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The Relationships Between Mental Age, Level of Language Functioning and Social Acceptability in the Trainable Mentally Retarded.

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THE RELATIONSHIPS BETWEEN MENTAL AGE, LEVEL
OF LANGUAGE FUNCTIONING AND SOCIAL ACCEPTABILITY
IN THE TRAINABLE MENTALLY RETARDED.

The Louisiana State University and Agricultural
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THE RELATIONSHIPS BETWEEN MENTAL AGE, LEVEL
OF LANGUAGE FUNCTIONING AND SOCIAL
ACCEPTABILITY IN THE TRAINABLE
MENTALLY RETARDED

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
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in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Speech

by
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ABSTRACT

The purpose of this study was to explore the language ability of the trainable mentally retarded and its relationship to chronological and mental age, as well as to sex and placement (institutionalized or non-institutionalized). The nature of the relationship between language ability and social acceptability was also investigated.

Eighty subjects in the trainable mentally retarded range constituted the sample studied. A measure of intelligence (Leiter International Performance Scale), four speech and language measures (Arizona Articulation Proficiency Scale, Illinois Test of Psycholinguistic abilities, receptive and expressive Peabody Picture Vocabulary Test), and ratings of functioning level and social acceptability were obtained for each subject. The functioning level and social acceptability judgments were made by four judges who were trained speech pathologists or psychologists, the assumption being that they represented key professionals who were largely responsible for the assessment and training of the retarded.

It was determined that institutionalization does not significantly affect language ability or social acceptability. It did affect judged functioning, however; day school pupils being judged superior. Males in both settings were judged as functioning better than females.

Relationship between mental age and speech and language performance was found to be much stronger than that between chronological age and test performance.

Language ability was found to account for 23 percent of the variance in social acceptability and almost half (46%) of the variance in judged functioning level. Articulation was not related to either.

A strong relationship (62% of the variance) was found between the Peabody Picture Vocabulary Test and the Illinois Test of Psycholinguistic Abilities supporting the use of the PPVT as a rapid and acceptable measure of language with the TMR.

Thirty-five percent of the variance in social acceptability ratings was unaccounted for by the variables explored. Judges' comments suggest that physical appearance may account for a sizeable proportion of the remaining variance. The establishment of a reliable scale to predict acceptability of the TMR according to physical appearance, therefore, seems indicated.

Therapeutic implications of the research findings were discussed.

CHAPTER I

INTRODUCTION, PERTINENT LITERATURE AND PURPOSES OF THE STUDY

I. INTRODUCTION

As a cause for national concern, mental retardation ranks as one of our largest and most important problems. In their guide on mental retardation, Beal, Payer and Yarbrough (1965, p. 9) reported that "there are twice as many mentally retarded as there are cases of blindness, polio, cerebral palsy and rheumatic heart disease combined." According to their report, "only four disabling conditions have a higher incidence" cancer, arthritis, cardiac disease and mental illness." Since these conditions have generally appeared later in life and retardation is most often apparent early in an individual's life, society must necessarily make more long term plans for the retardate.

The President's Panel on Mental Retardation (1964, p. 15) defined the mentally retarded as those "children and adults who, as a result of inadequately developed intelligence, are significantly impaired in their ability to learn and to adapt to the demands of society." The definition given by the President's Panel assumed that the basic factor

in retardation is inadequately developed intelligence which causes impaired learning ability and impaired adaptive behavior. Heber (1961) in his manual on terminology and classification in retardation identified both intelligence and adaptive behavior as dimensions of retardation, but did not necessarily suggest a cause and effect relationship between intelligence and adaptive behavior.

As reported by Beal, Payer and Yarbrough (1965), the average intelligence quotient (I.Q.) for all people in the United States is considered to be 100 and those individuals with scores of 0 to 75 on standard tests of intelligence were considered to be in the retarded range. They further stated that within the retarded range different levels of functioning are found: profound (approximate I.Q., 0-19), severe (approximate I.Q., 20-35), moderate (approximate I.Q., 36-52), and mild (approximate I.Q., 53-75).

For purposes of training and care these four groups have generally been divided into three categories: educable, trainable and profoundly retarded. Because educable, trainable and profoundly retarded groups included all four levels (profound, severe, moderate and mild) and overlapping does occur, the proportion of individuals in each category cannot be reliably reported. However, the President's Panel (1964) has reported that the profoundly retarded comprised only about 1-1/2% of the retarded population.

Therefore, the remaining 98-1/2% were potential candidates for some form of training and possible assimilation into and contribution to society, whether it be in community or institution. Those considered educable have received the most attention from educators, psychologists and speech pathologists regarding testing, evaluating and planning of appropriate programs.

