

Utah State University

DigitalCommons@USU

---

All Graduate Theses and Dissertations

Graduate Studies

---

5-1991

## The Play of Visually Impaired Preschoolers With Their Mothers

Claudia Weber

Follow this and additional works at: <https://digitalcommons.usu.edu/etd>

 Part of the [Family, Life Course, and Society Commons](#)

---

### Recommended Citation

Weber, Claudia, "The Play of Visually Impaired Preschoolers With Their Mothers" (1991). *All Graduate Theses and Dissertations*. 2378.

<https://digitalcommons.usu.edu/etd/2378>

This Thesis is brought to you for free and open access by the Graduate Studies at DigitalCommons@USU. It has been accepted for inclusion in All Graduate Theses and Dissertations by an authorized administrator of DigitalCommons@USU. For more information, please contact [digitalcommons@usu.edu](mailto:digitalcommons@usu.edu).



THE PLAY OF VISUALLY IMPAIRED PRESCHOOLERS  
WITH THEIR MOTHERS

by

Claudia Weber

A thesis submitted in partial fulfillment  
of the requirements for the degree

of

MASTER OF SCIENCE

in

Family and Human Development

Approved:

UTAH STATE UNIVERSITY  
Logan, Utah

1991



## ACKNOWLEDGEMENTS

To my mother and father who taught me the importance of both work and play. To my husband whose patience never failed. And, to Ann Austin whose encouragement and support, even during her sabbatical, meant so much to me.

Claudia Weber

## TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS . . . . .	ii
LIST OF TABLES . . . . .	vii
ABSTRACT . . . . .	ix
Chapter	
I. INTRODUCTION AND STATEMENT OF PURPOSE . . . . .	1
II. REVIEW OF LITERATURE . . . . .	4
What is Play? . . . . .	4
What Is the Connection Between Exploration and Play? . . . . .	8
Why do we Play? . . . . .	9
Classical Theories . . . . .	9
Contemporary Theories . . . . .	11
Integration of Old and New Theories . . . . .	15
A Suggested Paradigm for Play . . . . .	19
What Is the Importance of The Interactive Aspect of Play? . . . . .	20
What Is the Developmental Importance of Play? . . . . .	24
How Does Mother Influence Play? . . . . .	27
Why Is Play Important For Children with Handicaps? . . . . .	29
Why Is Play Important for Children with Visual Impairment? . . . . .	32
What Is the Maternal Role In Play with Visually Impaired Children? . . . . .	33
How Is Play Assessed? . . . . .	35
Classification of Play . . . . .	37
Play Scales . . . . .	40
Conclusion on Play Scales . . . . .	59
Why Use the Play Assessment Scale? . . . . .	67
A Summary and Statement of Objectives for Study . . . . .	69

III. METHODS . . . . .	73
Subjects . . . . .	75
Design and Procedures . . . . .	76
Measures . . . . .	77
Parent/Caregiver Involvement . . . . .	77
Description . . . . .	77
Reliability . . . . .	80
Validity . . . . .	81
Play Assessment Scale . . . . .	82
Description . . . . .	82
Reliability . . . . .	82
Validity . . . . .	82
Battelle Developmental Inventory . . . . .	84
Description . . . . .	84
Reliability . . . . .	84
Validity . . . . .	85
IV. RESULTS AND DISCUSSION . . . . .	88
Reliability and Validity Established in Study. . . . .	88
Play Assessment Scale: Reliability . . . . .	88
Play Assessment Scale: Validity . . . . .	89
Hypotheses, Statistical Procedures, and Data Analysis . . . . .	90
PAS vs. BDI: Hypotheses . . . . .	93
PAS vs. BDI: Analysis . . . . .	94
PAS vs. BDI: Data . . . . .	96
Correlation Between PAS and BDI . . . . .	103
Additional Factors Influencing Developmental Levels . . . . .	106
Summary of Relation Between BDI and PAS . . . . .	109
Maternal Influence . . . . .	110

	Page
Maternal Influence As Measured By the PAS: Hypothesis . . . . .	110
Maternal Influence As Measured By the PAS: Analysis . . . . .	110
Maternal Influence As Measured By the PAS: Data . . . . .	111
Maternal Interaction Style . . . . .	113
Mother's Interactional Style: Hypotheses . . . . .	113
Mother's Interactional Style: Analysis . . . . .	114
Mother's Interactional Style: Data . . . . .	115
Responsiveness . . . . .	116
Control . . . . .	118
Cohesion and Play . . . . .	119
Directiveness . . . . .	119
Verbalization . . . . .	120
Vision . . . . .	121
Developmental Delay . . . . .	121
V. GENERAL DISCUSSION . . . . .	126
Play Assessment Scale As a Valid and Reliable Tool . . . . .	126
Maternal Influence . . . . .	127
Maternal Interaction . . . . .	129
Responsivity . . . . .	129
Age . . . . .	130
Vision . . . . .	131
Control and Directiveness . . . . .	132
Verbalization . . . . .	133
Maternal Response To Delay . . . . .	134
Value of Play . . . . .	135
Limitations . . . . .	136
Future Research . . . . .	138
Summary . . . . .	138
REFERENCES . . . . .	140

Page

APPENDICES . . . . .	153
Parent/Caregiver Involvement Scale . . . . .	154
Play Assessment Scale . . . . .	180
Battelle Developmental Inventory . . . . .	206

## LIST OF TABLES

Table	Page
1 Summary of Overlap Among Play Theories . . . . .	17
2 Early Play Scales: Social/Cognitive Paradigm for Classification of Play . . . . .	43
3 Later Play Scales: Developmental Paradigm for Classification of Play . . . . .	49
4 Current Play Scales: Developmental with Clinical Utility . . . . .	60
5 Farran's Scale: Domains . . . . .	78
6 Hypotheses: Statistics Used for Analysis . . . . .	91
7 Means and Standard Deviation for BDI and Play Alone and with Mother . . . . .	97
8 Developmental Age Minus Chronological Age: Variability . . . . .	97
9 Play Assessment Ages Minus Chronological Ages: Variability . . . . .	98
10 Battelle Ages Minus Play Assessment Ages with Mother and Alone: Variability . . . . .	99
11 T-Test by Intervention Group . . . . .	101
12 T-Test by Gender . . . . .	102
13 Correlation: PAS vs. BDI--Ranked Scores . . . . .	104
14 T-Test by Pairs: BDI vs. PAS--P-values . . . . .	105
15 T-Test by Pairs: BDI vs. Ranked Play Scores . . . . .	107
16 Correlation Between Developmental Delay and Vision Loss . . . . .	109
17 Play with Mother vs. Play Alone . . . . .	112

## Table

Page

18	Significant Findings for Level of Maternal Behavior on Farran's Scale as Related to BDI and PAS . . . . .	117
19	T-Test by Pairs: Developmental vs. Chronological Ages . . . . .	122
20	Relation Between Maternal Interaction and Developmental Scores for LEAST Delayed . . .	123
21	Relation Between Maternal Interaction and Developmental Scores MOST Delayed . . . . .	124

## ABSTRACT

The Play of Visually Impaired Preschoolers  
with Their Mothers

by

Claudia Weber, Master of Science  
Utah State University, 1991

Major Professor: Dr. Ann Austin  
Department: Family and Human Development

This thesis answers the following questions: (a) Is the Play Assessment Scale a true measure of development? (b) Does the mother have a significant, positive influence on the child's level of development? (c) Does the mother's interactional style influence the child's development as measured by the Play Assessment Scale and the Battelle Developmental Inventory? The subjects were 13 visually impaired preschoolers. Development was measured with the Play Assessment Scale and the Battelle Developmental Inventory. Maternal interactional style was assessed with the Parent/Caregiver Involvement Scale. The study indicated that the Play Assessment Scale is a valid, reliable measure of development in the preschool child. Mother was able to significantly raise the child's developmental level through play. And, maternal



interaction style appeared to be sensitive to the child's level of development. To highlight the developmental importance of interaction in the context of play, an interactive paradigm was used to answer the three questions posed by the study. (219 pages)

## CHAPTER I

### INTRODUCTION AND STATEMENT OF PURPOSE

As long as there have been children, there has been play. Society's perspective of the purpose and value of play has shifted and altered over the centuries. Yet, play has persisted as both an integral part of life and as an enigma.

Interaction with mother in a play situation is the route whereby the child develops his/her premise system about the world (Block, 1984). Kelly-Byrne (1989) suggested that the development of an understanding of interpersonal interactions occurs in the context of play. Children's play is "associated with interpersonal interaction and the development of communication patterns" (p. 239). Social interactions are also a path to cognitive acquisitions (Kreye, 1984). Social interactions with mother in play form the foundation for cognitive and social development. Many researchers have also suggested that play influences language development in a bidirectional manner (Hulme & Lunzer, 1966; McCune-Nicolich & Carroll, 1981; Piaget, 1962; Westby, 1980). Moreover, play is closely aligned with cognitive (Piaget, 1962); social (Block, 1984; Kelly-Byrne, 1984) and linguistic (Westby, 1980) development.

It follows that any factor which influences play will also impact development. A sensory, cognitive, motor or

emotional handicap will alter the child's ability to fully experience or participate in play. Beside the obvious mobility problems visual impairments entail, the external world is of minimal interest to visually impaired children. The mother becomes the primary conduit to the outside world for visually impaired children. Visual impairment limits not only play but also the child's interactions with the mother (Rogers & Puchalski, 1984). With both play and interactions restricted, the development of the visually impaired child is at an increased risk.

Although certainly not a cure, mother's ability to interact with her visually impaired child in play can ameliorate the effects of the handicap on development (Friedman and Pasnak, 1973; Rogers, 1988; Sandler and Wills, 1965; Warren, 1977). Identification of specific qualitative facets of the mother-child play interaction and their effects on play would offer interesting insights into the dynamics of dyadic play in visually impaired children.

A comprehensive view of play addresses both the social and cognitive aspects of play. Within the last century, scholars have begun to make quantitative observations of the nature and potential of play. Most play scales are based on a cognitive framework. Play scales offer a positive, nonthreatening, flexible and enjoyable approach to assessment of children with handicapping conditions. Currently the selection of commercially available scales is extremely limited. One scale which shows great promise is

Fewell's (1984) Play Assessment Scale (PAS). It is hoped that efforts to establish the reliability and validity of the Play Assessment Scale will hasten the availability of a viable and much needed assessment tool.

It is expected that the results of this study will not only lend credence to the Play Assessment Scale, but will also identify the mother's influence and optimal interactive style in play with her visually impaired child.

CHAPTER II  
REVIEW OF LITERATURE

What is Play?

Play, like life and love, is a universal experience which evades precise definition. Intuitively, few people will deny its existence. Realistically, few people will be able to define this abstract concept in concrete terms. The latin word illudere means to play. The word illude or, the more common usage, elude, literally means out to play. Engaging in play is thus equated with elusion. Elusion is the act of being evasive in nature. It is not surprising that play, which is evasive in nature, also has an elusive definition. The Oxford English Dictionary (Second edition, 1989) lists 39 definitions for play.

There are two types of working definitions of play. For ordinary conversational usage it is sufficient to define play as enjoyable, flexible and pretend. For scientific research, play must be defined in precise terms which account for developmental theories. For this paper a concise definition will be provided.

Brian Sutton-Smith (1979) suggested two theoretical paradigms which influence definitions of play. The first paradigm focuses on individual functions. The psychological and cognitive aspects of the individual help define play.

Theorists in this paradigm define play as either arousal modulation and stimulus generation (McCall & Schultz; in Sutton-Smith, 1979) or cognitive in nature. Sutton-Smith (1979) summarized several cognitive theorists; Fein, McCall, Garvey, Singer and Singer who defined play as the power to influence events, exploration of social influence, dramatization, flow, adaptive potentiation and envisagement of possible realms. The second paradigm used to define play is an anthropological perspective that looks at the cultural functions of play. Cultural theorists view play as a form of human communication, a way of organizing behavior, laughter and manipulation of ends-means behavior. Just as theorists may subscribe to both paradigms, a consolidated definition of play also includes elements from both individual and cultural perspectives.

The most agreed upon definition of play includes five criteria: (1) Intrinsic motivation, the dominance of means over goals (Bruner, 1972; Fein, 1978; Fewell, 1988; Garvey, 1977; Huinzinga, 1976; Piaget, 1962; Sutton-Smith, 1979). (2) Positive affect, pleasurable and enjoyable (Fein, 1978; Fewell, 1988; Garvey, 1977; Sutton-Smith, 1979). (3) Nonliterality, involves fantasy (Huinzinga, 1976; Sutton-Smith, 1979). (4) Flexibility, suspends ordinary rules, (Fein, 1981; Piaget, 1962; Sutton-Smith, 1979). (5) Voluntary, spontaneous, high degree of choice (Fein, 1981; Fewell, 1988; Garvey, 1977; Huinzinga, 1976; Piaget, 1962; Sutton-Smith, 1979). Any one of these criteria alone does

not necessarily constitute play. Eating warm chocolate chip cookies is pleasurable but it is not play. Smith and Vollstedt (1985) set out to test if commonly held definitions for play would be agreed upon by a large number of observers (n=70). They found that the most important factor for judging an activity as play was nonliterality, the element of fantasy. They also found flexibility and positive affect to be important factors. Their research indicated that intrinsic motivation is a weak correlate of play. However, the children observed in their study were in small groups in a classroom setting. Peers provide strong extrinsic motivation for play. In an environment with other children it would seem that intrinsically motivated play would normally be minimal. In view of this research and the preponderance of other researchers favoring this criteria, it is proposed that intrinsic motivation is an important aspect of play. The most important finding of Smith and Vollstedt's (1985) research is that the more criteria present, the more likely an activity will be judged as play. They suggested that the presence of any two of the three criteria--nonliterality, positive affect and flexibility--will describe play 93% of the time. By consensus, play may be defined as a pleasurable, voluntary activity with an element of fantasy and flexibility which is engaged in for the intrinsic enjoyment of the means not an end.

The concise, scientific definition is a workable tool for research. Yet, even the most seasoned researcher leaves

a scientific definition of play with the nagging notion that there is a little bit more to play. Several researchers have written eloquent definitions of play. Piaget (1962) viewed play as an orientation of behavior rather than a behavior per se. He felt that "play is an assimilation of reality to the ego" (p.148). In Sutton-Smith (1979) Schwartzman saw play as a meta-behavior. That is, communication about behavior itself. On a different level, Brown and Gottfried (1985) quoted Vandenberg as saying that "myth, meaning and hope are fundamental aspects of human life and (that) play is an important manifestation of these phenomena" (p. 8). Succintly, Vandenberg described play as "closer to hope than to rehearsal" (p. 8.) Huinzinga (1976) simply stated "play has a tendency to be beautiful" (p. 73). In McLellan (1970) Froebel captured the essence of play as follows: "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" (p.13).

In summarizing definitions then, an ordinary conversational concept of play would be enjoyable, flexible and pretend. A scientific, research-oriented definition would present play as a pleasurable, voluntary activity with an element of fantasy and flexibility which is engaged in for the intrinsic enjoyment of the means, not an end goal. An ideological definition of play would include: highest expression of human development, the free expression of what is in a child's soul and closer to hope than to rehearsal.



What Is the Connection Between  
Exploration and Play?

There is a lot of confusion evident in the literature on the distinction between play and exploration (Cannella, Berkely, Constans, & Parkhurst, 1987; Collard, 1979). Therefore, to further clarify the definition of play, a brief discussion of exploration and play is relevant. Although there are definable differences between exploration and play, Weisler and McCall (1976) suggested that the separation of these concepts is artificial. Both exploration and play involve acquisition of information. Exploration gives knowledge about objects; play imparts knowledge about self. Positive affect may be experienced in exploration while neutral affect may be exhibited during play. Wohwill (1989) suggested that both exploration and play are intrinsically motivated. The distinction between play and exploration becomes even fuzzier when the child's ongoing stream of activity is observed. Constant transitions between play and exploration occur in a fluid manner. It is suggested (Wohwill, 1989) that play and exploration develop in a parallel fashion. The overlap between play and exploration in infants make them almost indistinguishable.

## Why Do We Play?

Scholarly theories of play can be traced back to the 18th century. Both classical and current theories of play will be discussed. Comparisons will be made between older and contemporary theories of the basic principles of play.

### Classical Theories

Perhaps the earliest reference to a theory of play is Schiller in the 18th century (McLellan, 1970). Schiller hypothesized that after primary survival needs are met, the superfluous energy left over was directed toward play. Since most survival needs are met by parents, children have an abundance of excess energy available for play. Schiller described two types of excess energy: (1) material superfluity (analogous to physical play) and (2) aesthetic superfluity (similar to symbolic or dramatic play). In Schiller's view, the purpose of play is to engender an aesthetic appreciation in mankind.

In 1855 Spencer presented the theory that "play is the superfluous and useless exercise of the nerves that have been quiescent" (Pepler & Rubin, 1982, p. 23). Spencer's physiological approach suggested that higher animals have more available energy for play. Although Spencer is often credited with the excess energy theory, he never used the phrase excess energy (Pepler & Rubin, 1982). And, he freely admitted that his ideas came from "some German" whose name

he could not remember (perhaps Schiller?) This theory was revived briefly in 1931 by McDougal (Herron & Sutton-Smith, 1971) who saw play as a nonpurposeful activity solely for the release of excess energy.

Hall (in 1891) was a proponent of the recapitulation theory of play (McLellan, 1970). This theory is an evolutionary approach which sees mankind reliving the history of the human race through play. The ontogeny of play recapitulates the phylogeny of mankind. Play is a working through of primitive tendencies which must be accomplished before arriving at healthy adulthood. In Hall's view, allowing children to play war games ensures peace loving children. Although a frustrated parent may occasionally see his toddler as a "little savage," this theory has not persisted.

A contemporary of Stanley Hall, Froebel has been called "the apostle of play" (McLellan, 1970). He coined the term "kindergarten," literally, a garden for children. Froebel conceptualized play as a central component in educational programs for young children. Many of Froebel's philosophies regarding the essential nature of play to the child's development persist today. Froebel felt that one of the purposes of play is to bring "the inner outer and the outer inner" (p. 14). In his view, play is a pure behavior which should be encouraged.

In the late 1800's Groos hypothesized a practice, or pre-exercise, theory of play (McLellan, 1970). Play provides

a means for rehearsal and practice for later life. Play facilitates the development of instincts and the emergence of intelligence. In Groo's view, play is necessary for survival. "You don't play because you're young--rather you're young so you can play" (McLellan, 1970, p.9). Two types of play were suggested by Groos. Experimental play allows the child to practice motor, cognitive and sensory skills. Socionomic play is primarily for the development of social skills.

Simply put, in 1890 Sully saw play as the child's expression of imagination and ideas (McLellan, 1970). The two purposes of play are to imitate adults and play out imaginative ideas. A perceptive insight is evident in Sully's pondering over how much an adult can really understand of child's play. Sully suggests that only a child can grasp the true meaning of child's play. Interestingly, it is on this premise that Kelly-Byrne (1989) based her dissertation on play. She spent several months engaged in actual play with a child.

#### Contemporary theories

One of the first twentieth century play theorists was Freud (McLellan, 1970). Freud felt that it was the human condition to have instincts which need satisfying. When these needs were not met, tension resulted. Relief of this tension is pleasurable. Play, in Freud's view, is a manifestation of this drive to seek pleasure. Play consists

of this pleasure principle and the compulsion to repeat a behavior until it is mastered. The reliving of original experiences to release inner tension by using play is the basis for modern play therapies.

In 1947 a behavioristic approach was taken by Schlosberg who saw play purely as a stimulus-response activity.

Lowenfeld (in 1935) suggested that play has a inner and outer aspect. She classified play as (McLellan, 1970): (a) bodily activity; (b) integration of previous experience; (c) fantasy and inner realization - "experience feeds fantasy and fantasy interprets experience" (p. 12); and (d) orientation to environment.

Play, in Griffith's view, is primarily related to fantasy. In contrast to her contemporary Freud, she saw play as a way of avoiding problems in the environment by dealing with them in an indirect, piecemeal fashion. In young children, imagination is the characteristic thought. Healthy emotional and intellectual development depends on fantasy.

In the mid-1940's Isaacs saw imaginative play as the way whereby children make the transition from symbolic values to constructions of reality. Play is seen as the interaction of three forms of activity: physical skills; interest in environment; and fantasy to relieve tension and enhance understanding.

Five aspects of play as outlined by Buhler (McLellan,

1970) were the following: (1) functional (equivalent to sensori-motor), (2) fantasy, (3) passive listening, (4) constructional, and (5) collective games. Her components of play followed a developmental sequence.

Brownlee suggested in 1954 that there is an actual play drive. Play, in Brownlee's view, is an instinctual drive that all children possess.

An abstract, but interesting, theory was presented by Thomae in the mid-1950's (Hutt, 1971). He hypothesized that inner behavior has a rhythm and outer behavior is aperiodic. Play functions to change movement periodicity to object periodicity to activity level periodicity. This concept of play, making order out of chaos, is similar to Piaget's proposal that play is primarily assimilative in nature.

It was theorized by Haldane, another contemporary of Brownlee and Thomae, that the result of play is loss of negative entropy. Play is the mechanism whereby the human organism regains a state of positive energy.

The approach to play chosen by Huizinga, also in the 1950's, was ethological. He suggested that play was an activity engaged in by higher animals (Huizinga, 1976). Play is not merely an adaptive function, but it has a unique function of its own. Huizinga was one of the first researchers to give play a cultural perspective.

The Russian researcher Vygotsky saw play as the mechanism used by the child to move up to the next developmental level (Vygotsky, 1967). In his view, play is

a source of development. It facilitates internal transformations. Although he did not see play as the dominant factor in childhood, he saw it as "a leading factor in development" (p. 15). As children separate from situational constraints, they create imaginary situations. Vygotsky suggested that this parallels the child's shift from imaginary play to play with rules.

Piaget perceived play as a dissociation between assimilation and accomodation (Piaget, 1962). When assimilation subordinates accomodation and functions by itself, the orientation is toward play. Assimilation for assimilation's sake results in a distorted picture of reality. The discrepancy between assimilation and accommodation, when the two factors are out of balance is the source of symbolic make-believe. Therefore, Piaget hypothesized that when assimilation predominates and assimilation and accommodation are out of balance, the play of the child is symbolic. Play is a state of disequilibrium. But, not all play is symbolic. Piaget felt that symbolic play constitutes a pole of assimilation. Symbolic play is to practice play as representational intelligence is to sensori-motor intelligence. Symbolic play satisfies the ego and provides a nonverbal way of communicating subjective emotions.

Because the thought processes are in a state of disequilibrium, the child must assimilate reality to the ego to continue to develop (Piaget, 1962). Piaget felt that the

child assimilated reality to the ego rather than to thought because cognitive processes are not well developed in young children. A balance between assimilation and accommodation is necessary for thought to develop. In Piaget's words (1962), "Imitation is a continuation of accommodation, play a continuation of assimilation and intelligence a harmonious combination of the two" (p. 104).

The research of Ungerer, Zelazo, Kearsley and O'Leary (1981) supported Piaget's theory of symbolic play development. They found that the infant develops the ability to separate objects from action. This ability progresses to the point where symbols become separate and symbols are created by the child for use in play.

#### Integration of Old and New Theories

Although it would seem as though the earlier play theories have been displaced by the newer theories, an excellent historical review by Brian Sutton-Smith (Herron & Sutton-Smith, 1971) reveals overlap many theorists (see Table 1). The ability of play to transform the child's reality to symbolic representation was agreed upon by Schiller (in 1700), Spencer (in 1855), Groos (in 1898), Piaget (1962), and Vygotsky (1967). Qualitatively different stages of play were recognized by Schiller (in 1700), Spencer (in 1855), Groos (in 1898), Piaget (1962), Rubin and Smilansky (1970). Spencer (in 1855), Fein (1981) and Garvey (1977) all noted the element of nonliterality in play. Play



as a facilitator of creativity is espoused by Schiller (in 1700), Spencer (in 1855), Groos (in 1898), Hall (in 1891) and Singers (1979.) Groos (1898), Freud (in 1935) and Bruner (1972) all agree that play allows practice and mastery of skills necessary later in life. The view that play has a cathartic function in development is shared by Hall (in 1891) and Freud (in 1935.) The physiological perspective on play suggests that neural mechanisms are responsible for play. Play provides the perfect release of tension for excited neuronal circuits. Spencer (in 1855) and Berlyne (in 1969) agree with this theory. A summary of this information is provided on Table 1.

Table 1

Summary of Overlap Among Play Theories

<u>Principle</u>	<u>Classic view</u>	<u>Contemporary view</u>
1. Play allows child to transform reality to symbolic representation of world	Schiller (1700) Spencer (1855) Groos (1898)	Piaget (1962) Vygotsky (1967) Singers (1979)
2. Qualitatively different levels of play reflect varying abilities	Schiller (1700) Spencer (1855) Groos (1898)	Piaget (1962) Rubin and Smilansky (1970)
3. Nonliterality	Spencer (1855)	Fein (1980) Garvey (1977)
4. Facilitates creativity and an aesthetic approach	Schiller (1700) Spencer (1855) Groos (1898) Hall (1891)	Singers (1979)
5. Play allows practice and mastery of activities necessary later in life	Groos (1898)	Freud (1935) Bruner (1972)

Table 1--continued

Summary of Overlap Among Play Theories

<u>Principles</u>	<u>Classic view</u>	<u>Contemporary view</u>
6. Play has a cathartic function in development	Hall (1891)	Freud (1935)
7. Neural mechanisms responsible for existence of play	Spencer (1855)	Berlyne (1969)

## A Suggested Paradigm for Play

Much of the play research and many of the play scales are based on Piaget's theories of cognitive development. As a result, most current conceptualizations of play are founded on a cognitive framework. The literature supports a strong connection between play and cognitive development (Fein, 1975; Piaget, 1962; Ungerer, Zelazo, Kearsley & O'Leary, 1981; Vygotsky, 1967). However, a conceptualization of play as simply a mirror of cognitive development is shortsighted.

Piaget (1981) distinguished between behaviors related to objects and those related to people. Kreye (1984) also noted that "In play, the child spontaneously organizes objects and people" (p. 305). Both object and social behaviors have structural/cognitive and energetic/affective aspects (Piaget, 1981). To Piaget cognition and affect are "two sides of the same coin" (p. xiv). He stated: "Affective structures are isomorphic with intellectual structures" (p. 9). Play behaviors related to objects (toys) are both cognitive, concerned with logical knowledge, and affective, concerned with interests and intraindividual feelings. Play behaviors related to people are also both affective, interpersonal and cognitive, aware of intrapersonal relationships.

A comprehensive view of play will incorporate behaviors toward both objects and people and an examination of both

the cognitive and affective aspects of object and people interactions.

#### What Is the Importance of the Interactive Aspect of Play?

While recognizing that play involves interactions with objects, the emphasis here will be on the socially interactive aspects of play. The social interactive aspect of knowledge acquisition is not routinely addressed (Kreye, 1984).

Development in the child, both cognitive and affective, is a function of (a) the child's premises about the receptivity and responsivity of the world to his or her actions and therefore the child's position in the world; (b) the child's opportunities to experiment with nature; (c) the child's strategies for responding to discrepant experiences (Block, 1984.) In interactive play with mother the child's premises about receptivity and responsivity are developed.

"The spiraling, reciprocating, bidirectional effects of child and parent interaction" (Block, 1984, p. 281) can facilitate or hinder development. If reciprocity in interactions is stunted the child's development is at risk (Garabino, 1989). Block (1984) also recognized that socialization practices can restrict exploration, discourage play and inhibit problem solving by premature or excess intervention. The result is an impairment of cognitive development.

An ecological perspective (Garabino, 1989) suggests that the development of the child is a function of "how the child develops interactively with the immediate social and physical environment" (p. 22). The social-verbal aspects of context are strongly influential in early concept formation. (Kreye, 1984). Early interactions with caretakers can influence the child's modes of processing and psychological structures (Block, 1984). Caretakers can affect interests, play and opportunities for exploration in a positive manner. The mother-child interaction is an adaptive mechanism which lays the groundwork for conceptual organization. "Play may be the child's primary mode of conceptual organization" (Kreye, 1984, p. 305). Vygotsky (1967) also suggested that children learn concepts in social interaction. This view was upheld by Piaget (1962) who proposed that verbalization and socialization of schemas can transform sensory motor schemas into concepts. Socialization practices can encourage both assimilative and accommodative problem solving strategies and their appropriate application can benefit problem solving competencies (Block, 1984).

