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The effects of early intervention on young handicapped children who are nonverbal or have limited expressive language skills

Joyce Mott Anderson
University of Nevada, Las Vegas

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**The effects of early intervention on young handicapped children
who are nonverbal or have limited expressive language skills**

Anderson, Joyce Mott, M.S.

University of Nevada, Las Vegas, 1988

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THE EFFECTS OF EARLY INTERVENTION ON YOUNG HANDICAPPED
CHILDREN WHO ARE NONVERBAL OR HAVE LIMITED
EXPRESSIVE LANGUAGE SKILLS

by

Joyce Mott Anderson

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

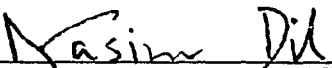
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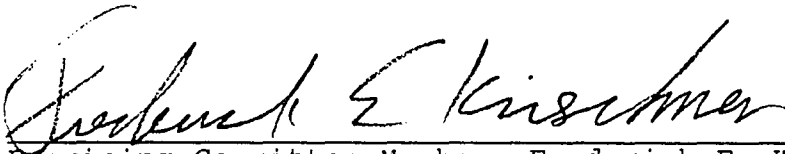
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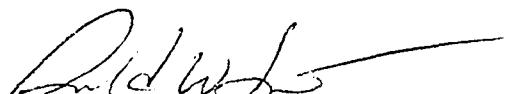
The thesis of Joyce Mott Anderson for the degree of Master of Science in Early Childhood Education for the Handicapped is approved.


Chairperson, Nasim Dil, Ph.D.


Examining Committee Member, Frank N. Dempster, Ph.D.


Examining Committee Member, Frederick E. Kirschner, Ed.D.


Graduate Faculty Representative, Lawrence A. Golding, Ph.D.


Graduate Dean, Ronald W. Smith, Ph.D.

University of Nevada, Las Vegas
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ABSTRACT

The purpose of this study was to investigate the impact of early intervention services on sixteen young handicapped children who were nonverbal or exhibited limited expressive verbal skills. It was proposed that these children would make gains in all areas of development including cognitive, receptive language, expressive language, fine motor, gross motor, self-help, and social/emotional as a result of carefully and systematically planned intervention. The subjects in this study had expressive language delays ranging from eight to thirty-three months. All children participated in an early intervention learning center that provided services noncategorically using a wholistic and transdisciplinary approach.

The findings from this study confirmed that each of the sixteen children made gains in all developmental areas. By implementing Wolery's (1983) formula gains were shown to be a result of early intervention and not merely maturation. Findings for the group as a whole reveal that gains in all areas of development were significant ($p < .0005$). Five categorical subgroups formed according to the primary handicapping conditions of the sixteen children all showed gains in each developmental domain.

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Dedication

To Jennifer, Ty, Amy, Jeff, B.J.
Greg, and especially, Tony
with all my love

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Writing a thesis is a once-in-a-lifetime experience. It has provided me the opportunity to study, to learn, and to grow in my knowledge of and love for young handicapped children. There are many people to thank for their help and support in this undertaking. Dr. Nasim Dil has been my professor, my director, my advisor, and most importantly, my friend. She has spent countless hours on my behalf. For her continued encouragement, enthusiasm, example, commitment, and willingness to share her vast knowledge, I thank her. To Dr. Frank Dempster and Dr. Fred Kirschner for their expertise in research methods; their time spent reading drafts and providing feedback; and their patience in working with someone who has never taken a statistics class, I offer my sincerest appreciation. To Dr. John Bates for sharing his knowledge of research methods not only in class but also in many moments of panic, I say thank you. To my favorite brother-in-law George Swarts (Mr. WordPerfect) who has stuck by me through all the frustrations of using a computer I give my love, my appreciation, and twenty hours of typing.

To Connie Lambert, a special friend, who has experienced the ups and downs, the joys and frustrations, and the agony

and ecstasy of being a wife, mother, and student, I say thank you for your encouragement, your listening ear, and all your help. I couldn't have done it without you.

To my parents who instilled in me the love of learning and the confidence in my ability to accomplish anything I desire, I share this realization and thank you for being the best parents a child could have.

To my six children who have shown during the past two years an unmeasurable amount of patience and understanding for a mother who is unorganized, usually late, often preoccupied, and a real grouch, I love you with all my heart.

And to Tony, my favorite person in the world, WE DID IT!

CHAPTER 1

INTRODUCTION AND REVIEW OF LITERATURE

Introduction

The focus of this study is to investigate the impact of early intervention services on the development of young children who are identified as handicapped by various agencies providing diagnostic and intervention services. In particular, the children selected for this study are those who, in addition to other handicapping conditions, had very limited or no expressive language skills before the initiation of intervention services. The purpose was to evaluate the gains made by these children not only in their verbal expressive skills but in all areas of child development such as cognitive, receptive language, expressive language, fine motor, gross motor, self-help, and social/emotional after receiving comprehensive services for a minimum period of five months.

The interest in a systematic investigation of the progress made by the above-described population of children evolved over a two-year period of providing direct services to young children who had a wide variety of special needs with varying levels of intensity and severity. Although the

children served during this period included those who had an appropriate or reasonable level of verbal skills, those children who were totally nonverbal or who had very limited expressive verbal skills were most interesting and challenging. It was observed that these children could be classified broadly into two categories: 1) those who compensated for their lack of verbal skills by using aggressive and destructive styles as they approached and communicated with others. This type of behavior led them to get into trouble with significant adults (parents, teachers, caregivers) and even peers; and 2) those who were passive and inactive, and made very limited attempts to approach and communicate with others, frequently using nonverbal modes like gestures, facial expressions, grabbing and/or crying to communicate. These children had a strong potential to be ignored or misinterpreted, contributing immensely to their frustration. The intervention strategies required to work with these two groups of children varied according to individual needs. There was a rewarding aspect of using carefully planned intervention with these children. Many of them made substantial progress and their gains were noted in specific areas of development. The observation of the developmental change of these children as a result of early intervention was extremely encouraging, and it seemed worthwhile to undertake this project for further systematic investigation. It was expected that the findings of this research would be beneficial for parents, caregivers,

teachers, and researchers who work with these children in a wide variety of settings.

A review of available literature revealed that a great number of research studies have investigated the positive effects of early intervention on the overall growth and development of young children with special needs (Bond, 1987; Bagnato & Neisworth, 1980; Bricker & Sheehan, 1981; Bailey & Bricker, 1985). However, this review also revealed a dearth of research on young handicapped children who are either totally nonverbal or have very limited verbal skills. This void further strengthened the interest to pursue this research.

The next section of this chapter includes definitions of terms used in this research, the statement of the problem for research and a comprehensive review of related research.

Definition of Terms

Nonverbal children: Children who are twelve months and older and express themselves through gestures, nodding of the head, facial expressions, body positioning and/or have very limited speech sounds, both intelligible and unintelligible.

Early intervention: Preventive, remedial and educational services provided to young handicapped children at the earliest possible time of a child's life starting with birth until school age (approximately the first eight years of a child's life) according to P.L. 90-538: Handicapped Children's

Early Education Assistance Act of 1968. These services are individualized to meet the child's needs in whatever developmental domain they may occur. Children who qualify for early intervention services are those young children between birth and eight years of age with special needs in any or multiple areas of child development such as communication, speech and language, fine motor, gross motor, perceptual motor, self-help, social and emotional, cognitive learning and general physical development. If these children were described according to categories they would be labeled as mentally retarded, emotionally disturbed, learning disabled, developmentally delayed, etc.

Wholistic approach: The primary focus is on the child as a complete entity with the evaluation of strengths and weaknesses in all areas of child development for the purposes of providing early intervention services.

Significant others: All individuals, parents, siblings, other relatives, caregivers, researchers, and early interventionists within the environment of a young handicapped child who have an impact, either directly or indirectly, on the child's development.

Functional assessment: The evaluation of a child done through formal and informal testing and/or observational procedures to determine the current functioning level of a child in each developmental domain.

Categorical assessment: The evaluation of a child done through

formal and informal testing and/or observational procedures for the purpose of assigning a category to the child like mentally retarded, emotionally disturbed, or developmentally delayed.

Statement of the Problem

By watching infants develop into young children, a relatively consistent pattern of rapid growth can be noted. This growth entails much more than physical growth; it can be seen in all developmental domains. Although this rate of development varies among average children, some guidelines have been established (Gesell, 1943; Piaget, 1952; Erikson, 1963) that enable one to approximate the onset of specific skills according to a child's chronological age. While some more recent research (Baltes & Willis, 1977) suggests that chronological age is not necessarily the most useful descriptive variable of development, for the purposes of this study chronological guidelines will be utilized for comparing gains of children in various developmental areas as a result of early intervention.

The first few years of life have been shown to be vital to the development of young children. Bloom (1964) estimated that 50% of a child's intellectual development as measured at age seventeen occurs between conception and age four, with 30% occurring between ages four and eight, and 20% between ages eight and seventeen. Brazelton (1974) stated that a child

learns how to utilize all his potential for learning and thinking during the time from infancy to childhood. To better understand how this development occurs one can review the work of White (1975) who provides the following general outline of the average child's pattern of development during the first thirty-six months of life. From birth through two months, the child engages in sleep, sucking and gumming fists, brief visual interest, and arm and leg motions. Between two and four months the child begins sucking and gumming anything handy, indiscriminate affiliation with anyone, batting with hands, arm, leg and head motions, and has an extended visual interest (own hands and faces of others). Added to these activities between four and five months of age are hand-eye activities, socializing especially with primary caregiver, and playing with own sounds. The child between five and eight months of age begins simple manual activities with small objects, can practice sitting up, plays with own sounds and attends to words. A rapid period of growth occurs between eight and fourteen months of age as the child continues to exhibit extensive visual interest, practices emerging gross motor skills, explores the qualities of objects, attends to words, practices simple skills such as closing and opening doors and covers, filling and emptying containers, standing objects up, etc., learning about simple causes and effects including light switches, pushing balls, jack-in-the-boxes and TV switches, and reactively coping with slightly older

siblings. A child fourteen to twenty-four months of age begins listening to language, practicing simple skills, developing gross motor skills, exploring objects, procuring objects, getting and holding the attention of the primary caregiver, going along with simple requests, asserting himself, testing his will and seeking assistance when needed. From twenty-four to thirty-six months of age the child continues to build on his earlier skills in addition to using and listening to language, practicing both gross and fine motor skills, engaging in make-believe, creating products, getting and holding the attention of peers, practicing leading and following peers, and conversing. This pattern of learning reveals the successive skills average children develop during this period of rapid growth. These skills can be utilized to engage in various activities which assist the development of expressive language.

Of particular interest is the pattern of language development in young children. Lenneberg (1966) noted a universal sequence of language development and a similar rate of development in all normal children. According to his findings, babbling begins around six months of age, first words are spoken at approximately twelve months, and two-word combinations emerge at twenty-four months. This development of communication skills is an essential aspect of average child development which is facilitated through interactions with members of the family, caregivers and other significant

adults within the child's environment from the very early days of life. Portes (1985) quotes Vygotsky as stating that "adults not only teach all aspects of language to children but also process information for them before they do so for themselves" (p. 7). A child's communication skills begin with nonverbal behaviors like gestures, facial expressions, eye movements, head movements and changes in body position. These are the child's modes of communication until he or she reaches a level of maturity allowing him or her to merge nonverbal into verbal modes (Dil, 1984). During this time, gestures are often used to reinforce the developing language (Gesell & Ilg, 1943). In their Human development: A life-span perspective, Lerner and Hultsch (1983) outline the stages of vocalization and the approximate age of onset in young children from birth through twelve months of age. Undifferentiated crying occurs from birth through one month, with the cry signalling all of a newborn's needs. Around two months a child uses differentiated crying to distinguish between hunger, pain or distress, and anger. Babbling occurs between three and four months and continues until a child is eight and nine months of age. It consists of repetition of simple consonant and vowel sounds. From six to eight months of age lallation occurs, which involves the accidental or imperfect imitation of an infant's own sounds and those of others. Between nine and ten months the infant exhibits echolalia or imitation, during which time the infant consciously imitates sounds he or she hears.

Patterned speech begins around one year of age. During this time the child consciously produces adultlike intelligible sounds and uses them to communicate. As most children grow older their means of communication become more sophisticated as this expressive language emerges. These verbal expressions obtain primary significance while the nonverbal become coordinated with and supplemental to verbal expression. Most of these communication skills are learned within mother-child dyads during the first years of life (Warren & Rogers-Warren, 1982), and are supplemented within caregiver-child dyads and family environment. Regardless of where this beginning language occurs, one critical variable is the individual interaction of the child with a responsive, attentive adult (O'Conner & Schery, 1986). The degree to which verbal dialogue and exchange occur with others in the child's environment has a direct impact on the intensity and rate of production of the child's emerging verbal language.

It is vital to recognize how this development is slowed and/or altered in a child who is born with a handicapping condition or who acquires one in the early years of life. If all systems of an organism allegedly are interrelated, the "failure to remediate one handicap may multiply its effects in other developmental areas, and may produce other handicaps (particularly social and emotional ones) that are secondary to the initial insult." (Hayden & McGinness, 1977, p. 153). For example, certain disabilities may impair the speech

mechanism or information processing system of the brain, which may affect the expressive language skills and hence overall functional skills of a child.

The actions of significant others within the young handicapped child's environment can also cause a delay in the child's development. Expectations may be raised to excess by those either unwilling or unable to accept the child's handicapping condition. Expectations may also be lowered, thus not allowing the handicapped child to attempt tasks that seem difficult but may actually be within the child's capabilities. Parent and caregiver requests of the young handicapped child may be altered to enhance the adults' expectations; that is, their distorted perceptions of the child's ability to understand and learn rather than the child's actual competencies. Even the reaction of peers to the child and/or the handicapping condition can deny the child access to 'typical' childhood experiences that facilitate and enhance development.

The progress in development of a young handicapped child can be slow and minute, especially when compared to the development of an average child. Recognizing these differences in development, it is vital that the handicapped child be reliably assessed in order to determine typical levels of performance. There exists a substantial need to develop and improve assessment instruments and procedures relevant to handicapped children before accurate assessment can be made

(Hamilton, 1979; Hanson, 1985; Meisels, 1985).

