LANGUAGE LEARNING DIFFERENCES OF PRE - AND POST - PUBIC MENTALLY RETARDED INDIVIDUALS

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ABSTRACT

LANGUAGE LEARNING DIFFERENCES OF PRE- AND POST-PUBIC MENTALLY RETARDED INDIVIDUALS

By

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Lenneberg (1964,1967) hypothesized that the mentally retarded subject cannot benefit from speech and language training, that manipulation of reinforcing contingencies will not significantly assist in the development of language, and that language learning will not take place after the CA of 12 to 14 years due to physiological limitations.

Research has indicated, however, that the language of the retarded can be remediated in subjects with various etiologies and at different mental age levels. Most often the training associated with remediation has made use of behavior modification principles. That language learning in the mentally retarded is limited by age has not, however, been well documented by Lenneberg nor has it been examined directly by others. The legislation of manditory special education for the adult mentally retarded subject makes it imperative for the speech and language clinician to know how practical it is to initiate or

continue therapy with the mentally retarded individual at various chronological age levels, especially those beyond the CA of 12 to 14 years.

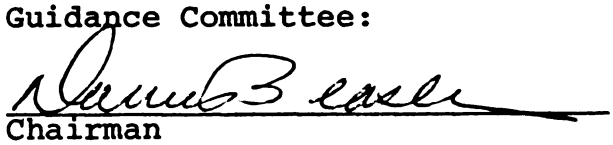
To test the hypothesis that post-pubic severely mentally retarded subjects have a reduced capacity for language learning, eight pre-pubic and eight post-pubic subjects were selected from a population attending a day training program. Each group was subdivided into a test group and a control group of four subjects each. The test groups were given five hours of training in a language acquisition program. The control groups maintained their regular schedule of activities.

Results of the investigation showed that 1) the pre-pubic as well as the post-pubic severely mentally retarded test groups showed increases in language behavior, 2) this increase occurred as a result of the modification of reinforcing contingencies, 3) no significant amount of difference was seen in the rate of increase in language behavior between test groups and 4) the subjects had experienced growth in language from the pre-pubic through the post-pubic years.

Accepted by the faculty of the Department of Audiology and Speech Sciences, College of Communication Arts, Michigan State University, in partial fulfillment of the requirements for the Master of Arts degree.

Director of Thesis

Guidance Committee:



Chairman

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CHAPTER I

INTRODUCTION

Much of the research published in recent literature concerning the mentally retarded has been devoted to the description of language and its development in individuals exhibiting problems associated with various etiologies and from various environments. Also prominent are reports of training procedures designed to improve a variety of language functions in groups or individuals exhibiting a wide range of intellectual functioning and mental ages. Associated with these training procedures are descriptions of programs for the amelioration of the language deficits of the mentally retarded which are being devised and applied. Currently, investigators appear to be attempting to answer the question, "Can the mentally retarded by benefited by training?" To date, the results have been optimistic, and thus, new methods in clinical management are taking the place of the custodial care previously provided for them.

An apparent increase in public awareness of the needs and capabilities of the mentally retarded has increased the demand for special education for the mentally

handicapped. The appearance of manditory special education in some states raises the question, "How long can a mentally retarded subject benefit from a training program?"

There has been a paucity of research which has treated the chronological age of the mentally retarded individual as an independent variable.

Speech and Language Behavior of the Mentally Retarded

Articulation.--Schlanger and Gottsleben (1957) studies the speech characteristics of 516 residents of The Training School (Vineland, N.J.) (377 males, 139 females, $\overline{X}$ CA=28.9, SD=17.3, $\overline{X}$ MA=7.8, SD-3.0). The results of the investigation revealed that 79 percent of the residents had some type of defective speech. Seventy-eight percent had articulation disorders, 47 percent had voice disorders, and stuttering was seen in 17 percent. Ninety-five percent of those classified as "Mongoloid" (n=44), 84 percent of those classified as "Organic" (n-189), and 80 percent classified as "Undifferentiated" (n=137) were found to be defective in articulation. Sixty-six percent of those classified as "Familial" (n=64) were regarded as having errors in articulation.

Language.--Karlin and Strazzulla (1952) describe the language characteristics of 50 retarded children living

at home. The children were divided into three groups. Eleven children with a CA range from 3-9 years to 14 years, MA range of 6 months to 3 years, and an IQ range of 15 to 25 comprised the first group. The second group was made up of 26 children who had a CA range of 3 years to 13-7 years, MA range of 1-3 years to 6 years and IQ range between 26 and 50. The third group were 13 children with a CA range between 3-9 years and 14-1 years, MA range of 1-8 years to 7-11 years, and IQ range between 51 and 70. Karlin and Strazzulla found that certain developmental milestones namely sitting, walking, words, and sentences, were positively correlated with increased intellectual deficit, i.e., those subjects with the lowest MA were more retarded in achieving the milestones than were those in the middle group. The subjects in the middle group, in turn, were more delayed in reaching the milestones than were the highest functioning group. Several characteristics of language noted by Karlin and Strazzulla were the use of concrete language and the inability to deal with abstractions, a tendency toward echolalia, irrelevancy of ideas, preseveration, and glibness, particularly in the older girls.

Graham and Graham (1971) studied the syntactic characteristics in mentally retarded subjects with a CA range of 10 to 18 years and an MA range of 3 to 10 years.

They determined that language facility for the mentally retarded depended primarily on his MA.

Lozar, Wepman, and Hass (1972) compared lexical usage of 27 institutionalized mental retardates from 5-6 to 14-6 years of age to that of nonretarded children. Percentages of common words used by the retardates in a language sample were compared with a similar measure for the nonretarded children of the same CA and MA. The mean number of lexical items used by the children showed very little difference from the CA of 5 years to the CA of 13 years.

Beier, Starkweather and Lambert (1969) interviewed 30 residents at the Utah State Training School to determine their use of vocabulary. The subjects ranged in CA from 11 to 24 years ($\bar{X}$ CA=19) and had an IQ range of from 23 to 75 ($\bar{X}$ IQ=53). A 2700 word sample was collected from each subject during the interview. This sample was analyzed and compared to word samples collected from normal subjects with CAs of 12 and 16 ($\bar{X}$ CA=15, $\bar{X}$ IQ=103). Results showed that the mentally retarded subjects spoke slower than the normals, used a greater number of "positive" words, often referred to "other" and used greater numbers of "I," "me" and "mine." Very little difference was noted in the most frequently used words of the retardates and the normals.

Mein (1961) examined the grammatical structures of an institutionalized population of 40 mongoloids between the ages of 10 and 30 years. One hundred words taken during a conversational interview and 100 words the patients used to describe a picture were analyzed and classified. It was determined that with increasing mental level the speech patterns matured in a manner similar to that of normal children. Specifically, a reduction in the number of nouns used and an increase in the other parts of speech was observed. However, increases in language complexity for the mentally retarded subjects were observed to occur at a slower rate than for the normal population.

Using 80 patients from the same population as in the previous study, Wolfensberger, Mein, and O'Connor (1963) investigated core (communal) vocabulary and fringe (individual) vocabulary. They found that, although the number of core words increased with increasing MA and CA, the percentage of core words in the entire vocabulary decreased, thereby indicating an increase in fringe vocabulary. The authors reasoned that the core vocabulary of infants was "probably close to 100 per cent and their fringe vocabulary close to zero...with development, vocabulary diversifies..." (p. 41). Therefore, the percentage of core vocabulary used by the subjects declined even though the core vocabulary size increased.

Memory and learning.--Brown (1972) tested 12 institutionalized retardates with a CA range of 12-2 to 18-10 years ($\bar{X}$ CA=16 years). She found that when presented a short-term memory task the mentally retarded children showed a recency effect similar to young normals. Ellis and Munger (1966) also tested short-term memory in retardates. The CA range for their subjects was 16 to 25 years ($\bar{X}$ CA=20 years). Their subjects showed a primacy and recenty effect similar to normal four-year-olds.

Hagen and Raker (1971 in preparation, cited by Hagen, 1971) found that the retarded child's performance on a memory task improved when he was induced to employ rehearsal strategies. They also found, however, that the retarded child would not use such strategies unless pressured to do so.

Prem, Logan, and Towle (1972) studied the effect of pretraining on a rote learning task with a mentally retarded population. Analysis of data indicated that the mentally retarded subjects exhibited a pronounced deficit in the early stages of a rote learning task and that pretraining had no effect on performance.

