

The University of North Carolina
at Greensboro

JACKSON LIBRARY



CQ

no. 1333

UNIVERSITY ARCHIVES

BRINGLE, ELIZABETH K. HARRISON. The Effectiveness of Multisensory Stimulation on the Cognitive Development of Young Physically Handicapped Children. (1975) Directed by: Dr. Nancy White. Pp. 84

The purpose of the present study was to obtain data that could be analyzed to determine the significance of supplemental multisensory stimulation on the cognitive development of physically handicapped children. It was hypothesized that reading to physically handicapped children, $1\frac{1}{2}$ to $3\frac{1}{2}$ years old, for a total of 30 minutes daily, for 6 months (a minimum of 65 hours), would significantly increase the children's DQ/IQ scores, measured on the Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M.

The subjects were eight physically handicapped children, aged $1\frac{1}{2}$ to $3\frac{1}{2}$ years, who were enrolled for weekly therapy in the Baby Group Program or the Baby Out-patient Program at the Cerebral Palsy and Orthopedic School, Greensboro, North Carolina. The primary caregiver for each child was his/her mother.

The data were collected using the Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M to obtain pretest and posttest scores.

W

Means and differences between scores were analyzed by a t test. Interview data were collected using a Questionnaire to ascertain the mothers' opinions about the effect of the reading program on their children.

The hypothesis that reading to physically handicapped children, $1\frac{1}{2}$ to $3\frac{1}{2}$ years old, for a total of 30 minutes daily for 6 months (a minimum of 65 hours) would significantly increase the children's DQ/IQ scores was partially supported. It was found that the increase in DQ/IQ scores varied as a function of the children's initial DQ/IQ scores. That is, children whose pretest DQ/IQ scores were in the normal range showed a trend toward an increase in posttest DQ/IQ scores. Also, children whose mental ages were above 1 year had a significant increase in their posttest DQ/IQ scores. Interviews with the mothers indicated that six children had made cognitive gains, evidenced by an increase in the children's verbalization and understanding, and four children had made affective gains, evidenced by an increase in the children's display of affection toward their mothers.

THE EFFECTIVENESS OF MULTISENSORY STIMULATION
ON THE COGNITIVE DEVELOPMENT OF YOUNG
PHYSICALLY HANDICAPPED CHILDREN

by
Elizabeth K. Harrison Bringle

A Thesis Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Science in Home Economics

Greensboro
1975

Approved by

Nancy White
Thesis Adviser

APPROVAL PAGE

This thesis has been approved by the following committee of the Faculty of the Graduate School at The University of North Carolina at Greensboro.

Thesis
Adviser

Nancy White

Committee Members

Marilyn T. Eubank

Lawrence M. Franck

Mary Elizabeth Keister

May 7, 1975
Date of Acceptance by Committee

ACKNOWLEDGMENTS

To the many people whose help made this study possible, I wish to express my sincere appreciation. For their guidance and invaluable assistance in various phases of the study and in the preparation of the thesis, I am indebted to my graduate committee, Dr. Nancy White, Chairman, Associate Professor in the Department of Child Development and Family Relations in the School of Home Economics; Dr. Marilyn Erickson, Associate Professor of Psychology; Miss Lavina Franck, Assistant Professor of Home Economics; and Dr. Mary Elizabeth Keister, Excellence Professor in the Schools of Home Economics and Education. For approving the study and sending letters of recommendation to the parents, I wish to thank Mrs. A. M. Inman, Executive Director of the Cerebral Palsy and Orthopedic School, Mrs. Robert C. Little, Assistant Director, and Mrs. F. G. Newby, Social Worker-Counselor. For her cooperation in collecting the data, I wish to acknowledge the psychologist, Ms. Susan Corriher, who administered the developmental/intelligence tests. For her assistance in

typing the manuscript I wish to thank Mrs. Jeanetta French. I am grateful to my family for their understanding and support throughout my graduate study.

Special recognition must go to the children and parents for their participation in the study. Their cooperation, exhibited by their keeping appointments, welcoming me into their homes, reading for a total of 65 hours, and marking the Data Sheets, was an impressive demonstration of the willingness of these mothers and fathers to extend themselves in behalf of their children's total development.

CHAPTER I	1
CHAPTER II	12
CHAPTER III	20
CHAPTER IV	27
CHAPTER V	34
CHAPTER VI	41
CHAPTER VII	48
CHAPTER VIII	55
CHAPTER IX	62
CHAPTER X	69
CHAPTER XI	76
CHAPTER XII	83
CHAPTER XIII	90
CHAPTER XIV	97
CHAPTER XV	104
CHAPTER XVI	111
CHAPTER XVII	118
CHAPTER XVIII	125
CHAPTER XIX	132
CHAPTER XX	139
CHAPTER XXI	146
CHAPTER XXII	153
CHAPTER XXIII	160
CHAPTER XXIV	167
CHAPTER XXV	174
CHAPTER XXVI	181
CHAPTER XXVII	188
CHAPTER XXVIII	195
CHAPTER XXIX	202
CHAPTER XXX	209
CHAPTER XXXI	216
CHAPTER XXXII	223
CHAPTER XXXIII	230
CHAPTER XXXIV	237
CHAPTER XXXV	244
CHAPTER XXXVI	251
CHAPTER XXXVII	258
CHAPTER XXXVIII	265
CHAPTER XXXIX	272
CHAPTER XL	279
CHAPTER XLI	286
CHAPTER XLII	293
CHAPTER XLIII	300
CHAPTER XLIV	307
CHAPTER XLV	314
CHAPTER XLVI	321
CHAPTER XLVII	328
CHAPTER XLVIII	335
CHAPTER XLIX	342
CHAPTER L	349
CHAPTER LI	356
CHAPTER LII	363
CHAPTER LIII	370
CHAPTER LIV	377
CHAPTER LV	384
CHAPTER LVI	391
CHAPTER LVII	398
CHAPTER LVIII	405
CHAPTER LIX	412
CHAPTER LX	419
CHAPTER LXI	426
CHAPTER LXII	433
CHAPTER LXIII	440
CHAPTER LXIV	447
CHAPTER LXV	454
CHAPTER LXVI	461
CHAPTER LXVII	468
CHAPTER LXVIII	475
CHAPTER LXIX	482
CHAPTER LXX	489
CHAPTER LXXI	496
CHAPTER LXXII	503
CHAPTER LXXIII	510
CHAPTER LXXIV	517
CHAPTER LXXV	524
CHAPTER LXXVI	531
CHAPTER LXXVII	538
CHAPTER LXXVIII	545
CHAPTER LXXIX	552
CHAPTER LXXX	559
CHAPTER LXXXI	566
CHAPTER LXXXII	573
CHAPTER LXXXIII	580
CHAPTER LXXXIV	587
CHAPTER LXXXV	594
CHAPTER LXXXVI	601
CHAPTER LXXXVII	608
CHAPTER LXXXVIII	615
CHAPTER LXXXIX	622
CHAPTER LXXXX	629
CHAPTER LXXXXI	636
CHAPTER LXXXXII	643
CHAPTER LXXXXIII	650
CHAPTER LXXXXIV	657
CHAPTER LXXXXV	664
CHAPTER LXXXXVI	671
CHAPTER LXXXXVII	678
CHAPTER LXXXXVIII	685
CHAPTER LXXXXIX	692
CHAPTER LXXXXX	699
CHAPTER LXXXXXI	706
CHAPTER LXXXXXII	713
CHAPTER LXXXXXIII	720
CHAPTER LXXXXXIV	727
CHAPTER LXXXXXV	734
CHAPTER LXXXXXVI	741
CHAPTER LXXXXXVII	748
CHAPTER LXXXXXVIII	755
CHAPTER LXXXXXIX	762
CHAPTER LXXXXXX	769
CHAPTER LXXXXXXI	776
CHAPTER LXXXXXXII	783
CHAPTER LXXXXXXIII	790
CHAPTER LXXXXXXIV	797
CHAPTER LXXXXXXV	804
CHAPTER LXXXXXXVI	811
CHAPTER LXXXXXXVII	818
CHAPTER LXXXXXXVIII	825
CHAPTER LXXXXXXIX	832
CHAPTER LXXXXXXX	839
CHAPTER LXXXXXXXI	846
CHAPTER LXXXXXXXII	853
CHAPTER LXXXXXXXIII	860
CHAPTER LXXXXXXXIV	867
CHAPTER LXXXXXXXV	874
CHAPTER LXXXXXXXVI	881
CHAPTER LXXXXXXXVII	888
CHAPTER LXXXXXXXVIII	895
CHAPTER LXXXXXXXIX	902
CHAPTER LXXXXXXXI	909
CHAPTER LXXXXXXXII	916
CHAPTER LXXXXXXXIII	923
CHAPTER LXXXXXXXIV	930
CHAPTER LXXXXXXXV	937
CHAPTER LXXXXXXXVI	944
CHAPTER LXXXXXXXVII	951
CHAPTER LXXXXXXXVIII	958
CHAPTER LXXXXXXXIX	965
CHAPTER LXXXXXXXI	972
CHAPTER LXXXXXXXII	979
CHAPTER LXXXXXXXIII	986
CHAPTER LXXXXXXXIV	993
CHAPTER LXXXXXXXV	1000