Once a young handicapped child has been accurately assessed, that child's specific strengths and weaknesses can be identified and intervention strategies implemented that will enhance the utilization of the strengths to remediate and/or alleviate the weaknesses of the child. In order to have a complete understanding of early intervention programs, it is vital to evaluate the program impact on the whole child. The development of a child should be positively related to the number of causal developmental factors that are positively influenced by the early intervention program (Ramey, 1985). Although emphasis is placed on the special needs areas, program impacts should be realized in all areas of development. While change in some areas may not be statistically significant, they may suggest educational importance if findings reveal cumulative trends above the level of chance.

In view of all these arguments, this study is designed to evaluate the effects of early intervention on children who, in addition to other handicapping conditions such as Cerebral Palsy, Down Syndrome, and microcephaly, did not have any or had very limited expressive language skills. These effects will be assessed in all areas of child development: cognition, receptive language, expressive language, fine motor, gross motor, self-help and social/emotional.

Review of Research

This section includes a review of research and theoretical literature related to the study of the developmental changes of young children with special needs as a result of early intervention services provided to them. The intention was to limit this review to that literature which focuses on the study of nonverbal children and those who have limited verbal skills. It was expected that this review would reveal studies dealing with the impact of early intervention on such children; studies tracing the improved sophistication of intervention strategies implemented with these children; and studies identifying methodologies utilized. However, the search revealed no studies dealing specifically with nonverbal children and the gains they made in all areas of child development as a result of early intervention. Few studies examine developmental gains made by children with limited verbal skills.

Consequently, the scope of this research was broadened to include studies performed to investigate the impact of early intervention on verbal and nonverbal children; children with a variety of handicapping conditions; children with mild, moderate and severe handicaps; children who are at-risk and those with developmental delays. Some of the studies included are related to comparatively older children but are relevant because of the methodology used for study. After conducting an extensive review, a diverse selection of studies was found

that can be broadly placed into two categories. One category consists of those studies that implement a wholistic approach to early intervention. That is, the change in child growth, however minute, is demonstrated in whatever areas of child development it occurs. These studies appear to have focused on the measurement of child change rather than the actual developmental-maturational gain. The second category is composed of studies focused on one to three components of child development in an attempt to provide some specific basis of evidence for the support of intervention services. These narrowly focused studies reported interesting and conclusive findings, though many lacked methodology identification or specific intervention strategies. An attempt will be made to explore the relevance of such studies in relation to the development of expressive language in young handicapped children.

This review is organized to present, first, those studies which focused on a wholistic approach to early intervention by investigating the gains made by children in all areas of child development. These studies are followed by those which were limited to the evaluation of changes in one, two or three areas but not all areas of child development, and includes studies of children who are nonverbal or have limited verbal expression; studies emphasizing the parent role in educating young handicapped children; and studies revealing social perceptions of young handicapped children.

The most comprehensive and revealing measure of child change due to early intervention must be based on a wholistic approach to child development. The change in child growth must be demonstrated in whatever areas of child development it occurs. It is only by accurately assessing all developmental domains and identifying individual strengths and weaknesses that one can concentrate on specific areas of need.

Bagnato and Neisworth (1980) addressed the concerns of program impact on the whole child in their efforts to monitor both child progress and program effectiveness of a preschool project conducted over a two year period. Their development of an Intervention Efficiency Index (IEI) resulted in a means to relate changes in a child's capabilities to the time spent in a program. The IEI is determined by developmental gains in months divided by time in intervention in months. Developmental gain is determined by the difference between pretest and posttest scores. Sixteen multiply handicapped children ages sixteen to sixty months were assessed every twelve weeks of participation in the program. The assessment tools included Gesell Developmental Schedules for assessing child performance; Preschool Attainment Record for judgments of teachers and parents; COMP-Curriculum Sequence which is a checklist of objectives by age level; and Perceptions of Developmental Skills to record behavior. From these assessments four indices were established describing (a) child gain in each developmental area; (b) group gain in each

developmental area; (c) child gain overall; and (d) group gain overall.

The results of Bagnato and Neisworth (1980) study revealed that the mean developmental gain for each month was 1.11 months (ranging from 1.03 to 1.19 months), indicating an average of more than one month of gain for each month of intervention. In the IEI domains, group gains were 1.12 in language, 1.19 in personal-social, 1.03 in motor, and 1.06 in problem-solving. Data reported in each domain show a greater than one month gain for each month of intervention. The development of the IEI helped to lay the groundwork for more sophisticated measures of early intervention impact, in addition to providing support of early intervention for young handicapped children. One limitation of this study is that it does not provide information about the expressive verbal skills of children.

Bricker and Sheehan (1981) initiated in 1977 a non-categorical program for young handicapped children in an attempt to accomplish five major objectives: 1) provide a comprehensive program producing verifiable change; 2) provide family support and education; 3) evaluate child change; 4) assist public schools in developing programs for young handicapped children; and 5) develop a model program for training, research and demonstration.

Intervention was provided to 63 children ages four months to five years (mean CA 36.5 months; 46% female, 54% male; 97%

Caucasian). Intervention was provided in both classroom and home settings. The classroom setting utilized large and small group and individual instruction in child development domains of gross motor, fine motor, sensorimotor, social, self-help and communication. There were fifteen to twenty instructional activities per day, separated by exploratory play periods. The home setting consisted of weekly visits to the home where the interventionist observed parent and child interactions. New activities to be implemented were modeled, and support specialists were consulted as needed. Although education and support were provided for families, the major focus of this study was documentation of child progress.

Pretests and posttests were administered over two years using the Bayley Scales of Infant Development (with children ages seven to twenty-nine months) and the McCarthy Scales of Children's Abilities (with children ages twenty-four to sixty months). These tests were administered after an initial adjustment period for the child of three to four weeks of daily classroom attendance. Pretest and posttest comparisons were provided for the total group as well as analysis for subgroups. The Bayley Mental Age Equivalent scores were reported in months. The pretest mean score was 12.7 as compared to a posttest mean score of 16.0 for the second year. Mean scores of 11.3 and 13.1 were achieved during the third year on these same assessments. Psychomotor Age Equivalents from the Bayley showed a mean pretest score of 7.5 and

posttest score of 11.0 during the second year, with mean scores of 8.9 and 12.2 on the same tests during the third year. Group findings on the McCarthy were not educationally significant for either the second or third year. However, when these results were broken into subgroup scores, they all showed educational significance for both the second and third year. On the McCarthy General Cognitive Index, at-risk children had a mean score of 114.4 pretest and 119.3 posttest; mildly handicapped children had a mean score of 65.9 pretest and 70.9 posttest; and moderately handicapped children had a mean score of 65.0 pretest and 72.7 posttest during the second year. There were no normal or severely handicapped children in the program that year. During the third year the mean scores increased from 102.5 to 111.2 for normal children; 66.7 to 71.9 for mildly handicapped children; and 46.5 to 55.5 for moderately handicapped children. There were no at-risk or severely handicapped children during that intervention year.

Bailey and Bricker (1985) replicated these findings with their Early Intervention Program which consisted of a home based unit (children ages birth through fifteen months) and a center based unit (children ages fifteen through thirty-six months). Thirty-six children (mean age 82.2 weeks) were involved during the second year and forty-six children (mean age 87.4 weeks) during the third year. These children were initially assessed using the Gesell Developmental Scales and Comprehensive Early Evaluation of Programming System (CEEPS).

These same tools were administered to obtain a posttest score with a five to seven month interval between tests. There were not statistically significant differences between pretest and posttest developmental quotient scores for either the second or third year although they did show positive child change.

All pretest and posttest differences were statistically significant when using the CEEPS. Using a two-tailed t-test the level of significance was determined to be $p < .001$. The total pretest mean for the second year was 343.6 with a total posttest mean of 413.2. Findings for the third year were not available. The results of this study are significant when considered in the aspect of a wholistic approach to child change. Although assessment scores did not measure statistically significant change, any gain is noteworthy when working with young handicapped children. By examining all developmental domains and child change within each of them, interventionists can more clearly identify each child's strengths and weaknesses. This process results in intervention services geared specifically to each child and his or her individual needs.

Contrasted to the wholistic approach of some early interventionists is the study of one, two or three developmental domains. The second category of studies presented in this review have narrowed their focus to very specific areas of child development in an effort to study a limited aspect of early intervention and its impact on young handicapped

children.

Fewell (1988) conducted a study limited in its discussion to motor achievement of young handicapped children. Impairments of children in this study included behavior disorders, communication disorders, health impairments, gross motor delays, and mild or moderate mental retardation. Forty-four preschool children were involved during the first year and sixteen children (from among those participating in the first year) were involved during the second year. This two year project used pretest and posttest scores of gross and fine motor skills to assess the gains made by children as a result of this intervention strategy.

The children ranged in age from three to five years at the onset of intervention and were randomly assigned to two treatment groups the first year. The first group was provided individual sensory integration therapy in twice weekly sessions of twenty-five minutes each. Occupational therapists provided this intervention and set individualized goals for each of the children. These goals were based on the pretest scores from the Assessment of Sensorimotor Integration in Preschool Children and the Peabody Developmental Motor Scales - Gross Motor Scale. Special education graduate students served as teachers in the second group. The gross motor lessons were administered in the group setting, meeting for twenty-five minutes four times per week. These two forms of intensive intervention were withdrawn after the first year and

replaced with a nonintensive gross motor activity. No specific fine motor instruction was provided either year.

Pretest and posttest scores from both groups of students were obtained using the Peabody Developmental Motor Scales. At the end of the second year, findings of t-tests did not reveal significant changes in the subjects' fine motor quotients for either year. The first year pretest mean was 75.52 as compared to the posttest mean of 77.51, whereas the second year fine motor pretest mean was 77.18 as compared to the posttest mean of 76.11. Significant ($p < .005$) gross motor gains were achieved during the first year with pretest scores averaging 74.45 and posttest scores averaging 84.81. During the second year the gross motor scores were not significant as they averaged 78.31 on the pretest and 76.28 on the posttest. It should be noted that some of the gains achieved during the first year were maintained at the start of the second year.

These findings point to a need for daily evaluations of child progress to be included with the follow-up evaluations of short term intervention. Through daily charting and recording progress can be carefully monitored, modifications can be made as necessary, and trends can more easily be identified. The narrow scope of this study has prohibited important data that could possibly have resulted if the focus had been broadened. Lenneberg (1969) points out that language development correlates better with motor development than it

does with chronological age. He found that especially with retarded children a high correlation is obtained between motor and language development. Additional valuable information regarding language and motor development in young handicapped children could have emerged from Fewell's (1988) study if the focus had been broadened.

Some studies have focused on a specific population of children and attempted to generalize the effects of early intervention across the gamut of that population. Children with Down Syndrome comprise one population which has frequently been studied. This is particularly relevant because Down Syndrome children generally have limited verbal language skills. Oelwein, Fewell and Pruess (1985) stated that Down Syndrome children are often recognized as an important group for early intervention studies because of certain research advantages like early reliable identification, the occurrence of the disability among all ethnic and socioeconomic groups, and long term data which is available on the performance of those who did not receive early intervention.

Martins, Mervis and Mervis (1986) conducted a comparative study dealing with early vocabulary acquisition by children with Down Syndrome and nonretarded children. The specific focus of this research was the early development of comprehension and production of object names. Comparisons of both comprehension and production were considered separately using a group of six Down Syndrome children and six nonretarded

children. Chronological age for the Down Syndrome group was eighteen to nineteen months, while that of the nonretarded group was nine months. Developmental age was measured using the Mental Scale of the Bayley Scales of Infant Development which placed the Down Syndrome group at the eight to fourteen month level while the nonretarded group was at the ten to twelve month level.

The children were visited by an observer at home every six weeks for a period ranging from fourteen to twenty-one months. The visit consisted of watching a mother-child play period of thirty minutes that was also audiotaped. The audio tape served to verify production of object names by the child during the play period. At the end of the first visit and every five months thereafter the children were assessed cognitively using Bayley's Mental Scale. Near their second birthday children were assessed using Form L-M of the Stanford-Binet. Also, assessment was obtained on the Object Permanence and Means-End relation subscales of Uzgiris and Hunt Ordinal Scale of Psychological Development.

Results of this study reveal that at the onset of comprehension and production of object names children in both groups, that is, children with Down Syndrome and nonretarded children, were at the same level of cognitive development. However, soon after language acquisition began, the vocabulary development of Down Syndrome children started to lag behind their cognitive development, whereas the vocabulary develop-

ment of the nonretarded children continued to increase consistent with their cognitive development. The Down Syndrome children at a cognitive level of sixteen months had a productive vocabulary size of 0.2 words while the nonretarded children at the same cognitive level had a similar productive vocabulary size of 0.3 words. At the twenty month cognitive level the productive vocabulary size of nonretarded children increased to 12.5 words while the lag in vocabulary development of Down Syndrome children was evidenced by a productive vocabulary of 4.0 words. One significant finding of this study is that children with Down Syndrome continued to make cognitive gains despite their language deficit, which lends support to the idea that if children have limited expressive language skills, automatic assumptions should not be made that these children are mentally retarded, have limited cognitive skills, and are unable to learn.

In facilitating the acquisition of language skills, it is important to look at the child's environment and interaction with significant others within that environment. Conti-Ramsden and Friel-Patti (1983) investigated the language relationship between mothers of language-impaired children and the mothers of non-language-impaired children. The language-impaired group consisted of eleven boys and three girls, while the non-language-impaired group consisted of six boys and eight girls. The non-language-impaired group measured at or above age level on expressive and receptive language skills

using the Sequenced Inventory of Communication Development. The language-impaired children measured a minimum of six month expressive language delay on the Developmental Sequence Analysis.

From these groups of children twenty-eight dyads were formed. Fourteen of the dyads were composed of mothers and language-impaired children ranging in age from 3.6 to 5.4 years. The other fourteen dyads consisted of mothers and non-language-impaired children ranging in age from 1.7 to 2.9 years. These mothers and children were videotaped during fifteen minute play periods. These play periods took place in a specially designed playroom set up for naturalistic play. Some of the toys included in the playroom were a ball, a shopping cart, a Fisher-Price garage, and a large box of Legos (interlocking building blocks).

