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DEVELOPING BODY IMAGE AND SKILLS OF ORIENTATION, MOBILITY AND SOCIAL COMPETENCE IN PRESCHOOL MULTIPLY HANDICAPPED BLIND CHILDREN

by

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B.S., UNIVERSITY OF PITTSBURGH, 1962

M.ED., UNIVERSITY OF PITTSBURGH, 1965

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University of Pittsburgh

1970

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CHAPTER I

INTRODUCTION

The increased incidence of blindness in children which was a result of retrolental fibroplasia during the period between 1940 and 1960 led to a heightened interest on the part of physicians, psychologists, educators and social workers in the needs of children under school age.[1] The National Conference on the Blind Preschool Child in 1947, and the National Work Session on the Preschool Blind Child in 1951, both sponsored by the American Foundation for the Blind, resulted in recommendations for descriptive studies of the growth and development of the blind child and the identification of the significant variables involved in the growth and development of the blind child.[2] During the 1950's, Morris studied extensively the early development of blind children. She demonstrated that blind children, without additional handicaps, progressed through an orderly pattern of growth in the same way as children who were

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[1] American Foundation for the Blind, Report of the National Work Session on the Preschool Blind Child (New York: American Foundation for the Blind, Inc., 1951).

[2] Ibid., P. 21.

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not blind if the blind children were provided with "favorable opportunities for learning."[1] She concluded:

> The failure to provide the essentials for healthy development may result in grossly retarded functioning and extreme emotional problems which do not lend themselves well to treatment.
>
> There is increasing recognition that many blind children who have been committed to institutions for mental defectives could have developed adequately if conditions had been more favorable for their development.[2]

More recently, increasing concern for the welfare and education of multiply handicapped blind children has been expressed. The American Foundation for the Blind, in a policy statement, stressed the lack of knowledge of educational methods and techniques, equipment and materials which were applicable to multiply handicapped blind children. The statement concluded:

> The American Foundation for the Blind . . . believes that there is a pressing need for increased public and voluntary support of relevant research and experimentation.[3]

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[1]Miriam Norris, Blindness in Children (Chicago: University of Chicago Press, 1957), p. 65.

[2]Ibid., p. 67.

[3]American Foundation for the Blind, Policy Statement: Services for Children and Adults Who Have Physical or Mental Handicaps in Addition to Visual Loss (New York: American Foundation for the Blind, Inc., October, 1968).

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The study being reported was undertaken to demonstrate some educational methods and materials with which the development of multiply handicapped blind children could be advanced.[1]

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[1]The demonstration project reported here was performed pursuant to a grant under Title VI of the Elementary and Secondary Education Act of 1965 (PL-89-10), Project No. 48-0935-02-012-02.

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CHAPTER II

REVIEW OF LITERATURE

Each multiply handicapped blind child must have highly individualized services, but some of the knowledge derived from studies which pertained to blind children with no additional handicaps can be utilized in a general manner. The following review of selected literature discusses briefly some educational considerations which are applicable to all multiply handicapped blind children.

Studies of Incidence and Prevalence

Some recent surveys indicated that the number of blind children was increasing. Graham stated:

> Blindness is a function of populations: the more children that are born, the more blind children . . . there will be. Incidence rates may decrease as medical science advances, but absolute numbers of blind children will not.[1]

It has been a difficult and complex task to gather data on the incidence and prevalence of blindness. The introduction to the National Society for the Prevention

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[1]Milton D. Graham, Multiply-Impaired Blind Children: A National Problem (New York: American Foundation for the Blind, Inc., 1966), p. 19.

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of Blindness Fact Book: Estimated Statistics on Blindness and Vision Problems, stated:

> At the present time it is not possible to assemble adequate and reliable statistics on blindness and vision problems in the United States as a whole. Accurate information is available in all states on the number, age, sex, and racial distribution of blind persons receiving financial aid or other special services. However, these figures do not provide reliable data on the prevalence or, what is even more important, the incidence of blindness. A few states maintain registers of the blind but data available from these sources have been limited and lacking in comparability.[1]

The prevalence of persons classified as blind under the definition derived from the Social Security Act of 1935, was estimated to be 399,300 by the National Society for the Prevention of Blindness, based on data gathered in 1962. Of this number, 0.7% were in the under five year age group.[2] Prenatal conditions accounted for 64.4% of the blindness in children under five. Because of the rapidly growing birth rate, a marked increase in numbers of blind children as a result of these prenatal conditions was projected.

There has been, recently, an alarmingly high incidence of multiple impairment in blind children. In 1965, Moor stated that population statistics of

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[1]The National Society for the Prevention of Blindness, Inc. Estimated Statistics on Blindness and Vision Problems (New York: The National Society for the Prevention of Blindness, Inc., 1966), p. 6.

[2]Ibid., p. 49.

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communities as well as demographic studies of the blind population of certain states showed incidences ranging from 16% in some localities to as high as 50% in others.[1]

The American Foundation for the Blind gathered data about the numbers of multiply handicapped visually handicapped children in the United States. Information was received from mailed questionnaires to

> local boards of education or school districts; residential schools for the blind only; private or state institutions; state welfare or health departments; commissions for the blind, etc.; state education departments; voluntary agencies; special residential schools; and hospitals or clinics

in fifty states. It was estimated that there were 15,000 such children.[2] Some earlier studies have reported data which would substantiate this estimate.[3]

The data reported in these studies did not reflect the results of the 1964-65 epidemic of rubella which was widespread in certain areas of the United States, particularly the eastern and western seaboard

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[1]Pauline M. Moor, "Who Are the Children and What Are They Like?," The International Journal for the Education of the Blind, XV (1) (October, 1965), pp. 20-23.

[2]Graham, Multiply-Impaired Blind Children, p. 4.

[3]William M. Cruikshank and Matthew J. Trippe, Services to Blind Children in New York State (Syracuse: Syracuse University Press, 1959); Frank C. Bucknam, "Multiple-Handicapped Blind Children, An Incidence Survey," The International Journal for the Education of the Blind, XV (2) (December, 1965), pp. 46-50.

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states. More than 40,000 cases were reported in a population of 3.5 million in the State of Connecticut by Geltzer, Gruber and Sears.[1] Maternal german measles (rubella) in the first trimester of pregnancy caused subsequent development in the newborn of congenital heart defects, hearing loss, mental retardation, cataracts and/or other ocular abnormalities. Graham stated:

> The public should be informed about the extent of the problems of the multiply impaired blind child. For example, the Communicable Disease Center of the National Institute of Neurological Diseases and Blindness should release a full report on the rubella epidemics of 1964-65 so that others can decide whether a special survey is needed. If there are 3,000 to 5,000 such children as they estimate, we need to know a good deal more about them if services are to be planned for them.[2]

In spite of difficulties in gathering data for incidence and prevalence studies, enough data have been collected concerning numbers of blind children and multiply handicapped blind children for reasonable estimates to be published and for projections to be made indicating that there will be sufficient numbers of these children to warrant national concerns regarding their education.[3]

---

[1]Arthur I. Geltzer, Donald Gruber, and Marvin L. Sears, "Oculuar Manifestations of the 1964-65 Rubella Epidemic," American Foundation for the Blind, Research Bulletin Number 15 (January, 1968), p. 35.

[2]Graham, Multiply-Impaired Blind Children, p. 19.

[3]Ibid., p. 1.

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School Programs for Multiply-Handicapped Blind Children

In recent years, articles have appeared concerning development of programs for the multiply-handicapped blind child. McQuie, in 1960, discussed the characteristics, evaluation and programs for severely disturbed blind children.[1] He recommended that large classrooms be provided; that programs be limited to six to eight children in one class; and that restriction in movement be kept at a minimum. In 1963, Gruber and Moor published No Place to Go, in which they said:

> The potential of the forgotten blind child--sometimes so great as to be superior--may be lost to society unless someone or some total setting is willing to undertake a program especially designed to encourage the latent development of the child.[2]

Some programs for multiply handicapped children have been conducted in residential situations. The Edward R. Johnstone Training and Research Center at Bordentown, New Jersey, reported a program for mentally retarded blind children which was aimed principally at psychological development. Each child was exposed to many "security promoting experiences; acceptance

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[1] Bob McQuie, "Severely Disturbed Blind Children," The International Journal for the Education of the Blind, X (2) (December, 1960), pp. 34-37.

[2] Kathern F. Gruber and Pauline M. Moor, editors, No Place to Go (New York: American Foundation for the Blind, Inc., 1963), p. 2.

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promoting activities; fear-alleviating experiences and social interaction" and was allowed complete freedom to explore his surroundings.[1]

The Michigan School for the Blind conducted a summer program for "deviant blind children."[2] Improvements in behavior, academic achievement and measured intelligence for a small group of children were reported. Treatment procedures were not reported.

The Texas School for the Blind conducted a pilot program for multiply-handicapped blind children aimed mainly at academic achievement. Strong emphases was given to concrete experiences, including one field trip a week. The experimenters reported:

> Prior to the program, the multi-handicapped blind children were progressing educationally at a low educable mentally retarded rate. At the end of the first year of the program, these same children were progressing almost at a normal or average overall rate of educational achievement.
>
> There are three important explanations for this radical change. The children obtained a great deal of personal and individual attention with the five-to-one student-teacher ratio maintained in the project. A great deal of effort was made to develop the type of educational environment which would motivate and stimulate each child to

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[1]Erbert F. Cicenia et al, "The Blind Child with Multiple Handicaps: A Challenge, Part I," The International Journal for the Education of the Blind, XIV (3) (March, 1965), pp. 1-70: Erbert F. Cicenia et al., "The Blind Child with Multiple Handicaps: A Challenge, Part II," The International Journal for the Education of the Blind, XIV (4) (May, 1965), pp. 105-112.

[2]Anna S. Elonen and Margaret Polzien, "Experimental Program for Deviant Blind Children," New Outlook for the Blind, 59 (4) (April, 1965).

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> demonstrate his highest learning potential. Finally, as a result of the development of an educational prescription for each child, the best avenues for learning were maximized for each individual child's predicted achievement.[1]

The children involved in these residential school programs have been school age children and the programs were aimed at remediation of handicaps.

One program for preschool multiply handicapped blind children has been reported from the Maryland School for the Blind.[2] Twenty-three children were grouped into four class groups for a four-hour school day. Activities included: individual play, group play, toilet-training, self-care and feeding, music and rhythms, walks, activities to stimulate speech, listening to stories, care of pets, and crafts. The purpose of the program was two-fold: to stimulate the development of the children, and to begin to evaluate their potential as it related to future educational placement.

With the exception of a few residential school programs, multiply handicapped blind children have had only custodial institutions available to them. Graham stated:

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[1]James P. Best and R. J. Winn, Jr., "A Place to Go in Texas," The International Journal for the Education of the Blind, XVIII (1) (March, 1968), p. 9.

[2]Lois V. Cox, "The Maryland School for the Blind Summer Day School Program for Preschool Multihandicapped Blind Children," The International Journal for the Education of the Blind, XVIII (4) (December, 1968), pp. 97-99.

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> We believe that one of the principal causes of resorting to institutionalization as a makeshift answer to meet the needs of many multiply impaired blind children is the general misconception that the number of blind children is decreasing because retrolental fibroplasia is no longer a principal cause of blindness. . . . We do not believe that institutionalization per se is wrong: some children can benefit only from custodial care. We urge that only such children be committed, and that those capable of self care, independence of mobility, and some learning be given the opportunity to develop their capabilities.[1]

The current situation was presented by the American Foundation for the Blind:

> The field of special education is now undergoing the inevitable growing pains of developing attitudes and techniques which will meet the personal, educational, and social needs of multiply handicapped people.
>
> . . . . . .
>
> There is a reluctance on the part of each field of special education to provide service to individuals whose combined problems make present day methods and techniques seem inadequate.[2]

Development of the Blind Child

Research involved with sensory and environmental deprivation revealed ways in which blindness was a factor in the total development of the blind child.

Sensory deprivation.--In recent years there has been an increasing interest in the effects of sensory deprivation and stimulation. Although there were

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[1]Graham, Multiply Impaired Blind Children, p. 19.

[2]American Foundation for the Blind, Policy Statement, p. 2.

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occasional observations reported earlier, systematic investigation was intensified in the early 1950's following the publication of Hebb's work, The Organization of Behavior.[1] Experiments of sensory deprivation in humans produced some dramatic behavioral aberrations and deterioration in the cognitive functions of problem solving and reasoning.[2] Hebb reported observation of "apathy, lack of interest in surroundings, motor retardation and increased hours of sleep" as effects of stimulus deprivation.[3] The role of early stimulation was stressed in Hebb's conception of the nervous system in which early learning was conceived to consist largely of the establishment of perceptual elements which served as the basis of learning later in life. He said: "Psychological development is fully dependent on stimulation from the environment. Without it, intelligence does not develop normally and the personality is grossly atypical."[4]

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[1]Donald O. Hebb, The Organization of Behavior (New York: John Wiley and Sonsm Inc., 1949).

[2]Philip Solomon et al., editors, Sensory Deprivation (Cambridge: Harvard University Press, 1961).

[3]Donald O. Hebb,"The Motivating Effects of Exteroceptive Stimulation," American Psychologist, 13 (1958), p. 112.

[4]Donald O. Hebb, "The Mammal and his Environment," American Journal of Psychiatry, 111 (1955), p. 829.

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Cognitive processes and concept formation have been investigated. Foulke said, about the development of blind children: "sensory experience is prerequisite to the formation of concepts, and the amount and kind of experience determines the scope and quality of the concepts."[1]

More experiments have been conducted on animal sensory restriction than on human. To exclude stimulation from any given end organ has been difficult. For studies in which sensory deprivation was to be temporary, vision has been the sensory modality of choice. Biochemical investigations of visual processes showed that maintenance and development of the nervous system were highly dependent upon neural activation. Studies with chimpanzees revealed that total deprivation of light during infancy produced chemical changes in the ganglion cells of the retina and an eventual disappearance of light reflexes which was progressive even after the animals were returned to light.[2] After total deprivation of light from birth to ten weeks, the rabbits in a study

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[1]Emerson Foulke, "A Multi-Sensory Test of Conceptual Ability," New Outlook for the Blind, 58 (March, 1964), p. 75.

[2]K. L. Chow, A. H. Riesen and F. W. Newell, "Degeneration of Retinal Ganglion Cells in Infant Chimpanzees Reared in Darkness," Journal of Comparative Neurology, 197 (1957), pp. 27-42; A. H. Riesen, "Effects of Stimulus Deprivation on the Development and Atrophy of the Visual Sensory System," American Journal of Orthopsychiatry, 30 (1960), pp. 23-36.

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conducted by Brattgard exhibited retinal cells with reduced levels of protein.[1] When given light stimulation for three weeks, some cells, but not all, reached normal levels. This gave proof of atrophy of some ganglion cells and their optic nerve fibers. Maletta and Timiras found that decreased sensory input at critical developmental periods, in its alteration of biochemical parameters resulted in subsequent neural dysfunction.[2] Singh, Johnston and Klosterman postulated that visual pattern restriction rather than total light deprivation was a critical factor in behavioral, physiological and biochemical changes in animals.[3] The fact that biochemical changes in the retinal cells occurred from stimulus deprivation has been demonstrated. Globus and Scheibel, however, found no difference in the total numbers of cortical neurons or in frequency of various cell types between rabbits reared from birth to thirty days in darkness and those reared

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[1]S. O. Brattgard, "The Importance of Adequate Stimulation for the Chemical Composition of Retinal Ganglion Cells During Early Post-natal Development," Acta Radiologica, Suppl. 96 (1952), pp. 1-80.

