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THE EFFECT OF A PARENT EDUCATION PROGRAM FOCUSING ON PLAY ON THE DEVELOPMENT OF PRESCHOOL NEUROLOGICALLY IMPAIRED CHILDREN

By

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ABSTRACT

THE EFFECT OF A PARENT EDUCATION PROGRAM FOCUSING ON PLAY ON THE DEVELOPMENT OF PRESCHOOL NEUROLOGICALLY IMPAIRED CHILDREN

By

Dawn Marie Welch

The purpose of this study was to determine the effect of a parent education program on the development of preschool neurologically impaired children. The experimental program focused on parental attitudes toward play, the value of play, the importance of play to physically impaired children, and adaptations of play activities and modifications of play equipment for physically impaired children.

The primary design was a quasi-experimental, pretest-posttest model. Eighteen subjects were selected to participate in the eight week program from three physical therapy programs in southern Michigan. They were matched into pairs based on developmental quotients from pretest data collected on a comprehensive developmental exam. All subjects participated in a therapeutic play group; parents of the experimental subjects participated in the parent education program.

The Wilcoxon Sign Test for Matched Pairs demonstrated a significant difference between the experimental and control groups in gross motor and social-cognitive development. No significant difference was noted in fine motor, expressive language, and reflexive development.

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CHAPTER I

THE PROBLEM

The theoretical study of play in children with physically handicapping conditions has been an area devoid of empirical research. Developmental psychologists, early childhood educators, and recreators contend that play is essential to the social, emotional, cognitive, and physical development of children (Piaget, 1954, Murphey, 1972, Ellis, 1973, and Sponseller, 1974). Along with an increasing emphasis on leisure in the world today, there is an increasing emphasis on play as a subset of behaviors which are not separate from other behaviors and therefore are subject to behavioral methods of research (Herron, and Sutton-Smith, 1971). Most of the behavioral research on play has been with normal children as subjects. However, several empirical studies have been devised to study play behavior of mentally retarded children (Ross, 1970, Cleland, Swartz, and Chasey, 1971) and therapeutic intervention has been initiated based on the results of these studies. Michelman (1974) develops a case for the inclusion of play agendas into the programs of institutionalized multi-handicapped children based on observational research.

Frequently the medical focus masks the daily living needs of the physically handicapped child. Because of enforced immobility, sensory motor impairments, and time constraints of the primary caregiver, and because the child is unable to function independently in play, basic play skills

often are not acquired (Michelman, 1974). Florey (1971) stresses that the significance of the everyday play of the child requires that professionals who work with children regard it as a respectable area of concern. "When a child cannot play, we should be as troubled as when he cannot eat or sleep" (Florey, 1971).

Before play can take place, a child's basic needs for comfort, security, sleep and food have to be met (Maslow, 1970, Braga, 1974). The parents of a child who does not have developmental problems are required to spend comparatively little time in meeting those basic needs and thus may have time to play with the child if they so desire. On the other hand, the parents of a child with neurological impairment may have to spend a considerable amount of time meeting basic needs. Often spasticity, abnormal reflex activity, and muscle contractures or bony deformities make it difficult to provide constant comfort. Feeding difficulties due to pathological reflexes, poor muscle tone, and coordination make mealtime a traumatic, time consuming event. A large percentage of these children have hyperirritability and hypersenstitivity to auditory and tactile stimuli. These difficulties make bedtime and sleeping difficult for the child, and time consuming for the family. Time and energy for play are likely to be minimized.

Factors which are observed to affect the play behaviors of physically impaired children include limited mobility to explore and initiate play activities (Diamond, 1971), decreased sensory imput which decreases the childs ability to

learn about his environment through play (Marx, 1973), and the increased amount of time spent on therapy and caring for the physically handicapped child (Witengier, 1970).

Parental feelings of guilt about bearing a child with a problem (Freeman, 1967) and their feelings of inadequacy related to handling and caring for the child frequently prevent meaningful parent-child interaction. Parents often are observed by this author holding their child stiffly without cuddling or rocking. It appears that they are reluctant to toss the child around and tickle him as they would if he did not have a physical problem. If the parents of the neurologically impaired child are not aware of the need for play and/or are apprehensive about engaging in play for fear it will cause physical pain or increased spasticity, the time for play and the quality of play can further be minimized.

The family has long been recognized as the dominant factor in the socialization and education of the child (LeMasters, 1970, Brazelton, 1969). Recent evidence suggests that the first five years of life constitute the most critical period for the total development of the child (Leach, 1977). Because of the significance of the early years, parental knowledge about the physical, social, emotional, and intellectual needs of children is important for the successful integration of these little persons into society. Effective parenting requires an understanding of childrens' needs at all stages of their development. The ways in which these needs are met, or are not met, influence a child's overall functioning (Braga, 1974).

The literature reveals that programs have been developed for parents of preschool mentally retarded children (Ross, 1970, Gross and Gross, 1977) and for parents of preschool disadvantaged children (Collard, 1972, Gross and Gross, 1977). Most of these programs have had as their focus improvement of the childs' intellectual functioning and preparation for school. Play as program content has not been researched extensively for neither parent nor play programs.

Play is vital to the social, emotional, physical, and cognitive development of the preschool child (Norbeck, 1971, Sutton-Smith and Sutton-Smith, 1974, and Buckland, 1971). Because parental intervention can enhance the play process, this writer contends that by providing an educational program focusing on play for parents of neurologically impaired children, the overall development of these children can be enhanced.

NEED FOR THE STUDY

The value of play in the development of the preschool neurologically impaired child is considered by this investigator to be significant. There exists a need to ascertain the extent to which a parent education program focusing on play alters the developmental progression of preschool children with neurological impairments.

In reviewing the physical therapy literature, little empirical or experiential research was located related to play or to parent education. Physical therapy curriculum plans routinely omit any discussion of play or a playful philosophy,

and the focus in pediatric therapy is on techniques of orthopedic and neurodevelopmental treatment. Physical therapists, as a consequence of this lack in their curriculums and literature, rarely incorporate play in their treatment programs.

This writer has observed that parents of physically impaired children do not play spontaneously and developmentally with their children. Parents often depend on their child's physical therapist for directions concerning how to manage their child at home. Since most physical therapists are not oriented to play or a playful approach, play is not regarded as important. For these reasons, a parent education program which focuses on the value of play to the neurologically impaired child, play skills, and adaptations of play activities and equipment appears warranted.

Literature on play in early childhood education, recreation, and psychology (Sponseller, 1974, Diamond, 1971) tends to be based on observation and not on research data. This investigation attempted to document the effect of an educational program, taught with play methods, about childs' play on the developmental level of preschool neurologically impaired children. Only through studies such as this, even though there were significant limitations, can further research be stimulated and the body of knowledge expanded.

PURPOSE OF THE STUDY

The purpose of this investigation was to determine the effect of a parent education program on the developmental progression of preschool, neurologically impaired children.

The parent education program focused on attitudes toward play, knowledge about children's play, the significance of play to development, and adaptations and modifications of play activities and equipment for neurologically impaired young children.

RESEARCH HYPOTHESIS

The review of the literature has led the investigator to the following research hypothesis:

> The physical, social, and cognitive development of preschool neurologically impaired children whose parents participate in a play training program will be significantly greater than the physical, social, and cognitive development of the children whose parents do not participate in a play training program.

ANTECEDENT PROBLEMS

The following problems were recognized and dealt with before the study was initiated:

1. A scale was selected which yields an overall developmental age in weeks as well as scores in each of the pertinent areas (physical, social, and cognitive).
2. A specific play program which is appropriate for preschool neurologically impaired children was developed and pilot tested. This task was undertaken in conjunction with another investigator who was conducting a companion study.

RESEARCH PLAN

This study utilized a quasi-experimental, pretest posttest research design with an available sample with subjects

assigned to control and experimental treatments. The investigation was conducted in conjunction with a companion study whose purpose was to determine the effects of incorporating therapeutic play into the physical therapy treatment program of neurologically impaired preschool children. Twenty-seven children were selected from three physical therapy programs in Southern Michigan to be involved in the combined study. Three comparison groups were establised at all three centers.

Group A: The control group for the companion study was composed of nine (9) subjects; 3 from each location. These subjects continued with their regularly scheduled physical therapy treatments twice a week for 1 hour.

Group B: This group was composed of nine (9) subjects; 3 from each location. They continued with their physical therapy once a week for one hour and participated in the experimental therapeutic play group once a week for one hour. This is the experimental group for the companion study and the control group for this study.

Group C: The control group for this study was composed of the remaining, nine (9) subjects; three from each location. These subjects received physical therapy for one hour once a week, participated in the therapeutic play group for one hour a week, and in addition their parents were involved in a parent education program dealing with play and its importance for the neurologically impaired child.

All subjects were pretested using the El Paso Comprehensive Developmental Evaulation Chart (EPCDEC) or the

Denver Developmental Screening Test, and the Vulpe' Play Assessment. Subjects were matched into pairs on the basis of their overall developmental quotients from pretest scores. The treatments were administered for eight weeks.

The subjects for this study were selected from Roosevelt-McGrath School, Wayne, Michigan, Durant Tuuri Mott School, Flint, Michigan and Ingham Medical Center, Lansing, Michigan. All children were involved in physical therapy programs for neurologically impaired children at the time of the study. The Therapeutic Play and Parent Education programs were implemented within these facilities and the pretesting and posttesting were done during regularly scheduled physical therapy sessions at the respective treatment sites.

Volunteers were selected from the Therapeutic Recreation and Social Work programs at Michigan State University, East Lansing, Michigan to assist the principal investigators with the therapeutic play and parent education programs. They participated in a pretraining program for four hours prior to beginning the program.

Employing a modified systems approach to program planning, goals and objectives were determined related to the value of play, the significance of play for the development of normal and impaired children, parental attitudes about play, and adaptations and modifications of play activities and equipment for neurologically impaired children. Eight learning sessions were designed utilizing an informal, playful approach, to meet these objectives.

Following the eight week play and parent education program, all children were posttested using the same comprehensive developmental scale(s).

A pilot study was implemented to determine the appropriateness of the goals and objectives, and the relationship of the activities to the goals and objectives. Preschool children and their parents from an existing physical therapy program were used for the pilot study. Experts in therapeutic recreation and pediatrics were enlisted to observe and evaluate two play and two parent sessions. These experts also evaluated the objectives and activities for all sessions. Evaluation forms used are found in Appendix D. Goals, objectives, and activities for the therapeutic play program can be found in Appendix A, and for the parent education program in Appendix B.

RATIONALE FOR THE RESEARCH PLAN

A review of the literature on play shows that most research on the topic is observational. A study of developmental levels of impaired children following a play and parent education program is adaptable to an experimental-control group research design even though there are numerous limitations. This investigation may stimulate further research in the area using controlled methods of research.

The population for this study was chosen because children with neurological impairments comprise a large segment of the preschool age group that is commonly treated by physical therapists. By limiting the subjects to those with neurological impairments rather than including children with orthopedic

and peripheral nerve problems, the physical therapy treatment approach is somewhat circumscribed but will not be specifically defined for each child and each therapist.

The eight week period for implementation of the play and parent education programs was chosen because it seemed to be a realistic period of time to maintain parental cooperation. A longer program, and therefore more time between the pretest and the posttest, might yield more definitive results.

The three locations selected were all within a reasonable traveling distance for the principal investigators to administer the pre-and post-tests and to implement the programs. The physical therapists and administrators of these facilities were willing to have their clientele participate in the study and were willing to identify children who fulfilled the sample requirements.

The research design facilitated a comprehensive evaluation of the child. The El Paso Comprehensive Developmental Evaluation Chart (EPCDEC) was chosen as the primary scale to measure motor (gross and manipulative), reflexive, social, and cognitive development for subjects from one to three years. The Denver Developmental Screening Test (DDST) was chosen and items correlated within the same categories for subjects from three to five years. In addition, the Vulpé Play Assessment was administered to all children as it provided a more detailed description of the social-cognitive areas using developmental play items. The data from the Vulpé Play Assessment was used to supplement the developmental examinations and was

therefore not analyzed statistically. These combined scales were found to give a comprehensive evalution of the childrens development. These scales were chosen because they can be given in a reasonable amount of time, are comprehensive, and can be administered by a physical therapist. All evaluation forms used for statistical analysis are found in Appendix C.

ASSUMPTIONS RELATED TO THE RESEARCH PLAN

The following assumptions were made in conjunction with the implementation of the study:

1. Physical therapy treatment has a positive effect on the development of preschool children with neurological impairments.
2. The developmental scale selected accurately measured the changes in motor, social, and cognitive development of neurologically impaired children.
3. A representative group of neurologically impaired children in the preschool age range will be available to the researcher because of the early identification clause of the Mandatory Special Education Act (Public Law 198, 1971).
4. Activities designed for the play and parent education treatments were assumed to be appropriate to meet the goals and objectives of the program.
5. The program activities in the therapeutic play and the parent education program were presented in a "fun" atmosphere, incorporating a playful approach by the volunteers and the group leaders.

6. The program is of sufficient duration that there was no pretest effect on the posttest. The items in the developmental examinations are nonspecific and can be evaluated in different ways through observation.
7. Parents developed skills and knowledge about playing with their child from the training program.
8. Parents transfered their skills and knowledge about playing to the act of playing with their child thereby increasing the quality and quantity of play time.

LIMITATIONS OF THE RESEARCH PLAN

The following have been identified as limitations of the proposed research plan:

1. There was no way to prevent absence of children and/or parents, due to illness, changes in parents' work schedules, and other obligations.
2. Bias of the researchers, volunteer aides, and associated facility personnel may have affected the results. The developmental scales were as objective as possible to decrease this bias.
3. The inability to regulate the physical therapy program which was administered to the experimental and control groups may have affected the results.
4. There was no way to control the amount and type of play within the physical therapy treatment and within the home environment. The amount and type of play in the home, the playfulness of the parents and other family members, and

the playfulness of the physical therapist involved in the child's treatment program are recognized as important factors but were not considered in the data collection or analysis.

5. Test reliability and validity of the developmental exam to be used has not been completely researched though work in this area has begun.
6. The relatively short duration of the play and parent education programs may have affected the results.
7. The sample size was kept small in order that the principal investigator and the principal investigator in a companion study could evaluate all children in the pretest and post-test and also implement the play and parent training programs. This decreases tester bias, but severely limits the generalizability of the study. The results are applicable only to children in southern Michigan as this is the area from which the available sample is drawn.
8. Cooperation of families, volunteers, and facility personnel might not have been consistent.
9. Socio-economic factors, which are known to affect play behavior, cannot be controlled.

DEFINITIONS

Neurologically Impaired. Any central nervous system defect manifesting a motor disability can be classified as a neurological impairment. Examples of specific conditions which were included in this study under this definition are:

Cerebral Palsy, post encephalitis, post meningitis, hydrocephalus, post traumatic head injuries and cerebral tumors. Conditions not dealt with in this study were: Downs Syndrome, peripheral nerve injuries, myelodysplasia, and benign congenital hypotonias.

Preschool. Children between the ages of one year zero months and four years eleven months were designated as preschool for purposes of this study.