The findings from the above study have important implications for the language-impaired nonverbal child. It was found that these children were not in a deficient language environment, but rather the opposite. In the mother-child dyads, mothers of non-language-impaired children averaged 70.7 conversational exchanges, while the mothers of language-impaired children averaged 65.6 conversational exchanges. However, as these findings are further examined, it is revealed that mothers of non-language-impaired children initiated the conversation 58% of the time, while the mothers of language-impaired children initiated the conversation 66%

of the time. These mothers of language-impaired children adjusted their language to meet the needs of the child's developing language. The role of fathers in the language development of their young handicapped children is unknown since most research data evaluates the impact of a handicapped child on the mother, who has traditionally been viewed as the primary caregiver (Vadasy, Fewell, Meyer & Greenberg, 1985). Conti-Ramsden and Friel-Patti's (1983) study supports the theory that the role of parent involvement in the education of young handicapped children is an important aspect of early intervention. By educating parents, the home environment can become an important center for the child's learning.

Deaf children constitute another population identified for studies determining the effectiveness of parent participation in early intervention programs. Simmons-Martin (1981) directed the Early Education Project, a center based/home demonstration center for children under six years of age with educationally significant hearing impairments. A hearing loss was defined as educationally significant if that level of loss would prevent the child from learning to talk if the child did not receive early educational services. Simmons-Martin (1981) conducted a longitudinal study with a sample of thirty-one children with an educationally significant hearing loss over a span of two-and-a-half to five years. The average age at enrollment in the program was twenty-six months, and the children entered the preschool program at an average age of

forty-eight months. The focus of the project was to teach parents to be active participants in their handicapped child's education, although no methods of parent training and assessment of adult behaviors were described in the study. The effects of the program were determined by measuring the child's language development.

The children were grouped into age category blocks of six month periods, beginning with 2 to 2.6 years, 2.6 to 3 years, 3 to 3.6 years and so forth until 5.6 to 6 years. Growth in language ability during each of these six month increments was measured by the Scales of Early Communication Skills for Hearing-Impaired Children. These scales measure both receptive and expressive language. A steady increase of language ability was shown throughout the study: the average communication skills at age 2 to 2.6 years was 8.92 words receptively and 5.17 words expressively. At 4 to 4.6 years the average receptive measure was 26.25 words with a measure of 19.44 words expressive.

While this growth in communication skills was encouraging, the measurements were not compared to growth in hearing normal children. If a significant difference was shown between these two groups of children, it would point to the need for additional intervention strategies to be formulated and implemented to enable the deaf children to make further gains. The effects of this early intervention program utilizing parent participation were limited to the expressive

and receptive language domains. Measure of child gains in other developmental domains was not reported. No comparison of intervention strategies can be made because this study did not provide a description of the early educational program developed for these deaf children. Such a description would allow for possible implementation of these strategies with young children who may be language impaired though not deaf.

Zeitlin (1981) through her Learning Through Coping Project conducted an investigation on the impact of parent and child coping skills and early intervention. This study was conducted over a period of two years. The handicapped children involved were three to five years old. The study was comprised of three components: 1) the child's classroom program; 2) a parent program; and 3) the school's involvement with the child. The classroom program included twelve children with a head teacher, two teacher aides, the services of a psychologist one day per week, a language therapist one-and-a-half days per week, a social worker as needed, and volunteers. All staff and volunteers were trained in Learning Through Coping concepts, which are highly structured, task-analyzed developmental learning experiences. The parent program was implemented for parents to learn to deal with the feelings and fears that are related to parenting a handicapped child. Parent need was assessed by a psychologist who helped parents identify their needs, set goals and learn ways to cope. The school's involvement with the child consisted in

placement of the child after intervention in the mainstream classroom or least restrictive environment for further education.

The thirty-six children involved in the program all showed positive gains in perceptual motor, language and cognitive development. The findings reflect a composite index using the McCarthy Scales of Children's Abilities, Learning Accomplishment Profile, and Zimmerman Preschool Language Scale. During the first year mean pretest and posttest scores ranged from 44.70 to 55.50 in perceptual motor, 49.33 to 59.83 in language, and 48.45 to 60.30 in cognitive development. During the second year of the program mean scores from pretest and posttest ranged from 47.83 to 56.83 in perceptual motor, 52.74 to 62.70 in language, and 51.44 to 62.11 in cognitive development. Although these gains were attributed to effective coping, these coping strategies were never identified other than as a significant increase in performance beyond the expectations of maturation. An increase in performance beyond the expectation of maturation is the same criterion used to measure the effectiveness of an educational early intervention program as well. It can then be concluded that an early intervention educational program may serve as a means of reducing the stress of young handicapped children and their parents by providing an avenue for coping, thus contributing to a better quality of life in the future.

Barrera, Rosenbaum and Cunningham (1986) compared

intervention programs for premature infants and their parents. Their hypothesis was that by improving parents' responsiveness and sensitivity to the child's needs, environmental changes and developmental gains would result. The study was conducted with twenty-four fullterm infants (more than 2,500 grams birthweight; gestational age greater than 37 weeks) and fifty-nine preterm infants (less than 2,000 gram birthweight; gestational age less than 37 weeks). The preterm and fullterm infants were matched according to age, sex, type of delivery and socioeconomic status. Preterm infants were randomly assigned to a control group (22 infants), a parent-infant intervention group (21 infants), or a developmental programming intervention group (16 infants). All of the fullterm infants (24) were assigned to a second control group. Infants in both control groups received an assessment at home at four, eight, twelve and sixteen months of age using the Education for Multiplihandicapped Infants (EMI) Assessment. Home visits were made weekly for the first four months, every other week for the next eight months, and monthly during the last four months. No intervention strategies were implemented for the control group.

In the developmental programming group parents were helped to assess their child's functioning level using the EMI, and a curriculum program was developed for the parents to follow in working with their child. The parent-infant intervention group attempted to enhance the parents' observa-

tional skills, thus allowing them to adjust their behavior to the child's cues. Individual programs were based on observation of videotaped segments of specific parent-child interactions during a free play period of ten minute duration. Two observers recorded the mother's responses to the infant as well as the infant's response to the mother, specifically looking for reciprocal behavior. All groups were assessed using the Bayley Mental and Motor Scales of Infant Development throughout the intervention period. At four months of age, the preterm infants had significantly lower mental and motor scores than did the fullterm infants. Preterm infants scored between 70 and 80 on the mental scale, while fullterm infants scored an average of 110 at the same age. By sixteen months of age, the mental score of the preterm infants was within the normal range (between 90 and 100) although still lower than the fullterm infants (110 to 120). On the Motor Scale preterm infants scored between 75 and 85 at four months, moving to 90 to 100 at sixteen months. The fullterm infants scored an average of 110 at both four and sixteen months.

One interesting aspect of this study was the comparison of verbal development among groups. The fullterm control group averaged 0.1 word at four months and 2.3 words at sixteen months of age. In the preterm groups, the control group and parent-infant group each averaged 0.1 word at four months of age, while the developmental programming group had no verbalization. At sixteen months of age, the control group

expressed an average of 0.5 words; the parent-infant intervention group averaged 1.4 words; and the developmental programming group averaged 1.7 words, showing the greatest gains in verbal skills were made using an individually developed curriculum program.

Most of the findings of this study were reported in terms of group change. The preterm infants were grouped as a whole and compared to the fullterm infant control group. Initially the authors' focus was a comparison of the results of three different intervention strategies for premature infants and their parents. This study did not appear to be consistent with the purposes originally stated, as results were not reported for all groups to allow for comparison of strategies to be made. One innovative aspect of this study was the involvement of parents from one experimental group in assessing their child's functioning level. From this assessment a curriculum was developed for the parents to implement when working with their child. The data presented in this study showed the greatest verbal gains were made by this group of infants whose parents had assisted in the assessment. This points to the importance of parent involvement in the education of their young handicapped child as well as the critical need for valid assessment to be made that allow for the development of accurate, individualized curricula.

A novel method for assessing cognitive development in young handicapped children was proposed by Jens and Johnson

(1982). They used the groundwork laid by others to study cognition using affective responses in young handicapped children. Many of these children display motor limitations that can hinder their performance on cognitive measurements, since often motor performance is required to assess cognitive development. This theoretical research combined several studies in an attempt to show the relationship between cognitive processes and affective expression in young handicapped children. These efforts revealed that normal children began laughing at the median age of three to four months, while the onset of laughter in a group of children with Down Syndrome occurred at a median age of ten months. Children who laughed and smiled the least recorded the lowest performance on the Mental Scale of the Bayley. Nonverbal affective behavior was shown to relate to cognitive ability in both normal and handicapped children, but the validity of this relationship must be considered within the limitations of this study; that is, this study is a combination of several studies measuring cognitive development by affective behavior with various populations of children and various strategies; the relatively small numbers of children involved; and the accuracy of the cognitive scores of the young handicapped children obtained using an instrument (Bayley) not specifically geared to this population.

Cognitive development is an important aspect of any child's growth. Children who exhibit delays in cognition will

benefit from having everyday experiences presented in a way that will not only challenge but also improve their mental capabilities (Pruess, Vadasy & Fewell, 1986). These challenges are especially important for nonverbal children who are often isolated from peers because of their inability to communicate. This isolation prevents these children from participating in everyday experiences which promote development. It can also deny nonverbal children the opportunity for learning from the modeling of siblings and peers. Efforts to provide these challenges can be enhanced as more effective means of nonverbal assessment are developed so the most appropriate strategies can be implemented with young handicapped children.

Bond (1987) attempted to assess the cognitive skills of forty handicapped hearing-impaired and forty nonhandicapped children ages two-and-a-half years to five-and-a-half years of age. The hearing-impaired children had been identified as having both expressive and receptive language difficulties. Recognizing that most traditional methods for assessing cognitive development are heavily reliant on language, Bond (1987) provided for individual testing of the eighty children using nonverbal cognitive tasks. The McCarthy Scales tasks of block building, puzzle solving and draw-a-design showed only slight differences between the hearing-impaired and hearing normal children. Hearing-impaired children scored an average of 7.83 on block building, while hearing normal

children scored an average of 9.03 on the same task. Hearing impaired children scored an average of 2.95 on puzzle solving, with hearing normal children scoring an average of 5.02. On spatial ordering tasks, hearing-impaired children scored 16.35 on the five item test while hearing normal children scored 13.40 on the same test. These findings clearly establish the need for a valid nonverbal means for assessing not only cognitive abilities but abilities in all areas of development in young handicapped children. If careful consideration is given to developing such an instrument, a more valid representation could be presented of the overall performance level of nonverbal children or children with limited recordable expressive language skills.

In an attempt to assess accurately symbolic play and social participation styles of language-impaired and normally developing children, Roth and Clark (1987) conducted a study rating only nonverbal aspects of play. Verbal behaviors were not scored. Six language-impaired males with a mean age of 6.7 years and eight normal language males with a mean age of 2.9 years were matched for the study. The children were compared on the basis of linguistic ability rather than chronological age. Linguistic ability was determined on the basis of performance on the mean length of utterance ($M=3.31$), Developmental Sequence Scoring and the Columbia Mental Maturity Scale. Three testing sessions were videotaped during which the children were engaged in "free play" activity

involving a tractor and toy figure, a doll, doll bed with pillow and blanket, a Fisher-Price playhouse with figures of people, furniture and automobiles, and a table with a fork, knife, spoon and plate. The play behaviors were assessed using three measures: 1) Scale of Social Participation and Play; 2) Symbolic Play Test; and 3) Brown-Lunzer Scale. These scales examined social participation as well as developmental levels of symbolic play. They also rated nonverbal aspects of play only. These assessments revealed that the language-impaired children exhibited more nonplay behavior and tended to walk around the room and watch others play rather than engage in parallel or solitary play, while all of the normal language children and only one of the language-impaired children put people, furniture and cars in the Fisher-Price playhouse and organized a pattern of play utilizing the figures.

The language-impaired children also displayed deficits in symbolic play activities such as setting the table for dinner and putting the doll to bed with a pillow and blanket. They did not use play materials in an insightful manner and there was a lack of development of structured activities around a central theme. This and other research studies have focused on the social development of young handicapped children because of an "underlying and pervasive fear" that as these children are moved into a regular classroom setting they will be rejected and isolated by their peers (Guralnick,

1981). Ray's (1985) findings that twice as many handicapped children were identified by teachers as being socially withdrawn and/or inadequate than were nonhandicapped children concur with this statement. The added complication of limited verbal skills on social adjustment is an important issue that needs to be addressed.

Ray (1985) conducted his study in two elementary schools in central Kentucky during a two month period at the end of the school year. The purpose of this study was to investigate teacher, peer and observer perceptions of the social acceptance of young handicapped children. The ages of the children were not reported. Eight handicapped and sixteen nonhandicapped children were placed in dyads consisting of one handicapped child and two same-sex nonhandicapped peers per classroom. Children were randomly selected for observation of their social interaction. Social interaction was defined as positive or negative peer interaction. Three methods of measuring social interaction were used: 1) a teacher rating system which required teachers to identify up to five children in their class characterized by infrequent interaction and up to five children who exhibited inadequate interaction. Though descriptions of these categories were provided for the teachers, they were not included in the study; 2) a peer sociometric instrument which asked students to identify their peers whom they most like or did not like to play with at recess and during free time; and 3) a recording system which

utilized three observers charting the targeted child during ten second intervals to see if the student was alone or interacting positively or negatively with peers.

It was found that peers rated handicapped children as the most frequently rejected (41.5% of the time as compared to 22.9% for nonhandicapped). This finding is particularly important since nonhandicapped students outnumbered handicapped students two to one in the study. The important finding was that independent observers did not find the handicapped children to be different from nonhandicapped children in actual social interaction. It is unclear after reading this study if the peer interaction required verbal skills in order to be considered significant. If verbalization was a requirement for significant social interaction, this would have direct implications for the nonverbal child. The child's lack of verbal skills would serve to immediately classify the child as socially inadequate by both teachers and peers, and the impact of such a classification would have a definite impact on the child's future development.