[2]Gabe J. Maletta and Paola S. Timiras, "Acetylcholinesterase Activity in Optic Structure After Complete Light Deprivation from Birth," Experimental Neurology, 19 (4) (1967), pp. 513-518.

[3]Devendra Singh, Richard J. Johnston and Harold H. Klosterman, "Effect on Brain Enzyme and Behavior in the Rat of Visual Pattern Restriction in Early Life," Nature, 216 (5122) (1967), pp. 1337-1338.

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normally.[1] Further investigation of the effects of light deprivation to the visual neural pathways and of the reversability of these effects was recommended.

It has been previously estimated that the infant's visual acuity at birth was extremely low, in fact, at four months it was thought to be approximately 20/2500. A devise for testing the acuity in infants revealed that newborns had acuities which were much better than was previously believed.[2] One hundred newborns who were tested responded to the stimulus at 20/450 near vision. Ophthalmologists have been increasingly aware that visual stimulation should begin at birth. Children who have been diagnosed at birth as blind may have had residual vision which could be useful vision if immediate stimulation had been provided. Much could have been retained if stimulation had not been delayed.[3]

Environmental deprivation.--Studies of deprivation in animals enabled the experimenters to observe long term effects of controlled conditions. Some experiments have

---

[1]Albert Globus and Arnold B. Scheibel, "The Effect of Visual Deprivation on Cortical Neurons: A Golgi Study," Experimental Neurology, 19 (3) (1967), pp. 331-345.

[2]John J. Gorman, David G. Cogen and Sydney S. Gillis, "A Devise for Testing Visual Acuity in Infants," Sight Saving Review, 19 (1959), pp. 80-84.

[3]David M. Hiles, M.D., Private Interview, Pittsburgh, Pennsylvania, July, 1969.

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demonstrated that:

> restriction of early environmental stimulation can have drastic and enduring effects on such traits as emotionality, learning ability, activity level, social behavior and perception.[1]

Levine and his associates reported that:

> Both painful shocks and gentle handling enhance the development of normal stress responses in infant animals. The absence of such treatment leads to behavioral disorders when the animal matures.[2]

Rosenzweig compared rats reared in an "enriched environment" with rats kept in an "impoverished environment." He concluded: "Enriched experience leads to anatomical and chemical changes in the brains of rats."[3] The effect of stimulation, however, apparently varied for different families of animals. Fuller and Thompson found that some dogs would tolerate severe isolation without apparently suffering from it.[4]

Jersild said:

> The studies of the effects of deprivation and stimulation in the laboratory have opened

---

[1]William R. Thompson and Theodor Schaefer, Jr., "Early Enviornmental Stimulation," in Functions of Varied Experience, ed. by Donald W. Fiske and Salvatore R. Maddi (Homewood: Dorsey Press, 1961), p. 84.

[2]Seymour Levine, "Stimulation in Infancy," Scientific American, 202 (5) (May, 1960), p. 80.

[3]Mark R. Rosenzweig, "Environmental Complexity, Cerebral Change, and Behavior," American Psychologist, 21, p. 332.

[4]John L. Fuller and W. Robert Thompson, Behavior Genetics (New York: John Wiley and Sons, 1960).

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> up exciting vistas that potentially hold great significance for developmental psychology. As far as the child is concerned, more information is needed concerning what is optimal, what is minimal, what is damaging.[1]

Experimental conditions which can be imposed upon animals cannot be used with children, and studies of the effects of environmental deprivation on children have largely been observations of preselected groups of children who were already in institutions. Provence and Lipton discussed infants in institutions, the general impairment of their relationships to people and the weakness of their emotional attachments.[2] Some evidence has been reported that there are critical periods in infancy in which the absence of adequate mother-child interaction produced irreversible effects in terms of the child's capacity to establish adaptive human relationships in the future.[3] The importance of a warm relationship with a mother or mother substitute has been vividly reported by Bowlby.[4]

---

[1]Arthur T. Jersild, Child Psychology, (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1968), p. 102.

[2]Sally Provence and R. C. Lipton, Infants in Institutions (New York: International Universities Press, 1962).

[3]J. A. Ambrose, "The Concept of a Critical Period for the Development of Social Responsiveness in Early Human Infancy," in Determinants in Infant Behavior, ed. by B. M. Foss (New York: John Wiley and Sons, Inc., 1963).

[4]John Bowlby, "The Nature of the Child's Tie to his Mother," International Journal of Psychoanalysis, 39 (1958), pp. 350-373.

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Factors which made it difficult for mothers to establish a warm and accepting relationship with their blind children have been discussed. Abel pointed out that, in the case of the premature infant, the subtle effects of the mother leaving her baby in the hospital when she returned home were long lasting.[1] Ross stressed the guilt feelings on the part of the mother which affected her treatment of her child.[2] Imamura studied behaviors of mothers of blind children as contrasted with behaviors of mothers of sighted children in the areas of succorance, sociability and dominance. The study demonstrated that mothers of blind children did not react to their children in the same fashion as did mothers of sighted children, but used ignoring more than refusal as their response to demands of their children.[3]

The stimulating interaction of vision with the environment was investigated by Rheingold in a series of experiments with infants in institutions. She observed:

> The basic and primary activity is the infant's visual exploration of his environment. Certain objects attract and hold his attention. To some of these, apparently the most interesting, he gives

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[1]Georgia Lee Abel, Concerning the Education of Blind Children (New York: American Foundation for the Blind, 1959).

[2]Alan O. Ross, The Exceptional Child in the Family (New York: Gruney and Stratton Company, 1964).

[3]Sadako Imamura, Mother and Blind Child, Research Series No. 14 (New York: American Foundation for the Blind, Inc., 1965).

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> facial, vocal and bodily responses of delight. Of these objects, the human being appears to be the most provoking of the responses labeled social responsiveness.[1]

By increasing the amount and variety of visual stimulation administered to infants by human beings, she increased the social and exploratory behaviors of the infants.

The importance of environmental stimulation for the development of intelligence has been stressed. The developmental theories of Piaget postulated processes of assimilation and accommodation which were critical to learning.[2] Assimilation occurred when an organism used something in its environment for some activity which was already in its repetoire. Accommodation occurred when the organism adapted itself for something in the environment. These processes contributed toward a sequential patterning of development. Unless certain forms of stimulation and subsequent learning took place, this development would not proceed. In the United States, the work of Piaget and his collaborators has been elaborated with large groups of children. The center for Cognitive Studies of Harvard University has worked to confirm and to clarify Piaget's theories. Data from this research led

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[1]Harriet L. Rheingold, "The Effect of Environmental Stimulation upon Social and Exploratory Behavior in the Human Infant," in Determinants of Infant Behavior, ed., by B. M. Foss (New York: John Wiley and Sons, Inc., 1961).

[2]John J. Flavell, The Developmental Psychology of Jean Piaget (Princeton, N.J.: D. Van Nostrand Company, Inc., 1963).

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Bruner to present a theory of cognitive growth sequentially resembling Piaget's and confirming Piaget's view of intelligence as an interaction between organism and environment. Bruner maintained: "Early sensory deprivation prevents the formation of adequate models and strategies for dealing with the environment."[1]

The severe effects of sensory and environmental deprivation on some blind children have been investigated. Burlingham noted that blind infants showed excessive autoerotic activities and/or passivity.[2] Fraiberg observed: "Regression remains the chief defense of the blind child."[3] Hallenbeck found behavior patterns in blind children similar to those found in mentally defective children.[4] Rigby and Haspiel reported blind children who displayed pseudo-retardation and language retardation typical of autistic children.[5] Elonen found blind children

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[1]Jerome S. Bruner, "The Cognitive Consequences of Early Sensory Deprivation," in Sensory Deprivation, ed. by Philip Solomon (Cambridge: Harvard University Press, 1961), p. 207.

[2]D. Burlingham, "Some Notes on the Development of the Blind," The Psychoanalytic Study of the Child, XVI (New York: International Universities Press, 1961).

[3]Selma Fraiberg, "Parallel and Divergent Patterns in Blind and Sighted Infants," The Psychoanalytic Study of the Child, XXIII (New York: International Universities Press, 1968).

[4]Jane Hallenbeck, "Pseudo-retardation in Retrolental Fibroplasia," New Outlook for the Blind, 48 (November, 1954), pp. 47-49.

[5]M. E. Rigby, "Some of the Problems of the Multiply Handicapped," International Journal for the

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diagnosed as mentally retarded who were "infantile from deprivation."[1]

DesLauriers described blind children who have developed a "secondary autistic adaptation" as a result of sensory deprivation. He stated:

> The human identity which defines him clearly as a person in his own right cannot take place without constant communication and relationship between the developing human organism and its human environment.[2]

He maintained that this condition could, in part, be overcome if tactile, kinesthetic and proprioceptive sensory-affective stimulation were stressed from birth.

Moor, in discussing the relationship of research data to the needs of multiply handicapped blind children, said:

> Today, then, more is known about these children, their numbers, their potentialities and the developmental needs.
>
> Translating this knowledge into action, both for the sake of the children themselves and for the sake of the contribution which their improved functioning can make to society, is a serious and urgent matter which faces the educational world today.[3]

Education of the Blind, XII (2) (May, 1963), pp. 97-102; G. S. Haspiel, "Communication Breakdown in the Blind Emotionally Disturbed Child," New Outlook for the Blind, 59 (March, 1965), pp. 98-99.

[1]Anna Elonen and A. C. Cain, "A Diagnostic Evaluation and Treatment of Deviant Blind Children," American Journal of Orthopsychiatry, 34 (July, 1964), pp. 625-633.

[2]Austin M. DesLauriers and Carole F. Carlson, Your Child is Asleep (Homewood, Illinois: The Dorsey Press, 1969), p. 355.

[3]Moor, No Place To Go, p. 16.

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Personal Independence Factors

The group on research representing the educational needs of young blind children at the National Work Session on the Preschool Blind Child recommended, in part: "examination of factors which contribute to efficient living in the area of personal care, social maturity and physical orientation."[1] Some of these factors have been discussed as they pertain both to adults and to children.

Orientation and mobility.--Lowenfeld felt that restriction in mobility potential could be regarded as the most severe single effect of blindness.[2] Maxfield said:

> The limitation in the ability to get about has been described as a most serious effect of blindness. As a result of it the blind child cannot expose himself to the great variety of experiences which are a natural part of the seeing child's life.[3]

Lord said:

> The inability of the blind to move freely in space constitutes one of their chief limitations. The competent blind person, however,

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[1]American Foundation for the Blind, Report on National Work Session, p. 23.

[2]Bertram Lowenfeld, Our Blind Children (Sprinfield, Ill.: Charles C. Thomas, 1956).

[3]Katheryn E. Maxfield, "The Preschool Blind Child," in Blindness: Modern Approaches to the Unseen Environment, ed. by Paul A. Zahle (New York: Hafner Publishing Company, 1962), p. 104.

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learns many skills which help reduce the significance of this limitation.[1]

The ability of blind adults to use skills other than visual skills has been investigated. Axelrod found that generally the blind were not better than the sighted in auditory and tactile ability.[2] Investigations into the spatial perceptions of the blind have indicated that blind adults, especially those who were congenitally blind, lacked much ability to integrate tactile impressions into visual images and relied upon other cues, such as time in place of distance, to orient themselves in space.[3] Fisher found that while congentially blind adults used audition for spatial localization, their acuity of hearing was not improved over sighted adults.[4]

Hapeman outlined many of the basic concepts which could be taught to very young children in order to

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[1]Francis E. Lord, Preliminary Standardization of a Scale of Orientation and Mobility Skills of Young Blind Children (Washington, D.C.: U.S. Department of Health Education and Welfare, 1967), p. 1.

[2]S. Axelrod, Effects of Early Blindness: Performance of Blind and Sighted Children in Tactile and Auditory Tasks (New York: American Foundation for the Blind, Inc., 1959).

[3]Philip Worchel, "Space Perception and Orientation in the Blind," Psychological Monograph No. 15, 65 (1951).

[4]Gerald H. Fisher, "Spatial Localization by the Blind," American Journal of Psychology, 77 (March, 1964), pp. 2-14.

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enhance their independence of movement.[1] These included: (1) concepts needed for understanding the true nature of the environment, such as body image, the nature of objects both fixed and movable, the nature of terrain and the nature of sounds and odors, (2) concepts needed for achieving and maintaining orientation, such as the path of moving objects, positions of objects in space and directions, and (3) concepts needed for efficient mobility such as distance and time, following a sequence of fixed objects, turning and moving with and against moving objects. Buell warned: "If a child is not permitted to be physically active before the age of ten, some of the harm done can never be overcome."[2] He found blind and partially seeing children whose parents had permitted them freedom, even to the extent of neglecting safety for them, did not differ in motor performance from normal children. Blind and partially seeing children who had been overprotected by their parents differed significantly from either neglected blind or normal children.

Cratty felt that formal instruction was indicated:

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[1]Lawrence B. Hapeman, "Developmental Concepts of Blind Children Between the Ages of Three and Six as They Relate to Orientation and Mobility," The International Journal for the Education of the Blind, XVII (2) (December, 1967), pp. 41-48.

[2]C. E. Buell, Motor Performance of Visually Handicapped Children (Ann Arbor: Edwards Brothers, 1950), p. 55.

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> For the blind to gain an insight into the nature of space, it is believed that they must be led through tasks that are carefully sequenced and accompanied by explicit instruction. To leave such training to chance is not only a disservice, but may have deleterious effects on person and personality.[1]

The concepts related also to the child with low vision. Margach, in a paper presented to the members of the Association for the Education of the Visually Handicapped, said:

> If we are to exercise maximum influence toward helping carve niches in a sighted world for our partially sighted charges, there can be no more important place in which to begin to work than in the early development of adequate spatial perception skills. . . . We must begin at nursery and pre-nursery levels, and we must do it in a framework that rejects, apriori any notion of structural inadequacy. . . . If a child even might have light perception we ought to make every effort to help him to learn to use this skill in building his spatial discriminations.[2]

Lord developed a "Scale of Orientation and Mobility Skills of Young Blind Children." He stated:

> The blind person is obliged to use a variety of cues and to develop patterns of behavior which compensate for his loss of vision. The use of such cues and the employment of related skills has come to be referred to as "Orientation and Mobility." The term may be defined more formally as including the adjustments and skills necessary for effective

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[1] Bryant J. Cratty and Theressa A. Sams, The Body-Image of Blind Children (New York: American Foundation for the Blind, 1968), p. 44.

[2] C. B. Margach, "Spatial Perceptions in Low-Visioned People," Proceedings of the Association for Education of the Visually Handicapped (Philadelphia, Pennsylvania, 1968).

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integration of the blind person with his total environment.[1]

This development was a two phase project. The first phase of the project was concerned with the development of orientation and mobility skills relating to the developmental tasks of young blind children, ages three through twelve. From these studies a preliminary scale of selected skills, ordered in terms of their developmental sequence was published as a preliminary draft. The second phase was concerned with the revision of the preliminary draft and establishing preliminary norms for the revised (Experimental Edition) scale. The Experimental Edition was designed to be used to reveal the actual level of performance of blind children. Since many of the skills should be developed during childhood, the scale was projected for the use of school age children under twelve years. The scale was not designed to provide an adequate measure for the skills at the preschool level. The preschool years were included primarily as a base for the school age child. Lord recommended:

> The development of a scale for use with very young children--perhaps two to five years of age--appears desirable. The environment must be made meaningful to the blind children at as early an age as possible since attitudes toward travel are doubtlessly established during these formative years.[2]

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[1] Francis E. Lord, Scale of Orientation and Mobility, p. 45.