Therapeutic Play. Play activities for neurologically impaired children, emphasizing self-initiated, pleasurable (fun) experiences which are oriented toward therapeutic goals; i.e. optimal positioning, use of involved extremities, normalization of muscle tone, and motor patterns, and facilitation of mobility constituted therapeutic play.

Therapeutic Play Program. An eight week planned program of group play activities, which was designed to meet previously determined therapeutic goals.

Play (for the neurologically impaired child). Behavioral characteristics which are self initiated, pleasurable and intrinsically motivated experiences, and which are receptive and/or expressive, constituted the entity of play.

Playfulness. Lieberman defined playfulness as:"a personality trait characterized by quantity and quality of physical, social, and cognitive spontaneity, manifest joy, and sense of humor (Lieberman, 1966)".

Physical Therapy (for the neurologically impaired child). An individualized, goal-oriented session was conducted twice a

week emphasizing inhibition of abnormal reflexes and muscle tone, facilitation of normal muscle tone, motor patterns, and developmental sequence, maintenance of range of motion, increase of strength and endurance, improvement of balance and coordination, and improvement of ambulation and gait pattern.

Parent Education Program. An eight week program for parents focused on attitudes about play, knowledge about the value of play for neurologically impaired children, and adaptations and modifications of play activities and equipment.

Physical Therapy for the Neurologically Impaired Child. An individualized, goal-oriented session was conducted twice a week, emphasizing inhibition of abnormal reflexes and muscle tone, facilitation of normal muscle tone, motor patterns and developmental sequence, maintenance of range of motion, increase of strength and endurance, improvement of balance and coordination, and improvement of ambulation and gait pattern.

CHAPTER II

REVIEW OF LITERATURE

Two major areas of literature are considered relevant for this review. Research on play and development is reviewed to examine the appropriateness of the content in planning an intervention program for young neurologically impaired children and their families. Literature on definitions, theories, and variables which constitute play, the value of play and how play affects the social, emotional, cognitive, and physical development of handicapped and non-handicapped children will be reviewed. Parent education literature is reviewed for effective methods of instruction and for applicability to the topic of play.

Less extensively reviewed here but still of significance to the study are parental influence on child development, developmental problems associated with neurological impairments and their influence on play abilities of children, play in physical therapy, and literature that will support the intended method of study and the instruments selected.

DEFINITIONS OF PLAY

In the past decade there has been an increasing concern for play and leisure and a definite shift in attitudes away from the puritan work ethic (Ellis, 1972). Researchers are beginning to attack the basic questions of what play is, why people play, of what value is play and playfulness, and what constitutes the group of behaviors we call play.

Many psychologists, educators and, child development specialists have spent much time and effort trying to define and delineate the exact nature of play. Huizinga (1949) dealt with the tendency to split categories into exclusive opposite sets by initially defining play as not-work. After extensive study he concluded a more important complementary pair would be play-earnest or play-seriousness; though he felt that seriousness seeks to exclude play, whereas play can very well include seriousness (Huizinga, 1949).

Some authors have defined play behavior in terms of its cause or motive. Sapora and Mitchell (1961) defined play as "the aimless expenditure of exuberant energy." Late in the 19th century Groos defined play as "instructive practice, without serious intent, of activities that will later be essential to life" (Groos, 1898).

In searching for a satisfactory definition within the literature, the question of whether play is intrinsically motivated or learned behavior inevitably arises (White, 1959, Florey, 1971). Both sides of the issue appear to be equally well documented. Play is thought to be innate behavior for all mammals, though man is seen as the supreme player (Ellis, 1972). Man exhibits a great variety of play behavior as well as very complex play behaviors. Furthermore, only man plays extensively beyond the juvenile period (Norbeck, 1971, Dolhinow, 1971, Morris, 1969, Hunt, 1965). On the opposite end of the continuum, play is viewed as a learned behavior. Play can be explained as learned behavior,

made in response to stimuli in the environment, that is not demonstrably critical for survival (Kimble, 1961, Ellis, 1973).

Play includes an emotional element of pleasure. Play is spontaneous, is customarily regarded as nonutilitarian and nonproductive, and is in its outward form species specific (Jackson and Angelino, 1974). Play allows for optimum exploration of the unknown and is unpredictable in that each player is free to respond in his own way. Play implies freedom from imposed constraints and encourages creativity (Gunn, 1977). Sutton-Smith describes play as a very special type of "knowing", unique in character and having the characteristics of self-control, euphoric-tension, scale reduction, and novelty (1972). He defines stages similar to those explained by Piaget: sensory motor (infancy), symbolic (toddlerhood), and imaginative (childhood). These stages all deal with life in terms of models.

Attempts at defining play are numerous with the tendency being to define play according to the particular purpose of the research (Takata, 1969). Frequently researchers incorporate many definitions and theories or segments of theories to derive an operational definition which will meet their research needs.

Several authors have attempted to define and delimit play by reviewing the literature only to conclude that play is undefinable (Millar, 1968, Ellis, 1973). "The gallant attempts to provide direct, comprehensive theories of play are inadequate partly because they attempt to define and treat play as an activity with a common core and with characteris-

tics that distinguish it from all others" (Millar, 1968). Millar proposed that play be used as an adverb to describe how and under what conditions an action is performed.

Lieberman (1966) attempted to differentiate between play and playfulness. Quantity and quality of physical, social, and cognitive spontaneity, manifest joy and sense of humor were rated, and Lieberman predicted that these were in fact the expression of one personality trait--playfulness.

> Play is a universal human behavior. It is therefore presumably vital to human existance. Societies regard and handle play differently. Some provide it a place of honor and put it to social use. Other societies, notably our own in recent centuries, have held play in dishonor, a course of action that has borne positive results in monumental economic achievements, but at the same time has presented us with a chain of social problems." (Norbeck, 1971).

The preceding statement is only one of many examples found in the literature on the history and philosophy of play which indicate that our society has minimized the value of play. Play is presented as trivial, worthless, and something to be done only when all work is done. This idealogy of play, described as "Scroogian" by Brian and Shirley Sutton-Smith (1974), is explained by stating that the industrial revolution which needed many workers had to force a predominantly rural European culture from its festive and seasonal way of life. The idea that work was supreme and play was evil helped to provide the industrial revolution with the human machinery it needed. The creativity and individuality which is felt to be necessary in our

modern society (Buckland, 1971) were not needed and in fact were discouraged during earlier eras. Several authors have described the official suppression of play in western cultures, particularly in Protestant countries following the Reformation (Illick, 1974, Aries, 1962). In contrast non-western societies, view play as "an outstanding, socially approved feature of life which holds a position of honor in religious observances (Norbeck, 1971).

Evidence of the puritan work ethic still is obvious in our society today and tends to be transferred from one generation to the next (Gunn, 1977). In spite of this, however, people and animals continue to play from very early in their lives (Smilansky, 1968, Sutton-Smith, 1972). Play is first expressed in the mouth play of infants which is apparent after needs of feeding are met. Unlike exploratory activity, this play does not appear to be controlled by immediate stimulus events (Sutton-Smith, 1972).

Neumann, in "The Elements of Play" (1971), analyzed the literature on play and concluded that all activities can be placed on a continuum from "work" to "play". Three criteria are defined which distinguish play: control must be internal, the player must suspend reality (to act "as if"), and the activity must be internally motivated (Sponseller, 1974).

THEORIES OF PLAY

At the 1970 White House Conference on Children, participants recognized that play behavior cannot occur until the basic needs such as food, health, warmth, and security have been met (Jackson and Angelino, 1974). Maslow formulated the "hierarchy of needs: as a construct through which we can view the growth of human beings toward psychological health and self-actualization (Maslow, 1970). The basic needs can be classified into five groupings: (1) physiological (2) safety (3) belongingness and love (4) esteem and (5) self-actualization. The significance of this formulation is not that it looks at human beings as inherently growth oriented. In the literature on play, nothing was found which attempted to place play into this hierarchy of needs. Elements of what we call play can be seen in all of the groupings beyond physiological and safety needs (Braga and Braga, 1974). This basic need concept has been expressed in terms of conditions inhibiting or facilitating play (Florey, 1971). The conditions which inhibit play (hunger, anxiety, and fear of pain) are manifestations of physiological and safety needs, which are lower on the hierarchy of basic needs. The conditions which Florey delineates as facilitating play (novelty, opportunity for exploration, imitation of competent role models) are higher on the hierarchy of basic needs, to be sought after physiological and safety needs have been met.

Gunn suggests that following the crisis period of an illness or disability, after basic needs have been met,

the patient will be ready for play activites to meet the need for optimal arousal (1975). In order for the individual to meet his needs for optimal arousal the play activity must meet certain characteristics: self-regulation, increasingly complex skill acquisition, intrinsic rewards, creative and imaginary responses, and free of external constraints (Ellis, 1973).

Many theories have been advanced in the past which attempt to explain why people play. The most common are the classical theories of surplus energy, instinct, recapitulation, preparation for life, and relaxation. The surplus energy theory maintains that play is caused by excess energy which must be expended. The instinctual theory assumes genetic inheritance: play behavior of children is natural and instinctive. The recapitulation theory states that through play the player recapitulates the history of the development of his own species. Groos's view of play as preparation is based on behavior as instinctive. The player is perfecting his instinctive skills so that when they become critical they will be effective. The relaxation theory implies rest and recuperation from work (Ellis, 1973).

The more recent theories of play are concerned with the actual form of the play behavior and attempt to explain play in terms of cause and effect. The best known of these are generalization (re-enactment of rewarding work experiences), compensation (satisfaction of needs not met through work), catharsis (expression of emotions in a

harmless way), psychoanalytic (repetition of unpleasant experiences or tendencies), developmental (play as caused by the growth of the childs intellect), and learning (the normal process which produces learning) theories (Ellis, 1973).

Of these the developmental and learning theories seem to be most applicable to the present study and will therefore be discussed in greater detail. Developmentalists view play as having various stages, each based on learned behavior from the previous stage (Erikson, 1950, Piaget, 1962). Piagetian theory sees play as "the expression of one of the phases of progressive differentiation occuring when assimilation is dissociated from accommodation" (Piaget, 1962). Assimilation refers to the process by which the living creature internalizes the information it receives in terms of its previous habits and preferences as it makes this information part of its already existing knowledge. Accommodation refers to the adjustment the organism must make to reality in order to assimilate properly any unique or novel aspects which the environment may provide. Play is the direct result of the "primacy of assimilation" (Piaget, 1962). Piaget sees play as closely tied to the growth of intelligence and as a condition of pure assimilation (Flavell, 1963). Piaget proposed three types of games: practice games, symbolic games, and games with rules. These types of games correspond closely to his three stages of intellectual growth: the sensory-motor level, the preoperational

level and the operation level. Piaget also suggests criteria which distinguish play from non-play activities: Play as (1) an end in itself, (2) spontaneous, (3) pleasurable, (4) relatively lacking in organization, (5) marked by freedom from conflicts, and (6) as overmotivated (Flavell, 1963, Jackson and Angelino, 1974).

Information seeking as knowledge seeking (epistemic) behavior also can have characteristics which are similar to play. Play as a subset of behaviors can be reduced to stimulus-response psychology, and play can be explained as merely learned behavior. Schlosberg (1947) described play in terms of stimulus response concepts of generalization, thresholds, and learning. In the past decade, learning theorists have begun to look at curiosity, arousal, and attention in learning (Smilansky, 1968). Moffitt attempts to show that play is an important mode of sensory-motor, perceptual-motor, language and cognitive development (1972). Much of what the author describes as play would be called exploration or learning by others.

In their recent book, The Power of Play, Caplan and Caplan attempt to substantiate their premise that the power of play is all pervasive. They view play as an entity which can aid physical growth, strengthen personality, encourage personal relations, further creativity and the joy of living, and advance learning (Caplan and Caplan, 1974).

A recent integration of two existing theories appeared most promising as a guide for the practitioner as well as

the researcher. The first theory contends that quiescence is not the natural state of the organism, and for that reason the organism interacts with the environment. It postulates that an intermediate level of arousal is optimal. Play seems to be the behavior that comes from a need for stimulation and produces knowledge about the constantly changing environment (Ellis, 1973).

For more than 100 years scholars have been formulating theories to explain why people play. Basic to all of these theories is the concept that play is valuable to animals and humans and therefore is a legitimate area of concern.

THE VALUE OF PLAY

In reviewing the literature regarding the value of play the following quotations are considered by this writer to be of significance:

> Through play that emerges in a normal, natural pattern, children discover who they are, how their bodies and minds work, and how they feel about themselves and others. Play is childrens response to life, if they are to be vital, creative, healthy individuals. If we can believe that play is as necessary to our wholeness as work and that the two can mesh with each other, life will take on additional meaning and joy" (Evans, 1974).

> Play makes life more interesting. Play makes us enjoy being with each other a lot more. Playful people are more versatile. Versatile people are flexible and creative." (Sutton-Smith and Sutton-Smith, 1974)

> Childs play is the infantile form of human ability to deal with experience by creating model situations and to master reality by experiment and planning (Erikson, 1955)."

> The sheer pleasure of playing is extremely important to learning because it encourages the child to explore. Here in play, we have two essentials of intellectual growth--interest and experimentation" (Hartley, 1971).
>
> Play is the most dynamic childhood learning method. The young child plays from early morning until he goes to sleep at night. It is the most natural way for a child to use his capacities, to grow and learn skills" (Caplan and Caplan, 1974).
>
> Play habits of the young become a matter of critical importance in their preparation for adulthood. Those who play poorly when young will have inept dreams for the social futures in the societies in which they live" (Erikson, 1973).

All of the above statements support the concept that play is of value to man, though each view is supported by a different body of knowledge.

Many professionals from various disciplines are showing increased concern for the management of play to achieve goals which they judge to be worthy (Sutton-Smith, 1971). Some authors argue that if the activity is managed or manipulated by others it is no longer play (Gunn, 1977, Neumann, 1974). Most who are concerned with children, however, agree with the following concepts: play is the main mode of learning in children (Hartley, 1971, Garvey, 1977, Arnold, 1955, Bruner, 1975); play can be successfully employed as a technique with emotionally disturbed children (Klein, 1960, Axline, 1947); play is the basis for creativity, versatility, and imagination (Curry, 1975, Lieberman, 1965, and Sutton-Smith, 1974); and play helps a person to perceive the reality of the world (Hartley, 1971).

THE VALUE OF PLAY TO THE PHYSICALLY HANDICAPPED CHILD

The value of play to the physically handicapped child is less well documented than the value of play to man in general. Finnie devotes one chapter in her book Handling the Young Cerebral Palsied Child at Home (1975) to play. In it she states:

> Play is equally important for the Cerebral Palsy child. He, too, must become aware of himself, explore, and get to know his hands, feet, face, and so forth; learn about himself in relation to others, and understand how the world around him works. . . . Because of his difficulties in moving and balancing, in eye-hand coordination--and often with the additional handicap of defects in seeing and hearing--he needs lots of help. . . . His handicap prevents him from learning through play in a natural way, so unless he has help and encouragement, he will not be able to learn as he plays, or to reach his potential" (Finnie, 1975).