Social interactions are a potent influence on the child's development of a premise system which is the child's view of what the world is like for her/him. This includes the degree of receptivity and responsivity the child expects to find in the world, the place the child feels s/he has in the world and the kind of aspirations the child feels are

appropriate for her/him. "Play is an integral part of the developmental process that underlies tool use and social and motor development" (Vandenberg, 1978, p. 736). Social play is an essential precursor to the development of successful social interactions.

As the child interacts with the mother in a play situation, the child develops a premise system which reflects the mother's responsiveness, appropriateness and control (Block, 1984). Cognitive and affective growth of the child will be influenced by the quality of the premise system developed.

Kelly-Byrne (1989) suggested a similar relationship: Mutual expression through social play leads to increased trust and intimacy in personal relationships and therefore leads to the more direct kinds of human development that such sharing of the self typically allows (p. 238).

The play of children is closely aligned with interpersonal interaction. It is the means whereby communication and, beyond that, intimacy develop in childhood. Kelly-Byrne concluded that "the play relationship itself led to a fundamental transformation of the child's symbolic expression" (p. 242).

Looking at play from an interactive perspective may also reveal changes in the child's needs and developmental differences in the mother's responsivity during play. Harlow and Harlow (1966) proposed three stages in the

mother's affectional system: maternal attachment and protection; the transitional or ambivalence stage; maternal separation. This corresponds with four stages of the infant-mother affectional system: reflex; comfort and attachment; security; and separation. Embedded in the interactive stages are four stages of interactive play: rough-and-tumble; approach-withdrawal; integrated; and aggressive. Harlow and Harlow (1966) suggested that the maternal and infant-mother affectional systems are integral to the development of socialization. They concluded that all of the proposed stages interact in an "orderly sequential manner" (p. 272).

Vandenberg (1978) also addressed the concept of parallel interactive stages. During early motor play the mother's attitude is very protective. With increasing social play, the mother's control decreases and peer interactions increase. It is suggested that while maternal control may be appropriate in the early stages of play, as the child matures, maternal control should decline.

Vygotsky (1967) noted that by taking only a cognitive perspective of play, developmental changes in needs, motives and affect are often overlooked. It is suggested that the changes in needs and motives will be expressed in play.

Piaget (1962) supported the contention that play will reflect changes in motives. To Piaget, play is primarily an assimilative activity. The affective aspect of assimilation is equated with interest. It is logical to



assume that as a child develops, his or her ability to assimilate object and social interactions will evolve. As this ability to assimilate changes, so will the child's interests. Early interactions between the child and his or her caretaker form a template for later social development (Harlow & Harlow, 1966). Interactive play is a major factor influencing social development (Vandenberg, 1978). An interactive paradigm seems to be an appropriate and comprehensive way of looking at the play of children.

#### What Is the Developmental Importance of Play?

As established in the previous section, the social, cognitive and linguistic development of the child interacts with play in a bidirectional manner. To paraphrase Vandenberg (1978) play is an integral component of the developmental process underlying social development (p. 736). The reciprocal effect was observed by Feitelson and Ross (1973) who found that children deprived of social interactions displayed deficiencies in symbolic play activities.

Piaget (1962) suggested that cognitive development is facilitated by play which in turn reflects cognitive achievements. Both Piaget (1962) and Vygotsky (1967) portrayed play as a transitional activity. Movement from sensorimotor activities to representational thought is accomplished through play (Piaget, 1962). Vygotsky (1967)

viewed play an "an intermediary between the purely situational constraints of early childhood and thought" (p. 13). The correlation between cognitive development and symbolic play has been confirmed by many researchers (Bruner, Jolly, & Sylva, 1976; Fein, 1975; Ungerer, Zelazo, Kearsley & O'Leary, 1981).

Play leads to more complex cognitive behavior which in turn influences play (Athey, 1984). Four cognitive developmental functions have been postulated for play: increases availability of information; facilitates mastery of skills and concepts; uses intellectual operations which leads to maintenance of cognitive processes; and promotes creativity (Athey, 1984).

Not only do cognition and play facilitate and maintain each other, but each mirrors the development of the other. Children with cognitive delays show an arrested development of play (Vygotsky, 1967). The developmental level of play is also lowered in children with autism and Down syndrome (Riguet, Taylor, Benaroya & Klein, 1981) and developmental disabilities (Powers & Radcliffe, 1989). Hill and McCune-Nicolich (1981) found that the play of children with Down syndrome correlated more strongly with mental age than with chronological age.

Both language and play are active expressions of the child's ability to create cognitive representations of reality (Hulme & Lunzer, 1966; McCune-Nicolich & Carroll, 1981; McCune-Nicolich, 1981; Piaget, 1962; Westby, 1980).

Language and play develop in a yoked fashion. As the child moves from single-word utterances to combinatorial language productions, her/his symbolic play becomes increasingly complex. Casby and Corte (1987) indicated that the relationship between language and symbolic play ( $r=.84$ ) is stronger than the relationship between chronological age and symbolic play ( $r=.68$ .) Children with language impairments also show evidence of deficits in symbolic play (Terrell, Schwartz, Prelock & Messick, 1984). Although the play of the language impaired children was below the level expected for their chronological age, it was more advanced than their linguistic skills. The researchers speculated that the types of symbolic play chosen for the study may have distorted the language-play relationship. However, further evidence for a possible independence between language and symbolic play was suggested by Rogers (1988) who noted that visually impaired children with well-developed language exhibit deficiencies in symbolic play.

It is clear from the literature that play is an integral part of social, cognitive and linguistic development. In addition, play promotes integration of cognitive, linguistic and social development (Athey, 1984). "Play contains all developmental tendencies in a condensed form; in play it is as though the child were trying to jump above the level of his normal behavior" (Vygotsky, 1967).

What factors can influence this essential component of development? How does the mother's interactional style

impact play? What is the effect of a handicapping condition on play?

#### How Does Mother Influence Play?

Play is the child's primary mode for organizing concepts. The younger the child, the more context dependent their concepts are. Accessing the concepts is a function of the mother's structuring of the context (Kreye, 1984).

At 20 months, the mother's guidance during play will result in more diversity in exploratory (handling, mouthing) and combinatorial (grouping, stacking) play than as observed when the child plays alone (O'Connell & Bretherton, 1984). Neither maternal facilitation nor practice effects alone will account for the increased diversity in play seen with mother. It is the explicit, active guidance of the mother and the child's age which are most influential in determining an increase in the diversity of the child's play.

Block (1984) proposed that the mother's responsiveness, appropriateness and control are reflected in the child's premise system. The child's premises about receptivity and responsivity, interactional opportunities and problem solving strategies can thus be attributed to the mother's socialization pattern. Block (1984) suggested that these socialization patterns in the context of play are not only necessary for the development of a premise system but also facilitate "the child's achievement of the cognitive recognition and fluencies that represent the essence of

cognitive development" (p. 275). Clarke-Stewart (1973) concluded that optimal interactive maternal behavior for the child's development is stimulating, responsive, appropriate, and accepting. Both Clarke-Stewart (1973) and Teti, Bond and Gibbs (1988) found that mother's presentation of play materials and play style correlates with the child's skill with objects. Development of the premise system is mediated by the child's interaction with mother in play.

In Schaffer and Crook's (1979) study mothers were asked to actively interact with their children in a play situation. The mothers used both verbal and nonverbal control techniques to encourage their children to play with a variety of available toys. It was found that maternal control of the child's behavior was subtle, sensitive and appropriate.

Brooks-Gunn and Lewis (1982) also concluded that "mothers tailor play interactions their child's ability and behavior" (p. 26). In their study, 111 children with handicaps and 156 children without handicaps were observed playing with their mothers for 20 minutes. Play was divided into five categories: demonstrating, giving, accepting, removing and manipulating. Mothers of children with handicaps used demonstration to initiate play much more frequently than mothers of children without handicaps.

Both mothers and fathers of normal children appear adept at appropriately adjusting the level of play to their infants abilities (Teti et al., 1988). In this study both

mothers and fathers were observed separately playing with their infant for 15 minutes. The mean age of the 69 infants was 17.5 months. The object-focused play and verbal simulation used by mothers and fathers was modified both to the infant and by the infant.

The literature indicates that mothers are generally appropriate, responsive and sensitive to their children in a play interaction. There is evidence that the mother's influence can increase the diversity of the child's play. Moreover, mother plays an important role in maintaining and facilitating play interactions with her child.

#### Why Is Play Important for Children with Handicaps?

It is obvious from the literature that play occupies a critical position in the cognitive, social and linguistic development of the child. Logically, any factor which interferes with play is a potential deterrent to development. Any motor, cognitive, sensory or emotional impairment may disrupt play and, in turn, impede normal development beyond the effects attributable solely to the handicap. An awareness of the degree to which the handicap influences play may allow for appropriate intervention.

In Tizard and Harvey (1977), Mogford suggested that: All handicapped children have one thing in common that their ability to explore, interact with and master the environment is impaired, with a consequent distortion

or deprivation of normal childhood experience (p. 171).

Sedentary activities and a lack of appropriate play models contribute to an impoverished play environment for the child with a handicap (Munoz, 1986.) Rogers (1988) also attributed deficits in the play of children with handicaps to similar factors: understimulating environment; lack of close relationships; lack of appropriate language and social models. The results are qualitative differences in play as a function of the handicap. Spontaneity, creativity, attention and exploration may all suffer due to the handicap. Gralewicz (1973) and Gowen, Goldman, Johnson-Martin and Hussey (1984) indicated a qualitative reduction in total play time with multiply handicapped children. They found that children with handicaps not only played less, but they also have fewer playmates.

While the play of children with handicaps seems to be influenced both qualitatively and quantitatively there is evidence that the sequence of play development remains intact. Several researchers have found that the sequence followed by children with handicaps matches that observed in non-handicapped children (Fewell & Rich, 1987; Gowen et al., 1984; Rogers, 1988; Tilton & Ottinger, 1964).

The child's level of play is positively correlated with their developmental age (Fewell, 1988; Gowen et al., 1984; Hill & McCune-Nicolich, 1981; Weiner & Weiner, 1974). As children mature developmentally, so does their play. The

level of play corresponds to the child's developmental, not chronological age. Children who never achieve a high developmental age may never reach the level of symbolic play (Beeghly & Cicchetti, 1987; Fewell & Rich, 1987). When compared to normal children, the play of language impaired (Terrell & Schwartz, 1988), socially impaired (Gould, 1986), mentally retarded and autistic children (Tilton & Ottinger, 1964) is less complex, more concrete and of shorter duration.

An adult's response to the handicap may influence the child's play. Greenberg and Field (1982) found that normal, developmentally delayed and Down syndrome children were rated as having a less difficult temperament in a play situation than cerebral palsy or audiovisually impaired children. This rating appeared to be both context and rater dependent. Teachers in a classroom setting rated the children most harshly. Mothers indicated the most positive perceptions of temperament. The negative implications of these findings are obvious. Meyer, Fox, Schermer, Ketelsen, Montan, Maley and Cole (1987) found that teachers who utilized a low intrusive style in the play of children with autism were able to elicit a higher quantity and quality of play.

Although handicapping conditions correspond to the general effects outlined above, each specific handicap seems to have a unique effect on play. Therefore, the focus here will be only on the effects of visual impairment on play.



Why Is Play Important for Children  
with Visual Impairment?

Children with visual impairments appear to play at levels below their age matched peers (Sandler & Wills, 1965). This may be a function of both the handicap itself and the quality of the mother-child interaction.

Visual impairment influences motor development, which in turn impacts the child's play (DuBose, 1979; Fewell & Kaminski, 1988; Fraiberg, 1977). Motor behaviors requiring projections (jump, run, grasp) are often stilted. Obviously play requiring objects or movements through the environment will be curtailed. This decreased motility ties in with Fewell's (1988) observation that visually impaired children exhibit delayed exploration of their environment and less elaborate play routines. In addition, a lack of engagement of the hands at midline is often observed.

Although the language of visually impaired children is usually age appropriate, it seems to have a few unique characteristics. There is a tendency to verbally represent the self, usually with the I pronoun, more than is appropriate (DuBose, 1979; Fraiberg, 1977; Sandler & Wills, 1965). This centering on I seems to be reflected in a more egocentric style of play. When visual recall is not possible, the child will attempt to organize the environment by imitating sounds and using verbalizations

(Sandler & Wills, 1965). Tait (1972) suggested that visually impaired children use verbalizations to both explore and keep in contact with the environment. Verbal repetition and imitation are pronounced in children with visual impairments (DuBose, 1979; Fewell, 1988; Rogers, 1988; Sandler & Wills, 1965; Singer & Streiner, 1966).

There is some debate in the literature on the degree of creativity exhibited by children with visual impairments. Most researchers indicate a diminished creativity and imagination, both qualitative and quantitative (Warren, 1977). Singer and Streiner (1966) mirror these findings. They labeled the play of visually impaired children as more concrete with limited fantasy. Simultaneously, there is evidence of more fantasy or imaginary companions among children with visual impairments (Singer & Streiner, 1966; Warren, 1977).

#### What Is the Maternal Role InPlay with Visually Impaired Children?

Because the focus of this study is on visual impairment, this section will emphasize maternal influence as it relates specifically to children with visual impairments. The external world has a lack of appeal for the child with visual impairment (Sandler & Wills, 1965). The mother becomes the primary source of stimulation and security. "Cathexis and understanding of the world outside goes via the mother to a far greater extent than in the

sighted child, and continues thus for a far longer time" (p. 9). DuBose (1979) noted that the role of the mother is particularly important in fostering positive self-concept, self-care and social interaction skills. While the role of the mother is always crucial, it is apparent that visually impaired children have a more tenuous grasp on development which intensifies their need for maternal interactions.

Bregani et al. (1981) noted that perhaps the most significant aspect of the handicap is not the visual impairment per se, but how it influences the mother-child relationship. The primary source of problems is a difficulty in the reciprocal interactive system (Rogers & Puchalski, 1984). "Both partners in the visually-impaired dyads are deprived" (p. 55). The mother's responses to the infant tend to be weak, inconsistent (Rowland, 1984), more neutral (Rogers & Puchalski, 1984) repetitive and very directive (Kekelis & Andersen, 1984). There are fewer positive vocalizations, less face to face interaction (Rogers & Puchalski, 1984) and, more adult initiated, child centered topics (Kekelis & Andersen, 1984) in maternal interactions with visually impaired children.

Optimal mother-child interactions are composed of both maternal responsiveness and the child's readability which facilitates maternal involvement (Kekelis & Andersen, 1984). Mothers need feedback and children need appropriate stimulation (Rogers & Puchalski, 1984). Visually impaired children demonstrate fewer positive responses, fewer social

initiations, more negative affect and more ignoring responses toward mother (Rogers & Puchalski, 1984). The vocabulary of signs and signals (smiles, body language, facial contortions) are often absent or limited in children with visual impairment (Fraiberg, 1977).

Children with visual impairments must be taught to engage in active play (Warren, 1977). Without adult stimulation visually impaired children will withdraw and revert to primitive activities. Teaching play can enhance acquisition of symbolic skills (Friedman & Pasnak, 1973), move the child toward other objects and people and teach reciprocity (DuBose, 1979). Rogers (1988) suggested that children with visual impairments (and autism) need more play coaching, in the form of directive teaching and modeling, than children with other handicaps. Training left to chance is a disservice to the child (Parten, 1971).

Play is a crucial aspect of development. Handicapping conditions diminish the child's ability to fully experience play. Visual impairment is particularly sensitive to mother's ability and willingness to facilitate play. Enhancement of play is an effective technique to augment the acquisition of symbolic, social, cognitive and language skills in children with visual impairments (Friedman & Pasnak, 1973; Rogers, 1988).

#### How Is Play Assessed?

Play follows a predictable developmental sequence.

Although the quality and rate may change, research indicates that the sequence remains intact (Fewell & Rich, 1987; Gowen et al., 1984; Piaget, 1962; Rogers, 1988). It is possible to present play as a model of normal development. This model can then be used for assessment. Children with handicaps are particularly amenable to assessment via play.

Most assessment tools emphasize what the child can not do. This is demoralizing for both the child and the parents. Play assessment focuses on what the child can do. Many developmental assessments are long and arduous. Play is a pleasurable, nonthreatening activity which, by definition, is enjoyable to the child. In addition, play is very adaptable to a wide variety of handicaps and degrees of impairment. To date there are two limitations to play assessment. First, there are only two scales available commercially. One is very expensive and comes from England; the Symbolic Play Test (Lowe & Costello, 1976). The other is tailored toward IEP development (Linder, 1989). Secondly, neither experimental nor available play scales provide a detailed picture of all developmental domains. However, play scales do have tremendous potential for multi-disciplinary assessment of handicapped children to determine developmental age, interests, abilities and interactional capabilities with both objects and people.

Following will be a discussion of classifications of play which form the foundation for many play scales. There will be a presentation of the play scales developed to date.

By understanding the evolution and availability of play scales the reader will be aware of the current state of the art in play scales and, will develop an appreciation for the scale selected for this study.

### Classification of Play

The classification of play is based on qualitative differences in activities and follows a developmental sequence. Many researchers have attempted to delineate stages of play based on the correlation between different types of play and the child's development.

Weisler & McCall (1976) suggested four stages of play: (1) isolation, no initiation of interaction with other children; (2) parallel play; (3) social, but, non-interactive play; and (4) social, group play.

A few years later McCall (1979) further refined his stages: (a) (0-2 months) child focuses on sensory stimulus, (b) (2-7 months) child is capable of increased exploration, (c) (7-13 months) child develops the ability to separate object from action and begins imitation, (d) (13-21 months) child separates means and ends, and (e) (21 months and older) child understands and begins to use symbolic relations.

Garvey (1977) recognized six types of play that dominate various developmental levels. Each of the six types of play overlaps, persists over time and increases in complexity with development: (1) (0-8 months) play with

motion and interaction, (2) (9-36 months) play with objects, (3) (2-6 years) play with language, (4) (3 years to adolescent) play with social materials, and (5) (3 years to adolescent) play with rules. This includes both playing games that have rules and treating the rules as an adaptive aspect of play where the rules themselves are a part of the game, and (6) (3 years to adolescent) play with rituals

Underlying each of these types of play is biological maturation, increase in skills and increasing complexity. As the child develops, the properties of the objects decrease in importance and the play becomes increasingly dominated by the child's plans and ideas.

Smilansky (1968) divided play into three stages: (1) functional, (2) constructive, and (3) dramatic.

This mirrors the stages Buhler suggested in 1928 (Pepler & Rubin, 1982): (a) "Funktionsspiel," (b) "Konstruktionsspiele," and (c) "Fiktionsspiele."

Piaget (1962) suggested six stages of play based on the child's cognitive development: (1) (0-1 month) preparation through reflex--externally stimulated, not true imitation; (2) (1-5 months) sporadic imitation--accommodation approximately equal to assimilation; primary circular reactions; (3) (6-8 months) systematic imitation--imitation based on experience; secondary circular reaction; assimilation of new models to the schemas; (4a) (8-11 months) direct imitation--understanding of relationships between things; coordination of schemas; only imitation of

models with some familiarity to child's schemas; (4b) imitation of auditory and visual models; (5) (12-16 months) systematic and exact imitation of new models--progressive differentiation between accommodation and assimilation; tertiary circular reactions; experimentation to understand new properties of objects; and (6) (16-18 months) deferred imitation--"imitation no longer dependent on the actual action" (p. 62); representation first appears; imitation process becomes internal.

Belsky and Most (1981) suggested twelve stages of play development: (1) mouthing, (2) simple manipulation--visually guided, (3) functional manipulation--spinning wheels on car, (4) relational--bringing together and integrating two or more objects in an inappropriate manner (e.g., spoon to stick) (5) functional-relational--bringing together and integrating two object in an appropriate manner (e.g., cup on saucer) (6) enactive naming--approximate pretense activity, (e.g., raise phone receiver to ear without talking) (7) pretend self--pretense behavior directed toward self in which pretense is obvious (e.g., make slurping sounds while "drinking" from empty cup) (8) pretend other--pretense behavior directed away from child toward other (e.g., brush doll's hair) (9) substitution--using "meaningless" object in creative manner (e.g., stick as toothbrush) (10) sequence pretend--create scenario with a single pretense (e.g., put doll in cradle, then kiss good night) (11) sequence pretend substitution--same sequence as



pretend sequence only integrate a single substitution (e.g., put doll in cradle, cover with green felt square "blanket") and (12) double substitution--pretense play involving two substitutions within a single scenario (e.g., treat peg as doll, put peg/doll in cradle and cover with green felt square blanket, say good night to peg.)

Fewell (1988) based her Play Assessment Scale on a sequence of eight stages: (1) primary reactions--shake rattle; (2) functional--act appropriately on object; (3) combinatorial--combine object together that have a logical relationship; (4) relational actions--early classification, cluster things together with a theme or attribute; (5) sequential actions--feed baby and then burp baby, know order; (6) generalization--same act across different objects; (7) representational--use object to represent another object in a way that conveys meaning; and (8) problem solving--a necessary part of cognitive growth, is often removed with early intervention. A summary of these lists is provided in Table 4.

#### Play Scales

A play scale is a nonverbal way of assessing the child's ability to use symbolization. Most play scales are based on a developmental sequence and utilize several of the classifications mentioned in the previous section. Early play scales looked at broad developmental categories. Although they functioned to organize an activity previously

thought of as chaotic and meaningless into developmental categories, their clinical utility was minimal.

Parten (1932) looked primarily at the social aspects of play. Five levels were suggested: (1) unoccupied/onlooker, (2) solitary, (3) parallel, (4) associative, and (5) cooperative. Smilansky (1968) focused on a cognitively based hierarchy of five types of play: (1) unoccupied/onlooker, (2) functional (exploratory manipulation), (3) constructive, (4) dramatic, and (5) games with rules. Odom (1981) attempted to combine Parten and Smilansky's scales and create his own scale of 13 levels: (1) unoccupied/onlooker (2) solitary/functional, (3) solitary/constructive, (4) solitary/dramatic, (5) parallel/functional, (6) parallel/constructive, (7) parallel/dramatic, (8) associative/functional, (9) associative/constructive, (10) associative/dramatic, (11) cooperative/constructive, (12) cooperative/dramatic, (13) cooperative and games with rules. Odom concluded that there was no particular advantage to his 13 level scale over using Parten and Smilansky's scales separately.

Rubin, Maoini and Hornung (1976) felt that both social and cognitive aspects of play were important for extraction of meaningful educational and developmental inferences about play. They combined the Parten and Smilansky scales as a matrix. Using this matrix to assess the play activity of children, they found both gender and socio-economic status (SES) differences. In lower SES children both parallel and

functional play were more evident. Both associative and cooperative play were seen more with middle class children. No differences in SES were found with dramatic play. Girls were found to use more solitary and parallel constructive play than boys. Boys engaged in more solitary functional and associative dramatic play than girls.

Pellegrini and Perlmutter (1987) recognized that Smilansky's cognitive factors and Parten's social factors are interdependent measures of behavior. Combining the three social and three cognitive factors creates nine measures of play. Pellegrini and Perlmutter reduced the Smilansky and Parten scales into three factors: (1) dramatic-constructive play, (2) solitary behavior, and (3) functional-constructive play. Dramatic play is primarily assimilative. Constructive play is primarily accomodative. It is suggested that dramatic and constructive play are complimentary. Movement between these two types of play is indicative of a fairly high cognitive function. Solitary play is a passive social-cognitive behavior. Functional-constructive play, a non-social interaction with objects, is a more immature form of play. The continuum from functional to constructive play suggests that the child may need to explore with functional play before progressing to constructive play. Functional-constructive play correlates positively with age which suggests that it is an adaptive behavior. (See Table 2 for a summary of early play scales.)

Table 2

Early Play Scales: Social/Cognitive Paradigm for  
Classification of Play

<u>Parten (1932)</u>	<u>Smilansky (1968)</u>	<u>Odom (1981)</u>
1.unoccupied/onlooker	1.unoccupied/onlooker	1.unoccupied /onlooker
2.solitary	2.functional	2.solit/fn'l
3.parallel	3.constructive	3.solit/cons
4.associative	4.dramatic	4.solit/dram
5.cooperative	5.games with rules	5.parall/fnl
		6.parall/cons
		7.parall/dram
		8.assoc./fn'l

Table 2--continued

Early Play Scales: Social/Cognitive Paradigm for  
Classification of Play

<u>Parten (1932)</u>	<u>Smilansky (1968)</u>	<u>Odom(1981)</u>
		9.assoc./cons
		10.assoc./dram
		11.cooper/cons
		12.cooper/dram
		13.cooperative & games w/rules
		Pellegrini
<u>Rubin, Maoini &amp; Hornung (1976)</u>		<u>&amp; Perlmutter(1987)</u>
		1. dramatic/ construct
1. solitary		2. solitary
2. parallel		3. fun'l/const
3. associative		

---

Note. Use of scales limited to describing broad categories of increasingly complex play activities.

Following the play scales based on Parten and Smilansky's social-cognitive paradigm was an eclectic series of scales which all seemed to be based loosely on Piaget's stages of development. McCune-Nicolich (1977) suggested five levels of symbolic play which correspond closely to Piaget's more advanced stages. Level one is a presymbolic scheme where the child exhibits realistic use of objects. Level two is the more abstract auto-symbolic scheme where the child begins pretend activities. Level three incorporates single scheme symbolic games. By level four the child is combining schemes into symbolic games. Level five is planned symbolic games. At this level the child is able to mentally represent activities enough to pre-plan activities. The level assigned to the child depends on: source of the scheme (intrinsic or extrinsic motivation), evidence of pretending, actors and objects incorporated in games, number of schemes and pre-planning of play. Achievement of higher levels is indicative of increased abilities to symbolize.

Jeffree and McConkey (1976) looked at imaginative play with dolls. Although their play assessment is rather unstructured compared to other scales, it still follows a developmental sequence. Using three different sets of materials under three different modeling conditions they encouraged play, modeled play and then allowed the child free play with the materials. Each observation of free play was assessed on five factors: actor, action, instrument,

context and duration. They found that diversity and elaborateness of play increased with age. Higher levels of imaginative play were found with more realistic toys. And, with normal children modeled play increased both the frequency and duration of both immediate and later imaginative play. In children with Down syndrome the modeling effects were only specific to the modeling period and did not generalize. They concluded that imaginative play correlates more with developmental age than chronological age.

Three studies developed an assessment scale based on the strong correlation between play and language development. Based on the premise that "verbal communicative behaviors have nonverbal, sensorimotor antecedents," Dunst (1978, p. 121) suggested a model for assessing infants nonverbal communicative behaviors. The model is a compilation of progressively complex developmental behaviors cited by previous researchers. These behaviors are correlated with developmental age, Piagetian stages and Bates' system for language classification. On the assumption that communication emerges in the context of interactions with others, an ethological approach to assessment was suggested. Dunst's proposed model can be used as a developmental check list. It may also be used to characterize primary communicative behavior and to specify stage of development. Although Dunst's model is more of a nonverbal assessment than a specific play scale, it

demonstrates a clear relationship between language development, Piagetian stages and specific infant behaviors (many of which are playful in nature).

Chappell and Johnson (1976) proposed that failure to develop speech may be attributed to a lack of representational competence. They suggested three developmental levels which correlate with verbal development. Sensorimotor exploration corresponds to the pre-verbal stage. Children at this level show no understanding of the relationship between words and objects. By eighteen months children progress to imitative self-utilization of items. The deferred imitation of this level is a bridge between sensorimotor and representational behavior. Verbal labels and an understanding of object permanence appears. The child's vocabulary at this level consists primarily of two word sentences describing agents and objects in actions schemas (e.g., car go). The onset of the third developmental level is around two years. At this age the child is capable of re-enactment of object-person relations in symbolic play. At two years of age children need an object to carry out symbolic play. By three years of age they can use their finger to represent objects such as guns. The child's language at this level reveals understanding of the relationship between objects, people and actions.

Chappell and Johnson's play scale is administered by presenting the child with twelve different objects and



giving a verbal directive appropriate for each object. When given a doll and a ball the child is directed to throw the ball to dolly. The child's response will determine his or her level of development. The scale reveals the child's representational competence. The purpose of the assessment is to determine if the reason for the child not speaking is due to a lack of representational competence.