The primary goal with the educable retardate is self-maintenance through acquisition of practical skills, basic reading, arithmetic and social and vocational skills (Beal, et al., 1965) in conformity with community expectations. This individual could generally be expected to become gainfully employed and to be assimilated into community life. Since the trainable retardate, however, was usually incapable of self-maintenance and independent functioning, goals with this individual have been necessarily more limited. These included simple communication, elementary health and safety rules, and simple manual skills (Beal, et al., 1965). According to Levine, Elzey and Paulson (1966, p. 112),

Trainable mentally retarded children are those children who are capable of achieving personal independence, social adjustment, and economic usefulness in their home situation or a supervised environment, but unable to benefit from a program designed to lead to complete independence, such as provided for educable mentally retarded children.

Children they included in this group have intelligence quotients between 25 and 60.

The above stated goals demonstrated that the habilitation process for retardates in general placed a greater emphasis on social rather than academic achievement. This was particularly true for the trainable child. Because the trainable child lacks intellectual capacity to benefit from a traditional type of educational program, his training must stress social learning, social adjustment and has as a general goal, social acceptance by the community or the institution.

Unfortunately for retardates, greater emphasis was placed on results of standard intelligence tests which yielded a number referred to as an I.Q. A formula for obtaining the intelligence quotient is:

$$I.Q. = \frac{\text{Mental Age (M.A.)}}{\text{Chronological age (C.A.)}} \times 100$$

Frequently, the child wore this number (I.Q.) like a label and it was used as the basis for his future treatment and training. Standard intelligence measures and tests have been intended for the most part to be used with a population whose scores are normally distributed. Their orientation has been toward measuring academic achievement or academic potential rather than social performance and potential (Sarason, 1959). Thus, they forced the retarded child into a mold which he could not fit and as a result these standard techniques measured what he wasn't rather than what he was. Among

others, Sarason (1959) objected to this tendency of viewing the retarded individual from the standpoint of an I.Q. score, as well as the tendency to ignore individual differences in their behavior and personalities. According to Baumeister (1965), an I.Q. score alone added little to our knowledge of the retarded individual--its main function being to provide an indirect measure of what we have already observed directly. He believed it would be far more relevant to determine whether the I.Q. was valid for making reliable prognostic statements regarding these individuals. In other words, how would the individual respond and adapt to his environment. Regarding the abilities of retardates, Baumeister (1965, p. 881) further stated:

All too often mental retardation is regarded as a unitary, pervasive deficit--i.e., lack of "intelligence." . . . but, research is quite clear on this point--mental retardates are less deficient in some areas than they are in others. On some measures, e.g. in certain learning situations, they may perform as well as "normal" individuals. The more refined we make our analyses of adaptive behavior, the clearer it becomes that we must speak of specific deficits in particular skills or processes.

As a measure of adaptive behavior, degree of socialization attained is particularly important to the trainable child because it represented his means of acceptance. Unlike his intellectually normal peers, this child does not gain acceptance through academic achievement. Some other variable(s) must account for his success or failure. Since "it is generally acknowledged, at least for humans, that

socialization does involve language" (Blount, 1969, p. 33), it would be reasonable to hypothesize that language ability may be related to the trainable retardate's adaptability and acceptability. As Goertzen (1957) noted, language skills are necessary for adjustment in general and for social adjustment in particular. Lillywhite and Bradley (1969) also suggested a logical relationship between language ability (functioning) and Mental Age. Although as yet an unexplored relationship, they believed that the retarded individual should be evaluated according to Mental Age rather than chronological age in regard to his speech and language functioning.

II. PERTINENT LITERATURE

Only a limited amount of information has appeared in the literature about the trainable population in general and in particular about their language ability. Even less attention has been paid to their social functioning.

Communication Skills of the Retarded

Generally, research in the area which can be broadly classified as communication has concentrated on studies of type and degree of articulatory defects (Schiefelbusch, 1965; Goertzen, 1957; Schlanger and Gottsleben, 1957; Schlanger, 1954; Karlin and Strazzula, 1952) or techniques and duration of therapy and resulting changes in articulatory patterns

(Schubert, Jansen and Fulton, 1967; Schubert, Van Heuvel and Fulton, 1966; Mecham, 1955; Schlanger, 1953). As might be anticipated, these studies have found that trainable retardates did have articulatory defects and that neither technique nor duration of therapy significantly improved patterns of articulation. Further, the studies indicated that improvements made were not maintained over time. These studies confined themselves primarily to the investigation of speech rather than language. For the purpose of the present study the distinction made by Henrikson (1960, p. 95) between language and speech will be adopted. Regarding language, he stated that it:

. . . may be defined as including any form of inter-communication behavior. Speech on the other hand, is included in the definition of language. Speech is the audible aspect of language.

One fairly extensive investigation of language and communicatory behavior was the Parsons Language Sample (Spradlin, 1963). However, it concerned itself with the educable retarded population rather than the trainable population.