[2] Ibid.

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Children who possessed limitations other than blindness which might have interfered with their chances of success, such as retardation, motor deficiencies, and emotional disturbances were excluded from the norming sample. For this reason, the scale was not appropriate to be used as a test of partially seeing children or of multiply handicapped visually handicapped children. It was useful, however, in its identification of the behavioral components in orientation and mobility which were relevant for young visually handicapped children.

Lord stated:

> Although some children of four or five demonstrated unusual competence, others seemed insecure while performing such elementary tasks as walking. Early basic training would help the child avoid or overcome such insecurity and should lead to greater independence in adolescence and adulthood.[1]

Body-image.--In psychology and psychiatry, the concept of body-image has received increasing importance. Developmental psychologists have published tests of intelligence based on the child's ability to construct a human figure.[2] Kephart stressed that the purpose of body image was to develop a point of origin for three dimensions.[3]

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[1]Francis E. Lord, Scale of Orientation and Mobility, p. 45.

[2]Florence L. Goodenough, Measurements of Intelligence by Drawing (Yonkers, N.Y.: World Book Company, 1926).

[3]Newell C. Kephart, The Slow Learner in the Classroom (Columbus, Ohio: Charles E. Merrill Books, Inc., 1966).

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He suggested that the formation of a left-right orientation and the ability to identify his left and right hands contributed to the child's ability to make the spatial discriminations necessary for reading. Siegel, investigating posture in the blind as it was related to effective mobility, said that proper dynamic posture was conditioned by body image.[1]

While research results were conflicting concerning the transfer of children's body image awareness to visual perceptions, it seemed logical to assume that a blind child's own body was a proper referent from which to organize his environment. Cratty wrote:

> Finding out about space is one of the critical problems for the blind person. The visual system can process exact information about space more efficiently than the other sensory modalities. A blind person's faulty perceptions of body and left-right dimensions may lead to inaccurate organization of the home, neighborhood, and school environment. Hence, it is believed that a sound rationale for teaching body-image to blind children is that their physical being is the "center platform" from which all spatial judgments originate. Tasks and techniques intended to improve awareness of the body, its parts, and its movement attributes are vital to educational programs for blind infants and children.[2]

Cratty developed an assessment inventory based on his work with blind children. While child development theorists have implied that a child must first learn all

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[1]Irwin M. Siegel, Posture in the Blind, Research Series No. 15, (New York: American Foundation for the Blind, 1966).

[2]Cratty and Sams, Body Image, p. 36.

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about his body and then move out into space, Cratty felt that the child should be taught awareness of the body's more gross aspects and that structuring of space in relation to body planes should be taught from the beginning. He outlined a complete training sequence, based on the percent of responses to various substasks within the survey form.

The attributes in Phase I of Cratty's training sequence, which he said could be developed between the ages of two and five years, included body planes, parts and movements. Phase II, which included left-right discriminations, were applicable to blind children between five and seven years. Blind children developed awareness of individual body parts, such as thumb and first finger, at a later age than did sighted children. For young preschool children, Cratty's training sequence utilized the child's awareness of only gross parts, such as head, foot, stomach, and back, to develop concepts of over, under, before, behind, etc. Since the objective of teaching body image was to be able to relate to space, Cratty said:

> Remember that the value of training methods is directly related to the extent to which we encourage the child to think about what he is doing and why he is doing it, rather than simply to encourage movements without meaning and verbalizations without thought.[1]

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[1] Ibid., p. 37.

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In going through these activities the teacher should constantly combine verbal and motor behavior and the child should be required to tactually inspect a human, another individual or his own body and report when he touched his side, back, front, etc. This involved not only tactual stimulation for the child, but extensive human interaction which helped overcome the effects of both sensory and social deprivation.

Cratty said:

> Educators of the blind note that blind infants seem to have a vague idea about what is part of their bodies and what is not. In other ways, it has been observed, blind children have difficulty perceiving their bodies.
>
> Many professional workers interested in the education of blind children, as well as individuals working with children neurologically impaired in other ways, have begun to pay attention to teaching body-image. Some special educators feel that it is important for the atypical child to perceive at least the gross aspects of his body before he is expected to make more complex judgments inherent in the classroom tasks.[1]

Social competence.--Social competence was defined by Doll as: "the functional ability of the human organism for exercising personal independance and social responsibility."[2] Working under the assumption that "this competence may be measured progressively in terms of maturation by sampling its genetic stages by means of representative performances at successive life ages," he developed

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[1] Ibid., p. 1.

[2] Edgar A. Doll, Measurement of Social Competence (Minneapolis: Educational Test Bureau, 1953), p. 10.

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the "Vineland Social Maturity Scale" as a quantitative measure.[1] The scale was designed to be administered by an interview with an informant having intimate knowledge of the child, and to measure habitual performance rather than latent ability or capacity.

Doll's development of this scale was aimed not only as an instrument by which to assess children for educational placement and treatment, but as an instrument to be used in the research of developmental problems of handicapped children. Bradway used the Vineland Scale in an extensive study of school aged blind children.[2] Item analysis showed that visual handicaps did not inhibit successful item performance but did delay the expression of such performance.[3]

Maxfield and Fjeld adapted the Vineland Scale for use with preschool blind children.[4] Evaluation of the children was reported in both Bradway's and Maxfield's studies in terms of the norms developed with seeing children. A later adaptation of the scale by Maxfield and

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[1] Ibid.

[2] Katherine P. Bradway, "Social Competence of Exceptional Children: III, The Deaf, the Blind, and the Crippled," Journal of Exceptional Children, 4 (1937), 64-69.

[3] Doll, Measurement of Social Competence, p. 528.

[4] Kathryn E. Maxfield and Harriet A. Fjeld, "The Social Maturity of the Visually Handicapped Preschool Child," Child Development, 13 (1942) pp. 1-27.

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Buchholz was published with norms based on the performance of blind preschool children.[1]

The "Social Maturity Scale for Blind Preschool Children" covered the whole preschool age range from birth through five years. However, the authors stated they were unable to measure any children below five months of age for their standardization. Also, children who had handicaps in addition to their blindness were not included in the standardization.

The division of the tasks outlined in the Maxfield-Buchholz scale followed the organization of the Vineland Social Maturity Scale. These were: Self-help General, Self-help Dressing, Self-help Eating, Communication, Socialization, Locomotion and Occupation. Actually the categories were not mutually exclusive, but they were developed to place emphasis on the outstanding element in each task.

The scale of social maturation was not an intelligence test. Maxfield stated: "The concept of social maturation implies growing competence of the child in the performance of increasingly complex activities having to do with personal independence and social adjustment."[2]

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[1]Kathryn E. Maxfield and Sandra Buchholz, A Social Maturity Scale for Blind Preschool Children (New York: American Foundation for the Blind, 1957).

[2]Maxfield and Buchholz, Social Maturity, p. 3.

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Graham recommended that mobility and daily living skills be taught as early as possible so that the child would have some control of his environment.[1] The identification of skills relating to orientation, mobility, body image awareness and social competence, and the ordering of these skills according to their sequential development have produced instruments which may be used in the investigation of instructional techniques.

Education of Skills of Personal Independence

Some psychologists who have investigated learning processes have become convinced that the years from birth to around six could be of critical importance for future development. Bloom surveyed all major longitudinal studies of youngsters and compared the results with other research on human intelligence and achievement.[2] He estimated that about fifty percent of mature intelligence was developed by age three and another thirty percent by age eight. He stated:

> The importance of the influences which affect the growth of such characteristics is likely to be far greater in the periods of most rapid development than it is, at least quantitatively, in the periods of least rapid development.[3]

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[1]Graham, Multiply Impaired Blind Children, p. 20.

[2]Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: John Wiley and Sons, Inc., 1964).

[3]Ibid., p. 104.

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Martin Deutsch of the Institute of Development Studies said:

> A program to compensate for environmental deprivation is most effective when supplied at a particular state.
>
> . . . . . .
>
> Compensatory programs at three or four years of age could prevent future disabilities and remedy current deficiencies.[1]

Some investigations have been made concerning specialized techniques for teaching handicapped children. One effective method has been operant conditioning. Skinner's work with animals showed that the immediate rewarding of a behavior increased the probability of the behavior being repeated.[2] The frequency of occurrences of behaviors that were not rewarded remained at a constant level. The only real effect of punishment was to suppress a response temporarily, and when the effect wore off, the behavior recurred. From these basic concepts, he developed a teaching method which involved fractioning tasks into very small sequential behaviors and reinforcing each behavior until it was established before progressing to the next. This process was called "shaping" by Skinner.

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[1]Martin Deutsch, "Facilitating Development in the Preschool Child: Social and Psychological Perspectives," in National Education Association, Prevention of Failure (Washington, D.C.: Department of Elementary-Kindergarten-Nursery Education, National Education Association of the U.S., 1965), p. 39.

[2]B. F. Skinner, The Behavior of Organisms (New York: Appleton-Century-Crofts, 1938).

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This technique has been successfully employed with autistic, retarded and hyperactive children.[1]

Summary and Assumptions

A review of the literature dealing with multiply handicapped blind children revealed little empirical evidence upon which to base educational decisions. Data on incidence and prevalence were available only to the extent that reasonable estimates could be made. Few educational programs for multiply handicapped blind children were reported and those that were reported were predominantly psychologically inclined rather than educationally oriented. Studies of the effects of sensory and environmental deprivation revealed evidence of the effects upon cognitive processes in animals and adults, but the effects upon children of these deprivations have not been empirically tested. Some evidence was available that early education was critical in the developmental processes of normal children.

The opinions of experts in the field have been reported, and mainly from these opinions it has been possible to make the following assumptions relevant to this study.

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[1]Leonard P. Ullman and Leonard Krosner, Case Studies in Behavior Modification (New York: Holt Rinehart and Winston Co., 1965).

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1. There is a pressing need for research and experimentation concerned with educational techniques applicable to multiply handicapped blind children.

2. Few educational programs have been concerned with the needs of pre-school multiply handicapped blind children.

3. Sensory and environmental deprivation may retard the development of blind children.

4. Limitations in mobility prevent blind children from exposure to a variety of experiences which are available to seeing children.

5. Body image awareness is important to blind children for development fo spatial orientation.

6. Skills of orientation, mobility and social competence and awareness of body image are factors which contribute to personal independence in young blind children.

7. Compensatory programs at the preschool level are recommended.

Problem

How effective will short term instruction be in developing orientation, mobility, social competence and body awareness skills of preschool age multiply handicapped visually handicapped children?

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Hypothesis

Short term instruction will result in increased performance of preschool age multiply handicapped visually handicapped children in body awareness skills, and in skills of orientation, mobility and social competence pertaining to: movement in space; self-help, eating; self-help, dressing; and socialization.

Definition of Terms

The following definitions are used in this study.

Blindness is defined as: Central visual acuity of 20/200 or less in the better eye, with correcting glasses; or central visual acuity of more than 20/200 if there is a field defect in which the peripheral field has contracted to such an extent that the widest diameter of visual field subtends an angular distance no greater than twenty degrees.[1]

Orientation and Mobility Skills are defined by the items which appear in A Scale of Orientation and Mobility Skills of Young Blind Children.[2]

Body Awareness Skills are defined by the items which appear in the Body Image of Blind Children

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[1]C. E. Kerby, Manual on the Use of the Standard Classification of Causes of Blindness (New York: National Society for the Prevention of Blindness, 1940).

[2]Lord, A Scale of Orientation and Mobility Skills, Appendix B.

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Screening Test.[1]

Social Competence Skills are defined by the items which appear in A Social Maturity Scale for Blind Preschool Children.[2]

Movement in Space is defined by the skills included in A Scale of Orientation and Mobility Skills of Young Blind Children and/or A Social Maturity Scale for Blind Preschool Children which pertain to: using tactual cues; using doors and windows; avoiding hazards; localizing auditory cues; identifying auditory cues; riding tricycles or skates; using right and left; familiarization techniques; walking; understanding turns and reversing routes; using trailing techniques; walking up-down steps; hopping and skipping; running and jumping; and climbing.

Self-help, Eating is defined by the skills included in A Scale of Orientation and Mobility Skills of Young Blind Children and/or A Social Maturity Scale for Blind Preschool Children which pertain to: seating self; drinking from cup or glass; and eating with spoon, fork, knife.

Self-help, Dressing is defined by the skills included in A Scale of Orientation and Mobility Skills of Young Blind Children and/or A Social Maturity Scale for Blind Preschool Children which pertain to: putting on

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[1]Cratty, Body Image of Blind Children, p. 69.

[2]Maxfield and Buchholz, Social Maturity, p. 37.

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clothing; removing clothing; buttoning and unbuttoning; hanging up clothes; brushing hair; and tying bowknots.

Socialization is defined by the skills included in A Scale of Orientation and Mobility Skills of Young Blind Children and/or A Social Maturity Scale for Blind Preschool Children which pertain to: using names of familiar objects; initiating own play; adjusting to group situations; washing and drying face and hands; listening to music, stories; taking part in parallel play, toileting; using telephone; and talking in sentences.

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CHAPTER III

Population and Procedures

While certain general administrative procedures were employed, methods of instruction and materials were specifically prescribed for each child.

General procedures.--Seven children were included in the project, which was conducted during a six week period from mid-June until the end of July. The children were transported to a school building each morning five days a week, and the class period was three hours. This made a total of ninety hours of training for each child.

The objectives of the program were to develop: conpetency in activities having to do with personal independence and social adjustment; orientation and mobility skills; and awareness of the body, its parts and its movement attributes. The specific behaviors which were chosen for instruction were those tasks included in the Scale of Orientation and Mobility Skills of Young Blind Children, A Social Maturity Scale for Blind Pre-school Children and A Body Image of Blind Children Screening Test.[1]

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[1]Francis E. Lord, Preliminary Standardization of a Scale of Orientation and Mobility Skills of Young Blind Children (Washington, D.C.: U.S. Department of Health

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Prior to the six weeks period of training, case study data were collected which included medical records opthalmological evaluations, and social case work records of family status and developmental history. The coordinator of the program visited six of the children two times each in his home and recorded her assessment of the motor and social behavior of the child, family attitudes toward the child's handicap and opportunities for personal independence available to him in his own home setting. On the first visit, she was accompanied by the social case worker who was known by the parent and her observations were made very informally and recorded. This was done in an effort to make her presence non-threatening to the parent of the child. One child, Karen, was accepted quite late into the program and it was possible to visit in her home only one time. For the rest of the children, the second visit was longer, usually half a day. On this visit, the coordinator recorded the mother's responses to the Social Maturity Scale for Blind Preschool Children. The natural mother, or the foster mother of each child reported those tasks which her child did or did not accomplish. Tony lived in an institution for dependent

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Education and Welfare, 1967); Kathryn E. Maxfield and Sandra Buchholz, A Social Maturity Scale for Blind Preschool Children (New York: American Foundation for the Blind, 1957); Bryant J. Cratty and Theressa S. Sams, The Body-Image of Blind Children (New York: American Foundation for the Blind, 1968).

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and neglected children, and the coordinator was permitted to see him only once. The data was reported to her by the head nurse of the institution.