In an article entitled "Play is Valid" (1968), Frank says of play and learning:

> With his sensory capacities, the child learns not only to look but to see, not only to hear but to listen, not only to touch but to feel and grasp what he handles. He tastes whatever he can get into his mouth. He begins to smell what he encounters. He can and will--if not handicapped, impaired, or blocked--master these many experiences through continual play. . . the most intensive and fruitful learning activity in his whole life cycle" (Frank, 1968).

The deficits caused by play deprivation in children are clearly recognized (Bruner, 1966, Schults, 1965, White and Watts, 1973). Play deprivation has been studied in laboratory animals (Suomi and Harlow, 1976) with results showing that monkeys without playmates, to provide sensory and motor stimulation, develop socially disturbed

characteristics and never learn to play as adults. Play deprivation in handicapped persons has been described in relationship to the blind (Frampton, Kerney, and Schattner, 1969, Morris, 1974), to the mentally retarded (Ross, 1970, Cleland, Swartz, and Chasey, 1971, Horne and Philleo, 1976), and to the physically handicapped (Cliff, Gray, and Nymann, 1977, Witengier, 1970, Gralewicz, 1973, and Michelman, 1974).

Through interviews with parents of multihandicapped children, Takata found evidence that the handicapped child lacks opportunity for successful play experiences (Takata, 1971). Lack of appropriate models for play is a major factor in play deprivation. Since the physically impaired child may be unable to function in play by himself, he fails to acquire skills even at the lowest level of his ability (Michelman, 1974).

The Education For All Handicapped Children Act of 1975 (Public Law 94-142) mandates that educational agencies shall identify all unserved handicapped children and provide a free appropriate public education, integrating the handicapped with the non-handicapped to the appropriate extent. Related services which are required to help a child benefit from special education are also mandated. Play, Michelman proposes, is a neglected, overlooked factor which has an important influence on learning and should be part of the special treatment the child receives (Michelman, 1974).

Gralewicz completed a comparative study of multihandicapped and non-handicapped preschool children based on the

hypotheses that the multihandicapped child plays less, spends more time playing alone, and has fewer play companions than the non-handicapped child (Gralewicz, 1973). The results supported all hypotheses except that the multihandicapped child spends more time playing alone. The time spent playing alone was found to be similar in both groups, but the multihandicapped child had less playtime with others because of attendance in therapeutic programs and more time spent in his physical care. The author contended that the developmental gains from an effective therapy program may compensate for decreased playtime and that compensatory play programs can be developed once specific areas of deprivation are identified.

PARENTAL INFLUENCE ON CHILD DEVELOPMENT

Information sources which relate to the attempt to understand the significant influence parents have upon their children have varied widely. Supported by a heavy accumulation of evidence suggesting that the first years of life are instrumental in terms of cognitive development, Caldwell (1967) calls for supplementing the family environment with priming resources. Caldwell's discussion of priming resources is primarily in the cognitive domain and directed toward preparation of the child for formal education.

Gordon in "The Beginnings of the Self: The Problem of the Nurturing Environment", stresses the importance of children's early years on the establishment of a sense of self that then serves as a filter for all future life

experiences (Braga and Braga, editors, 1974). The major premise of this article is that feelings about the self are influenced by the childs active experiences with the environment and by the attitudes and models of significant others. Bayley (1964) indicated that the self-picture is fairly well integrated by the third year of life. The results of her study suggested that the mothers affectional behavior toward her child in the first three years of life was related to the childs friendship, cooperation, and attentiveness at the time of school age.

Concerning motor development, Seefeldt discusses the importance of "critical periods" in relationship to sensory stimulation. The author utilizes experiments on animals and humans to support the theory that the reduction of essential sensory stimulation results in delayed or inappropriate motor responses. Seefeldt supports provision of enriched environments by proposing that early movements, if repeated often enough, are incorporated into cell and phase assemblies within the central nervous system. This process facilitates improved future learning of more complex movements (Seefeldt, 1975).

Baumrind (1967) studied child rearing practices associated with competence in the young child. A basic assumption from which this and other similar studies proceed is that physical, cognitive, and social development of young children is largely a function of child rearing practices. The child's energy level, his willingness to explore and

will to master his environment, and his self control, sociability, and buoyancy are set not only by genetic structure but by the stimulation and interaction provided by his parents (Baumrind, 1967).

In developing Maternal Behavior Rating Scales, play and social interaction were used as criteria to indicate maternal awareness and quality of maternal interaction (Ainsworth, 1971). The mother who responds appropriately to her child does not overstimulate him by interacting in too intense, too vigorous, too prolonged, or too exciting a manner. She is also unlikely to understimulate because she picks up and responds to the signals of boredom which the baby gives. The quality of parent-child interaction was emphasized and the author contends that children of highly sensitive mothers follow more normal patterns of development (Ainsworth, 1971, 1973).

Saunders and Keister (1973) found that very young children placed in day care settings actually lost ground in their physical and mental abilities. Children who had previously walked or talked were no longer able to walk or talk. This was related to the lack of stimulation provided by the environment. Brophy (1970) asserts that it is not the amount of stimulation but the way the stimulation is organized in the home that is important. The amount of stimulation provided and therefore the childs achievement can be influenced by the mothers impression of herself (Strom and Greathouse, 1974).

The three original Parent Child Development Centers funded by the Administration for Children, Youth, and Families (ACYF) have many unique features, but share the basic premise that in order to help parents learn and change, the stresses on the lives of parents must be alleviated (Gross and Gross, 1977). In these centers, information on growth and development is offered to the parents in conjunction with supportive and counseling services in a group setting.

Father participation in playing and learning is emphasized by McDiarmid, Peterson, and Sutherland in their book on parent participation in child development (1975). They also stress making every learning situation enjoyable for the parent and the child and offer suggestions on how to do so.

Parent participation in the early education of handicapped children is considered of such importance that the Bureau for the Education of the Handicapped, United States Office of Education, requires that parent participation be built into proposals for many of its federal grants (Cohen, 1977). It is apparent from the literature search that parents have significant influence on the development of their children, both normal and handicapped.

PARENT EDUCATION PROGRAMS

The literature reveals that until recently educators involved in preschool programming have virtually ignored the critical influence of the home on child behavior and learning (O'Connell, 1975, Gordon, 1975). O'Connell suggests that a

systematic procedure for relaying developmental information to parents with children of all different ages and handicaps is needed. Programs have been initiated which provide developmental information to parents of children with developmental disabilities (Diamond, 1971, Flint and Deloach, 1975, and Morris, 1973) and disadvantaged families (Gross and Gross, 1977, Collard, 1972). Parent information and support groups have been reported to have varying degrees of success with parents of disabled children.

In a study which investigated the effect of play programs on preschool children with learning disabilities and multihandicapping conditions, it was concluded that early sensory and movement experiences are necessary to prepare children for learning. The results of the study led to the conclusion that parent/child sensory motor activities should be initiated shortly after birth and should be done on a continuing basis at home (Martin and Evans, 1972).

Once the need for assistance to parents is determined, it is necessary to identify the most effective way that this assistance can be provided. Parent education programs have existed in the past with little research to objectively evaluate the effectiveness of methods (Pickerts and Fargo, 1971). Program goals were rarely specified and programs were continued if participants liked them and recommended their continuation. Dinkmeyer described the "C" parent group; the participants collaborate, consult, clarify, confront, show concern, maintain confidentiality, and are committed to change (Dinkmeyer, 1973).

The best known approaches to parent education are the mental health and learning focused approaches. The former, known also as the affective self-examination approach to parent education was evaluated by Brim (1965). The focus was on improving the mental health of parents and therefore improving the mental health and learning abilities of children. The results were inconclusive. The learning focused approach was suggested by Pickerts and Fargo (1971) as being adaptable to evaluation and successful because it has clearly defined goals which can be translated into specific behaviors or tasks that will indicate whether or not the parent understands his role as parent and its significance to the development of the child.

In research on methods of parent-education groups, the question of discussion vs. lecture always arises. Hereford (1963) compared semi-structured discussion groups, with lecture control groups. The parents who attended the discussion groups did show significantly (.05) greater changes in their attitudes and behaviors than did the parents in the lecture groups.

A comprehensive review of parent-education programs for low income families is offered by Chilman (1973). Parent education groups have not proven effective in making significant changes in knowledge and attitudes of parents in the low income populations. However, in studies of educational intervention with mothers of disadvantaged infants it was found that children made significant I.Q. gains in comparison

to a group whose mothers did not receive an education program. The cost of the programs and the extent of intervention (i.e. home training to allow for practice of skills, toy lending, etc.) were found to be significant factors in the provision of such programs.

THERAPEUTIC PLAY PROGRAMS

Results of a survey of therapeutic play services in childrens general hospitals in the United States showed that less than half of the hospitals surveyed provided any play services to hospitalized children. The study concluded that more emphasis is needed in the use of play to help children work through anxieties associated with surgery and in play sessions to promote physical therapy (Williams, 1970).

"Just as early infant movement comes as the natural response to frequent physical handling by the mother and to multisensory stimulation, so the young child uses his body most vigorously in play with other children and in response to toys and activities that he enjoys (Marx, 1973)". This statement is the basis for a program implemented at the United Cerebral Palsy Center of Manhattan which integrates physical therapy into a preschool play/education program. Parent instruction in physical therapy/play activities is an integral part of this program. The approach utilized is group activities, with learning experiences planned for each individual based on objectives prepared for each child during the multidisciplinary staff conferences. Positioning children and stimulating movement are found to be effective

methods of incorporating physical therapy into the classroom. Self-care and perceptual training are integrated into the program and activities are carried out by the teachers. Comparison studies of this method have not been reported in the literature though the importance of such studies was stressed by the author (Marx, 1973).

In England, play groups have become increasingly popular in conjunction with physical therapy and speech therapy (Leyland, 1976). The neurodevelopmental approach to treatment of young cerebral palsy children (Bobath and Bobath, 1969) originated in London, and is commonly used by therapists throughout England. Because it is a dynamic method which is incorporated into handling techniques with children, it is very adaptable to a play setting providing the ratio of therapists to children is high (Leyland, 1976). To date research has not been reported of comparison of play groups and individual treatment programs.

A play center for developmentally handicapped infants and young children (three months to two and one half years) was founded early in the 1970's in southern California. The goals of ELic (Edward Levy Infant Center) were to provide a play center with stimulation in a loving and playful atmosphere, and to provide emotional support for the parents, so often denied them by their extended families and the community (Diamond, 1971). Though this center serves as a model for other programs which are being developed, no controlled research methods are being used to determine its effectiveness.

It is difficult to determine from reviewing the literature whether there is a scarcity of preschool programs for handicapped with a play approach, or only a scarcity of authors who have chosen to report their findings. Nowhere in the literature was there a model which one might follow in the establishment of a play/physical therapy program.

PROGRAM DESIGN

Peterson (1971) seems to offer the most workable program planning procedures using the systems approach. In this model, the purpose of the program is defined and goals and objectives are specified prior to implementation of the program. These program goals are used as guidelines to develop behavioral-learning objectives, which are descriptions of the behavior expected after instruction. Procedures for reaching the objectives are then designed. An ongoing, formative evaluation plan is simultaneously developed (Peterson, 1974). Initially stating the objective, provides a workable rationale for selecting program activities to meet the objective and furnishes direction when selecting appropriate leadership techniques for conducting the activities (Witt and Witt, 1975).

Several developmental tests were reviewed during the literature search. Those reviewed extensively were: The Denver Developmental Screening Test, The Bayley Scales of Infant Development, The Cattell Infant Intelligence Scales, The Milani-Comparette Test for Motor and Reflex Development, The Preschool Attainment Record, The El Paso Comprehensive

Developmental Evaluation Chart, The Vulpe Assessment Battery, and the Wolanski Assessment (Frankenburg and Dodds, 1973, Krajicik, 1977, Milani-Comparetti and Gideoni, 1967, Cliff, et al, 1975, Wolanski, 1973). Several play assessment scales were also reviewed to determine feasibility of inclusions in the study (Knox in Reilly, Ed., 1974, Sutton-Smith and Sutton-Smith, 1974, and Vulpe, 1977).

SUMMARY

Literature on play and development, the value of play to handicapped and non-handicapped children, and the importance of play programs was reviewed. Though the material evidence is minimal, an attempt was made to document the appropriateness of play as content in planning an intervention program for parents of neurologically impaired children. Parental influence on child development is well supported by studies in various disciplines; medicine, psychology and psychiatry, and education. Parent education groups as a means to provide information was explored to determine its effectiveness.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this investigation was to determine the effect of a parent education program on the developmental progression of preschool neurologically impaired children. The parent education program focused on attitudes toward play, knowledge about child's play, the significance of play to development, and adaptations and modifications of play activities, toys, and equipment for physically impaired young children. The program was administered to parents of children participating in a physical therapy playgroup program as a part of a companion study.

DESCRIPTION OF POPULATION AND SAMPLE

The study utilized a quasi-experimental, pretest-post-test control-group design with an available sample. Twenty-seven preschool children, male and female, who were enrolled in physical therapy programs for neurologically impaired children were pretested using a comprehensive developmental scale. All children had chronological ages between one year zero months and four years eleven months at the onset of the study. They were living at home with their parents or foster parents and were transported to a physical therapy department twice a week for individual treatments. Eighteen (18) children were participating in a companion study and were grouped as follows: Nine (9) children received physical therapy twice a week for one hour for the eight week duration of the study. Nine (9)

children received physical therapy once a week for one hour and participated in a therapeutic play group once a week for the eight weeks. Eighteen (18) children were participating in this study and were grouped as follows: The control group consisted of the nine (9) children receiving physical therapy and the therapeutic play group once a week for the eight weeks. The experimental group consisted of nine children who received physical therapy once a week, the therapeutic play group once a week, and in addition, their parents attended a parent education program on play for the eight week period. Three (3) children for each of the three groups were selected from each of three (3) locations within southern Michigan.

Location	Group A (Physical Therapy)	Group B (Physical Therapy And Play)	Group C (Physical Therapy, Play And Parent Education)
1.	3	3	3
2.	3	3	3
3.	3	3	3

control — experimental → Therapeutic Play

control — experimental → Parent Education

Figure 3-1. Number of Subjects by Location and Group.

Following the programs, all children were posttested using the same comprehensive developmental scale and gain scores were calculated. In addition, anecdotal information was collected following each play and parent training session.

Subjects were selected from the following preschool programs: Roosevelt McGrath School, Wayne-Westland School District, Wayne, Michigan, Durant Tuuri Mott School, Flint, Michigan, and Ingham Medical Center, Lansing, Michigan. Subjects were matched into pairs on the basis of their overall developmental quotients from pretest scores and then assigned to each of the three groups.

Children with neuromuscular impairments resulting from meningitis, encephalitis, traumatic brain injuries or other head injuries which cause damage to the central nervous system were included in the study if they met the age and physical therapy program requirements. Children with primary muscle diseases, peripheral nerve injuries, and mental retardation without physical disability were excluded from this investigation.