Institutionalization.--The results of a series of studies conducted by Lyle (1959, 1960, 1960, and 1961) to determine the effects of institutionalization on the retarded individual showed that: 1) the development of

verbal intelligence is not enhanced by institutionalization, 2) language development is facilitated by a home environment, 3) the level of language development achieved by an institutionalized subject is predetermined by the level of language achieved prior to institutionalization and, 4) the language of the retarded child developes in the same manner as that of the normal subject, but at a slower rate with the greatest differences seen at the lower MA levels. Schlanger (1954) found that the language of the institutionalized mentally retarded subject was lower in output and suggested that this was due to inadequate motivation and stimulation for speech.

Specific Training Procedures

Baer, Guess, and Sherman (1972) describe their work with a ten-year old institutionalized severely retarded girl. The child, who had exhibited "no linguistic behavior" since the age of two, was taught to imitate vocalizations and to label and finally to produce grammatical productions of plurals. In another study, Baer and Guess (1973) employed differential reinforcement and imitation procedures to teach four "severely retarded" children (CA range from 11 to 16 years) to generate noun suffixes from newly taught verbs.

Hagen and McManis (1972) attempted to increase the ability for naming and describing in mental retardates.

Thirteen boys and seven girls enrolled in public school classes for the educable mentally retarded (EMR) were matched on the basis of a pretraining test (Experimental group: $\bar{X}$ CA=9-5, $\bar{X}$ MA=5-1, $\bar{X}$ IQ=64.7, Control group: $\bar{X}$ CA=9-9, $\bar{X}$ MA=4-9, $\bar{X}$ IQ=66.4). Thirty pictured objects and a taped description of each object were presented to the experimental group. Training in naming and describing objects was given over a 14 day period. The most significant results were seen in a reduction of unacceptable responses and increases in formal description responses to training items.

Bradley, Maurer and Hundziak (1966-1967) studied the effectiveness of "milieu therapy" and language training with 30 institutionalized mentally retarded children with an age range of 7 to 18 years. The Illinois Test of Psycholinguistic Abilities (ITPA) was used as a pre-test and post-test measure, and the effects of training were determined by performance on the ITPA. The experimental group showed significant raw score increases on six of the nine ITPA subtests. In addition, other IQ and language measures showed significant increases when compared to their own pre-tests.

Guess, Smith, and Ensminger (1971) studied the effectiveness of non-professionals teaching language skills to 40 mentally retarded children with a CA range of 4 to

18 years. The subjects were divided into two groups, a "high level" group (average MA=5) and a "low level" group (average MA=2,75). The Peabody Language Development Kit and specially written lessons were administered over an 18 month period. The ITPA was used for pre-test and post-test purposes. Both groups increased their raw score on the ITPA by 20 points and made "highly" significant increases when their post-tests were compared with that of their matched control groups.

Language Programs

Talkington and Hall (1970) applied a Matrix Language program (Gotkin, 1967) to a group of 20 institutionalized mongoloids with a mean CA of 24.2 ($\bar{X}$ IQ=40.7). The program was administered to groups of five subjects daily for 20 days. When comparisons of pre-and post-tests of the experimental group were made with those of a control group (20 subjects with a $\bar{X}$ CA=24.5 and $\bar{X}$ IQ=39.1), the significant gains were observed in language usage and ability to process concepts. The authors felt that analysis of these gains showed "that language and concept training with mongoloid subjects is both feasible and effective, at least in the immediate sense" (p. 90).

Berger (1972) outlined a program for the atypical deaf child. Nine deaf children ranging in age from 8 to 17 years who exhibited deviant behavior and little if any

language behavior received training for one and a half to two years in individual and group sessions. Significant improvement was seen in both areas for all subjects.

Several other programs have been designed to be used in language training with the mentally retarded person. Hallet, Sype, and Gates (1972) presented a language based curriculum guide for the severely retarded child, and Marshall and Hegrenes (1972) developed a therapy model designed to be used with the cognitively disorganized child. Miller and Yoder (1972) devised a method of teaching syntax to the mentally retarded child. Other language acquisition programs have been devised by Bricker (1972), Richardson (1967), and Risley, Hart, and Doke (1972). Recently, such a program has been devised in Michigan by Kent, Klein, Falk, and Guenther (1972) and modified by Rowland (1973). This modification of Kent's, et al., Language Acquisition Program (LAP) is known as the Modified Language Acquisition Program (MLAP).

The Modified Language Acquisition Program

Kent, et al., originally developed the Language Acquisition Program for use with the nonverbal mentally retarded, institutionalized child in the CA range of five to twenty years. Rowland's modification of the program incorporated the use of higher functioning mental retardates as language trainers for lower functioning mental

retardates. She also devised a language assessment form to be used with the training program.

Table 1 shows the structure of the program as modified by Rowland. The assessment as devised by Rowland (Appendix A) follows the structure of the program. In the program, Phase I, the attending phase, requires that (a) the subject be able to sit for at least 30 seconds without restraint or prompting, (b) the subject sit 30 seconds without exhibiting interfering behaviors, i.e., rocking, kicking, or stereotypic hand or arm movements, (c) the subject be able to obey the spoken command "Look at this," and (d) the subject make eye contact prior to each command in (c) above.

In Phase II the subject is required to imitate motor movements in response to a spoken command, "Do this," and the presentation of a visual stimulus of the motor pattern to be imitated. Section (a) requires the imitation of the movements necessary for hitting, lifting and releasing, lifting and moving, and touching and pointing. Section (b), motor imitation with body parts, requires imitation of hand and arm movements, touching of visible body parts, touching of body parts not visible and moving body parts not visible.

Phase III, vocal imitation requires the subject to imitate a vocal pattern following the command "Do this, say _____." The progression is from imitation of any sound

to imitation of the vowel sounds, imitation of one syllable words and fianlly imitation of two and three-word phrases.

Ability to encode names of common objects, room parts, body part, activities and objects not visible is the requirement of Phase IV, the basic receptive phase. Section (a) demands that the subject select an object upon request from a display of eight common objects placed before him following the command "Show me the _____." Four visible room parts are requested in the same manner (section b) as well as four body parts (section c). To complete section (d) the subject is required to perform six activities named by the examiner. Section (e) demands that the subject find eight different objects that have been placed out of his view. The command "Go get the ____" is used.

Phase V, an expansion of Phase IV follows the same format but requires that the subject give two objects, identify objects and room part together, differentiate between his own body parts and those of a doll, and finally, find two objects not visible. Carrier phrases are the same as phase IV with the exception of section (b) in which case the phrase is changed each time, demanding the understanding not only of object names and room parts but the prepositions "in" and "on" as well, i.e., "Put the spoon in the box" or "Put the baby on the chair."

Phase VI, naming objects, requires the subject to vocally respond in an intelligible manner when asked, "What is this?" The objects, body parts, room parts, and activities used in the previous phases are used as the stimulus items. The final section (e), of this phase requires the subject to name an object taken from his view but which he has just seen.

The final phase, the expressive expansion phase, is a measure of the subject's ability, in section (a), to respond to the interrogative sentence "What do you want?" The subject is shown the eight objects used previously which are contained in a box. The box is then removed from his sight and he is asked the question. His desire for an object is implied by his responding with an object name. Section (b) requires the subject to tell where an object is when asked, "Where is the _____?" Previously used objects and room parts are used for this section. The desirable responses are, i.e., "Baby on floor" or "Spoon in box." However, responses, i.e., "There," "There ____" or "____there," accompanied by a pointing response are accepted. In Section (c) the subject must give the appropriate vocal response "baby's" or "mine" to the question "Whose (body part) is this?" when a body part on the doll or the subject is pointed to by the examiner. In Section (d) the subject is to ask the examiner to perform an activity in response to the question, "What do you want me to do?" The remaining section

requires that the child name an object that is missing from three objects that he has just seen. The prescribed manner of scoring the assessment is to mark each response with one of the following: Correct (+), partially correct or an approximation ((+)), incorrect response (-), or no response (NR) or (0). One point is given for each correct response. For a more complete description of the LAP or the MLAP see Kent, et al., (1972) or Rowland (1973).

The "Critical Period" Theory

The above studies or programs conducted by Baer, Guess, and Sherman (1971), Baer and Guess (1973), Berger (1972), Bradley, Maurer, and Hundziak (1966-1967), Marshall and Hegrenes (1972), and others would indicate that positive results are affected by speech and language training with the mentally retarded. In some cases growth in language is achieved beyond adolescence.

On the other hand, regarding the mentally retarded, Lenneberg (1964) has stated "Since in these patients the proper development of brain mechanisms for language is arrested or severely slowed, there are no measures available for correction of symptoms (p. 160)." He suggested that parents be counseled against "taking the patient from one speech therapist to the next (p. 160)" as there is little encouraging evidence to support the success of such

TABLE 1.--Phase Structure of the MLAP.