Meadow (1984) conducted a study of teachers' ratings of social/emotional adjustment of young children. Four groups of children (60% boys and 40% girls) with a mean age of 55 to 56 months were identified. The first group included seventy-nine hearing impaired children who had at least one other handicapping condition. The second group involved seventy-nine hearing impaired children with no other hand-

icapping conditions. The third group had fifty-two handicapped children without hearing impairments, and the fourth group was comprised of fifty-two hearing children without any handicapping condition. The results of this study indicated that teachers identified deaf children with other handicaps as being significantly ($p < .001$) less socially adjusted than their peers in the group of hearing-impaired with no other handicaps. Teachers also found hearing children with handicaps to be significantly ($p < .05$) less socially adjusted than their nonhandicapped hearing peers. The multiply handicapped children in the first group were found to be significantly below all other groups in social/emotional development and exhibited the highest incidence of destructive behavior. These children did not demonstrate appropriate communication skills. As compared to other groups, they avoided eye contact most often. They were frequently isolated and separated from others by their own choice. These communication deficits caused teachers to perceive the children as severely socially maladjusted. One limitation of this study is that the impact of the limited skills in communication was discussed only with reference to the social development of children. The study did not include other areas of a child's development affected by limited verbal skills.

In summary, although much has been done in the past ten years, early childhood education for the handicapped is still in its infancy. While children's developmental gains have

been observed and reported by parents, teachers, caregivers and researchers, much controversy still exists as to the direct impact early intervention services have on the development of young handicapped children. These studies have revealed a broad scope of developmental and educational concerns and the importance of a wholistic approach to measure child gains (Bagnato & Neisworth, 1980; Bricker & Sheehan, 1981; Bailey & Bricker, 1985); language acquisition and development (Martins, Mervis & Mervis, 1986; Conti-Ramsden & Friel-Patti, 1983); the role of the parent in a child's education (Simmons-Martin, 1981; Zeitlin, 1981; Barrera, Rosenbaum & Cunningham, 1986); the need for appropriate assessment materials (Jens & Johnson, 1982; Bond, 1987; Roth & Clark, 1987); and social acceptability of young handicapped children (Ray, 1985; Meadow, 1984). The search to identify the effects of specific intervention strategies on nonverbal young children met with limited success because the relevant information is implicit rather than explicit.

In view of the findings presented above, this study will attempt to fill partially the existing gap in the available research; that is, to study specifically young handicapped children with limited or no expressive verbal skills and evaluate change in all areas of child development resulting from early intervention services. The following hypotheses will serve as a guide to demonstrate the specific areas of study linked with gains made as a result of early intervention

services.

Hypotheses

Hypothesis 1. Each child will demonstrate a gain in each area of development as a result of early intervention.

1.1 Each child will demonstrate a gain in cognitive skills.

1.2 Each child will demonstrate a gain in receptive language skills.

1.3 Each child will demonstrate a gain in expressive language skills.

1.4 Each child will demonstrate a gain in fine motor skills.

1.5 Each child will demonstrate a gain in gross motor skills.

1.6 Each child will demonstrate a gain in self-help skills.

1.7 Each child will demonstrate a gain in social/emotional development.

Hypothesis 2. The group as a whole will demonstrate a gain in each area of development as a result of early intervention.

- 2.1 The group as a whole will demonstrate a gain in cognitive development.
- 2.2 The group as a whole will demonstrate a gain in receptive language development.
- 2.3 The group as a whole will demonstrate a gain in expressive language development.
- 2.4 The group as a whole will demonstrate a gain in fine motor development.
- 2.5 The group as a whole will demonstrate a gain in gross motor development.
- 2.6 The group as a whole will demonstrate a gain in self-help skills.
- 2.7 The group as a whole will demonstrate a gain in social/emotional development.

Hypothesis 3. Each categorical subgroup formed will show a gain in each area of development as a result of early intervention.

- 3.1 Each subgroup will show a gain in cognitive development.
- 3.2 Each subgroup will show a gain in receptive language development.
- 3.3 Each subgroup will show a gain in expressive language development.
- 3.4 Each subgroup will show a gain in fine motor development.
- 3.5 Each subgroup will show a gain in gross motor

development.

3.6 Each subgroup will show a gain in self-help skills.

3.7 Each subgroup will show a gain in social/emotional development.

CHAPTER II

METHODOLOGY AND RESULTS

Research Design

This study was conducted using a single subject design, with each subject serving as his or her own control. This was necessitated by the nature of the hypothesis proposing individual child change would occur in all areas of child development as a result of early intervention. Single subject study evaluation procedures emphasize the child's uniqueness and focus on the change found in each child. MacLeod, Andrews and Grove (1980) report that single subject evaluation is most appropriate when studying handicapped children because: 1) it documents the variability of individual child behavior; and 2) when the individual child serves as his or her own control, changes are evaluated within the context of the child's uniqueness.

Subjects

The subjects in this study were sixteen young handicapped children; six girls and ten boys. They ranged in age from twelve to forty-five months with the average age being twenty-nine months. The subjects selected were those identified as being from eight to thirty-three months delayed in expressive

language and having an average delay of eighteen months. The primary handicapping conditions of these children were: Down Syndrome (3 children); cerebral palsy (3 children); developmental delays (3 children); language disorders (3 children); post-encephalitic (1 child); microcephaly (1 child); and hyperactivity (1 child). These children received early intervention services for periods ranging from five to twenty-four months with the average length of services being received for nine months through a developmental learning program, center-based, with a heavy emphasis on family involvement. Table 1 presents each child's sex, etiology, age (in months) at onset of intervention, and the number of months the child received intervention services.

Setting

The developmental learning program which provided early intervention services to children was located at a university in an urban setting. This program for children was an intensive on-campus training facility and constituted one component of a graduate personnel preparation program in early childhood education for the handicapped. This program utilized a non-categorical, wholistic, multi-disciplinary approach to educating children. Teachers were graduate students at varying stages of degree completion enrolled in this program. As part of their degree program, graduate students were required to complete two semesters (a minimum

Table 1. Demographic data for each child

Child	Sex	Age*	Length of Intervention	Etiology
NW	M	20	7	Cerebral Palsy
AR	F	22	5	Cerebral Palsy
SO	F	18	17	Encephalitis
ZW	M	18	6	Developmental Delay
SS	M	31	5	Down Syndrome
DD	F	29	24	Microcephalic
JA	M	28	10	Developmental Delay
KF	F	25	11	Language Disorder
AT	M	24	20	Hyperactivity
MP	F	24	5	Down Syndrome
PR	M	35	10	Down Syndrome
EM	F	36	6	Language Disorder
SV	M	37	5	Language Disorder
RM	M	36	7	Developmental Delay
OL	M	43	22	Developmental Delay
SC	M	45	9	Cerebral Palsy

*in months

of 760 hours) of providing direct services to young handicapped children. Graduate students were primarily responsible for all program-related activities. Also assisting the teachers in the classroom was a volunteer team composed of parents and relatives of the child, and students from other academic programs like social work, psychology, and nursing. These volunteers assisted the teachers in recording observations and implementing lesson plans after receiving training from teachers. The teacher-child ratio was generally 1:3. Children attended the program four consecutive days per week, three hours per day. Contracted support services of a speech therapist, occupational therapist and physical therapist were provided. The therapist conducted the initial screening of the child and was observed by the child's teacher and parents. A report of the findings and recommendations was prepared by the teacher, then carefully reviewed by the therapist and faculty advisor. Any changes or modifications were made at this time. Recommendations were incorporated into the child's Individualized Educational Plans (IEP's) and Individualized Family Service Plans (IFSP's) and implementation was conducted by the child's teacher and family members. Progress was monitored during subsequent therapist visits. A copy of the report was then placed in the child's folder and another given to the parents. This method provided for the most efficient use of therapists' expertise in addition to the most effective use of funds available for

support services.

Parent involvement was an important component in these intervention services, although no attempt was made to measure the impact this involvement may have had on child gain. Daily contact between teachers and parents occurred as parents brought the child to the program and when the child was picked up. This contact kept parents informed of their child's progress on a daily basis, allowed parents to provide feedback to the teachers regarding the child in the home setting, and provided the opportunity for teachers to give the parents new instruction to be implemented in the home setting. Parents not only served as volunteers, but also attended monthly parent meetings. These meetings provided parents with the opportunity to learn from experts in the field of early childhood education as well as a support system as parents met together to discuss the challenges and concerns of raising a handicapped child. Parents received monthly newsletters informing them of school activities and offering articles on parenting skills and other pertinent matters. The siblings of the children in this study were included in parent meetings and participated in social activities and holiday celebrations. The degree of parent participation varied among the children.

Intervention Design and Data Collection

The functional level of each child in each area of development was assessed during the early stages of the intervention period and again at the end of the intervention period using the Brigance Diagnostic Inventory of Early Development, the Portage Guide to Early Education, and the Hawaii Early Learning Profile (HELP) (see sample, Appendix A). The Brigance Inventory was used to assess receptive and expressive language, gross motor, fine motor, cognitive and self-help levels of development. The Portage Guide was used to assess social and emotional development of children over thirty-six months of age, with the HELP being used to assess social and emotional development of those children under thirty-six months. All parents provided written permission for child data gathered to be used in research (see sample, Appendix B).

The Beginning of the Year (BOY) Report was prepared after the child had been in the classroom for two to three weeks and had become familiar with teachers, peers, volunteers and classroom procedures. During this adjustment period teachers were making careful observations of the child within this environment. Assessment was conducted both formally and informally, using large group, small group and individualized teaching settings. Information was also collected daily through parent reports. Once the assessment was completed, the teacher prepared a comprehensive Individualized

Educational Plan (IEP) for each child (see sample, Appendix C). The IEP identified the child's current level of performance in the developmental domains mentioned above. Goals were then established for the child in each domain, and specific objectives were outlined to enable the child to meet those goals. An IEP meeting was then held to inform parents of the assessment data and the specific goals and objectives identified for their child. Parents had the opportunity to make suggestions and/or modifications in the IEP or accept it as prepared. The IEP was then used to determine the most appropriate curriculum for each child and was incorporated into weekly lesson plans (see sample, Appendix D). A child's IEP was consistently reviewed and updated as changes in the child's developmental skills occurred.

Teachers also maintained daily anecdotal records for each child and prepared a chart of objectives in each developmental domain (see sample, Appendix E). These charts were marked daily and indicated if an objective was: a) not introduced on any given day; b) introduced but not attempted by child; c) introduced and attempted only with teacher prompting; d) accomplished by child with teacher assistance; or e) independently accomplished by the child. This charting system allowed for a very accurate measure of child change regardless of how minute or gradual it may be. At the end of the school year each child was again assessed using the Brigance Inventory, Portage Guide and/or HELP. Results from the

assessment were prepared in an End of the Year (EOY) Report. In this report developmental levels from the baseline assessment were compared to those levels established by the assessment at the conclusion of intervention. The differences in these two measures reflect child gains during the period intervention services were received.

Analysis of Data and Results

Table 2 identifies each child's raw scores representing developmental age in months (determined by assessment at onset of intervention and assessment at completion of intervention) as well as gains made in each developmental domain including cognitive, receptive language, expressive language, fine motor, gross motor, self-help and social/emotional. A comparison of developmental rate prior to intervention with the rate of progress during the intervention period is presented in Table 3. This comparison is made using a formula proposed by Wolery (1983):

$$\text{Change in Rate of Development} = \frac{\text{DA2} - \text{DA1}}{\text{CA2} - \text{CA1}} \quad \frac{\text{DA1}}{\text{CA1}}$$

Where

DA1	represents developmental age at onset of intervention
DA2	represents developmental age at end of intervention
CA1	represents chronological age at onset of intervention
CA2	represents chronological age at end of intervention

The rate resulting from this formula (change in rate of development) reflects the child's rate of development

Table 2. Pretest and Posttest Raw Scores and Gains (in months) for Individual Children in each Developmental area, and Means of the Group

Child	Cognitive			Receptive Language			Expressive Language			Fine Motor			Gross Motor			Self-Help			Social/Emotional		
	DA1	DA2	G	DA1	DA2	G	DA1	DA2	G	DA1	DA2	G	DA1	DA2	G	DA1	DA2	G	DA1	DA2	G
NW	14	25	11	17	24	7	7	27	20	12	16	4	6	10	4	10	20	10	21	31	9
AR	10	18	8	9	12	3	12	15	3	17	22	5	12	21	9	12	18	6	14	20	6
SO	3	6	3	4	11	7	2	6	4	1	7	6	4	9	5	6	12	6	2	4	2
ZW	3	6	3	4	7	3	4	7	3	4	6	2	6	10	4	7	12	5	4	8	4
SS	20	39	19	24	36	12	9	30	21	9	26	17	10	28	18	9	21	12	10	20	10
DD	20	39	19	7	24	17	12	24	12	17	30	13	22	43	21	16	30	14	18	36	18
JA	27	42	15	21	30	9	16	30	14	24	39	15	18	29	11	20	28	8	22	30	8
KF	12	36	18	18	30	12	12	24	12	13	24	11	18	27	9	14	25	11	20	30	10
AT	18	42	24	18	38	20	12	41	29	22	42	20	18	36	18	19	42	23	9	30	21
MP	1	10	9	5	7	2	5	8	3	12	16	4	8	11	3	8	11	3	7	12	5
PR	18	24	6	18	28	10	12	16	4	20	28	8	20	31	11	26	36	10	20	28	8
EM	31	48	17	27	44	17	17	24	7	32	40	8	32	40	8	40	50	10	32	40	8
SV	30	44	14	36	46	10	17	24	7	37	43	6	32	39	7	32	40	8	28	32	4
RM	29	51	22	40	48	8	9	29	20	29	44	15	29	44	15	29	36	7	20	36	16
OL	34	54	20	30	60	30	16	28	12	30	52	22	18	30	12	15	30	15	24	40	16
SC	18	24	6	30	48	18	12	48	36	18	36	18	28	36	8	24	32	8	12	24	12
Group Mean	18	32	14	19	31	12	11	22	11	19	29	10	18	28	10	18	28	10	16	26	10

DA1 - Developmental age at pretest

DA2 - Developmental age at posttest

G - Gains

Table 3. A Comparison of Rate of Development Before Intervention and Change in Rate of Development as a Result of Intervention in Each Developmental Area