During the first week of the program, the children were assessed by the teachers, using the Scale of Orientation and Mobility Skills of Young Blind Children and A Body Image of Blind Children Screening Test. Each child was tested individually before a panel of three judges not connected in any other way with the program. The panel consisted of a rehabilitation counselor, an educational specialist in preschool blind children, and a psychologist. Each judge rated each child individually. The score sheets of the judges were examined for agreement between raters. The judgment of the majority of the raters as to success or failure on a single task was considered the final result. Karen and Jeffrey were completely untestable on the scales used. The judges recorded their observations of the behavior of these two children. Both the Scale of Orientation and Mibility Skills of Young Blind Children and A Body Image of Blind Children Screening Test depend upon the ability of the child to follow verbal directions. Tony and Mark did not respond to any verbal command. They were untestable on the Body Image of Blind Children Screening Test. They were rated on the Scale of Orientation and Mobility Skills of Young Blind Children by informal observation of their self-directed activities. Behavioral observations were also recorded by the judges for

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Tony and Mark.

For each child, a record was made of the items passed on the three scales used. Lesson plans were made for each child which outlined the instructional procedures and practice follow-up for the items chosen for instruction. Wherever possible, the items were chosen from the scales. For three children, Karen, Jeffrey and Tony, it was necessary to choose items which were developmentally below the items on the scales. These lesson plans were reviewed daily by the teachers at the end of each day. The staff met each morning and outlined the specific individual procedures for each child for the day. Tape recorders and a portable dictaphone were available in each room. Each day, each staff member recorded her activities and the child's responses. These reports were reviewed before the next morning's staff meeting. Programming for each child could be adjusted daily.

Each child was provided with as much stimulation as possible. The teachers were physically active with the children at all times. They encouraged the children to explore indoors and out, always helping to identify and label each new object. Outside, the children used see-saws, slides, moneky bars, a sand box and swimming pool. They were encouraged to walk on the grass and pebbles in their bare feet and to dig in the dirt and mud. One play area had a surface of blocked out areas of different textures, some smooth, some pebbles, some large rocks

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imbedded in rough cement. Three large rooms were available as were all outdoor play areas surrounding the school. Except for one ten minute period at the beginning of the day when juice was provided, lunch period and toileting period, no child was restricted to any one area.

Some puzzles, blocks and other tactual materials which were used, had been developed specifically for low visioned children. Some other puzzles, manipulative toys, and models were of the commercial types used with normal preschool children. Brightly colored vests and bibs having large zippers and buttons in constrasting colors were especially constructed to teach social competence skills. Some developmental materials which had been designed to teach perceptual skills were used to develop the use of residual vision. Sets of pegs of graduated heights and diameters which had been constructed according to the specifications outlined by Barraga were also used to develop the use of residual vision.[1] Small stuffed zoo animals were used for the children to identify, and at the end of the program, the children were taken on a field trip to the children's zoo, where they could see and feel live animals. Recordings for auditory training and rhythm band instruments for group activity were used. A list of the specific materials which were used appears in Appendix B.

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[1]Natalie Barraga, Increased Visual Behavior in Low Vision Children, Research Series No. 13 (New York: American Foundation for the Blind, 1964).

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Lunch was provided daily to teach the use of cup, fork and spoon, to introduce semi-solid foods to those children who had not learned to chew, and to develop socialization.

Some parents transported their own children. Teachers took the time after the session to instruct the parents on methods of stimulation for their children. Once each week, all the parents and the two medical social workers who were assigned to counsel with the parents in the future met formally together. During the program, a different resource person met with the parents each week and discussed with them the goals they could realistically project for their children. During the final week, the parents and social workers were encouraged to spend time in the program observing the teacher's work with each child.

The children were re-assessed by the teachers on the Scale of Orientation and Mobility skils of Young Blind Children and A Body Image of Blind Children Screening Test during the final week of the program. The panel of judges who were present at the beginning were also present at the end of the program for this testing period and again recorded their observations. The parents were interviewed, and the Social Maturity Scale for Blind Preschool Children was scored for the items which the children were doing at home at the end of the program. Four months after the close of the program each child was re-evaluated individually by the coordinator of the program.

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Videotapes were made of the testing procedures at the beginning and end of the program. Training procedures were also videotaped and a composite tape was prepared for the use of teachers and social agencies who have an interest in preschool multiply handicapped children.

Instruments.--Three instruments were used for pre and post evaluation with the children: A Social Maturity Scale for Blind Preschool Children, A Body Image of Blind Children Screening Test, and A Scale of Orientation and Mobility Skills of Young Blind Children.[1] Validity and Reliability studies for these scales used groups of blind children with no additional handicaps for standardization procedures. Generalization of the results to multi-handicapped visually handicapped children would not be valid. For this reason, scores which indicated comparative levels with other blind children were not collected. Only the actual raw score numbers of items passed were considered. Items not passed on the pre-test became specific behavioral items for instruction.

A Social Maturity Scale for Blind Preschool Children is an adaptation of the Vineland Social Maturity Scale. It is not an intelligence test, but rather is an inventory of the social competence of the young blind child. It consists of ninety-five items, each of which is placed within

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[1]Maxfield and Buchholz, Social Maturity: Cratty, Body Image; Lord, Orientation and Mobility Skills.

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the year level of expected performance based on the performance of other blind children in the same age range. The items are divided into categories of: Self-help general, Self-help Dressing, Self-help Eating, Communication, Socialization, Locomotion and Occupation. The year levels include: O-I, I-II, II-III, III-IV, IV-V, V-VI.

The scale is scored in the same manner as the Vineland Social Maturity Scale and a "social quotient" which stands for the relationship between the chronological age and social age can be obtained; however, this relationship was not computed as it was not considered relevant to the present study in light of the standardization group which was used to establish the social age norms.

The Body Image of Blind Children Screening Test was devised by Cratty as an assessment device for the evaluation of blind children's body image, and as a sequence of tasks related to body image training of blind children, arranged in order of difficulty. Cratty revised a body image training sequence for sighted children which he had previously developed as the basis for this assessment inventory for blind children. The final revision resulted in a screening device in five sections: Body Planes, Body Parts, Body Movements, Laterality and Directionality. The test was administered to ninety-one blind children, age range five to sixteen years, and the percent of correct responses on each of the test items was determined to find the approximate order of difficulty represented by the

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various components on the test. The content of the components, in order, are: Phase I, Body Planes, Parts and Movements; Phase II, Left-right Discriminations: Phase III, Complex Judgments of the Body and of Body-Object Relationships; Phase IV, Another Person's Reference System. Only Phase I and Phase II were considered applicable for preschool children. All of the items on the scale involve responses to verbal directions.

The Scale of Orientation and Mobility Skills of Young Blind Children is a test of the developmental tasks of young blind children, ages three through twelve, which relate to orientation and mobility. These involve maturational skills, self-taught skills and some very formal skills which are taught as a part of orientation and mobility training by specialists. Review of developmental studies of normal children, and judgments of experienced teachers of blind children provided the identification of the skills relating to orientation and mobility. The scale is constructed with twenty-seven subscales which have been identified as major skills. Under each major skill are items arranged in order of difficulty.

Staff.--The staff who worked with the children consisted of the investigator, who served as coordinator, two teachers and five aides. This made it possible to assign one teacher or aide to each child at all times. The two teachers were trained teachers of visually handicapped children, each with more than five years' experience. One

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of the teachers was a graduate of a program for instructors of mobility and orientation. Since the program was conducted during the summer months, it was possible to secure as aides, teachers who were particularly interested in gaining experience with preschool children. Three of the aides were trained teachers of visually handicapped children. One aide was a student with three years of college training in elementary education. The fifth aide was a teacher who was studying the education of visually handicapped children and who was able to satisfy some of her practicum experience in the field of special education by serving during the summer.

The two teachers were responsible for introduction and instruction of tasks. The aides were responsible for encouraging practice in the tasks.

An experienced person from a field relating to the education of visually handicapped children met with the parents each week. These resource people were: a medical social worker; a pediatric ophthalmologist; a university professor in the area of teacher education; a program specialist for preschool blind children; and a director of programs for the visually handicapped children from the state department of education.

In addition, the services of two medical social workers were contracted for further counselling with parents.

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Subjects and specific education procedures.--The subjects of this study consisted of children living in Allegheny County, Pennsylvania, who met the following criteria: (1) were in the age range three through six years; (2) satisfied the criteria of blindness as defined by the National Society for the Prevention of Blindness; (3) had no previous experience in a special education program; and (4) were able to walk independently.

The Pittsburgh Branch of the Pennsylvania Association for the Blind had on their active case rolls seven children who met this criteria. All seven children were accepted for the program. No attempt was made to establish representativeness of this sample from a larger population which may exist.

A summary of the seven children is shown in Table 1. Recorded evaluations as they were collected prior to the program are included in Appendix A.

The description of each subject and the specific educational procedures pertaining to each subject follow.

Mark was three years old at the beginning of the program. He had severe retinal degeneration with residual vision in one eye. Although his ophthalmological report was "light perception" for both eyes, he wore glasses and had good use of the vision in his right eye. He had cerebral palsy which affected his right hand and foot. He did not use his right hand even as a helping hand.

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TABLE 1

DIAGNOSTIC DATA AT BEGINNING OF PROGRAM

Name	Age	Visual Acuity Right Eye	Visual Acuity Left Eye	Additional Handicaps	Speech
Mark	3 yr.	light perception	light perception	Cerebral Palsy	Infantile
Tony	3 yr. 1 mo.	light perception	light perception	Severe Retardation	None
Karen	3 yr. 3 mo.	no light perception	no light perception	Brain Damage (?)	None
Adam	3 yr. 6 mo.	light perception	enucleated	Partial Spina Bifida	Infantile
Dale	4 yr. 8 mo.	20/200 corrected	20/200 corrected	Heart murmur	Normal
Jeffrey	5 yr. 7 mo.	light perception	no light perception	Deaf, rubella syndrome	None
Judy	5 yr. 9 mo.	no light perception	light perception	Borderline Retardation	Echolalic

He walked independently but limped, and his right foot turned out at approximately sixty degrees from the direction of travel. He walked up and down stairs, holding the rail, and climbed upon chairs independently. He drank from a cup and fed himself solid food with a spoon. He did not talk except for a few single words such as "Hi" and "Bye-bye," was not toiled trained, did not dress or undress himself without assistance, and did not wash or dry his hands. It was not possible to evaluate his knowledge of body parts because he refused to do anything on command.

At the beginning of the program, Mark refused any restraint on his constant aimless wanderings. If he were forced to remain in one room or to sit down and be still, even to eat, he screamed and threw himself on the ground. He was allowed to explore at will, indoors and out for a few days. An effort was made to extinguish his temper tantrum behaviors by preventing their occurrence. His attention span was short and the teacher and aides were instructed to interrupt their instruction periods at a point before he displayed rebellion. Very short tasks were scheduled so that each one could be completed before he indicated his desire to explore.

He was first encouraged to sit for short periods, less than five minutes at a time, to look at pictures in a book. The teacher labeled each picture and encouraged him to verbalize with her the names of animals in pictures and the body parts of the animals. Gradually the periods

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were extended to ten minutes.

In order to teach him to use his right hand, he was introduced to a simple form board puzzle, and when he had learned to assemble this puzzle, he was given puzzles of increasing difficulty until he was assembling ten piece puzzles. It was necessary for him to use his right hand as a helping hand to maneuver the puzzle pieces. He was given large beads to string. This forced him, not only to use his right hand, but to accomplish a task which required eye hand coordination.

He was removed from the other children at lunch time and ate alone with an aide for one week. At the end of this time, he returned for lunch to the lunchroom, but was removed from the room when he had finished eating. Gradually he was allowed to stay with the other children as long as he remained in his seat. Finally, after a few weeks, he would enter the lunch room quietly, climb up on a seat and eat, and sit quietly chattering to the other children for the entire period. He was encouraged to socialize with the other children, then, in rhythm band exercises and in simple nursery singing games.

When his behavior became manageable, he was taught to remove his own coat and with help, to wash and dry his hands.

Tony was three years, one month old. He had always been in institutions and had been crib bound and unstimulated until he was transferred at two years, four months,

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to the present institution which was a child welfare shelter within a hospital setting. Here he was taught to walk, to be dressed during the day, and to be physically active. His ophthalmological diagnosis was "hereditary congenital cataracts" and his visual acuity was reported as "light perception, both eyes." He wore glasses which were tied around his head, and had good vision for mobility, although he was quite photophobic. He drank from a cup which he held for himself, with help, fed himself solid food with a spoon, and was partially toilet trained. He made no attempt to verbalize. He responded to some basic commands such as "come here" and "no-no." He was generally completely expressionless, would take anyone's hand and go anywhere, but did not acknowledge the presence of any person other than to allow his hand to be taken. He had attacks of uncontrollable screaming and would throw himself violently to the ground during the attack. Usually his screaming was triggered by an attempt on some adult's part to restrict his nearly constant wandering, but sometimes he just started to scream for no reason which could be determined. When he threw himself down on the ground or pavement, he bounced his head on the cement without seeming to feel any pain. He was rarely still, but moved from room to room, from toy to toy, throwing them down after he had examined them.

The whole staff was instructed to work with Tony to control his screaming attacks. He would display a

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brief facial and body rigidity immediately preceding onset of screaming, and when this occurred, the staff member closest to him picked him up immediately, held him very tightly, rocked him, and talked softly and lovingly to him in a reassuring fashion. At first Tony thrashed wildly at this restraint, but he learned to relax in an adult's arms and then could be put down to continue his activities. As the staff was able to control him in this manner for longer periods of time, the length of time between attacks lengthened and he attended to structured play situations for longer periods of time. In his social behavior, he was at such a low level that tasks which were usually suitable for a one year old child were attempted. He was encouraged to put blocks into a bucket and take them out again, to pull a pull toy with him on his exploring excursions, to sit in a wading pool and splash the water and to play in the sand box. His shoes and socks were removed and he played in the grass and on the pebbles and cement.

The aide who was assigned to Tony explored with him. She talked to him in a stimulating manner constantly. She encouraged him to label objects. At first she chose only two words, "cup" and "water." He began to attend to her and soon said "cup" and "wa-da." Each week a few more words were stressed and he began to talk to the other persons on the staff with these words.

At the start of the fourth week, transportation arrangements for Tony had to be revised and he missed

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three days of school for that reason. The institutional nurse reported that he screamed until he became sick. When he returned to school, the process of eliminating the screaming attacks had to be gone through again. This time, however, it took only two days to extinguish the behavior.

It was rarely possible to get Tony to work on any manipulative task such as assembling a puzzle or stacking blocks. Nothing which was consistently rewarding to him was discovered. At lunch time he ate almost compulsively, finishing his own food quickly and snatching from the others whenever he could. An attempt to use sweet cereal bits as a reward for a small behavior ended with his screaming for all the rest of the cereal that the teacher had.

It was recommended that very basic behaviors, such as attending to a human voice or responding to a human smile would have to be established before any further training could be effective with Tony.

Karen was three years, three months old. She had been born normally seeing but she was a battered baby and had encurred retinal detachment, had a cataract in her left eye, and now had no light perception in either eye. She lived in a foster home where there was little stimulation provided. She did not distinguish night from day and slept most of the time. When she was awake, she lay on her back with her thumb in her mouth and rocked from side to side. She had learned to stand and to walk at three

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years of age, just three months before the beginning of the program, but she did not walk independently to explore her surroundings. She did not talk and did not respond to any speech, not even her own name. She whined and cried if she was forced to sit up from her usual prone position on the floor. She did respond by reaching out her hand toward a toy when the teacher held the toy in front of her and squeaked it. She was not toilet trained and did not feed herself. She ate only strained baby food, and although her foster mother said she did not take a bottle, she did not drink from a cup even if it were held for her. Her foster mother carried her into the classroom and Karen laid limp across her mother's shoulder with no attempt to support herself. When the teacher attempted to pick her up, Karen scratched and bit the teacher and growled like an animal. She was quiet only if allowed to lie on the floor and rock.