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	iii
LIST OF TABLES	vii
CHAPTER	
I. INTRODUCTION	1
Purpose	4
Assumptions	5
Definitions	6
Cerebral Palsy and Orthopedic School	6
Baby Group Program	7
Baby Outpatient Program	8
Physical Handicap	8
Cognitive	9
Hypothesis	9
Limitations	10
II. REVIEW OF RELATED LITERATURE	11
Need for Cognitive Intervention Programs for Physically Handicapped Children	11
Effects of Verbal Stimulation Intervention Programs on Cognitive Development	19
III. METHODS AND PROCEDURES	28
Description of the Subjects	28
Selection of the Sample	29
Selection of the Multisensory Stimulation	30
Details of the Stimulation Program	33
Methods of Collecting the Data	35
Developmental/Intelligence Testing	35
Interviews with Mothers	36
Methods of Data Analysis	37
Developmental/Intelligence Testing	37
Interviews with Mothers	37

	Page
IV. RESULTS	38
Pretest-Posttest DQ/IQ Score Difference	38
Interview Data.	43
Mother 1.	43
Mother 2.	45
Mother 3.	47
Mother 4.	49
Mother 5.	51
Mother 6.	52
Mother 7.	53
Mother 8.	55
V. DISCUSSION.	58
VI. SUMMARY	65
BIBLIOGRAPHY.	69
APPENDIX A.	72
Letter of Explanation	
APPENDIX B.	75
Parental Permission	
APPENDIX C.	77
Time and Activity Sheet	
APPENDIX D.	79
Data Sheet	
APPENDIX E.	81
Parent Interview Questionnaire	

LIST OF TABLES

Table	Page
1 Means and Individual DQ/IQ Pretest, Posttest, and Difference Scores	39
2 Means and Individual DQ/IQ Pretest, Posttest, and Difference Scores for the Four Children Whose Pretest DQ/IQ Scores Were in the Normal Range	41
3 Means and Individual Mental Age Pretest, Posttest, and Difference Scores	42

CHAPTER I

INTRODUCTION

One question which many child development researchers find themselves asking is, what experiences does a physically handicapped infant need to stimulate his cognitive development? Major current theories of cognitive development, reported by Charlesworth (1968) focused on the infant's motor activity. Piaget's theory (1952) in particular assumes that perception or cognition depends for its perfection on the infant's motor development and the consequences of his action. Physically handicapped infants, however, cannot progress through the motor-sensory stages deemed necessary for action-centered theories of cognitive development. Shere and Kastenbaum (1966) reported that cerebral palsied infants were handicapped in attempting to coordinate their sensorimotor functioning. In addition, cerebral palsied and orthopedically handicapped infants lacked the opportunities for frequent and varied motor contacts with their environment that the non-handicapped infants enjoyed. Although the infants might have lived in an environment that had a

variety of objects, developmental delays and difficulty or inability in locomotion, manipulation and communication restricted physically handicapped children's opportunities for experiential learning from their environment.

On the one hand, there was evidence that motor activity was important for a child's cognitive development. On the other, there was evidence that many cerebral palsied and orthopedically handicapped children had normal cognitive development without active motor development. Robinson and Robinson (1965), summarizing reports from numerous studies, concluded that about 25% of the cerebral palsied children have tested IQ scores in the 90 and above range (normal to superior), about 25% have IQ scores between 70 and 90 (borderline retarded), and about 50% have below normal intelligence. Frostig and Maslow (1970) stated that there was no proof that the children with movement deficiencies could not learn academic skills and subject matter; in fact, clinical evidence had proved the contrary. Abercrombie (1966) reported that children in late childhood and early teens who had lacked movement skills from birth because of

cerebral palsy might perform at an equal level of intelligence and perception with normal children. Such studies of non-retarded physically handicapped individuals pointed to the inadequacy of exclusively action-centered theories of cognitive development.

During the late sixties and early seventies, child development research gave evidence that the years from ages one to four are especially important for the development of mental and motor functions. Bayley (1965) suggested that the age period from 1 year to 4 years should be studied in an effort to determine environmental factors which are relevant to cognitive development. Barsch (1967) reported from a 1965 conference on Conceptual and Methodological Approaches to Research in Pediatric Outpatient Departments. The conference published a lengthy list of research topics regarding the study of deviant infants and representing areas and developmental dynamics that were only dimly understood. Barsch (1967) reviewed the list and reported that there was a recurring emphasis upon the need to explore methods of stimulation which might be used by the parents in home settings to optimize certain aspects of the deviant child's development.

Because of the importance placed on children's early experiences for cognitive growth, and because of the restrictions that physical handicaps place on children's experiential learning, there seemed to be a need for research on experiences that could increase physically handicapped children's cognitive development. In an attempt to find an experience that parents could provide for their physically handicapped children which would beneficially affect the children's cognitive development, the present study was undertaken.

Purpose

The purpose of the present study was to obtain data that can be analyzed to determine the significance of supplemental multisensory stimulation on the cognitive development of physically handicapped children, $1\frac{1}{2}$ to $3\frac{1}{2}$ years old. The multisensory stimulation that was selected required that the mother hold her child while she read to him for a total of 30 minutes daily, for 6 months (a minimum of 65 hours). The Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M were administered to the children before and after the reading program. A comparison of the DQ/IQ

scores on the pretests and posttests was made to determine the significance of the supplemental multisensory stimulation on the children's cognitive development. In addition, information given by the mothers in response to interview questions was presented in case studies to express the mothers' opinions of the reading program and its effect on their children.

Assumptions

The basic assumptions made in relation to this study were the following:

1. The formation of cognitive and intellectual skills can reasonably be conceived of as developmental in nature and modifiable by variations in the environment (Freeburg & Payne, 1967).
2. Early stimulus enrichment of infants significantly influences later behavior and learning (Hebb, 1949; Piaget, 1952; Hunt, 1961; Uzgiris, 1967; and Holden & Willerman, 1972).
3. It may be possible for perception to precede and outweigh action as an influence on the development of young infants. This would contradict the frequent assumption that the post-natal maturation and learning of

sensorimotor response is a prerequisite for perceptual-cognitive development (Abercrombie, 1966; Fantz & Nevis, 1967; and Charlesworth, 1968).

4. A child's language developmental sequence, particularly in the early stages, is closely related to, and may be the same as, cognitive development (Kretschmer, 1975).

5. Handling of a child by his mother is important for the child's visual exploratory behavior (White & Held, 1967).

6. An enriched environment could favorably affect the intellectual fate of the neurologically damaged infant (Holden & Willerman, 1972). A previously held assumption had been that environmental effect was negligible, compared with the effect of neurological damage.

Definitions

For the purpose of this study the following definitions were used:

Cerebral Palsy and Orthopedic School. The Greensboro, North Carolina, Cerebral Palsy and Orthopedic School was built in 1950, to serve the needs of cerebral palsied and/or orthopedically handicapped children from

preschool ages through high school ages. Special education classes were provided for groups of children according to their abilities. Physical, occupational, and speech therapy were provided for each child during the school day, according to individual needs. Children who were physically able to attend a regular school, but still had handicaps which needed treatment, had appointments with therapists after school hours on an outpatient basis. Also in the outpatient program were a few babies who had been referred by their doctors and had been accepted for therapy as outpatients. By 1971, more babies needed to be seen by therapists than time would permit on an individual outpatient basis. In an attempt to meet the needs of more babies, a group program for babies under 3 years old was started in the fall of 1971, at the Cerebral Palsy and Orthopedic School.

Baby Group Program. The Greensboro Cerebral Palsy and Orthopedic School conducted a group program twice a week for children under 3 years old. No more than ten children were enrolled in the program at any one time. Each of the children enrolled had one or more of the characteristics usually attributed to an infant--inability

to sit alone, to crawl, to walk, or to talk. Therefore, the program was called a baby, rather than a toddler or a preschool, program. The babies were brought to the school on Monday and Thursday afternoons for 1 hour. During that time, the therapists and other school personnel played with the babies on a one-to-one basis, combining therapies with activities appropriate for each baby's developmental level. While the therapists played with the babies, the parents and the social worker-counselor met in another room to discuss the problems of living with handicapped children.

Baby Outpatient Program. Some cerebral palsied and/or orthopedically handicapped babies under the age of 3 years, who for various reasons were not enrolled in the Baby Group Program at the Cerebral Palsy and Orthopedic School, received therapy in the Baby Outpatient Program. The babies' appointments with the therapists were for 30-minute sessions, several times a month.

Physical Handicap. Physical handicap is a term used to describe an impairment in one or more motor responses as a result of an orthopedic or a neurological insult received by the individual prenatally, at birth,

or postnatally. Examples include cerebral palsy, spina bifida, and undiagnosed motor impairments.

Cognitive. The term cognitive designates the diverse processes and functions involved in mental activity--the phenomena to which such labels as reasoning, learning and planning are conventionally applied. For the purposes of the present study, cognitive stimulation and development were spoken of as though they existed as entities separate from sensory or affective stimulation. In a child's life, stimuli are interwoven. However, in order to describe the very complex whole in meaningful terms, it was necessary to consider these aspects of development as though they existed in separate compartments and to measure independently various aspects of the child's development and characteristics of his environment (Provence, 1967).

Hypothesis

Reading to physically handicapped children, $1\frac{1}{2}$ to $3\frac{1}{2}$ years old, for a total of 30 minutes a day, for 6 months (a minimum of 65 hours) will significantly increase the children's DQ/IQ scores, measured on the Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M.

Limitations

The study was limited to investigating the effects of the stimulation program on children who were enrolled in the Baby Group Program, or in the Baby Outpatient Program, at the Cerebral Palsy and Orthopedic School and who were cared for in their homes by their mothers. Only 10 of the 15 babies met the criteria; however, one family moved out of town before the stimulation program started, and one child was dropped from the study because the mother was not able to complete the program in the time allotted. Only eight children remained in the program. With such a small sample, and no control group, the findings were at best suggestive.