Child	Cognitive		Receptive Language		Expressive Language		Fine Motor		Gross Motor		Self-Help		Social/Emotional	
	Rate	Change	Rate	Change	Rate	Change	Rate	Change	Rate	Change	Rate	Change	Rate	Change
NW	.70	2.2	.85	1.2	.35	8.2	.60	1.1	.30	1.9	.50	2.9	1.0	1.2
AR	.45	3.5	.40	1.5	.55	1.1	.70	1.3	.50	3.3	.54	2.2	.63	1.9
SO	.16	1.1	.22	1.9	.11	2.1	.05	6.4	.22	1.3	.33	1.1	.10	1.1
ZW	.25	2.0	.33	1.5	.33	1.5	.33	1.5	.50	1.3	.58	1.4	.30	1.2
SS	.65	5.9	.77	3.1	.29	14.5	.29	11.7	.32	11.2	.29	8.3	.32	6.2
JA	.96	1.6	.24	2.9	.41	1.2	.58	1.1	.75	1.2	.70	1.2	.80	1.2
DD	.70	1.2	.75	1.2	.57	2.5	.86	1.1	.64	1.7	.55	1.1	.62	1.1
KF	.72	2.3	.72	2.9	.48	2.3	.52	1.9	.72	1.2	.56	1.8	.80	1.1
AT	.75	1.6	.75	1.3	.50	2.9	.92	1.1	.75	1.2	.79	1.5	.37	2.8
MP	.04	43.9	.21	2.0	.20	2.9	.50	1.6	.30	2.0	.33	1.8	.29	3.4
PR	.51	1.2	.69	1.5	.34	1.2	.57	1.4	.57	1.9	.74	1.3	.57	1.4
EM	.86	3.3	.75	3.9	.47	2.5	.88	1.5	.91	1.4	1.10	1.5	.88	1.5
SV	.81	3.5	.97	2.1	.46	3.1	.97	1.2	.86	1.4	.86	1.9	.76	1.1
RM	.80	3.9	1.00	1.1	.25	11.4	.80	2.6	.80	2.6	.80	1:3	.55	4.1
OL	.79	1.1	.69	2.0	.37	1.5	.69	1.4	.41	1.3	.35	2.0	.56	1.3
SC	.40	1.7	.66	3.0	.26	2.5	.40	5.0	.62	1.4	.53	1.5	.26	4.5

independent of maturation and can be interpreted as follows:

If change in rate of development is:

- >1, it indicates an accelerated rate of development;
- =1, it indicates rate of development prior to intervention maintained after receiving services;
- <1, it indicates either an age appropriate level had been reached and gains have slowed or a decelerated rate of development.

Rosenberg, Robinson, Finkler and Rose (1987) made a comparison of several formulas evaluating the impact of early intervention programs. These formulas consider a child's rate of development prior to intervention and show the change in that rate as a result of intervention. The assumption underlying these formulas is that positive change in the rate of developmental progress is an indication of the impact of intervention rather than just maturation. Although some formulas represent an unchanging rate at 0 and some at 1, they all produce virtually the same information. Wolery's (1983) formula was selected for use in this study because in it an unchanging rate is represented by 1.00 instead of 0, and an accelerated rate will be reported in positive numbers rather than negative numbers.

Table 4 presents overall group mean pretest and posttest raw scores, standard deviations and t-values. A paired, one-tailed t-test formula was used to determine the significance level of gains.

Five categorical subgroups were formed according to the primary handicapping condition of the children. One

Table 4. Group Mean Pretest and Posttest Raw Scores (in months), Standard Deviations and t-values*

Domain	Pretest	Posttest	Standard Deviation	t-value
Cognitive	18.375	31.562	6.513	7.808
Receptive Language	19.250	30.812	7.820	6.232
Expressive Language	10.875	21.937	8.572	5.511
Fine Motor	18.562	29.437	6.354	6.980
Gross Motor	17.562	27.750	5.195	8.190
Self-Help	17.937	27.687	4.767	8.190
Social/Emotional	16.437	26.250	5.479	7.167

* $p < .0005$
paired, one-tailed t-test

subgroup consisted of three Down Syndrome children (2 boys, 1 girl; mean age 32 months). Four boys (mean age 30 months), all of whom were developmentally delayed to varying degrees, comprised the second group. Three children with language disorders (2 girls, 1 boy; mean age 32 months) comprised the third group. Two boys and one girl (mean age 29 months) identified as having cerebral palsy made up the fourth group. The fifth group consisted of one boy and two girls (mean age 24 months) each with a different handicapping condition. One child was microcephalic, one child was post-encephalitic, and one was identified as hyperactive. The developmental gain comparisons among these five subgroups are presented in Table 5.

The data presented in Table 2 reveals that Hypothesis 1 was supported since each individual child demonstrated an increase in each developmental area as a result of early intervention. Hypothesis 1.1 was supported since all children gained in the cognitive area. The gains ranged from 3 to 24 months with a mean of 14 months. Seven children made gains of 17 to 24 months, while four children made gains of 9 to 15 months. Five children made gains of 3 to 8 months. Only two of these children made cognitive gains of three months, representing the smallest increase among the subjects. This is understandable since both children were identified as being severely/profoundly retarded. Child S0 had a chronological age of 18 months and was functioning between the three and

Table 5. Subgroups

	Cognitive	Receptive Language	Expressive Language	Fine Motor	Gross Motor	Self-Help	Social/Emotional
Down Syndrome (DS) N=3	Pre 24.30 SD 6.80 t-value 2.88 p	15.60 23.30 5.29 2.62	8.60 18.00 10.12 1.59	13.00 23.30 6.65 2.50	12.60 23.30 7.50 9.40 p<.01	14.30 22.60 4.72 3.05 p<.05	12.30 17.30 5.00 1.73
Developmental Delay (DD) N=4	Pre 38.25 SD 8.52 t-value 3.51 p	23.75 36.25 11.95 2.09	11.25 22.75 7.23 3.17 p<.05	21.75 35.25 8.34 3.23 p<.025	23.50 33.50 4.54 4.39 p<.025	17.75 26.00 4.34 4.02 p<.025	17.50 28.50 6.00 3.66 p<.025
Language Disorder (LD) N=3	Pre 42.60 SD 2.08 t-value 13.60 p	27.00 40.00 3.60 6.24 p<.025	15.30 24.00 2.88 5.21 p<.025	27.30 35.60 2.51 5.70 p<.025	27.30 35.30 1.00 14.03 p<.005	28.60 38.30 1.52 11.01 p<.005	26.60 34.00 3.05 4.16 p<.05
Cerebral Palsy (CP) N=3	Pre 22.30 SD 2.51 t-value 5.73 p	18.60 28.00 7.76 2.08	10.30 20.00 9.07 1.84	15.60 24.60 7.81 2.0	15.30 22.30 2.64 4.58 p<.025	15.30 23.30 2.00 6.93 p<.025	15.60 24.60 3.00 5.19 p<.025
Other (MEH) N=3	Pre 29.00 SD 10.97 t-value 2.42 p	9.60 24.30 8.00 3.17 p<.05	8.60 23.60 12.767 2.03	13.30 26.30 6.507 3.54 p<.05	14.60 29.30 8.505 2.98 p<.05	13.60 28.00 9.3 2.61	9.60 23.30 10.21 2.30 5 6

four month level cognitively. Child ZW was twelve months of age with an overall functional age of four months. The significant aspect of the gains made by these children is that even though children function at the severe/profound level, they are capable of making cognitive gains if intervention is carefully and systematically provided.

Hypothesis 1.2 was supported since increases in receptive language occurred for all children and ranged from 3 to 30 months, with a mean gain of 12 months. The greatest increase (30 months) in receptive language was realized by child OL, who was near age appropriate (CA=65 months, DA=60 months) at the conclusion of intervention services. Seven children made receptive language gains at mean or above, while six children made gains ranging from 7 to 10 months. Three children made gains of 2 to 3 months.

Hypothesis 1.3 was supported since all children made gains in expressive language. The average gain was 11 months, with increases ranging from 3 to 36 months. Five of the children made gains of 20 to 36 months; six made gains of 7 to 14 months; and five made gains of 3 to 4 months. Child NW began receiving intervention services at 20 months of age, at which time expressive language was assessed at the seven month level. Communication was mainly nonverbal with gestures and nodding the primary modes used. After seven months of direct services, this child's expressive language was assessed at 27 months, or age appropriate. The child was speaking in 2 to

3 word sentences and adding new words to the vocabulary almost daily.

Supporting hypothesis 1.4 were fine motor gains for all children. Developmental levels in this domain increased from 2 to 22 months, with a mean gain of 10 months. Fifteen to twenty-two month gains were realized by six of the children in fine motor development. Four children made gains of 8 to 13 months, and six children made gains of 2 to 6 months. Child ZW was twelve months of age when entering the program and was assessed to have a fine motor developmental level of four months. Although the child's increase reflects only a two month gain during six months of intervention, this increase is important when considered in relation to the severity of the child's handicapping condition which included cortical blindness and extensive delays in all areas. This twelve month old child was functioning initially at an overall four month level of development.

Gross motor gains by all children support hypothesis 1.5. These gains range from 3 to 21 months with a mean gain of 10 months. Four children made gains of 15 to 21 months; eight children made gains of 7 to 12 months; and four children made gains of 3 to 5 months. Child MP made a gain of three months. Although it appears to be a slight gain, it is actually very important for this child due to a fragile physical condition of Down syndrome with congenital abnormalities, hypoglycemia, polycythemia, and necrotizing enterocolitis. These gains

enable this child to have increased mobility within the environment, an important developmental step for each child.

Hypothesis 1.6 was supported by the increase shown by all children in levels of self-help skills. Gains ranged from 3 to 23 months, with a mean gain of 10 months. Three children made gains of 14 to 23 months, while eight children made gains of 8 to 12 months. Five of the children made gains of 3 to 7 months. Gains made by child AT (23 months) brought this child's self-help functional level to near age appropriateness as a result of early intervention.

Hypothesis 1.7 was supported by gains shown by all children in the social/emotional domain. These gains ranged from 2 to 21 months with a mean gain of 10 months. These gains are especially important due to the fact that many of these children had very inappropriate behavior upon entering the program. Much of this behavior was attributed to the child's frustrations due to his or her inability to communicate. Four of the children made gains of 16 to 21 months. These four children were all initially assessed as having serious behavior problems including the inability to sit and attend as well as being manipulative with peers and teachers in the classroom. The social/emotional gains made by these children as a result of early intervention services resulted in improved behavior, significant social progress and appropriate interactions with others.

Additional support for Hypothesis 1 was the confirmation

that the gains made by children were the result of early intervention rather than just maturation. This support can be found when reviewing Table 3, which shows rate of development prior to intervention and the change in rate of development as a result of intervention for each child in each developmental domain. As outlined by Wolery (1983), this change in rate of development shows how an increase in the child's rate of growth is produced as a result of intervention services rather than maturation. Therefore, a change in rate of development is an indication of the impact of intervention. Change in rates of development for various children range from 1.1 to 43.9 in cognitive development; 1.1 to 3.8 in receptive language; 1.1 to 14.5 in expressive language; 1.1 to 11.7 in fine motor; 1.1 to 11.2 in gross motor; 1.1 to 8.3 in self-help; and 1.1 to 6.2 in social/emotional development. According to Wolery (1983), these changes in rate of development are a function of the intervention provided to these children rather than maturation.

The highest individual accelerated rate in cognitive development was seen in child MP. This child entered the program at 24 months of age and had at that time a cognitive developmental level of one month. After receiving five months of intervention services, this child's developmental level was assessed at 10 months. This change in rate (.04 as compared to 43.9) reflects the significant developmental growth made as a result of intervention services.

Significant change in developmental rates can also be seen in the area of expressive language. The two children showing the greatest changes are child SS and child RM, who began intervention services at ages 31 and 36 months, respectively. At that time both children were assessed at the nine month expressive language level. After five months of intervention, child SS was assessed to be functioning expressively at the 30 month level, very near his chronological age of 36 months. Child RM received services for six months, after which time a functioning expressive language level of 29 months was determined.

Child SS made the most significant change in rate of development in fine motor, gross motor, self-help and social/emotional domains. Although 31 months old when entering the intervention program, developmental age was assessed at 9 and 10 months in these four areas. After five months of receiving direct intervention services, posttest assessment of these domains revealed total gains of 57 months in functional developmental ages. Recognizing that these gains result from intervention rather than maturation clearly point to the efficacy of early intervention for young handicapped children.

Hypothesis 2 is supported by the findings in Table 4 that show the group of sixteen children as a whole made gains in all areas of development. This table reports the group mean raw scores from pretest and posttest, standard deviation,

paired t-values, and probability values for all areas of development. A paired one-tailed t-test was used to determine the level of significance of these findings. Hypothesis 2 was supported since all group paired t-values showed statistical significance at the $p < .0005$ level. Comparisons of the pretest and posttest scores of the group as a whole reveal overall average gains of approximately 11 months. Hypothesis 2.1 was significantly supported by cognitive mean gains of 13 months and significance at the $p < .0005$ level. These cognitive gains show that although children are nonverbal or have limited expressive language skills, they are still capable of learning and advancing in cognitive skills.

Hypothesis 2.2 was supported as the whole group made significant ($p < .0005$) gains in receptive language. These gains averaged 11 months. Hypothesis 2.3 was supported with the group as a whole making gains in expressive language, with the average gain being 11 months. These gains were significant at the $p < .0005$ level. An important aspect to note is that gains made in expressive language were consistent with gains made in all developmental domains.

Gains made by the group as a whole in fine motor development support Hypothesis 2.4. These gains averaged 11 months and were significant at the $p < .0005$ level. Hypothesis 2.5 was supported by group gains averaging 10 months in gross motor development. These gains were significant at the $p < .0005$ level.

Hypothesis 2.6 was supported significantly at the $p < .0005$ level. The group as a whole averaged a 10 month gain in self-help skills. These gains are particularly important as the young handicapped children experience a greater degree of independence as their ability to help themselves increases.

Hypothesis 2.7 was supported by the group gain in social/emotional development. This gain averaged 10 months and was significant at the $p < .0005$ level.