In order to teach Karen to feed herself, it was necessary to teach her to grasp with her hands and to understand that the food which appeared at her mouth when someone was feeding her, was first in a dish before her. A stick of candy was used. First Karen was allowed to lick it. When she showed that she liked the taste of the candy by sticking out her tongue for more, the stick was placed in her hand and her fingers were forced around it, and her hand was guided to her mouth. At first this was done by grasping her hand and moving it to her mouth and

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then, later, by putting pressure on her elbow while she guided the stick. When she had mastered this task, she was presented with a cup and a spoon which she grasped and put to her mouth. At meal time her fingers were put into her bowl of food and then guided to her mouth until she learned to repeat this motion independently. Then the spoon was given to her at lunch time. Her hand was guided to put the spoon in the bowl and then to her mouth. Each time that she succeeded in getting food into her mouth, her teacher said "Um-m, that's good!" She eventually guided the spoon independently with only support to her arm supplied for her. Milk was poured into her cup, and again her hand was guided to carry the milk to her mouth. The verbal reinforcement was continued in order to encourage her to repeat the motion.

Karen was encouraged to explore the environment. As she walked around the schoolroom, she was shown how to produce noises to stimulate her, such as running her fingers over the grating on the door and banging the metal rail along the blackboard with a stick. She was encouraged to play in water in the sink, to put her bare feet in sand, to listen to a music box and to follow the sound of other's voices as they walked before her and called her. Verbal encouragement was exaggerated and given to her constantly.

To teach Karen awareness of her own body and that of another person, she was placed sitting on the floor

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between her teacher's legs, Karen's back against her teacher's chest. Then, with their hands together, they played patty-cake and played with a beach ball.

Karen enjoyed putting her chin against a metal rail and pounding on the rail to produce a vibration. An electric hand vibrator applied to her hands, arms, feet and legs was used as a reward. In order to teach her to tolerate solid food, cookies were broken into small pieces, and if she allowed the cookie to be placed in her mouth, the vibrator was turned on and applied. This was accompanied by her teacher saying "um-m, that's good!" Gradually the application of the vibrator was delayed until Karen chewed the cookie and swallowed it. Subsequently other solid food, such as small pieces of apple, was used instead of the cookie. Each time the vibrator was applied, the teacher talked to Karen constantly labeling feet, hands, arms, legs, head, etc.

Adam was three years, six month old. He had retrolental fibroplasia. His left eye was enucleated and, although his opthalmological report was light perception, he did not have sufficient residual vision in his right eye for travel. He had a partial spina bifida which made sitting for long periods difficult. He was not toilet trained. He drank from a cup independently and ate solid food. His mother fed him with a spoon, although he could feed himself with a spoon with much spilling. He walked well and could walk independently

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up and down steps. He had mannerisms such as walking on his toes, jumping up and down repeatedly in place, rocking while sitting and wringing his hands before his eyes convulsively. His speech was infantile. His mother understood some words and was able to communicate with him. He did understand what was said to him. He was unable to tolerate any noise around him, and became agitated when he was in a room with other children. He would not allow the teacher to touch him and he screamed if she came near him, or even spoke to him. If he was presented with a toy, he chewed it and then threw it backward over his head. If he were really restrained in any fashion, he threw himself on the floor and kicked and screamed.

Adam's mother had talked to him enthusiastically about school before he came, and he repeated her enthusiastic phrases in an echolalic manner so that it appeared that he was prepared the first day to cooperate and enjoy the experience. However, as soon as his mother left the room, he hit out at the teacher and screamed when she spoke to him. He discovered a large rocking horse, climbed upon it, and rocked compulsively. When his teacher attempted to remove him from it, he screamed and kicked. He was finally forcibly removed, placed on the gym mats, and allowed to kick for a short time. His teacher then presented him with some textured blocks. When he held one in his hand he was given a

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piece of sweet dry cereal while, at the same time, his teacher talked quietly to him. He was encouraged to tell his teacher which block was rough and which was smooth. While he was busy with this activity, the rocking horse was removed from the room and he was not again allowed to rock on anything. His attention span was short. The first time that he threw the block from him, he was taken from the mats and introduced to a tricycle. He was shown how to place his feet on the pedals and to keep them there while he was being pushed around. His muscular development was weak. He was unable to use the pedals to propel himself. He had weak hands and arms and did not use his hands to explore or to manipulate. A new object was immediately put into his mouth and then dropped or thrown. He jumped and screamed whenever there was a confusion of noises around him; for instance, when other children were in the room. Discussion with his parents revealed that he would not tolerate noises at home and even became agitated when his baby brother cried.

Adam's teacher started to work for several short periods each day with a collection of objects such as buttons, a cup, blocks, etc., in one large round container. He was asked to draw an object from the container and was given a piece of sweet dry cereal and much praise if he did so. If he verbally identified the object, he was given another piece of cereal and praise. At first

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the activity was not longer than five minutes at a time. At the end of one week, he tolerated sessions of almost fifteen minutes. After the first two days he was no longer given cereal, but only praise for success each time.

His teacher also sat with him for short periods each day while he listened to a tape recording of common household noises: water running, garage door opening, vacuum sweeper motor, etc. Adam was encouraged to identify these noises. This activity was instituted on the basis that perhaps noises which were completely identifiable to him would become less distractable. The aide was also instructed to identify every noise in the room while she was working with him, and each new sound was called to his attention and identified.

It was obvious that Adam understood most of the language of his teacher. However, his own language was incomprehensible and when he tried to communicate and was not understood, he became very agitated and aggressive. His aide began to communicate with him by mimicking his own verbal sounds and, for instance, repeating the rhythms of his poundings after him. After one session when he had a long interchange of pounding on the steps of the slide with his aide, he ran to her and hugged her. This was the first indication of happiness that Adam had expressed. This type of activity was continued throughout the program.

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Small muscle activities such as puzzles and pegboards were not continued after the second week. Instead, much outdoor play was carried on. His aide slid down the sliding board holding him between her legs, and ran with him in the grass. He learned to propel himself on the tricycle in the outdoor play area.

At first he was helped to feed himself and gradually the help was withdrawn until he was feeding himself his entire lunch. He learned to wash his own hands but not to dry them.

He worked with the male mobility teacher well on body image awareness tasks. He did not verbalize, but learned to touch upon command gross parts: head, feet, eyes, nose, etc.

Dale was four years, eight months old. He was a rubella baby, was aphakic, had a heart murmer, but his hearing was normal. He did not wear glasses and his eyes rolled uncontrollably. He lived in a low-income housing development with his mother and four siblings and had learned good mobility skills. He was toilet trained and could feed himself with a spoon. While he talked plainly, his verbal comprehension was limited. He could not dress himself but could undress himself independently.

Dale's large muscle development was good. He could ride a tricycle and pedal a small automobile. He used the swings and see-saws independently. He did not accomplish any small muscle, eye-hand coordination type

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of task. He had never previously been exposed to beads, crayons, puzzles or books. He had not learned to use his residual vision for close work. He had not developed any definite handedness. He ate with either hand and could not indicate his right hand or left hand upon request.

The social workers who were concerned with his family immediately made arrangements for him to be fitted with glasses. The first task which was assigned for his instruction was buttoning and unbuttoning. This task was useful for his social competency and also involved the use of his residual vision. In the beginning he was taught to slip a button through a buttonhole on a strip of cloth and attend to the task visually. Then he was taught to button a vest which had been constructed of red corduroy with large black buttons and buttonholes for contrast. The aides worked with him on other eye-hand coordination activities such as puzzles and pegboards. When he was working on these tasks, the aide quietly held his left hand in her own in an effort to establish right handedness with him.

He had a library period each day in which he was encouraged to find specific articles in pictures and to verbalize stories which were previously read to him. He wanted only to ride the tricycle and automobile. A contingency management system was set up. Dale was paid in toy money for each coordination task which he successfully

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completed. Then he was charged toy money for rides on the tricycle. This method successfully kept him working on the tasks.

It was not until the fourth week of the program that Dale received his glasses. He spent two days just exploring with them, identifying leaves on trees and people's faces, etc., delightedly. Then the teacher began working with him using commercial material which was designed to develop visual perception. He learned to trace circles and squares, using first just his finger and then a crayon. He learned to cut with scissors, to string beads, and assemble basic puzzles.

These close eye-hand activities were continued until the end of the program. The social caseworker was supplied with some materials and was instructed to encourage his mother to continue the activities.

Jeffrey was five years, seven months old. He was a rubella baby with cardiac and kidney involvement and was diagnosed as totally deaf. He had congenital cataracts, microphthalmos, atrophied iris, and could see little with his right eye at about four inches. He used his vision for mobility. He had no speech, was not toilet trained, did not tolerate solid food, and could drink from a cup only if the cup were fitted with a slotted cap used for training. He had been taught to walk nine months before the beginning of the program and walked with his feet at approximately a 160° angle with

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each other. He wandered around constantly. At home he was physically controlled for his own safety with a harness hooked to heavy furniture. When he came in contact with someone, he wrapped his arms and legs around the person and climbed like an animal till he reached the person's face. Then he threw himself wildly backward, hanging by his legs which were wrapped around the person's body. When he was pulled back up, he repeated the procedure. This had been a game he played with his father and it had been used as a rewarding activity in teaching him to walk. If he were given a toy, he lay on the floor, squealing, and moved the toy three to four inches in front of his right eye for long periods of time. He fixated on any light, tried to locate light switches in every room, and followed rays of sunshine coming in the window.

The staff was instructed not to pick Jeffrey up. When he clutched at any of them, he was gently lowered to the ground and at the end of four days he was no longer attempting this activity. He refused to eat lunch at school. Since one of the objectives of the summer training was to teach him to eat solid food, the parents were instructed to give him only a minimum of breakfast so that he would be hungry. The teacher brought in a small pocket flashlight. Working in a semi-darkened room, she started to teach him to tolerate solid food with a banana. When Jeffrey allowed her to put a piece

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of the banana close to his mouth, he was allowed to look at the light. Later this reward was withheld until he allowed the banana to be placed into his mouth. Then the reward was withheld until he chewed the banana. In this fashion he was taught to pick up a spoon independently and spoon pieces of banana from a dish into his mouth. He also learned to tolerate semi-solid foods in his general diet if the light was given to him as a reward.

Jeffrey's reports indicated total deafness and there was no one on the staff who was professionally trained in speech and hearing; however, experienced visitors remarked that he did not cry the way a deaf child does. It seemed possible that some central nervous system damage might account for his apparent deafness. For this reason, while the light was used as the immediate reward, the teacher paired this with constant talking at a normal or even slightly below normal level. At times it appeared that Jeffrey was indeed following verbal commands, but it was not possible to establish this confidently. Consistent hand and body signals were devised and the entire staff learned them. For instance, when he refused to walk and kicked his feet out from under him, a firm hand under his left armpit was a signal to stand up and walk and he recognized and obeyed this signal consistently. He had a habit of biting people, but learned that a slight tug on his hair meant

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to stop it, and he stopped biting.

He was introduced to stairs. His feet were maneuvered up one step and then the light was flashed at him. This was continued up each step until he learned to walk up by himself. He was continuing this activity at home without the light and it seemed that competency was becoming rewarding in itself to him. The teacher worked with him with a toy involving rings that slid on and off a spindle. The teacher first handed him a ring and guided his hand to put the ring on the spindle, then flashed the light for him. Then the light was gradually withheld until he picked up the ring and put it on independently. Then he was rewarded for putting on two rings, not just one. This continued until he assembled the whole toy for his reward. A bicycle was equipped with stirrups to hold his feet; first, because he walked with his feet directed outward, and second, because he was unable to keep his feet still on the pedals. He learned to guide the bike as it was pulled along by his teacher by means of a rope tied to the handle bars of the bike. He was not strong enough to propel the bike himself.

Using the shaping process with the light as a reward which was already established, Jeffrey learned to bounce and catch a large beach ball, to stack blocks on a table and on the floor. He was first taught to assemble a simple form board puzzle and then progressed to more complex shapes. The teacher covered the flashlight

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with colored cellophane paper. When Jeffrey put in the tomato piece of the puzzle, she covered the light with red paper before flashing it. When he put in the green celery, she covered the light with green cellophane. Gradually the process was reversed so that when the teacher flashed the red light, Jeffrey picked up the tomato.

In the beginning, signals were given to Jeffrey tactually, but gradually the teacher gave him more hand signals, such as snapping her fingers very close to his right eye when she wanted his attention. This was part of her training to teach him to use his residual vision to perform tasks such as pegboard tasks, puzzles, etc.

Judy was five years, eight months old. She had bilateral microphthalmos, micro-cornea, and amblyopia according to her opthalmological report. She could identify objects and colors with her left eye. She used her residual vision for mobility, but did not use it for other activities. She was photophobic to such an extent that when she moved from inside to outside, for instance, she was unable to use her vision for mobility and had to be guided. She had little use of her hands for manipulating small tasks. When she was given a puzzle piece to insert, she flattened out her hand, and slid the piece around until it accidentally fell into the hole. She used a spoon with either hand. If permitted, she ate mostly with her fingers. She did not dress herself

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nor walk up and down steps independently. She carried some one particular small trinket, such as a puzzle piece or small doll with her and constantly twirled it before her left eye. She was mostly echolalic in her speech, and when she did instigate speech, it was inappropriate to the occasion. She was extremely negative to teacher direction, preferring to wander aimlessly from room to room. She did not interact with the other children.

Judy's hands were weak; in fact, she could barely control the weight of a spoon. She could verbalize a knowledge of her gross body parts, but had not established left-right discrimination. She was given an intensive daily practice session on the gymnastic mats, using the methods outlined by Cratty. This involved rolling on the mats and being encouraged to constantly verbalize her position. She was started on the task of learning to button and unbutton with the bright red corduroy vest. She looked in the air and fumbled ineffectively with the vest, being unable even to lay the buttonhole side of the vest over the button side. She did not push the button through the hole even when it was positioned for her. The teacher brought in a box of colored buttons and strips of cloth on which she had made several different sizes of buttonholes. Judy was encouraged by the aides to practice pushing buttons through the holes. She tried this tactually but never once attempted to look at the task.

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It was necessary for the aide to turn her head toward the task and tell her to look at it.

Judy's field of vision was very limited and she did not attempt to locate the task at hand in this field. She had no depth perception, and did not understand the concept involved with a puzzle piece dropping into a hole. She was interested in colors and could label and match them. The teacher concentrated on having her match beads, first by color, then by shape. This necessitated her using her vision. She was also included in the library period with Dale and was encouraged to look at pictures with him.

Judy wa given intensive training every day with the materials outlined by Barraga. To help her focus on the materials which she was manipulating, the room was darkened and the black pegs were set against a white board and illuminated with a high intensity lamp. The other materials with which she worked were carefully chosen. For instance, perceptual material involving the assembling of flat pictures in the shapes of fruit was tried. The pictures were large and undetailed; however, when assembled, the entire picture was too large for Judy to see all at one time and the concept of wholeness was lost.