CHAPTER II

REVIEW OF RELATED LITERATURE

The selected literature related to the present study was divided into two categories: research on the need for cognitive intervention programs for physically handicapped children, from birth to age three; and research on the effects of verbal stimulation on cognitive development of children, ages 18 months to 3 years.

Need for Cognitive Intervention Programs
for Physically Handicapped Children

The necessity of cognitive intervention programs for physically handicapped infants was one of the conclusions in a study by Shere and Kastenbaum (1966). The study was initiated to investigate the interaction between mothers and cerebral palsied children that might affect the children's cognitive development. The children in the study were severely handicapped--neither walking, talking nor sitting without support. The children's inability to move to objects or to ask for them was the equivalent of their living in an impoverished object-environment. Unless the mothers provided their children

with objects and encouraged the children's exploratory play with the objects, the children's impoverished environment--restricted mobility and isolation from activities--would hinder the children's cognitive development.

Two of the questions asked by Shere and Kastenbaum (1966) were as follows:

1. Would the mothers recognize that their children's limited mobility and isolation from activities with objects would have a deleterious effect on their children's cognitive development?

2. How would the mothers respond to guidance and suggestions offered by professionals for the purpose of stimulating their children's activity?

The study (Shere & Kastenbaum, 1966) consisted of three parts: (a) an interview with each mother; (b) observations of each mother dealing with her child at home; and (c) a guidance program consisting of lessons and home practica--in today's terminology, an intervention program. The subjects in the study were 13 cerebral palsied children between 2 and 4 years old, who could neither walk, talk,

nor sit without support. The children lived with both parents in economic circumstances that ranged from low-income to above-average-income. Each child's primary caregiver was his/her mother.

Shere and Kastenbaum (1966) reported an analysis of the information obtained from the interviews with the mothers, as follows:

1. Each of the 13 mothers of children with severe handicaps was mainly concerned about the physical handicap and was not aware that the physical handicap was damaging her child's cognitive development.

2. Each mother's primary wish for her child was for him to be able to walk.

3. Each mother evaluated her child as good, based chiefly on one behavioral aspect--the child's passivity. The child showed no initiative, expressed no demands, and presented no disciplinary problems.

4. None of the 13 mothers provided toys or other objects for her child's play. The mother's concept of play was linked to the child's rudimentary movements, as an aid to the child's motor development, and was not linked to his cognitive development.

5. It had not occurred to the mothers, nor had it been suggested to them by any professional personnel, that physically handicapped children needed opportunities to contact the object world around them. As a result, the children were kept in a barren environment that prevented their having experiences with the object-world.

During the second part of the study (Shere & Kastenbaum, 1966), observations of the spontaneous mother-child interactions in the homes were recorded by pairs of observers. The observers made six visits to each home, staying from 2 to 3 hours at each visit, over a span of from 7 to 8 months. Shere and Kastenbaum (1966) analyzed the reports from the observations and found that the 13 mothers were not aware that they could or should provide opportunities for their children to play with objects that the children could neither move to nor request.

The Guidance Program phase of the study by Shere and Kastenbaum (1966) lasted for 5 months and was divided into two parts. Part I was lessons, taught at the beginning of each month, to acquaint the mothers with general principles of child development. Part II was a guidance program, conducted once a month in each home, to supervise the mothers in their application of child development

principles during special play sessions with the child. Psychologists introduced the lessons as suggestions about increasing the child's understanding of the world around him. Each mother was given a set of cards explaining the guidance ideas, a dated notebook in which the mother recorded objects that she presented to the child daily and the child's actions with the objects, and any special equipment that she would need to carry out the play sessions. At the end of 5 months, Shere and Kastenbaum (1966) wrote case studies on each family.

From a summary of the case studies, Shere and Kastenbaum (1966) offered their suggestions for subsequent research and their ideas about practical applications of a guidance program.

1. Guidance programs should begin when the family learns that the child has cerebral palsy and take into consideration the total life situation of the mother and child. Although the physicians and other professionals whom the mother contacts first will be concerned about the infant's physical development, it would be an advantage to have personnel with a background in total child development on the treatment team from the very beginning. The mother could learn that as she helps her child develop physically,

there are specific things she should do to help him develop intellectually and socially.

2. There was a conflict of values between the mothers and guiders. The mothers considered passivity a characteristic of a happy baby. However, the guiders were trying to get the mothers to stimulate their babies' activity. Such a conflict needed to be discussed and resolved before a guidance program could begin.

3. Mothers in the guidance program had to be instructed and encouraged to play with their children. It was difficult for play to be play, and not work, when the participants had to work at playing with their children.

In future guidance programs, Shere and Kastenbaum (1966) suggested that the guiders take a more active role in playing with the children so that the mothers could see that a pleasurable and productive interaction was possible. When the mothers felt comfortable about joining in the play, they could do so voluntarily and the guiders would gradually release their role as a model for the mothers.

To summarize, Shere and Kastenbaum (1966) answered the questions raised at the beginning of their study as follows:

1. Would the mothers recognize that their children's restricted mobility and isolation from activities and objects would have a deleterious effect on their children's cognitive development?

The interviews and home observations made it clear that these mothers had no insight into the whole area of psychological growth--that is, they did not seem to realize that limited mobility and limited accessibility to the world of people and objects had any implications for the infant's well being. Even more rudimentary, they did not seem aware that there is a total process of development from infancy to maturity which is exposed to all the contingencies of life, nor aware of the corollary that everything which one did or did not do for the child would exert an influence upon the kind of person he eventually became. (Shere & Kastenbaum, 1966, p. 327)

2. How would the mothers respond to guidance and suggestions offered by professionals for the purpose of stimulating their children's activity?

The mothers often responded with such common self-references as "I don't have enough patience," "I don't have enough time," and "I'm not a good teacher" . . . The "not enough time" statement frequently was voiced when guidance suggestions were presented, or the outcome of past suggestions inquired into. The mothers typically would say, "I have done so much already!" They pointed to how much attention they had to give to the child's "basic needs"--e.g., "Not only must I feed and toilet and dress him, but now you want me to play with him, too?" The child's psychological needs were seen as something less than basic when, indeed, they were seen at all. (Shere & Kastenbaum, 1966, p. 329)

In addition, there was a value conflict between the mothers and the guiders. The mothers considered the babies "good" and "happy" when the babies were almost completely passive, initiating little action and making few demands. However, the guiders were interested in increasing the children's activity, initiative, and demands. When the children did manifest some activity or a desire for activity, the mothers frequently acted in negative or inhibiting ways. The mothers expressed fear that they would spoil the babies by going along with the babies' demands.

In those cases when the specific goal of the guidance program was approximated, the mother had changed her interaction with her child. Before the guidance program, the mother's primary concern revolved around her child's motor handicap. When objects were offered to the child, the objects were used as motivation for the child to move to them or as exercise for the child's hands and fingers. The guidance program helped the mother realize that her child also needed opportunities for acquisition of knowledge about objects, and the mother modified her approach in line with the guidance ideas.

The study by Shere and Kastenbaum (1966) did not present any hard data on the results of their guidance program. However, recent research on guidance (intervention) programs (Levenstein, 1970, and Ginandes & Roth, 1973) used the guiders as models for the mothers to learn how to play with their children, which was one of the suggestions made by Shere and Kastenbaum (1966). Although the children were not physically handicapped, they were from low income families, were living in impoverished environments and were characterized as "passive." The studies by Levenstein (1970) and by Ginandes and Roth (1973) are presented in the next section.

Effects of Verbal Stimulation Intervention Programs on Cognitive Development

Levenstein (1970) conducted a study to test the cognitive growth of 2- and 3-year-old children of low-income families whose mothers provided extra verbal stimulation in their homes. Two of the major hypotheses were stated as follows: (a) the general and verbal intelligence of 2- and 3-year-old children from low income families would rise in children exposed to verbally oriented play activity between the children and their mothers, and (b) the IQ rises would be greater (because of beginning symbolic

language development) among 2-year-old children than among 3-year-old children.

A "before-after" experimental design was followed, with the subjects, 54 children, ages 20 to 43 months, and their mothers. The children were divided into three geographically separated groups--experimental (N = 33), comparison 1 (N = 9), and comparison 2 (N = 12). The Cattell Infant Intelligence Test or the Stanford-Binet Intelligence Scale and the Peabody Picture Vocabulary Test were used to measure the general and verbal cognitive status of all the children before and after the 7 months that the intervention program lasted. During the 7 months, children in the experimental group received verbally stimulating intervention, children in the comparison 1 group received non-verbally stimulating intervention, and children in the comparison 2 group received no intervention beyond the testing. All mothers were tested on the Peabody Picture Vocabulary Test and were interviewed before and after the intervention.

The 33 experimental group children and their mothers were visited for an average of 32.4 Home Sessions by a research social case worker, who was called a Toy Demonstrator. She gave to each child, over the 7-month

period, a toy chest and a total of 28 toys or books. The role of the Toy Demonstrator was to be a model for the mother in how to stimulate verbally oriented play with the child, using the toys and books. The Toy Demonstrators were instructed to demonstrate verbal stimulation techniques while playing with the child and to include the mother gradually in the play. As the mother repeated and elaborated on the verbal stimulation techniques, the Toy Demonstrator was to take a secondary role. The mothers were encouraged to play and read with the child between the Home Sessions. The Toy Demonstrators were to keep constantly in mind that the child's primary and continuing educational relationship was with his mother.