Nine sets of parents (three from each facility) were selected to participate in the parent education program. These parents attended eight, hour-long sessions with activities designed to meet the goals and objectives of the program. See Appendix B. Parents who agreed to bring their children for the play group but did not participate in the parent education program were provided with audiovisual materials, written information on physical disabilities, refreshments, and a comfortable place to socialize while their children were in the play sessions.

Parents in all three groups who agreed to participate in the study were provided with information on therapeutic play following the collection of data. They were informed

prior to the study that all results and program information would be made available to them and the facility staff following the study.

Demographic data was collected on the age of parents, ages and sex of siblings, position of the physically handicapped child within the family, educational level of parents, and additional programs in which the child or parents are participating. A sample form is included in Appendix E. No attempt was made to match subjects based on these characteristics or to formally analyze any of these variables.

THE INDEPENDENT VARIABLE

This section will include a brief discussion of the therapeutic play program which is the independent variable for the companion study as well as a more comprehensive discussion of the parent education program.

The intent of the therapeutic play program is to provide play activities within a physical therapy setting, once weekly to children with neurological impairments in order to encourage their progress in physical, social, and cognitive development. Each developmental objective was divided into sub-objectives and therapeutic play activities were designed to meet these objectives.

The therapeutic play group utilized optimal positioning for function, integration of all extremities, facilitation of normal motor patterns, balance and equilibrium responses, and concern for the normal developmental sequence. A description of all activities may be found in Appendix A.

The independent variable for this study was the parent education program. The intent of the parent program was to establish an educational program for parents of preschool children with neurological impairments in order to encourage parents to play with their children at home in a developmental yet playful manner. No attempt was made to measure their playfulness in a pretest or to follow up with measurement of the amount that they play with their children at home. It is this investigator's hypothesis that if the program was effective in teaching parents the value of play and how to play effectively with their child, the developmental progress of the child would have been enhanced in the posttest.

The principal investigator in the companion study with the assistance of four or five volunteer aides led all play group sessions. This investigator with one volunteer aide simultaneously led the parent group sessions.

An important factor in the program is the informal, playful atmosphere with which the program was presented. Volunteers were selected to assist with both the play and the parent education programs through the Michigan State University Recreation Program and from other people who expressed an interest in childrens play. Criteria for selection was their ability to facilitate playfulness in the children and parents. The pre-program training for volunteers emphasized flexibility, versatility, and creativity, which are traits thought to be characteristics of playfulness (Lieberman, 1965). It is this playful approach which is thought to separate this program

from the typical group therapy programs sometimes found in preschools for physically handicapped children that are taught in a more conventional, educational manner (Leyland, 1976, Sponseller, 1974). The volunteer training program schedule may be found in Appendix G.

THE CONTROL AND EVALUATION OF EXTRANEOUS FACTORS

Provisions were made to control the following confounding factors:

1. A significant issue to be considered in this investigation was attendance of the children and their parents. Illness within the family, transportation difficulties, changes in parents' work schedules, and other obligations on a particular evening are some of the factors which affected attendance. Additional volunteers were provided to baby-sit with siblings of parents participating in the parent education program. Transportation was provided on a prearranged basis when families were known to have a problem.
2. The physical therapy program and the therapeutic play program was held in the setting familiar to the children in order to demonstrate a minimal environmental effect. During pretest, the physical therapist who works with each child was present in order to minimize the effect of a stranger on the test results.
3. The subjects in the study were matched according to their overall developmental scores as measured during the pretest. Children were placed in the experimental and control groups from each of the three locations based on these pretest scores.

TEST PROCEDURES

The subjects in this study were pretested by the principal investigators one week prior to the institution of the program. The developmental testing took place within the child's regularly scheduled physical therapy treatment in the department where he routinely received treatment. The evaluators spent a short time observing and interacting with the child prior to beginning the testing so that the presence of a stranger did not adversely affect the pretest. The childs' physical therapist was present to discuss the results of the pre- and post-testing in order to insure reliability and validity of the testing.

Developmental scores for selected areas (gross motor, cognitive-social, manipulative, expressive language, and reflexive) were determined in the pretest and recorded for each child. Posttesting occurred during the week following the completion of the program under similar conditions as in the pretest.

CONDUCT OF TREATMENTS

Literature was reviewed to determine the appropriateness of the goals and objectives for the treatment programs (Moffitt, 1972, Morgenstern, 1968, Griswold, 1972, Marx, 1973, Braga, 1974). Positioning the children in order to facilitate movement and participation in activities (Bobath and Bobath, 1975, Finnie, 1975, Marx, 1973) is an important part of the play program. Following the developmental motor sequence and stimulating proper postural alignment are treatment techniques

which will be incorporated into the objectives and activities for the play program (Gesell, 1940, Bobath and Bobath, 1975, Finnie, 1975). Activity selections for both programs will be selected from related literature (Braga, 1974, Griswold, 1972, Aston, 1971, Gordon, 1970, Madaras, 1977).

Facilities were selected based on their ability to assist with the selection of families and to provide places for the play group, the parent education group, and the parents of the play group children to socialize. Large equipment, such as Bobath balls, large wedges, bolsters, tunnels, etc. were provided by the respective facilities. Smaller equipment, consumable supplies, and refreshments were provided by the investigators.

A proposal for funding of the therapeutic play program and the parent education program was approved by the Michigan Easter Seal Society. A total of six hundred eighty-five dollars was used to cover the cost of equipment, supplies, and travel to the experimental sites.

The programs were implemented once a week for eight weeks in each of the three facilities chosen to participate. The principal investigators implemented the play groups and the parent education groups with the assistance of pretrained volunteer aides to assure consistency of approach. Sessions #7 and #8 of the parent education program required involvement of the parents and the children together.

The format for the parent education program was as follows: an initial fun activity to develop a playful,

relaxed atmosphere, an information period designed to meet a specific objective, and an informal discussion period simultaneously with refreshments. Children from the play group participated in the seventh and eighth sessions only. The parent education group leader attempted to facilitate discussion following the informational period, rather than serve a leader function.

THE DEPENDENT VARIABLES

The dependent variables in this study all reflect developmental status and were used to measure progress in the subjects during the ten-week period between the pretest and the posttest. The areas of development which were selected are those felt to be most directly related to physical therapy goals and objectives: gross motor, reflexive, manipulation, expressive language, cognitive-social, and play.

Instrumentation. A comprehensive developmental test (which is appropriate for the age group used in this study) was chosen. The El Paso Comprehensive Developmental Evaluation Chart (EPCDEC) was chosen from several others reviewed because: it could be given by a physical therapist or teacher rather than a clinical psychologist, the testable categories were not too broad, the test items were all observable so that parental reports were not relied upon, and for the first year the results are recorded in two-week intervals. Because the EPCDEC covers developmental progress only through 36 months of age, the Denver Developmental Screening Test (DDST) was selected to cover the areas of development other than reflexive

for the developmental ages three to five years. Reflexive development was recorded on the EPCDEC for all children as all reflexes are assumed to be mature by the developmental age of three years. Due to the severity of disability in most of the children who are in preschool treatment programs the assumption was made that most of the children would score within the EPCDEC limits. This chart also evaluates the locomotor prognosis for the child with cerebral palsy, a syndrome manifesting sensory and motor impairments. Head circumference, body growth, and presence of seizure activity were also recorded on the EPCDEC. Research is presently being conducted to determine the reliability and validity of this test.

The results are recorded on the EPCDEC in bimonthly intervals for the first year, every three months for the second year, and every six months for the third year. Results are recorded on the DDST at six month intervals from two to six years. If the child scored in the two-and-one-half to six year range, results were recorded on both tests to insure reliability of the test items. Figure 3-2 demonstrates the correlation between the test items on the EPCDEC and the DDST. Items which show a positive correlation within a six month period are marked with an asterisk (*). Two examples of this correlation are: In the 2 1/2 year age range one DDST item is "throws ball overhand"and the corresponding item in the EPCDEC is "throws ball 4 feet". "Copies circle" was found in both tests at the 3 year level.

Figure 3-2. CORRELATION BETWEEN TEST ITEMS: EPCDEC AND DDST

AGE	DDST	EPCDEC	DDST	EPCDEC	DDST	EPCDEC	DDST	EPCDEC
In Years	Gross Motor	Gross Motor	Fine Motor Adaptive	Manipulative	Language	Expressive Language	Personal-Social	Cognitive-Social
2	Kicks ball, forward*	Standing, kicks ball*	Tower of 5-6 cubes	Unscrews lids	Combines 2 words*	Uses a few 2 word phrases*	Puts on clothing	Unwraps candy
	Walks backward*	Walks backward*	Dumps raisin from bottle	Turns knobs	Points to 1 body part named*	Uses I, me, you	Uses spoon, spilling little	Identifies dolls body parts*
2½	Balances on 1 foot 1 sec.	Walks on tiptoes	Tower of 8 cubes*	Tower of 8 cubes*	Follows 2/3 directions	Uses many 2 word phrases	Washes & dries hands	Is toilet trained
	Throws ball overhand*	Throws ball 4 ft.*	Imitates vertical line	Imitates vertical, cir. & horiz. line	Names 1 picture*	Names pictures in book*	Helps in household tasks	Knows "mine" unable to share
	Jumps in place							
3	Broad Jump*	Jumps up a few inches*	Copies O*	Copies O*	Uses plurals	Uses long phrases, omits words	Plays interactive games*	Plays guessing games*
	Pedals tricycle	Can stand, feet tog.	Imitates 3 block bridge*	Imitates 3 block bridge*	Comp. cold, tired, hungry Gives full name*	Asks freq. questions	Puts on clothing	Knows full name*
3½	Balances on 1 foot 5 sec.		Copies +		Recognizes 3/4 colors		Dresses with supervision	

See Appendix C for complete developmental evaluation forms.

A play assessment taken from the Activities of Daily Living Section of the Vulpé Assessment Battery for the Atypical Child (Vulpé, 1977) was given to all of the children at the same time as the developmental pretest. The play assessment is scored in monthly intervals and employs the stages of play development as its basis. This was compared in the same manner as the developmental test and was used as the basis for formative evaluation of play and parent activities.

Both physical therapists who evaluated the subjects (the principal investigators in this and the companion study) have had considerable experience doing developmental testing. For this reason all of the testing was done by these two individuals, and the results were discussed with the physical therapist treating the child to insure reliability and validity of the testing. At least ten children were tested prior to the pretesting by the investigators to insure familiarity with the form and recording methods of the EPCDEC, the DDST, and the Vulpé Play Assessment.

The Pilot Study. A pilot study was conducted to determine the appropriateness of the activities in meeting the goals and objectives of the play and the parent education program. Two activity modules were incorporated into an existing physical therapy/play program with preschool physically impaired children. Implementation of the two sessions was similar to those planned for the conduct of the actual study. Observers with pediatric and therapeutic recreation experience were present to evaluate the activities, leadership techniques, and selection of activities in relationship to the goals and

objectives of the play program. Observers with expertise in family counseling and therapeutic recreation evaluated the parent education program in the same manner. See Appendix D for evaluation forms utilized.

All of the goals and objectives were evaluated by these observers and by additional experts in pediatrics, play, family counseling, and systems approach to program planning. Changes were made in the program objectives and activities prior to the beginning of the study based on the observations and written evaluations of the experts. The pilot study was conducted as an attempt to increase the validity of the program.

DATA COLLECTION

Pretest and posttest data was collected on the EPCDEC, the DDST, and the Vulpe Play Assessment by the principal investigators. Gain scores in gross motor, fine motor, reflexive, expressive language, and social-cognitive development were calculated.

During each weekly program session, a volunteer was assigned to each parent and collected anecdotal data on parent interaction, parent-child interaction, playfulness, and incorporation of program materials and ideas into daily life reported by parents. Parent-child interaction was observed and recorded prior to the sessions when parents were bringing their child to the play group and at the end of the sessions when the parents returned to pick up their child. Observations were also recorded following the seventh and eighth sessions when parents and children played together. A form was designed

for the purpose of recording this data and may be found in Appendix F. At the end of the eight week period a compilation of the anecdotal observations was done, and the findings were categorized and percentages of responses to three of the items were calculated.

DATA ANALYSIS

Nonparametric statistics were used to analyze the results of the study because of the small sample size and the assymetry of the curve, as determined by Chi square test results. The Wilcoxon matched-pairs signed-ranks test was used to determine if a significant difference between the experimental and the control groups existed. This test was used because it considers the relative magnitude as well as the direction of the differences between the pairs.

Each category of development was evaluated for the six matched pairs (N=6) to determine whether or not the parent education program had a significant effect on the child. Alpha was set at .1. Setting alpha at this value takes into consideration the many limitations inherent in this study and enables the researcher to determine the feasibility of further research in this area.

No attempt was made to analyze the anecdotal or demographic data statistically. Instead, it was looked at subjectively to see if any differences could be noted in behavior of parents of children after information about play and the opportunity to play was provided. Inferences which would be drawn from this subjective data are presented along with the statistical data in Chapter IV.

CHAPTER IV

ANALYSIS AND RESULTS

The accumulated data of the El Paso Comprehensive Developmental Evaluation Chart and the Denver Developmental Screening Test are analyzed, discussed and interpreted in this chapter which is divided into four major parts:

1. The analysis and results of five developmental categories on the EPCDEC and the DDST: gross motor, fine motor, expressive language, social-cognitive, and reflexive.
2. The analysis and results of the Vulpé Play Assessment.
3. The analsyis and results of the anecdotal data.
4. An overall summary.

The initial sample consisted of nine (9) pairs of children selected from three locations in southern Michigan. Three pair were from each of the following locations: Durant Tuuri Mott School, Flint, Michigan, Ingham Medical Hospital, Lansing, Michigan, and Roosevelt McGrath School, Wayne Michigan. All subjects were participating in physical therapy programs at the time of the study. The majority of subjects were also involved in at least two other treatment areas, i.e. occupational therapy, speech and language therapy, recreational therapy, etc. Only two subjects were involved in home exercise programs on a routine basis. Sixty-six percent of the parents involved had at least one year of education following high school. Only two parents had not finished high school. Socio-economic status of the families was unknown.

Four subjects dropped out of the study, leaving six pairs available for analysis (n=6).

TEST RESULTS FOR EPCDEC AND DDST

The pretest, posttest data and gain scores are shown for each of the five categories of development in Table 4.1

TABLE 4.1 PRETEST, POSTTEST, GAIN SCORES FOR EPCDEC/DDST

FOR FIVE DEVELOPMENTAL CATEGORIES (IN WEEKS)

Pair	Subject	Gross Motor			Fine Motor			Expressive Language			Social-Cognitive			Reflexive		
		Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
1	22*	12	26	14	10	14	4	4	10	6	16	16	0	10	10	0
	4	6	12	6	24	26	2	30	30	0	48	50	2	10	12	2
2	7*	20	40	20	24	28	4	24	32	8	34	48	14	10	10	0
	13	18	20	2	18	20	2	18	20	2	22	24	2	16	16	0
3	8*	27	30	3	30	60	30	34	60	26	28	84	56	24	24	0
	15	46	48	2	72	72	0	72	84	12	84	96	12	48	48	0
4	18*	26	26	0	26	26	0	30	32	2	40	48	8	26	26	0
	24	50	52	2	46	52	6	22	36	14	52	76	24	48	48	0
5	25*	96	108	12	240	240	0	240	264	24	168	216	48	144	144	0
	14	40	50	10	60	96	36	132	144	12	92	108	16	28	32	4
6	16*	144	168	24	120	144	24	120	120	0	168	192	24	144	144	0
	6	48	52	4	144	172	28	192	240	48	192	192	0	100	100	0

* Subjects whose parents participated in the Parent Education Program.