I. Attending Phase
   A. Sitting
   B. Elimination of Incompatible Motor Responses
   C. Looking at Objects
   D. Pre-Trial Eye Contact

II. Motor Imitation Phase
   A. With Objects
   B. With Body Parts

III. Vocal Imitation Phase
   A. Gross Vocal
   B. Vowel
   C. Word
   D. Phrase

IV. Basic Receptive Phase (Understanding single words that label)
   A. Touching Objects
   B. Pointing to Room Parts
   C. Pointing to Body Parts
   D. Performing Activities
   E. Finding an Object (Not Visible)

V. Receptive Expansion Phase (Understanding combinations of words that label)
   A. Giving Trainer Two Objects
   B. Placing Object on Room Part

Table 1.--Continued.

	C. Pointing to Body Parts (self and baby's)
	D. Finding Two Objects (Not Visible)
VI.	Basic Expressive Phase (Using single words to label)
	A. Naming Objects
	B. Naming Room Parts
	C. Naming Body Parts
	D. Naming Activities
	E. Naming a Concealed Object
VII.	Expressive Expansion Phase (Using combinations of words to label)
	A. Asking for an Object
	B. Telling Where Object Is
	C. Telling Whose Body Part is Pointed To
	D. Telling Trainer to Perform an Activity
	E. Naming a Missing Object

Objects: ball, baby doll, car, comb, hat, key, shoe, spoon.

Body Parts: eye, hair, nose, teeth.

Room Parts: box, chair, floor, table.

Objects used for imitation: peg board with hammer, doll, supported vertical stick and ring, chair, hat, xylaphone, bell, blocks, glass, spoon.

Activities: eat, bounce ball, roll ball, jump, march, sit.

Other materials: doll with visible teeth.

Words: names of objects, names of room parts and body parts used plus "gone" and "mine."

therapy. He further stated that speech progress of the mentally retarded was steady but markedly slower than that of normals and that progress stabilizes:

> early in the first half of the second decade of life. Little further improvement of speech habits can be expected beyond the level of achievement reached at age twelve to fourteen. This does not preclude, however, the acquisition of some new words or names (p. 160).

Lenneberg further asserted that:

> His studies with deaf and retarded children had shown that the stages of language development could not be changed by any variation in deed or environmental circumstances (Smith and Miller, 1966, p. 270).

Lenneberg (1964) cited his own work (Lenneberg, Nichols, and Rosenberger, 1964) and that of Goda and Griffith (1962) to support these statements.

Lenneberg, Nichols, and Rosenberger (1964) studied 54 mongoloid children examined over a three year period. The subjects were non-institutionalized and ranged in CA from 6 months to 22 years. Data gathered from medical histories, neurological examination, psychological testings, tape recordings of spontaneous utterances, articulation tests, and vocabulary assessments acquired over the three year period were analyzed. The investigators noted some degree of speech progress in all of the subjects, but progress in language development was noted only in those children younger than fourteen years of age. The authors reported no theraputic procedures that may have been administered during the time of the study.

Goda and Griffith (1962) studied 106 institutionalized retardates with a CA range of 13 to 21 years with a median age of 16. The subject's MA range was 6 to 13 years with a median of 9-5 years. The subject's IQ's ranged from 45 to 84 with a median of 60. A single response to each of 25 pictures was obtained from each subject. The recorded responses were scored for sentence length, completeness and type. The articulation of 65 consonant elements was also tested. The findings were derived from a comparison of results with a study by Templin (1957) of language development in normal children. Goda and Griffith's subjects fell at or near the CA of 7 group level of Templin's normals in mean number of articulation errors and mean sentence length. No data is provided for individual age groups. The authors noted of their results:

> It proved possible to assign the sample an age location on the scale of normal development at roughly CA7. In light of the relatively small changes observed following CA 7, particularly in sentence usage measures, this finding does not seem to indicate a sizable amount of retardation in language (p. 497).

Lenneberg (1967) also uses his study (Lenneberg, et. al., 1964) to parallel the language learning problems of the aphasic child with the language learning problems of the mentally retarded individual. He found that children between 4 and 10 years of age who suffer a single hemisphere trauma after language has been acquired recovered

the facility of language completely. However, individuals past the age of 18 had a greatly reduced possibility of regaining total language function following such a trauma. He, thus, compared his observation of mongoloid children who showed no development in language beyond the age of 14 years with the aphasic children who displayed a reduced capacity for language learning when the onset of symptoms occurred after the age of 18 years.

Lenneberg (1967) suggested a "critical period" for language learning to explain these findings.

> The limiting factors postulated are cerebral immaturity on the one end and termination of a state of organizational plasticity linked with lateralization of function at the other end (p. 176).

The "critical period," then, is limited by physical changes in the brain which occur rapidly during the first two years of life and are stabilized by adolescence.

Statement of the Problem

Evidence from the literature to support Lenneberg's generalization of language learning problems in aphasic children to the language learning problems of the mentally retarded individual cannot be found. Further, there is little evicence in the literature to support or contradict a "critical period" for language learning in the mentally retarded. Most studies have been done with children under age 15. Those studies with older retardates, group the

subjects according to MA or IQ rather than CA. It appears that the CA of the mentally retarded as an independent variable, as it pertains to language acquisition, has been overlooked in research. Because of the broad implications regarding education of the mentally retarded suggested by a "critical period" of language learning, this study proposed to determine if post-pubic mentally retarded persons were indeed unable to increase the complexity of their language behavior, as suggested by Lenneberg.

CHAPTER II

EXPERIMENTAL PROCEDURE

Subjects

The subjects for this study were enrolled in a day training program for children diagnosed as severely mentally retarded. To be placed in this program the individual child must have an IQ $\leq$ 30. The subjects were divided into two groups: a pre-pubic and a post-pubic group. The subjects comprising the pre-public group had a CA less than 11 years. The subjects in the post-pubic group had a CA greater than 16 years. Each group had a total of eight subjects, four test subjects and four control subjects. The selection of subjects for the test and control groups were randomly determined.

The pre-pubic test group ranged in CA from 77 months to 127 months with a mean age of 104.75 months. The pre-pubic control group ranged in CA from 83 months to 119 months with a mean age of 104.5 months.

The CA range for the post-pubic test group was 217 months to 275 months with a mean age of 243.75 months. The CA range for the post-public control group was 201 months to 273 months with a mean age of 237.25 months.

Excluded from the study were subjects with uncorrected visual or known auditory acuity deficits, severe emotional disturbances, progressive diseases and subjects whose mental retardation was known to have been acquired after the perinatal period. One post-pubic test subject and two pre-pubic control subjects were classified as having Down's Syndrome. The other subjects were medically unclassified.

Two subjects from the post-pubic test group were receiving sedatives daily to control hyperactivity. One of these subjects was also receiving an antihistimine to control an allergy. The remaining two subjects from this test group were receiving no medication. Three subjects from the post-pubic control group were receiving anticonvulsants daily.

One subject from the pre-pubic test group received anticonvulsants daily. The remainder of the test group as well as the pre-pubic control group received no medication.

Materials

The Modified Language Acquisition Program (MLAP) [as adapted by Rowland (1973) from the Language Acquisition Program (LAP) for the retarded by Kent, et al., 1972] and the accompanying language assessment test were employed for language training. The testing and training were administered as prescribed with the exception of the scoring

of the assessment. Rowland specified that one point be given for each correct response and no points be given for any other response. For the purposes of the present study half of a point was given for partially correct responses or approximations in Sections III-c and -d, and V-a, -b, and -d. For Section III-c, the vowel sound alone was considered an incorrect response. However, the vowel plus a correct consonant in either the initial position or the final position which was given in the correct order was considered a partially correct response. Words having the correct vowel and distorted consonants were also accepted as partially correct. Section III-d required that one word of a two word phrase be given to be partially correct, and consonant distortions were acceptable in that word. Sections V-a, -b, and -d, required one half of the response to be correct, i.e., giving the examiner one of the two objects requested, recognizing either the correct object or the correct room part on which the object was to be placed, or finding one of the two objects not visible. Criteria set by Rowland for passing each section was 90 percent of the responses correct. A total of 383 points were possible on the assessment.

Design and Method of Presentation

The experimental design followed a pre-test, training, post-test format. All subjects were individually

administered a MLAP assessment pre-test. The test subjects then received instruction in the MLAP program in the prescribed manner. The control subjects received no special training but followed their regular classroom instruction throughout the training period. At the end of the training period all subjects were again administered the MLAP assessment. All testing and training was carried out by the experimenter, a speech therapist experienced in using behavior modification principles with the mentally retarded population, and familiar with concepts of the development of speech and language.