The comparison 1 children were exposed during the intervention period to an average of 24 non-verbally stimulating visits from a social worker. Each week the social worker brought non-verbally stimulating gifts to each child. Her role was to sit in the same room with the comparison 1 child but to avoid verbal interaction. Sometimes she would play records. The child's mother was encouraged to stay in another room. The purpose of the non-verbally stimulating visits and gifts from the social worker was to control for the Hawthorne effect on the

experimental group. If the experimental group and the comparison 1 group had made similar gains in IQ points, a positive response to the visits and toys would have been suspected as the cause, demonstrating the Hawthorne effect. If the experimental group had made a greater gain in IQ points than the comparison 1 group, the verbally stimulating interaction would be suspected as the cause.

Levenstein (1970) reported results that showed that the experimental group children demonstrated a mean Cattell and Stanford-Binet gain of 17 IQ score points, which was significantly higher (at the .001 level) than the gain of 1 IQ score point for the comparison 1 group and the gain of 2 IQ score points for the comparison 2 group. The prediction of a rise in verbal IQ for the experimental children was also confirmed, although not as markedly in comparison with the other two groups. The experimental children's mean gain of 12.2 IQ points on the Peabody Picture Vocabulary Test was significantly higher (at the .01 level) than the comparison 1 children's loss of 4 points, though no higher than chance over the 4.7 gain of the comparison 2 children. Within the experimental group there was a large range in the cognitive gains of the children. The cognitive gain associated with the

experimental intervention seemed to be a result of the attempt to stimulate verbal interaction between the mother and child. Of major importance also was the fact that even in low-income families a parent could have a significant influence on her child's cognitive growth.

The second hypothesis was not confirmed. There was no significant difference between the IQ gains of the 2- and 3-year-old children in the experimental group. The lack of differentiated effect on the 2- and 3-year-olds suggested that the critical period for cognitive learning through the program was not demonstrated between the ages of 20 months and 43 months.

A replication of the Levenstein study (1970) was conducted by Ginandes and Roth (1973), using for subjects children 24 to 35 months old, who had been placed in foster homes. Some of the characteristics of foster children, noted by Ginandes and Roth (1973), were feelings of powerlessness, lack of mastery, and not being able to effect changes, resulting in passivity. Ginandes and Roth (1973) reported a need to instill in the foster child at an early age a sense of curiosity, assertiveness, mastery of materials, and an awareness of cause-and-effect relationships. There existed a need to instill in the

foster parents, whose educational level was high school or lower, the value of learning for preschool children and the importance of verbal communication between parent and child for the child's intellectual development.

In the replication study (Ginandes & Roth, 1973), eight children between 2 and 3 years old were in the experimental group and seven children of the same ages were in the comparison group. During pretests by a psychologist it was found that one of the eight experimental children was a diagnosed case of childhood schizophrenia and another, a primary mental defective. In spite of the diagnoses, both children were included in the program, even though the children's limitations would restrict the IQ score gain. The eight children in the experimental group were visited by the case worker, who during the study assumed the role of Toy Demonstrator. The Toy Demonstrator gave each child a toy chest and at the first visit each week, either a toy or a book, for a total of 23 play materials. At the second visit each week, the Toy Demonstrator reviewed any toy or book chosen by the child. The role of the Toy Demonstrator was to show the mother how the play materials could be used to stimulate verbal interaction between the mother and child

and to invite the mother to become involved in the process. The toys and books given as gifts remained in the home as stimuli for more talk and play between the child and family members.

The results of the study showed that the children in the experimental group had a mean Cattell and Stanford-Binet IQ gain of 13 points, significantly higher (at the .005 level) than the mean loss of 4.7 IQ points by the comparison group. The child diagnosed as schizophrenic gained 13 IQ points, the same gain as the average for the sample. The child diagnosed as primary mental defective gained 10 IQ points, only 3 points less than the experimental group average gain. It was reported by Ginandes and Roth (1973) that the intervention program had benefitted all the children, including the exceptional children.

From interviews with the foster mothers, it was learned that some of the mothers had become aware of their children's roles in initiating verbalization, which necessitated a response from the parents. The 2-year-old children's initiating conversation was viewed as an important development because it indicated a decrease in the child's passivity.

A study by Irwin (1948) found that differences in the speech sound status of two groups of infants existed when they were categorized according to the occupational level of their fathers. Babies, from 18 months to 3 years, whose fathers were in business and the professions showed superiority over babies whose fathers were skilled, semi-skilled, or unskilled laborers.

In a follow up study, Irwin (1960) tested the effect that systematic reading of stories would have on the phonetic production of children, from 13 to 30 months of age. During this period books were furnished weekly to 24 children in the experimental group. A parent read for 20 minutes daily to the children in the experimental group. No books were furnished for the 10 children in the control group, and no reading regimen was prescribed. During home visits every 2 months, the investigator recorded the spontaneous vocalization of each of the 34 children in both groups. The results of Irwin's (1960) study showed that the spontaneous vocalization of the experimental group increased consistently over the control group after the child was 18 months old. A one-tailed t test showed that the differences between the phonetic production of the experimental and control groups was

significant (at the .05 level) for all ages after 18 months except the 21- 22-month-age. Irwin (1960) reported that the results of the study suggested that systematically increasing the speech sound stimulation of infants under 30 months of age by reading and by telling stories about the pictures increased the phonetic production over what might be expected without reading enrichment. Because of the close ties between verbal and cognitive skills, the increase in phonetic production also indicated an increase in cognitive development.

CHAPTER III

METHODS AND PROCEDURES

The purpose of the present study was to collect data that could be used to determine the significance of supplemental multisensory stimulation on the cognitive development of physically handicapped children, 1½ to 3½ years old. The methods and procedures discussed in this chapter are divided into six sections: (a) description of the subjects, (b) selection of the sample, (c) selection of the multisensory stimulation, (d) details of the multisensory stimulation program, (e) methods of collecting the data, and (f) methods of data analyses.

Description of the Subjects

Subjects in the present study were eight children, three girls and five boys, who were enrolled in the Baby Group Program or the Baby Outpatient Program at the Cerebral Palsy and Orthopedic School, Greensboro, North Carolina. At the beginning of the study the children's ages ranged from 18 to 42 months, with a mean age of 30 months. The physical handicaps of the children had been

diagnosed as follows: cerebral palsy, 3; mental retardation and cerebral palsy, 1; hearing handicap and cerebral palsy, 1; mental retardation with no other diagnosis, 1; and spina bifida, 2. Each child had one or more of the characteristics usually associated with babies--inability to sit alone, to walk, or to talk. The children lived with both parents in economic circumstances that ranged from below-average income to upper-middle-class income. The primary caregiver for each child was his/her mother.

Selection of the Sample

The method that was used to obtain the subjects was one of direct contact through the administration of the Cerebral Palsy and Orthopedic School. The proposed study was explained to the director, the assistant director, and the social worker/counselor at the school and they approved the study. The school director sent a letter (Appendix A) to 16 families who had children in the Baby Group Program, in the Baby Outpatient Program, or on the waiting list for either program. The letter explained the study, recommended the study, obtained parental permission for participation in the study (Appendix B), and asked for a tentative time that the investigator could contact the

family. Affirmative replies were received from ten mothers who were the primary caregivers for their children. These ten children were selected as the subjects. However, one child moved within a month after the study began and one mother was not able to complete the requirements within the designated time, which left eight children as the subjects for the research study.

Selection of the Multisensory Stimulation

The mothers of the eight physically handicapped children were interviewed before the multisensory stimulation was selected. The purpose of the initial interview was to learn how the children spent the day--the sensory stimulation and the experiences that they usually had. The interviews were held in each home at a time selected by the mother as most convenient for her. The interviews lasted approximately 30 minutes. Based on the information from the initial interviews, the supplemental multisensory stimulation was determined.

The interviewer asked the mother what her child was doing during half-hour intervals from 6 a.m. to 10 p.m. on the previous day, and if that was the child's usual activity at that time. Other questions asked were the

following: (a) who was in the room with the child, (b) was the television on, (c) could the child see the television, and (d) could the child hear the television if he were in a different room. The information from the mothers was recorded by the interviewer on a Time and Activity Sheet (Appendix C). Answers to the questions and additional information volunteered by the mothers are discussed in two parts: the amount of television stimulation the children had, and other experiences the children usually had.

1. A summary of the information given by the mothers indicated that the television was turned on in four homes as soon as the family got up. These mothers stated that they left the television on all day when they were home. The children in these homes could hear the television even if they were in a different room. In two of the other homes, the television was turned on for the children to watch two children's programs. In the remaining two homes, one child could see and/or hear television if he were awake while his mother watched programs for 2 hours in the afternoon and one child watched television for about 3 hours at night with the rest of the family.

2. The mothers took care of the children's physical needs during the day and night. At night and on week-ends, in seven of the families, the fathers usually played with the children. Play often included the exercises that were prescribed for the children by the physical therapists. Three of the fathers took their children with them when they worked in the yards or gardens. These children rode the lawn mower or tractor with the fathers, or they sat in a swing or stroller.

Other experiences that the children might have during a day included being with their brothers, sisters, cousins, or neighbors' children, either to watch the other children or to play with them to the extent that their handicap permitted; visiting the grandparents' homes (only one child lived too far to permit frequent visiting); going shopping with mother; going to the nursery at church; and going on family vacations.

All eight of the children were exposed to activities that were physically and socially stimulating. All the children were exposed to television, in varying degrees, that was visually and verbally stimulating. However, only three of the children were exposed to experiences that might be designated as cognitively stimulating. The

cognitive stimulation to which these children were exposed was different for each child. One of the mothers sat outside holding her child and talking to him about animals, objects, and activities in the yard. Another mother bought her child increasingly difficult puzzles because her child had mastered puzzles with fewer pieces. Both parents in another family were trying to teach their child to recognize alphabet letters, using a magnetic board and letters. Although all eight of the children had experiences that might stimulate their physical and social development, only three of the children had special experiences planned to stimulate their cognitive development.