The raw data found in Table 4.1 was subsequently subjected to analysis using the Wilcoxon Sign Test for Matched Pairs. Following the collection of all data, gain scores for all subjects were calculated. Differences in gain scores were computed and ranked without respect to sign, the smallest difference being ranked as one. Signs were then reattached from the original values. The sum of the ranks of positive differences (T+) and the sum of the ranks of negative differences (T-) were then computed. Referring to the Distribution of the Sign-Ranked Statistic T for alpha at .1 determination of significance was made. Table 4.2 shows the application of the Wilcoxon Sign Test for Matched Pairs to the data.

TABLE 4.2 WILCOXON SIGN TEST FOR MATCHED PAIRS

ON FIVE DEVELOPMENTAL CATEGORIES (CRR = $T_- \geq 17$, $T_+ \leq 4$)

Pair n=6	Gross Motor			Fine Motor			Expressive Language			Social-Cognitive			Reflexive*		
	Difference	Rank	Signed	Difference	Rank	Signed	Difference	Rank	Signed	Difference	Rank	Signed	Difference	Rank	Signed
1	-8	4	-4	-2	1.5	-1.5	-6	1.5	-1.5	+2	1	+1	+2	1	+1
2	-18	5	-5	-2	1.5	-1.5	-6	1.5	-1.5	-12	2	-2	0	-	-
3	-1	1	-1	-30	5	-5	-14	5	-5	-44	6	-6	0	-	-
4	+2	2.5	+2.5	+6	4	+4	+12	3.5	+3.5	+16	3	+3	0	-	-
5	-2	2.5	-2.5	+36	6	+6	-12	3.5	-3.5	-32	5	-5	+4	2	+2
6	-20	6	-6	+4	3	+3	+48	6	+6	-24	4	-4	0	-	-
	$T_- = 18.5$**			$T_- = 8$			$T_- = 11.5$			$T_- = 17$**			$T_- = 0$		
*n=2 for Reflexive Category (CRR=$T_- \geq 0$, $T_+ \leq 3$)	$T_+ = 2.5$			$T_+ = 13$			$T_+ = 9.5$			$T_+ = 4$			$T_+ = 3$		

** Statistically Significant, Alpha .1

A research sub-hypothesis can be stated for each category of development:

The development of children whose parents received the parent education program focusing on play is significantly greater than the development of the children whose parents did not receive the training program in the following categories:

$H_{1.1}$ Gross motor development

$H_{1.2}$ Fine motor development

$H_{1.3}$ Expressive language development

$H_{1.4}$ Social-Cognitive development

$H_{1.5}$ Reflexive development

Table 4.2 indicates that a significant difference in the gain scores between the control and the experimental group was noted in gross motor and social-cognitive development. Fine motor, expressive language, and reflexive development did not demonstrate a significant difference. However, members of the treatment group moved in the desired direction in fine motor and expressive language, while no change was noted in either the control or the experimental group in reflexive development.

In expressive language development all pairs showed differences in direction but the magnitude of the differences was not great enough to accept the research hypothesis. In this category, one subject in the control group made a very large improvement (48 weeks in the eight week period between the pretest and the posttest). The magnitude and direction of this subject was sufficient to cause rejection of the research hypothesis.

One of the anticipated limitations of the study, the effect of a stranger on the pretest results, was noted in two subjects. One control group subject improved more than would be feasible in the language area. It was felt by the researchers that this large difference in the posttest results was due to the subjects being comfortable with the evaluators. In the fine motor area four of six pairs achieved some gain, but due to one control subject making a very large gain, presumably the effect of a stranger in the pretest, significance was not shown.

In reflexive development, four pairs of subjects showed no change in magnitude or direction. The sample size was therefore reduced to two for purposes of analysis. The research hypothesis was rejected at the .1 alpha level.

Alpha was chosen to be .1 for this study as it is generally accepted in this type of educational research. At this level if significance is detected, further research in this area may be pursued. If the .2 alpha level had been selected, significance would have been more likely in additional developmental areas, but the validity of the results would be decreased and would not justify further research.

The individuals who dropped out may have affected the statistical results of the study. The decreased n may have affected the significance. The two subjects in the experimental group whose partner in the control group dropped out had shown change in magnitude and direction which may

have determined significance in fine motor or expressive language development.

Observation of the raw data indicated improvement in the desired direction in all developmental categories except reflexive development. The mean gain score for each developmental area for the experimental group was larger than for the control group. With an n large enough to justify the use of parametric statistics it is probable that significance would be shown in the analysis of the data.

THE VULPÉ PLAY ASSESSMENT

The play assessment which is part of the Activities of Daily Living section of the Vulpé Assessment Battery for the Atypical Child (Vulpé, 1977) was used in an informal attempt to determine if the items on the play scale compared with the items on the social-cognitive section of the El Paso CDEC and the personal-social section of the DDST. From the literature review (Knox, 1974, Sutton-Smith and Sutton-Smith, 1974) it was apparent that criteria used to evaluate the play development of children contained elements of all categories of development but were most similar to the above named sections. It was found that many items on the play scale were difficult to observe in a testing situation, and required significant amounts of reporting from parents or therapists to score. In addition, some items which were scored as requiring assistance or as unable to do were observed one week later in the play group, and the child was found to be

independent. It was unlikely that this improvement was valid, and was probably due to inadequate time for the testing.

In analyzing the data it was found that 9 out of 12 of the subjects exhibited no change in the posttest. Two subjects improved 18 months in the 8 week period between the pretest and the posttest. The remaining subject actually showed regression on the Vulpe' Scale during that same period. When observing the posttest scores of the two subjects who improved in the Vulpe' play scale with the same two subjects on the EPCDEC no change in development on the Vulpe' play scale was noted. The subject who regressed on the Vulpe' play scale actually improved on the EPCDEC. Because of the observed inconsistencies in results between the Vulpe' play scale and the two developmental exams it was felt that the Vulpe' play scale was not an appropriate test and therefore no statistical analysis was conducted.

ANALYSIS AND RESULTS OF ANECDOTAL DATA

Table 4.3 shows the percentage of positive responses to the items on the anecdotal data form about play activities attempted and equipment modified at home in the previous weeks. This information was recorded by the volunteers who were assigned to each parent for the duration of the eight week program. During the course of the program it appeared that volunteers became more relaxed with the families and less attentive to detail. This factor may have influenced some of the trends noted in the anecdotal data. Multiple volunteer raters and reliability checks between raters might have made these observational results more valid.

TABLE 4.3 PLAY ACTIVITIES ATTEMPTED AND EQUIPMENT MODIFIED BY PARENTS AT HOME

Location	Subject	Play Activities #/7 weeks	%	Equipment Modified #/7 weeks	%
Flint	22	5	71	2	29
	7	3	43	1	14
	8	2	29	3	43
Lansing	18	4	57	5	71
	16	6	88	0	0
Wayne	25	3	43	0	0

Fifty-five percent of the parents reported activities tried at home in the previous week. All of the parents tried some of the activities at least once during the eight week program. Parents did not modify play equipment or toys as frequently (25%) as they tried play activities. Two of the subjects' parents did not modify any equipment during the eight week period. Eighty percent of the parents responded that they learned facts about play and child development which were helpful to them in dealing with their children at home. No specific information was recorded about what kind of information was most helpful.

The following inferences were drawn from subjective evaluation recorded on the anecdotal data forms:

1. After the third session both mothers and fathers were described as being increasingly playful. Volunteers recorded phrases such as: "mother smiled at child constantly and winked at her", "picked up child and twirled him around", "child

laughed out loud", and "mother ran and hid behind the big wedge, encouraging child to hunt for her, laughed together when found". These types of descriptions increased in number and in the description of active playfulness as the program progressed.

2. No apparent differences were noted between playfulness of mothers and fathers as a group. However, there was a recorded change in the playfulness of 2 of the fathers. One subject's father requested a change in the order of two sessions so that his family would be able to attend a session which he felt would be especially fun. Another father was described as physically tossing his child around and tickling him, while making the following comment: "I never thought I'd be having fun doing this."
3. Some trends can be noted in the observational data between the three experimental groups. The Wayne group requested written information and asked questions of the researcher about emotional adjustment factors much more frequently than the other two groups. Parents in this group brought books and articles to share with each other. Members of the Flint group frequently expressed anger and frustration toward the medical and school systems in relationship to services offered for their

children. The Lansing group appeared to establish some friendships within the group as was exhibited by all three set of parents attending a family camping week-end together and planning additional social activities. There was a noticeable difference in the comraderie shown within this group.

4. No trends could be noted from the items on parent-child interaction. Two parents were noted to interact more spontaneously and easily with their handicapped child after the fifth session.

SUMMARY

The literature review supports the importance of play to child development and the influence of parents on the development of their child. This study documents the positive effect of a parent education program on the gross motor and social cognitive development of preschool neurologically impaired children. Anecdotal data shows that the majority of parents utilized program information to assist their children with play at home. Parents appeared to enjoy the program and became increasingly playful as the eight week program progressed. The Vulpe' Play Assessment, demographic data and anecdotal data was analyzed subjectively and inferences drawn in an attempt to stimulate further research in this area.

CHAPTER V

SUMMARY

An accumulation of evidence suggests that parents influence the physical, social, and cognitive development of their children. Play has been determined to be an important medium for learning in preschool children. There is evidence to suggest that play is of increasing importance to neurologically impaired children. This study was designed to determine the effect of a parent education program focusing on play for parents of neurologically impaired preschool children. The gross motor, fine motor, expressive language, social-cognitive, and reflexive development of two groups of children participating in physical therapy programs was compared in this study.

The design was a quasi-experimental pretest-posttest control group model with an available sample. The control group received physical therapy once a week and participated in a play group once a week. The experimental group received this same treatment and in addition their parents participated in the parent education group once a week. Both groups of children were pretested using the EPCDEC or the DDST (if they tested above the developmental age of three years) and the Vulpé Play Assessment prior to the eight week program. Subjects were matched into pairs on the basis of their overall developmental quotients from pretest data. All children were posttested by the same examiners after the program and gain scores were calculated. The families participating in this and a companion study comparing physical therapy with therapeutic play, were selected from three locations in

southern Michigan.

The one-tailed Wilcoxon Sign Test for Matched Pairs was used to statistically analyze the results. The Vulpe' Play Assessment was analyzed subjectively as were the anecdotal and demographic data. The experimental group improved significantly over the control group in gross motor and social-cognitive development. No significant differences were noted in fine motor, expressive language, and reflexive development after treatment.

CONCLUSIONS

The following conclusions are presented within the confines of the limitations imposed by this investigation following the statistical and subjective analysis of the data:

1. The parent education group which focused on the value of play, the influence of play on child development, the importance of play to the neurologically impaired child, adaptations of activities and modifications of play equipment had a significant effect on the gross motor and social-cognitive development of preschool neurologically impaired children.
2. This parent education program which focused on play did not have a significant effect on fine motor, expressive language or reflex development.
3. The parent education program on play was beneficial to parents and children as evidenced by the following anecdotal results:

A. The majority of parents will utilize information provided to them on play activities and modifications of equipment to assist their neurologically impaired child.

B. Parents reported positive feelings about the information presented and about the opportunity to become acquainted with other parents of handicapped children. They felt that the information provided needs to be practical and explained in sufficient detail.

C. Parents appeared to enjoy the sessions as demonstrated by:

   1. They stayed after the formal sessions ended to socialize.
   2. One group requested continuation of the sessions.
   3. One group suggested making the program available to other parents of handicapped children.

D. Parents became increasingly playful with their children and with each other in the parent group as the program progressed.

E. Parents showed increasing ability to interact spontaneously with each other and with their children.

IMPLICATIONS FOR PRACTICE

The void in physical therapy literature which related to play and to parent education suggests the need for research in these areas. The publication of the results of this and other related studies will enable the clinician to re-evaluate present clinical practices. This investigation suggests some important implications for the clinician:

1. This investigation in combination with the companion study demonstrates that play is a useful adjunct to physical therapy. Play as a method for achieving many of the objectives of physical therapy could be incorporated into the individual programs of preschool children in school and clinical settings.
2. The group approach to physical therapy with play as the basis for treatment was shown to be effective for pre-school children. It is feasible to incorporate this group approach into treatment programs for neurologically impaired children.
3. It is feasible for parents to be instructed in play activities and adaptations of equipment to enable the child to play at home as a routine part of the childs physical therapy program.
4. An instructional manual for parents could be developed patterned from the play and parent programs designed for this investigation.
5. Physical therapy curriculums could develop instructional sessions for their students incorporating play into

physical therapy. Students could be assigned to clinical settings which emphasize the playful approach to physical therapy.

IMPLICATIONS FOR FURTHER RESEARCH

Although there are many limitations inherent in this study it nonetheless provides a basis for further research in the area of play and development of neurologically impaired children. Some important implications for the researcher are listed here:

1. A similar study could be designed with a larger sample size to determine which categories of development are influenced by play education for parents.
2. The duration of the study could be increased to see if developmental change would be noted over a longer period of time.
3. Other developmental categories such as receptive language, emotional, perceptual-motor could be evaluated.
4. Other existing assessment tools could be used to see if there are similar findings.
5. Developmental scales for preschool neurologically impaired children could be developed and utilized in a similar study. The EPCDEC could be standardized and norms determined.
6. A play scale for neurologically impaired children could be developed and tested.
7. Play and parent program approaches could be varied to see if developmental progression is influenced.

8. Children of different ages and physical disabilities could be studied.
9. The assumption that increased parental knowledge about play leads to changed parental behavior could be tested in a controlled study.
10. Rating the playfulness of parents in a pretest-posttest design could determine the effectiveness of parent education programs.
11. Individual case studies, utilizing methods of observation (videotaping, activity check lists, etc.) could be developed for use as developmental evaluation tools.
12. A similar study could be designed attempting to eliminate the effect of a stranger doing the pre- and posttesting.

A P P E N D I C E S

A P P E N D I X A

THERAPEUTIC PLAY PROGRAM

for

PRESCHOOL NEUROLOGICALLY IMPAIRED CHILDREN

GOALS STATEMENT: The intent of this program is to provide recreational, play activities in a Physical Therapy setting once weekly to children with neurological impairments, between the ages of one to five years in order to encourage their progress in physical, social, sensory, perceptual-motor, cognitive and reflexive development.

Objective 1.0 To provide a relaxed, playful atmosphere within a pre-school play group setting.

Sub-objective 1.1 To expose the participants to fun experiences, through playful leadership techniques and presentation of play activities.