Generally speaking, the basic principles of shaping, prompting and fading, and differential reinforcement were used. All subjects of the post-pubic group with one exception received social reinforcement only. One subject in the test group received a primary reinforcer. All subjects from the pre-pubic group received food reinforcement except one test subject, who was reinforced with a toy car. All primary reinforcers were paired with social reinforcers. During the administration of the assessment all responses, correct, partially correct or incorrect, were reinforced as prescribed. During the training portion of the program a schedule of continuous reinforcement of correct or partially correct responses was maintained.

The level at which each child began the MLAP was determined by the number of correct responses he was able

to make in each phase of the assessment as prescribed by the program. The levels failed on the pre-test by each subject and the levels where training was begun are presented in Table 2. Upon mastering a section in the program, the subject then proceeded to the subsequent section, as defined by the MLAP.

Each test subject received individual training in the program twenty minutes each day, three days a week for five weeks, for a total of five hours. Assessment and training was carried out in two rooms which were typically used on a daily basis for speech therapy. (See Appendix B for detailed description.)

Table 2.--Pre-test, Training, and Post-test Phase Profile for Pre-pubic and Post-pubic Test Subjects.

Pre-Pubic Subject	Age in Years & Months	Phases Failed Pre-test	Phases Training Began	Phases Showing Increase
S.B.	8-11	All areas except I A,B	II A,B*	I C,D II A,B III B,C,D IV A,B,D,E V A,B,C,D VI A
J.S.	9-0	All areas except I A,B	II A,B*	I C,D
D.S.	6-5	All areas except I A,B,C,D II A	II B	II B III A,B,C IV A,B,C,D,E V C
J.Y.	10-7	All areas except I A,B	II A,B*	I C,D II A,B

Table 2.--Continued.

Post-Pubic Subject	Age in Years & Months	Phases Failed Pre-test	Phases Training Began	Phases Showing Increase
B.G.	18-1	III C,D IV C V A,B,C,D VII B,C,D,E	III C,D IV C V A,B,C	III C,D V A,B,C VI A
E.P.	19	IV C,D,E V B,C,D VII A,B,C,D,E	IV C,D,E V A	IV E V A,B,C,D VI A,E VII A,B,E
R.R.	22-11	All areas except I A,B	II A,B*	I C,D II B III A
R.V.	21-3	II B III B,C,D IV D V A,D VI A,B,C,D,E VII A,B,C,D,E	II B III B IV D V A,D	II A,B III B V A,D

*Training in Phase I C and D was incorporated with later pahses by the experimenter rather than separately as prescribed by Rowland.

CHAPTER III

RESULTS

A pre-test and post-test percent correct score was determined for each individual subject. A comparison of scores was made of the within subjects scores, between test and control groups within the separate age groups, and finally between the two test groups. This data can be found in Figures 1 through 3.

Table 3 presents the pre-test and post-test scores and their differences for all subjects. Table 3 also shows that the post-pubic test group showed an increase in test scores from pre-test to post-test, with a range of increase from three percent to 11 percent and a mean increase of six percent. The post-pubic control group demonstrated a mean decrease between pre-test and post-test of minus one percent with a range of score differences from minus five percent to less than one percent.

Table 3 also shows that the pre-pubic test group showed an increase between pre-test and post-test scores with a range of increase from two percent to 16 percent, with a mean increase of seven percent. The pre-pubic control group showed a mean increase of one percent with

a range of scores between minus two percent to six percent. These results are summarized in Table 4.

Examination of Table 2 shows that all test subjects except one made improvements in sections where direct training occurred. The exception, J.S. from the pre-pubic group, displayed an increase in eye contact and looking behavior, the training of which occurred under Phase II-a. Further examination of Table 3 shows that the subject displaying the greatest increase in the pre-pubic group, S.B., improved in the pre-vocal areas as well as the verbal areas. Another subject, D.S., also showed increases in the verbal area. All subjects showed increases in the pre-verbal areas of attending or motor imitation. From Table 3 we note that, generally speaking, the pre-pubic test subjects with the highest initial scores made the most increase, while those with the lowest initial scores made the least increase.

In the post-public group all subjects showed increases in understanding words or combinations of words that label either visible or not visible as well as increases in vocal imitation of vowels, words or phrases with one exception, R.R. Subject R.R. had the smallest initial score and made the smallest gains. However, this subject made increases in the gross vocal imitation section as well as the attending and motor imitation sections.

TABLE 3.--Individual Pre-test and Post-test Scores for All Subjects.

	Age in Year & Month	Pre-test %	Post-test %	D
Test Subject		Pre-pubic Group		
S.B.	8-11	21.6	37.2	15.6
J.S.	9-0	17	19	2
D.S.	6-5	39.4	45.1	5.7
J.Y.	10-7	19	24	5
Control Subject				
J.B.	9-10	23.7	24.5	0.8
D.C.	6-11	23	23	0
E.K.	9-11	38	36	-2
K.P.	8-2	20	26	6
Test Subject		Post-pubic Group		
B.G.	18-1	69.1	72.8	3.7
E.P.	19-0	69	80	11
R.R.	22-11	35	38	3
R.V.	21-3	45.9	49.6	3.7
Control Subject				
T.M.	17-2	16.3	16.7	0.4
J.M.	22-5	53.6	53.1	-0.5
R.M.	16-9	72	67	-5
N.R.	22-9	81.2	80.4	-0.8

TABLE 4.--Summary of Group Data

	Mean Age	Mean Pre-test	Mean Post-test	D
		Pre-pubic Group		
Test Subjects	104.5 mo.	24.2%	31.4%	7.1%
Control Subjects	104.75 mo.	26.3%	27.6%	1.3%
		Post-pubic Group		
Test Subjects	243.75 mo.	54.7%	60.2%	5.5%
Control Subjects	237.25 mo.	55.8%	54.4%	-1.4%

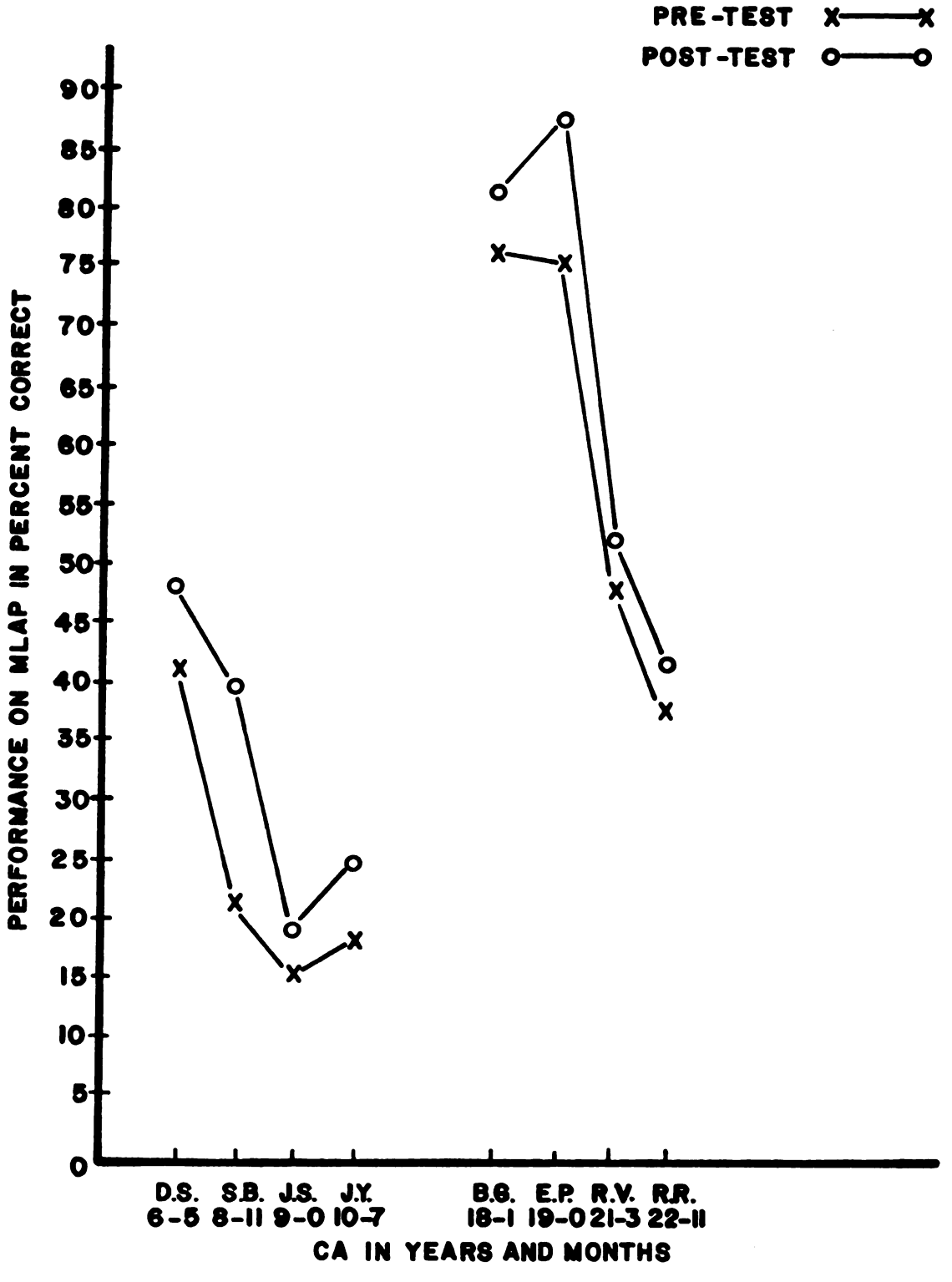


Figure 1.--Pre-test and Post-test Percentage Scores for Individual Test Subjects.