Hypothesis 3, which states that each categorical subgroup will show developmental gains as a result of early intervention, was supported as revealed in Table 5. This table reports subgroup mean pretest and posttest raw scores, standard deviations, paired t-values and probability values for each developmental area. Although all subgroups do not show statistically significant (one-tailed t-test) gains, this may be attributed to the very low number of children in each subgroup. Hypothesis 3.1 was supported since all subgroups made gains in cognitive development. The mean gains range from 8 months (CP subgroup) to 16 months (MEH and LD subgroups). The subgroup means that show statistical significance are subgroups DD ($p < .025$), subgroup CP ($p < .025$), and the LD subgroup ($p < .005$). Hypothesis 3.2 was supported by an increase in the level of receptive language as shown for all groups. Mean gains ranged from 7 months (DS subgroup) to 14 months (MEH subgroup). The MEH subgroup gains were significant at the $p < .05$ level, with gains made by the LD

subgroup showing significance at the $p < .025$ level. Though all other subgroups made gains, no statistical significance was determined.

Hypothesis 3.3 was supported by each subgroup's gains in expressive language. The range of mean gains was 9 months (LD subgroup) to 15 months (MEH subgroup). Two subgroups made statistically significant expressive language gains: DD subgroup ($p < .05$) and LD subgroup ($p < .025$). Hypothesis 3.4 was supported with fine motor developmental levels revealing gains for all subgroups. Those subgroups showing significance were the DD subgroup ($p < .025$), the LD subgroup ($p < .025$), and the MEH subgroup ($p < .05$). Hypothesis 3.5 was also supported. Subgroup gains in gross motor development reveals t-values that are significant for all subgroups with mean gains ranging from 7 months to 15 months. Statistically significant gross motor gains for each subgroup were as follows: DS ($p < .01$); DD ($p < .025$); LD ($p < .005$); MEH ($p < .05$); and CP ($p < .025$).

Hypothesis 3.6 was supported since all subgroups achieved an increase in self-help skills. Gains ranged from 8 months (subgroups DS and CP) to 15 months (subgroup MEH). Those subgroups whose gains showed statistical significance were subgroup DD ($p < .025$); subgroup LD ($p < .05$); and subgroup CP ($p < .025$). Hypothesis 3.7 was supported by gains ranging from 5 to 14 months for all subgroups in social/emotional development. The two subgroups whose gains show statistical significance ($p < .025$) are subgroups DD and subgroups CP. The

LD subgroups findings were significant at the $p < .05$ level.

CHAPTER III

DISCUSSION, IMPLICATIONS AND CONCLUSIONS

Discussion

The purpose of this study was to investigate the impact of early intervention services on sixteen young handicapped children who were nonverbal or exhibited limited expressive verbal skills. It was proposed that these children would make gains in all areas of development including cognitive, receptive language, expressive language, fine motor, gross motor, self-help, and social/emotional. The subjects in this study were all identified as nonverbal or having limited expressive verbal skills and had expressive language delays ranging from eight to thirty-three months. All children participated in an early intervention learning center located at an urban university. This center provided intervention services non-categorically to these children using a wholistic, transdisciplinary approach.

There were several features that made this service delivery program unique. The program focused on the whole child and the importance of family involvement. Much attention was given to developing a positive self-concept in each child as well as building confidence by providing the child with opportunities to experience success consistent with

his or her abilities. The classroom setting provided a home atmosphere filled with warmth and caring. All aspects of the program utilized team effort and received team support. These factors in totality contributed to gains made by each child.

Graduate students serving as teachers in the program assessed the functional age level of children at onset and again at the conclusion of intervention services. These pretest and posttest scores were compared to determine gains made in each developmental domain. The prediction in this study was that a carefully and systematically planned intervention program would result in gains for all children in all developmental domains.

The findings from this study confirm that each of the sixteen children made gains in all developmental areas. Applying Wolery's (1983) change in rate of development formula, which determines an accelerated or decelerated rate of development independent of maturation, to individual scores revealed an increased rate of development for each child in each domain. Therefore, the gains of children were not attributed to maturation but rather to the early intervention services provided through the particular program they were enrolled in.

The results of this study confirm the importance of focusing on recognition of the 'whole' child rather than just his or her handicapping condition. This wholistic approach to early intervention has been successfully used by many

interventionists including Bagnato and Neisworth (1980), Bailey and Bricker (1985), and Greenberg and Calderon (1984). By providing individualized intervention geared to each child's special developmental needs the 'whole' child is benefitted. Gains were recognized in all domains for each child, regardless of the child's primary handicapping condition.

When the group as a whole was examined, it was found that group gains in all developmental domains were significant at the $p < .0005$ level. Categorical subgroups were also formed according to the primary handicapping conditions of the children in this study. Although all subgroup findings were not statistically significant, they did reveal gains in all developmental areas. These findings are consistent with other available research (Oelwein, Fewell & Pruess, 1985; Bricker & Sheehan, 1981; Hanson, 1985; Meisels, 1985) and confirm the efficacy of early intervention.

The sixteen subjects in this study made gains in cognitive as well as all other developmental areas. These gains were made by individual children, by the group as a whole, and by each categorical subgroup. Bond (1987) examined the role of expressive language in the cognitive development of preschool handicapped children and stressed the importance of assessing the cognitive development of young children with limited expressive language. Although it may appear that children with little or no expressive language cannot learn,

the findings of this study are consistent with those findings of Martins, Mervis and Mervis (1986) which showed that cognitive gains can be made despite language deficits. When working with young handicapped children opportunities for learning are not left to chance. The lack of prerequisite skills often observed in these children make it vital that their environment be manipulated in order to provide relevant learning experiences.

This study shows how early intervention services resulted in cognitive developmental gains for all sixteen children. This cognitive development in turn can improve the child's social/emotional development by creating an increase in the amount of maternal interaction and responsiveness. This maternal interaction with the young handicapped child is important to the child's social and emotional development.

In this study the group of sixteen children as a whole made significant ($p < .0005$) gains in social and emotional development. These gains were also realized by each individual child as well as within all categorical subgroups. This study has identified the importance of young handicapped children developing appropriate social skills enabling them to interact with parents, teachers, caregivers and peers in everyday settings. Although language deficient, all sixteen children made gains in social and emotional development that enabled them to become more acceptable to peers and significant others within their environment. This growth in

social skills may also produce an increase in language development (Rogers, 1988). Rogers (1988) suggests that, due to the relationship between the development of language and symbolic thought, symbolic play can be an important aspect of early intervention.

Many of the children in this study experienced gains placing them at or near age appropriate developmental levels. As these young handicapped children become better able to function near the level of nonhandicapped peers, opportunities must be made available to provide shared educational experiences. Guralnick (1981) states that a basic level of social integration must exist between handicapped and nonhandicapped children before the benefits of mainstreaming can be realized. The gains realized by the children in this study are especially important when working towards the goal of educating each child in the least restrictive environment, which for many of these children will be a mainstreamed classroom.

When the results of this study were examined, it was found that individual children, the group as a whole, and subgroups all experienced an increased level of expressive language skills. These gains in expressive language were consistent with gains made in all domains, thus supporting the findings of Simmons-Martin (1987) that although children were language delayed, they were able to make gains in language development as a result of early intervention.

This study also reveals the importance of recording daily a complete and accurate account of each child's activities and experiences. Events recorded include those reported by parents, those directly observed by teachers, volunteers and therapists, and those determined through formal and informal testing of individuals within small and large group settings. As these events are recorded, trends of development as well as specific gains can be traced. The knowledge of these gains and trends on a day-to-day basis serves as a tremendous source of strength for parents, thus contributing to the release of stress and positive attitude towards the child. As defined by Zeitlin (1987), an increase in child performance is due to more effective coping by parents, family and child. Results from this study strengthen this idea and lead to the conclusion that families utilizing the support of early intervention services experience less stress as they cope with parenting a handicapped child.

Implications

The results of this study have direct implications for parents, teachers and researchers interested in young handicapped children. This study offers important insights for parents of young handicapped children. Dyson and Fewell (1985) found that parents of preschool-aged handicapped children experienced more stress than did parents of nonhandicapped preschool-aged children. They identified the

four primary sources of stress as being: 1) the child's characteristics; 2) physical incapacitation; 3) parental pessimism in relation to the child; and 4) the severity of the child's handicapping condition. It is important to note that Dyson and Fewell's (1985) study revealed that parental stress increased according to their child's inability to communicate with others. Parents of children in this study played a vital role in the education of their young handicapped children. They served as volunteers in the classroom, attended monthly parent meetings, participated in IEP meetings, and provided continuity of services into the home through IFSP's. Barrera, Rosenbaum and Cunningham (1986) found that children who made the greatest verbal gains were those whose parents assisted in assessment. Although no attempt was made in this study to measure the precise contribution in child gains as a result of parent involvement, it was observed that those children whose parents played an active role in their child's education made consistent gains. This is an important area for future study.

This study of young handicapped children who are nonverbal or who exhibit limited expressive language skills shows that each of these children, regardless of the severity of his or her handicapping condition, was able to make gains in all areas of development. Parents can be encouraged as they see the improved quality of their handicapped child's life resulting from early intervention services. They can see

that expressive language gain were consistent with gains made in all other developmental domains; that the child's independence increased as did his or her self-help skills and self-confidence; and that social and emotional gains promoted the acceptability of the child by peers, teachers, and others within the child's environment.

This study also has implications for the teachers of young handicapped children. These teachers can become some of our most reliable sources of research data as they daily work with these young children. Teachers have the opportunity to collect data and implement techniques and strategies to determine those methods most appropriate and effective to use with young handicapped children who are nonverbal or exhibit limited expressive language skills. This study provides teachers a basis to determine if trends in developmental gains as a result of early intervention services show consistency with all or most young handicapped children. The effectiveness of the intervention strategies utilized in this study are due in part to factors previously mentioned including family involvement, development of self-concept and confidence in children, and the home-like atmosphere carried into the classroom. It cannot be assumed that children will learn automatically, and care needs to be taken to see that the learning environment is systematically organized to provide learning opportunities to develop prerequisite skills before leaving children to learn by themselves and unfold

naturally. An environment void of these opportunities and factors cited may not produce results similar to those found in this study.

A question commonly asked by early interventionists is "How do young handicapped children learn?" One answer to this question is that cognitive gains are dependent on expressive language skills. This study has shown something quite different; that is, that children who are nonverbal or who exhibit limited expressive verbal skills can and do make cognitive gains as a result of early intervention. Future studies of this area can provide additional support for these findings. Another area for future research is in the relationship between the degree of parental involvement in the education of young handicapped children and the developmental gains made by the child. With the passage of P.L. 99-457 parent and family involvement will become a much more integral part of educating young handicapped children. If research is available to show the importance of parent and family participation in this education, it may serve as a means of motivating and encouraging such involvement.

Limitations

There are several limitations inherent to this study. The single subject research design can be considered a limitation by those researchers who strongly believe in an experimental or control group research design. From the point

of view of early interventionists, this is not a limitation. When dealing with handicapped children it is not morally, ethically, and in some states legally possible to identify groups of handicapped children and withhold services to any degree.

The quality of assessment and educational intervention provided by graduate students who also served as teachers varied according to the individual competencies possessed by these students. An attempt was made to control for this by having all teachers supervised and instructed during their practicum experience by the same director of the graduate personnel preparation program. Objectivity was promoted and data was collected by a number of professionals and confirmed through parent reports. Still, individual differences in graduate students were noted.

The involvement and education of parents and families was an integral part of the services provided. No attempt was made to separate the impact of contributions made by parents and contributions made by teachers.

The use of Wolery's (1983) formula assumes a linear pattern of child development. Although it is true that children progress in a continuous manner, they can and do exhibit periods of accelerated growth as well as periods of decelerated growth. The change in rate of development can appear inflated if the child experienced a rapid growth period during intervention, or deflated if the child's growth had

slowed considerably during the intervention period.

This study considered the effectiveness of intervention by looking at factors such as home atmosphere, warmth and caring of teachers, focus on positive self-concept and confidence, team effort, and family involvement in totality. The measurement of impact of individual factors on child gain as well as the impact of support services outside the intervention program was beyond the scope of this study.

Conclusion

This study was conducted to determine the effects of early intervention services on young handicapped children who are nonverbal or who exhibit limited expressive language. Three major hypotheses were identified. These hypotheses stated that 1) each individual child would make gains in all areas of development; 2) the group as a whole would make significant gains in all areas of development; and 3) categorical subgroups formed according to primary handicapping conditions would make gains in all areas of development as a result of early intervention services. The findings from this study supported each of these hypotheses.

This study showed the importance of looking first at the whole child, recognizing his or her strengths as well as weaknesses. The use of appropriate assessment tools enables interventionists to accurately determine functional abilities of children in each developmental area. Once these functional

levels have been identified, appropriate intervention strategies can be implemented that will allow each child to develop to his or her greatest potential. These strategies work most effectively when they are utilized by families as well as teachers of young handicapped children.

The conclusion drawn from these findings is that early intervention works when it is provided in a warm environment with systematic implementation of strategies carefully selected for each individual child to meet his or her special needs. It provides an opportunity for young handicapped children, regardless of their handicapping condition, to make gains in all areas of development including cognitive, receptive language, expressive language, fine motor, gross motor, self-help, and social/emotional. We can stop asking the question, "Is early intervention effective?" and turn our efforts to developing techniques and strategies most beneficial to young handicapped children.

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APPENDIX A

**Sample Assessment Materials
Brigance, Portage, and HELP**

PLEASE NOTE:

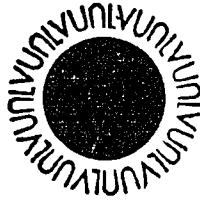
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APPENDIX B
Sample Release Form



DEPARTMENT OF COUNSELING AND EDUCATIONAL PSYCHOLOGY AND FOUNDATIONS
EARLY CHILDHOOD EDUCATION FOR THE HANDICAPPED PROGRAM

UNIVERSITY OF NEVADA, LAS VEGAS
4505 MARYLAND PARKWAY • LAS VEGAS, NEVADA 89154 • (702) 739-3875/3253

I, _____, grant permission to the
(Parent's name)

faculty, staff and students of the University of Nevada, Las Vegas, to provide educational programs, gather data and do research projects in a supervised setting with my preschool child. I knowingly and voluntarily place my child in the _____ program and release The University of Nevada, Las Vegas, its faculty, staff and students from any and all liability resulting from my child participating in this program.