Sub-objective 1.2 To decrease excessive sensory input and facilitate normalization of muscle tone in order to enable participation in play activities.

Sub-objective 1.3 To select playful volunteers, based on their interest and previous experience in play or recreational settings.

Objective 2.0 To improve physical development and physical function.

Sub-objective 2.1 To improve gross motor skills.

Activities

2.1.1 Obstacle course: Rolling and crawling up and down a large wedge, somersaults, creeping through the tunnel, sliding down slide, jumping on the trampoline, walking or crawling on various materials-textures, climbing in and out of a large box, climbing on a chair and jumping off, crawling under a bar, climbing over a bar, stepping on flagstones, throwing balls into a barrel, etc.

2.1.2 Ball Games: Nerf ball suspended from above on a string, kick ball, catching and throwing, rolling (balls of various shapes, sizes, textures), bat and ball activities, pushing balls, barrels, etc.

2.1.3 Mobility Games: Belly boards, swinging in sheet or hammock, tyke bikes, wheelbarrow races and other relay races, sit-n-spin, see-saw games, tilt board games, etc.

2.1.4 Beanbag and ring toss games

2.1.5 Angels-in-the-snow, rolling, and somersaults

2.1.6 Marching rhythm band

2.1.7 "Simon Says, and "Follow the Leader"

Sub-objective 2.2 To improve fine motor skills.
Activities
2.2.1 Marching rhythm band, making of instruments such as box guitars, pie pan tambourines, coffee can drums, tin can marracas, bells, xylophone, etc.

2.2.2 "Whats-in-the-box activity; filling and emptying containers with objects of various sizes, shapes, and textures while positioned on large balls, wedges, and barrels, etc.

2.2.3 Bottle sandwiches; fill clear glass or plastic containers with layers of macaroni, peas, beans, rice, cloves, popcorn, peppercorns, etc.

2.2.4 Tactile collages; cutting and pasting onto construction paper, various objects such as macaroni, yarn, cotton, popsicle sticks, fabrics, ribbon, construction paper, etc.

2.2.5 Fun dough activities; using materials such as silly putty, play dough, and flour and cornstarch dough.

2.2.6 Toy boats; making soap sailboats, wooden "motor" boats with rubber band propulsion, for water play.

2.2.7 Body tracings; adult traces child's body, child adds clothing and body parts.

2.2.8 Making cardboard box trains; painting outside, adding windows (to fit various body parts), wheels, smoke stack, etc.

Sub-objective 2.3 To improve range of motion.
Activities
2.3.1 Action songs and rhythm games; examples (to be selected based on the children's abilities), "Head, Shoulders, Knees and Toes", "I'm a Little Teapot", "The Itsy Bitsy Spider", "Do Your Ears Hang Low?", "If You're Happy and You Know It, Clap Your Hands", "The Hokey Pokey", "Ring Around The Rosie", "London Bridges", "Row, Row, Row, Your Boat".

2.3.2 Hula Hoop Activities; sitting while holding onto the hula hoop, raise it overhead, changing position of hands, moving it around from hand to hand, etc.

2.3.3 Angels-in-the-Snow

2.3.4 Finger Painting; with large sheets of paper on the wall.

2.3.5 Bicycling of extremities; reciprocal movements of legs and arms done to rhymes and songs by adults.

2.3.6 Water play; buoyancy, warmth of water incorporated to increase joint mobility, bilateral hand activities, etc.

2.3.7 "What's-in-the-Box"; positioning of child and placement of box to facilitate joint mobility.

2.3.8 Ball play; throwing, catching, and kicking various balls.

Sub-objective 2.4 To improve muscle strength.

Activities

2.4.1 Obstacle Course

2.4.2 Ball and Bolster Games; Throwing and pushing balls and bolsters of increasing weight.

2.4.3 Fishing Game; pull weighted ropes to get prizes.

2.4.4 Pretend Animals; Be a duck, bunny, snake, cat, frog, rocking horse, etc.

2.4.5 "What's-in-the-Box?"; To be done prone over balls, bolsters, etc.

2.4.6 Mobility games; such as belly boards, wheelbarrows, tyke bikes, crazy car, etc.

2.4.7 Water play; utilizing resistance of the water.

2.4.8 Bean Bag Toss; utilizing various weights.

2.4.9 Hula Hoop Activities; utilizing resistance to hoop when raising up and down.

2.4.10 Cardboard Box Train; pushing and pulling each other in train

Sub-objective 2.5 To improve balance and reinforce equilibrium reactions

Activities

2.5.1 Obstacle Course; rolling up and down wedge, creeping over tilt board, jumping on trampoline, walking through tires and hoops, teeter-totter, sit-n-spin, etc.

2.5.2 Equilibrium Board Boat; maintaining balance while in various positions on the equilibrium board

2.5.3 Musical Beanbag Pass; children pass the beanbag to music, sitting just far enough apart to have to use balancing reactions.

2.5.4 Large ball and barrel activities

2.5.5 Ball Games; stressing reaching out and maintaining balance

Sub-objective 2.6 To inhibit abnormal reflex activity and muscle tone

Activities

2.6.1 Prone over large balls and bolsters; gentle movement to inhibit spasticity

2.6.2 Swing; child positioned in sheet or hammock to inhibit tone

2.6.3 Mirror play; head in midline to discourage tonic reflexes

2.6.4 Bilateral hand and foot activities; finger and foot painting, throwing and catching, stringing beads, stacking cones or rings, etc.

Sub-objective 2.7 To facilitate oral-motor development

Activities

2.7.1 Tongue games; follow the leader with tongue movements - in/out, to the sides, up/down, etc.; licking off whipped cream, peanut butter, etc.

2.7.2 Mirror play; tongue and facial movements

2.7.3 Pretend Indians; learning war whoops, sounds, etc.

2.7.4 Snacktime; exposure to various textures of foods, jello, whipped cream, pudding, cookies, cheese, etc.

2.7.5 Pudding Painting; encouraging hand to mouth pattern, tongue movements, etc.

2.7.6 Action songs

2.7.7 Water play; using straws, blowing bubbles, etc.

2.7.8 Straw Painting

Objective 3.0 To facilitate sensory awareness.

Sub-objective 3.1 To differentiate between different textures

Activities

3.1.1 Rubbing body with various tactile materials, such as terry cloth, sheepskin, carpet, vinyl, burlap, sandpaper, silk, suede, plastic packaging material, corduroy, mud, hand cream, etc.

3.1.2 Feely ball; made from various textures. Push, pass, and catch games

3.1.3 Sand play; use of various textured objects in the sand, i.e. sponges, soft plastic animals, hard plastic pails and shovels, add water to change texture of the sand.

3.1.4 Water play; varying temperatures, addition of crazy foam and/or soap bubbles to change the consistency.

3.1.5 Finger and Body Painting; addition of sand, coconut, cornmeal, rice, to change texture. Use of pudding (plain or with rice or tapioca), gel, frosting, or whipped cream.

3.1.6 Tactile collage

3.1.7 "What's-in-the-Box?"; using various textured objects.

3.1.8 Fun dough

3.1.9 Bead Play; wooden beads, pop beads, hair rollers, etc.

3.1.10 "Pass the Jar"; filled with rice, beans, yarn, macaroni, styrofoam pieces, cotton balls, etc.

Sub-objective 3.2 To distinguish between various sounds.

Activities

3.2.1 Identify the sounds; use bell, spoons, tambourine, drums, tin containers with various objects inside, xylophone, blocks of wood, etc.

3.2.2 Rhythm band

3.2.3 Animal Sounds Game

3.2.4 Tearing, wrinkling, crumpling various materials, paper, plastic, cellophane, tinfoils, etc.

3.2.5 Action songs and music

3.2.6 Pass the beanbag to music

3.2.7 Water play, emphasizing sounds such as drip, splash, plop, etc.

Sub-objective 3.3 To distinguish between smells.
Activities
3.3.1 Hand Cream Activities; rubbing on different parts of body, discussing the process of smelling, hand to nose, etc.

3.3.2 Snacktime, emphasizing various smells of foods.

3.3.3 Blowing bubbles; odor and sensation involved

3.3.4 Frosting cookies; use various flavors in frostings, i.e. lemon, mint, chocolate, orange, cinnamon, etc.

Sub-objective 3.4 To distinguish between tastes.
Activities
3.4.1 Foodstuffs; tasting various foods, such as peanut butter, jelly, sugar, salt, lemon, spaghetti (cooked and uncooked) carrots, cheese, apples, nuts, granola, raisins, pudding, etc.

3.4.2 Pudding Painting

Sub-objective 3.5 To facilitate visual discrimination.
Activities
3.5.1 Mirror play

3.5.2 Ball play; emphasis on focus

3.5.3 Obstacle Course; emphasis on focus

3.5.4 Flashflight Games; focusing on moving light, in a darkened room

Objective 4.0 To improve perceptual motor skills.

Sub-objective 4.1 To increase awareness of body parts.
Activities
4.1.1 Angels-in-the-Snow

4.1.2 "Simon Says", and "Follow the Leader"

4.1.3 Body Tracings

4.1.4 Mirror play

4.1.5 Hula Hoop Games

4.1.6 Finger and Body Painting

4.1.7 Hand Cream Activities

4.1.8 Action songs and rhythm games

4.1.9 Cardboard Box Train

Sub-objective 4.2 To improve awareness of spatial concepts.
Activities
4.2.1 Hula Hoop games

4.2.2 Obstacle Course

4.2.3 "Simon Says", and "Follow the Leader"

4.2.4 Mobility Games

Sub-objective 4.3 To improve motor planning.
Activities
4.3.1 Obstacle Course

4.3.2 Mobility games

4.3.3 Marching rhythm band

4.3.4 Angels-in-the-Snow

4.3.5 Action songs and rhythm games

4.3.6 Cardboard Box Train

4.3.7 Hula Hoop Games; children get in and out, over and under hoop, etc.

Sub-objective 4.4 To improve figure-ground awareness.
Activities
4.4.1 Obstacle Course

4.4.2 Pegboard Games; copy pre-determined patterns

4.4.3 Suspended ball activities

Sub-objective 4.5 To improve directionality and laterality.
Activities
4.5.1 Angels-in-the-Snow

4.5.2 Ball games

4.5.3 Chalk and felt board activities; acting out stories with figures on the feltboard, making large circles, scribbling on chalkboard.

4.5.4 Obstacle Course

Objective 5.0 To improve cognitive-social (play) skills.

Sub-objective 5.1 To improve the ability to maintain attentiveness during a group activity.

Sub-objective 5.2 To improve the ability to follow basic directions and commands.

Sub-objective 5.3 To improve an awareness of self.

Sub-objective 5.4 To increase awareness of others.

Sub-objective 5.5 To increase recognition of common playthings and their function.

Sub-objective 5.6 To improve the ability to imitate others.

Sub-objective 5.7 To improve the ability to explore their immediate environment.

Sub-objective 5.8 To increase ability to show likes and dislikes.

Sub-objective 5.9 To improve ability to take turns.

The activities for this objective are incorporated into the total program.

A P P E N D I X B

PARENT EDUCATION PROGRAM

GOAL STATEMENT: The intent is to establish an educational program for parents of preschool neurologically impaired children with an informal, playful atmosphere. The program will focus on the significance of play in development, parental attitudes toward play, information concerning neurological impairment, and adaptations and modification of activities and play equipment.

Objective 1. To improve parent's awareness and understanding of their attitudes toward play and playfulness and of how their attitudes influence the play attitudes and abilities of their children.

Sub-objective 1.1. To increase parent's knowledge about the significance of play.

Sub-objective 1.2. To increase parent's awareness of their own playfulness and their attitudes toward play.

Sub-objective 1.3. To enable parents to participate in play activities in a playful manner.

Sub-objective 1.4. To increase parent's knowledge of the effect of a playful attitude on their children.

Objective 2. To increase parent's understanding of neurological impairment.

Sub-objective 2.1. To increase parent's basic knowledge of neurological impairment.

Sub-objective 2.2. To increase parent's knowledge of the varied sensory and motor deficits associated with neurological impairment.

Sub-objective 2.3. To increase parent's knowledge concerning handling and positioning.

Objective 3. To increase parent's understanding of the significance of play in the development of their children.

Sub-objective 3.1 To increase parent's knowledge of child development.

Sub-objective 3.2. To increase parent's knowledge of the way children learn and develop through play.

Sub-objective 3.3. To increase parent's awareness of the incorporation of play into physical therapy treatment of children.

Sub-objective 3.4. To increase parent's awareness of the importance of play for the growth and development of neurologically impaired children.

Objective 4. To assist parents in adaptations and modifications of play activities and play equipment.

Sub-objective 4.1. To increase parent's understanding of the necessity of adapting and modifying toys and play activities for their neurologically impaired child.

Sub-objective 4.2. To increase parent's resources concerning play adaptation and modifications.

Sub-objective 4.3. To increase parent's ability to adapt and modify play activities for their neurologically impaired child.

Sub-objective 4.4. To increase the parent's ability to adapt and modify play equipment for their neurologically impaired child.

Sub-objective 4.5. To encourage parent's to pose problems they encounter with play activities and equipment, to the group for discussion and possible alternatives.