Details of the Stimulation Program

The supplemental multisensory stimulation that was chosen was a simple one that would not require much of the mother's time. Because none of the eight mothers had mentioned reading to her child, each mother was asked to hold her child on her lap and read to him/her, or talk to him/her about the pictures, from children's books for a total of 30 minutes daily. The stimulation program was to last for 6 months (a minimum of 65 hours), which was the equivalent of 30 minutes daily, 5 days a week, for 6 months.

In addition to reading to her child, each mother was asked to mark Data Sheets (Appendix D) showing the number of minutes that she read to her child each day. Data Sheets and Directions were taped inside a notebook and given to each mother. The Directions were as follows:

Hold your child on your lap and read to him/her for a total of 30 minutes each day, pointing out the pictures, talking about them, and making up original, simple tales about them that would interest your child.

We suggest three sessions of 10 minutes each, but if you prefer one session of 30 minutes or two sessions of 15 minutes, that's all right. Check the Data Sheet so that the total amount of time spent reading is correct.

There may be days when you are not able to read. Please leave those spaces blank so the information will be accurate. If the father should read to the child, please put f in the appropriate time space.

For now, please limit your reading to your child to 30 minutes each day. If you find that you would like to read either more or less, please talk to me about it before you make a change.

Once every 2 weeks the investigator telephoned each mother and made an appointment to visit her home. At this time the investigator brought three different children's books and new Data Sheets to exchange for the used ones. The books were either the Golden Books series or a similar series and were purchased at supermarkets,

drug stores or discount department stores. Some of the books had stiff cardboard pages with bright, colored pictures of objects that might be in the child's environment. The other books were nursery rhymes or stories that are generally used with preschool children. During the visit, any problems that the mother was having in connection with the reading program were discussed and the mothers were encouraged to continue the reading.

Methods of Collecting the Data

Two methods were used in collecting the data:

- (a) a developmental/intelligence test was administered to each child, before and after the stimulation program; and
- (b) an interview was held with each mother after the stimulation program.

Developmental/intelligence testing. Before the stimulation program began, the investigator telephoned each mother and scheduled a time when it would be convenient for her child to be given a pretest. The mothers chose a time when the child would be rested and when the mother could give the child her undivided attention. If possible, a time was chosen when no other family members would be present. The investigator and a master's level

psychologist trained in administering developmental and intelligence tests went to each home at the time chosen. During the test, the child either sat on his/her mother's lap at the kitchen table or sat in a high chair with his/her mother sitting in a chair beside him/her. The psychologist administered to each child the Bayley Scales of Infant Development and, if necessary, the Stanford-Binet Intelligence Scale, Form L-M.

The investigator kept a record of the number of minutes that each mother read to her child. When each mother had completed approximately 3900 minutes of reading, the investigator telephoned and made arrangements for a posttest to be administered to the child. The previously described procedure was followed. The same psychologist administered to each child the Bayley Scales of Infant Development and, if necessary, the Stanford-Binet Intelligence Scale, Form L-M.

Interviews with mothers. After the posttest had been given to every child, the investigator telephoned each mother and asked if she would answer a questionnaire (Appendix E) about the reading program. Each mother was asked the same questions. The mothers' answers to the questions were recorded by the investigator.

Methods of Data Analysis

Analysis of data included DQ/IQ scores and interviews with mothers.

Developmental/intelligence testing. A DQ/IQ score was computed for each child on his pretest and posttest. A one-tailed t test was used to determine the significance of the increase in DQ/IQ scores between the pretest and the posttest.

Interviews with mothers. The answers given by each mother were written as a case study for each child. The mother's opinions of the reading program and its effect on her child are included, plus suggestions from the mothers about improving the reading program.

CHAPTER IV

RESULTS

The purpose of the present study was to obtain data that could be analyzed to determine the significance of supplemental multisensory stimulation on the cognitive development of physically handicapped children. The multisensory stimulation that was chosen required that the mother hold her child while she read to him for a total of 30 minutes daily, for 6 months (a minimum of 65 hours). The Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M were administered to the children before and after the reading program. The results were divided into two parts: (a) Pretest-Posttest DQ/IQ Differences, and (b) Interview Data.

Pretest-Posttest DQ/IQ Score Differences

Ratio DQ/IQ scores were determined for all subjects because the Bayley Scale norms do not include standard scores for the lower ranges of retarded children. As shown in Table 1, the eight children demonstrated a mean

DQ/IQ score gain of 2 points on the Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M. A one-tailed t test performed on the data revealed no significant increase in the DQ/IQ scores, $t(7) = .581$, $p > .05$.

Table 1

Means and Individual DQ/IQ Pretest,
Posttest, and Difference Scores

Subject	Pretest DQ/IQ Score	Posttest DQ/IQ Score	Difference in DQ/IQ Scores
1	19	10	- 9
2	41	47	6
3	84	82 ^a	- 2
4	84	94	10
5	86	93	7
6	13	7	- 6
7	21	13	- 8
8	113	131	18
Mean	57	59	2

^aPsychologist and mother noted child was uncooperative

Inspection of the data revealed that the DQ/IQ scores varied as a function of the initial DQ/IQ scores. That is, children whose initial DQ/IQ scores were in the normal range showed a greater improvement in scores than did the children whose initial DQ/IQ scores were in the retarded range. As shown in Table 2, the four children whose initial DQ/IQ scores were in the normal range demonstrated a mean DQ/IQ score gain of 8 points on the Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M. A one-tailed t test comparing pretest with posttest DQ/IQ scores of children whose pretest scores were in the normal DQ/IQ score range revealed a trend toward an increase in DQ/IQ scores, $t(3) = 1.99, p < .10$.

Table 3 presents the means and individual mental age pretest, posttest, and difference scores. Three of the children showed a decrease in mental age, while five of the children showed an increase in mental age. Inspection of the data revealed that the five children who showed an increase in mental age scores had a pretest mental age score above 1 year. The pretest, posttest DQ/IQ score differences were examined for the five children whose mental

ages were above 1 year at pretest. A one-tailed t test performed on the data revealed a significant increase in the DQ/IQ scores of those children, $t(4) = 2.414$, $p < .05$.

Table 2

Means and Individual DQ/IQ Pretest, Posttest,
and Difference Scores for the Four Children
Whose Pretest DQ/IQ Scores
Were in the Normal Range

Subject	Pretest DQ/IQ Score	Posttest DQ/IQ Score	Difference in DQ/IQ Scores
3	84	82 ^a	- 2
4	84	94	10
5	86	93	7
8	113	131	18
Mean	92	100	8*

*Significant at the .10 level

^aPsychologist and mother noted child was uncooperative

Table 3
Means and Individual Mental Age Pretest,
Posttest, and Difference Scores

Subject	Mental Age Score		Difference in Mental , Age Scores
	Pretest	Posttest	
1	7.9	4.8	-3.1
2	13.0	19.3	6.3
3	25.2	31.0 ^a	5.8
4	19.3	30.0	10.7
5	19.7	27.0	7.3
6	4.4	2.8	-1.6
7	3.8	3.3	-.5
8	26.0	42.0	16.0
Mean	14.9	20.2	5.1

^aPsychologist and mother noted child was uncooperative

Interview Data

The purpose of the interviews following the supplemental multisensory stimulation was to get the mothers' opinions and ideas about the reading program. The mothers were told that their opinions and suggestions could be helpful to other parents and children. The mothers were asked twelve questions, based on their experiences (see Appendix E for a copy of the Parent Interview Questionnaire). Their answers to the questions and additional information that they volunteered were incorporated into a case study about each child.

Mother 1. Mother 1 explained that at the beginning of the program she had used 5- to 10-minute sessions of reading to her child. Because the child would not sit in her lap, the mother put the child in a high chair and showed her the books. She used these procedures for about 6 weeks, until the child became interested enough in the books to sit still. At that time the mother started holding the child in her lap to show her the books, doing this four times a day. She gradually increased the length of each session, while holding the child in her lap, until she was reading three times a day for 10 minutes at each session.

Mother 1 preferred reading to her child while the younger brother was asleep; however, he was present more often than not. When the brother wanted to see the book, Child 1 pushed him away. The brother did not like his mother's telling him to "hush," nor did he like his mother's holding Child 1 while he had to sit beside her. For these reasons the mother preferred reading when the brother was not around.

There were several days when the mother omitted reading: when the child was sick, when the mother was busy with canning and freezing produce from their garden, and when she had to take the child for professional examinations. (The mother reported that during one visit to a doctor's office the child picked up a book and sat and looked at it for 30 minutes, while they were waiting. Previously, while waiting, the child had crawled or walked continuously.)

Several evenings each week the father would read to the child for one 10-minute session after supper. The schedule of receiving three different books every 2 weeks was "all right" with the mother. She thought that reading the same books over and over helped. Mother 1 did not notice any changes in the child's verbal development

during the program. However, at the time of the interview Child 1 had started jabbering. She had jabbered "ma-ma" and "da-da" all that day and she would repeat these sounds after the mother said them.

In answer to the question about any changes in the child's behavior toward her, Mother 1 responded, "Yes, she will come to me and/or her daddy to be held and will sit on our laps for as long as 30 minutes at a time." This behavior was a complete change from her behavior at the beginning of the program when the child would not sit on their laps.

Although the mother did not notice any changes in her child's verbal development, she would recommend reading to children. She believed that reading would help a child who was already making sounds, because the younger brother had repeated words when he was present during the reading.