The most sophisticated development of language through play was developed by Westby (1980). She contended that the primary cognitive development during the pre-operational period is representational thought. Both language and pretend play require the use of mental representations. Although language is more abstract than play (words are less like reality than a doll is like a baby) play may be used to assess the child's representational abilities. Infant tests such as Bayley's do not assess mental imagery or language. A child can score well on the Bayley scales yet be incapable of symbolic behavior which is pre-requisite for language development.

Westby (1980) proposed ten developmental stages of symbolic play. Each stage correlates with specific language achievements. Assessment is accomplished by exposing the child to developmentally appropriate toys, adults and peers. The child is allowed to play alone or in groups. Two observers record the child's activity every five to eight minutes. The cognitive play level determined should match with the appropriate language level. The purpose of the

scale is to determine if the child will need intervention and to focus on areas needing emphasis. (See Table 3 for a summary of these scales.)

Table 3

Later Play Scales: Developmental Paradigm for  
Classification of Play

McCune-Nicolich (1977)                      Jeffree & McConkey (1976)

Scales' Conceptualization of Play

Developmental levels	Measures of imaginative play
1. presymbolic	1. % imaginative actions
2. auto-symbolic	2. % elaborated imaginative actions
3. single scheme symbolic games	3. % time in imaginative actions
4. combinatorial symbolic games	4. # of different imaginative actions
5. planned symbolic games	

Administration

observation of mother-child interaction	observation of child's interaction with toys
---	--

Format

free play with toys no verbal prompts from mother	encourage play, model play free play--5 min. each
---	--

Table 3--continued

Later Play Scales: Developmental Paradigm for  
Classification of Play

McCune-Nicolich (1977)

Jeffree and McConkey (1976)

Materials

36 toys presented to child in wooden bucket	3 sets of toys (no specific number) -realistic -realistic doll + junk material -junk material
--	--

Ages

9-24 months	18-41 months (CA)
-------------	-------------------

Utility

-obtain level of symbolic maturity (highest level of symbolic play exhibited independently)	-quantify imaginative play -determine toys most likely to elicit imaginative play
---	--

---

Table 3--continued

Later Play Scales: Developmental Paradigm for  
Classification of Play

Dunst (1978)

Chappell &amp; Johnson (1976)

## Scales' Conceptualization of Play

Developmental check list of behaviors--correlates with developmental age, Piaget's stages and Bates' system of language classification	developmental levels 1. sensorimotor explor 2. imitative self- utilization 3. primitive play application
---	---

## Administration

observe child interact in play with parents, peers, or teachers in home, classroom or outdoor	observe child's response when presented with 12 toys (4 at a time) if no spontaneous interaction, adult may give verbal directive
---	--

## Materials

nothing specific	12 familiar household objects (doll, ball, spoon, toy phone, mirror)
------------------	--

## Ages

1-22 months	up to age 3
-------------	-------------

Table 3--continued

Later Play Scales: Developmental Paradigm for  
Classification of Play

Dunst (1978)

Chappell and Johnson (1976)

## Utility

- |   |  |
|---|--|
| 1. determine context most likely to elicit communicative behaviors  | 1. identify language retardation tied with representational incompetence |
| 2. determine primary type of communicative behavior   | 2. use to develop a stimulation or treatment program if needed           |
| 3. specify developmental stage  | 3. determine level of development and foster next level of growth        |
| 4. determine correlation between language develop. and development in other domains (object permanence, play) |  |
-

Table 3--continued

Later Play Scales: Developmental Paradigm for  
Classification of Play

Westby (1980)

---

Scale's Conceptualization of Play	
developmental stages	corresponding language
1. 9-12 mo object permanence	- 0 -
2. 13-17 mo purposeful exploration	single words
3. 17-19 mo start representational	words with functional relationship
4. 19-22 mo symbolism beyond self	refers to objects and persons not present
5. 24 mo--pretends at activities of others	plurals, possessives
6. 2-1/2 years--primarily parallel play--portrays interactions	responds to "WH" words (why, what...)
7. 3 years--pretend play with sequence associative play	use of past tense

Table 3--continued

Later Play Scales: Developmental Paradigm for  
Classification of Play

Westby (1980)

---

Scale's Conceptualization of Play

8. 3 - 3-1/2 years--less

realistic toys

expands descriptive  
vocabulary

9. 3-1/2 - 4 years

problem solving

verbalizes intentions

use dolls to act out

scenes

10. 5 years--coordination

of more than one event

relational terms--

simultaneously

while, beyond, after..

cooperative play

Administration

Stimulate play and verbalizations with developmentally  
appropriate and interesting toys

Materials

developmentally appropriate toys

Age

9 months to 5 year

Table 3--continued

Later Play Scales: Developmental Paradigm for  
Classification of Play

Westby (1980)

---

Utility

1. determine if intervention is appropriate
  2. highlight areas to emphasize
  3. to determine appropriate level of language  
intervention cognitive level and language level  
should match language training above cognitive level  
will not generalize
-



The most current group of play scales correlate specific play behaviors with developmental stages. Based on obvious observable differences in infant play, Belsky and Most (1981) suggested that play would be a viable tool for assessment of individual development. Standardized infant assessments, Bayley scale, Uzgiris-Hunt minimize motivational differences between children. Belsky and Most (1981) noted that differences in motivation may "account for stability in individual differences between infancy and later developmental epochs" (p. 637). In free play the child must define the problem, focus attention and persist at the task. Twelve stages of play, from undifferentiated exploration through decontextualized play were hypothesized. Play levels were determined by observing the child in 15-minute free play sessions conducted in the home with familiar toys and mother present. A summary of the play measures on each child indicated the highest level of play, frequency of undifferentiated manipulation, frequency of exploration and frequency of pretend activities.

Westby (1980) contended that representational thought in the primary development in early cognitive growth. Largo and Howard (1979) suggested that early cognitive development is largely a function of the child's ability to imitate. They hypothesize that play should reflect developing cognitive processes. Although it is apparent that free play reflects development, Largo and Howard noted that when the play is slightly structured developmental changes are more

obvious and there is less variability in the child's behavior. Play was assessed by presenting the child with 12 different sets of toys. The examiner first requested a specific play behavior, then demonstrated the behavior and then noted the child's response. The play behavior was recorded under one of four categories: exploratory, functional, spatial, and non-specific play behavior.

The Lowe and Costello Symbolic Play Test (Gould, 1986) is the only commercially available play test. The materials for administration of the test are sets of miniature toys which are presented to the child in a predetermined pattern. The purpose of miniature toys is to encourage the children to represent real objects with the small toys. The test yields a single score, child's developmental level. Besides the constraint of specialized toy sets, this test is limited by the age group it focuses on, one to three years of age.

The Transdisciplinary Play-Based Assessment (TPBA) developed by Linder (1989) uses play to assess cognitive, communication, sensorimotor and social-emotional development. Children between six months and six years can be assessed with this tool. The approach does an excellent job of highlighting the child's needs, strengths, emerging skills and interests. This assessment tool may have particular utility for preparing the child's IEP. The TPBA is based on a sequence of six play categories: exploratory, functional, constructive, symbolic, rough-and-tumble and games with rules. Each play category is assigned a specific

age range. Although the scale does not produce a specific play age, it does provide an age range.

Rogers' Play Observation Scale (Rogers, 1988) offers a convincing argument for the use of play in assessment and intervention. The Play Observation Scale measures five cognitive levels of play: (1) sensorimotor--repetition of motor acts to practice skills, (2) symbolic agent--use of an object as if it were something else, (3) symbolic substitution--incorporation of real object into pretend activity, (4) symbolic complexity--acquisition of symbolic actions and schemas, and (5) social-communicative--awareness and inclusion of others. Each level is subdivided into four to seven increasingly complex stages. Administration of the scale is accomplished by interacting with the child in a twenty minute play session. For the first ten minutes the examiner presents the child with toys and interacts in a responsive manner. In this portion the adult makes no attempt to initiate communication or activities. The second ten minutes consists of adult modeling and suggestions. The 20-minute session is scored for the highest level of play achieved in each of the five categories. The examiner then determines the percentage of time that the child exhibits each of the levels. A specific age is not attached to each category. The strength of this scale is its apparent recognition of overlap between developmental levels.

Still under revision, the Play Assessment Scale (PAS) by Fewell (1984) shows promise. This scale consists of 45

observable behaviors based on a developmental sequence. The sequence consists of eight levels: primary reactions, functional use, combinatorial, relational, sequential, generalization, representational and problem solving. The child is presented with a series of age-appropriate toys with minimal prompting and interaction from the examiner or parent the child is allowed to play with the toys. Play behavior is observed and recorded until the examiner is satisfied that the child has demonstrated his or her highest level. (For a summary of current play scales, see Table 4.)

#### Conclusion on Play Scales

Early play scales and their modifications (Odom, 1981; Parten, 1932; Pellegrini & Perlmutter, 1987; Rubin, Maoni & Hornung, 1976; Smilansky, 1968) gave an overview of broad developmental categories from a social-cognitive paradigm. Although commendable for their attempt to organize play, their utility was minimal. The second group of play scales (Chappel & Johnson, 1976; Dunst, 1978; Jeffree & McConkey, 1976; McCune-Nicolich, 1977) are based on Piaget's cognitive stages of development. In these scales play is broken down into specific developmental stages. Unfortunately, none of the scales yield concrete objective information about the child's development.

The most current group of play scales classifies specific play behaviors into developmental stages. Most scales in this group determine the child's level of play,

emerging skills and interests. (Play scales are summarized in Tables 2 through 4.)

Table 4

Current Play Scales: Developmental with Clinical Utility

Largo & Howard (1979)

Belsky & Most (1980)

Scales' Conceptualization of Play

Play characteristics

developmental levels

1. exploratory

1. mouthing

2. functional

2. simple manipulation

3. spatial

3. functional

4. non-specific

4. relational

5. functional-relational

6. enactive naming

7. pretend self

8. pretend other

9. substitution

10. sequence pretend

11. sequence substitution

12. double substitution

Table 4--continued

Current Play Scales: Developmental with Clinical UtilityLargo and Howard (1979) \_\_\_\_\_ Belsky and Most (1980)

## Administration

- |                                    |  |
|------------------------------------|--|
| 1. present child with<br>toy set   | 1. in home with mother<br>present give child<br>two sets of different<br>sets of toys  |
| 2. request specific play           | 2. allow 15 min. of free<br>play with each set   |
| 3. demonstrate desired<br>activity | 3. observe and record<br>highest level of<br>play, frequency of<br>undifferentiated<br>manipulation,<br>exploration, and<br>pretend behavior |
| 4. note child's response           |  |

## Materials

- |  |                              |
|--|------------------------------|
| 12 sets of toys presented<br>sequentially to child | two sets of familiar<br>toys |
|--|------------------------------|

## Ages

9-30 months

7-21 months

Table 4--continued

Current Play Scales: Developmental with Clinical UtilityLargo and Howard (1979) Belsky and Most (1980)

## Utility

- |  |                                       |
|--|---------------------------------------|
| 1. teaching and assessment tool                              | 1. determine general levels of play   |
| 2. determine level of play child is operating at             | 2. supportive of the use of play as a |
| 3. appropriate for normal, handicapped and retarded children | valid assessment tool                 |

Table 4--continued

Current Play Scales: Developmental with Clinical UtilityLinder (1989)Fewell (1984)

## Scales' Conceptualization of Play

6 developmental levels

1. 0-24 mo:exploratory
2. 9-24 mo:functional
3. 24 + mo:constructive
4. 21-72mo:symbolic
5. 36 + mo:rough & tumble
6. 60 + mo:games with rules

8 developmental levels

1. primary reactions
2. functional use
3. combinatorial
4. relational actions
5. sequential actions
6. generalization
7. representational
8. problem solving

Assesses cognitive,  
communication, sensorimotor  
and social-emotional  
development



Table 4--continued

Current Play Scales: Developmental with Clinical UtilityLinder (1989)Fewell (1984)

## Administration

1. observe and record strengths, proficiency or delay in play skill development
2. justify above rating
3. specify intervention needs

1. observe play with series of age appropriate toys with minimal prompting by adult
2. record child's actions on scale consisting of 45 developmental behaviors

## Time

1 - 1-1/2 hr play session with 6 phases:  
 unstructured facilitation  
 structured facilitation  
 child/child interaction  
 parent/child interaction  
 motor play  
 snack

15-20 min. observation of child playing alone with minimal adult prompting

Table 4--continued

Current Play Scales: Developmental with Clinical UtilityLinder (1989)Fewell (1984)

## Materials

interesting and age-  
appropriate toys

3-4 sets of age-  
appropriate toys  
most toys familiar  
a few miniature and  
novel toys

## Ages

6 months-6 years

0-36 months

## Utility

1. determine level of play
2. appropriate for handicapped and retarded children
3. identify emerging skills
4. transdisciplinary approach

1. determine specific play age for child
2. appropriate for handicapped and retarded children
3. identify emerging skills
4. appropriate for teachers and clinicians
5. adaptable to various handicaps
6. no special materials required

Table 4--continued

Current Play Scales: Developmental with Clinical Utility

Rogers (1986)

---

Scale's Conceptualization of Play

5 Developmental categories

1. sensorimotor
2. symbolic agent
3. symbolic substitute
4. symbolic complexity
5. social/communicative

Administration

1. 10 minutes of responsive toy interactions with adult
2. 10 minutes of modeling and suggesting play activities

Materials

age appropriate toys

Ages

6 months to 6 years

Utility

1. determine most frequent cognitive levels child plays at
2. appropriate for handicapped, normal and very young children

The reliability of most scales appeared to be limited to the single case described in the research article. Only Lowe and Costello (Gould, 1986) and Linder (1989) have achieved sufficient reliability with their scales to market them as standardized instruments. Westby (1980) and Fewell's (1984) scales are in the process of being tested for reliability.

#### Why Use The Play Assessment Scale?

This historical overview of play indicates that the use of play as an assessment tool is not a new concept. Furthermore, the importance of play in the development of children has been accepted for hundreds of years. What is new is that play scales are now reaching the point of refinement where they have practical applications for intervention and assessment. The scale chosen for this study is the Play Assessment Scale by Fewell (1984). This scale was selected for two reasons: First, it is based on sound developmental principles. The eight developmental levels suggested by Fewell seem comprehensive without being excessive. Earlier scales (Parten and Smilansky) simply selected broad areas of development (solitary, parallel, and cooperative play) which have little utility for assessment. The 12 developmental levels suggested by Belsky and Most (1980) are cumbersome to work with. Belsky collaborated with Fewell in the early stages of the development of the Play Assessment Scale. It was decided that his 12 levels

could be incorporated into the current eight stages of play proposed by Fewell. Second, the Play Assessment Scale was readily adaptable to the available video tapes of mother-child play interactions. Most other scales require a more structured or specific format for administration. In addition, a specific play age is determined by this scale. Although several other scales also provide a play age (Largo & Howard, 1979; Linder, 1989; Rogers, 1986) their overall utility was minimal. In the author's estimation, this scale has the most potential for clinical utility. It is short, easy to use, requires no special tools, and is easily adaptable to multidisciplinary settings. Finally, this is the only scale which starts at zero months (birth). This makes this scale well suited to children with severe cognitive impairments.

The Play Assessment Scale is potentially very valuable. The only published articles to date to use this scale have been authored by Fewell (1987, 1988), the developer of the scale. The Battelle Developmental Inventory is a standardized, well accepted, commonly used developmental scale. Its ability to assess low functioning children has made it particularly popular for use on children with disabilities. There have been no published articles comparing the Play Assessment Scale to the Battelle Developmental Inventory. Furthermore, comparison of a detailed analysis of the mother-child play interaction and the Battelle Developmental Inventory with the Play

Assessment Scale is a unique approach.

A Summary and Statement of Objectives  
for Study

There is strong support in the literature for play as not only a facilitator of development (Athey, 1984; DuBose, 1979; Friedman & Pasnak, 1973; Kreye, 1984; Rogers, 1988; Vygotsky, 1967) but also as a process which follows a predictable developmental sequence (Fewell & Rich, 1987; Gowen, et al., 1984; Piaget, 1962; Rogers, 1988; Westby, 1980). Play is an essential mediator of cognitive, linguistic and social development. In advocating a developmental curriculum, Rogers (1988) suggested that play is a "primary vehicle for enhancing development" (p. 143) of cognitive, communicative and social skills. Clearly play occupies a central role in development.

Logically, factors which influence play, either positively or negatively, will have the potential to enhance, modify or diminish normal development. A handicap alters the child's ability to fully experience all aspects of play (Munoz, 1986; Rogers, 1988; Tizard & Harvey, 1977). The bridge between the handicap and play which leads to development is most often the mother. The most responsive sensitive mother (or father) can not obliterate a handicap but, s/he can buffer the impact of the the handicap on development.

An interactive paradigm focuses on the mother-child

interaction which is the basis for the child's development of a premise system. As Rogers and Puchalski (1984) noted, the primary source of problems in the development of children with handicaps can be attributed to difficulties in the reciprocal interactive system. Close examination of the mother-child interactive system in play reveals patterns and processes central to the development of the child. The interactive approach to cognitive development is often passed by (Kreye, 1984). Besides being unique and central, the mother-child interaction perspective is particularly salient for children with visual impairments. Of all the handicapping conditions, visual impairment perhaps places the child in the most dependent position vis-a-vis their primary caretaker.

The importance of play, and in particular, its role in the development of visually impaired children has been firmly established. While the literature does address mother-child play interactions with visually impaired children (Bregani et al., 1981; DuBose, 1979; Fraiberg, 1977; Kekelis & Andersen, 1984; Rogers & Puchalski, 1984; Rowland, 1984) detailed descriptions are scarce. Observations of mothers playing with their visually impaired children will contribute to the small but growing literature on the play of visually impaired children. A detailed disclosure of the dynamics of the mother-child interactive system has the potential to direct future interventions with visually impaired children toward the

most advantageous areas. In addition to intervention, play is a viable tool for assessment. The nontraumatic, adaptable, positive approach offered by play assessment makes this tool particularly suitable for children with handicaps. As the paucity of available play scales indicates, there is a need for reliable, valid play assessments. Efforts made to establish the Play Assessment Scale as a valid tool will contribute to this growing area of "user friendly" assessments.

As Fewell et al. (1987) noted, many play studies are weakened by "the heterogeneity of the populations both within and across handicapping conditions" (p. 115). In the literature on children with handicaps, children with various handicapping conditions are often lumped together as if they were a homogeneous group. In an effort to break away from this erroneous assumption, this study focuses on a single handicapping condition: visual impairment.

This study incorporates an interactive paradigm to look at several aspects of mother child interactions during play. The first objective is to determine if the mother's interactional style (responsiveness, control, directiveness) will influence the level of the child's play development. It was hypothesized that the child will play at a higher level with mother than when playing alone. Further understanding of the relationship between mother-child interactions and play contributes to the sparse literature on interactive play with visually impaired children. The



final objective of this study is to examine the relationship between the Battelle Developmental Inventory and the Play Assessment Scale. Establishing the Play Assessment Scale as a valid assessment tool contributes toward future availability of a much needed scale.

This study addresses the following three hypotheses:

- (1) The Play Assessment Scale is a true measure of the child's development which is observable through play.
- (2) Mother has a positive, significant influence on the child's level of development through play.
- (3) Mother's interactional style during play influences the child's developmental levels as measured by the Play Assessment Scale and the Battelle Developmental Inventory.

## CHAPTER 3

## METHODS

The data for this study come from a longitudinal investigation of visually impaired preschoolers. This study is being conducted by the Early Intervention Research Institute at Utah State University in conjunction with the Human Development Center (HDC) at Louisiana State University. Visually impaired children between zero and 30 months of age started receiving services at the HDC in February of 1987. The children were randomly assigned to two intervention groups using a computer-simulated four-sided die.

One group received a structured weekly program which is individualized for each family by their care manager. In addition, the children in this group received one hour of individualized intervention in their home each week. The family programs addressed care issues such as feeding and diapering, daily routines and intervention strategies. Activities were directed at facilitating the parents' knowledge and the child's development. Structured lesson plans for the children focused on gross motor, fine motor, cognition, self-help, social-emotional, and communication skills.

The second group, considered low intensity, participated in hourly group meetings at the HDC every other week during the nine-month school year. Discussions and

presentations focused on the effects of visual impairment.

Annual data collection was conducted at the Human Development Center (HDC) in New Orleans. Both groups were tested at the HDC to minimize external contextual effects on testing. Only data sets collected at the second posttest in 1989 were sufficiently complete to suit the purposes of this study. Testing was conducted on the annual anniversary of the child's enrollment into the program. Testing was conducted as a function of length of enrollment not chronological age of the child. Data collected in 1989 included the Battelle Developmental Inventory, twenty-minute video tapes of mother-child interaction during play, Assessment of Preferential Looking, demographic information, severity rating of visual impairment, Family Support Scale (FSS), Family Resource Scale (FRS), Parent Stress Index (PSI), Family Adaptability and Cohesion Evaluation (FACE). The video tapes were scored on three scales: Farran's et al. (1986) Parent/Caregiver Involvement Scale, Marfo's (1989) Frequency and Sequential Patterns in mothers' interactions with mentally handicapped and nonhandicapped children, and Fewell's (1984) Play Assessment Scale. The proposed study will focus on the Battelle Developmental Inventory, videotaped mother-child interactions, Farran's scale, the Play Assessment Scale and ratings of visual acuity. The following questions will be addressed: Is the Play Assessment Scale a valid, reliable developmental tool? To what degree does the child's mother facilitate the child's

development through play? Does maternal interaction style vary as a function of the child's age and degree of vision loss?

### Subjects

Subjects for this study were 13 visually impaired preschoolers ranging in age from 27 to 61 months. The mean chronological age at the time of post-testing was 43 months. Eight of the subjects were female (mean age = 45 months) and five were male (mean age = 40 months.) The children were selected from a population referred to the Louisiana State University Eye Center by local ophthalmologists and pediatricians. The criteria necessary for selection included visual impairment as the primary disability and the presence of only one or two mild additional handicaps. Only two of the 13 subjects had one or two mild handicaps in addition to visual impairment. One child had a cleft palate. The other child had "possible physical impairment." She was classified as awkward and clumsy. The rest of the children had no other handicapping conditions.

Visual acuity was classified as follows: 1=blind; 2=severely impaired with correction; 3=mildly or moderately impaired. Of the 13 subjects, three were classified as blind, one as severely impaired and the remaining nine as mildly or moderately impaired. The admitting diagnoses for the children at the Eye Center indicated that developmental delay in motor or socio-communication/cognitive areas was less than 33% for seven subjects, more than 33% in either

motor or socio-communication/cognitive areas for four subjects and greater than 33% in both motor and socio-communication/cognitive areas for two of the subjects. The two most severely delayed were also classified as blind.

The average education level achieved by the mothers was fourteen years and the father was thirteen years. The average annual income was \$28,700. The large standard deviation (\$26,000) could be attributed to several very low (three below \$2,500) and a few very high (two above \$75,000) income families. Nine of the mothers were not employed outside of the home. Based on the Duncan Scale, six of the fathers were either unemployed or unskilled workers, two were blue collar workers and two were professionals. Three of the families were single parent families with only the mother present. The two intervention intensity groups were analyzed separately and together.

#### Designs and Procedures

The children were videotaped in a small (approximately 12' x 12') room which contained a chair, a sofa, a table, and a selection of toys. For the first ten minutes the mother sat on the sofa, filled out forms (demographic information) and encouraged the child to play with the toys. The mother was told to be responsive to the child but did not engage in play activities. After ten minutes the videotaper verbally signalled the mother ("ok, go ahead and play now") to actively play with the child using the toys

provided. Toys included telephone, xylophone, plastic doll family, stuffed doll, ball, form board, and pull trucks. As part of an ongoing intervention program at Louisiana State University the mothers were aware that research was being conducted to assess the effectiveness of the intervention. The specific purpose of the videotaped play interaction was not made clear to either the mother or the videotaper. The mother was instructed to "just play with (your child) for ten minutes." Most mothers chose to sit on the floor to play with their child. The mother-child interactive play was videotaped for ten minutes. On the same day that the child was videotaped playing, a Battelle Developmental Inventory was administered.

#### Measures

##### Parent/Caregiver Involvement Scale

###### Description

Farran's Parent/Caregiver Involvement Scale rates maternal behavior across three dimensions: amount, quality, and appropriateness. Eleven maternal behaviors were coded: physical involvement, verbal involvement, responsiveness, play interaction, teaching, control, directives, relationship among activities, positive statements, negative statements and goal setting (see Table 5). The behavioral descriptors were rated on a 5-point scale from (one) most negative to (5) most positive.

Table 5

Farran's Scale: Domains

1. Physical involvement: Body contact, affection, handling, and positioning of the child.
2. Verbal involvement: The quality, quantity and appropriateness of the verbal interchange with the child.
3. Responsiveness: Sensitivity and responsiveness of the mother to verbal and motor acts initiated by the child. The amount, intensity and appropriateness were scored.
4. Play interaction: Both the quality and quantity of the play interaction between mother and child. The amount of time spent in play activities, the warmth and enthusiasm of the play and maternal attempts to adapt play to the child's level of ability and interest were scored.
5. Teaching behavior: Efforts made by mother to develop the child's interests and abilities.
6. Control: Degree of organization and flexibility exhibited by mother. Maternal direction of activities to developmentally appropriate levels.
7. Directives: The commands for specific behaviors issued by the mother. The forcefulness and reasonableness of these commands was scored.

Table 5--continued

Farran's Scale: Domains

8. Positive statements: Both verbal and non-verbal (hugs, smiles) praise. Consistency and intensity of praise was noted.
9. Negative statements/discipline: Criticisms, impatience and instances of discipline were observed. The harshness and appropriateness of the statements were focused on.
10. Goal setting: Flexibility, reasonableness and communication of expectations to the child. Both verbal and non-verbal messages were noted.
11. General impression of interaction: Attention, involvement, acceptance, and enjoyment within the mother-child interaction.

Recoded into: Responsiveness (item three), Control (items five, six, and ten), Cohesiveness (item eleven), Play (item four), Directiveness (items one, seven, and nine), and Verbalizations (items two and eight).



Items which strongly correlated with each other were combined to reduce the factors to six behaviors: responsiveness, control, cohesive interaction style, play interaction, directiveness, and verbalizations. The six behaviors were recoded into low (1), moderate (2), or high (3) levels based on the frequency that these behaviors were observed.

### Reliability

The completed videotapes were mailed to Dale Farran, scored with the Parent/Caregiver Involvement Scale and returned coded. (See Appendix A for a copy.) Farran and her trained graduate students scored the tapes of mother-child play sequences. Direct communication with Farran indicated that the scoring process was so complex that reliability could be assured only when the scoring was done by either Farran or students trained directly by her. Farran and her students have achieved a high degree of interrater reliability. Using the same format as Farran, a response-class matrix, Mash, Terdal and Anderson (1973) recorded parent-child interactions and achieved an interobserver agreement that ranged from 78% to 96% after only four to six hours of training.

Farran's Parent/Caregiver Scale is an observational tool that does not test skills. Therefore, internal consistency was not a relevant index of reliability for the Parent/Caregiver Involvement Scale.

### Validity

Content validity can be broken down into face validity and logical validity. Face validity is the extent to which the instrument appears to measure the ability it intends to assess. Logical validity involves defining the area to be assessed and developing items to cover relevant areas. The items on the Parent/Caregiver Involvement Scale describe in detail both adult and child behaviors during a play interaction. (See Appendix A.) Amount, quality and appropriateness of numerous aspects of involvement, both physical and verbal, are recorded. Farran's scale has both face and logical validity. Construct validity is the degree to which the instrument measures the theoretical constructs it was designed to assess. The theoretical basis of the instrument enables the researcher to make testable predictions about the validity of the instrument. Farrans scale of parent involvement is based on the assumption that play interactions between children and their mothers will incorporate both verbal and nonverbal behaviors and will vary in quantity, quality and appropriateness. It is based on the premise that mother-child interactions are multifaceted and variable. The Parent/Caregiver Involvement Scale has construct validity.