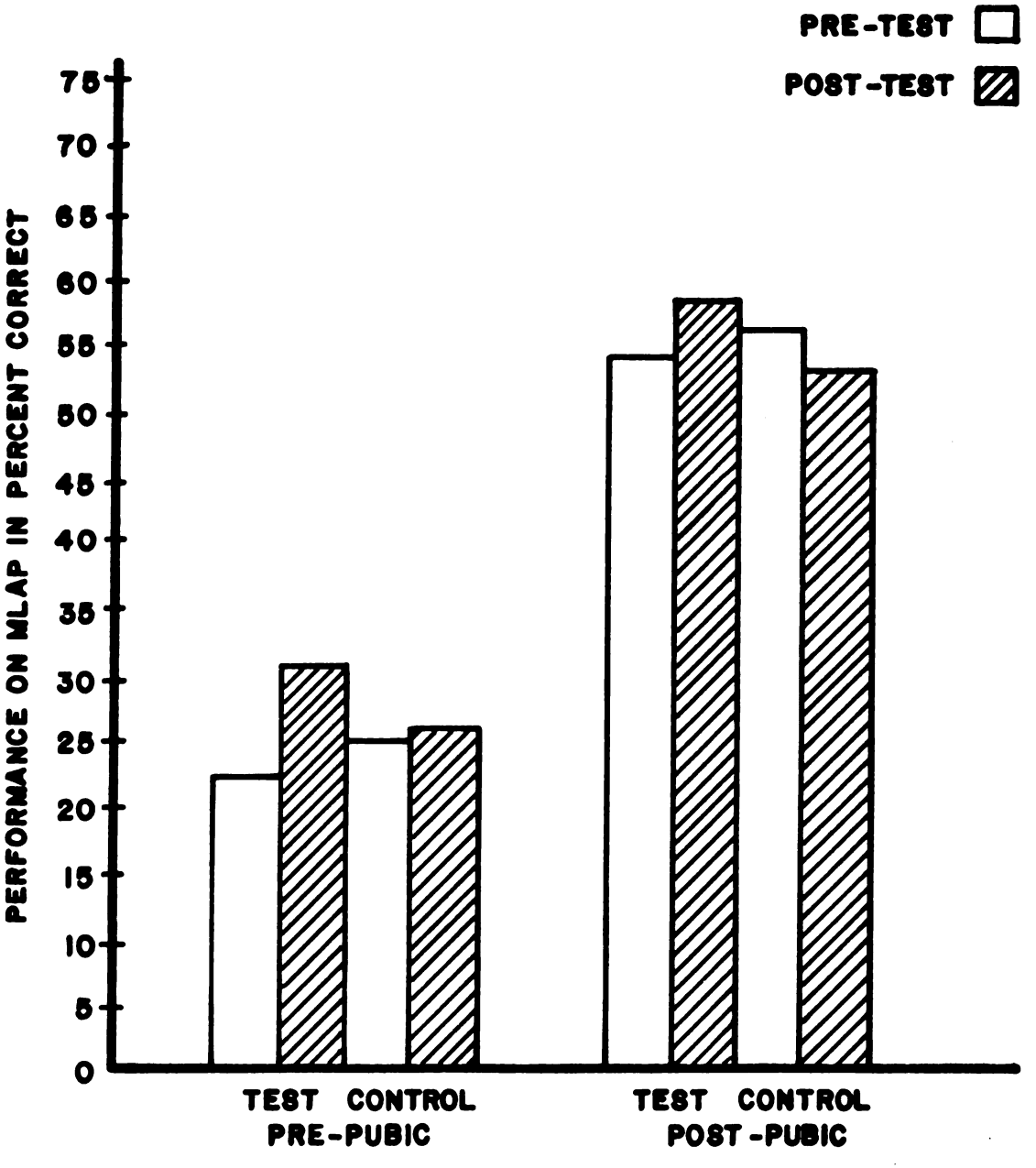


Figure 2.--Pre-test and Post-test Percentages for all Groups.

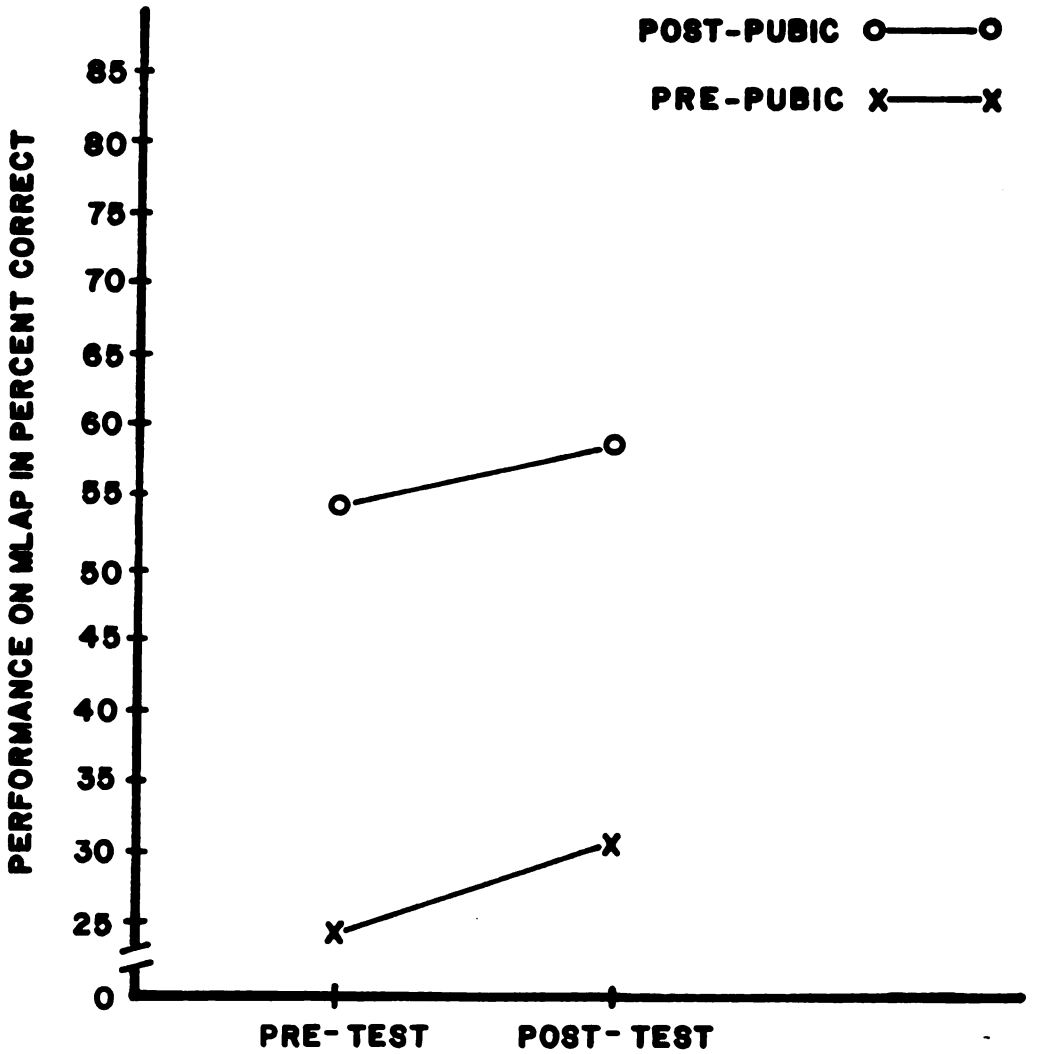


Figure 3.--Comparison of Pre-test and Post-test Scores of Test Groups.