A P P E N D I X C

COMPREHENSIVE DEVELOPMENTAL EVALUATION CHART

Child's Name _____

Birthdate _____

Initial Evaluation Date _____

Diagnosis _____

Physician(s) _____

_____

_____

Referral Source _____

Mother's Name _____

Father's Name _____

Address _____

Phone _____

Other family members with related disorders _____

_____

Health Clinic _____

Assisting Agencies (#) _____

_____

Summary of History:

Precautions:

Clinic Appointments:

Equipment:

SOURCE	TYPE	DATE ORDERED	RECEIVED	RETURNED

Developed by the Early Childhood Development Team of the El Paso Rehabilitation Center

S. Cliff, D. Carr, J. Gray, C. Nymann, S. Redding.

REFLEXES	GROSS MOTOR	MANIPULATION	VISION	WEEKS	FEEDING	RECEPTIVE LANGUAGE	EXPRESSIVE LANGUAGE	COGNITIVE—SOCIAL
MORO REFLEX FLEXOR WITHDRAWAL EXTENSOR THRUST ASYMMETRICAL TONIC NECK SYMMETRICAL TONIC NECK TONIC LABYRINTHINE—SUPINE & PRONE PALMAR GRASP POSITIVE SUPPORTING REACTION	Supine—symmetrical active movements of all extremities Prone—turns head side to side In ventral suspension—allows relaxed flexion, head slightly lower & elbows flexed, some hip extension In ventral suspension—briefly holds head in plane of body Prone—sometimes kicks legs out Prone—lifts face to 45° Supine—symmetrical active movements of all extremities. Elbows, knees, & knees are partly flexed In ventral suspension—often holds head above plane of body Prone—usually holds head in midline Prone—lifts face to 45°-90° plane flat In ventral suspension—maintains head above plane of body Sitting—usually holds head up, upper back fairly straight Prone—lifts chest up, lifts face to 90° Has only slight head lag when pulled to sitting	Puts hand to mouth after stimulation of cheek or palm Flexes elbow approximately 180° when arm is extended and then released* Puts hand to mouth Arms thrust in play Briefly retains rattle when placed in hand Holds hands open or loosely closed Actively holds rattle & glances at it Primitive clutch; pulls at dress or blanket Reaches for a brightly colored dangling toy; may contact it Puts hands together Puts toy to mouth Attempts to contact cube with hands	Pupils respond to hand-shadow test* Doll's eye movements* Raises around; occasionally fixates momentarily Briefly follows object moved horizontally in front of face Fixates for a few seconds Watches mother intently during feeding Briefly follows objects from side to midline Briefly follows a moving person Eyes accommodate to an object held at 7½ inches Follows a brightly colored dangling toy 180° Catches sight of presented object immediately Shows binocular coordination Looks at hand when reaching Follows an object moved vertically Blinks to threat Intently watches moving & still objects	0 2 4 6 8 10 12 14 16	Sucks well: suck reflex* rooting reflex* lip reflex* tongue reflex* normal oral tone No interference from: severe ATNR severe TNR palmar-mental reflex* tactile hypersensitivity Coordinates sucking & breathing Sucks 60-100 times per minute Swallows every 2-3 sucks Begins reaching when held in the feeding position Automatically opens mouth for feeding Can be fed soft pureed foods from spoon	Shows vague indirect regard of environment Shows alert expression Shows direct definite regard of environment Frequently stops vocalizing when adult joins in Is aware of noises and objects in environment Reduces amount of crying	Lustily cry when uncomfortable Cries on leave Makes throaty noises Cries with changes in pitch Coos & gurgles in vocal play Says single vowel sounds, "ah", "oh" Begins blowing bubbles Shows pleasure in making sounds Squeals and shouts Tries to "talk" when spoken to Laughs aloud Coos and goes when talked to	Displays awareness of examiner Changes body activity when spoken to Quiets when picked up Responds to a speaking voice Smiles when stimulated Shows awareness of brightly colored rattle Reacts when paper is placed on face Simple play with rattle Smiles upon recognition of mother's face Excites when a toy is presented Glances from object to object Spontaneous social smile Enjoys noise-making toys

COMMENTS:

ROM LIMITATIONS:

HEAD CIRCUMFERENCE:

WEIGHT:

HEIGHT:

HIPS:* Asymmetry of skin folds; Limitation of hip abduction; Obvious shortening of affected leg; Snapping sign; Telescoping sign

MUSCLE TONE:
_____Hypertonic
_____Hypotonic
_____Athetoid

DTR'S:

BABINSKI:

CLONUS:

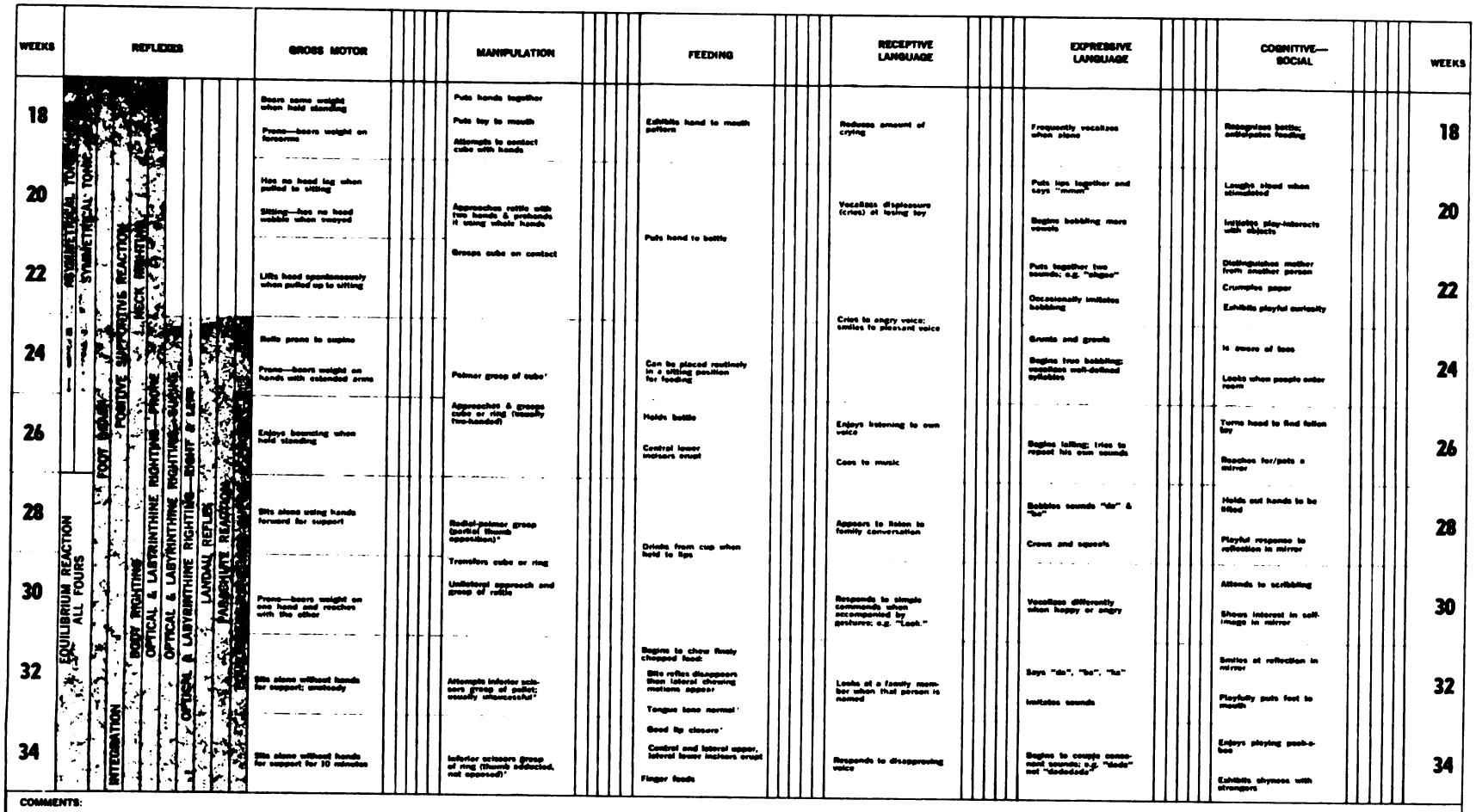
SUSPECTED SEIZURE ACTIVITY:

PHYSICAL ABNORMALITIES:

HEARING:
Quiets to a bell
Listens to mother's voice

PARENTAL ATTITUDES:

*ITEM EXPLAINED IN TEST MANUAL


WEEKS
REFLEXES
GROSS MOTOR
MANIPULATION
FEEDING
RECEPTIVE LANGUAGE
EXPRESSIVE LANGUAGE
COGNITIVE—SOCIAL
WEEKS
ASYMMETRICAL TONIC
SYMMETRICAL TONIC
FOOT KICK
POSITIVE SUPPORTIVE REACTION
INTEGRATION
NECK RIGHTING
BODY RIGHTING
PRONE
OPTICAL & LABYRINTHINE RIGHTING
SUBMIT
OPTICAL & LABYRINTHINE RIGHTING
SUPINE
LANDAU REFLEX
EQUILIBRIUM REACTION
ALL FOURS
PARACHUTE REACTION
Bears some weight when held standing
Prone—bears weight on forearms
Has no head lag when pulled to sitting
Sitting—has no head wobble when swayed
Lifts head spontaneously when pulled up to sitting
Rolls prone to supine
Prone—bears weight on hands with extended arms
Enjoys bouncing when held standing
Sits alone using hands forward for support
Prone—bears weight on one hand and reaches with the other
Sits alone without hands for support; unsteady
Sits alone without hands for support for 10 minutes
Puts hands together
Puts toy to mouth
Attempts to contact cube with hands
Approaches rattle with two hands & preferably if using whole hands
Grasps cube on contact
Palmar grasp of cube*
Approaches & grasps cube or ring (usually two-handed)
Radial-palmar grasp (partial thumb opposition)*
Transfers cube or ring
Unilateral approach and grasp of rattle
Attempts inferior scissors grasp of pellet; usually unsuccessful*
Inferior scissors grasp of ring (thumb adducted, not opposed)*
Exhibits hand to mouth pattern
Puts hand to bottle
Can be placed routinely in a sitting position for feeding
Holds bottle
Control lower incisors onset
Drinks from cup when held to lips
Begins to chew finely chopped food
Bite reflex disappears when lateral chewing motions appear
Tongue tone normal*
Good lip closure*
Control and lateral upper, lateral lower incisors erupt
Finger feeds
Reduces amount of crying
Vocalizes displeasure (cries) at losing toy
Cries to angry voice; smiles to pleasant voice
Enjoys listening to own voice
Coos to music
Appears to listen to family conversation
Responds to simple commands when accompanied by gestures; e.g. "Look."
Looks at a family member when that person is named
Responds to disapproving voice
Frequently vocalizes when alone
Puts lips together and says "mmm"
Begins babbling more vowels
Puts together two sounds; e.g. "adgoo"
Occasionally imitates babbling
Growls and growls
Begins true babbling; combines well-defined syllables
Begins talking; tries to repeat his own sounds
Babbles sounds "da" & "ba"
Crows and squeals
Vocalizes differently when happy or angry
Says "da", "ba", "ba"
Imitates sounds
Begins to accept environment sounds; e.g. "dada" not "dadadada"
Recognizes bottle; anticipates feeding
Laughs aloud when stimulated
Imitates play-interacts with objects
Distinguishes mother from another person
Crumples paper
Exhibits playful curiosity
Is aware of toes
Looks when people enter room
Turns head to find fallen toy
Reaches for/pats a mirror
Holds out hands to be lifted
Playful response to reflection in mirror
Attends to scribbling
Shows interest in self-image in mirror
Smiles at reflection in mirror
Playfully puts foot to mouth
Enjoys playing peek-a-boo
Exhibits shyness with strangers
COMMENTS:
ROM LIMITATIONS:
HEAD CIRCUM-FERENCE:
WEIGHT:
HEIGHT:
HIPS:*
Asymmetry of skin folds
Limitation of hip abduction
Obvious shortening of affected leg
Snapping sign
Telescoping sign
MUSCLE TONE:
Hypertonic
Hypotonic
Athetoid
DTR'S:
BABINSKI:
CLONUS:
SUSPECTED SEIZURE ACTIVITY:
PHYSICAL ABNORMALITIES:
HEARING:
Localizes sound side to side
VISION:
No irregularities in the eye position or movements
Can track 180° in all planes
Can accommodate to close objects.
PARENTAL ATTITUDES:
*ITEM EXPLAINED IN TEST MANUAL
© 1975 EL PASO REHABILITATION CENTER

WEEKS	REFLEXES	GROSS MOTOR	MANIPULATION	FEEDING	RECEPTIVE LANGUAGE	EXPRESSIVE LANGUAGE	COGNITIVE—SOCIAL	WEEKS
36	EQUILIBRIUM REACTIONS—PRONE, SUPINE & ALL FOURS EQUILIBRIUM REACTION—SITTING FOOT GRASP INTEGRATION OF SUPPORTING REACTIONS TO ALLOW FOR RECIPROCATION BODY RIGHTING OPTICAL & LABYRINTHINE RIGHTING—PRONE, SUPINE, RIGHT & LEFT LANDAU	Pulls to standing Attempts to crawl	Radial-digital grasp of cube (thumb begins to move towards opposition)*	Begins to chew finely chopped food: Bite reflex disappears then lateral chewing motions appear Tongue tone normal* Good lip closure* Central and lateral upper, lateral lower incisors erupt Finger foods	Meaningfully waves "bye-bye" Cries when scolded	Enjoys making coupled sounds; e.g. "lala," "baba" Begins to string sounds together with inflectional patterns	Inspects a toy Exhibits curiosity; uncovers toy	36
38		Sitting—recovers balance after leaning forward	Scissors grasp of pellet*	Does not gag on anterior half of tongue Gag occurs on back half of tongue	Comprehends "no-no"	Repeats most sounds said to him (not words)	Responds appropriately to "no-no"	38
40		Crawls forward on stomach Goes over into prone from sitting	Inferior pincer grasp of pellet*		Responds to own name	Begins echolalia: imitates facial expressions and sounds	Is a cooperative participant in peek-a-boo Dislikes being supine except to sleep	40
42		Gets to a sitting position independently	Crude release of cube		Understands some phrases of body action, e.g. "Open your mouth."	Jabbering begins to resemble short sentences	Extends toy to examiner; may not release Will look in box for contents	42
44		Creeps on hands and knees Pulls to standing using furniture	Removes cube from cup	Begins to eat solid table foods	Understands meaning of "hot"	Enjoys making bilabial sounds Uses both speech and nonspeech sounds	Shows interest in pictures in book Deliberately drops toy to be picked up	44
46		Can lift one foot when standing with support	Puts cube into cup; may not release		Looks at shoe when asked, "Where's (child's name) shoe?"	Tries to say names of familiar objects, e.g. "baba" for "bottle"	Attempts to scribble after demonstration	46
48		Cruises along furniture Pivots while sitting	Neat pincer grasp of pellet*		Shakes head "yes" or "no" in answer to a few questions	Talks to himself in mirror	Repeats performance when laughed at Attempts to "play" ball	48
50		Lowers from standing to sitting without help	Removes round block from formboard	Attempts to drink from cup by self	Looks for ball when asked, "Where's the ball?"	Imitates some new sounds not previously heard	Plays ball with examiner Obeys "no"	50
52		Walks with one hand held Stands alone momentarily	After demonstration, releases a cube into cup	Begins to acquire mature swallow pattern No more drooling Should no longer drink from bottle Eats most table foods—meat may be chopped	Usually follows command, "Give it to me."	Uses one word with meaning	Turns pages of a book	52

COMMENTS:

ROM LIMITATIONS:

HEAD CIRCUMFERENCE:

WEIGHT:

HEIGHT:

HIPS:* Asymmetry of skin folds; Limitation of hip abduction; Obvious shortening of affected leg; Snapping sign; Telescoping sign

MUSCLE TONE: ______ Hypertonic ______ Hypotonic ______ Athetoid

DTR'S:

BABINSKI:

CLONUS:

SUSPECTED SEIZURE ACTIVITY:

PHYSICAL ABNORMALITIES:

HEARING: Localizes sound side to side and up and down

VISION: No irregularities in the eye position or movements. Can track 180° in all planes. Can accommodate to close objects.