Mother 2. This mother reported that at first she thought she would have to tie her child in a chair to get him to sit still. After a few weeks, he learned to look at the pictures and then he would willingly sit beside her. (She was pregnant at this time, so he could not sit on her lap.) The mother used a schedule of reading for one 30-minute session. She preferred reading to the child at

night because the reading helped to get him to go to bed. The child seemed more relaxed at night, but not sleepy; therefore, the mother thought that the child also preferred reading at night.

Child 2 had been fitted with a hearing aid 1 month before the reading program began. His mother would tell him the names of things in the books and afterward make the signs that she knew. Mother 2 would have preferred keeping one set of books until the child had mastered all the words. There were no changes in the child's verbal development during the reading program and the mother did not know how much the child had comprehended. She stated, "I don't think he got much out of it, but he will sit and look at pictures in a book now." (The interviewer had noticed that the child said "bye-bye" appropriately and made vowel sounds.)

The mother replied that the reading sessions did not interfere with her daily routine. However, she had to omit reading on occasions when the child was sick, when she was in the hospital having the new baby, for 3 weeks after she and the baby came home, and when the family was busy on week-ends. The father helped with the reading about once a week. When the new baby could be propped up

in bed beside her, the mother read to Child 2 with him on one side and the baby on the other. She observed that Child 2 seemed more interested in the reading when the baby was there also.

Mother 2 noticed that her child's behavior toward her changed during the program. She commented, "He seemed to like my paying attention to him. I felt that he was warmer toward me." Although Mother 2 did not notice any changes in her child's verbal development, she would tell another mother, "It's much better to start a child off early. What they can get in the early years helps."

Mother 2 expressed a need for more help with her hard of hearing child who had started attending a morning program at the School for the Deaf. The mother was still looking for some way to reach her child, but she said that she needed to know his capabilities. She thought that because he had taken so long to learn to walk, he could not think about other things. She added, "Maybe now that he can walk, he'll realize that he needs other things."

Mother 3. Mother 3 distributed the reading times daily between two 15-minute sessions and one 30-minute session. When she read, she always had her child sitting beside her with her arm around him. She preferred reading

to him at night, because she had more time and because the father could read if she were busy or going to class. Her child would have liked to have had her read to him all the time. She explained, "He loves to have stories read to him." The only days she omitted were days that the family was away for the weekend. The father usually read to the child once a week. There were no other children in the family. The mother had not noticed any changes in her child's behavior toward her. However, she had noticed changes in the child's verbal development. "He could tell me the stories!" she enthused. She knew that the child had learned many new words as a result of the reading. She added, "The experience definitely helped him." Mother 3 would have preferred more books more often. The child did not get tired of the same stories, but the mother did.

In response to the question, "What would you tell another mother with a 2- or 3-year-old child similar to yours about reading to him regularly?", she replied, "Every chance they get, read. When they can get the child to sit still, read to him. He seemed to grasp so much during that time. It's a very important time in a child's life." The mother was glad that her child had been included in the program.

After the reading program, the mother had taped stories on a cassette. When she was busy, she could give her child the books and the cassette player. The child could match the book to the story and turn the pages as he listened to the tapes. The mother commented also that they had missed the visits and said they planned to invite the interviewer to come back to see them.

Mother 4. This mother started reading three 10-minute sessions a day. Because her child would try to throw the book down, the mother thought that the child got tired of the same stories. The child liked Mother Goose rhymes so several books with nursery rhymes were taken to her. The child would listen to the nursery rhymes and gradually the mother was able to increase the length of time that the child would look and listen to other books. For approximately 75% of the program, the mother distributed the reading into two 15-minute sessions.

When the mother read, she held the child in her lap. However, the mother reported that the child seemed to prefer having her grandmother read to her. When the grandmother read, the child sat in a chair especially designed to give her good support. The reading program did not

interfere with the mother's daily routine, because the grandmother was always available to do the reading if the mother had other plans. The mother and the grandmother each read to the child for approximately half the time. The time preferred for the reading was before the child's nap, because she was more agreeable then.

In answer to the next three questions, the mother responded that she had not noticed any changes in the child's behavior toward her; there were no other children in the family; and the mother would have liked to have had more books, more often, because her child seemed to tire quickly of the same ones.

As a result of the reading program, the mother reported, "She learned to recite nursery rhymes. Hearing me say things from the books, she'd remember what the things were."

The mother would tell other parents that the reading had been good for her child and that her child had learned a lot. The family had been given a box of children's books by a relative who recommended reading to young children so that they would learn to like books and reading.

Mother 5. The time periods for reading were equally distributed between three 10-minute sessions and two 15-minute sessions by Mother 5. When she read to her child, he was sitting beside her about 90% of the time and was sitting in her lap the other 10%. Neither she nor the child preferred reading at any one time of the day. The reading had not interfered with her daily routine, the mother reported. She omitted the reading on week-ends when the family was often out of town. The mother said that she was satisfied with the schedule of getting three different books every 2 weeks.

Child 5 had two older brothers who were usually present when the mother read. She reported that Child 5 would try to push his brothers out of the way so that he could stay next to his mother. The preschool age brother would respond by walking off. The brother who was in the first grade would stay and listen because he liked to have his mother read.

The mother had noticed several changes in the child's verbal development as a result of the reading. She stated, "He talks more now, counts pictures, tries to count." The interviewer had noted toward the end of the program that

he would greet her by saying, "Give me books." The mother had not noticed any changes in his behavior toward her.

Mother 5 had told some friends about reading to her 2-year-old child and they had agreed that it was a good idea. When the interviewer had told the mother the details of the multisensory stimulation program, the mother had replied, "I hadn't thought about reading to him. I read some to his older brothers, but I haven't tried reading to him."

Mother 6. Mother 6 read for two 15-minute sessions daily about 25% of the time and for one 30-minute session daily the other 75% of the duration of the reading program. When she read to Child 6, he was usually in her lap and occasionally beside her. She preferred reading to her child in the mornings, because she was much busier in the afternoons. When it was not possible for her to read, she omitted the reading on that day. (The mother had surgery and had to omit reading for 1 month.)

Child 6 had an older sister who was usually present when the mother read. The mother reported, "He liked for her to be there. His sister thought it was funny to be reading to her brother, but she enjoyed it."

The mother answered that she had noticed a change in her child's behavior toward her. She remarked, "We got closer--the closest we've ever been." She also noted a change in his verbal behavior. "He's making more sounds; he started saying, 'ma-ma'--he's been saying, 'da-da'," the mother stated.

Mother 6 would advise reading regularly to a child similar to hers, even though in the beginning she had had difficulties keeping her child still. When her child got tired, she would try encouraging him to look, or would stop and read to him at another time.

Mother 7. Mother 7 divided her daily reading time between three 10-minute sessions and two 15-minute sessions. When she read to her child he was in her lap, 10% of the time; in his swing, 10% of the time; and on the bed beside her, about 80% of the time. She preferred reading to him after his morning or evening meal because he was more relaxed then. She omitted reading when her child was sick and when she was canning produce from their garden. The child's father read to him on the average of once a week. The schedule of receiving three books every 2 weeks suited Mother 7. She did not think that 10 minutes at a time was

so long that the child got tired of the same books. She thought that it took that long for the child to learn the different things in the books.

Although there were no siblings in the family, Mother 7 kept a toddler during week-days while his mother worked. She reported that the toddler was present for about half of the reading sessions. The mother thought that her child's jabbering meant that he wanted his friend to look at the books also. The friend would sit beside them and repeat words.

Mother 7 had noticed a change in her child's behavior toward her, which she described. "He seems closer to me; he'll talk to me more," she said. "Everytime I pick up a paper, he wants to be read to. If I read I will have to read to him once, then I'll put him down and he'll look at a book while I read my paper or book," she explained. She had also noticed several changes in her child's verbal development as a result of the program. "He jabbars all the time," she commented. "He says, 'oh' [in a sympathetic way] when I cough; he says, 'side' for outside, and he says, 'paw-paw' [the name they use for his grandfather]." She added that he had learned the names of things that were

similar to objects pictured in the books. She would show him the pictures and the real objects. She reported that he learned to recognize many objects by name.

Mother 7 would tell another mother with a child similar to hers that the reading really helped her child understand more. She elaborated, "If he could see the object in the book and see the real thing, it was really good. He loves books so much now, no one can have a book unless he has a book, too." Other comments she had about the reading program included the following: "I think it's real good. Lots of kids like ours don't get enough attention . . . If an adult sits down and does things with him, he knows his mother or daddy is really interested in him . . . He's more interested in lots of other things as a result of seeing and hearing about them from books."

Mother 8. Mother 8 read to her child for one 30-minute session daily about 85% of the time. The other 15% of the time she read for two 15-minute sessions. Her child was in her lap for about 85% of the sessions. The child was on the floor having her physical therapy exercises the other 15% of the time. The mother preferred reading to her child before bed-time or nap-time because the reading was

an inducement to get the child to go to bed. The mother said that the child preferred being read to before bedtime, possibly because reading at that time was part of their daily routine.

Child 8 had one older sister and one older brother. If either or both were present while the mother was reading to Child 8, they had to be still and quiet. The sister and brother paid no attention to their mother's reading to Child 8. The mother said that the reading program did not interfere with her daily routine. She omitted reading on days when the child was sick. The father read if the mother was busy. The mother would have preferred a schedule of receiving new books every week, because the mother got bored reading the same books for 2 weeks.

The mother reported that she had definitely noticed a change in her child's verbal development as a result of the program. She explained, "Her talking and her understanding us are almost 100% better. When we first started, she wasn't talking at all--just saying a few words, but not repeating when we asked her to. Now she says anything she wants to. She comes out with sentences that floor us."