## Play Assessment Scale

### Description

The returned tapes were scored with Rebecca Fewell's Play Assessment Scale (1984). (See Appendix B for a copy.) The tapes consisted of play sequences--first the child alone, then with its mother. The children were free to move around the room or to sit and play with the available toys (phones, doll, form board, pull trucks, etc.). The scale consists of 45 play activities arranged in a developmental sequence. For a detailed description of the Play Assessment Scale, see the literature review section and Appendix B.

### Reliability

As mentioned, one of the goals of this study was to establish the Play Assessment Scale as a reliable tool. Therefore, the reliability results will be discussed to Chapter Four under results and discussion.

### Validity

The Play Assessment Scale is intended to be a developmental assessment of the child's development from sensorimotor reactions through the beginning of problem solving skills. The test items selected do reflect sensorimotor abilities observable in play (i.e., child explores toys with mouth/tongue for sensory pleasure). The items progress developmentally through functional abilities (i.e., child appropriately hugs doll), to relational actions

(i.e., child brushes doll's hair) and finally to problem solving abilities (i.e., child solves puzzle with novel toy using four to six steps.) The Play Assessment Scale has content validity.

Construct validity is a measure of the instrument's adherence to its theoretical underpinnings. The Play Assessment Scale is based on the premise that play proceeds through a predictable developmental sequence that reflects social, cognitive, and communicative development. Fewell and Rich (1987) attempted to establish construct validity for the PAS by comparing it to eight measures of communication, four cognitive measures and three social measures. The Spearman correlations between the PAS and the communication measures (GATE, Play Checklist language, EIDP language, WBRS or WBRS-R expressive language and receptive language, Callier-Azusa cognitive-communication-language, and the Callier-Azusa expressive and receptive language ranged) from 0.80 to 0.94 with a significance level of 0.001.

The correlation coefficients for the PAS with the four cognitive measures (Play Checklist cognitive, EIDP cognitive, Callier-Azusa cognitive-communication-language, and the Callier-Azusa cognitive) ranged from 0.85 to 0.89 with a significance level of 0.001.

The three social measures (Play checklist, EIDP, and Callier-Azusa) had correlations with the PAS that ranged from 0.77 to 0.92, again, significant at the 0.001 level.

These significant correlations with external measures indicate that the Play Assessment Scale has construct validity.

### Battelle Developmental Inventory

#### Description

The Battelle Developmental Inventory is a standardized developmental measure. (See Appendix C.) Nine domains are assessed by the test: personal-social, adaptability, gross motor, fine motor, motor total, expressive communication, receptive communication, total communication, and cognitive. The Battelle Developmental Inventory is appropriate for children 0 to 8 years of age. The wide range of development measured and the fine discriminations in activities make this test particularly suitable for children with disabilities. The entire test requires one to two hours for administration. The children demonstrate activities (i.e., They place objects in a container, answer questions, and exhibit motor skills) in the presence of the examiner and the child's caregiver.

#### Reliability

The Battelle Developmental Inventory was administered and scored by trained testers at the site. A ten percent shadow scoring was performed to verify the testers' stand of performance. Four indices of reliability were be addressed for the Battelle Developmental Inventory (BDI): standard

error of measurement, test/retest reliability, interscorer reliability, and internal consistency.

The standard error of measurement is an index of the variability in scores due to the test itself. The average standard error of measurement for the BDI for the 24 to 71 month age range is 4.55 (Newborg, Stock & Wnek, 1984). This indicates that the child's "true score" is probably within 4 1/2 points, plus or minus, of the obtained score. This small standard error is evidence that the BDI has a minimal amount of variability. In the 24 to 71 month age range the average test/retest reliability score for the BDI total score is 0.98.

Interscorer or interrater reliability is the correlation between two or more ratings on the scores or responses obtained on the same test. The BDI total score for the 24 to 71 month age range has an average interrater reliability of 0.98.

Internal consistency assumes that the tester tests a single skill with varying degrees of difficulty. Since the BDI tests a variety of skills, this measure of reliability is not appropriate. The low standard of measurement (4.55) and the high (0.98) test/retest reliability and interscorer reliability indicate that the Battelle Developmental Inventory is a reliable developmental assessment tool.

### Validity

A valid test measures what it claims to measure, not

some other construct. Content validity can be subdivided into face validity and logical validity. An instrument that appears to measure the construct it claims to measure is said to have face validity. The BDI assesses development. It yields scores of developmental ages and is based on a developmental model. Logical validity is assessed by defining the areas of interest and developing items to cover the relevant areas. The Battelle Manual (Newborg et al., 1984) describes in detail the rigorous process used to identify the skills to be assessed and the development of appropriate test items. The BDI has both face and logical validity.

Construct validity is the degree that the instrument measures the theoretical constructs it was designed to assess. From the theoretical basis of the instrument one should be able to make testable predictions about the validity of the instrument. The primary theory underlying the BDI is that development progresses at a fairly uniform rate across all developmental domains. The correlations between all five subdomains of the BDI are all between 0.53 and 0.99. An additional confirmation of the developmental nature of the BDI is the age-score correlations which are approximately 0.99.

External tests were used to determine the concurrent validity of the BDI (Newborg, Stock & Wnek, 1984). The BDI was compared to the Vineland Social Maturity Scale, Stanford-Binet, Weschler Intelligence Scale for children

(WISC-R) and the Peabody Picture Vocabulary Test (PPVT). The correlation with the Stanford-Binet is moderate (0.40 to 0.61). This relatively low correlation supports the contention that the BDI is a developmental, not intelligence test. The low correlation with the WISC-R (0.02 to 0.79) could be attributed to the very small sample size (n=10). Since the WISC-R yields an IQ score, the low correlation with the BDI again confirms the BDI as a developmental test. The Peabody PVT correlations with the subdomain of the Vineland, based on Spearman's Ranks, range from 0.79 to 0.94. The BDI demonstrates content, construct and concurrent validity.

The data was analyzed to answer three questions:

- (1) What is the correlation between the PAS and the BDI?
- (2) Does mother influence the child's level of play?
- (3) What is the impact of mother's interactional style on the child's measured developmental levels?



CHAPTER IV  
RESULTS AND DISCUSSION

Reliability and Validity Established in Study

Play Assessment Scale: Reliability

The standard error of measurement, determined by dividing the standard deviation by the square root of the sample size, is an index of variability in scores due to the test itself. The Play Assessment Scale (PAS) has a standard error of measurement of 3.20 for play alone and 2.70 for play with mother.

High correlations between original scores and scores obtained on a second viewing of the same test of the same material indicate a high test/retest reliability. The PAS is an observational tool. The children were scored with the PAS playing alone and playing with their mother. Because of the maternal influence, these observations were not a suitable measure of test/retest reliability.

The correlation between two or more scores or responses obtained on the same test refers to interscorer or interrater reliability. The Play Assessment Scale (PAS) was used to assess the child's developmental level of play in months. Three trained graduate students, working separately, rated the child's play alone and with the mother. Dr. Fewell trained the author. The author subsequently trained two research assistants. Three tapes

were initially viewed by all three students. The author explained each scored item out loud to the other two students. All three students then scored three tapes separately and met to discuss their results. The videotapes were rerun for a group discussion of any discrepancies. Finally, three videos were again scored separately and results between the three scorers (A, B, and C) yielded the following comparisons: A:B = 91.5%, B:C = 98%, and A:C = 92.5%. The determination of play age was based on a full twenty minute viewing of each play session, both alone and with mother.

Tests that assess varying degrees of difficulty of a single skill can be measured for internal consistency. The PAS simply snapshots the level of play at a specific time. Since it does not look at varying degrees of difficulty, internal consistency is not a relevant index of reliability for this assessment tool.

The PAS has a standard error of measurement of 3.20 for play alone and 2.70 for play with mother. The interrater reliability is 0.94. The Play Assessment Scale, as used in this study, was a reliable assessment tool.

#### Play Assessment Scale: Validity

Construct validity for the Play Assessment Scale was discussed in the previous chapter. Fewell and Rich (1987) compared the PAS with several external measures. In this study, the PAS was compared to the Battelle Developmental

Inventory. The correlations between the Spearman's ranks of the PAS alone and with mother and the nine domains of the Battelle Developmental Inventory ranged from 0.79 to 0.94. Based on previous research (Fewell & Rich, 1987) and the findings from this study, the Play Assessment Scale appears to be a valid assessment tool.

#### Hypotheses, Statistical Procedures and Data Analysis

The literature review suggests that play is a viable developmental assessment tool and, the mother-child interactions in play are a crucial facet of development. These issues were explored through the use of observations and assessment scales. This study was guided by three sets of hypotheses. Each hypothesis is presented and followed by a discussion of the statistical procedures and the data analysis. (A summary of the hypotheses and analyses procedures is provided in Table 6.)

This study will attempt to answer the following questions: (a) What is the correlation between the Play Assessment Scale and the Battelle Developmental Inventory?, (b) Does mother influence the child's level of play?, (c) What is the impact of mother's interactional style on the child's measured developmental levels?

Table 6

Hypotheses: Statistics Used for Analysis

<u>Hypotheses</u>	<u>Statistics</u>
1. PAS:BDI Correlation	
H1: no significant gender effects	T-Test/groups (gender)
H2: no significant differences between the intervention groups on	T-Test/groups (intervention)
H3: significant correlation the BDI and the PAS	Pearson's corr Spearman's rho (correlate ranks)
2. Maternal Influence	
H4: Age equivalent scores on the two scales not significantly different	T-test/pairs
3. Maternal Interaction	
H5: Developmental level of play significantly higher w/mother	Wilcoxon signed-rank T-Test/pairs scatterplot
H6: Optimal levels of maternal interaction significantly influence developmental levels	One-way analysis of variance Frequency distribution

Table 6--continued

Hypotheses: Statistics Used for Analysis

<u>Hypotheses</u>	<u>Statistics</u>
H7: Maternal interaction styles more influential for younger children	One-way analysis of variance Frequency distribution
H8: Maternal interaction styles more influential for children with severe vision loss	One-way analysis of variance Frequency distribution
H9: Maternal interaction styles more influential for children more developmentally delayed	One-way analysis of variance Frequency distribution

PAS vs. BDI: Hypotheses

It has been postulated that the Play Assessment Scale is a true measure of the child's cognitive, social, linguistic, and motor development which are observable through play. The Battelle Developmental Inventory is a proven, standardized test of the child's social, adaptive, communication, motor and cognitive development. A strong correlation between the Play Assessment Scale (both play alone and play with mother) and the Battelle Developmental Inventory indicate that the Play Assessment Scale has utility for assessing development; specifically, development in visually impaired children. An interesting find was the correlation between the nine domains of the Battelle Inventory (social, adaptive, expressive communication, receptive communication, fine motor, gross motor, total motor, cognitive and total) and the Play Assessment Scale. The study indicated that both of the scales (BDI and PAS) not only correlate but also measure the same construct, developmental age. With the small sample size (n=13) effects of gender and group were accounted for. Discounting these effects allowed analysis of the data set as a whole. Further breakdown would diminish reliability and predictability of an already small data set.

The following hypotheses attempted to answer these questions:

H1: There are no significant gender effects on the Battelle Developmental Inventory or the Play Assessment

Scale.

H2: There are no significant differences between the intervention intensity groups on all domains of the Battelle Developmental Inventory or the Play Assessment Scale.

H3: There is a significant correlation between all domains of the Battelle Developmental Inventory and the play age alone and play age with mother.

#### PAS vs. BDI: Analysis

Before preceding with a detailed analysis of the data, the author ran descriptive statistics to determine frequencies, means, ranges, and frequencies on the differences between chronological ages and developmental ages (Battelle and play) and between Battelle ages and play ages to determine if there was a large range in differences. With the small number of subjects, large ranges indicate variability which can obscure the results.

A T-test determined if there were significant differences between genders on the Battelle Inventory (BDI) and the Play Assessment Scale (PAS). No significant differences between genders were found.

To test for intervention differences between the two groups a T-test by groups was run. This was to determine if there were significant differences on Battelle and play performance.

A Pearson's correlation was run to determine if the

developmental ages determined by the BDI correlated with the play ages observed with the PAS. Given the small number of subjects (n=13) it was not unusual to find a fair amount of variability between subjects. A frequency was also run on the differences between the BDI and the PAS. A large range on these differences also pointed to variability between subjects. To minimize variability a nonparametric statistic, Spearman's rho was appropriate here. The data set was ranked and correlations were run on the ranks (Spearman's rho). Strong, significant correlations on Pearson's correlation or a Spearman's rho can not be interpreted to mean that the two scales measure the same construct. To determine if the two measures do measure the same construct (developmental age) a T-test by pairs was run.

A frequency distribution of the chronological ages revealed logical divisions in the ages. It was also of interest to rerun the above correlations and T-tests by age groups. This indicated whether significant differences or correlations can be attributed to a specific age group. Given the very small number of subjects, any further subdivisions were interpreted with caution.

Plots were also run on the correlations to determine if strong correlations represent a clustering or a true linear relationship. To assess the impact of vision, a correlation was run between the degree of vision loss and the



discrepancy between developmental age on the BDI and the PAS.

#### PAS vs. BDI: Data

Due to the difficulty of obtaining a large sample of children with a single disability within a fairly restricted geographic region, the sample size (n=13) was small for this study. With a small sample size, a large range of variability can confuse the results. To determine if there is a large range of variability, frequencies were run on the developmental and chronological ages (see Table 7), differences between BDI developmental ages (see Table 8) and chronological ages and between play ages and chronological ages (see Table 9). The chronological ages ranged from 27 to 61 months with a mean of 43.2 months and a standard deviation of 12 months. The developmental ages for play with mother ranged from 13 to 50 months with a mean of 24.5 months; for play alone the range was from 8 to 26 months with a mean of 19.4 months. The developmental ages for the Battelle total ranged from 22 to 91 months with a mean of 39.3 months. The large range of differences between developmental ages and chronological ages and the relatively large standard deviations indicate the presence of a high degree of variability among the subjects (see Tables 7, 8, and 9).

Table 7

Means and Standard Deviation for BDI and Play Alone and  
with Mother

	M	SD	range
chronolog age	43.2	12.0	27-61 (34)
play alone	19.4	11.5	8-52 (44)
play w/mom	24.5	9.8	13-50 (37)
BDI tot	39.3	21.4	22-91 (69)

Note. All ages in months

Table 8

Developmental Age Minus Chronological Age: Variability

BDI Subdomains	M	SD	range
BPS	-2.8	14.8	-31-27 (58)
BAB	-8.2	12.1	-26-16 (42)
BGM	-16.5	11.8	-36- -2 (34)
BFM	-5.9	12.8	-32-24 (56)
BM	-11.2	9.6	-34- -3 (31)
BRC	-7.3	12.9	-25-19 (44)
BEC	-4.4	14.8	-29-30 (59)
BCT	-7.3	15.0	-36-22 (58)
BC	-9.2	13.7	-40-14 (54)
BT	-3.9	16.5	-31-40 (71)

Table 8--continued

Note. Negative means indicate a developmental delay (chronological age >developmental age). BPS = personal-social; BAB = adaptive behavior; BGM = gross motor; BFM = fine motor; BM = motor total; BRC = receptive communication; BEC = expressive communication; BCT = communication total; BC = cognitive; BT = Battelle Total.

Table 9

Play Assessment Ages Minus Chronological Ages: Variability

	M	SD	range
play w/mom	-18.7	11.2	-40- -7 (33)
play alone	-23.8	13.6	-46- -5 (41)

The next step was to look at the differences in developmental ages as determined by the BDI versus those determined by the PAS. This served two purposes. First, it was important to see how different the two developmental scales were across the various BDI domains. Second, it was of interest to note whether play alone or play with mother was closer to the BDI developmental scores.

A frequency on the difference between developmental age determined by the BDI and the PAS was run. For play with mother the average range of difference was 62.8 months; for play alone it was 71.1 months (see Table 10).

Table 10

Battelle Ages Minus Play Assessment Ages with Mother and Alone: Variability

BDI

Subdomains	Play w/Mother			Play Alone		
	M	SD	range	M	SD	range
BPS	16.0	(17.9)	-9-61 (70)	21.1	(19.9)	-11-68 (79)
BAB	10.5	(17.5)	-15-55 (70)	15.6	(18.9)	-17-6 (79)
BGM	2.3	(11.5)	-21-17 (38)	7.4	(13.1)	-21-24 (45)
BFM	12.8	(13.6)	-8-39 (47)	17.9	(16.2)	-10-46 (56)
BM	7.6	(9.9)	-12-28 (40)	12.7	(12.5)	-14-35 (49)
BRC	11.5	(19.3)	-17-58 (70)	16.5	(21.6)	-19-65 (84)
BEC	14.4	(21.1)	-11-69 (80)	19.5	(23.3)	-13-76 (89)
BCT	11.5	(21.0)	-21-61 (82)	16.5	(23.1)	-16-68 (84)
BC	9.6	(17.6)	-11-53 (64)	14.7	(19.8)	-10-60 (70)
BT	14.8	(18.7)	-12-53 (67)	19.9	(20.9)	-14-62 (76)

Note. Positive means indicate that the BDI developmental age is greater than the PAS developmental age. BPS = personal-social; BAB = adaptive behavior; BGM = gross motor; BFM = fine motor; BM = motor total; BRC = receptive communication; BEC = expressive communication; BCT = communication total; BT = total.

Finally, it was important to determine if there were differences on the BDI or PAS which could be attributed to group or gender. A t-test by gender for the Battelle and play scales was run. No significant differences between males and females were found for scores obtained on the BDI and PAS. A t-test by group was run to determine if the intensity of intervention would influence performance on the BDI and PAS. No significant differences were found between groups on the BDI or PAS (see Table 11). In addition, the groups did not contain children of significantly difference ages. And, there was no significant difference in the ages of the children in each gender (see Table 12).

Table 11

T-Test by Intervention Group

BDI Subdomain	<u>mean +/- standard deviation</u>		P
	Low (n=7)	High (n=6)	
BPS	42.8 +/- 17.8	37.6 +/- 23.2	.66
BAB	34.3 +/- 9.7	35.8 +/- 20.7	.87
BGM	29.7 +/- 8.6	23.3 +/- 10.7	.27
BFM	41.1 +/- 17.9	32.8 +/- 15.6	.39
BM	35.6 +/- 8.8	28.0 +/- 14.2	.29
BRC	37.0 +/- 15.1	34.6 +/- 22.7	.84
BEC	40.4 +/- 16.7	37.0 +/- 27.2	.79
BCT	36.1 +/- 17.8	35.6 +/- 23.8	.97
BC	35.4 +/- 15.3	32.5 +/- 22.9	.79
BT	44.3 +/- 23.2	33.5 +/- 19.4	.38
<u>Play Subdomain</u>			
play alone	20.4 +/- 5.4	18.2 +/- 16.7	.76
play w/mother	25.7 +/- 6.1	23.0 +/- 13.6	.67

Note. BPS = personal-social; BAB = adaptive behavior;  
 BGM = gross motor; BFM = fine motor; BM = motor total;  
 BRC = receptive communication; BEC = expressive  
 communication; BCT = communication total; BC = cognitive;  
 BT = total.

Table 12

T-Test by Gender

BDI Subdomain	mean +/- standard deviation		P
	male (n=5)	female (n=8)	
BPS	33.2 +/- 7.7	45.0 +/- 23.9	.23
BAB	31.2 +/- 9.8	37.4 +/- 17.8	.44
BGM	25.2 +/- 10.7	27.8 +/- 9.8	.67
BFM	30.6 +/- 10.7	41.5 +/- 19.1	.22
BM	27.8 +/- 11.5	34.8 +/- 11.8	.32
BRC	29.4 +/- 6.1	40.0 +/- 22.3	.24
BEC	31.8 +/- 11.7	43.3 +/- 25.3	.29
BCT	30.2 +/- 8.8	39.5 +/- 24.4	.35
BC	29.6 +/- 8.8	36.9 +/- 22.7	.44
BT	30.0 +/- 8.3	45.1 +/- 25.4	.15
<u>Play Subdomain</u>			
play alone	22.6 +/- 17.1	17.4 +/- 6.9	.55
play w/mother	25.2 +/- 14.2	24.0 +/- 7.2	.87

Note. BPS = personal-social; BAB = adaptive behavior;  
 BGM = gross motor; BFM = fine motor; BM = motor total;  
 BRC = receptive communication; BEC = expressive  
 communication; BCT = communication total; BC = cognitive;  
 BT = total.

These findings suggest two approaches to analysis. First, the large variability in developmental and chronological ages and their differences and the small sample size suggest that Spearman's Ranks may be appropriate and helpful. By using ranks, the distance between points becomes unimportant and variability is minimized. Second, the effects of gender and intervention do not seem to be significant so the data set can be analyzed as a whole without further subgroupings.

#### Correlation Between PAS and BDI

A Spearman's ranking was done on both the Battelle and Play scores. A Pearson's correlation was run between the ranked play scores and the ranked Battelle scores. The correlations were from  $R=0.26$  to  $0.84$  (see Table 13). The level that the child played at with mother (momplay) correlated significantly with all domains of the BDI. The level that the child played at alone correlated significantly with the Battelle gross motor scores.

There is a strong, positive, significant correlation between the BDI and the PAS when the child is playing with mother. However, just because the two instruments are strongly correlated, it does not mean that they are measuring the same construct. A T-test by pairs determined if the play ages (alone and with mother) are significantly different from the Battelle developmental ages. The significant differences found indicate that the PAS



measures different constructs on all domains of the BDI except gross motor, communication total and cognitive for play with mother and gross motor for play alone (see Table 14).

Table 13

Correlation: PAS vs. BDI--Ranked Scores

BDI Subdomain	Play Alone		Play w/Mother	
	R	P	R	P
BPS	.48	.09	.73	.004
BAB	.40	.15	.59	.03
BGM	.62	.02	.84	.000
BFM	.40	.17	.78	.002
BM	.51	.08	.80	.001
BRC	.27	.38	.66	.02
BEC	.38	.19	.74	.004
BCT	.35	.24	.71	.007
BC	.43	.15	.79	.001
BT	.47	.10	.78	.002

Note. BPS = personal-social; BAB = adaptive behavior; BGM = gross motor; BFM = fine motor; BM = motor total; BRC = receptive communication; BEC = expressive communication; BCT = communication total; BC = cognitive; BT = total.

Table 14

T-Test by Pairs: BDI vs. PAS--P-values

<u>BDI Subdomain</u>	<u>Play Alone</u>	<u>Play w/Mother</u>
BPS	.002	.007
BAB	.01	.05
BGM	.06	.48
BFM	.002	.005
BM	.003	.02
BRC	.02	.05
BEC	.01	.03
BCT	.02	.07
BC	.02	.07
BT	.005	.02

Note. BPS = personal-social; BAB = adaptive; BGM = gross motor; BFM = fine motor; BM = motor total; BRC = receptive communication; BEC = expressive communication; BCT = communication total; BC = cognitive; BT = total.

$p < .05.$

Additional Factors Influencing  
Developmental Levels

A frequency distribution on the age of the child indicated that approximately half of the children were under 40 months of age and half were over 40 months. To determine if differences in performance could be attributed to a specific age group, the age of child was recoded into two groups: younger (under 40 months) and older (greater than 40 months.) T-tests for both the younger children and the older children indicated no significant differences in performance on the BDI or PAS, which could be attributed to either intervention group or gender. Note that, as expected, a t-test on the combined ages indicates that there are significant differences in BDI performance between the two age groups.

A t-test by pairs indicated that in the younger children the PAS measured a different construct than the BDI except for the gross motor and motor total domains of the BDI when the child is playing with mother. In the older children, the PAS and the BDI are significantly different only for the personal-social, fine motor and BDI total. When the older child is playing alone the PAS is also significantly different from the motor total and expressive communication domains (see Table 15).

Table 15

T-Test by pairs: BDI vs. Ranked Play Scores

	Alone		Mother	
	Y	O	Y	O
PS	*	*	*	*
AB	*	--	*	--
GM	*	--	--	--
FM	*	*	*	*
MT	*	*	--	--
RC	*	--	*	--
EC	*	*	*	--
CT	*	--	*	--
Cog	*	--	*	--
Tot	*	*	*	*

Note. Alone = play alone; Mother = play with mother;  
 Y = younger than 40 months; O = older than 40 months;  
 \* = significant difference ( $p < .05$ ).

A correlation of the BDI ranks and PAS ranks by the two age subgroups revealed a similar correlational pattern for both the younger and older children. Even with the small numbers in the subgroups there was still a strong significant correlation between the Battelle gross motor domain and play with mother ( $R = .80$ ;  $P = .03$ ) for the older children.

Plots were run on the correlations between the Battelle ranks and the PAS ranks to determine if the correlations

represent a clustering or a true linear relationship. The relationship between play alone and each of the Battelle domains ranked appeared to be linear with a steep slope. The relationship between play with mother and each of the Battelle domains ranked appears to be curvilinear. The plot curves up to the right and forms a plateau.

The final factor influencing achieved developmental levels may be vision loss. To determine the impact of vision loss on discrepancy between chronological age and developmental age, first, the difference in ages was computed. (Refer to Tables 8 and 9 for developmental delays.) This difference was then correlated with degree of vision loss. All differences between chronological age and developmental age were negative, indicating a developmental delay across all domains of the BDI and the PAS both with mother and alone. A significant correlation was found between vision and the difference between the child's actual age and adaptive behavior ( $R=.57$ ;  $P=.04$ ). Children with better vision seemed to be more skilled at adaptive behavior. The degree of vision loss did not seem to correlate significantly with play either alone or with mother (see Table 16).

Table 16

Correlation Between Developmental Delay and Vision Loss

	<u>BDI Subdomains</u>						
	<u>PS</u>	<u>AB</u>	<u>GM</u>	<u>FM</u>	<u>MT</u>	<u>RC</u>	<u>EC</u>
Vision R	.30	.37	.21	.21	.28	.23	.35
P	.31	*.04	.48	.49	.34	.44	.23
	<u>Cog</u>	<u>Total</u>	<u>Alone</u>	<u>Mother</u>			
Vision R	.46	.16	.25	.23			
P	.12	.59	.42	.44			

Note. \*  $P < .05$  = alpha level of significance

Summary of Relation Between BDI and PAS

The analysis of data suggests that the PAS and BDI are significantly and positively correlated when the PAS is used to assess play with mother. Although the two scales are correlated, they each appear to measure unique constructs. The relationship between play alone and the BDI is linear; play with mother and the BDI have a curvilinear relationship. For the 13 subjects observed, the degree of vision loss did not seem to influence the child's play either alone or with mother. The only domain of development, as measured by the BDI, which seemed to correlate with vision was adaptability. Children with better vision seemed to score higher on the BDI adaptability subdomain. T-tests on the entire group and two age subgroups suggested that there are no significant

differences between the age equivalent scores on the nine domains of the BDI and the play age alone and play age with mother.

#### Maternal Influence

##### Maternal Influence As Measured By the

##### PAS: Hypothesis

It is logical to assume that the child plays at a higher level with mother than when playing alone. However, while mother may facilitate play it is possible that she has an inhibitory effect. It is important to show that mother is capable of increasing the child's level of play. This confirms that mother is capable of increasing the child's level of play. And, mother is a potential facilitator of development. The fourth hypothesis is as follows:

H4: The age equivalent scores on the nine domains of the Battelle Developmental Inventory is not significantly different from the play age alone and play age with mother as determined by the Play Assessment Scale.

##### Maternal Influence As Measured By the

##### PAS: Analysis

Again, the small number of subjects directed the analysis toward nonparametric techniques. A Wilcoxon signed-rank test revealed whether or not there is a significant difference between the level of play alone and

playing with mother.

A T-test by pairs indicated whether play alone and play with mother were strongly correlated and/or significantly different constructs. A scatterplot of play alone and play with mother was run to show whether there was a linear or curvilinear relationship between these two constructs.

Maternal Influence As Measured By the  
PAS: Data

The small number of subjects again leads to a nonparametric technique to examine maternal influence on play. To determine if there is a significant difference between the level of play alone and with mother the Wilcoxon signed-rank test was used. This test indicated that twelve of the children played at a higher level with mother than when alone and one child played at the same level. The level of play was found to be significantly higher with mother than when playing alone ( $P=.004.$ ).

A correlation between play alone and play with mother was run. The results show a strong correlation ( $R=.94$ ;  $P=.05$ ) between these two measures. Although the two measures, play alone and play with mother, are strongly correlated it was important to determine if they measured unique domains. A t-test by pairs again reveals a strong correlation ( $R=.94$ ) but also indicates that they are significantly different ( $P=.001$ ).