CHAPTER IV

DISCUSSION

Examination of Table 2 shows the language level of the test subjects to be severely depressed. Initially, only one subject in the post-pubic group had a level of vocal imitation high enough to pass the vocal imitation phase of the MLAP assessment. The three other subjects in this group displayed receptive language skills but not imitative speech. None of the subjects in the pre-pubic group were able to pass the MLAP assessment requirements for imitative speech. Also, levels of receptive speech, if present, were not great enough to pass the receptive language requirement on the MLAP assessment.

However, a mean six percent increase in language behavior was seen in the post-test scores of the post-pubic group and a mean seven percent increase in language behavior was seen in the post-test scores for the pre-pubic group. These scores represent increased language behavior in subjects exhibiting severely retarded language behavior. No significant amount of difference was seen in the rates of increase in language behavior between the test groups, suggesting that a similar rate of learning

resulted within the two groups albeit at different levels.

It can be seen in Figure 2 that there was a significant amount of difference in the language of the pre-pubic and post-pubic groups as measured by the MLAP assessment device. Assuming that the MLAP was an adequate measure of language in this situation it would appear that the subject had experienced growth in language development from the pre-pubic through the post-pubic years. Further investigation with subjects whose ages fall between those of the pre and post-pubic groups may suggest the ages at which language, as it is measured by the MLAP, is acquired.

Evidence Against the "Critical Period" Theory

Lenneberg (1967) suggested a "critical period" for language learning which is physiologically determined by "cerebral immaturity at one end and termination of a state of organizational plasticity...at the other end (1967, p. 176)." He presented data from his studies with aphasic children and mentally retarded individuals. He then drew a comparison between the language learning behaviors of the two groups to support the theory for reduced capacity for language learning as a result of the termination of the "critical period." That the comparison between these groups may be invalid and that the theory of a "critical period" may not be operational for the

mentally retarded is observed from the results of previous research, the results of the present study, and the categorical differences between the aphasic child and the mongoloid individual.

That the language behavior of mentally retarded subjects of any CA or IQ can be modified has been shown by several investigators. Baer, Guess and Sherman (1972), Baer and Guess (1973), Bradley, Maurer and Hundziak (1966-1967), Guess, Smith and Ensminger (1971), and Berger (1972) observed growth in dimensions of language behavior as the result of theraputic techniques in severely and moderately retarded children 18 years of age and under. Talkington and Hall (1970) found language training "feasible and effective (p. 90)" as a result of their work with institutionalized mongoloids ($\bar{X}$ CA=24.2, $\bar{X}$ IQ=40.7).

In the present study growth in language behavior in subjects older than 18 years of age was equal to that of pre-adolescent subjects. Interestingly, the only mongoloid test subject, 19-year-old E.P., gained 11.3 percent from pre-test to post-test. This was second only to subject S.B. of the pre-pubic group who achieved a 15.1 percent increase between pre-test and post-test. The third highest percent of increase from either group was 5.7 percent. The results cited above are contrary to the findings of Lenneberg, Nichols and Rosenberger (1964).

Lenneberg, et al., found in their study of 54 mongoloids ranging in age from six months to 22 years that language behavior increased in all subjects below the age of 14 years, but not in those above that age. Lenneberg cites Goda and Griffith (1962) to support the theory that in the individual past the age of 14 years the "progress in language learning comes to a standstill after maturity (Lenneberg, 1967, p. 155)." Goda and Griffith, however, do not seem to support this theory. They found that their population of mentally retarded subjects fell at or near the CA of 7 years of Templin's (1957) normal subjects and observed that little further growth in language behavior occurred beyond the CA of 7. The conclusion appears warranted, therefore, that much further growth in language learning would not have been expected, simply because the subjects in Lenneberg's study may have reached a plateau in language maturity.

It is also possible that Lenneberg's subjects if they had not reached language maturity may have acquired what language they needed to function adequately in their environment, which may have been limited by other variables related to mental retardation. It appears that Lenneberg may have assumed a need for growth in language behavior in his subjects, when in fact such a "need" on the part of the speaker/listener was not present.

That a question of the validity of a comparison of language learning behaviors in aphasic children and mongoloid subjects to support the "ciritcal period" theory may arise is observed first, in the differing etiologies of the two conditions. Mongolism is a manifestation of a chromosomal irregularity probably present from inception. Aphasia, however, is an acquired condition, often caused by trauma. Secondly, the condition of mongolism as well as other classifications of mental retardation, characteristically exhibit various degrees of general retardation of intellectual functioning. General retardation, however, is not often found in children with normal premorbid intellectual functioning who have acquired aphasia. Thirdly, the mentally retarded subjects may have various degrees of a number of concomitant conditions, i.e., deficiencies in visual or auditory acuity or perception, motor handicaps, and social or environmental restrictions. These factors may not be operational in the aphasic subject. Most important, however, is the possibility suggested by Berry (1969) that in the aphasic subject "disturbed and enfeebled potentials in the ailing hemisphere interfere with the potentials of the minor hemisphere and thus retard learning...(p. 43)." It would thus appear difficult to compare the language learning behavior of the aphasic child to the language learning behavior of the mentally retarded individual.

Implications for Language Intervention

Because of the small sample used in this study and because the sample was not strictly controlled for etiology the findings cannot be fairly generalized. Also, because mentally retarded individuals were used in this study, the results should not be generalized to normal individuals or to subjects with acquired neural pathologies. However, the amount of increased language ability obtained during this brief training period suggests that language therapy is of value to the mentally retarded subject, even for those below the IQ of 30. That there was not a significant amount of difference between the two test groups in pre-test and post-test, indicates a potential ability for language growth even in those subjects past the "critical period" for language acquisition.

Implications for Further Research

Further study with finer age classifications including the ages between those of the populations used in the present study, study with greater numbers of subjects within age groups, as well as longer training periods are needed to make it possible to generalize language learning behaviors relative to age.

Because this study did not control for etiology the question is raised, "Is there a learning difference

in various etiological categories of mental retardation which are related to age?" This question should also be investigated before generalizations regarding language learning behavior of the mentally retarded are made.

It may also be advisable to use other test/training instruments. Specifically, testing instruments that measure gestural expression, conceptual levels and semantic intent while not placing too early an emphasis on oral speech are advisable. Training instruments that incorporate non-oral means of communication would also be advisable.

The present study raises the question of the appropriateness of various language acquisition programs for populations differing in age or etiology.

APPENDICES

APPENDIX A

THE MODIFIED LANGUAGE ACQUISITION PROGRAM TERMINAL MEASURES TO ACCOMPANY THE MODIFIED LANGUAGE ACQUISITION PROGRAM

THE MODIFIED LANGUAGE ACQUISITION PROGRAM FINAL TESTS
TO ACCOMPANY THE MODIFIED LANGUAGE ACQUISITION PROGRAM*

Student _____ Reinforcer:

Date _____ A. Check one:
_____Token _____No Token

Examiner _____ B. Check one or more and specify
_____Food: 1. solid _____
2. soft _____
3. drink _____

Test Purpose: Check One

___Initial Test

___Follow-Up Final Test (1,2,3,4) __Other: 1. toy _____
2. Other _____

GENERAL DIRECTIONS: The child's performance on each trial is recorded in the blank following the response as one of the following:

+	correct response
(+)	approximation
-	incorrect response
NR	no response

With the exception of the first two parts in the Attending Phase (see the description for those parts in the testing manual) each correct response is worth one point and all other responses are not worth any points or franction of points.

SUMMARY OF SCORES: Number of possible points follow individual part, and number of points needed to pass are in parenthesis. Total scores, enter them below, and circle training area(s).

* MLAP was adapted from: Kent, L., Klein, D., Falk, A., and Guenther, H., "A Language Acquisition Program for the Retarded." In McLean, J. E. and Schiefelbush, R. L., (eds.) Language Intervention with the Retarded: developing strategies, Baltimore, Maryland: University Park Press 1972; by Martha S. Rowland, Michigan State University, Department of Elementary and Special Education, 1972.
The MLAPFT are meant to be accompanied by the testing and training procedures described in: A Modified Language Acquisition Program for use by Attendants and Attendant-Supervised Retarded Trainer-Student Pairs, Martha S. Rowland, 1972.