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CHAPTER IV

RESULTS

The three instruments which were used in the study were not chosen primarily as evaluative tools since the groups used for their standardization were blind children with no additional handicaps. The instruments did, however, delineate specific tasks which related to the objective of the demonstration project. They were used primarily as a basis for individual instruction. The number of tasks on each instrument which were accomplished by fifty per cent of the children in the standardization groups of the same chronological age were considered as the level of expectance toward which instruction was programmed. No objective judgement was made as to the normalcy or retardation of the children before or after the training. The success of the training was considered in terms of the individual progress of each child. The evaluation by the independent observers was conducted at beginning of the program for the purpose of identifying specifically those tasks which each child should be taught. At the end of the program the evaluation was conducted in order to establish whether or not each child had learned these tasks.

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The observers used as guides the Scale of Orientation and Mobility Skills of Young Blind Children and A Body Image of Blind Children Screening Test whenever possible. Some items on the Orientation and Mobility Scale were not applicable to the whole study group since they were tasks specific to totally blind children. Both instruments depended upon the ability of the child to obey verbal commands. Karen and Jeffrey had no verbal comprehension and the evaluators were requested to record their specific observations of the behaviors of these two children before and after training. Tony and Mark refused to obey verbal commands. The evaluators recorded the accomplishments of tasks on the Orientation and Mobility Scale by these two children as they were playing and exploring during the testing day.

Each evaluator rated each child on a pass-fail basis independently from the others. Their ratings were compared for agreement. The child was considered to have passed or failed a task if two of the three evaluators agreed upon the rating. On the Orientation and Mobility Scale, the percent of agreement between raters was 80 per cent or above for each child. On the Body Image Screening Test the percent of agreement between raters was 88 per cent or above. There was a slight trend for the rehabilitation counselor to disagree with the psychologist and the preschool educational specialist. Of seventy-six disagreements, thirty-three were registered by the rehabilitation counselor.

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The behavioral observations which the evaluators recorded for Mark, Karen, Tony and Jeffrey were analyzed for agreement between raters. No list of specific behaviors was provided to be used as a guide for these observations. The evaluators were instructed to record the specific behaviors which they observed during the day. At least 80 per cent of the number of specific behaviors which were recorded were recorded by two of the evaluators, or by three of them. Those behaviors which were recorded by only one of the three evaluators were not considered for the final results.

Since direct cooperation by the child was not called for in the administration of the Social Maturity Scale for Blind Preschool Children, inasmuch as it was administered to the mother of the child, it was possible to use this instrument to evaluate all seven children. This scale was administered and recorded by the coordinator of the program in the homes of the children before and after the training session.

The following general analysis was based on the objective recordings of the evaluators and the coordinator. Results were observed for each child which were in addition to those outlined by the instruments, but which were relevant to the general hypothesis as it related to the objectives of the demonstration. A discussion of these behaviors as well as the specific behaviors which appeared as gains on the three instruments appears under the

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heading of "Specific results."

General results.--The norming data for the Scale of Orientation and Mobility Skills of Young Blind Children reported the numbers of tasks on the scale which were passed by fifty per cent of the youngest group of children, three and four years of age, to be thirty-two. The number of tasks on the scale which were passed by fifty percent of the next level, five and six years of age, were sixty-four. Some of the items were not suitable for the children who, although their ophthalmological reports indicated "light perception only," were found to have much useful vision. These items were omitted from the testing procedures. The result was that the number of tasks which the child could be expected to accomplish was different for each child. All of the children who were assessed on the Scale of Orientation and Mobility Skills of Young Blind Children showed gains at the end of the program. The scores for these five children appear in Table 2.

TABLE 2

SCORES ON A SCALE OF ORIENTATION AND MOBILITY SKILLS OF YOUNG BLIND CHILDREN

Name	Number of Possible Items	Pretest	Posttest	Gain
Mark	22	12	13	1
Tony	22	6	16	10
Adam	31	21	28	7
Dale	43	31	39	8
Judy	43	16	33	17

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A Body Image of Blind Children Screening Test is a series of tasks arranged in order of difficulty as established after administration of the test to blind children with no additional handicaps. There are eighty-five tasks on the scale. No definite age norms have been published. A limitation pointed out by Cratty is that the test involves a measure of the extent to which the child can respond to verbal direction. Because of this limitation, the instrument could be used for evaluation with only three children. Jeffrey was deaf, and Karen and Tony made no response to verbal stimulation. Mark refused to do anything on command, although he had verbal understanding. Adam did not do any of the items on the scale at the beginning of the program, and Dale did the items concerned with gross body parts only. This could have been a function of language retardation rather than failure in the area of body awareness. When Adam and Dale were informally approached with simpler language, they indicated body image awareness that was not demonstrated during formal testing. The gains demonstrated for Adam and Dale may have been a function of enlarged vocabulary. Changes in individual scores for Adam, Dale and Judy are shown in Table 3.

All of the children passed more items on the Social Maturity Scale for Blind Preschool Children at the end of the program. The norming procedures for this scale, again, involved blind children with no additional handicaps.

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TABLE 3

PRETEST AND POSTTEST ON A BODY IMAGE OF BLIND CHILDREN SCREENING TEST

Name	Pretest	Posttest	Gain
Adam	--	15	15
Dale	26	53	27
Judy	17	62	45

It was only possible to compute roughly the number of tasks which each child could reasonably be expected to perform. Karen and Jeffrey, because of their additional severe handicaps, did not do many of the items that blind children of comparable ages did. None of the children did all of the items which were indicated for their age level. Mark and Dale did more, compared to blind children at their ages, than did any of the rest. However, Mark and Dale had sufficient use of their residual vision that they generally functioned as seeing children. Changes in individual test raw scores appear in Table 4.

TABLE 4

SCORES ON A SOCIAL MATURITY SCALE FOR BLIND PRESCHOOL CHILDREN

Name	Number of Possible Items	Pretest	Posttest	Gain
Mark	55	54	57	3
Tony	56	41	47	6
Karen	59	17	29	12
Adam	62	56	59	3
Dale	80	78	82	4
Jeffrey	91	25	30	5
Judy	93	74	84	10

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Specific results.--The tasks which each child did at the end of the program included items other than those outlined in the scales. Since parent education was important, changes in attitudes of the parents were recorded. Data gathered in the months following the training were also relevant to the specific results for each child.

Mark, at the end of the program, did one task from the Scale of Orientation and Mobility Skills of Young Blind Children and three tasks from the Social Maturity Scale for Blind Preschool Children which he had not done at the off-set of the program. These tasks were in the areas of Self-help, Dressing and Socialization. He "removed his coat (sweater) without help," which task appeared on both scales, "made a definite effort to push down and pull up unfastened panties" and "carried out constructive activity." His inability to verbalize and his physical hemiparesis of the right side made some of the tasks on the scales inappropriate. In order to encourage him to talk and to use his right hand, his instruction was concerned with tasks which were not included in the three scales chosen. These tasks which were chosen were derived from developmental scales which were appropriate for seeing children.

The evaluators recorded their observations of Mark's behavior as follows. He varbalized the names of animals which were shown to him in a picture book and correctly identified on these animals: head, feet, tail, eyes, nose

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and mouth. He assembled puzzles of increasing difficulty up to a ten piece puzzle with interlocking parts. He threaded beads on a string, choosing the beads to make some design of his own. He successfully worked a zipper on a zipper board and also on the apron which he wore at lunchtime. He sang into the tape recorder when requested, and he verbally socialized with Dale as they were together on the gym mats. During a play session, the teacher whispered to him, "Point to your nose," and he did so. He continued the game through ear, mouth, eye and check.

Mark was more easily controlled without temper tantrums at the end of the program. He was consistently using his right hand as a helping hand. He was enrolled in a preschool program for physically handicapped children for the next school year and his training was to be continued. He was also able to receive speech training in his new situation.

Mark's foster mother attended every parent session. While she had indicated at the beginning of the program that she was not confident that she could keep him because of his behavior, she was anxious to do so at the end. A report from the social worker follows.

> Mark's foster parent is intelligent and interested in helping Mark. Her change in attitude is evidenced in her understanding of Mark's behavior pattern and her ability to cope with it.
>
> By observing the staff as they worked with Mark, she was encouraged to be more firm and demanding of him.

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> She claims that the guest speakers and the parent's discussions were helpful with her other foster children as well as with Mark.[1]

Tony did ten tasks on the Scale of Orientation and Mobility Skills of Young Blind Children and six tasks on the Social Maturity Scale for Blind Preschool Children that he did not do at the beginning. These included: under the category of Socialization, "talks, imitates speech patters," "makes positive response to command," "says two or more words," "identifies doors," and "shows evidence of planfulness in arranging objects"; under the category of Self-help, Eating, "drinks from cup or glass unassisted and replaces it on table"; and under the category of Movement in Space, "walks upstairs without physical help," "runs with support," "runs, one hand held," "runs toward person," "jumps off ground," "climbs on sturdy object," "climbs on sturdy object without support," and "climbs up and down independently."

The evaluators recorded the following. He used a fork unassisted. He said "cup" "up" and "down." He understood the functioning of a bell and rang it. He climbed up to the sink and turned on the water faucet and played in the water. He pulled a pull toy with him all day.

The staff reported changes in Tony's behavior. He came to them independently and showed them his toys. He

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[1]Permission has been granted by the Pittsburgh Branch of the Pennsylvania Association for the Blind to reprint reports of parent's attitudes.

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screamed rarely. He willingly walked to the car to be driven home. The head nurse in the institution in which he lived reported that when he awakened at night he no longer screamed. He tolerated being left in the playroom with the other children in the institution and he was relating to and imitating the words of the attendants.

A foster home was not available for Tony. The social worker was attempting to have him attend a preschool class for handicapped children, but four months after the program he was not yet admitted. The report of the social worker follows.

> Tony presents an unusual challenge to those entrusted with his care. As an abandoned three year old child he lacked all the normal stimulation of a wanted child in a warm and loving family. The non-professionals who cared for him were terribly threatened by his blindness and his frustrations. The improved behavior and the new found skills, plus the interpretation carried back to the custodians, made them more aware of the individual attention needed by Tony. Despite their over-burdened schedule, the custodians now extend more understanding and time to Tony, which care is still a poor substitute for a good foster home.

Karen did twelve tasks on the Social Maturity Scale for Blind Preschool Children and two tasks on the Scale of Orientation and Mobility Skills of Young Blind Children which she had not accomplished at the beginning. These included: under the category of Socialization, "responds to familiar person," "shows preferences in materials," "shows active interest in various sounds," "voluntarily releases objects," "shows active curiosity about objects," "makes positive response to command," and "shows definite

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interest in working movable parts of objects"; under the category of Movement in Space, "attempts to regain lost objects," "seats self, one contact"; under the category of Self-help, Eating, "drinks from cup or glass which is held," "chews and swallows solid food," and "shows definite attempt to feed self with spoon"; and under the category of Self-help, Dressing, "pulls off socks and shoes as an act of undressing."

At the end of the program, the evaluators recorded that Karen came when called. She responded to simple commands such as "let's go" and "get up, Karen." She did not lay and rock all morning but explored constantly. She climbed up on a stool and held her hands under the water to be washed. At lunch time she attempted to hold her own spoon as it was guided into her mouth. She played with a large beach ball, kicking it back to her teacher or throwing it when it was rolled to her. She listened to a music box, holding it to her ear and smiling with human facial expressions. She had learned to eat pieces of apple and banana as well as cookies and when she was being stimulated with the vibrator, she took off her own shoes and socks in order to investigate the vibrator with her feet. She followed a moving sound source. When playing with a toy she threw it from her and retrieved it by herself. She "looked interested and alert," responded to tickling with a "human giggle" and was "making her own fun sounds."

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When Karen did no longer have the school and was with her foster mother all day, she regressed to her original condition of sleeping most of the day. After two months, she was admitted to a preschool for retarded children where the staff was trained in the techniques used to stimulate her during the summer project. She quickly gained back the losses she had suffered and was progressing. At the end of one month, she initiated sounds in a beginning speech pattern. She initiated her own ball game by rolling the ball to a wall and retrieving it when it returned. She ate cookies and bananas. She explored independently.

Her training was not reinforced in her home. Her foster mother had attended all the parent sessions and verbalized an intense interest in Karen and her future; however, the follow-up report from the social worker stated:

> Karen's foster mother, because of her own limitations and inability to follow through with the recommendations that were made, indicated a lack of comprehension of the purpose of the program.

Adam did seven tasks on the Scale of Orientation and Mobility Skills of Young Blind Children, fifteen tasks on the Body Image of Blind Children Screening Test and three tasks on the Social Maturity Scale for Blind Preschool Children at the end of the program which he had not done at the beginning. These included: under the category of Self-help, Dressing, "removes oxfords and sweater without assistance," and "dries own hands

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acceptably"; under Movement in Space, "makes complete turn in place," "walks downstairs without support," "walks upstairs alternating feet," "runs, one hand held," "runs toward person" and "uses basket or other receptacle for carrying"; under Self-help, Eating, "eats with spoon." In the area of body awareness, he demonstrated upon command knowledge of head, feet, side, front, back, arm, hand, thumb, ear, nose, mouth, eye and check.

Adam's parents reported that he was riding a tricycle at home. He was tolerating other children around him. The parents had taken him to a restuarant for dinner and he had quietly eaten his dinner. This was the first time that they had been able to take him to a public place without a scene. His parents were instructed to continue the large muscle physical types of activities.

Four months after the end of the program, Adam had not been placed in any further educational program. He was feeding himself and cooperating with toilet training. His speech had not improved and was still unintelligible to anyone but his mother. He was playing with his younger brother and was no longer contented to withdraw to his room to rock and listen to records. The report concerning his parent's attitudes from the social worker stated:

> Both parents were grateful for the combined interest and help given their child. They are not as threatened in their approach to Adam as they were heretofore. Also they can now articulate objectively Adam's potential development as well as his limitations. Having received tangible support and "know-how" they are able to relate to him with confidence.

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Dale did eight tasks on the Scale of Orientation and Mobility Skills of Young Blind Children, four tasks on the Social Maturity Scale for Blind Preschool Children and twenty-seven tasks on the Body Image of Blind Children Screening Test, which he had not done at the beginning of the program. These included: under the category of Self-help, Dressing, "button sweater," "unbuttons front buttons," and "puts on coat or simple garment"; under Self-help, Eating, "eats with a fork"; under Socialization, "makes forms with some approximation to that of intended object"; and under Movement in Space, "makes complete turn in place," "goes up and down stairs without support," "hops - one foot," and "climbs up and down independently." In the area of body image awareness he demonstrated knowledge of all Body Planes, Body Parts, Trunk Movements of the Body While Fixed, Limb Movements, Left Hand, Right Hand, Right Knee and Left Foot.

The staff reported that Dale was coloring well, staying within lines, that he was stringing beads, matching colors, assembling puzzles with five interlocking pieces and was manipulating a peg board. These are visual tasks. He recognized and verablized the names of animals in picture books.

Recommendations were made that Dale attend a kindergarten which would continue with the type of eye-hand co-ordination work that would develop the use of his vision. However, this had not been arranged four months after the

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program and Dale was at home. The social worker was able to provide his mother with some materials, and reported:

> Dale's mother appreciated the concentrated educational programming, not only for Dale, but also for herself. Prior to the course she had little knowledge of the value of visual stimulation provided by using suitable materials (puzzles, cut outs, paints, pulltoys, etc.). With greater knowledgeability she has continued to provide Dale useful materials and is more confident in supervising his play. Meeting with other parents of blind children added to the support given her by the teachers and the caseworker. Most dramatically Dale was found to have a great deal of useful vision and will eventually be eligible for placement in a regular sighted class. All these factors have helped Dale's mother change from an outlook of futility to one filled with optimism!