A scatterplot was run to assess the nature of the



relationship between play alone and play with mother. The scatterplot indicates a fairly linear relationship between the two variables.

To decrease the influence of the variance on the small number of subjects, play alone and play with mother were ranked. A plot of the ranks of play alone and play with mother is curvilinear and resembles a sine wave.

There is a strong, significant, positive correlation between the level of play alone and the level of play the child achieve's with mother. However, the level of play with mother is significantly higher than when the child plays alone (see Table 17).

Table 17

Play with Mother vs. Play Alone

	<u>Statistic</u>	<u>R</u>	<u>P</u>
Mom/alone	Wilcoxon signed-rank		.004
Mom/alone	Pearson correlation	.936	0.000
Mom/alone	T-test/pairs	.936	0.001

Note. Mom = level of play child achieves when playing with mother; Alone = level of play child achieves when playing alone.

## Maternal Interaction Style

Mother's Interactional Style: Hypotheses

Does the mother's interactional style influence the child's developmental levels as measured by the BDI and the PAS? More specifically, the question asked was "how do responsiveness, control cohesiveness, play quality, directiveness and verbalizations interact with the nine BDI domains and play alone and play with mother?" The influence of age and vision on the mother's interactions with their child was also of interest. It seemed probable that mother adjusts her interactional style to the child's age and/or handicap. The differences between the chronological age of the child and the age level the child plays at with mother were looked at to see if they were a function of the mother's interactional style. Differences between the chronological age of the child and the developmental age when playing alone and playing with mother were looked at for indications of a developmental delay. The effect of this delay on the mother's interactions was also explored.

These issues are summarized in the following five hypotheses:

H5: The developmental level of the child, as measured by the Play Assessment Scale, is significantly higher when playing with mother than when playing alone.

H6: Optimal levels of maternal responsiveness, control, cohesiveness, play quality, directiveness and

verbalizations have a significant positive influence on development as measured by the nine BDI domains and the two measures of play.

H7: Maternal interactional style is more optimal for younger children.

H8: Maternal interactional style is more optimal for children with more severe vision loss.

H9: Maternal interactional style is more optimal for children who are more developmentally delayed.

#### Mother's Interactional Style: Analysis

To determine the impact of mother's interactional style on measured developmental levels a one-way analysis of variance was run between the BDI and play developmental ages and the maternal variables. A one-way analysis of variance was also run between the BDI and play developmental ages and the maternal variables. A one-way analysis of variance was also run between the child's chronological age and the maternal interaction domains. Frequency distributions of the age groupings indicated two specific age groupings. A one-way analysis of maternal variables and developmental scales (BDI and play) by age groups were looked at for influences observed as a function of age. The impact of the degree of vision loss was also assessed with a one-way analysis of variance on the 13 visually impaired subjects.

To determine if there is a significant difference between the chronological age of the child and the

developmental ages, a T-test by pairs was run. This indicated whether developmental levels are significantly different from the chronological age of the child. Differences between developmental ages (BDI and PAS) and chronological ages were computed. A frequency distribution of these differences indicated the direction of these differences (delay or acceleration) but not the significance.

To assess the influence of the developmental acceleration or delay on the mother's interactions a one-way analysis of variance was run between the age discrepancies (developmental age minus chronological age) and the maternal variables. In addition to significant relationships, the standard deviations were looked at closely. Large standard deviations indicated variability between the subjects. Since the maternal variables were recoded into low, high, and moderate interactions, examination of the statistics for patterns suggested trends in the mother's interactional style that varied as a function of the child's development.

#### Maternal Interactional Style: Data

An analysis of the data suggests that mother's interactional style does influence the child's development. The sample size may account for the small number of significant relationships.

A one-way analysis of variance was run between the developmental scales (BDI and PAS) and the maternal

variables. Note that the sample size was too small to accurately use a multiple analysis of variance. Dividing the children into two age groups (below and above 40 months) results in two smaller groups (n=6 and 7). Although the influence of mother at different ages is of interest the author cautions that interpretation of results is tentative with such small numbers. However, possible trends may be of interest here. Results will be summarized in Table 18. Implications of these findings will be elaborated and discussed in the final chapter.

#### Responsiveness

Responsiveness is an index of maternal-sensitive reactivity to the child. This construct was recoded into low quality, medium and high quality responders. Low responsiveness indicates that the mother is not particularly sensitive or reactive to the child in a play situation. Highly responsive mothers are very aware and reactive toward their children. A one-way analysis of variance showed no significant differences between low, medium and highly responsive mothers on any of the Battelle domains or the play scale.

Table 18

Significant Findings for Level of Maternal Behavior on  
Farran's Scale as Related to BDI and PAS

Subjects	Resp		Ctrl		Cohes/Play	
	BDI	PAS	BDI	PAS	BDI	PAS
All (n=13)	lo	hi	med	med	lo	hi
<40 months	hi	hi	no	diff	hi	hi
>40 months	lo	med	lo	med	lo:PS	alone:hi
					AB	w/mom:med
					Med: M	
					Comm	
					Cog	

---

Subjects	Drct		Verb	
	BDI	PAS	BDI	PAS
All (n=13)	med	lo	hi=PS	lo=FM
			lo=AB, GM, cog.,	
			comm.	
<40 months	hi	hi	hi*	hi
			low best	EC, CT, BT
			for motor	
>40 months	med	lo	lo	lo

Table 18--continued

Note. Resp = responsiveness; Ctrl = control; Cohes = cohesiveness; Play = play; Drct = directiveness; Verb = verbalizations; PS = personal-social; AB = adaptive behavior; M = motor; Comm = communication (all domains); Cog = cognitive; FM = fine motor; GM = gross motor; EC = expressive communication; CT = communication total; BT = Battelle total.  $p < .05$ .

In the younger children (under 40 months) children with highly responsive mothers tended to do better on both the BDI and the PAS. For older children the trend is for low responsive mothers to have children with higher developmental scores.

#### Control

Control is a measure of how the mother exercises her authority in a play situation. The lowest scores on the BDI were attained by children whose mothers used a high quality of control in a play situation. On the PAS children of both high and low controlling mothers performed equally poorly. For younger children there seemed to be very little difference between high and low levels of maternal control. For older children, low levels (quantity and quality) of maternal control seemed to result in higher developmental levels on the BDI. On the Play Assessment Scale, moderate levels of control seemed to be optimal.

### Cohesion and Play

Cohesiveness is an index of the mother's ability to keep the play session moving along in an orderly, smooth manner. Play is a measure of the mother's involvement, enthusiasm and ability to adapt the activity to the child's level of skill and interest. Cohesiveness and play were strongly correlated ( $R=.99$ ). Predictably, they both influenced the BDI and the PAS in a similar way. A low quality and quantity of maternal cohesiveness and play resulted in children with higher Battelle scores. A medium level of cohesiveness and play seemed to be more conducive for play. In younger children a high degree of cohesiveness and maternal involvement in play seemed to result in higher scores for both the BDI and the PAS. In older children the results were mixed.

### Directiveness

A highly directive mother uses both physical and verbal means to persuade her child to behave the way she wants. A high directive score indicates a high quantity but low intensity interaction between mother and child. In all domains of the BDI, a medium level of maternal directiveness seems to correspond to higher scores.

For older children, low levels of maternal directiveness relate to higher levels of play. And, medium levels of directiveness relate to higher BDI scores.

In younger children there is a tendency for high levels



(high quantity, low intensity) maternal directiveness to correspond to higher scores on all domains of the BDI except for the motor domain. For motor development low levels (low frequency, high intensity) of directiveness appear to be optimal. High levels of directiveness for younger children, seem to correspond to higher levels of play, both alone and with mother.

### Verbalization

Verbal involvement with the child includes talking, singing or reading. Verbalization is a measure of not only the quantity of verbal stimulation but also the ability of the mother to speak at a level and speed that is appropriate for the child's ability and interest. Moderate levels of verbalization correspond to the lowest scores on all domains of the BDI and PAS. For younger children, high levels of maternal verbalization were observed with children who obtained the highest scores across all domains of the BDI and the PAS. For these younger children, high levels of verbalization had a significant, positive impact on expressive communication ( $P=.02$ ), communication total ( $P=.03$ ) and BDI total ( $P=.006$ ). For older children, interestingly, it is low levels of maternal verbalization that correspond to higher scores across all domains of the BDI and the PAS.

### Vision

The next factor to consider is the impact of the child's degree of vision loss on maternal interactions. Vision loss was recorded as 1=severe, 2=modest, and 3=mild. Three children (23%) had severe vision loss. One child had moderate vision loss and nine children (69%) had mild vision loss. A one-way analysis of variance between vision loss and maternal interaction variables revealed no significant findings. However, there was a tendency for mild vision loss to be associated with lower levels of maternal interaction.

### Developmental Delay

The final questions were whether the children were developmentally delayed. And, if they were, whether the delay influenced mother's approach to interaction with her child. To determine if the children were developmentally delayed the chronological age of the child at the time of testing was subtracted from the developmental ages achieved on the BDI domains and the PAS. A frequency was run on these differences. All of the differences were negative indicating substantial developmental delays in this population. (Refer to Tables 8 and 9.) Gross motor development was the domain of the Battelle which seemed to show the most delay (mean = -16 months). The two areas of least delay were personal social development (mean = -2.7 months) and expressive communication (mean = -4.4 months).

Play with mother and alone, as assessed by the PAS, was very delayed. For play alone the mean discrepancy in ages was -24 months; for play with mother the mean delay was -19 months.

To determine if there was a significant difference between the developmental ages of the children and their chronological ages, a t-test by pairs was run (see Table 19).

Table 19

T-Test By Pairs: Developmental vs. Chronological AgesP-Value

<u>PS</u>	<u>AB</u>	<u>GM</u>	<u>FM</u>	<u>MT</u>	<u>RC</u>	<u>EC</u>	<u>CT</u>	<u>BC</u>	<u>BT</u>	<u>EXPL</u>	<u>MOM</u>
.51	.03	.00	.12	.001	.06	.31	.11	.03	.41	.00	.00

Note. PS = personal-social; AB = adaptive behavior; GM = gross motor; FM = fine motor; MT = motor total; RC = receptive communication; EC = expressive communication; CT = communication total; BC = cognitive; BT = total; EXPL = play alone; MOM = play with mother.

The children's chronological ages were significantly different from their developmental ages in adaptive behavior, gross motor, motor total, cognitive and both play alone and with mother. This indicates significant developmental delay in these areas.

How do these developmental delays affect the mother's interactions? A one-way analysis of variance was run

between the age discrepancies (developmental age minus chronological age) and the maternal variables. Although none of the findings were significant, there were several consistent trends. In general, children who were the least developmentally delayed had mothers who used low to moderate levels of responsiveness, control, cohesiveness, play, directiveness and verbalizations.

The most developmentally delayed children had mothers who used medium to high levels of intensity in all of their interactions (see Table 20).

Table 20

Relation Between Maternal Interaction and  
Developmental Scores for LEAST Delayed

	PS	AB	GM	FM	MT	RC	EC	CT	Cog	BT	Expl	Mom
Resp	M	L	L	M	M	L	L	L	L	M	M	M
Ctrl	L	L	L	M	L	L	L	L	L	M	M	M
Cohes	L	L	M	M	M	L	L	L	L=H	L	M	M
Play	L	L	M	M	M	L	L	L	L=H	L	M	M
Drct	M	M	M	M	M	M	M	M	M	M	L	L
Verb	L	L	M	H	M=L	L	L	L	L	H	L=M	M

Note. L = low; M = medium; H = high; Resp = responsiveness; Ctrl = control; Cohes = cohesiveness; Play = play; Drct = directiveness; Verb = verbalization; PS = personal-social; AB = adaptive behavior; GM = gross motor; FM = fine motor; MT = motor total; RC = receptive communication; EC =

Table 20--continued

expressive communication; CT = communication total; Cog = cognitive; BT = total; Expl = play alone; Mom = play with mother.

Table 21

Relation Between Maternal Interaction and  
Developmental Scores MOST delayed

	<u>PS</u>	<u>AB</u>	<u>GM</u>	<u>FM</u>	<u>MT</u>	<u>RC</u>	<u>EC</u>	<u>CT</u>	<u>Cog</u>	<u>BT</u>	<u>Expl</u>	<u>Mom</u>
Resp	H	M	H	H	M	M	M	M	M	H	H	H=L
Ctrl	H	M	M	H	M	M	M	M	M	H	H	H
Cohes	M	H	H	L	H	H	H	H	H	M	L	L
Play	M	H	H	L	H	H	H	H	H	M	L	L
Drct	L	H	H	H=L	L	H=L	L=M	L=H	H	L	M	M
Verb	M	H	H	M	H	H	H	H	H	M	H	H

Note. L = low; M = medium; H = high; Resp = responsiveness; Ctrl = control; Cohes = cohesiveness; Play = play; Drct = directiveness; Verb = verbalizations; PS = personal-social; AB = adaptive behavior; GM = gross motor; FM = fine motor; MT = motor total; RC = receptive communication; EC = expressive communication; CT = communication total; Cog = cognitive; BT = total; Expl = play alone; Mom = play with mother.

Further interpretation of these results would be pure conjecture. Most of the mean scores had standard deviations equal to or larger, than themselves. The prevalence of broad standard deviations indicates a large variability in

the sample. In addition, the lack of statistically significant findings precludes the reporting of anything except noticeable trends.

CHAPTER V  
GENERAL DISCUSSION

Play Assessment Scale As a Valid and Reliable Tool

One of the primary tasks of this thesis was to establish the Play Assessment Scale (PAS) as a valid and reliable assessment tool. Discounting the effects of group and gender allowed analysis of the group as a whole. The large variability was minimized with the use of nonparametric statistic. A strong ( $R=.59$  to  $.84$ ) significant ( $P=.000$  to  $.03$ ) correlation was found between the BDI and the PAS when the child played with mother. When the child played alone, the Battelle gross motor domain was significantly correlated to the PAS ( $R=.64$ ;  $P=.02$ ). Although the two tests are correlated, a t-test by pairs indicated that they do measure different constructs on all domains except gross motor development. It is possible that some of the items on the PAS measure the development of both play and the child's gross motor skills. The only significant factor that vision seemed to influence was adaptability. Children with better vision seemed to score higher on the adaptability subdomain of the BDI. The results indicate that the PAS is a valid, reliable scale appropriate for use with visually impaired preschoolers.

As discussed previously, this sample showed a large amount of variability (see Tables 7, 8, and 9). A frequency

of the developmental age, as determined by the BDI, minus the chronological age revealed that in most domains the standard deviation actually exceeded the mean score (see Table 8). BDI minus chronological age had an average of 51 months and most standard deviations exceeded the mean. Interestingly, for the Play Assessment Scale this was not the case. A frequency of the difference between the PAS developmental age and the chronological age indicated that the standard deviations were less than the means. And, PAS minus chronological age had an average of 37 months (see Table 9). For this sample, discrepancies between developmental age and chronological age were smaller and showed less variance when the PAS was used than when the BDI was used. This strengthens the argument for the PAS as a viable developmental assessment tool.

#### Maternal Influence

The second point was to determine if mother raises the child's level of development through play. As mentioned in the literature review, mother is often the visually impaired child's primary channel to external information and stimulation. Warren (1977) contends that without active teaching the play of visually impaired children will be withdrawn and primitive. Rogers (1988) indicates that visually impaired children need more play coaching than children with other disabilities.

The results of this study indicated that when visually



impaired preschoolers children played with mother, their level of play was significantly ( $P=.004$ ) higher than when they played alone. Even though play with mother and play alone were at significantly different levels, there was a strong, positive correlation ( $R=.94$ ) between the two measures. Mother is capable of significantly raising the child's developmental level through play.

If this observed increase in the child's level of development during play with mother does not generalize beyond the play situation, these findings are of minimal importance. However, as Block (1984) suggests, the child's premise system about receptivity and responsivity are developed through interactive play with mother. And, cognitive and affective development are a function of the child's premises about the receptivity and responsivity of the world to his or her actions. (Play ----> premise system ----> cognitive/affective development).

Based on this study, it is logical to conclude, as Piaget (1962) did, that interactive play with mother can facilitate cognitive and affective development. While the findings clearly indicate that mother has a significant, positive impact on development, other subtle influences were noted.

On Table 10 the differences between the BDI developmental ages and the PAS developmental ages were listed. When the child played with mother, as opposed to playing alone, the mean difference decreased on all domains.

This could be attributed to play with mother being a higher level and therefore closer to the BDI scores. However, on each domain, the standard deviation for play with mother was smaller than the standard deviation for play alone. And, the discrepancy between BDI and PAS developmental ages was smaller when the child played with mother. These smaller standard deviations and ranges indicate that there is less variance in children's play when they play with mother rather than alone.

Further evidence for a maternal tightening effect is seen on Table 7 where the standard deviation and range of developmental ages are both smaller when the child play with mother and not alone. And, on Table 9 the difference between PAS developmental ages and chronological ages also show smaller standard deviations and ranges when the child plays with mother. Therefore, not only does mother have a significant, positive impact on development but she also seems to subtly decrease the variance in the child's play.

#### Maternal Interaction

##### Responsiveness

The final portion of this study addresses the mother's interactional style. As discussed in the literature review, responsivity is a key component in the child's development of a premise system about themselves in the world (Block, 1984). In visually impaired children, the feedback system of signs and signals is absent (Fraiberg,

1977). Thus, the normal flow of responses between mother and child is frustrated. Without reciprocity, the child's development suffers and cognitive development may even be impaired. In visually impaired children, maternal responsivity should be of paramount importance. While overall, a low level of maternal responsivity in this study was associated with higher BDI scores, definite trends were noted when the subjects were divided into two age groups. Higher levels of maternal responsivity were associated with higher developmental levels for the younger children. For the older children, low to medium levels appeared to be optimal. It is reasonable to speculate that mother provides an appropriate, higher level of responsiveness to younger children.

#### Age

Although significant findings were minimal, there were some consistent age-related trends. For younger children (under 40 months) a higher quality of responsiveness, control, cohesiveness, play, directiveness, and verbalizations seemed to be associated with higher developmental scores on the BDI and PAS. For older children, low to medium levels of quality in maternal interactions were associated with higher BDI and PAS scores. This corresponds with the finding that the highest quality of control, cohesiveness, play, directiveness, and verbalizations were observed for the oldest children. The increased quality evident with older children could be

explained by several factors. With increasing age the child may become more skilled at social interactions. This increasing skill contributes to a higher quality mother-child interchange. It is also possible that with increasing age the mother becomes more skilled at communicating with her child. It is probable that both of these factors are involved. In addition, it is possible that more involved interactions are developmentally appropriate with older children.

#### Vision

The effect of vision, although not significant, also follows a trend. The children with the best vision received a lower quality of responsiveness, control, cohesiveness, play, directiveness, and verbalization. While there were some trends related to age and vision, there were no significant relations.

Sandler and Wills (1965) found that children with a visual impairment play at levels below their age matched peers. This study strongly supported that finding. Children playing alone had a mean delay of 24 months. Playing with mother, the mean delay was 18 months. While it is possible that this large delay could be attributed to inaccurate scoring of the PAS or a poor fit between the PAS and the mother-child play interaction, it is more likely, as the literature indicates, that the children were developmentally delayed.

### Control and Directiveness

High control is flexible yet consistently organizes and structures the child's play session. Mothers who had the highest control scores had children who did the worst on the BDI. Medium to low scores on control correspond to the highest scores on both the BDI and the PAS. As suggested in the literature review (Vandenberg, 1978) lower levels of control did seem to be associated with the older children. A high score under directiveness is indicative of frequent, yet gentle and sensitive attempts by mother to adjust the child's behavior. The child's personal-social and fine motor behavior seemed to be associated with the highest quality of directiveness. On all other domains of the Battelle, moderate levels of directiveness were related to the highest BDI scores. This supports Kekelis and Andersen's (1984) finding that mothers of visually impaired children tend to be more directive. Interestingly, for play, both alone and with mother, children with the highest play development scores had mothers who scored low on directiveness.

One could speculate that highly directive, controlling mothers squelch their child's development of a premise system that views self as capable of reaching out and learning. As Block (1984) notes, in a play situation with mother the child develops a premise system that reflects maternal control.

### Verbalization

Highly verbal mothers had children who exhibited the best personal-social and fine motor skills. As Kreye (1984) noted, the social-verbal aspects of context play an integral part in early concept formation. And, play is the "primary mode of conceptual organization" (Kreye, 1984, p. 305). It is logical to assume that mothers who are highly verbal in a play context facilitate their child's development of a personal premise system of self in a positive personal-social role. All the other developmental domains (adaptive behavior, communication, gross motor and cognition) and play seemed to correspond to low levels of verbalization. This supports Rogers and Puchalski's (1984) finding that overall, mothers of visually impaired children use fewer verbalizations. However, since low verbalization was related to higher scores on communications, adaptive behavior and cognition it may be possible that overly verbal mothers suppress their children's development or low levels of verbalization encourages growth. The children who were the most delayed in language had mothers who used the most verbalizations. The children least delayed in language had low verbalizing mothers. These findings again suggest that highly verbal mothers may discourage their child's communication and may not be sensible to the child's needs.

It is also possible that mothers who are more sensitive to their environment were inhibited while being videotaped.

An additional problem with the verbalization measure is that a low score indicates both a low quantity and quality. It is probable that while being videotaped mothers were reluctant to express sharp, negative (low quality) statements to their child. Therefore, a low verbalization score is probably most indicative of low quantity. The quantity may have been artificially suppressed.

Another interesting developmental trend is the children's expressive communication skills. Children with visual impairment use verbalizations to explore and keep in contact with their environment (DuBose, 1979; Fewell, 1988; Rogers, 1988; Sandler & Wills, 1965; Singer & Streiner, 1966). Therefore, you would expect them to have higher levels of expressive communication developed. The highest scores achieved in this study were, predictably, in the expressive communication domain.

#### Maternal Response to Delay

The finding that the children who were most delayed had mothers with the highest scores on the maternal variables could be attributed to a number of factors. First, it is possible that the most delayed children required a higher quantity and quality of maternal interaction and the mothers responded in a developmentally appropriate way. However, it is equally probable that the direction of causality is from mother to child. It is possible that a high quantity and quality of maternal responsiveness, control, cohesiveness,

play, directiveness, and verbalization is detrimental to development. Given the bidirectional nature of mother-child interactions it is difficult to determine the direction of causality.

#### Value of Play

Another finding of interest is the emergence of play as a separate, unique facet of development. As Piaget noted (1962) play is assimilation, imitation is accomodation and intelligence is the blending of the two. Different degrees of maternal interaction were optimal for play than were observed for the BDI. Low quantity and quality directiveness and verbalizations were related to the best PAS scores. Higher BDI scores were associated with moderate to high directiveness and verbalizations. High cohesiveness and play ratings corresponded to the highest PAS and lowest BDI scores. A medium level of responsiveness and control was associated with the highest PAS scores and some of the BDI scores (adaptive behavior, receptive communication and communication total). A low rating on responsiveness related to the best BDI scores. It is clear that qualitatively different maternal responses are used to elicit optimal play than are used for other domains of development. Perhaps play interactions elicit a different qualitative aspect of maternal involvement that are unique yet necessary to the child's total development.



Another indication of the unique role of play in development is the correlation between the BDI and the PAS. The results indicated that the two scales did correlate yet do measure unique constructs. This suggests that play, as measured by the PAS, is a true developmental construct yet represents a facet of development not measured by the BDI.

In addition, many of the interventions designed for children with handicaps focus on the child's area of deviance. While many activities (i.e., physical therapy) are effective treatments they are non-normative, may not generalize and do not encourage social interactions. Mash and Terdal (1973) suggest that mother-child play interactions are an appropriate way to introduce behavior modification techniques. Their premise is that play is a non-deviant type of behavior. This study clearly shows that mother can make a significant impact on her child through normal play interactions. Mother-child play interactions can serve as an appropriate and effective adjunct to therapy programs for visually impaired children and, very probably, other handicaps.

#### Limitations

The most obvious limitation of this study is the small sample size. As discussed earlier, statistical techniques and cautious interpretations were used to minimize the problem. Although the homogeneity of the population is a strength, caution must be taken with generalizations of the

results. This study assessed only children with visual impairment. All interpretations need to be made with reference to that specific population.

Another limitation to this study is the subjective nature of Farran's scale. Although the author is confident that it is a valid and reliable tool, close examination reveals its subjective nature. While the author agrees with Farran's definition of high maternal directiveness as a high quantity, low intensity behavior, this interpretation is obviously subjective. The chronological ages of some of the children exceeded the age appropriate limit for the Play Assessment Scale (36 months). However, the developmental ages of the children did not exceed 36 months in most cases.

In addition, the play interaction between mother and child was limited by the toys available. The toys were appropriate and allowed a wide range of activity to be observed. However, the tapes were prepared by researchers other than the author. Novel toys and toys encouraging problem solving were absent. The presence of these toys may have encouraged the children to achieve higher levels of play. The author feels that the large delay in play development can be attributed to not only a true developmental delay in the visually impaired children, but also to the limitation presented by the toys used.

### Future Research

The author feels strongly that the PAS is a viable assessment tool that fills a unique niche. More research is needed using the PAS on other populations of children with disabilities and comparing it to other developmental scales.

The unique role of play is evident in the maternal interactions. However, the direction of causality is not clear. The importance of play in development has been established. The exact role of the mother, the child and the disability in promoting or hindering play is just emerging. Is a moderate level of responsiveness and a low level of directiveness optimal for play development or, is that a function of the disability or, the child's personal style? This chicken and egg problem has only begun to be explored.

### Summary

The PAS is a true developmental scale. It is valid, reliable and suitable for use with young children who are visually impaired. The PAS is an important contribution to assessment of children with disabilities. It is the only play scale that can be used for very young or developmentally delayed children and offers a specific play age.

This study also shows that mother can make a significant positive impact on the child's level of development through play. With children who have

disabilities, mother is often the primary promoter of the child's development. It is evident from this study that mothers are capable of using play to enhance the child's development.

Although the results are confusing and not statistically significant, there are some definite trends in maternal interactions that appear to be a function of the child's age and developmental delay. The quality and quantity of maternal interactions are lower for older children. In general, the younger, more delayed children are the recipients of a higher quality and quantity of maternal involvement. The direction of causality has yet to be determined.

It is evident that play is a unique aspect of the child's development. Like a mirror, it not only reflects development but also offers a different image of the child. Mother's role in the facilitation of play is an important area of future research. Play is an integral part of development. Play as an assessment tool is the future.

## References

- Athey, I. (1984). Contributions of play to development. In T.D. Yawkey & A.D. Pellegrini, A.D. (Eds.), Children's Play: Developmental and Applied (pp. 136-148). Hillsdale, NJ: Lawrence Erlbaum.
- Beeghly, M. & Cicchetti, D. (1987). An organizational approach to symbolic development in children with Down Syndrome. In D.Cicchetti & M. Beeghly (Eds.), Symbolic Development in Atypical Children. New Directions for Child Development, (pp. 87-108). San Francisco, CA: Jossey-Bass.
- Belsky, J. & Most, R.K. (1981). From exploration to play: A cross-sectional study of infant free play behavior. Developmental Psychology, 17, 630-639.
- Block, J. (1984). Sex Role Identity and Ego Development. San Francisco, CA: Jossey-Bass.
- Bregani, M., Ceppellini, M., Cerabolini, A., Contini, L., Damascelli, A., Livingstone, S., Premoli, D. & Rocca, D. (1981). Blind children: Prevention of emotional disturbances by early intervention with parents and child. Courier, 31, 256-262.
- Brooks-Gunn, J. & Lewis, M. (1982). Development of play behavior in handicapped and normal infants. Topics in Early Childhood Special Education, 2, 14-27.