(At the time of the initial interview, the mother had said that she wondered if the cerebral palsy was the reason that the child was not talking.) The mother reported that the child had also learned to recognize alphabet letters and to count up to ten. The child had learned to count by counting the pages in the books with her father. Mother 8 would tell a mother with a child similar to hers, "I'd recommend reading to any child, but especially to a physically handicapped child so she'll learn to enjoy reading, because she won't be able to participate in as many activities."

CHAPTER V

DISCUSSION

The hypothesis that reading to physically handicapped children, 1½ to 3½ years old, for a total of 30 minutes daily, for 6 months (a minimum of 65 hours), would significantly increase the children's DQ/IQ scores, measured by the Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M was partially supported. The four children whose initial DQ/IQ scores were within normal DQ/IQ range demonstrated a mean gain of 8 DQ/IQ score points, which suggested a trend toward an increase in DQ/IQ scores as a result of the reading program. Also, the five children whose initial mental age scores were above 1 year demonstrated a mean increase of 8 DQ/IQ score points, which was significant at the .05 level. The results suggested that a minimum mental age of 1 year was necessary before a reading program could beneficially affect the cognitive development of physically handicapped children.

Results from the Irwin study (1960) suggested that systematic reading to children beginning at age 13 months

resulted in an increase in the children's phonetic production when they were 18 months old. From 18 to 30 months, the phonetic production of children in the reading program increased significantly over the phonetic production of children who were not in the reading program. The close tie between phonetic production--a verbal skill--and cognitive skills suggested that a reading program would increase the cognitive skills of children between the ages of 13 and 30 months. In the present study, reading to physically handicapped children did appear to increase the DQ/IQ scores of the children with a minimum mental age above 1 year.

Levenstein (1970) reported that the general and verbal intelligence of low-income 2- and 3-year-old children increased in the experimental group, who were exposed to home-based stimulation of verbally oriented play activity between them and their mothers, using books and toys to encourage verbal interaction. The experimental group children demonstrated a mean gain of 17 IQ score points, significant at the .001 level, on the Cattell Infant Intelligence Test and the Stanford-Binet Intelligence Scale, which was significantly higher (at the .001 level) than

that of 1 point for the comparison group 1 and 2 points for the comparison group 2. The prediction of a rise in verbal IQ for the experimental children was also confirmed although not as markedly in comparison with the other two groups. The experimental children's mean Peabody Picture Vocabulary Test gain of 12.2 IQ points was significantly higher (at the .01 level) than the comparison 1 children's loss of 4 points, though no higher than chance over the 4.7 gain of the comparison 2 children. Low-income and physically handicapped 2- and 3-year-olds may be thought of as living in impoverished environments. In the present study, the results suggested an increase in the DQ/IQ scores of physically handicapped children with a mental age above 1 year. The children were exposed to home-based multisensory stimulation by their mothers' reading to them.

Ginandes and Roth (1973) characterized children living in foster homes as passive, a description which may also apply to physically handicapped children (Shere & Kastenbaum, 1966). In a replication of the Levenstein study, Ginandes and Roth (1973) reported results that indicated that the eight experimental children between 24 and 36 months old living in foster homes demonstrated a mean

Cattell and Stanford-Binet gain of 13 points, significantly higher (at the .005 level) than the loss of .7 points by the control group. Results of the present study suggested an increase in DQ/IQ scores of physically handicapped children whose mental age at pretest was above 1 year. The gain of 8 DQ/IQ score points was significant (at the .05 level).

Shere and Kastenbaum (1966) recommended that a guidance program for mothers of children with cerebral palsy begin as soon as the diagnosis was made. They further suggested that a child development specialist be a member of the team treating the child and planning the guidance program. The results from the present study, that physically handicapped children with a minimum mental age above 1 year can benefit from cognitive stimulation, agreed with the Shere and Kastenbaum (1966) recommendations. As the parents learn exercises to stimulate their child's physical development, they could also learn multisensory stimulation approaches to increase their child's cognitive development.

Shere and Kastenbaum (1966) suggested that the Home Visitor in the Guidance Program take an active role in

playing with child so that the mother could see that a pleasurable and productive interaction was possible. Levenstein (1970) and Ginandes and Roth (1973) demonstrated that the role of Home Visitor or Toy Demonstrator was important. The Toy Demonstrator served as a model for the mother in stimulating verbally oriented play with the children, using the toys and books she brought. After reading reports of these studies and evaluating the results of the present study, the following recommendations for further study are made:

1. The Home Visitor initially should take a more active role as a model for the mother in stimulating verbally oriented play with the children.
2. The Home Visitor should take toys, or objects, as well as books to the children. Because physically handicapped children are not able to move to objects and manipulate them as normal children do, stimulating verbal interaction using toys may be an important factor in increasing the cognitive development of physically handicapped children.
3. A study should be designed to determine the optimum mental age at which to begin a reading program for

the reading to benefit the cognitive development of physically handicapped children.

From the interviews with the mothers it was learned that all eight mothers thought that their children had benefitted from the reading program. The mothers of six of the children reported that their children had made cognitive gains, evidenced by an increase in the children's verbalization and understanding. The mothers of four of the children reported that their children had made affective gains, demonstrated by an increase in the children's display of affection for their mothers. All eight mothers said that they would recommend a reading program to other mothers of physically handicapped children, $1\frac{1}{2}$ to $3\frac{1}{2}$ years old.

The mothers of four of the children had liked the schedule of receiving different books every 2 weeks. They said that it helped their children to go over the same books. The mothers of the other four children suggested that they would have preferred receiving three different books every week. They reported that they got bored reading the same books. One mother thought that her child got tired of the same books for 2 weeks. In the

Levenstein study (1970) and the Ginandes and Roth study (1973), the subjects were selected on a geographical basis so that the Toy Demonstrator could make weekly or twice weekly visits. Weekly visits were not thought feasible in the present study, because the children lived so far apart that the investigator drove 260 miles every 2 weeks just to visit each child once. The generally cooperative and responsible attitude of the mothers, shown by their keeping appointments, welcoming the investigator into their homes, reading to their children, and marking the Data Sheets made this study possible.

CHAPTER VI

SUMMARY

Current theories of child development emphasize the importance of early experiences for children's cognitive development. Physically handicapped children, because of their developmental delays and difficulty or inability in locomotion, manipulation, and communication, lack the opportunities for experiential learning from their environment that non-handicapped children enjoy. The restrictions that physical handicaps place on children's frequent and varied contacts with objects in their environment are similar to the restrictions that an impoverished environment places on non-handicapped children. Recent research in child development has demonstrated that the IQ scores of children living in disadvantaged environments were increased by intervention programs that stressed verbal stimulation in the home.

The present study was undertaken to find out if supplemental multisensory stimulation provided by parents could beneficially affect the cognitive development of physically handicapped children. Subjects for the study

were eight physically handicapped children who were $1\frac{1}{2}$ to $3\frac{1}{2}$ years old. They were enrolled for weekly therapy in the Baby Group Program or the Baby Outpatient Program at the Cerebral Palsy and Orthopedic School, Greensboro, North Carolina. Their mothers were their primary caregivers. From interviews with the mothers about the experiences the children typically had, it was learned that the mothers did not regularly read to their children.

The Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M were administered to the children to obtain pretest and posttest DQ/IQ scores. For the intervention program, each mother was asked to hold her child on her lap and read to him/her for a total of 30 minutes daily, for 6 months (a minimum of 65 hours). Appropriate children's books were taken to each child every 2 weeks. During the visits, the investigator exchanged books and collected Data Sheets on which the mothers had recorded the number of minutes she had read to her child daily.

The developmental/intelligence testing data were analyzed by t tests computed on the means and differences between pretest and posttest DQ/IQ scores. After the

posttests the investigator interviewed the mothers to obtain their opinions and suggestions about the reading program. The interview data were written as a case study for each child.

The hypothesis that reading to physically handicapped children for a total of 30 minutes daily, for 6 months, would significantly increase their DQ/IQ scores measured on the Bayley Scales of Infant Development and/or the Stanford-Binet Intelligence Scale, Form L-M was partially supported. It was found that the DQ/IQ scores varied as a function of the initial DQ/IQ scores. That is, the four children whose initial DQ/IQ scores were in the normal range demonstrated a mean gain of 8 DQ/IQ score points, indicating a trend toward an increase in posttest DQ/IQ scores. Also, the five children whose pretest mental age scores were above 1 year had a mean DQ/IQ score gain of 8 points, which was significant at the .05 level. The results suggested that minimum mental age of above 1 year was necessary before a reading program could beneficially affect the cognitive development of physically handicapped children.

In the opinions of the mothers, all the children had benefitted from the reading program. The mothers of six of the children reported that their children had made cognitive gains, demonstrated by an increase in their children's verbalization and understanding. The mothers of four of the children reported that their children had made affective gains, demonstrated by an increase in their children's display of affection toward their mothers. All eight mothers said that they would recommend a reading program to other mothers of physically handicapped children.

BIBLIOGRAPHY

- Abercrombie, M. L. J. Body image and draw-a-man test in cerebral palsy. Developmental Medicine and Child Neurology. 1966, 8, 9-15.
- Barsch, R. H. The infant curriculum--concept for tomorrow. In J. Hellmuth (Ed.), Exceptional infant (Vol. 1). New York: Brunner/Mazel, 1967.
- Bayley, N. Comparison of mental and motor test scores for ages 1-15 months by sex, birth order, race, geographical location, and education of parents. Child Development, 1965, 36, 379-412.
- Charlesworth, W. R. Cognition in infancy: Where do we stand in the mid-sixties? Merrill-Palmer Quarterly of Behavior and Development, 1968, 14, 25-46.
- Fantz, R. L., & Nevis, S. The predictive value of changes in visual preferences in early infancy. In J. Hellmuth (Ed.), Exceptional infant (Vol. 1). New York: Brunner/Mazel, 1967.
- Freeberg, N. E., & Payne, D. T. Parental influence on cognitive development in early childhood: A review. Child Development, 1967, 38, 65-87.
- Frostig, M., & Maslow, P. Movement education: Theory and practice. Chicago: Follett Educational Corp., 1970.
- Ginandes, J., & Roth, H. A. Replication of the mother-child home program by a foster agency. Child Welfare, 1973, 52, 75-81.
- Hebb, D. O. The organization of behavior: A neuro-psychological theory. New York: Wiley 1949.