PARENTAL ATTITUDES:

*ITEM EXPLAINED IN TEST MANUAL

REFLEXES

- EQUILIBRIUM REACTIONS WHILE STANDING—FORWARD, BACKWARDS, SIDEWAYS
- EQUILIBRIUM REACTIONS KNEEL-STANDING
- EQUILIBRIUM REACTIONS—PRONE, SUPINE, ALL FOURS, SITTING
- [illegible] REACTIONS TO ALLOW FOR [illegible]

AGE	GROSS MOTOR	MANIPULATION	FEEDING	RECEPTIVE LANGUAGE	EXPRESSIVE LANGUAGE	COGNITIVE—SOCIAL	AGE
1 YEAR 3 MOS.	Walks alone Squats, then regains standing position	Builds a tower with 2 blocks Places round block in formboard without demonstration	Picks up cup with palmar grasp* Begins independent spoon-feeding	Looks at correct picture in book when named	Says at least two words with meaning Uses expressive jargon	Cooperates in dressing	1 YEAR 3 MOS.
1 YEAR 6 MOS.	Walks hurriedly Seats himself in small chair	Builds a tower of 3-4 cubes	Partially feeds self; frequently spills Eats bite-sized pieces of meat Has approximately 12 teeth	Identifies a few body parts when named	Points to make wants known Says 4-7 words with meaning; e.g. "All gone," "Thank you."	Plays meaningfully with toys; e.g. doll, cup, car Scribbles spontaneously when given crayon	1 YEAR 6 MOS.
1 YEAR 9 MOS.	Walks up stairs using railing	Builds a tower of 5-6 cubes Places 2-3 shapes in formboard	Handles a cup well	Points or looks to 4 common items when named	Vocalizes wants Asks for familiar objects by name	Shows favoritism for selected toys Copies mother in household tasks	1 YEAR 9 MOS.
2 YEARS	Standing—kicks ball Walks backward	Unscrews lids; turns knobs Strings 1" beads	Holds spoon in the supinated position Has approximately 16 teeth	Carries out simple commands; e.g. "Put the book on the chair." Identifies 5 pictures in a book	Uses a few two word phrases; e.g. "More milk," "Daddy gone." Uses I, me, you	Unwraps candy Identifies doll's body parts	2 YEARS
2 YEARS 6 MOS.	Can walk on tiptoes Throws a ball 4 feet	Builds a tower of 8 cubes Imitates a circular, vertical & horizontal stroke with a crayon	Has all 20 deciduous teeth	Understands the prepositions on and under	Uses many two word phrases; usually intelligible Can name 5 pictures in a book	Is toilet trained Knows meaning of "mine"; unable to share easily	2 YEARS 6 MOS.
3 YEARS	Jumps up a few inches Can stand with feet together	Imitates a bridge with three blocks Copies a circle	Feeds self independently; seldom spills	Identifies action pictures in books	Uses longer phrases with some words omitted; e.g. "That boy bad." Asks frequent questions	Plays guessing game, "Which hand?" Knows full name	3 YEARS

COMMENTS:

ROM LIMITATIONS:

HEAD CIRCUMFERENCE:

WEIGHT:

HEIGHT:

HIPS:* Asymmetry of skin folds; Limitation of hip abduction; Obvious shortening of affected leg; Snapping sign; Telescoping sign

MUSCLE TONE: Hypertonic; Hypotonic; Athetoid

DTR'S:

BABINSKI:

CLONUS:

SUSPECTED SEIZURE ACTIVITY:

PHYSICAL ABNORMALITIES:

HEARING: Localizes sound in all planes

VISION: No irregularities in the eye position or movements; Can track 180° in all planes; Can accommodate to close objects.

PARENTAL ATTITUDES:

*ITEM EXPLAINED IN TEST MANUAL

86

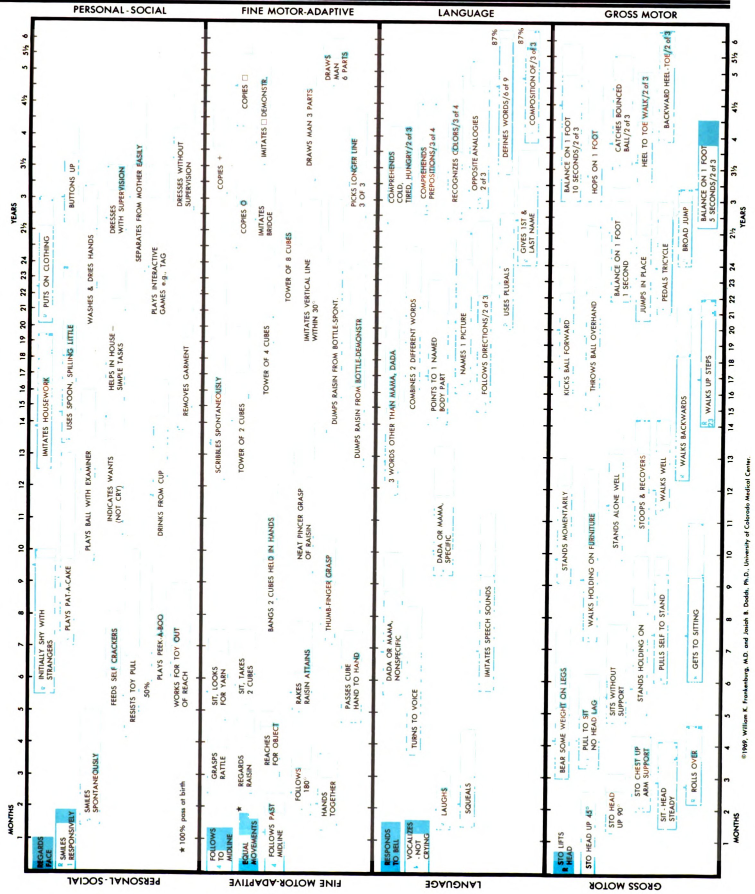
DENVER DEVELOPMENTAL SCREENING TEST

STO.=STOMACH
SIT=SITTING

PERCENT OF CHILDREN PASSING
25 50 75 90

May pass by report
Test Item
Footnote No. - see back of form

Date
Name
Birthdate
Hosp. No.



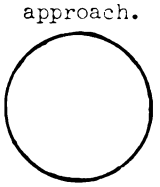
DATE

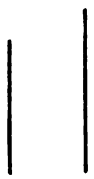
NAME

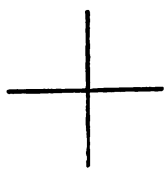
DIRECTIONS BIRTHDATE

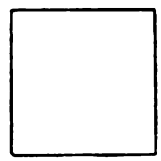
HOSP. NO.

1. Try to get child to smile by smiling, talking or waving to him. Do not touch him.
2. When child is playing with toy, pull it away from him. Pass if he resists.
3. Child does not have to be able to tie shoes or button in the back.
4. Move yarn slowly in an arc from one side to the other, about 6" above child's face. Pass if eyes follow 90° to midline. (Past midline; 180°)
5. Pass if child grasps rattle when it is touched to the backs or tips of fingers.
6. Pass if child continues to look where yarn disappeared or tries to see where it went. Yarn should be dropped quickly from sight from tester's hand without arm movement.
7. Pass if child picks up raisin with any part of thumb and a finger.
8. Pass if child picks up raisin with the ends of thumb and index finger using an over hand approach.





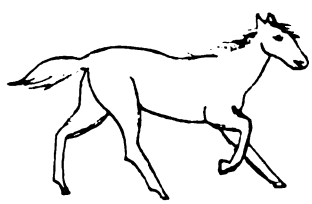


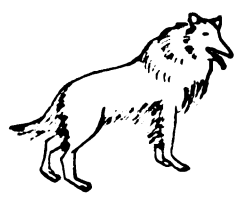


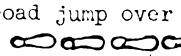
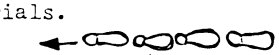
9. Pass any enclosed form. Fail continuous round motions.
10. Which line is longer? (Not bigger.) Turn paper upside down and repeat. (3/3 or 5/6)
11. Pass any crossing lines.
12. Have child copy first. If failed, demonstrate

When giving items 9, 11 and 12, do not name the forms. Do not demonstrate 9 and 11.

13. When scoring, each pair (2 arms, 2 legs, etc.) counts as one part.
14. Point to picture and have child name it. (No credit is given for sounds only.)





15. Tell child to: Give block to Mommie; put block on table; put block on floor. Pass 2 of 3. (Do not help child by pointing, moving head or eyes.)
16. Ask child: What do you do when you are cold? ..hungry? ..tired? Pass 2 of 3.
17. Tell child to: Put block on table; under table; in front of chair, behind chair. Pass 3 of 4. (Do not help child by pointing, moving head or eyes.)
18. Ask child: If fire is hot, ice is ?; Mother is a woman, Dad is a ?; a horse is big, a mouse is ?. Pass 2 of 3.
19. Ask child: What is a ball? ..lake? ..desk? ..house? ..banana? ..curtain? ..ceiling? ..hedge? ..pavement? Pass if defined in terms of use, shape, what it is made of or general category (such as banana is fruit, not just yellow). Pass 6 of 9.
20. Ask child: What is a spoon made of? ..a shoe made of? ..a door made of? (No other objects may be substituted.) Pass 3 of 3.
21. When placed on stomach, child lifts chest off table with support of forearms and/or hands.
22. When child is on back, grasp his hands and pull him to sitting. Pass if head does not hang back.
23. Child may use wall or rail only, not person. May not crawl.
24. Child must throw ball overhand 3 feet to within arm's reach of tester.
25. Child must perform standing broad jump over width of test sheet. (8-1/2 inches)
26. Tell child to walk forward,  heel within 1 inch of toe. Tester may demonstrate. Child must walk 4 consecutive steps, 2 out of 3 trials.
27. Bounce ball to child who should stand 3 feet away from tester. Child must catch ball with hands, not arms, 2 out of 3 trials.
28. Tell child to walk backward,  toe within 1 inch of heel. Tester may demonstrate. Child must walk 4 consecutive steps, 2 out of 3 trials.

DATE AND BEHAVIORAL OBSERVATIONS (how child feels at time of test, relation to tester, attention span, verbal behavior, self-confidence, etc,):

A P P E N D I X D

EVALUATION

1. Please identify any objective(s) which are not stated clearly._____ Comments _____
_____

2. Please identify any objective(s) you feel does not relate to the goal statement._____ Comments _____
_____
_____

3. Please identify any additional objective(s) which you feel would be necessary to achieve the purpose of the study.
_____
_____

4. Please identify any sub-objective(s) which are not stated clearly._____ Comments _____
_____

5. Please identify any sub-objective(s) you feel does not relate to its respective objective._____
Comments _____
_____

6. Please identify any additional sub-objective(s) which you feel would be necessary to meet its objective._____
_____ Comments _____
_____

7. Please identify any activity(ies) you feel does not relate to its respective objective(s). _____
_____ Comments _____
_____

8. Please identify any additional activity(ies) which you feel would be necessary to meet its respective objective(s).
_____
Comments _____
_____

9. Are the sub-objectives and activities appropriate for preschool Cerebral Palsy children? _____
_____
_____

PILOT PROJECT EVALUATION

THERAPEUTIC PLAY PROGRAM AND PARENT EDUCATION PROGRAM ON PLAY

As you observe the play/parent education pilot session, please comment on the following areas:

1. Organization (time structure, order of presentation, etc.)

2. Preparation

3. General Atmosphere

4. Leadership and Direction

5. Participant Interaction

6. Activities (therapeutic, fun, motivating, etc.)

7. Additional Comments

A P P E N D I X E

Child's Name _____ Mother's Name _____

Birthdate _____ Father's Name _____

Siblings' Name _____ Mother's Birthdate _____

_____ Father's Birthdate _____

Siblings' Ages _____

Address _____

Educational Level:

	Mother		Father	
K - 8th grade	K 1 2 3 4 5 6 7 8		K - 8th grade	K 1 2 3 4 5 6 7 8
High School	1 2 3 4		High School	1 2 3 4
College	1 2 3 4		College	1 2 3 4
Post-grad	_____		Post-grad	_____

Diagnosis of Child _____ Phone _____

Treatment Services for Child (where and number of times per week) _____

_____

Additional programs your child participates in? _____

_____

Additional programs you are involved in related to your child

_____

Describe your child _____

_____

A P P E N D I X F

ANECDOTAL DATA FORM

PARENT EDUCATION ON PLAY

NAME_____SESSION #_____

DATE_____EVALUATOR _____

Answer the following questions with brief descriptions of interactions observed during the parent group sessions. Use direct quotations whenever appropriate.

Did parent(s) comment on any play activities tried or equipment or activities modified during the past week?_____

_____

_____

Did they comment on anything learned in the past session(s) and/or their response to any of the information presented?

_____

Do parents appear comfortable (i.e. interact easily and spontaneously) with each other?_____ Describe situation.

_____

_____

Do parents appear comfortable (i.e. interact easily and spontaneously) with their child (children)? _____
Describe situation. _____

_____

Describe childs' initial response when parents re-enter the room after the play sessions. _____

_____

Describe parents response upon returning to their child.

_____

Comment on the playfulness of the mother _____

_____

Comment on the playfulness of the father _____

_____

Comment on the playfulness of the child in the play group,

_____

in the presence of parents _____

Were there observable changes in the parents responses during the session? _____ Describe _____

_____

General Comments _____

_____

A P P E N D I X G

VOLUNTEER TRAINING PROGRAM

First Session

I. Fingerpainting with Pudding

Half of the volunteers will each be given the description of a child of preschool age, who has been diagnosed with a neurological impairment. The description will include the child's age, disability, personality characteristics, mental status, etc. They will then be requested to role play their assigned child. After a brief description of the Therapeutic Play session the rest of the volunteers will act as volunteers in a modified therapeutic play session. Roles will be reversed after fifteen minutes. Following the play session there will be a group discussion dealing with the participants' feelings during the session, the activity itself (pudding painting), and ways in which the activities can be therapeutic yet fun. Time: One hour

II. Videotape on the therapeutic play program. Time: thirty minutes

III. Policies and Procedures

A. Time, place and transportation discussion

B. Expectations of the volunteers

1. Versatility between parent and play group.
2. Assist group leaders in the preparation of the area and equipment.
3. Assist with the dressing of the child.
4. Each volunteer will be assigned to specific children.
5. Participate in free play with the children as they arrive.
6. Observe children and parents' reactions for recording after each session.
7. Encourage children to participate in the group.
8. Encourage children to interact, but do not allow them to hurt each other.
9. Assist in cleaning program area.

Time: thirty minutes

Second Session

I. Roleplay Parents of Handicapped Children

After a brief description of the parent education program on play, half of the volunteers will be given the description of a preschool neurologically impaired child, including the same characteristics as those given for

the play program. They will then be requested to role play the results of these children in a modified parent education session on play. The rest of the volunteers will be asked to act as volunteers in the session. Roles will be reversed after fifteen minutes. A group discussion will follow dealing with the participants' feelings and reactions, handicaps such as neurological impairments and parental attitudes towards these and play.

Time: One hour

II. Observation and Recording

A segment of the Therapeutic Play videotape will be shown and the volunteers will be asked to record their observations. Discussion will follow concerning observation and recording with emphasis on the problem of interpretation. Another segment of the video will then be shown and they will be asked to record their observations again. Comparisons will then be made.

Time: Forty-five minutes

III. Handouts and Further Discussion and Questions

A. An opportunity for the volunteers to ask any further questions or stimulate further discussion will be provided.

B. Handouts
   1. Schedule of both programs
   2. Chapter on "Play" by Finnie
   3. Development of Play
   4. "How To Play With Your Baby" (Asconi)

Time: Fifteen minutes

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