- Brown, C. & Gottfried, A. (Eds.). (1985). Play interactions: The role of toys and parental involvement in children's development. NJ: Johnson & Johnson Baby Products Company.
- Bruner, J.S. (1972). Nature and uses of immaturity. American Psychologist, 27, 687-708.
- Bruner, J.S., Jolly, A., & Sylva, K. (Eds.). (1976). Play--Its Role in Development and Evolution. New York, NY: Basic Books.
- Cannella, G.S., Berkeley, T.R., Constans, T.M. & Parkhurst, S.A. (1987). Cognitive processes of at-risk and typically developing infants: Comparison of exploration, play and problem solving. Child Study Journal, 17, 269-286.
- Casby, M.W. & Della Corte, M. (1987). Symbolic play performance and early language development. Journal of Psycholinguistic Research, 16, 31-42.
- Chappell, G.E. & Johnson, G.A. (1976). Evaluation of cognitive behavior in the young nonverbal child. Language, Speech, & Hearing Services in Schools, 7, 17-27.
- Clarke-Stewart, A. (1973). Interactions between mothers and their young children: Characteristics and consequences. Monographs of the Society for Research in Child Development, 38, (6-7, Serial No. 153).

- Collard, R.R. (1979). Exploration and play. In B. Sutton-Smith (Ed.), Play and Learning (pp. 92-107). New York, NY: Gardner Press.
- DuBose, R. (1979). Working with sensorily impaired children: Part I: Visual Impairments. In S.G. Garwood (Ed.), Educating young handicapped children: A developmental approach (pp. 37-56). Germantown, MD. ASPEN Systems Corporation.
- Dunst, C.J. (1978). A cognitive-social approach for assessment of early nonverbal communicative behavior. Journal of Childhood Communication Disorders, 2, 110-123.
- Farran, D., Kasari, C., Comfort, M. & Jay, S. (1986). Parent/caregiver involvement scale. Honolulu: Center for Development of Early Education.
- Fein, G.G. (1975). A transformational analysis of pretending. Developmental Psychology, 11, 291-296.
- Fein, G.G. (Ed.). (1978). Child Development. Englewood Cliffs, NJ: Prentice-Hall.
- Fein, G.G. (1981). Pretend play in childhood. An integrative review. Child Development, 52, 1095-1118.
- Feitelson, D. & Ross, G.S. (1973). The neglected factor--play. Human Development, 16, 202-223.

- Fewell, R.R. (1984). Play Assessment Scale (4th ed.).  
Unpublished document. Seattle, WA: University of  
Washington.
- Fewell, R.R. (1988, February). Utilization of the Play  
Assessment Scale. Workshop presented at the Oregon  
Educational Association's Play Assessment Workshop,  
Portland, OR.
- Fewell, R.R. & Kaminski, R. (1988). Play skills  
development and instruction for young children  
with handicaps. In S. Odom & M. Karnes (Eds.),  
Early intervention for infants and children with  
handicaps: An empirical base (pp. 136-149).  
New York, NY: Paul Brooks.
- Fewell, R.R. & Rich, J.S. (1987). Play assessment as a  
procedure for examining cognitive, communication,  
and social skills in multihandicapped children.  
Journal of Psychoeducational Assessment, 2, 107-118.
- Fraiberg, S. (Ed.). (1977). Insights from the blind.  
New York, NY: Basic Books.
- Friedman, M. & Pasnak, G. (1973). Accelerated acquisition  
of classification skills by blind children.  
Developmental Psychology, 9, 333-337.



- Garabino, I. (1989). An ecological perspective on the role of play in child development. In M. Block & A.D. Pellegrini (Eds.), The ecological context of children's play (pp. 124-137). Norwood, NJ: Ablex.
- Garvey, C. (1977). Play. Cambridge, MA: Harvard University Press.
- Gould, G. (1986). The Lowe and Costello play test in socially impaired children. Journal of Autism and Developmental Disorders, 16, 199-213.
- Gowen, M., Goldman, L., Johnson-Martin, C. & Hussey, M. (1984). Object play and exploration of handicapped and nonhandicapped infants. Journal of Applied Developmental Psychology, 10, 53-72.
- Gralewicz (1973). Play deprivation in multihandicapped children. The American Journal of Occupational Therapy, 27, 70-72.
- Greenberg, R. & Field, T. (1982). Temperament ratings of handicapped infants during classroom, mother and teacher interactions. Journal of Pediatric Psychology, 7, 387-405.
- Harlow, M. & Harlow, L. (1966). Learning to love. American Scientist, 54, 244-272.
- Herron, R.E. & Sutton-Smith, B. (Eds.). (1971). Child's Play. New York, NY: John Wiley & Sons.

- Hill, P.M. & McCune-Nicolich, L. (1981). Pretend play and patterns of cognition in Down's Syndrome children. Child Development, 52, 611-617.
- Hutt, C. (1971). Exploration and play in children. In R.E. Herron & B. Sutton-Smith (Eds.), Child's Play (pp. 24-56). New York, NY: John Wiley & Sons.
- Huizinga, J. (1976). Play and contest as civilizing functions. In J.S. Bruner (Ed.), Play: Its role in development and evolution (pp. 247-338). New York, NY: Basic Books.
- Hulme, L. & Lunzer, M. (1966). Play, language and reasoning in subnormal children. Journal of Child Psychology and Psychiatry, 7, 107-123.
- Jeffrey, D.M. & McConkey, R. (1976). An observation scheme for recording children's imaginative doll play. Journal of Child Psychology and Psychiatry, 17, 189-197.
- Kekelis & Andersen (1984). Family communication styles and language development. Journal of Visual Impairment and Blindness, 78, 54-65.
- Kelly-Byrne, D. (1989). A child's play life. NY, NY: Teachers' College Press.

- Kreye, M. (1984). Conceptual organization in the play of preschool children: Effects of meaning, context and mother-child interaction. In I. Bretherton (Ed.), Symbolic play: The development of social understanding (pp. 56-72). Orlando, FL: Academic Press.
- Largo, R.H. & Howard, J.A. (1979). Developmental progression in play behavior of children between 9 & 30 months. I: Spontaneous play and imitation. Developmental Medicine Child Neurology, 21, 299-310.
- Linder, T.W. (1989). Transdisciplinary play-based assessment. New York, NY: Paul H. Brookes.
- Lowe, M. & Costello, A.J. (1976). The symbolic play vest. Berkshire, England: NFER-Nelson.
- McCall, R.B. (1979). Stages in play development between zero and two years of age. In B. Sutton-Smith (Ed.), Play and Learning (pp. 63-72). New York, NY: Gardner Press.
- McCune-Nicolich, L. (1977). Beyond sensorimotor intelligence: Assessment of symbolic maturity through analysis of pretend play. Merrill-Palmer Quarterly, 23, 89-99.

- McCune-Nicolich, L. (1981). Toward symbolic functioning: Structure of early pretend games and potential parallels with language. Child Development, 52, 785-797.
- McCune-Nicolich, L. & Carroll, S. (1981). Development of symbolic play: Implications for the language specialist. Topics in Early Language Development, 2, 1-15.
- McLellan, J. (1970). The question of play. London, England: Pergamon Press.
- Marfo, K. (1989). Multi-pass: A scheme for coding parent-child interaction. Newfoundland, Canada: Memorial University Department of Educational Psychology.
- Mash, E., Terdal, L. & Anderson, K. (1973). The response-class matrix: Procedure for recording parent-child interactions. Journal of Consulting and Clinical Psychology, 40, 163-164.
- Meyer, L.H., Fox, J.M., Schermer, A., Ketelsen, E., Montan, N., Maley, K., & Cole, D. (1987). The effects of teacher intrusion on social play interactions between children with autism and their nonhandicapped peers. Journal of Autism and Developmental Disorders, 17, 315-332.

- Munoz, J.P. (1986). In Play, a skill for life.  
Rockville, MD: American Occupational Therapy  
Association.
- Newborg, J., Stock, J. & Wnek, L. (1984). Battelle  
developmental inventory manual. Allen, Texas: DLM  
Teaching Resources.
- O'Connell, B. & Bretherton, I. (1984). Toddler's play,  
alone and with mother: The role of maternal guidance.  
In I. Bretherton (Ed.), Symbolic play: The  
development of social understanding (pp. 337-368).  
New York, NY: Academic Press.
- Odom, A.L. (1981). The relationship of play to  
developmental level in mentally retarded preschool  
children. Education and Training of the Mentally  
Retarded, 16, 136-141.
- Parten, M.B. (1932). Social participation among preschool  
children. Journal of Abnormal and Social  
Psychology, 28, 136-147.
- Parten, C.B. (1971). Encouragement of sensory motor  
development in the preschool blind. Exceptional  
Children, summer, 739-741.
- Pellegrini, A.D. & Perlmutter, G. (1987). A re-examination  
of the Smilansky-Parten matrix of play behavior.  
Journal of Research in Childhood Education, 2,  
89-96.

- Pepler, D.J. & Rubin, K.H. (Eds.). (1982). The play of children: Current theory and research. Basel Switzerland: S. Karger.
- Piaget, J. (1962). Play, dreams and imitation in childhood. New York, NY: W.W. Norton.
- Piaget, J. (1981). Intelligence and Affectivity. Palo Alto, CA: Annual Reviews.
- Powers, G. & Radcliffe, H. (1989). The relationship of play behavior to cognitive ability in developmentally disabled preschoolers. Journal of Autism and Developmental Disorders, 19, 97-107.
- Riguet, G., Taylor, M., Benaroya, S. & Klein, G. (1981). Symbolic play in autism, downs and normal children of equivalent mental age. Journal of Autism and Developmental Disorders, 11, 439-448.
- Rogers, S. (1988). Cognitive characteristics of handicapped children's play: A review. Journal of the Division for Early Childhood, 12, 141-148.
- Rogers, S. & Puchalski, C.B. (1984). Social characteristics of visually impaired infants' play. Topics in Early Childhood Special Education, 3, 52-56.
- Rowland, C. (1984). Preverbal communication of blind infants and their mothers. Journal of Visual Impairment and Blindness, 78, 297-302.

- Rubin, K.H., Maioni, T.L. & Hornung, J. (1976). Free play behavior in middle class and lower class preschoolers: Parten and Piaget revisited. Child Development, 47, 414-419.
- Sandler, J. & Wills, E. (1965). Preliminary notes on play and mastery in the blind child. Journal of Child Psychotherapy, 2, 7-19.
- Schaffer, W. & Crook, L. (1979). Maternal control techniques in a directed play situation. Child Development, 50, 989-996.
- Singer, J.L. & Streiner, B.F. (1966). Imaginative content in the dreams and fantasy of blind and sighted children. Perceptual and Motor Skills, 22, 475-482.
- Smilansky, S. (1968). The effects of sociodramatic play on disadvantaged preschool children. New York, NY: J. Wiley & Sons.
- Smith, P.K. & Vollstedt, R. (1985). On defining play. An empirical study of the relationship between play and various play criteria. Child Development, 56, 1042-1050.
- Sutton-Smith, B. (Ed.). (1979). Play and Learning. New York, NY: Gardner Press.
- Tait, P. (1972). Behavior of young blind children in a controlled play session. Perceptual and Motor Skills, 34, 963-969.

- Terrell, B.Y. & Schwartz, R.G. (1988). Object transformations in the play of language-impaired children. Journal of Speech and Hearing Disorders, 53, 459-466.
- Terrell, B.Y., Schwartz, R.G., Prelock, P.A. & Messick, C.K. (1984). Symbolic play in normal and language-impaired children. Journal of Speech and Hearing Research, 27, 424-429.
- Teti, D.M., Bond, L.A. & Gibbs, E.D. (1988). Mothers, fathers, and siblings: A comparison of play styles and their influence upon infant cognitive level. International Journal of Behavioral Development, 11, 415-432.
- Tilton, J.R. & Ottinger, D.R. (1964). Comparison of the toy play behavior of autistic, retarded, and normal children. Psychological Reports, 15, 967-975.
- Tizard, B. & Harvey, D. (Eds.). (1977). Biology of Play. Spastics International Medical Publications. Philadelphia, PA: J.B. Lippincott.
- Ungerer, J.A., Zelazo, P.R., Kearsley, R.B. & O'Leary, K. (1981). Developmental changes in the representation of objects in symbolic play from 18 to 34 months of age. Child Development, 52, 186-193.



- Vandenberg, B. (1978). Play and development from an ethological perspective. American Psychologist, 33, 724-738.
- Vygotsky, L.S. (1967). Play and its role in the mental development of the child. Soviet Psychology, 5, 6-18.
- Warren, D.H. (1977). Blindness and Early Childhood Development. New York, NY: American Foundation for the Blind.
- Weiner, E.A. & Weiner, B.J. (1974). Differentiation of retarded and normal children through toy-play analysis. Multivariate Behavioral Research, 28, 245-252.
- Weisler, A. & McCall, R.B. (1976). Exploration and play. American Psychologist, 34, 492-508.
- Westby, C. (1980). Assessment of cognitive and language abilities through play. Language, Speech & Hearing Services in Schools, 11, 154-168.
- Wohwill, J.F. (1989). Relationships between exploration and play. In T.D. Yawkey & A.D. Pellegrini (Eds.). Child's Play: Developmental and Applied (pp. 134-162). Hillsdale, NJ: Lawrence Erlbaum.

APPENDICES

APPENDIX A

Parent/Cargiver Involvement Scale

## PARENT/CAREGIVER INVOLVEMENT SCALE

(April, 1986)

DIRECTIONS: This scale is designed to assess the behavior of a caregiver during play interactions with his/her child in home or laboratory settings. Play interactions should be observed for 20-30 minutes before scoring. Each item has behavioral descriptors at odd intervals along the 5-point scale. Please read the descriptors and the conventions in the manual for each item then write the number that best describes the observed caregiver behavior. If a behavior item is not observed, please score 1 for Amount and not observed for Quality and Appropriateness.

A = Adult

C = Child

Dale Farran, Connis Kasari, Harilee Comfort, &amp; Susan Jay.

Revision of: Jay Scale (1980), Jay-Farran Scale (1981), PCIS (1984), PCIS II (1985)

Further information available from:

Dale C. Farran, Ph.D.  
Center for Development of Early Education  
Kamehameha Schools/Bishop Estate  
Kapalama Heights  
Honolulu, HI 96817

## 1. Physical Involvement

### A. Amount of bodily contact.

Bodily contact involves both "passive" support and "active" touching. Passive support is observed when the caregiver uses her body to support the child, for example if the adult and child are on the floor and the child is leaning against the adult's knee. Occasionally it is difficult to determine in passive physical involvement who is initiating the involvement. If only passive contact is observed, score a 4 if it is continuous. Active touching includes using a toy to touch child (e.g. having doll "kiss" or "hug" the child).

To obtain a rating of 5, a caregiver who is passively supporting the child a great deal must also make some active attempts to touch the child. She may put her arm around the child, she may pat the child, she may pick up the child. In these instances, it is clear that the adult is initiating the interactions. Physical contact of either type may be intermittent or continuous. Choose the correct rating based on the overall percentage of time adult and child were in physical contact.

### B. Quality of handling.

Regardless of how much the adult handles the child, this item relates to how well the adult handles the child. If the adult never touched the child or "provided any passive support while being observed, check "not observed."

To rate this item for children with motoric problems, the observer must be aware of what is appropriate for that particular child. For example a child with abnormal muscle tone may need to be bounced or rocked in order to maintain a position or state of arousal. If the child seems to respond to this handling by relaxing or alerting, then it is appropriate for that child.

This item is not a judgment of how much the adult likes the child; an adult may provide rough or unnecessary handling because of stresses the adult is feeling or because of insufficient training in handling young children or a child with motoric problems.

### C. Appropriateness of caregiver positioning.

Appropriate physical involvement refers to the child's need to be positioned to facilitate access to people and to activities. This is particularly important for children who are not adequately mobile. These children depend upon adults to place them in positions where they can interact. For mobile children, adults must place themselves and toys/activities in positions where the child has easy access.

This item is not a clinical judgment about the therapeutic nature of the child's position. The fact that a motorically handicapped child may not be correctly aligned in a sitting position may cause a long-range therapeutic concern. However, it is not a crucial concern in order for that child and adult to engage in successful and satisfying interactions or child learning. If the adult has positioned the child so that he or she cannot move in order to engage in interactions or other learning experiences, then the adult would receive a lower rating. If the child requires trunk/head support, it is not necessary for the child to be in face-to-face contact with the adult to score a 5.

1. PHYSICAL INVOLVEMENT

A. AMOUNT OF RODILY CONTACT (Includes support, touching, holding)

1	2	3	4	5
very little to none: A and C hardly ever touch each other (If Amount = 1, Rate Not Observed on Quality and Appropriateness)		moderate: A and C are in physical contact mostly in the service of other activities or <u>Only</u> passive support		very much; constant, must include <u>active</u> touching; not just passive support

B. QUALITY OF CAREGIVER HANDLING OF CHILD (Includes changing child's posture, guiding movements, carrying)

1	2	3	4	5
never sensitive, well- executed handling; handling almost always rough, abrupt, ineffective		sometimes sensitive handling; about half- the-time (If only passive support occurred, do not rate above a 3)		almost always sensi- tive, well-executed handling; never rough abrupt
				_____ not observed

C. APPROPRIATENESS OF CAREGIVER POSITIONING OF CHILD: PLACEMENT OF C IN A PARTICULAR POSTURE FOR THE PURPOSE OF PLAY OR INTERACTION (e.g., sitting, standing, lying); PLACEMENT OF A AND TOYS TO ALLOW EASY ACCESS BY C

1	2	3	4	5
always positioned without adequate and easy access to toys and/or adult; impeding C's best approach to task		sometimes positioned with adequate access; about half-the-time		almost always posi- tioned adequately; for C's best approach
				_____ not observed

## 2. Verbal Involvement

### A. Amount of verbal involvement.

Verbal involvement means talking to the child. It can also mean reading or singing to the child. It does not include mechanical sources of verbal stimulation such as radios, record players, or television sets.

No matter whether the content of what the adult says is positive or negative, with this item the observer is scoring the presence of verbal stimulation to the child. To rate amount, do not attend to the quality or content of what is said, only to how much talk occurred.

For deaf children, signing is included with verbalizations. For children who are not deaf, but with whom signing is being used, signing must be accompanied by verbalizations.

### B. Quality of verbal interactions.

Quality primarily relates to comprehensibility for the child. When children are at the one-word stage or better, this is a fairly easy item to gauge. The adult must speak at a rate the child can follow, repeat just frequently enough for comprehension, and keep her language level simple enough for the child to understand, but not too simple.

It is slightly more difficult to rate in the nonverbal child. Speech directed to the nonverbal child should set the stage for the child's becoming verbal. It should be simple and repetitive enough so that it has the possibility of encouraging speech and comprehension by the child. The tone of the adult's voice must be soothing and varied enough to gain the child's interest in speech. Mumbling, lack of eye contact, and babyish sing-song interactions all lower the rating on this item. Adults can also speak too rapidly and overwhelm the child, resulting in a lowered rating.

### C. Appropriateness of verbal interaction.

For appropriateness, the focus is on the relationship of the words spoken to the activities: how much does the adult surround the child's activities with words, embedding his or her behaviors in a verbal context?

For example, a high score should be assigned to adults with active, independent children who may comment on what the child is doing, even offering interpretations ("That was hard for you to open, wasn't it?"). For less active children, high scores should be given to adults who comment on gaze direction or smaller movements of the head and arms ("You hear that noise too? Wonder what that is?"). In contrast, adults who talk equally as much but not about the child's behaviors or movements would receive a lower score. The adult may also explain his/her behaviors to the child, linking verbalizations to adult activities relevant to the child. ("I'm going to show you this new rattle.") There must be some talk like this to receive a 5.

Directives often precede behavior and do not comment on the behavior. If an adult's speech were almost exclusively in the form of directives to the child she should receive a lower rating on this item. If an adult does not take the opportunity to expand on the child's activity, she would also receive a lower rating.

2. VERBAL INVOLVEMENT

A. AMOUNT OF VERBAL INVOLVEMENT (Includes initiating and/or responding to C's verbal or non-verbal behavior)

1	2	3	4	5
<p>none; A seldom talks to C (If Amount = 1, Rate Not Observed on Quality and Appropriateness)</p>		<p>moderate; A occasionally talks to C about half-the-time</p>		<p>very much; A talks to C throughout session/visit with practically no pauses for C to talk</p>

B. QUALITY OF VERBAL INTERACTION (Adjustment for comprehension)

1	2	3	4	5
<p>A never adjusts speech to C's level—either too high or too low</p>		<p>moderate adjustment for comprehension; sometimes language directed to child too "babyish" or too complicated</p>		<p>A almost always assures C's comprehension of talk directed to C; A repeats for clarity; for non-verbal C, A alters tone of voice to gain C's attention</p>

\_\_\_\_\_ not observed

C. APPROPRIATENESS OF VERBAL INTERACTION (How much does caregiver provide a verbal link between the child and the world?)

1	2	3	4	5
<p>A hardly ever comments on C's activities or on A's own activities</p>		<p>A occasionally directs his/her talk to C about C's activities, relates A's activities to C</p>		<p>A's talk almost always related to C's activity and explaining A's own activities relative to C. Must be both talking about C's activities and A's activities to receive 5</p>

\_\_\_\_\_ not observed



3. Responsiveness of caregiver to child

A. Amount of responsiveness to child.

With the verbal and mobile child, this aspect of responsiveness is easy to gauge. Mobile, verbal children often make initiations to adults. At other times these children may engage in behaviors which should be controlled by an adult (e.g. dangerous situations). These kinds of behaviors also require a response. Amount simply refers to the frequency of the adult's responding to the child. Responding can be either physical or verbal.

If the child never directly initiates to the adult because he does not verbalize and cannot move toward her, one must be aware of more subtle cues that the child needs the caregiver's help. These can take the form of cries, coos, or sometimes merely a gaze directed at a toy. By definition, some identifiable behavior of the child must precede the response by the adult.

B. Quality of caregiver responsiveness.

The focus is primarily on intensity and the items range from very intense, forceful responses to gentle, sensitive responses. A neutral non-responsive caregiver would score a 3 on this scale. Aloofness is a moderate response. An adult who delivers intensely negative or intensely positive responses in a forceful or abrupt manner would receive a 1 or 2 on this item. In contrast, an adult who responds gently, sensitively, or with non-intrusive enthusiasm would receive a 4 or 5 on this item. An adult whose responses were always the same would receive a lower rating. Some spontaneous reactions must also occur.

Rate the quality of adult responses not initiations. This item is independent of the amount of responsiveness. The key behavior here is responsiveness. Quality ratings are only of adult responses. Consider quality of the times the adult responded to the child. If no responses were observed, "not observed" should be marked.

C. Appropriateness of caregiver responses.

Consider appropriateness of the times adults responded. The focus is on timing. Under appropriateness, concentrate on how linked the adult's responsiveness is to the developmental capabilities of the child. Some adults with all good intentions overwhelm the child by anticipating his/her every need. Such behavior is not developmentally appropriate and would yield a low score on the scale. Some children (e.g., Down Syndrome) require slower responses than other children. Some adults seem oblivious to the child's needs or wait so long to respond that there is little connection for the child between his initiations and the response. Both very fast and very late responses would score a 1 or a 2 on this item.

2. RESPONSIVENESS OF CAREGIVER TO CHILD

A. AMOUNT OF RESPONSIVENESS TO C (to his initiations, verbalizations, demands, distress)

1	2	3	4	5
A never responds (If Amount = 1, Rate Not Observed on Quality and Appropriateness)		A occasionally responds; responds about half-the-time		A almost always responds

B. QUALITY OF CAREGIVER RESPONSIVENESS: INTENSITY

1	2	3	4	5
responds abruptly, forcefully, very intensely, harshly		neutral; response not intense at all		A responds in a gentle, sensitive, positive manner. A may respond enthusiastically, with delight. Spontaneously is also observed
				_____ not observed

C. APPROPRIATENESS OF CAREGIVER RESPONSIVENESS: TIMING

1	2	3	4	5
seldom good synchrony of response to C's activities; A over- whelms C with quick- ness of response, or is too slow in response		moderate synchrony of response to C's needs. About half-the-time A's response appropriate and well-timed to C's needs		response to C almost always appropriate to C's needs. Good synchrony of response— neither too quick nor too slow
				_____ not observed

#### 4. Play interaction

##### A. Amount of play interaction.

This item refers strictly to the amount of time adult and child are engaged in an activity which could be called play. Frequently this may involve a toy, but it could also involve playing games, reading stories, coloring together, or singing songs together. These are activities in which adult and child are engaged both with the activity and with each other. This engagement does not need to be physical contact with the toy or activity. Some adults may be engaged in play with their child, although their role is primarily a verbal one.

Watching television together, therefore, is not play interaction. The adult's silent observation of the child's play (that is, the adult is not involved physically or verbally) is not play interaction. The adult's talking to the child as he or she does a chore around the house is not play interaction. That kind of talk would be captured under the rating for verbal interaction, but not here under play.

In order to provide a rating on this item, the observer must strike a balance between occurrence and duration. Many adults use a strategy of intervening in the child's play only when the child is becoming bored or needs help. They play for a few seconds and then pull back again. Although there may be many episodes like this, altogether they may not add up to much total play time. The observer must be aware of how much play with the adult the child is actually experiencing.

##### B. Quality of play between caregiver and child.

If adult and child did not play together, rate this as "not observed." This item refers only to interactive episodes between adult and child. The focus is on the warmth, interest in the play, and enthusiasm the adult shows for playing with the child. Sometimes play behavior can seem routinized or forced even though adult and child are interactive. Adult must demonstrate to the child excitement and pleasure in the play in order to obtain a high score on this item.

##### C. Appropriateness of playful interactions.

Here the emphasis is on the kinds of activities in which the adult and child are engaged. The question is how well adapted are the activities to the child's developmental needs and interest level. Again the observer must have had an opportunity to watch the adult and child play together before rating this item.

The essential distinction in this item is between the adult who attempts to change the child in order to make him play with the toys as they are versus the adult who attempts to change the toys or the activities so that they fit the child's developmental level and interest.

Adults who adapt the environment, in this case toys and activities, so that they are in line with the child receive a high score on this item. Similarly adults who appear to select toys carefully for the child based on their appropriateness for the child's capabilities would receive a high rating. In order to receive a score of 5, the adult must have shown some evidence of fitting the toy or activity to the child.

4. PLAY INTERACTION

- A.
- AMOUNT OF PLAY INTERACTION: ATTENTION/INTERACTION OF BOTH CAREGIVER AND CHILD TO TOT/ACTIVITY
- (May include teaching done in a play format, but excludes routine child care, e.g., diapering, feeding)

1	2	3	4	5
very little to none (If Amount = 1, Note Not Observed on Quality and Appropriateness)		moderate; about half- the-time		almost always

- B.
- QUALITY OF PLAY BETWEEN CAREGIVER AND CHILD:
- (How much warmth, interest and enthusiasm does the adult show to the child during play interactions?)

1	2	3	4	5
A shows no warmth, interest or enthusiasm during play; A may seem impatient, neutral or routinized in play behavior		A shows warmth, interest or enthusiasm some of the time; at other times seems routinized or detached		A's play behaviors marked consistently by warmth, interest in the activities, and/or enthusiasm
				_____ not observed

- C.
- APPROPRIATENESS OF PLAY INTERACTION
- (Adaptation of toys to child's developmental level and interest)

1	2	3	4	5
A never adapts to C's level of ability and interest; A persist- ently uses toys or activities conven- tionally although inappropriate for C		A sometimes adapts toys/activities to C's level of ability and interest; about half- the-time		A adapts toys/activities to C's level of interest; conventional use of toys and activities fits developmental needs and interests of child
				_____ not observed

## 5. Teaching Behavior

### A. Amount of teaching behavior.

Teaching behavior is instructive behavior on the part of the adult. For adults who teach really well, it is sometimes difficult to distinguish from play. Teaching may occur in the midst of play. It is distinguished from play in that it has a goal other than enjoyment. Teaching behavior may include demonstrations and physical or verbal prompts for skills that are emerging or new in a child's repertoire. The skills should be specific (body parts, pat-a-cake) and not general (receptive language) so that not all behavior is seen as teaching.

For some motorically handicapped children, physical therapy is a form of teaching. It has a goal other than mere play and it frequently involves mutual interaction between caregiver and child. However, physical therapy activities sometimes involve the child as only a passive recipient (e.g., range of motion exercises). This kind of "teaching" would not rate the highest score on this scale. If the caregiver's teaching solely consisted of physical therapy, rate the adult no higher than a 3 on amount of teaching behavior.

To receive the highest rating, the majority of the adult's teaching activities must be of a cognitive/social or communicative nature regardless of whether physical therapy activities take place. Practicing familiar skills or testing the child's knowledge may also be included in teaching behavior, even though they may be inappropriate to the child's needs. Ratings on amount focus only on how much teaching occurred, not how good it was.