- Holden, R. H., & Willerman, L. Neurological abnormality in infancy, intelligence, and social class. In E. P. Trapp, & P. Himelstein (Eds.), Readings on the exceptional child (2nd ed.). New York: Appleton-Century-Crofts, 1972.
- Hunt, J. McV. The psychological basis for using pre-school enrichment as an antidote for cultural deprivation. Merrill-Palmer Quarterly of Behavior and Development, 1964, 10, 209-248.
- Irwin, O. C. Infant speech: The effect of family occupational status and of age on sound frequency. Journal of Speech and Hearing Disorders, 1948, 13, 320-323.
- Irwin, O. C. Infant speech: Effect of systematic reading of stories. Journal of Speech and Hearing Research, 1960, 3, 187-190.
- Kretschmer, R. Application of linguistic theory to infant intervention programs. Paper presented at the meeting of the Pediatric Fellowship Program. Chapel Hill, N. C.: The University of North Carolina, 1974.
- Levenstein, Phyllis. Cognitive growth in preschoolers through verbal interaction with mothers. American Journal of Orthopsychiatry, 1970, 40, 426-432.
- Piaget, J. The origins of intelligence in children. New York: International Universities Press, 1952.
- Provence, S. Some determinants of relevance of stimuli in an infant's development. In J. Hellmuth (Ed.), Exceptional infant (Vol. 1). New York: Brunner/Mazel, 1967.
- Robinson, H. B., & Robinson, N. M. The mentally retarded child: A psychological approach. New York: McGraw-Hill, 1965.

Shere, E., & Kastenbaum, R. Mother-child interaction in cerebral palsy: Environmental and psychosocial obstacles to cognitive development. Genetic Psychology Monographs, 1966, 73, 255-335.

Uzgiris, I. C. Ordinality in the development of schemas for relating to objects. In J. Hellmuth (Ed.), Exceptional infant (Vol. 1). New York: Brunner/Mazel, 1967.

White, B. L., & Held, R. Experience in human development. In J. Hellmuth (Ed.), Exceptional infant (Vol. 1). New York: Brunner/Mazel, 1967.

JOHN H. HARRIS, M.D., M.P.H., DIRECTOR

1508 GLEBE ROAD

BETHESDA, M.D. 20814

April 29, 1974

Dear _____

You and your child _____ have been selected to take part in a study which could not only help your child but other children with handicaps also. We know you will want to take part in this study.

If you agree to be included, this is what will happen:

1. Your child will be given a developmental test to see what he can and cannot do at this time. This test will be printed and given to your child from UNC-2 and will be included in giving this test to other children.

APPENDIX A

Letter of Explanation

2. You will be given a copy of this letter and a copy of the test results. We will be glad to answer any questions you may have.
3. Mrs. Kay Bringle, a volunteer worker in our study program, will visit your home about once every two weeks to talk with you and see if you need any help with carrying out the program.
4. Your child will be tested again at the end of six months to see how much he has learned and what kind of progress he has made in this period.
5. Mrs. Bringle and her professors at UNC-2 will study the results and let us know the results of this study. Mrs. Bringle will use the study as a part of her work for a Master's Degree in Child Development.

GREENSBORO CEREBRAL PALSY AND ORTHOPEDIC SCHOOL
1508 Gatewood Avenue
Greensboro, N. C. 27405

April 29, 1974

Dear _____:

You and your child, _____, have been selected to have a part in a study which could not only help your child but other children with handicaps also. We know you will want to take part in this study.

If you agree to be included, this is what will happen

1. Your child will be given a developmental test to see what he can and cannot do at this time. This test will be painless and will be given by someone from UNC-G who is especially trained in giving this test to young children.
2. You will be asked to do some special things daily at home with your child. They will be simple and may be things you already are doing.
3. Mrs. Kay Bringle, a volunteer worker in our Baby Program, will visit your home about once every two weeks to talk with you and see if you need any help with carrying out the program.
4. Your child will be tested again at the end of six months to see how much and what kind of progress he has made in this period.
5. Mrs. Bringle and her professors at UNC-G will study the results and let us know the results of this study. Mrs. Bringle will use the study as a part of her work for a Master's Degree in Child Development.

If you have questions, please get in touch with me, or with Mrs. Newby. If you agree to take part in this study, please complete the form enclosed and return it to the School. When you have returned it Mrs. Bringle will get in touch with you immediately.

Since the first testing must be completed before May 12, it is most important that we get started immediately.

Thank you for your help.

Sincerely,

Mrs. A. M. Inman
Executive Director

BCI/bd

Enc.

GREENSBORO CEREAL WALSH AND ORTHOPEDIC SCHOOL
1504 Greenwood Avenue
Greensboro, N. C. 27403

April 29, 1974

I hereby agree to take part in the study being planned by
Mrs. Bringle, for my child _____

The best time of day for me to be reached at home is _____

I understand that Mrs. Bringle will get in touch with me
to plan for the tests and visits.

APPENDIX B

Date _____ Parental Permission

GREENSBORO CEREBRAL PALSY AND ORTHOPEDIC SCHOOL
1508 Gatewood Avenue
Greensboro, N. C. 27405

April 29, 1974

I hereby agree to take part in the study being planned by
Mrs. Kay Bringle, for my child _____.

The best time of day for me to be reached at home is
_____.

I understand that Mrs. Bringle will get in touch with me
to plan for the tests and visits.

Signed _____

Date _____

TIME AND ACTIVITY SHEET

For _____ spent the day, _____
 Child's Name mo./date/year

Time	Location of Child	Person(s) With Child	Child on TV	Dear TV
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

APPENDIX C

Time and Activity Sheet

TIME AND ACTIVITY SHEET

How _____ spent the day, _____.
 Child's Name mo./date/year

Time	Location of Child	Person(s) With Child	Child can See TV	Child can Hear TV
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Date / Sheet

DATA SHEET

Child's Name	Session 1 10 minutes	Session 2 10 minutes	Session 3 10 minutes
Day, Month, Date			
Monday, June 24	_____	_____	_____
Tuesday, June 25	_____	_____	_____
Wednesday, June 26	_____	_____	_____
Thursday, June 27	_____	_____	_____
Friday, June 28	_____	_____	_____
Saturday, June 29	_____	_____	_____
Sunday, June 30	_____	_____	_____

APPENDIX D

Data Sheet

DATA SHEET

Child's Name	Session 1 10 minutes	Session 2 10 minutes	Session 3 10 minutes
Day, Month, Date			
Monday, June 24	_____	_____	_____
Tuesday, June 25	_____	_____	_____
Wednesday, June 26	_____	_____	_____
Thursday, June 27	_____	_____	_____
Friday, June 28	_____	_____	_____
Saturday, June 29	_____	_____	_____
Sunday, June 30	_____	_____	_____

PARENT INTERVIEW QUESTIONNAIRE

Your opinion of the reading program and your ideas
about such a program would be helpful to other parents
and their children. The following questions are for you to answer
and your answers may be used in reports and other materials.

1. How long have you been reading with your child?

APPENDIX E

Parent Interview Questionnaire

2. How often do you read with your child?

3. How do you feel about the program?

4. How do you feel about the program?

PARENT INTERVIEW QUESTIONNAIRE

Your opinion of the reading project and your ideas about such a program could be helpful to other parents and their children. The following questions ask for your opinion and for some suggestions based on your experience:

1. When possible you read to _____ for a total of 30 minutes each day. How was this time period usually distributed?

Three, 10-minute sessions _____ %

Two, 15-minute sessions _____ %

One, 30-minute session _____ %

2. When you read to _____, where was (s)he usually?

In your lap _____ %

Beside you _____ %

Not in physical contact _____ %

3. Did you prefer to read one time of the day over other times? _____

If yes, what was your reason for preferring that time?

4. Did _____ seem to prefer to have you read one

time of the day over another? _____

If yes, do you know why there was a preference for that time? _____

5. During your 6 months reading program with _____, (s)he was exposed to about 65 hours of reading from approximately 40 books. As a result of the program, did you notice any changes in his/her verbal development? _____
- If so, would you describe the changes? _____
- _____
- _____

6. Did the reading program interfere with your daily routine? _____

7. When it was not possible for you to read to _____ on a particular day, how did you deal with this conflict in schedule?

Omit that day, or time _____

Read at another time in the day _____

Ask another family member to read _____

8. _____ has a (brother) and/or (sister), _____.
- Was/were (s)he/they usually present when you read to _____? If so, how did he/she/they react?
- _____
- _____

How did (sibling/s) _____ react to _____ being
read to each day? _____

9. Did you notice any change in _____ behavior
toward you, as a result of the reading program? _____
If so, describe the changes. _____

10. You were given a different set of three books every
2 weeks. Would you have preferred a different schedule?
____ If so, what schedule would you have preferred and
why? _____

11. What would you tell another mother with a 2- or 3-year-
old child similar to _____ about reading to
him/her regularly? _____

12. Do you have any other comments or suggestions about the
reading program? _____