Jeffrey did five tasks on the Social Maturity Scale for Blind Pre-School Children which he had not done in the beginning. These included: under the category of Socialization, "inhibits simple acts upon command," and "makes positive response to command"; under Self-help, Eating, "holds cup or glass when drinking," and "shows definite attempt to feed self with spoon"; and under Movement in Space, "walks upstairs with physical help."

The evaluators recorded the following observations. He acknowledged the presence of others without climbing upon them. He put together puzzles, using his eye. He threw, caught, kicked and retrieved a ball. He matched colors. He piled blocks. He inserted small pegs into a peg board. He mounted, steered and got off a tricycle by himself. He sat on a chair on command. He ate ice cream with a spoon.

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Jeffrey's parents reported that he had gained weight, was sleeping all night, was eating full meals of semi-solid food. He had not been ill the whole six week period, which was unusual for this boy. He was carrying on all his learned activities at home and was quiet and contented to sit down and occupy himself with no adult control.

For the first two weeks after the end of the program, Jeffrey was practically uncontrollable. During the third week after the program his hearing was re-evaluated at a clinic. Since his behavior could be controlled, it was possible for the first time to try a hearing aid. It was discovered that with the aid he responded to sounds. He was enrolled in a preschool for physically handicapped children. The staff and volunteers were trained in techniques of behavior modification and he was scheduled to receive services from an itinerant teacher of visually handicapped children. He was given regular hearing therapy. At the end of four months he was progressing rapidly. He rode a school bus quietly to and from school, removed his own coat and hat at school and at home, and was learning new manipulative tasks.

The social worker reported:

> The most dramatic change in attitude was experienced by Jeffrey's parents who moved from complete dejection and hopelessness to the knowledge that their child had potential and with help will achieve.

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> Over the past years much time, effort and money were devoted to this child with the greatest success resulting from the six week period of the Program.
>
> The unfaltering efforts of the Staff and their confidence in Jeff's ability to progress gave the parents courage and faith for the future.

Judy did seventeen tasks on the Scale of Orientation and Mobility Skills for Young Blind Children, ten tasks on the Social Maturity Scale for Blind Preschool Children and forty-five tasks on the Body Image of Blind Children Screening Test which she had not done at the beginning of the program. These included: under the category of Self-help, Dressing, "removes oxfords without assistance," "washes hands unassisted," "puts on coat (sweater) unassisted," "unbuttons front and side buttons," and "dresses self except tying bowknots"; under Socialization, "plays cooperatively at the preschool level," "adjusts readily to group situations," "makes forms with some approximation to that of intended object," "locates and answers the telephone" and "identifies doors"; under Self-help, Eating, "eats with a fork"; and under Movement in Space, "uses tricycle," "walks up and down stairs alternating feet," "correctly turns left upon command," "runs toward person," "jumps off ground" and "climbs up and down independently."

In the area of body image awareness, Judy demonstrated knowledge of Body Planes, Body Parts, Body Movements, Laterality, and Left and Right of Objects (not

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her own body).

The staff reported that Judy had learned to attend visually to where she was going and was riding a tricycle and steering it independently. She sat upright at the lunch table, feet on the floor, keeping her hands down, with no singing or other disrupting behavior. She was successfully coloring and stringing beads, using her vision.

At home, Judy completely dressed herself, went up and down stairs independently. Her family began to require her to behave in the same fashion as her sisters were required to behave. She was enrolled in a special education public school class for visually handicapped children. Within one month she was completely a member of the class. She sat in her seat and occupied herself with visual readiness materials, when asked to do so. She rode a bus to and from school and walked independently from the bus to her classroom. She identified pictures on a large readiness chart and pointed to them with a pointer two feet long. An attempt would be made to teach her to read print. Perhaps braille would still be her chief method of reading, but she appeared to have developed sufficient use of her residual vision that she could be taught both methods of reading.

Her parents both attended every parent session. They verbalized a change to a very realistic attitude toward the goals toward which they could work. These goals were much higher than they had previously thought.

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The social worker's report states:

Judy's parents evidence an appreciable change of attitude as a result of the Summer Demonstration Program.

Despite their progress in recognizing their rejection of their handicapped child and their efforts to alter their feelings, it was only when they saw Judy in a situation created to meet her needs that they were really able to think of her lovingly as "our little girl." The positive findings in addition to the warmth and interest generated by the staff were most encouraging and enlightening and helped to enforce their feelings of acceptance.

The timing was perfect for them as they were able to this point to "hear" and accept what was said about their child.

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CHAPTER V

DISCUSSION

The data from this demonstration study indicated that short term instruction resulted in increased performance in all seven preschool age multiply handicapped visually handicapped children in skills of orientation, mobility, social competence and body awareness. All of the children demonstrated gains in performance on the tasks outlined in the Scale of Orientation and Mobility Skills of Young Blind Children, A Social Maturity Scale for Blind Pre-School Children and A Body Image of Blind Children Screening Test.

The gains would possibly not have changed the condition of the children to any great extent had it not been possible in most instances to alter the attitudes of their parents and social workers. The concern of the parents for the future of their children, and their lack of knowledge about the educational possibilities for handicapped children were clearly demonstrated. When the parents were given specific instruction about educational programs and about methods of stimulation which they might employ in order to prepare their children for future education, they were able to begin to make more realistic demands of their children at home and to provide appropriate stimulation toward their development. The parents were encouraged to observe the

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teachers working with the children frequently. Since so many of them drove their children to the program, they had many opportunities to do this. Before and after the daily class, the staff took the time to discuss techniques with the parents. When each week the parents met with the resource specialists, they were relaxed enough to be able to verbalize questions which were personally important to them. As a result of all this, the new skills which were learned in the school were, in all instances except one, being practiced at home under the direction of the parents.

The program was conducted at all times with a completely behavioral approach. Since there was a staff meeting every morning, it was possible to continually instruct the teachers in behavioral management techniques. For instance, punishment was never used. Instead, teachers learned to interrupt activities before objectionable behavior began, and to reinforce only acceptable behavior. While bits of sweet cereal were used as rewards at the very beginning of the program, the teachers, by systematically observing the children, soon found other secondary rewards which were effective. These methods proved to be so effective that during the last two weeks, many visitors such as social workers from agencies involved with the children in the study and medical personnel who were involved with very young children, came to learn the techniques.

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Limitations

The reports which were presented with the applications of the children for the program were inadequate and misleading for educational purposes. The ophthalmological reports, in almost every instance, specified that the children had visual acuity of "light perception." Mark, Dale, Tony, Jeffrey and Judy all had more vision than indicated, and began to use their vision for mobility. The scales which were chosen as guides to instruction proved, in some instances, inappropriate for these multiply handicapped children. With the exception of Adam and Karen, both of whom were totally blind, the children had potential vision which made scales which were constructed for totally blind children not entirely suitable. Chronologically, the children in the study were within the age group for whom these scales were intended, but their handicaps in addition to their blindness had, in some instances, limited them to a developmental level far below their chronological level and below the level of the scales.

It was expected that lack of language would be a consideration in the training of Jeffrey who was diagnosed as deaf-blind; however, the general retardation in language of all the children presented unexpected difficulties. The audiological evaluations which were made on the children indicated only that they had no major hearing defects.

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These evaluations were as inadequate for educational purposes as were the ophthalmological evaluations. The staff agreed that professional services in the area of speech and language therapy were needed.

Implications

One of the consequences of a medical diagnosis of blindness could be the inability of some of the children to use effectively the residual vision which was available to them. Judy, when she came to the program, walked on her toes with her hands stretched out before her as a blind child frequently does. Her parents expressed dismay when the coordinator suggested that the child could see, and should be taught to do so. The dramatic change in Judy's performance from that of ineffectively fumbling with her hands at any task, to being able to pick up a peg and insert it carefully in a hole, and then to engaging in visual readiness activities in her school, would suggest that stimulation of the use of her vision much earlier would have enabled her to have experiences as a sighted child. Her apparent retardation may have been caused by this lack of stimulation.

Dale had been accepted in his own neighborhood and home as an "almost blind" child, to be watched over by his sisters. However, when proper glasses were obtained for him, with some instruction, he learned rather quickly to use his vision. The implication is that early visual stimulation is necessary, and parents should be counselled to

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provide this stimulation as much as possible, rather than to accept their child as blind.

While the possible psychological effects of the rejection of Karen and Tony by their natural parents cannot be separated from the effects of the almost total lack of sensory and social stimulation which they had received for their first three years, the changes in their behavior over a short time when stimulation was provided, would indicate that some of their handicapping conditions could have been prevented.

The medical personnel who visited the demonstration program expressed amazement at the gains in the children. If, as this study indicated, educators have methods and techniques which social workers, psychologists and medical personnel do not have, to teach these multiply handicapped children tasks which are not necessarily academic, then the involvement of educators in the treatment of the handicapped child even from birth is indicated. It appears that there is a need for closer cooperation between the educational specialist, social worker and medical personnel. The techniques of providing stimulation are part of the educational body of knowledge. These techniques need to be applied long before the handicapped child becomes of school age.

The ability of the staff to work on a day-to-day basis, to change approach and method of instruction as soon as a change was indicated, and to be not only satisfied, but completely elated over the smallest gain demonstrated by

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each child, proved to be important factors in the success of the program. Any pre-conceived goals for these children had to be discarded almost the first day. But this did not make any lesser goals seem unworthy. For many multiply handicapped children, the common educational goals may have to be completely revised.

At the present time, a child is, in general, admitted into or excluded from an educational program on the basis of the reports submitted from social work histories, psychological testing and medical diagnoses. From the results of this study, the implication arises that a trial period in an educational setting might indicate, for some children, potential beyond that which appears on reports. Some of the gains demonstrated by the children in this study, especially by those children who were the most severely handicapped, were dramatic. However, even the gains of the other less handicapped children, as indicated by the continuing successful performance of the children in other educational programs, appeared to be decisive to their educational future.

Recommendations

The results of this study, based upon the experience with these seven children, clearly demonstrated that the use of educational techniques produced dramatic changes in the behavioral functioning of children with multiple handicaps.

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The following recommendations are indicated:

1. The parents of multiply handicapped children suffer from a feeling of helplessness in dealing with these children. In addition to psychological support, such as might be provided by the social workers, the parents should be provided with knowledge of and demonstration of specific techniques to be used to foster the learning of specific tasks, as provided by the educator.

2. Parents, social workers, and tending adults should be instructed by the educator in specific methods of providing compensatory sensory and social stimulation.

3. Instruction in the efficient use of any residual vision should be provided to the child as soon after birth as feasible, and should be continued as the child matures.

4. Specific behaviors should be developed with the use of techniques, such as behavioral managements based on individual systematic observations.

5. A close cooperation between personnel in social work and in education is necessary. The techniques of both disciplines should be employed to alter the attitudes of parents and foster the development of the children.

6. Educational placement should not be made solely on the basis of medical, psychological and social work judgments. The child should be exposed to a planned, sequential, educational experience at the preschool level in order for realistic projections to be made by the time the child reaches school age.

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APPENDIX A

CASE STUDY DATA COLLECTED PRIOR TO PROGRAM

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Child No. 1

Name: Mark

Date of Birth: July 10, 1966 Age: 3 years

Sex: Male

Ophthalmological Report:

Diagnosis: Tapeto Retinal Degeneration O.U.
Congenital Retinal Dysplasia O.U.

Vision: Light Perception O.U.

Audiological Report:

It has not been possible to obtain an absolute and definite measure of Mark's threshold of hearing. However, his test performance indicates that his hearing is essentially within normal limits and that it is adequate for the development of speech and language skills. There does not appear to be any handicapping reduction in hearing which could interfere with learning.

Social Agency Report:

Mark's foster mother is an intelligent, cooperative foster parent who welcomes counseling and conscientiously follows through with the recommendations made by the social worker. Because of her untiring effort, Mark has made some progress. Surgery and the application of a body cast to correct an orthopedic defect of the right ankle has retarded his progress somewhat.

Prior to the surgery Mark was able to walk alone, but is having some difficulty at present. Mark feeds himself, verbalizes, and plays with toys. Toilet training has not been effected because of the health complications and hospitalization. Mark appears to be an alert, interested child who enjoys activity and the companionship of other children.

Investigator's Report:

Mark lives with foster parents who have one grown daughter, not living in the home. Besides Mark, there has usually been one foster infant in the home. This second child is one who stays for just

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a few months and is replaced by another infant. The foster mother is of German extraction and speaks English with a strong German accent.

It was discovered by Mark's foster mother when he was three months old that he was visually and physically handicapped. Since that discovery, his natural mother and maternal grandparents have had no contact with him.

When Mark was two years old, he was examined by a psychologist who told the foster mother that Mark would "need help all his life." The foster mother admits that she finds it difficult to refuse Mark anything because she feels sorry for him. However, she says that his tantrums are so disturbing that she is afraid she may not be able to keep him.

During the interview, Mark was watching television. He had a large box of toys in the living room. His speech was incomprehensible to the investigator, but he could communicate with his foster mother, who seemed to know what he wanted.

The foster mother expressed her dissatisfaction with the medical care Mark had received. She said, "These children are just guinea pigs to the doctors."

The foster mother was interested in having Mark attend school and readily agreed to attend the parent meetings each week.

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Child No. 2

Name: Tony

Date of Birth: May 24, 1966 Age: 3 years, 1 month

Sex: Male

Ophthalmological Report:

Diagnosis: Congenital Cataracts (hereditary)
O.U. Needled

Vision: Light Perception O.U.

Social Agency Report:

Tony was abandoned at birth by both parents. He was born at a hospital for unwed mothers where he remained until March 9, 1967, at which time he was transferred to a foundling home. In September, 1968, he was transferred to a child welfare shelter, where he is presently residing.

Tony has spent all of his young life in institutions and has been deprived of the warmth, love, and stimulation which is generally obtained either in a natural or foster home. Examining physicians have attributed his slow physical development, lack of muscular coordination and inarticulate responses to retardation. However, he has made tremendous strides since his placement at the present institution. Prior to his placement there, Tony screamed most of his waking hours, refused solid foods, and shied away from people. He is partially toilet trained and functions below his age level in other areas. He is eating well and accepts new foods.

Investigator's Report:

Tony lives in the hospital section of a child welfare shelter. His mother and father were both blind. They are now residing out of the state and are disinterested in Tony.

The head nurse of the institution expressed much interest in Tony. She went out of her office and brought him back with her. She held his hand as they walked and, while she talked to him, he neither looked at her nor spoke to her. During the conference Tony explored the office. He tried to

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open drawers and cabinets, but the nurse stopped him each time. He found her flashlight and occupied himself shining it into his eyes. He did not allow anyone to touch him. During the conference, he was given medication which was identified as a tranquilizer.

The nurse reported that Tony would not tolerate being left alone in the playroom with other children and screamed if he was put in any room with the door shut. When he came to the institution, at two years four months, he was not walking. The attendants put him in a walker, and he learned to walk independently very quickly. He also learned to feed himself when he was permitted to handle his own spoon. He walks with his toes turned out, particularly his left foot. The nurse had recommended that he be examined by an orthopedic specialist.

Before Tony came to this present institution, he was completely crib bound. The head nurse who reported for him, was pleased with his progress in the past six months. However, she expressed concern for his future. She said that the institution was so understaffed that they were unable to give him any personal attention.