### B. Quality of teaching behavior.

The focus is on the spontaneity of the teaching behavior and the tendency of the adult to incorporate teaching into ordinary pleasurable activities. There are adults who "teach" concepts by labeling appropriate and relevant behaviors of the child; they help the child learn by teaching at moments of heightened child interest.

Children are not ready for directed teaching of a protracted nature until they are at least five or six years of age. Adults who force very young children to participate in a tutorial type of teaching session would be rated low on this item.

### C. Appropriateness of teaching behavior.

This item relates to the kinds of activities the adult chooses to teach. What is important, here, is how closely the task matches the developmental needs and capabilities of the child. Some adults may insist on demonstrating or instructing the child in skills he/she has clearly already acquired, or instructing the child in skills which are far above his/her developmental level. Adults who engage in either of these teaching situations would receive a low score on this item. On the other hand, adults who integrate new and old skills into their teaching practices so that the child is encouraged to expand his knowledge to new dimensions would receive the highest score on this item.

5. TEACHING BEHAVIOR

- A. AMOUNT OF TEACHING BEHAVIOR: FOR THE PURPOSE OF TEACHING A PARTICULAR SKILL (Focus on the Amount of Time A spends teaching C, not frequency alone)

1	2	3	4	5
very little to none (if Amount = 1, Rate Not Observed on Quality and Appropriateness)		moderate; A occasionally teaches. A may introduce teaching activities but spends little time on each		almost always; A uses most of interactive time teaching C

- B. QUALITY OF TEACHING BEHAVIOR

1	2	3	4	5
A subjects C to vigorous teaching; almost all is routinized. Non-flexible demands for learning		some teaching is spontaneous, off-the-cuff, creative; some is routinized, drill-oriented, non-flexible		teaching is almost always spontaneous, originating from and addressed to C's activities. A creatively incorporates teaching into other activities
				_____ not observed

- C. APPROPRIATENESS OF TEACHING BEHAVIOR (Related to developmental capabilities and interests)

1	2	3	4	5
teaching tasks do not match C's learning needs. A unmindful of C's developmental capabilities		A sometimes teaches tasks that are appropriate to C's developmental capabilities; about half the teaching		A encourages C to appropriate level of his/her developmental capabilities. A takes into account C's capabilities in choosing what to teach and how
				_____ not observed

## 6. Control Over Child's Activities

### A. Amount of Control.

Control relates to the overall structure and organization of the child's activities. These kinds of activities include the play activities the child or adult chooses. They may be activities they do together or ones the child will carry out on his/her own. This item is focused on how much the adult organizes or directs these activities for the child.

The amount category is non-judgmental. Very warm and loving adults can be laissez-faire and very permissive, providing almost no structure to the child's day, while other equally loving and warm adults may organize the child's whole day, moving the child from activity to activity so that very little is left up to the child. The first adult described above would receive a 1 on the amount of structure and the second adult would receive a 5 on this item.

### B. Quality of Control.

This item is focused on the flexibility of the adult in the organization of activities for the child. Some adults are very insistent on what the child is to do and how the child should do it; their demands do not vary much in terms of the child's reactions. Other adults are more flexible, suggesting, for example, a range of possibilities for the child's activity, not being rigid in their expectations for the child's behaviors.

### C. Appropriateness of Control.

This item refers to the relationship between the structure the adult provides and the child's developmental needs. Some children require more structuring; they have few independent skills which they can bring to bear on a situation. Adults of those children who respond by highly structuring the child's day would score high on the appropriateness of their structure.

There are other adults who overstructure the child, who provide much more structure than the child needs. Those adults would receive a 1 as would adults who provide little when the child needs a great deal.

## 6. CONTROL OVER CHILD'S ACTIVITIES

A. AMOUNT OF CONTROL OVER CHILD'S ACTIVITIES EXERCISED BY CAREGIVER

1	2	3	4	5
A never organizes C's activities, "Laissez-faire" - C on his/her own (If amount = 1, Rate Not Observed on Quality and Appropriateness)		A sometimes organizes C's activities about half-the-time		A almost always organizes C's activities; A almost always tells or shows C what activities to stop and start

B. QUALITY OF CONTROL: INTENSITY/FLEXIBILITY

1	2	3	4	5
A insistent upon structure of child's activities; rigid and very firm about what C is to do and when		A sometimes insistent, demanding in organizing activities, but also somewhat flexible and will relent when C is not interested		A very flexible in organizing activities; suggests, but not overly insistent. Adapts demands according to reactions of C

\_\_\_\_\_ not observed

C. APPROPRIATENESS OF CONTROL: (Fit with child's developmental level)

1	2	3	4	5
A does much more controlling than is warranted for C's developmental level, OR A should do a great deal more controlling because of developmental level of C		A does somewhat more controlling of C's activities than is warranted, occasionally over-controls. OR A should do somewhat more structuring for the developmental level of C		A almost always structures C's activities appropriately for C's developmental level. A anticipates needs and acts ahead of time. Expectations for amount of structure needed are appropriate to C's skills

\_\_\_\_\_ not observed.



7. Directives: Number of demands/commands made of child

A. Amount of directives.

Basically this item is related to the number of imperatives of a physical or verbal nature directed by the adult to the child. How involved is the adult in telling the child what to do either positively or negatively? Some adults tell two-year-old children which color crayon to color with or which book to read first. Some caregivers of infants constantly physically or verbally direct the child's behaviors even during "play." Specific directives are the focus of this item. Physical imperatives involve the adult actually moving the child in some way in order to get him to do something (e.g., turning the child's head so he/she will look at a toy).

B. Quality of directives.

This item relates to the intensity of the directives issued by the adult towards the child. If no directives were issued, the observer should mark "not observed." The scale ranges from very forceful and abrupt (a rating of 1) to gentle directives (a rating of 5); neutral or mixed-intensity directives receive a rating of 3. Tone of voice is an important dimension in rating quality. Adults can phrase directives politely but in a forceful or harsh tone of voice. Voice tone is more important than content.

C. Appropriateness of directives.

In making demands of the child, this item evaluates how appropriate they are to the developmental and interest levels of the child. Appropriateness here refers only to those physical and verbal directives which were specifically directed to the child.

One good criterion for judging appropriateness is whether the child could accomplish what was being demanded. The caregiver who asks the child to name what he wants when he has entered the one-word stage is making appropriate demands of the child. A caregiver who asks a motorically impaired child to turn a page in a book may not be appropriate. Another criterion is how insistent the adult was that the child do what was demanded. Repeated demands are likely not taking the child's interest level into account.

7. DIRECTIVES: NUMBER OF DEMANDS/COMMAND MADE OF CHILD

A. AMOUNT OF DIRECTIVES ISSUED BY CAREGIVER: COMMANDS FOR SPECIFIC BEHAVIORS

1	2	3	4	5
A never directs C's specific behaviors (If Amount = 1, Rate Not Observed on Quality and Appropriateness)		A issues a moderate number of directives to C. No more than half A's verbal behavior		A constantly directing C's behavior. Much of A's verbal behavior consists of commands

B. QUALITY OF DIRECTIVES: INTENSITY

1	2	3	4	5
very rough; A's directing statements are almost always very forceful and compelling		moderate; A's directives are neutral or of mixed intensities, some forceful and some low-key		very low; A's directives are almost always low-key and gentle. Often phrased in the form of suggestion
				not observed

C. APPROPRIATENESS OF DIRECTIVES: REASONABLENESS OF DEMANDS/COMMANDS

1	2	3	4	5
A's demands are almost never reasonable for C's abilities and interest level		A's demands occasionally are reasonable; about half-the-time		A's demands are almost always reasonable, and appropriate to C's abilities and interest level
				not observed

B. Relationship among activities in which Caregiver was involved with Child

A. Amount of activities.

In order to judge the quality and appropriateness of the ways adults connect activities for the child, it is necessary to rate how many activities the adult and child were involved in. Play interaction is not being rated here for a second time. For this item, involvement of the adult can be merely observations of and comments on the child's activities. This item is focused on the involvement (from active observation to actual play) of the adult in activities of the child. If the adult merely watched the child and never attempted to initiate changes in the child's activities, this item should be scored a 1 and Quality and Appropriateness should not be rated.

B. Quality of relationship.

This relates to the smoothness of transitions. In interacting with the child or structuring the child's activities, how smoothly does one activity flow into another? Does the time spent in interaction seem to be an orderly whole or does it seem to be made up of many small unrelated activities? Does it seem to flow in natural order or do activities appear contrived?

"Half the time" on the scale refers to half the transitions observed. You can only evaluate the transitions witnessed during the visit. Your rating should be based on how many were smooth. Remember that for those children able to choose their own activities, the adult would receive a higher score if she/he is able to verbally link the activities or expand on them in a smooth and naturally-occurring fashion.

C. Appropriateness of relationship.

This item relates to how the sequence of activities is related to the child's developmental level and interest level.

Adults will frequently simplify an activity to capture a child's interest and then gradually make it more difficult. They may be especially alert to the child's boredom level, changing the activity gradually into something new when the child appears to lose interest in the initial activity. A good example is the adult who is reading *Pet the Bunny* to the child and who uses the book as a takeoff to play peek-a-boo with the child. Or an adult who has the child stack the rings on the stick and then moves to having him put them on her fingers. Both of these approaches would rate a 5, whereas an adult who consistently sequences activities which are uninteresting, too difficult, or too easy for the child would rate a lower score.

For a child who basically chooses or sequences his/her own activities, the adult may add on or comment in some way to link activities logically. If she does not, she would receive a lower rating.

This item relates to the transitions the observer has witnessed and their appropriateness for the child's ability and interest.

B. RELATIONSHIP AMONG ACTIVITIES IN WHICH CAREGIVER WAS INVOLVED WITH CHILD

A. AMOUNT OF ACTIVITIES IN WHICH CAREGIVER WAS INVOLVED

1	2	3	4	5
almost no activities observed in which A was involved or which A helped initiate (If Amount = 1, Rate Not Observed on Quality and Appropriateness)		equal balance between activities in which A was and was not involved with C		most activities involved A; a large number of activities occurred whether with one toy or many

B. QUALITY OF RELATIONSHIP AMONG ACTIVITIES

1	2	3	4	5
A's sequencing of activities and tasks within activities lacks smoothness and fluidity; activities seem to begin and end rather than flow. A & C seldom ready to end activity at same time		moderate fluidity and smoothness of sequencing between activities and tasks; about half-the-activities. A and C sometimes are synchronous on beginning and ending activities		A almost always sequences activities and tasks so there is smooth continuity among related activities. A elaborates on C's activities in natural order
				_____ not observed

C. APPROPRIATENESS OF RELATIONSHIP AMONG ACTIVITIES

1	2	3	4	5
A never sequences activities from simple to complex, or introduces change to maintain C's interest; activities seem unrelated and confusing		sometimes A sequences activities, for example, from simple to complex, or introduces change; about half-the-activities		A almost always sequences activities appropriately, for example, from simple to complex, or introduces change to maintain C's interest
				_____ not observed

9. Positive statements

A. Amount of positive statements.

Amount of positive emotion refers to the number of positive overtures or responses the adult made to the child. They may be of a verbal or non-verbal nature. This item includes praising statements ("What a big boy!", "Good for you!"), positive feedback ("That's right!", "pretty..."), hugs, smiles, or laughs. It does not include comforting the child--this is captured under the summary statements.

If there is a very low frequency of interaction in general between adult and child, but there is a high level of positive emotion, then the adult should receive a score of 4.

B. Quality of positive statements.

This item refers to the intensity of positive emotion observed. It is independent of amount. In other words, of the times the adult responded positively, how intense were these responses? An adult who varies her expression of positive emotion to fit the needs of the child would receive a high score on this item. An adult who repeatedly hugs or kisses the child in an intrusive manner, would receive a low score on this item.

If no positive emotion was observed then this item should be marked "not observed."

C. Appropriateness of positive statements.

This item refers to the timing of the adult's expression of positive emotion. It is independent of the amount of positive emotion expressed. Many adults may initiate affection with the child as a gap-filler in the interaction session. This affection may actually develop into a game between caregiver and child. While this is viewed as a positive interaction, it is seen as non-contingent when the adult initiated affection which interrupts the child's activity, or delivered positive reinforcement directly following punishment thus confusing the child. Both of these behaviors would be scored lower on appropriateness. This item rates the relationship between the caregiver's positive statements and the child's behavior.

If no instances of positive emotion were observed then mark "not observed."

## 9. POSITIVE STATEMENTS

## A. AMOUNT OF EXPRESSED POSITIVE VERBAL STATEMENTS, AND NON-VERBAL SIGNS OF POSITIVE REGARD (Prolee, hege, smile)

1	2	3	4	5
very little to none; A almost never expresses positive emotion (If Amount = 1, Rate Not Observed on Quality and Appropriateness)		moderate; A expresses positive emotion in moderate amount (about 1/4 of A's verbal behavior and initiations)		very much; A expresses positive emotion very frequently (More than 1/2 of A's verbal behavior and non-verbal initiations)

## B. QUALITY OF EXPRESSED POSITIVE STATEMENTS: INTENSITY

1	2	3	4	5
withdrawn, detached positive statements made with negative voice, or extremely overbearing		moderate intensity; sometimes detached or intrusive; sometimes high quality		loving, warm; variations in quality dependent on child behavior; always high quality  _____ not observed

## C. APPROPRIATENESS OF POSITIVE STATEMENTS: TIMING

1	2	3	4	5
A expresses positive emotion at inappropriate times, non-contingently, or inappropriate excess		sometimes inappropriate, sometimes appropriate reactions to C's activities		positive emotion; almost always appropriate timed to behavior  _____ not observed

## 10. NEGATIVE STATEMENTS/DISCIPLINE

### A. Amount of negative statements.

Negative emotion refers to the number of negative overtures or responses the adult made to the child. These may include sarcasm, hits, threats, irritability, criticism, or sharpness. Redirecting statements are also included—these involve the parents' attempts to stop something the child is doing by directing his/her attention to something else.

If there is a low frequency of interaction between adult and child, but there is a high level of negative emotion, then the adult should receive a score of 4.

### B. Quality of negative statements.

This item refers to the intensity of negative emotion expressed by the adult. This rating should be made independent of amount; that is, of the times the adult responded negatively, how intense were they?

An adult who uses gentle "no's" or "don'ts" and then redirects the child's behavior in order to lessen the child's opportunity for eliciting further negative emotion, would receive a high score on this item. In contrast, an adult who uses a sharp tone of voice or is unduly impatient would receive a low score on this item.

### C. Appropriateness of negative statements.

This item refers to the adult's timing of negative emotion and to the ability of the child to respond correctly to the discipline provided. It is independent of the amount of expressed negative emotion. Instead it refers to the instances negative emotion was expressed.

If the adult responded contingently (e.g., says "No!" immediately when the child puts a toy into his mouth), but the expectation that the child keep the toy out of his mouth is inappropriate (e.g., a young baby) then rate the caregiver lower on appropriateness. By the same token, if the adult says "No!" or curbs the child's behavior to elicit his/her attention to the adult's activity then this is inappropriate timing and should receive a lower rating.

10. NEGATIVE STATEMENTS/DISCIPLINEA. AMOUNT OF EXPRESSED NEGATIVE STATEMENTS, VERBAL AND NONVERBAL (Includes discipline, redirecting statements, criticisms, threats, hits, impatience)

1	2	3	4	5
<p>very little to none; A almost never makes negative statements (If Amount = 1, Rate Not Observed on Quality and Appropriateness)</p>		<p>moderate; A expresses negative statements no more than 10% of the time</p>		<p>very much; A expresses negative emotion very frequently, more than 25% of her/his verbal behaviors and non-verbal initiations</p>

B. QUALITY OF EXPRESSED NEGATIVE STATEMENTS: INTENSITY

1	2	3	4	5
<p>intensely negative; A uses physical punishment too intensely, severely; harsh tone of voice</p>		<p>moderate intensity; A occasionally uses harsh tone of voice; sometimes A seems impatient, sharp</p>		<p>A uses negative emotion with appropriate intensity; may frequently use reasoning to control behavior. Redirects C's attention</p> <p style="text-align: right;">_____ not observed</p>

C. APPROPRIATENESS OF NEGATIVE STATEMENTS: TIMING

1	2	3	4	5
<p>A expresses negative emotion not related to C's activities, or in inappropriate excess</p>		<p>sometimes inappropriate, sometimes appropriate reactions to C's activities. A relies on verbal control of C's behavior after the fact, seldom redirects in advance</p>		<p>negative emotion almost always appropriately timed to C's behavior</p> <p style="text-align: right;">_____ not observed</p>



## 11. Goal setting

### A. Amount of caregiver goal setting behavior.

Goal setting refers to the degree to which adults indicate expectations for children's behavior. There are adults who basically accept any behavior on the part of the child as being fine. Other adults continually communicate expectations for the child's behavior. They may provide information on how the child is to behave with strangers, how he/she is to behave at the table, and how he/she is to carry out activities.

There are many type of adults with different levels of expectation. One type of adult remains aloof from and uninvolved with the child in an inappropriate way. He/she may sit the child in an adjoining room and insist that the child play alone for an unreasonable length of time. When the child violates this demand, the adult may insist that he/she do what was requested. This caregiver would be rated moderately high on goal setting.

Other adults receive high ratings due to their continual and obvious attempts to control the child and tell the child what to do. The contrast between these adults is more in what goals are expected of the children, and not as much in the amount of goal setting.

Finally, there are adults who are very responsive to children but who basically never set goals for them. They appear to be allowing the child to guide the interactions. Or they may set goals and then retract them. These parents would be rated low on this item.

### B. Quality of goal setting.

This item refers to how much the adult does to enable the child to be successful at the goals set by the adult. Regardless of how reasonable the goals are, one can separately evaluate whether the adult provides a mechanism for the child to complete the goal to do what was expected.

This may be evidenced when the adult physically assists the child in placing the ring on a stacking pole, although the activity in itself may be too advanced for the child's development level. Conversely, if this adult had communicated such a goal to this particular child without assisting him/her to complete the activity or without carrying through the goal to completion, then she would receive a lower score.

### C. Appropriateness of goal setting.

This is an area in which one can make a judgment about how reasonable the adult expectations and challenges are for the child's developmental and emotional level. Is what is being asked of the child an appropriate kind of behavior?

An example may be the adult who crowds toys then leaves child alone when the child can initiate few behaviors (rating of 1) versus an adult who allows the child to pursue interests but sets goals so they are challenging to the developmental level of the child (rating of 5).

If there is a low frequency of interaction, then the highest score should be 4. If challenges are too low (e.g., baby who is only expected to "look" at toys but who could do more if facilitated to do so) then the ratings should be lower. Likewise, for example, if the expectation or goal is for a young baby to not mouth, then the goal is inappropriate and should receive a lower score.

II. GOAL SETTING

- A. AMOUNT OF CAREGIVER GOAL SETTING BEHAVIOR: DEGREE TO WHICH ADULT VERBALLY OR NON-VERBALLY COMMUNICATES EXPECTATIONS FOR C'S BEHAVIOR (Goal setting implies follow-through, indicating A expected certain behavior of C)

1                      2                      3                      4                      5

none: A never communicates goals for C (If Amount = 1, Rate Not Observed as Quality and Appropriateness)

moderate: A occasionally communicates goals for C; half the time spent pursuing specific goals for C's behavior, sometimes follows through

very frequently: A almost continually communicates goals for C, follows through in demands to get C to fulfill goal

- B. QUALITY OF GOAL SETTING: ADULT'S OVERALL FLEXIBILITY, ABILITY TO ADJUST SELF, ENVIRONMENT, OR CHILD SO THAT C WILL MEET SUCCESS AT ANY ACTIVITY

1                      2                      3                      4                      5

A never adjusts demands, environment, toys, to aid C's success at attaining goals A has communicated

A sometimes is flexible, occasionally adjusts environment so C can be successful at achieving goals

A almost always adjusts to aid C's success

\_\_\_\_\_ not observe

- C. APPROPRIATENESS OF GOAL SETTING: REASONABLENESS OF ADULT'S EXPECTATIONS FOR C'S BEHAVIOR

1                      2                      3                      4                      5

A never sets attainable, reasonable challenges for C; A unrealistic for C's ability levels

sometimes A's challenges are attainable; about half-the-time

A's challenges are almost always moderate, attainable, and appropriate to C's capabilities

\_\_\_\_\_ not observe

12. General impression of caregiver child interaction

A. Availability of caregiver to child.

In an overall fashion, how accessible is this adult to this child? And moreover, how much of that involvement is based on being responsive to the child's expressed needs? How much will the adult alter her/his own agenda to follow whatever cues are provided by the child? An adult who is intensely interactive with the child but never responsive is not really an accessible adult. That is, the adult will not change his/her behavior(s) in response to the child's.

B. General acceptance and approval manifested by adult.

Here one can give the adult a global rating for how much the adult seems to accept the child as he or she is. How much is the child receiving approval from the caregiver. If the adult ignores the child for an entire observation, score 1 on acceptance.

C. General atmosphere of caregiver child interaction.

Harmony is the key word here. Here the observer has the chance to make a general rating of the synchrony between adult and child or how much they seem to be in tune with each other. Neutral and low-key adults who have neutral and low-key children can score high here where they might not have scored high on some other items in the scale.

D. Enjoyment.

This item relates to those very pleasurable periods sometimes observed between adults and children in which each seems to be delighted with the other. Does the adult enjoy being with the child and does the adult communicate that to the child?

E. Provision of a learning environment.

This item relates to how well the adult has established the whole environment to support and facilitate learning by the child.

Caregiver behaviors which would indicate a low score on this item include having toys and games placed out of the child's reach or out of the child's visual field. Conversely having so many toys and games and visual stimuli surrounding the child that the child cannot focus on any one thing would also lower the rating on this item. An adult who captures the attention of his/her child to the activity at hand by reducing other distractors (e.g., clearing play area of toys not being used) would receive a high score on this item.

## 17. GENERAL IMPRESSION OF CAREGIVER CHILD INTERACTION

- A. AVAILABILITY OF A TO C: DEGREE TO WHICH C HAS ACCESS TO A'S ATTENTION AND INVOLVEMENT
- |   |   |  |   |   |
|---|---|--|---|---|
| 1   | 2 | 3  | 4 | 5   |
| A appears oblivious, preoccupied, inaccessible to C |   | A appears accessible to C (if needed); moderately responsive to C; C receives equal attention to that given other activities |   | A appears intensely involved, continually responsive; time seems to revolve around C and his/her activity |
- B. GENERAL ACCEPTANCE AND APPROVAL MANIFESTED BY A: EXTENT TO WHICH A SEEMS TO LIKE C
- |  |   |   |   |  |
|--|---|---|---|--|
| 1  | 2 | 3   | 4 | 5  |
| very low approval and acceptance: A is definitely rejecting, disapproving of C OR A is indifferent |   | moderate approval and acceptance: about half-the-time |   | very high, A exhibits much approval and acceptance |
- C. GENERAL ATMOSPHERE OF CAREGIVER CHILD INTERACTION
- |   |   |  |   |   |
|---|---|--|---|---|
| 1   | 2 | 3  | 4 | 5   |
| very much discord and conflict, OR indifference |   | sometimes the atmosphere is positive; about half-the-time, OR A's interactions are neutral |   | very harmonious, agreeable, friendly, peaceful, not one unhappy episode |
- D. ENJOYMENT
- |   |   |   |   |  |
|---|---|---|---|--|
| 1   | 2 | 3   | 4 | 5  |
| A never seems to take pleasure in C; A is either not involved or merely accepting |   | sometimes A seems to enjoy, take delight in and find happiness in being with C; about half-the-time OR A is neutral |   | A takes delight in C; A's enjoyment is obvious and continual |
- E. A'S PROVISION OF A LEARNING ENVIRONMENT: THAT IS, THE PROVISION OF TIME, SPACE, ATTENTION AND ADAPTATION THAT SUPPORTS C'S OPTIMUM CONCENTRATION ON A SINGLE TASK
- |   |   |   |   |   |
|---|---|---|---|---|
| 1   | 2 | 3   | 4 | 5   |
| poor or non-existent toys changed intermittently or not at all; or else learning space crowded with toys. A wasteful of adjusting task to level of moderate challenge |   | moderate to good; times between A and C highlighted by occasional moments of synchronized absorption in learning; about half-the-time |   | excellent; A engaged in support of successful learning environment for entire session/visit |

APPENDIX B

Play Assessment Scale

PLAY ASSESSMENT SCALE

5th Revision

Rebecca R. Fewell, Ph.D  
EEU HJ-10  
University of Washington  
Seattle, WA 98195

Copyright, 1986

This is the current working draft of the above referenced document. This copy has been prepared for research studies and in use in workshops conducted by the author. Anyone interested in reproduction and using the scale are asked to first contact the author for permission.

Administration InstructionsExaminer:

The examiner can be a parent, teacher, researcher, or other adult familiar with the test materials, and the child. The examiner should be thoroughly familiar with the administration procedures for the test. It is important that the examiner understand the perceptual or conceptual skill or process being examined in each item as this scale is an examination of a child's acts or play that demonstrate these skills. Therefore the child can perform any number of acts to demonstrate these skills. See the explanation for exemplars under scoring for more details.

Environment:

The PAS can be administered in any comfortable setting, preferably a carpeted room with space for floor play. Only one adult should be interacting with the child. If another adult is in the room, he/she should sit to the side and observe, read a book, or engage in some nondistracting act.

CONDITION I:

Place on the floor or appropriate play environment, one set of toys selected for the child's assessment from the Toy Sets listed. Elicit the child's involvement with the toys with a few introductory remarks such as "What can you do with these toys?", or "Here are some things you can play with." In the case of wind-up toys, it is appropriate to activate a toy as an introductory in addition to remarks such as "Watch what this can do." Avoid actually telling the child how to act on the toy.

The time allowed for each toy set is dependent on the child's interest and attention. The time range for a set is usually from 2 to 15 minutes. About five minutes is optimal; however, sets E, F and G (involving dolls) always require more time.

As the child plays, watch and score all the spontaneous play after your initial introductory remarks. After the child begins to repeat behaviors and is not demonstrating more advanced behaviors, conclude scoring in Condition I with that toy set and move to Condition II.

CONDITION II:

Continue with the earlier scene; however, initiate a verbal prompt. Begin with prompts that elicit a higher level behavior but do not tell the child exactly what to do. For example, to see if the child will offer you a spoon of food, say "I am hungry, too." If this fails, use a specific instruction; "Feed me too." All verbal prompts are scored under Condition II under the column marked V. Following verbal cues, present a physical model of the behavior you wish to elicit from the child. If the child responds, you mark this under the column M. This is followed by the verbal and physical model. These behaviors are recorded under the column marked V & M. See the Scoring Directions section for more complete information on scoring.

Follow the same sequence with each toy set until all appropriate sets have been presented to the child.

It is appropriate and desirable to make notes as to the verbal prompts that were successful in eliciting the child's play response. If a child responds to the first example above, this is an indication of more cognitive awareness than when the response is elicited only when being told precisely what to do. At this point in scale construction I am not in a position to differentiate these levels for purposes of scoring. I encourage note taking as the information is extremely valuable to teachers, parents or others developing appropriate play experiences for the child.

#### Scoring Directions

Each play behavior tapped on the scale is described in the following way:

Behavior The behavior to be observed is written in descriptive, observable terms. EX: 1. Tracks and attends for 15 seconds to toys

Exemplars Each behavior is given positive (+) and negative (-) examples of typical behavior to be observed. The exemplars are some descriptions of what may be observed, but do not reflect all the exemplars that can be recorded for that particular behavior. Exemplars are provided as a guide/reference only and are not to be confused as being the only examples of what counts as passing. Positive (+) exemplars are some descriptions of what counts as passing. Negative (-) exemplars are some descriptions of what does not count as passing.

Condition I All behaviors observed in Condition I are recorded in the first column of boxes labeled "S" for spontaneous. Check marks are recorded in the "S" column if the child spontaneously displays the play behavior for that item. The "S" column has three boxes marked 1, 2, 3 which refer to the number of times the child displays the behavior. A child who displays "tracking and attending for 15 seconds to a toy" twice during the assessment session would have a matrix that looks like this:

1	X
2	X
3	

Condition II The behaviors seen in Condition II are marked in the matrix labeled V, M, V + M. When recording behavior in Condition II, place check marks in the box corresponding to which cue/model the child successfully follows. For example, if the child fed the doll after a verbal cue, a check would be recorded under V, if after a physical model, a check would be recorded under M and if the behavior was displayed after a verbal and physical model the check would be recorded under V + M. Again the boxes 1, 2, 3 refer to the number of times the child displays the behavior.