I. Attending Phase
- A. Sitting - 30 ___ (30)
- B. Elimination of ICMR - 30 ___ (30)
- C. Looking at objects - 5 ___ (5)
- D. Pre-Trial Eye Contact - 5 ___ (5)

II. Motor Imitation Phase
- A. With Objects - 8 ___ (7)
- B. With Body Parts - 8 ___ (7)

III. Vocal Imitation Phase
- A. Gross Vocal - 3 ___ (3)
- B. Vowel - 12 ___ (11)
- C. Word - 36 ___ (33)
- D. Phrase - 20 ___ (No passing score)

IV. Basic Receptive Phase (Understanding single words that label).
- A. Touching Objects - 16 ___ (15)
- B. Pointing to Room Parts - 8 ___ (7)
- C. Pointing to Body Parts - 8 ___ (7)
- D. Performing Activities - 12 ___ (11)
- E. Finding an Object - 16 (Not Visible) ___ (15)

V. Receptive Expansion Phase (Understanding combinations of words that label).
- A. Giving Trainer 2 Objects-10 ___ (9)
- B. Placing Object on Room Part - 10 ___ (9)
- C. Pointing to Body Parts-16 (self and baby's) ___ (15)
- D. Finding 2 Objects - 10 (Not Visible) ___ (9)

VI. Basic Expressive Phase (Using single words to label)
- A. Naming Ojbects - 16 ___ (15)
- B. Naming Room Parts - 8 ___ (7)
- C. Naming Body Parts - 8 ___ (7)
- D. Naming Activities - 12 ___ (11)
- E. Naming a Concealed Object - 16 ___ (15)

VII. Expressive Expansion Phase (Using combinations of words to label)
- A. Asking for an Object - 4 ___ (4)
- B. Telling Where Ojbect Is-16 ___ (15)
- C. Telling Whose Body Part is Pointed to - 16 ___ (15)
- D. Telling Trainer to Perform an Activity - 6 ___ (4)
- E. Naming a Missing Object-8 ___ (7)

SCORING SECTION PERFORMANCE

I. Attending Phase

I-A Sitting Still: Note whether child sits without prompts or receipts of reinforcers for 30 seconds. If less than 30 seconds, note number of seconds child sits: _____ seconds

_____

I-B Elimination of Incompatible Motor Responses (Getting rid of movements that interfere with training): Note whether child exhibits incompatible motor behavior within the 30 second sitting period; if so, note number of seconds child sits with ICMR: _____Seconds _____

Description of any ICMR: _____

I-C Looking at Objects: Note whether child looks at correct objects when trainer says, "Look at this," and points to the objects. Total _____

1. key spoon comb baby car _____
2. key spoon comb baby car _____
3. key spoon comb baby car _____
4. key spoon comb baby car _____
5. key spoon comb baby car _____

I-D Pre-Trial Eye Contact: Trainer presents initial Inventory "C" again, delaying each trial slightly (may wait 5 seconds giving each child an opportunity to look at her before giving the command to "Look at this." Note whether child looks at trainer (without prompting) prior to each of the 5 "look at this" trials. Total _____

1. spoon comb kay baby car _____
2. spoon comb key baby car _____
3. spoon comb key baby car _____
4. spoon comb key baby car _____
5. spoon comb key baby car _____

II. Motor Imitation Phase: Trainer says, "Do this," and presents the following imitative models for the child to imitate.

II-A Imitation with Objects Total _____

1. Hammer a peg on a toy peg table _____
2. Point to a chair _____
3. Place a single ring on a supported vertical stick _____
4. Point to a chair _____
5. Put a hat on one's head _____
6. Put a hat on one's head _____
7. Place a single ring on a supported vertical stick _____
8. Hammer a peg on a toy peg table _____

II-B Imitation with Body Parts Total _____

1. Touch one's nose _____
2. Stick tongue out of mouth _____
3. Stick tongue out of mouth _____
4. Touch stomach with both hands _____
5. Touch one's nose _____
6. Put both arms straight out horizontally at sides _____
7. Touch stomach with both hands _____
8. Put both arms straight out horizontally at sides _____

III. Vocal Imitation Phase

III-A Gross Vocal Imitation: Trainer says, "Do this, say 'ah'" presenting three times for the child to imitate. Total _____

1. "Do this, say 'ah'" _____
2. "Do this, say 'ah'" _____
3. "Do this, say 'ah'" _____

III-B Vowel Imitation: Trainer say, "say 'ah'", presenting each vowel for the child to imitate. Total _____

1. /a/ _____
2. /i/ _____
3. /o/ _____
4. /i/ _____
5. /u/ _____
6. /a/ _____
7. /i/ _____
8. /u/ _____
9. /o/ _____
10. /a/ _____
11. /o/ _____
12. /u/ _____

III-C Word Imitation: Trainer says, "Say hat," presenting each word for the child to imitate.

1. hat	_____	19. floor	_____
2. gone	_____	20. ball	_____
3. floor	_____	21. shoe	_____
4. nose	_____	22. nose	_____
5. comb	_____	23. hair	_____
6. car	_____	24. car	_____
7. comb	_____	25. gone	_____
8. table	_____	26. table	_____
9. eye	_____	27. baby	_____
10. hat	_____	28. teeth	_____
11. spoon	_____	29. key	_____
12. shoe	_____	30. ball	_____
13. spoon	_____	31. baby	_____
14. chair	_____	32. box	_____
15. hair	_____	33. eye	_____
16. box	_____	34. mine	_____
17. chair	_____	35. mine	_____
18. key	_____	36. teeth	_____

III-D Phrase Imitation: Trainer says, "Say key and comb," presenting each phrase for the child to imitate. Total _____

1. Key and comb	____	11. Baby's eye	____
2. Key on chair	____	12. Spoon baby	____
3. My hair	____	13. Baby floor	____
4. Baby floor	____	14. Key on chair	____
5. My hair	____	15. Baby's hair	____
6. Key and comb	____	16. My teeth	____
7. Hat and spoon	____	17. Baby's eye	____
8. Spoon baby	____	18. Baby's hair	____
9. Hat and spoon	____	19. My eye	____
10. My teeth	____	20. My eye	____

IV. Basic Receptive Phase (Understanding single words that label)

IV-A Touching Objects: Trainer places objects on table in front of child and within his reach and says, "Show me the comb." Total _____

1. comb	_____	9. hat	_____
2. car	_____	10. spoon	_____
3. comb	_____	11. baby	_____
4. key	_____	12. key	_____
5. ball	_____	13. shoe	_____
6. ball	_____	14. shoe	_____
7. car	_____	15. baby	_____
8. spoon	_____	16. hat	_____

IV-B Pointing to Room Parts: Trainer places a box and chair in view of the child and says, "Show me the floor." Total _____

1. floor	_____	5. floor	_____
2. box	_____	6. chair	_____
3. table	_____	7. table	_____
4. chair	_____	8. box	_____

IV-C Pointing to Body Parts: Trainer faces child and says, "Show me (child's name) nose." Total _____

1. nose	_____	5. eye	_____
2. eye	_____	6. nose	_____
3. teeth	_____	7. hair	_____
4. teeth	_____	8. hair	_____

IV-D Performing Activity: Trainer places a ball and food on the table in front of the child. Both trainer and child stand as trainer gives each command. Note response to: Total _____

1. jump	___	7. sit	___
2. sit	___	8. jump	___
3. roll the ball	___	9. eat	___
4. march	___	10. bounce the ball	___
5. roll the ball	___	11. bounce the ball	___
6. march	___	12. eat	___

IV-E Finding Objects - Not Visible: Objects are placed behind the screen while the child watches. Trainer says, "Go get the ball." Total _____

1. ball	_____	9. hat	_____
2. spoon	_____	10. shoe	_____
3. key	_____	11. comb	_____
4. baby	_____	12. car	_____
5. spoon	_____	13. comb	_____
6. key	_____	14. car	_____
7. baby	_____	15. hat	_____
8. ball	_____	16. shoe	_____

V. Receptive Expansion Phase (Understanding two words that label)

V-A Giving Trainer Two Objects: Trainer places all objects on table and says, "Give me the car and the baby." (Hold out both hands) Total _____

1. car and baby	____	6. shoe and comb	_____
2. spoon and hat	____	7. baby and ball	_____
3. key and car	____	8. baby and shoe	_____
4. key and car	____	9. shoe and spoon	_____
5. car and spoon	____	10. baby and comb	_____

V-B Placing Objects on Room Parts: Trainer places all objects and the box on the table and says, "Put the spoon in the box." Total _____

1. spoon in box	_____	6. baby on table	_____
2. car in box	_____	7. key on chair	_____
3. spoon on floor	_____	8. baby in box	_____
4. shoe in box	_____	9. comb on floor	_____
5. car on table	_____	10. car on chair	_____

V-C Touching Body Parts (Self and Baby's): Trainer places a doll in front of child and says, "Show me the baby's teeth." Total _____

1. baby's teeth	_____	9. baby's teeth	_____
2. child's teeth	_____	10. child's eye	_____
3. child's teeth	_____	11. baby's hair	_____
4. child's hair	_____	12. child's nose	_____
5. child's hair	_____	13. child's nose	_____
6. baby's eye	_____	14. child's eye	_____
7. baby's hair	_____	15. baby's nose	_____
8. baby's eye	_____	16. baby's nose	_____

V-D Finding two Objects (Not Visible): Objects are placed behind the screen while child watches. Trainer says, "Go get the comb and the shoe."