Signature

Signature

Date

APPENDIX C
Sample IEP



DEPARTMENT OF COUNSELING AND EDUCATIONAL PSYCHOLOGY AND FOUNDATIONS
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End of the Year Report

MODEL DEMONSTRATION DEVELOPMENTAL LEARNING CENTER

Date: 21 May 1987

Reported by: _____

Child: _____

Report Date: May 21, 1987

Date of Birth: 02/21/85

Chronological Age: 2.3 years

is a 2.3 year old blond boy with a beautiful smile. He has been diagnosed as having Cerebral Palsy Spastic Quadraplegia which has resulted in a delay in his fine and gross motor development. He entered the MDDLDC program being fed through a gastric tube which was removed March 6, 1987. After the removal of the tube, Nicholas' expressive language displayed rapid gains. Since entering the program in October, he has shown significant gains in expressive language (+18 months), cognitive development (+10 months), and self-help (+8 months). Fine motor, gross motor, and social/emotional areas remain basically the same.

For the purpose of assessment, the Brigance Diagnostice Inventory of Early Childhood Development, and the Hawaii Early Learning Profile were utilized. The following comparisons are made between beginning level of development and his progress attained during the school year.

GROSS MOTOR: +0

Could do: 8-10 months (01/26/87)

- crawl dragging his body (8 mos)
- assume low creeping position (9 mos)
- make stepping movements (6 months)

Can do: 8-10 months (05/14/87)

- can now move quicker dragging his body
- no change in this behavior
- Walk with hands held (12 months)

FINE MOTOR: +4 months

Could do: 12 months (01/26/87)

- squeeze a toy with hand (10 mos)
- place block on flat surface voluntarily (9 months)
- make purposeful marks with crayon (18 months)

Can do: 16 months (05/14/87)

- can now squeeze & manipulate clay (2.6 yrs)
- can now place blocks in a basket or bowl & attempts to build block tower (1 yr)
- still uses crayons on paper, but can now uses a paint brush making whole arm strokes, may go off page (18 months)

End of the Year Report, p. 2

COGNITIVE: +10 months

Could do: 14-15 months (01/26/87)
 -hands toy back upon request (12 mos)

-pats pictures in book (14 months)
 -helps turn pages (14 months)
 -uses playdough & paints (21 months)

-

Can do: 25 months (05/14/87)

-is more accurate in putting toy in hand upon request
 -is more accurate in patting specific pictures upon request
 -is more accurate in turning pages
 -uses playdough & paints more appropriately
 -points to 5-7 pictures of familiar objects & things (25 months)
 -identifies six body parts (23 months)

RECEPTIVE LANGUAGE: +6 months

Could do: 14-20 months (01/26/87)
 -understands & responds to name (7mos)
 -attends simple command (12 months)
 -understands "no" (8 months)
 -shakes head "no" (7 months)

Can do: 24 months (05/14/87)

-attempts to say name
 -attempts two-part command
 -can say "no" meaningfully
 -can also nod head "yes"
 -follows directions "give me the ___"
 (24 months)
 -waves "bye-bye" (12 months)
 -points to apple when asked (24 months)
 -receptive body parts to "arms" (36 mos)

EXPRESSIVE LANGUAGE: +18 months

Could do: 6-8 months (01/26/87)
 -initiates sounds & words (7 months)
 -displays intelligible jabbering (12 months)
 -3 words other than "mama" or "dada" (12 months)
 -responds to simple yes or no questions (12 months)

Can do: 27 months (05/14/87)

-is correctly saying a variety of words
 -displays intelligible words
 -uses a large vocabulary
 -still responds to questions, but questions are now more complex
 -uses subject/predicate phrase (24 mos)
 -says please & thank-you (30 months)
 -expressive body parts to "hair" (30 mos)
 -names pictures to "plane" (24 months)

SELF-HELP: +8 months

Could do: 9-12 months (01/26/87)
 -feeds himself finger foods (12mos)
 -drinks from a cup with assistance (9 months)

Can do: 20 months (05/14/87)

-can now take spoon from plate to mouth with some spilling (18 months)
 -still needs assistance to drink, but does not drip as much
 -chews & swallows solid food (18 months)
 -assists in dressing (24 months)

End of the Year Report, p. 2

SOCIAL/EMOTIONAL: +6

Could do: 18-24 months (01/26/87)

- express a wide variety of emotions
- interacts with peers
- engages in parallel play

Can do: 30 months (05/14/87)

- still is very expressive
- still interacts very well with peers
- is consistent in this behavior
- says "no", but submits anyway (27 mos)
- separates easily from mother in familiar surroundings (33 months)
- enjoys a wide range of relationships, meets more people (30 months)

RECOMMENDATIONS:

has developed a great deal in the MDDLC family setting with older and younger children present. He displays a pleasant disposition and is very easy to work with. He tries very hard at all activities and is always willing to engage in new ones. It is recommended that he continue in the MDDLC program where he can receive individualized attention to increase his development in all the developmental domains. A strongly structured language development program is needed to maintain the gains he has made this year. One-on-one attention is needed to continue growth in the fine and motor areas. He has almost attained age-appropriate development in all domains except the fine motor and gross motor areas.

MODEL DEMONSTRATION DEVELOPMENTAL LEARNING CENTER
UNIVERSITY OF NEVADA, LAS VEGAS

INDIVIDUAL EDUCATION PLAN

NAME OF CHILD _____ DATE OF BIRTH _____ AGE 1y 8 mos
 PARENTS' NAMES _____ ADDRESS _____
 PHONE _____ DATE OF IEP 3 Feb 87 REPORT BY _____

PERCENT LEVEL OF PERFORMANCE	GOALS	LEARNING OBJECTIVES	EVALUATION CRITERIA PERSON RESPON.
1. Gross Motor: a) pulls himself along the floor b) sits unassisted for 1-5 seconds before losing his balance	To improve Gross Motor Skills	a) to crawl alternating legs b) to sit unassisted for 20-30 seconds	Brigance Diagnostic Inventory of Early Childhood Development, & Parents
2. Fine Motor: a) uses a palmar grasp to pick-up objects b) voluntarily releases blocks onto a table c) makes purposeful marks with a crayon onto a paper using a full arm swing	To improve Fine Motor Skills	a) to pick-up small objects using a pincer grasp b) to stack 2 blocks onto a table c) to make purposeful marks with a crayon onto a paper using wrist action	Hawaii Early Learning Profile Early Learning Accomplishment Profile

INDIVIDUAL EDUCATION PLAN


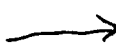
NAME OF CHILD _____ DATE OF BIRTH _____ AGE 1 yr 11 mos
PARENTS' NAMES _____ ADDRESS _____
PHONE _____ DATE OF IEP 3 Feb 87 REPORT BY _____

SENT LEVEL OF PERFORMANCE	GOALS	LEARNING OBJECTIVES	EVALUATION CRITERIA	PERSON RESPON.
3. Cognitive: a) ... opens his mouth when "mouth" is said b) grasps a car or block when it is near him.	To improve Cognitive Skills	a) to indicate through body movements additional body parts b) to distinguish between block or car when asked to pick one up.	Brigance Diagnostic Inventory of Early Childhood Development	Parents
4. Receptive language: a) shakes head "no" b) attends a simple (one-step) command	To improve Receptive Language Skills	a) to nod his head "yes" to indicate he wants to do an activity b) to increase ability to perform a 2-step command.	Hawaii Early Learning Profile Early Learning Accomplishment Profile	
5. Expressive language: a) coos & jabbles	To improve Expressive Language Skills	a) to verbalize vowel sounds b) to verbalize "car", "block", "ball" c) to indicate needs through verbalization or vocalization		

MDLCL
MODEL DEMONSTRATION DEVELOPMENTAL LEARNING CENTER
UNIVERSITY OF NEVADA, LAS VEGAS

INDIVIDUAL EDUCATION PLAN

NAME OF CHILD _____ DATE OF BIRTH _____ AGE 1 yr 11 mos
 PARENTS' NAMES _____ ADDRESS _____
 PHONE _____ DATE OF IEP 3 Feb 87 REPORT BY _____

PRESENT LEVEL OF PERFORMANCE	GOALS	LEARNING OBJECTIVES	EVALUATION CRITERIA	PERSON RESPON.
<u>Self-Help Skills:</u> a) drinks from a cup with assistance b) grasps & places finger foods in mouth	To improve Self-help Skills	a) attempt to hold his glass b) hold a glass & tip to drink. c) to gain more control in feeding himself finger foods	Brigance Diagnostic Inventory of Early Childhood Development Hawaii Early Learning Profile Early Learning Accomplishment Profile	& Parents 
<u>Social/Emotional:</u> a) engages in parallel play with peers	To improve Social/Emotional Skills	a) to play independently using blocks or books		



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MODEL DEMONSTRATION DEVELOPMENTAL LEARNING CENTER

Child's Name _____ Date of Birth 2/21/85
Report Type Beginning of the Year Report Date 1/26/87
Reported By _____ Child's Age 1 yr., 11 mos.

BEGINNING OF THE YEAR REPORT

_____ began school at MDDLCC on October 27, 1986. He is a blond little boy of average size. He has been diagnosed as having Cerebral Palsy Spastic Quadraplegia. This condition has delayed his developmental progress in the areas of fine and gross motor skill acquisition. Nicholas also entered the program being fed through a gastric tube because of Esophageal Reflux. According to Josette Lund, Speech Therapist, the lack of oral stimulation has resulted in a speech delay.

_____ was observed from October 27th to December 15th for the purpose of assessment. Brigance Diagnostic Inventory of Early Childhood Development, Hawaii Early Learning Profile, and Early Learning Accomplishment Profile were used for the assessment.

In the area of Gross Motor development, _____ is 8-10 months. He can crawl dragging his body, assume a low creeping position alternating legs, and can make stepping movements. He will work on assuming a hand-knee position, standing holding onto furniture, and going from sitting to prone position.

In the area of Fine Motor development, _____ is 12-18 months. He squeezes a toy with his hand, places a block on a flat surface with voluntary release, and makes purposeful marks with a crayon (may go off the page). He will work on picking up small objects with a pincer grasp, stacking objects, and more control with a crayon.

In the area of Cognitive Development, _____ is 14-15 months. He hands a toy back upon request, he pats pictures in books, helps to turn pages, and uses Play Dough and paints. He will work on pointing to body parts and objects when requested, and matching objects.

In the area of receptive language development, _____ is 14-20 months. He understands and responds to his name, attends a simple command, understands "no" and shakes his head "no". He will work on nodding his head for "yes" and attending a command of two or more steps.

Beginning of the Year Report, p. 2

In the area of speech and expressive language development, is 6-8 months. He imitates sounds or words, displays unintelligible jabbering, says at least three other words than "mama" or "dada", and responds to simple yes or no questions. He will work on concrete language and expanding his vocabulary.

In the area of self-help, is 9-12 months. He feeds himself finger foods and drinks from a cup with assistance. He will work on holding and drinking from a cup unassisted.

In the area of Social/Emotional development, is 18-24 months. He expresses a wide variety of emotions, interacts with peers, and engages in parallel play. He will work on independent play by using blocks or books independently for a few minutes.



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MODEL DEMONSTRATION DEVELOPMENTAL LEARNING CENTER

Child's Name _____ Date of Birth 2/21/85
Report Type Speech Screening Report Date 11/6/86
Reported By _____ Child's Age 1 yr., 9 mos.
Therapist _____

SPEECH SCREENING

The therapist worked with _____ while he was seated in his orthopedic chair. His mother was present in the screening room.

1. Receptive:

_____ said "_____ " and he responded by looking at her. She held a toy cat for him which he grasped. She said "Give me the cat", which he did. _____ showed him a ball, said "ball" - he did respond with vocalization. She held the ball up so _____ would look at it, keeping his head erect. He tracked the ball from side-to-side and up-and-down with his eyes, head, and hands. He cooed. He was offered a telephone which he grasped. With his mother's help, they attempted to get him to say "no" by shaking his head - he did not respond. _____ tried to have him say "MMM" - he did not respond. _____ was moved from the chair to a bolster on the floor. He was laid on his stomach across the bolster. _____ told him to lift his head, which he did. She asked "Do you want the ball?" He responded with a vocal response and grasped the ball. _____ decided that the position was not good for vocalization, so _____ ended the session seated on his mother's lap.

2. Recommendations:

- A. See the Occupational Therapist for correct positioning for better alertness and speaking postures.
- B. Do alot of tracking with objects while talking to him at the same time.

Speech Screening Report, p. 2

- C. Use concrete language for vocalization. Use full sentences for receptive input.
 - 1. Talk through normal family activities. (Ex. washing dishes - "This is a dish. I am washing the dish.")
 - 2. Use repetition of clothing, food, and household items. (Ex. "This is a ball. It is red. What is this? This is a ball.")
 - 3. Go through the house and name everything! (Ex. closets, kitchen, toybox)
 - 4. Accept any vocalization when he responds. Reinforce all vocalization.
- D. Strengthen yes and no response. Ask a question, then physically move his head and verbally say yes or no.
- E. Allow him to interact with objects - he needs to move and touch objects with both hands.
- F. Pre-speech begins with lots of chewing and tongue movement. Stimulate the muscles of the mouth as much as possible.
 - 1. Circle lips with an ice cube to strengthen the pucker response. Reinforce his response verbally.
 - 2. Using suckers or popsicles, place it in his mouth. Draw it out to promote licking and reaching for it with his tongue.
 - 3. Wet and freeze long Q-tips. Use them around his mouth. Alternate with warm and hot Q-tips to stimulate the sensory nerves.
 - 4. Stimulate all parts of the mouth with Q-tips or a toothbrush, including back muscles and pillars to slight gag response. Strengthening back muscles will result in more swallowing and more control.
 - 5. Wet washcloths to suck on to promote sucking response.
 - 6. Place a lifesaver in a washcloth or tied to a string to stimulate the mouth.
 - 7. Put flavors on gauze and place in the mouth. Talk about the flavors. Leave him with a good taste so he will want to do it again. Use a variety of good and bad flavors.