The investigator was not permitted to visit the part of the hospital where Tony lived. On the second visit, she was not permitted to see Tony, but only to talk to the head nurse.

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Child No. 3

Name: Karen

Date of Birth: March 2, 1966 Age: 3 years 4 months

Sex: Female

Ophthalmological Report:

Diagnosis: Retinal Detachment O.S.
Cataract O.S.

Vision: No Light Perception O.U.

Audiological Report:

The audiologic test results today indicate that hearing is essentially within normal limits and that hearing is adequate for the average listening situation.

Karen was also given an otologic examination by the resident otologist who reports evidence of serious otitis bilaterally. Otologic consultation is recommended.

Social Agency Report:

Karen's foster parent is a widow with the responsibility of a home and a family consisting of a daughter and two school age sons. Her prime concern in accepting a foster child is the monetary compensation. She has given Karen good physical care, but lacks imagination and is not interested or able to accept the suggestions for stimulation and exposure directed toward emotional and intellectual growth.

Karen is tall and well developed for her age. She walks alone, but is not toilet trained and is not able to feed herself or hold a cookie. She has no interest in exploring her surroundings and does not play with toys.

Until recently when the playpen broke, she spent most of her time in it asleep. She now sleeps on the living room floor during the day and never having had a regular schedule or routine, seems unable to distinguish between daytime and night time.

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Investigator's Report:

Karen is a "battered" baby who was removed from her parents and placed, first in an institution for three months, and then in a foster home. She had been born normally seeing, but had incurred retinal detachments and cataracts from her mistreatment. Her parents had attempted no contact with her since she was removed from their home.

During the conference between the investigator and Karen's foster mother, Karen was asleep on the sofa in the living room. There were no toys visible in the house. There was a small rocking chair in the living room. The mother made no attempt to waken Karen, but sat beside her without touching her.

The foster mother reported that Karen was not sleeping as much as she did previously, but was walking around the house "a little bit." When the investigator asked if Karen could go up and down stairs, the foster mother said, "No, she moves right past them." The foster mother reported that Karen did not drink from a bottle, but that she did not seem to know how to swallow when given milk in a cup. She ate only strained baby food.

The investigator asked the foster mother to waken the child. The foster mother did so, but did not attempt to hold the child, who whined and cried when she was put on her feet. Karen made no pleasurable response to the social worker talking to her or picking her up. She lay limp across the social worker's shoulder and cried. She finally began scratching the social worker and attempting to bite her. Then her foster mother put Karen back on the sofa. Karen put her thumb in her mouth and rocked for a few moments, then turned her back to the room and apparently went to sleep.

Karen's foster mother was willing to drive Karen to the class. She appeared interested in the program, and verbalized her concern for Karen because she was "slow to learn."

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Child No. 4

Name: Adam

Date of Birth: December 17, 1965 Age: 3 years 6 months

Sex: Male

Ophthalmological Report:

Diagnosis: Retrolental Fibroplasia, "not a premature" therefore, calling it "Developmental vitreous mass," plus secondary glaucoma, O.D. Left eye enucleated, April, 1966.

Vision: Light perception O.S.

Audiological Report:

Routine otologic examination by the resident otologist revealed bilateral serious otitis media. This middle ear problem may account fully for the slightly reduced hearing levels noted today. It is also possible, in view of the distractible behavior, that Adam is not yet able to respond to very soft sounds, which he may be able to hear.

Adam's poor development of speech and language, and limited verbal comprehension, cannot be related to the hearing levels obtained today which are only slightly reduced.

Social Agency Report:

Both parents were able to work through in a relatively short time their original shock to Adam's blindness. He is treated as a normal child and is included in contacts with relatives, friends and neighborhood children.

Adam's development has followed that of the average child. He sat up at 8 months of age and began self feeding at approximately the same time. He walked well at 18 months of age and manipulated his toys very well. His language skill has developed slowly even though he appears alert. Also, he is not completely toilet trained. Pediatrician has assured parents that auditory skills are normal.

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Parents are anxious to participate in Project so they can avail themselves of group experience with parents of other blind children and also to give Adam an opportunity for self improvement as preparation for enrolling in a regular school.

Investigator's Report:

Adam lives in a new bungalow in a rural settlement with his young mother, father and infant brother. His mother and father are high school graduates. His father is employed by a large grocery store company.

When the investigator came into the house, Adam was alone downstairs in a game room, rocking in a large rocking chair and listening to records. After talking to his mother for a few minutes, the investigator went downstairs with his mother to see Adam. The room had many toys in it and Adam's mother said he spent a lot of time there.

Adam's mother said that he generally ignored the baby, but that he became agitated when the baby cried. Adam also became agitated at any loud noise, such as a sweeper or lawn mower, and that he could not tolerate other children around him. His parents were not able to take him to a public place because he screamed and threw himself to the ground if he was in a crowded situation.

Adam's mother explained that he had a partial Spina Bifida. This made it difficult for him to sit for long periods and, for this reason, she had not been able to toilet train him.

Adam's family had, until two months previously, lived in a multiple family dwelling with his grandparents and great grandparents. His grandparents were very affectionate with him. They, also, kept a rocking chair in their home just for Adam.

Adam came upstairs and wandered around the house. He attempted to go to the sink and near some wires in the kitchen. Each time, his mother stopped him, Adam screamed and kicked, and his mother scolded and spanked him. After a while, she took him out to the patio and lifted him on to a large rocking horse and he rocked for the rest of the conference.

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Adam's mother showed the investigator toys which had been purchased for Adam. Most of the toys were noise making or rocking. There did not appear to be any large muscle toys, such as a large ball, wagon or tricycle.

Adam's mother verbalized her own doubts about how much to expect Adam to be able to do. She said that Adam's father felt he should be feeding himself and obeying her more, but that she could not bear to have him go hungry or be unhappy.

At all times, Adam's mother appeared to be a happy, accepting mother who showed pride in his accomplishments.

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Child No. 5

Name: Dale

Date of Birth: October 24, 1964 Age: 4 years, 8 months

Sex: Male

Ophthalmological Report:

Diagnosis: Aphakia, O.U.
Rubella Syndrome

Vision: "Eventually" 20/70 to 20/200; glasses recommended

Audiological Report:

He responded to speech signals at the 12 DB level which is well within normal limits and demonstrated good ability to discriminate among speech sounds. There is no evidence of a significant or handicapping reduction in hearing.

Social Agency Report:

Dale was a premature birth. He was born at eight month's term. His mother had measles in the second month of her pregnancy, hence the baby was checked by ophthalmologist in the child's second week. The diagnosis of congenital cataracts was made. At 18 months of age cataracts surgery on both eyes was performed.

The father is not presently a member of the family. Dale's mother is warm and understanding with Dale. She is responsive and cooperative despite her overwhelming problems of a large fatherless family. She is anxiously looking forward to participation in the Project.

Dale's development has been excellent despite visual limitations. He walked at 11 months of age. He started to verbalize at the same age. He feeds himself. He is toilet trained and is able to relate to children in the neighborhood. In familiar surroundings his mobility is excellent.

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Investigator's Report:

Dale is the second child of five who live in a public housing project with their mother. The house is furnished nicely and is very clean. The children appear well cared for, but are allowed complete freedom to roam in and out of the house, and out into the street. They live on a dead end circle, and there are few cars on the street. Dale manages to make his way around outside very well and has excellent mobility. When he went out of the house, his mother cautioned his little sister, who is three years old, to "watch out for Dale."

There were no toys in the house, no picture books, nor any other play materials. There was a large television set with a radio, and all the children seemed able to manipulate the dials.

Dale's mother expressed concern for Dale. She explained that Dale had to have frequent rest because he had chest pains. The doctor had said he had a heart murmer and should avoid fatigue. She said that she was afraid to let him go to kindergarten because the road was dangerous for him. She felt that he would have to go to the "blind school" when he became six years old.

Dale was shy and would not talk, but his mother said that he could talk well. He does not handle buttons, dress himself, nor eat with a fork. He does feed himself with a spoon and is toilet trained. He understands language. He went upstairs, upon request, and brought down some new pants that his mother had bought for him for the school picnic and showed them to the investigator.

When the investigator was leaving, Dale came out to the car and smiled and waved. He finally did verbally respond by saying he would see her in school soon.

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Child No. 6

Name: Jeffrey

Date of Birth: November 18, 1963 Age: 5 years, 7 months

Sex: Male

Ophthalmological Report:

Diagnosis: Congenital cataracts
Microphthalmos
Atrophied Iris

Vision: Can see a little, but not much

Social Agency Report:

Jeffrey, a full term rubella baby, was diagnosed as having cardiac, visual, and auditory involvement shortly after birth. He is highly susceptible to infection and was constantly under the doctor's care and in and out of hospitals during the first few years of his life. Because of the interest and efforts of both parents and their cooperation with the developmental clinic, he has developed physically, is mobile, and responds to stimuli.

The parents are eager to have him participate in the summer program and to take advantage of any opportunities that are available.

Investigator's Report:

Jeffrey lives with his mother, father and three older brothers in a small, fairly new house in a mill community. His mother and father are both high school graduates. His father is a millworker.

When the investigator arrived, the mother had a tablecloth on the kitchen table and coffee and cookies laid out. The father was home, since he was on the afternoon turn, and did considerable talking with the investigator about Jeffrey. The mother also talked freely about the terrible case of measles she had had, then discovered she was pregnant. She felt sure that there was something wrong when she was carrying the child because he was not active. The whole family was heartbroken when they discovered that Jeffrey was handicapped.

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After a while, the father went into the bedroom and brought Jeffrey out. Jeffrey had attractive features, but he displayed all the typical rubella syndrome. He was deaf, almost blind, spastic in his walk and apparently grossly retarded.

Apparently for a long time the social worker had tried to get the father and mother to let Jeffrey have his own bedroom. They were reluctant to let him out of their sight, but finally had arranged a room with a screen door on it which let them look in on him, and yet kept him controlled in one spot. When he was out of the bedroom, they put him in a harness and attached the harness under the sofa leg to keep him safe. Jeffrey is compulsive about lights and light bulbs. When he goes in any house, he goes all over trying to find the lights and turn on the light bulbs. He destroys all the lamps in the house if allowed. He likes to look in a flashlight and his mother says she buys flashlight batteries by the bagfull in order to keep him supplied with a fresh flashlight.

Jeffrey does not respond to anyone's handling except his father. He has a habit of begging to be picked up. Then he throws himself backwards so that his head goes down to the knee level, and when he is brought back up, he repeats the act. He did not walk until he was five years old. A dance therapist worked with him and taught him to walk. He is responding to some signals since his work with the dance therapist. When he is held in someone's arms, he now does not throw himself backward unless the person holding him blows on his face. When his father picked him up, he worked with his father's face trying to get his father to blow, so he could go down.

Jeffrey does not feed himself, does not eat solid food, will attempt to drink from a glass if it is held, and is not toilet trained. The father and mother were willing to do anything which was suggested. They appeared very grateful for any help they could receive.

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Child No. 7

Name. Judy

Date of Birth: September 30, 1963 Age: 5 years, 9 months

Six: Female

Ophthalmological Report:

Diagnosis: Bilateral Microphthalmos
Micro Cornea
Amblyopia

Vision: Can identify objects and colors with left eye.

Audiological Report:

She repeated speech signals at the 10 dB level bilaterally and indicated excellent discrimination ability bilaterally. The audiologic test results on both pure tone and speech reception threshold measures are consistent in indicating essentially normal hearing bilaterally.

Social Agency Report:

The parents had difficulty in accepting the fact of blindness in their child and it was necessary through case work service to work through their attitude of rejection and to help them cope with their feelings of guilt and resentment. The parents responded favorably to treatment and were able to develop a warm relaxed acceptance of their child.

Due to a lack of stimulation, expectation and exposure during the early years, Judy's developmental progress has been slow. She began to talk at 22 months and to walk at 25 months. At the present time she is functioning independently in that she feeds herself and is completely toilet trained. She does, however, require a structured program which will encourage socialization, greater independence and self-appreciation.

Investigator's Reports:

Judy lives in a large, modern home, with mother, father and two sisters. Her parents are college graduates. Her father owns a business concerned with chemical engineering.

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While the investigator was conferring with her mother, Judy moved freely around the house on the first floor, investigating through touch the many accessories that were on the tables. She went into the den where there was a radio, record player, television set, large book shelves and other evidences of a family interested in rather advanced cultural recreation, turned on the television set and sat before it, watching.

Judy's mother said that during the past year, Judy had progressed noticeably in socialization since she had attended a private nursery school. Judy has many fears: she cannot tolerate the vacuum cleaner, will not put her hands on anything which is plastic, will not investigate tactually any new object, and will not socialize with any other children. While Judy was wandering around the house, she continuously interrupted her mother's conversation with loud, repetitive, inappropriate questions, such as, "What's for lunch?" and "Who's that?" (about the investigator). Each time, her mother answered her pleasantly.

Judy's mother said that Judy did not go out of the yard by herself. Her mother transported her to the nursery school because Judy would ride with no one else.

Judy's mother seemed anxious to get help, but at the same time, her expectations for Judy were very low. She apparently enjoyed the child, but accepted her as a blind retarded child with whom no training could be effective.

Judy does not dress herself and needs help with steps. Her mother reported that she is toilet trained but still needs some help in that area, and can feed herself, but usually just dawdles unless help is provided.

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APPENDIX B

SUGGESTED MATERIALS

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APPENDIX B

SUGGESTED MATERIALS

Miscellaneous Commercial Material:

- Beach balls
- Bell cubes
- Crayons
- Doll and carriage
- Lego blocks, large size
- Music boxes
- Plastic wading pool
- Play-doh
- Pull toys
- Pounding bench
- Rocking chairs
- Rock and Stack set
- Sand box and toys
- Scissors, plastic
- See and Say toys
- Squeaky rubber clothespin shapes
- Toy broom
- Toy sweeper
- Toy telephone
- Tricycles
- Wagons

From Creative Playthings, Princeton, N.J.:

- Blockmobiles
- Bolt-Tight
- Cloth Foam Blocks
- Clutch Ball
- Giant Foam Blocks
- Nesting Wood Boxes
- Peg Boards
- Rhythm Band Instruments
- Rubber Farm Animals
- Rubber Hedgehogs
- Rubber Zoo Animals
- Shape Sorting Box
- Single Transportation Toys
  - Auto 5"
  - Airplane 8"
  - Dump Truck 6-1/2"
  - Helicopter 6"
- Texture Ball
- Wood Nuts and Bolts

From A. Daigger and Co., Chicago, Illinois:

- Pink Tower
- Cabinet of Geometric Insets
- Judy Puzzles

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From Tactile Aides for the Blind, Inc., Des Moines, Iowa

Animal Puzzles
Form Boards
Progress Development Project #2
Textured Blocks with Divided Rack

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VITA

Mary Eva Welfer Moore was born in Pittsburgh, Pennsylvania, January 9, 1918. She attended Miss Simonson's School and Peabody High School from where she was graduated in 1932. She attended the University of Pittsburgh for two years, until 1934.

She married and became the mother of three sons. In 1960 she resumed her education and in 1962 received a Bachelor of Science degree from the University of Pittsburgh. She was granted the degree of Master of Education at the University of Pittsburgh in 1965.

Her professional experience includes four years as an itinerant teacher of visually handicapped children in the public schools of Allegheny County, two years as coordinator of the public school program for visually handicapped children in Allegheny County, and three years as part-time instructor at the University of Pittsburgh.

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