Total _____

1. comb and shoe	_____	6. baby and car	_____
2. key and hat	_____	7. baby and car	_____
3. Hat and shoe	_____	8. shoe and baby	_____
4. hat and shoe	_____	9. comb and hat	_____
5. car and spoon	_____	10. spoon and baby	_____

VI. Basic Expressive Phase (Using single words to label)

VI-A Naming Objects: Trainer says, "What is this?" as each object is held up, one at a time.

Total _____

1. key	_____	9. hat	_____
2. baby	_____	10. spoon	_____
3. car	_____	11. key	_____
4. baby	_____	12. ball	_____
5. car	_____	13. hat	_____
6. shoe	_____	14. comb	_____
7. comb	_____	15. spoon	_____
8. ball	_____	16. shoe	_____

VI-B Naming Room Parts: Trainer notes the child's response while pointing to various room parts and says, "What is this?" Total _____

1. chair	_____	5. floor	_____
2. box	_____	6. table	_____
3. chair	_____	7. table	_____
4. box	_____	8. floor	_____

VI-C Naming Body Parts: Trainer notes child's response as she points to his body parts and to the child's body parts and says, "What is this?" Total _____

1. teeth _____
2. nose _____
3. nose _____
4. eye _____
5. eye _____
6. hair _____
7. teeth _____
8. hair _____

VI-D Naming Activities: Trainer performs activity and then says "What did I do?" Total _____

1. eat ___
2. sit ___
3. roll the ball ___
4. bounce the ball ___
5. jump ___
6. bounce the ball ___
7. roll the ball _____
8. sit _____
9. march _____
10. jump _____
11. march _____
12. eat _____

VI-E Naming Concealed Objects: Trainer notes child's response while showing object to child, placing it in box, covering box, and saying, "What is in the box?" Total _____

1. ball _____
2. baby _____
3. car _____
4. baby _____
5. car _____
6. shoe _____
7. comb _____
8. shoe _____
9. hat _____
10. spoon _____
11. key _____
12. ball _____
13. comb _____
14. key _____
15. spoon _____
16. hat _____

VII. Expressive Expansion Phase (Using combinations of words to label)

VII-A Asking for Objects: Trainer notes child's response when he shows child box of eight objects, then tips it away or put under the table, and says, "What do you want?" Total _____

1. "What do you want?" ___
2. "What do you want?" ___
3. "What do you want?" ___
4. "What do you want?" ___

VII-B Telling where an object is: Trainer puts the object on the room part as the child watches and then notes the child's response when asking, "Where is the baby?" Total _____

1. baby on floor _____
2. spoon in box _____
3. comb on table _____
4. comb on chair _____
5. spoon on table _____
6. spoon in box _____
7. car on floor _____
8. hat on floor _____
9. ball on chair _____
10. key on table _____
11. key in box _____
12. ball on floor _____
13. car on table _____
14. baby in box _____
15. shoe in box _____
16. hat on table _____

VII-C Telling whose body part is pointed to: Trainer points to body part on either the doll or the child and notes whether the child correctly answers with either "baby's," "mine," etc., in response to the question, "Whose nose is this?" Total _____

1. baby's nose _____
2. baby's teeth _____
3. baby's hair _____
4. baby's nose _____
5. baby's eye _____
6. child's teeth _____
7. child's nose _____
8. child's nose _____
9. baby's teeth _____
10. child's eye _____
11. baby's hair _____
12. child's eye _____
13. child's eye _____
14. child's teeth _____
15. baby's eye _____
16. child's hair _____

VII-D Telling Trainer to Perform an Activity: Trainer notes child's response to the question, "What do you want me to do?", performing each activity requested by the child after the question Total _____

1. What do you want me to do? _____
2. What do you want me to do? _____
3. What do you want me to do? _____
4. What do you want me to do? _____
5. What do you want me to do? _____
6. What do you want me to do? _____

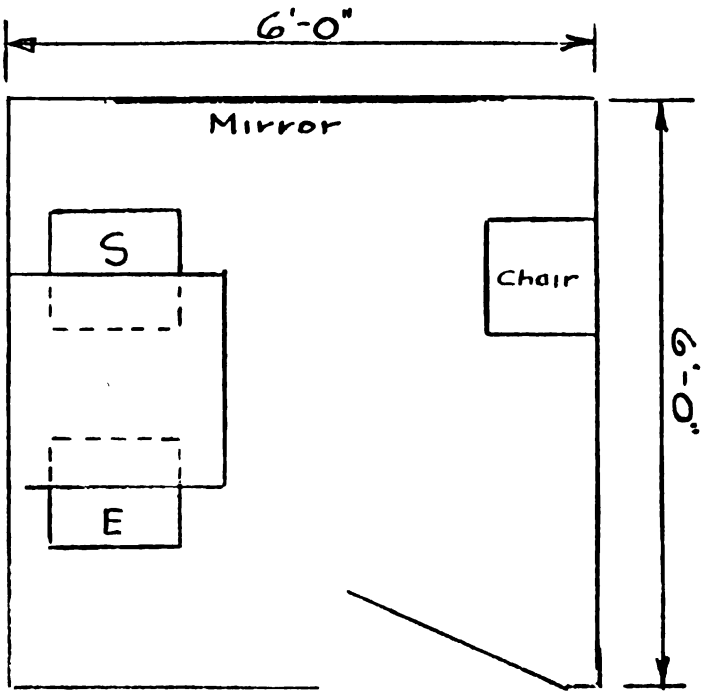
VII-E Naming Missing Objects: As the child watches trainer places 3 objects in a box and removes one out of his view and then notes whether child names object missing from the group of 3 that he has just seen. Trainer asks, "What is gone?" Total _____

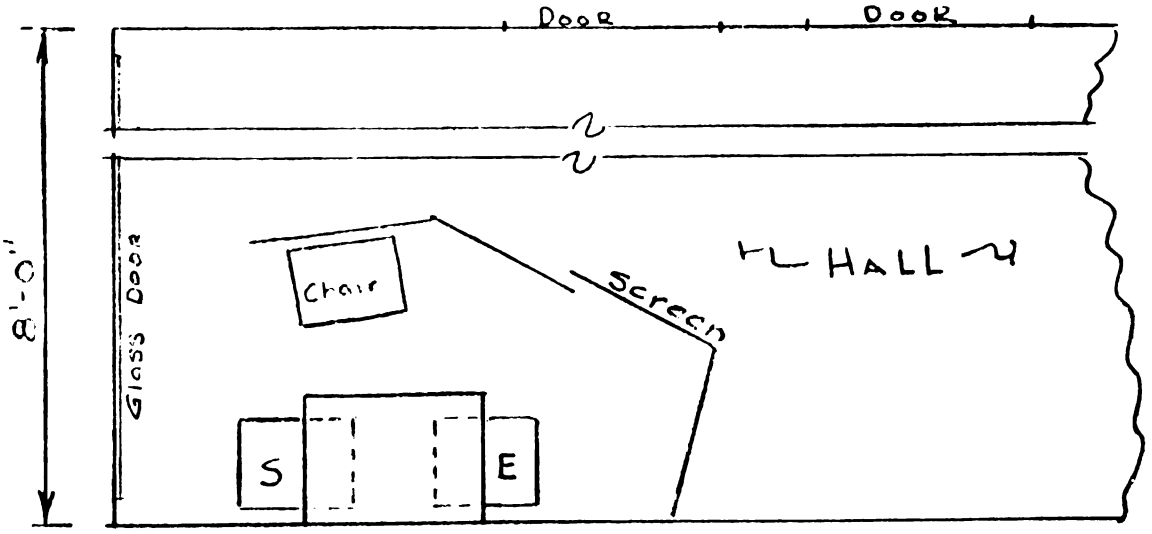
1. spoon baby key _____
2. comb ball car _____
3. comb car baby _____
4. baby comb ball _____
5. key ball hat _____
6. car hat comb _____
7. hat spoon shoe _____
8. key baby spoon _____

Comments:

APPENDIX B

TEST/TRAINING AREA DESCRIPTION





PLAN

Scale 1/2"=1'-0"

LIST OF REFERENCES

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