Speech Screening Report, p. 3

8. Wrap beef jerky in long gauze, wet it to produce a flavor, and - holding onto the end of the gauze - place it in the side of the mouth to stimulate and strengthen the tongue.
- G. Initially work on vowel sounds and the consonants "m", "p", and "b". May need to use physical prompting for correct lip positioning. (Ex. say "mmm". Ask him to say "mmm". Place finger under chin or on lips and say "mmm".)

PEDIATRIC OCCUPATIONAL THERAPIST
SENSORY - MOTOR INTEGRATION SPECIALIST

LAS VEGAS, NEVADA 89107

OCCUPATIONAL THERAPY CONSULT

NAME:

BIRTHDATE: 2-21-85

2.0

DATE: 2-18-87

Your child, _____ was given an occupational therapy screening as part of his/her preschool program. Following are the observations and recommendations which were made.

OBSERVATIONS:

Seems C.P. - spastic quad.
uses extension for mobility
spastic muscle tone
able to lay prone on elbows
rolls - log using abnormal reflex patterns
demonstrates gross grasp & release + ability
to cross body midline (i set up)
unable to sit independently or creep

RECOMMENDATIONS:

_____ seemed to communicate his needs/desires to his mother. He followed her command when she requested him to roll toward her. This therapist discussed the parent activities to continue working on with Nicholas. (Mrs. Wyatt has seen other therapists & been provided with home programs). e.g. rolling with arms straight, sitting in corner seat, transfer objects hand to hand, crossing body midline with grasp/release, prone on elbows to build muscle tone.

Please refer to the preschool teacher for further clarification, or explanations if necessary.
Thank you.

APPENDIX D
Sample Lesson Plans

MODLC-AM AND PM SCHEDULE FOR WEEK OF JUNE 20-23-1988

Teachers AM:
Teachers PM:
Prepared By:

Lead Teacher:
Lead Teacher:
Camera:
Camera:

OBJECTIVE: The children will become familiar with four shapes: Circle, Square, Triangle, Rectangle.

AM SCHEDULE:

TIME	ACTIVITY	DEVELOPMENTAL OBJECTIVE	PROCEDURE	MATERIALS
8:30-9:00	guided play	language, social exploration, self-direction, fine/gross motor	greet children and parents. guide child to activity observe interaction with other children/adults, activity selected. Child will clean-up at end of activities with adults help	blocks, puzzles, games, action toys, pegs and pegboards, crayons playdough, books, music tapes small blocks, dolls, rice table
9:00-9:15	circle	language, social cognitive	children grouped in cube chairs or on floor. Sing "Who came to school today" place sticker by name on chart. Children participate in songs and fingerplays, following directions, and attending in group	
9:20-9:45	small group	language, fine motor, cognitive	see attached instruction page for instructions	
9:50-10:00	toileting	self-help, hygiene language	take those who are able to the bathroom. diaper those who are not able. monitor child's activities on playground	
10:00-10:20	outside/1g group	gross motor, social, language	encourage parallel and cooperative play	balance beam, swings, balls, sand toys, bubbles, bikes.
10:20-10:30	come inside, wash hands get ready for snack			
10:30-10:45	snack and clean-up	self-help, social language	nutrition, self-help skills and table etiquette are focused. children are responsible for their own	

TIME	ACTIVITY	DEVELOPMENTAL OBJECTIVE	PROCEDURE	MATERIALS
10:30-10:45	snack and clean-up	self-help, social	individual clean-up	
10:50-11:10	art/crafts large group	fine motor, language, cognitive	see attached instruction page for instructions	
11:15-11:30	ready for home	self-help, language, social	help children gather materials for home discuss child's day with parent and say good bye to each child.	

Week: June 20-23-1988
 small group instruction
 9:20-9:45

GROUP ONE:

TEACHER: _____

- Monday:** Discuss with children the shape circle. Have examples of things that are round-ball, record, plate, wheel of toy truck. Have them touch and trace shape, discuss texture.
 Skill Sheet: trace and color all the circles on the paper red. When finished, have child count how many circles were on the paper.
 Using magazines, have the child find 5 pictures of things that are round or a circle and cut and paste them on paper. When they are finished, have them tell you what the pictures were and print the name of the picture next to it.
 Have them copy circles on paper
- Tuesday:** Discuss with children the shape square. Have examples of things that are square-book, block, piece of puzzle crayon box. Continue with procedure of Monday, this time color all squares blue.
 Using magazines, Find 5 pictures that are square, follow same procedure. Have them copy squares on paper.
- Wednesday:** Discuss with children the shape triangle. Have examples of things that are triangle-block, puzzle piece, making a triangle on paper. Continue, this time color all triangles green.
 Using magazines, find 5 pictures that are triangle, follow same procedure. Have them copy triangles on paper.
- Thursday:** Discuss with children the shape rectangle. The table, block piece, shape of clay. Continue this time color rectangles orange. Follow procedure cut out 5 pictures that are rectangle and paste, label what they are, copy rectangles on paper.
 Using the Tap-Tap shapes game call on each child to pick up a shape and hammer it on the board. Have them use sentences: This is a red circle, etc.
 Have each child find 4 things in the room-1 circle, 1 square, 1 triangle, 1 rectangle and bring them to the table and tell what they found.

If children finish quickly have them use the lacing tiles

MATERIALS: magazines, paper, scissors, paste, tap-tap game, red, blue, green, orange crayon, markers, examples of things circle, square, rectangle, triangle

Week: June 20-23-1988

small group instruction

9:20-9:45

GROUP TWO:

TEACHER: _____

- Monday: Cutting out playdough using the round cutters only.
Have them roll the dough into a ball, take ball of dough and flatten dough on table, take round cutter and press into dough to make a circle shape. Take child's finger and trace it around the shape of the dough. Have child say round.
String round rubber disks. Repeat word round and that they are stringing the round ones.
- Tuesday: Stack square blocks make a block tower of 3 to 5 blocks.
Make a large square using 4 square blocks.
Stack square foam blocks. Have child trace the shapes
- Wednesday: String triangle rubber disks
String circle rubber disks
Have child trace triangles
- Thursday: Stack rectangle blocks make a block tower of 3 or more
Use Colors and Shapes book: show child pictures say shape to child have child repeat what you said.

MATERIALS: playdough, cutter shaped circle. circle and triangle rubber disks and strings, square and rectangle blocks, square foam blocks, Color and Shapes book

Week: June 20-23-1988

Small group instruction

9:20-9:45

GROUP THREE:

TEACHER: _____

Monday: Trace shapes of circles using nesting cups on paper, if able
they may color the shape inside

Stack nesting cups

Use Color and Shapes book have child point to round objects

have child say name of object and what it is used for

Tuesday: Using blocks trace square shapes on paper
place square shapes on puzzle form
have child find a square object in the room

Wednesday: String beads that are round
trace triangle shapes on paper
use color and Shapes book to find shapes that are round,
square, and triangles. Have them identify the pictures

Thursday: Stack rectangle blocks to make a block tower of 5 or more
Using basic shapes puzzle have child match shape to the
form.
Have child point to the shape you say, have child say
shape name
Use playdough to make dough into the 4 shapes

MATERIALS: playdough, cutters, nesting cups, crayons, pencils, paper,
square and rectangle blocks, beads and strings, color and
shape book, shape puzzle.

SAMPLE E

Sample Daily Anecdotal Records

MODEL DEMONSTRATION DEVELOPMENTAL LEARNING CENTER

CHILD'S NAME _____

DATE STARTED _____

DATE ENDED _____

INDIVIDUAL EDUCATIONAL PROGRAM DATE

OBJECTIVES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1) Gross Motor: Sits by himself (for 10 sec.)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
moves from sitting to prone																									
names after rotating legs in crawling																									
stands holding onto table																									
2) Fine Motor: Grasps crayon & colors on paper																									
Picks up small blocks from table																									
Uses stacking rings																									
3) Cog. Dev. Points to body parts - nose, eyes, mouth																									
Points to ball, block, bird																									

CRITERIA FOR EVALUATION (see accompanying key)

I AGREE WITH THE INDIVIDUAL EDUCATION PROGRAM.

Parent/Guardian _____

[illegible]

CHILD'S NAME

DATE STARTED

DATE ENDED

INDIVIDUAL EDUCATIONAL PROGRAM

[illegible]

CRITERIA FOR EVALUATION (see accompanying key)

I AGREE WITH THE INDIVIDUAL EDUCATION PROGRAM.

Parent/Guardian

MODEL DEMONSTRATION DEVELOPMENTAL LEARNING CENTER

CHILD'S NAME

DOB

DATE	ANECDOTAL RECORDS	RECORDER
6-8-87	Said "bathroom", vacation, held crayon & made marks	no
6-8-87	at blocks, grasped blue one and said "blue" grasped green one and said "green" said "punch" at snack time.	
6-9-87	worked with with large snap blocks was able to follow directions "Pick up the blocks and put them in the basket." Recognized the color red said "red," said "boat, car, mom, phone, hello" very vocal today..	
6-10-87	Cried when mom left, quieted quickly. said "cracker, please, juice, Barbara." Painted w/ watercolors. Gripped listening to familiar sounds tape. Grasped "red, blue, yellow" pigs & blocks and handed over appropriate color when asked.	
6-11-87	Grasped blocks and placed in box. attempted to do puzzle - said "puzzle, Go, Pierce" drank juice assisted, ate cracker & cheese. Began crying when Pierce cried - cried on/off for 30 minutes. Did "open/shut them" with Lander-fer fungus then handed Lander, put them in his flap. attempted to sleep. Mom said he said "Ch + hee, go put on" to Dad this morning.	
6-15-88	Working on pushing Lander with objects and putting them in a box - did large pegs - approx 10 pegs some ching Lander. attempted puzzle. Rode in wagon on play ground - said "push, go" now again.	
6-16-87	Really attentive at circle time pointed to Lander to show what helps us to listen. Put colored sticks in styrofoam cup w/ Pierce - said "blue" "green".	
6-17-87	Cried when Dad dropped him off - stopped as soon as Dad out of sight. Worked w/ pigs & large peg board. Outside, dropped sand into pot in Sandbox - said "sand." did "open/shut them" in circle. Assisted to build block tower of 5 blocks. Repeated numbers 1-5 when counting blocks. Shown 1 Mom 3 block tower. Read book - dog "back" attempted "meow" & "oink". Assisted w/ cutting and gluing papers on page. said "hey"	
6-18-87	Also said "help" when placing pegs on board. Played w/ nesting cups - attempted to make a tower. Outside - played in sand, rode in wagon. In circle - shook bells - said "E-I-O" for old McDonald's Farm - said Kitty. Put sticks in cup. Cried out red, green, yellow, blue sticks when requested. Painted to pig, duck, dog, cat when	

MODEL B/ INSTRUCTION DEVELOPMENTAL LEARNING CENTER

Child's Name

DOB

DATE	ANECDOTAL RECORDS	RECORDER
6-22-87	requested. Asked to go down slide, worked on physio-ball. Drank juice from straw, ate p. butter & crackers w/ assistance. Entered crying - quieted when taken to back of room. Attempted to put magnetic pieces on board. Pointed to colors red, green, blue & yellow when asked. Listened to recording tape & clapped. Rode in wagon outside. Sat in circle - did not say "red" - said "blue". Colored in Red Book w/ crayon - said he made a "ball". Attempted to put ball in PVC pipe. Shook PVC pipe. Ate 1/2 sandwich & drank from a straw. Pushed top up & down to spin - said "again". Good interaction w/.	
6-23-87	Said "fell", "me". Entered crying - stopped quickly. Told me of chair - had nose bleed - picked on ice cube - said "tunnel" while in tunnel. Counted 1-4 w/ assistance. Fingers painted w/ blue. Held crayon & made mark on Blue Book.	
6-24	Throat swollen called	
6-25	Present in class today - Dad brought him in. He was crying momentarily when Dad left. He was given day - brought a green frog to show. Went for walk to collect pine cones. Ate small pizza & drank water from straw. Participated in song session	
6-29	Throat will not be free	
7-2		
7-6	Played "roll the ball" outside. Said "Ready, Set, Go" for ball. Said Butterfly. Participated in fingerplay songs in circle. Had "2 Blue Sticks". Ate muffin w/ assistance, drank Apple juice w/ straw w/ assistance.	
7-7	Sat on floor - did stacking rings w/ assistance. Took blocks out of box & put back in. Ate cereal holding spoon - some assistance to guide spoon to mouth. Got excited over strawberries. Ralled hall to Bq. Enjoyed walk outside. Said "Pine cone, watermelon, finished."	
7-8	absent	
7-9		
	7-13 - Mom called, going to Dr will keep us informed	

VITAE

VITAE

JOYCE MOTT ANDERSON, M.S.

CURRENT STATUS: Supervisor/Master Teacher for Early Childhood Education for the Handicapped Program, University of Nevada, Las Vegas.

PERSONAL DATA:

Present Address: 4291 E. Welter
Las Vegas, NV 89104

Office Address: College of Education
University of Nevada, Las Vegas
4505 Maryland Parkway
Las Vegas, NV 89154

Telephone: Home: (702) 641-0820
Work: (702) 739-3875

EDUCATION:

M.S. in Early Childhood Education for the Handicapped University of Nevada, Las Vegas
Las Vegas, NV
1986-88

B.A. in History Brigham Young University
Provo, UT
1967-72

Bachelor's degree in History with a minor in English. Secondary teaching certification. Student teaching at Midvale Junior High School, Midvale, Utah.

Master's degree in Early Childhood Education for the Handicapped. Completed two semesters and two summer sessions of personnel preparation in a classroom with young handicapped children ages birth to eight years. Emphasis on classroom organization, preparation of lesson plans, individual, large and small group activities, grouping and regrouping, conducting assessments, writing Individualized Educational Plans, daily charting and anecdotal recording, organizing parent meetings, preparing Individualized Family Service Plans, writing and editing monthly newsletters, and coordinating with community agencies.

Honors

Graduate Assistant

University of Nevada, Las Vegas
1986-88