A child who displays single acts to a doll twice after given a verbal cue would have a matrix that looks like this:

	V	M	V + M
1	X	—	—
2	X	—	—
3	—	—	—

Notes

Space is provided for notes on the behavior that is observed for a particular item. These notes can be descriptions of what the child actually did, the particular toys used or the child's approach to the toy or situation.

Determining The Score. Please note that only behavior observed during Condition 1 is used in establishing the play score. To pass an item, the child must display the behavior a minimum of one time if not specified in the play behavior column.

Raw Scores. The first step in determining a play age is to compute a raw score. To do this, a basal and ceiling must be established. The basal is the highest level at which a child demonstrates three consecutive behaviors. For example, if a child passes items 20, 21, 22, 23, 24 and does not demonstrate item 25, the basal would be 24. The ceiling is determined by three consecutive failures. To determine the raw score:

- (1) Find the basal.
- (2) Count the number of items passed beyond the basal, but not beyond the ceiling.
- (3) Add the basal to the number of items passed beyond the basal.

Ex: The child passes items 20, 21, 22, 23, 24  
       fails 25  
       passes 26, 27  
       fails 28, 29, 30

- (1) Basal = 24
- (2)       +2
- (3) 24 + 2 = 26
- (4) RS    = 26

Play Age

After determining the raw score, convert the raw score to a play age by referring to the conversion chart. Find the raw score and note the corresponding play age in months.

Ex: raw score 26 = PA 21 months

Special Note on Ceiling Score: We are continuing to work on this aspect of the PAS. It may be that some items within a level are not in exactly the correct developmental sequence. Some examiners may want to score all correct items above a basal rather than ignore those items correct above 3 consecutive failures.

Instructions for Use of Toy Sets

Determine what you think to be the approximate developmental level of the child based on the chronological age and any other knowledge available on the child. Select one or two toy sets that are appropriate for the estimated age. Additionally, select a set below and a set above that level. There is no exact number of sets. Each child is usually given about four toy sets. In this assessment scale, toys are only props for eliciting behaviors. The critical behavior is not a specific action with a specific behavior, but the spontaneous play action regardless of the toy.

Toy SetsSet A:

wind up toys  
squeak toy  
rattle  
wind up radio  
stuffed animal  
large spoon  
rhythm sticks  
roly poly

Set B:

small blocks  
large pegs/pegboard  
rings/ringstand  
nesting cups

Set C:

See N Say  
Jack-in-Box  
cash register  
book  
telephone  
bubbles

Set D:

cars/trucks  
tractor with cart  
logs for cart  
blocks  
small people (Fisher Price)  
school bus and people  
(Fisher Price)

Set E:

baby doll/male doll  
(Ernie, Raggedy Andy)  
play dishes, spoons  
doll bottle  
doll blanket/crib/pillow

Set F:

child size purse  
necklace  
bracelet  
mirror  
hairbrush  
glasses

Set G:

miniature doll  
miniature doll furniture  
miniature tea set

Set H:

box  
block  
play screwdriver or other tools  
paper/kleenex

Play Assessment Scale  
Conversion Chart

Total Raw Score	Month	Raw	Month
1	2	35	27
2	3	36-37	28
3	4	38	29
4	5	39	30
5	6	40	31
6	7	41	32
7	8	42	33
8	9	43	34
9-10	10	44	35
11	11	45	36
12-13	12		
14	13		
15-16	14		
17	15		
18-19	16		
20	17		
21-22	18		
23	19		
24-25	20		
26	21		
27-28	22		
29	23		
30-31	24		
32	25		
33-34	26		

CA = months

PA = months

yr mo da

Date of Testing

Date of Birth

CA in months

CA

PA in months



## PLAY BEHAVIORS

	EXEMPLARS	AGE		COND I		COND II		NOTES
				S	V	M	V+M	
1. Attends to and tracks toys for 15 seconds	+ follows mobile or activated object	2-4	1	_____	_____	_____	_____	
			2	_____	_____	_____	_____	
	- attends and tracks less than 15 seconds		3	_____	_____	_____	_____	
2. Attends and turns to sound of toy out of sight	+ quiets, moves head to side to locate sound source	2-4	1	_____	_____	_____	_____	
			2	_____	_____	_____	_____	
			3	_____	_____	_____	_____	
	- quiets, then kicks; turns to wrong side; looks at toy but only when sounded while in visual field							
3. Explores toys with mouth/tongue for sensory pleasure	+ sucks on pegs; mouths toys using tongue to explore	2-4	1	_____	_____	_____	_____	
			2	_____	_____	_____	_____	
			3	_____	_____	_____	_____	
	- "tastes" toy momentarily and discards							
4. Manipulates toys (waves, bangs, turns) for physical effects	+ grasps toys then shakes; waves; bangs;	5-7	1	_____	_____	_____	_____	
			3	_____	_____	_____	_____	
	- drops; grasps; holds							
5. Manipulates toys (squeezes, spins, pushes) for sensory effects	+ squeezes sound toy; spins spins truck wheels; pushes car	5-7	1	_____	_____	_____	_____	
			2	_____	_____	_____	_____	
			3	_____	_____	_____	_____	
	- no indication or purposeful watching of listening to toy action							
6. Bangs together any objects held in each hand	+ bangs object to object; pot lid to spoon;	5-7	1	_____	_____	_____	_____	
			2	_____	_____	_____	_____	
			3	_____	_____	_____	_____	
	- bangs lid on pot resting on floor; bangs spoon on tray or floor							

PLAY BEHAVIORS	EXEMPLARS	AGE (months)	COND I		COND II		NOTES
			S	V	M	V+M	
7. Grasps toy and visually examines	+ looks at image in mirror; turns hourglass and watches action; picks up doll and visually inspects doll's face - shakes, rattles or bangs toys	8-10	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
8. Places toys near other toys	+ places cup next to a truck, places ring on/next to doll - drops objects near another	8-10	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
9. Acts on toy while making appropriate sound or word	+ pushes truck and says "un-un"; knocks down blocks and says "boom" - makes indiscriminate sounds or no sounds while playing with toys	8-10	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
10. Places unrelated object in another object	+ places block in container; truck in box; peg in cup - one object next to another	11-14	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
11. Uses toys with appropriate actions	+ hugs, walks, kisses doll, points to eyes, etc; sniffs flower; pulls See 'N Say and attends to sound; turns book pages while looking at pictures; - bangs, waves, mouths	11-14	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____

	+, -	AWL (months)	Cumb 1	COND II				NOTES	
				S	V	M	V+M		
12. Places object near/in another object or body part to demonstrate relationship	+	touches cup or spoon to mouth; brush to hair; places ring near stand or peg near board (correct placements not necessary)	11-14	1	_____	_____	_____	_____	
				2	_____	_____	_____	_____	
				3	_____	_____	_____	_____	
	-	bangs; object held wrong; touches doll's leg with brush							
13. Combines unlike but related objects together	+	places spoon in cup; places cup on saucer; peg in pegboard; man on truck; doll on bed; receiver on phone;	11-14	1	_____	_____	_____	_____	
				2	_____	_____	_____	_____	
				3	_____	_____	_____	_____	
	-	cup on bed; ring in cup; spoon in truck							
14. Acts on self several times or in 2-3 ways	+	repeats single acts several times or engages in 2-3 acts to self at least one time; necklace on self; glasses on face; drinks from cup; eats from spoon; brushes hair	11-14	1	_____	_____	_____	_____	
				2	_____	_____	_____	_____	
				3	_____	_____	_____	_____	
	-	dumps container; pushes car; stirs in cup							
15. Places object near doll or person to demonstrate relationship	+	appropriately pushes near or touches cookie, cup, toy to adult, doll or child, but does not have to act on person or doll; brushes doll's hair with non-bristle end; places baby bottle to doll, adult, or child's but not on mouth	11-14	1	_____	_____	_____	_____	
				2	_____	_____	_____	_____	
				3	_____	_____	_____	_____	
	-	places objects near unrelated objects or touches inappropriate body parts							

PLAY BEHAVIORS	EXEMPLARS	AGE (months)	COND I		COND II		NOTES
			S	V	M	V+M	
16. Places object near adult and observes adult's use of object	+ pushes cookie or cup to adult's mouth then waits and watches for adult to pretend to eat, drink; gives purse or book to adult then observes adult open purse or book or activate a toy - looks to adults and vocalizes; holds up object and looks at adult	15-18	1	—	—	—	—
			2	—	—	—	—
			3	—	—	—	—
17. Places 3 to 4 objects in related group	+ groups or stacks blocks; rings; pegs; doll accessories; trucks and cars to demonstrate discrimination from other objects - group blocks and trucks; doll and peg or other toys with no apparent relationship to one another	15-18	1	—	—	—	—
			2	—	—	—	—
			3	—	—	—	—
18. Initiates motor or vocal act to adult, observes adults response, then imitates adult or responds appropriately to keep conversational act going	+ initiates a motor or vocal act to adult, peer or examiner copies or responds appropriately then child responds with imitation or another turn to keep exchange active; child says "hello", adult says, "Are you talking to Mommy?"; child says, "Hi Mommy". - vocalizes to peer or examiner and peer or examiner responds to initiation but child makes no effort to copy adult or take another conversational turn;	15-18	1	—	—	—	—
			2	—	—	—	—
			3	—	—	—	—



PLAY BEHAVIORS	EXEMPLARS	AGE (months)	COND I		COND II		NOTES
			S	V	R	V+R	
	engages in parallel play with peer or examiner but does not attempt to copy motor or vocal act						
19. Single act on doll	+ talks/babbles to doll; feeds; gives drink; brushes hair; - object touches doll in wrong place; object held wrong; physically abuses doll	15-18	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
20. Same actions with two objects or to two recipients	+ pours into 2 cups; combs own hair then doll's hair; hugs doll then hugs adult - pours into same cup twice; stirs in cup	15-18	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
21. Related serial acts to self	+ performs two related actions in sequence with objects; while pouring from pot to cup, child moves mouth several times to suggest drinking; stirs spoon in cup then drinks from cup; brushes hair, looks in mirror - combs hair; drinks from cup; reads book	15-18	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
22. Places toys in a scheme in a disorganized manner	+ puts dishes on table in no particular arrangement; plays with toy people and accessories from a large pile but does not organize them by lining them up, etc.; placements reveal dramatic intent but play scheme is not specific	19-22	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____

PLAY BEHAVIORS	EXEMPLARS	AGE (months)	COND I		COND II		NOTES
			S	V	H	V-H	
	- puts dishes and blocks or other toys together but a scheme is not clearly apparent						
23. Appropriate serial acts involving doll or adult	+ actions must be different:	19-22	1				
	+ loads blocks on truck, pushes truck to adult, gives block to adult; stirs in cup with spoon, feeds doll with spoon; actions must be different		2	=====	=====	=====	=====
	- feeds doll, feeds self, feeds adult		3	=====	=====	=====	=====
24. Same acts from 2 sources one recipient in one play scheme	+ drinks from bottle and drinks from cup; pushes truck to position and pushes car to position; combs hair and brushes hair of self	19-22	1	=====	=====	=====	=====
	- brushes own hair then brushes doll's hair; drinks from cup then gives doll drink		2	=====	=====	=====	=====
			3	=====	=====	=====	=====
25. Positions objects in appropriate place then acts on the combination	+ objects in back of truck and pushes truck; doll in driver's seat then pushes car; people in bus then pushes bus	19-22	1	=====	=====	=====	=====
	- pushes truck; puts doll in truck but does not push		2	=====	=====	=====	=====
			3	=====	=====	=====	=====
26. Same acts, different sources, different recipients in one play scheme	+ uses spoon to feed self then uses different spoon or a fork to feed doll; put lid on pot then puts another lid on another pot	19-22	1	=====	=====	=====	=====
			2	=====	=====	=====	=====
			3	=====	=====	=====	=====

PLAY BEHAVIORS	EXAMPLES	AGE (months)	COND I		COND II		NOTES
			S	V	M	V+M	
	- uses spoon to scoop then feeds self; wraps baby in blanket then puts baby in bed						
27. Purposefully completes two step problem solving task for solution with novel toy	+ puts coin in slot and pushes down lever for coin to enter register - repeats one or two schemes but fails to attend to solution	19-22	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
28. Demonstrates size, space awareness of four related objects	+ nests four cups or boxes; stacks rings on stick with awareness of size; builds with blocks with smaller blocks on top - puts box or cup in another but fails to sequence by size; puts rings on stand but no concern for order	23-26	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
29. Adds sounds to action and labels to objects such as an action and agent combination or in play, uses other two word combination appropriately	+ child makes car sounds and says "car" while pushing car; makes drinking sounds and says "juice" after pretending to drink; says, "Daddy's car" - pretends to drink, says sound but does not label object; uses only single words	23-26	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
30. Places doll in appropriate position to two objects within one play scheme	+ places doll on bed and covers up with blanket and pretends doll sleeps; puts doll in chair at table then feeds doll - doll wrapped up; doll in bed; person in truck or on horse	23-26	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____

PLAY BEHAVIORS	EXEMPLARS	AGE (months)	COND I		COND II		NOTES
			S	V	H	V+H	
31. Appropriate 3 step serial acts involves adult, or doll, other props in dramatic play with a theme	+ bathes, clothes, feeds; doll; pours drink from one container to another, stirs, serves to adult, or doll as if having dinner; loads blocks on truck, empties truck, builds with blocks then uses structure - gives book to adult, brushes adult's hair	23-26	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
32. Substitutes doll for self in play. Play indicates child thinks doll has senses and reacts to sensations	+ child holds mirror for doll to see; child holds telephone to doll's ear and moves doll as if doll is talking - child talks on phone, then puts phone to doll's ear but no animation of doll as if talking	23-26	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
33. Uses one object for two different purposes in play scheme	+ wipes doll with cloth then wraps doll in cloth; uses cup to eat from, then to drink from - feeds doll from bottle, then feeds adult from cup	23-26	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
34. Child demonstrates two actions with substitute objects. Place in front of child a peg or other straight object such as crayon or marker or tool, then say	+ child demonstrates brushing teeth and combing hair - child fails to demonstrate acts appropriately	27-30	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____

PLAY BEHAVIORS	EXEMPLARS	AGE (months)	COND I		COND II		NOTES
			S	V	H	V+H	
	"show me how to play brushing teeth; after child acts put object back down or give back to child and say "show me how to play combing hair"						
35. Places accessories in a scheme in an organized manner	+ puts dishes on table in a specific, organized manner; groups toy people and accessories in an organized scheme before engaging in dramatic play - groups objects but doesn't act on them or use them in play; dumps dishes on a table but doesn't arrange them	27-30	1 2 3	___ ___ ___	___ ___ ___	___ ___ ___	___ ___ ___
36. Substitutes object in single meaningful act. While child is playing, place one or two items near by that could be used to substitute for objects that are not currently present. Do not tell child specifically how to use objects, but say "here are some other things" as you position the items	+ uses substitute items: paper as blanket; shoe as house; peg as bottle or spoon - bangs peg like drumstick	27-30	1 2 3	___ ___ ___	___ ___ ___	___ ___ ___	___ ___ ___

PLAY BEHAVIORS	EXEMPLARS	AGE (months)	COND I		COND II		NOTES
			S	V	M	V+M	
37. Makes doll act on self as though doll capable of performing actions independent of child	+ places brush in doll's hand, then moves doll's arm to indicate doll can brush own hair; doll holds own glass then drinks; doll drives truck with hands on steering wheel - brushes doll's hair, places doll in truck and child pushes the truck	27-30	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
38. Demonstrates/verbalizes functional play plan before or while doing the acts	+ I am going to; I am making; pretends sand or small items are food or forms sand or materials to represent object then uses appropriately to communicate a pretend act (mudpies, castles, hills, etc.) then uses in a play scheme - comments on actions while doing these play acts but fails to use self as actor (Ex: car go; baby eat; my house)	27-30	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
39. Substitutes multiple objects in same scenario	+ paper for doll blanket and shoe for doll's bath tub - peg for car; paper for bed spread; block for food	27-30	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
40. Verbalizes play plan for assigned roles	+ I am mother . . . you be baby, I cook dinner and you watch TV - I want to go home; can we go get ice cream?	31-33	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____

PLAY BEHAVIORS	EXEMPLARS	AGE (months)	COND I		COND II		NOTES
			S	V	M	F+M	
41. Child demonstrates awareness or appropriate size correspondence between dolls and accessories. Place two dolls of different sizes near child, place different sizes of same accessories near-by. Say, "use these things to play with your dolls" (Ex: big/little spoons, brushes, chairs, plates, cups, etc.).	+ gives small doll a small cup and a small plate and gives larger doll larger items - incorrect relations of doll size to objects	31-33	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
42. When requested, shows adult how to perform simple motor act using a body part. Give the following instructions one at a time: Say, "show me how you brush your teeth," "brush your hair," "eat your cereal." Do <u>not</u> have substitute objects nearby for child to use.	+ child uses finger to represent toothbrush, hand as hairbrush and fingers to eat cereal - touches teeth, head or mouth	34-36	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____
43. Verbalizes play plan and uses pretend props which are identified for benefit of adult	+ "This is our house" (a box); "This will be my stove (table) and my pot" (saucer) - "You put her in her chair (chair) and I will serve her dinner" (plate, cup)	34-36	1	_____	_____	_____	_____
			2	_____	_____	_____	_____
			3	_____	_____	_____	_____

PLAY BEHAVIORS	EXEMPLARS	AGE (months)	COND I				COND II				NOTES	
			S	V	M	V+M	S	V	M	V+M		
44. Solves puzzle of steps using cash register or other novel toy with 4-6 steps	+ puts coin in slot, pushes lever down so coin drops in register, pushes change button for coin to drop into tray, pushes sale button for money to drop into drawer and turns crank to open drawer	34-36	1	_____	_____	_____	_____	_____	_____	_____		
			2	_____	_____	_____	_____	_____	_____	_____		
			3	_____	_____	_____	_____	_____	_____	_____	_____	
	- solves one step, then asks for help; gives to adult or abandons toy											
45. Demonstrates functions with dissimilar object substitutions given instruction: "We are going to play pretend. I will give you something like this (ball) and I want you to pretend you are washing your face." (1) given wad of paper on table say "brush teeth" (2) given rectangular wooden block (2 x 3") and a 1" cube say "feed baby" (3) given toy tool say "drink juice" (4) given Kleenex say "read book". Must respond to 3 of the 4 requests.	+ engage in play by pretending with dissimilar objects	34-36	1	_____	_____	_____	_____	_____	_____	_____		
			2	_____	_____	_____	_____	_____	_____	_____	_____	
			3	_____	_____	_____	_____	_____	_____	_____	_____	
	- child does not respond or uses object in a nonspecified manner.											



Sequences of Play

1. Primary reactions - Shake rattle
2. Functional use - take and do what is appropriate with it.
3. Combinatorial - put objects together that have a relationship
4. Relational actions - when child clusters or groups things together with a theme or a attribute. Early classification order - Doll drives - piles of like toys.
5. Sequential action - Critical - if follow logical sequences with play - can not follow verbal sequences - ability to reflect through play - should correlate with language.  
Ex. - feeds baby and then burps baby - knows order.
6. Generalization - Same acts across different objects.  
Ex. - Can drink from several different objects - commonality.
7. Representational - actions - uses object to represent another object in a way that conveys meaning - Ex. making shell represent hat. If you structure the environment so everything is totally appropriate, you limit the child. You need to stimulate the child. It is good for them to make the best of what they have and to communicate this adaptation to the adult. Don't give a child millions of toys. Therefore, representational play is important. Aluminum foil, play-doh... Make sure things are missing needed for the normal sequence to make sense. Want to see if the child can make a representational substitute.
8. Problem solving - often removed with early intervention. Problem solving is a process learned early - with play. This is a necessary part of cognitive growth.

Administration

Learning the sequences takes time

Choose appropriate toys (see toy matrix)

Have one set available at a time - & remove when done - controls environment - decreases relational play if excess toys are around. But, if a child enjoys a toy a lot, leave it out.

Have a broad range, of toys available - no set number

The child may show all behaviors with one set

of toys. However, have 3-4 sets available to see the range.

Primarily administer Condition I - where the child plays alone. Parent can do condition II is he/she understands the scale.

The difference between I & II = "The child's executive capacity"

Scoring

The child starts the sequence - not you. So, you need to understand the sequence. Try to understand as many of the behaviors as possible.

Under condition I you only need to see a behavior once.

Under condition II - 1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_

Each observation may represent a verbal or motor cue -However, this does not change the child's score.

Play Items (1-45)

1. & 2. - Early prerequisite - definition of "attend" with a deaf/blind child may be a brief manipulation.  
(Actually attends).
3. Mouthing - with a blind child this may be primarily exploratory - should be age appropriate (2-3 yo).
4. & 5. - Physical effect on their body - proprioceptive pleasure from their body.  
5 = cross modal - transfer/movement and sensory (listens) shakes rattle and listens.
6. First combinatorial - usually at midline - not necessary - two items combined - not just pounding on the floor.  
Ex: for children with one arm, look for body movement - child may hit an item put on their foot.
7. Visual concentration - child realizes that something is happening with the toy that is worth looking at -  
Discovering face - may feel nose and eye.
8. Start of categorization - child puts toys together - not just throwing toys around the room at random.
9. Consistent sound that appears to have meaning to the child in the context of the toy - may make noises while drinking from an empty cup. The action may have a label.
10. IN - not necessarily related.
11. Important to be appropriate - Ex: tries to put glasses on head/eyes - this does not necessarily need to be to self.
12. Eyeglasses put on foot is not appropriate - on the head is ok.
13. Early relational - sets comb by brush - unlike, but, related.
14. Children normally centered on self.

15. & 16. - When the child can't do something, they will pass it to the adult - will say 'You do it - I can't'.
15. Child will just push the object toward the adult. They've associated you with the object.
16. When the child looks at the adult to the object and back to the adult. You know the child is communicating. The child looks to see if you know what to do with it.
17. 3-4 related.
18. First clear active turn taking. May be physical or verbal. child imitates.
19. Self acts - child does something to somebody or, to a doll. (teddy bear ok). Something can do to self - does to doll.
20. First example of generalization - Same act with two objects  
Ex: feeds two dolls.
21. Serial item (sequential) logical/order... Usually to self. Pours then drinks. (agent - object combination).
22. Groups toys - not refined - spread out...  
But, can identify intent of play.
23. Involves someone besides self -sequence involves other person.
24. Generalization - only same acts (feeding) from two sources - to one recipient. Ex: bathes with wash cloth, bar of soap. Must be sequential - not broken up.
25. Two objects together and then does something with the two objects combined - movement with two objects together combined.
26. Generalization/global - expanded understanding.
27. Problem solving item - requires novel toy - difficult to find. Interesting and innovative (may have to make).  
Ex: place a toy in a Hershey can - put the lid on - and give the child a stick. Looking for strategies - This item is good for parent/child interactions (directiveness).

28. Spatial awareness.
29. Toy + sound + definite label for toy different from sound.
30. Start of Pretend play - more than one object - Overlaps with sequencing.
31. Serial act with at least 3 steps - see dramatic play scheme develop.
32. Logical self - other sequence - child thinks that the doll feels, hears, thinks or reacts. Ex: Puts phone to dolls ear.
33. First Substitution - Ex: Child uses a marker appropriately, then, uses the marker for something else. Representational behavior begins. This needs to happen within one play scenario.
34. One of the first requiring the examiner to do something. Ex: put a peg in front of the child and say - 'Show me how to play brush teeth'. Choose an item that is sort of shape appropriate - peg/toothbrush requires some imposing. (stimulates pretend).
35. Organized - Categorization clear. Can see the child demonstrate a knowledge of wholeness.
36. Put toys out for the child - Give him something that doesn't relate and see if he can make it appropriate to play - Representaitonal behavior.
37. Child thinks the doll can act and has responses.
38. Child tells you what he is doing now - Needs to convey his story.
39. More than one substitution in one scenario.
40. Assigns roles - first time shows some specific behaviors associated with specific roles.
41. Organization - but, very precise. Size correlates - graded appropriateness. So, miniature toys needed.

42. Examiner requested - 'Show me how' - objects not available.  
Ex: Using fingers like a comb - not acceptable to just pat hair. Should show representation of object with hand.
43. Tells you what he's going to do. And, uses pretend props.  
Symbol word that represents item.
44. 4-6 sequences to get end result.
45. Examiner initiates - Give wad of paper and 'show me how to wash face'. Want to see how far he will go in terms of substitution. Need rapport and trust to administer - Child may not do an activity, although he can, is the child does not trust you. (If the child can not speak, may demonstrate or sign).

APPENDIX C

Battelle Developmental Inventory

## BATTELLE DEVELOPMENTAL INVENTORY

**AUTHORS:** Jean Newborg, John Stock, Linda Wnek

**PUBLISHER:** DLM Teaching Resources

**DATE OF PUBLICATION:** 1984

**DESCRIPTION:** Standardized, individually administered assessment battery of key developmental skills.

**AGE RANGE:** 0 - 8 years

**PRACTICAL FEATURES:**

- A. Data is collected from a combination of a structured test format, interviews with parents, caregivers, and teachers, and through natural observation.
- B. Scoring system measures emerging skills as well as fully developed skills.
- C. Provides normative data that serve as a basis on which eligibility and placement decisions can be made. Measures student level and progress.
- D. Allows for modification of testing procedures for handicapped populations.
- E. Facilitates team assessments by providing separate test booklets for each domain.
- F. Behavioral content and sequence of developmental milestones are directly compatible with the content and organization of infant, preschool, and early primary program curricula.

**TIME REQUIRED FOR ADMINISTRATION:** Screening Test: 10-30 minutes  
Entire BDI: 1-2 hours

**AREAS ASSESSED:**

- A. **Personal-Social Domain:** Consists of 85 items that measure those abilities and characteristics that allow the child to engage in meaningful social interaction. Includes the following subdomains: adult interaction, expression of feelings/affect, self-concept, peer interaction, coping, and social role.
- B. **Adaptive Domain:** Consists of 59 items which measure both self-help and task-related skills. Includes the following subdomains: attention, eating, dressing, personal responsibility, and toileting.



- C. **Motor Domain:** Consists of 82 items which measure the child's ability to use and control large and small muscles of the body. The Gross Motor Domain consists of three subdomains: muscle control, body coordination, and locomotion. The Fine Motor Domain consists of the fine muscle and perceptual motor subdomains.
- D. **Communication Domain:** Consists of 59 items that measure reception and expression of information, thoughts, and ideas through verbal and nonverbal means. The Communication Domain is divided into two major subdomains: receptive and expressive communication.
- E. **Cognitive Domain:** Consists of 56 items that measure skills and abilities that are conceptual in nature. The behaviors measured in the Cognitive Domain are grouped into four subdomains: perceptual discrimination, memory, reasoning and academic skills, and conceptual development.
- F. **Screening Test:** Appropriate for ages 6 months to 8 years. Consists of 96 items selected from the five domains.

#### RELIABILITY AND VALIDITY:

##### A. Reliability:

- 1. Standard Error of Measurement:  $SE_m$ : permits the estimate of the margin of error associated with a single test score.
  - a) "The standard errors of measurement are very small and clearly indicate high precision (accuracy) of measurement."
- 2. Interrater Reliability:
  - a) Interrater reliability co-efficients are very high, indicating accuracy of rater judgment.
- 3. Test-Retest Reliability:
  - a) Test-retest reliability co-efficients are very high overall, indicating good stability of the scores from one testing session to another.
- B. **Validity:** The correlations between the BDI and Vineland, Developmental Activities Screening Inventory, and Stanford-Binet offer strong support for the concurrent validity of the BDI.

**GENERALIZABILITY:** This test is useful with children from the ages of 0-8 years living in the United States.

#### NORMS AND STANDARDIZATION:

- A. This test was standardized on 800 children distributed in approximately equal numbers among 10 age groups ranging from 0-95 months.

1. Representative of the U.S. population within the age range as described in the 1981 U.S. Bureau of the Census Statistical Abstract.
2. Stratified sample controlled for sex and minority status within each age group and residence (urban-rural).