Although there seems to be a general consensus that language development among the retarded is delayed, there has been only a limited number of investigations which have analyzed language development and language characteristics within this group. The least studied segment of the population has been the more severely retarded (I.Q. 50 and

below). Karlin and Strazzula (1952) studied severely retarded subjects (I.Q. scores from 15 to 50) in order to compare their accomplishments to norms for such developments as babbling, words and sentences (norms are 18 to 19 months). They found that the lower the I.Q. the later the onset of talking. They also noted that the greatest lag for the severely retarded as compared with the normal was for the onset of words and simple sentences. They concluded that these results were merely a reflection of the slower maturational rate characteristic of the lower I.Q. child.

Schlanger (1954) compared institutionalized and non-institutionalized subjects matched on chronological age (C.A.), Mental Age (M.A.) and I.Q. to determine if institutionalization had an effect on verbal output in terms of mean-sentence-length and words-per-minute. He found differences for both variables favoring the non-institutionalized group. He noted the greatest difference in words-per-minute (50 for the institutionalized versus 65 for the non-institutionalized). Mean-sentence-length difference was approximately $1/2$ a word. He attributed differences found to loss of family ties, trauma of being institutionalized, and lack of an adequate speech model since they had only peers with whom to converse.

In Britain, Lyle (1959) also studied the effect of institutionalization on language. His low I.Q. subjects

(77 institutionalized and 117 non-institutionalized day school pupils) were all administered the Minnesota Pre-school Scale of Intelligence. He found non-significant differences for non-verbal intelligence, but significant differences for verbal intelligence in favor of the non-institutionalized subjects. Generally, he found that non-institutionalized subjects were approximately six months ahead of their institutionalized counterparts. His conclusion was that institutionalization did not encourage the development of verbal intelligence.

Using the same subject population, Lyle (1960a) investigated speech and language development and again found non-institutionalized subjects superior to the institutionalized subjects. He concluded that where there was no opportunity to use language, subjects would not develop it.

Another aspect possibly related to development of speech and language, age of institutionalization, was also explored by Lyle (1960b). He found that age of admission for his 77 subjects made no difference on subsequent verbal development. The differentiating factor that he found was the degree of development which had been attained prior to admission.

Lyle (1961a) also compared the language of non-institutionalized retardates with that of children of normal intelligence matched for non-verbal I.Q. and chronological

age (C.A.). Results showed no linguistic retardation beyond what could be predicted from difference in M.A. level, but he found retardates approximately five months behind in verbal I.Q.

In another investigation between normal children and retardates, Lyle (1961b) concerned himself with development of language. With both groups of subjects he found the same pattern of language development, but noted that retarded children were slower in their development. He found differences were greatest at the lower M.A. levels and washed out at higher M.A. levels.

In still another British study, Mein and O'Connor (1960) investigated oral (expressive) vocabulary of 40 more severely retarded individuals. They found that Mental Age (M.A.) was the greatest predictor of vocabulary size; as M.A. increased vocabulary size increased and paralleled normal acquisition of vocabulary but at a slower rate.

Other language studies with retardates, although not necessarily with the trainable level, have sought to correlate language dysfunction with intelligence (Gens, 1950; Goertzen, 1957; Schlanger and Gottsleben, 1957; Karlin and Strazzula, 1952; Sirkin and Lyons, 1941; Spiker and Irwin, 1949). These studies suggested a relationship of only moderate degree between the two variables. A recent study by Halpern and Equinozzi (1969) found that verbal expressivity (e.g., type and number of words) and intelligence

(I.Q. score) were relatively independent of each other and that they did predict successfully different aspects of adaptive behavior.

Studies of social and communicative behavior have been primarily concerned with studying this behavior among peers in a population of retardates (Chennault, 1967; Hollis, 1966; Spradling, Girardeau and Corte, 1967). Limited research has also been conducted to determine acceptability of retardates among potential employers (Hartlage, 1965; Phelps, 1965).

Most frequently, social behavior has been equated with attainment of self help skills and measured by instruments such as the Vineland Social Maturity Scale (Doll, 1965) or the Caine-Levine Social Competence Scale (Levine, Elzey and Paulson, 1966). These are useful tools, but have tended to give a rather limited view of the person being assessed because of their focus on developmental skills rather than interpersonal, social interaction. Barclay (1969), in a recent study which employed the use of the Vineland Social Maturity Scale, sought to investigate longitudinal changes in intellectual and social functioning (which was actually social development) among young non-institutionalized retardates. The Vineland Scale was used to determine changes in social functioning and maturity. Results indicated that chronological age largely accounted for changes in both intellectual and social maturity.

Assessment of Intelligence,
Language and Social Func-
tioning

A number of techniques for assessment of intelligence, vocabulary and language ability are currently available and have been utilized with retarded populations with varying degrees of success. Among those frequently used are the Leiter International Performance Scale (intelligence), Peabody Picture Vocabulary Test (vocabulary), and the Illinois Test of Psycholinguistic Abilities (language). Although devised primarily for use with an intellectually normal population, these measures have been suggested by their authors as appropriate and practical for use with retardates.

Leiter (1966) who began developing his Performance Scale in 1927, stated that his interest in producing a suitable non-language test for measurement of general intelligence, personality and special abilities rather than in making standardization data on the test available. He envisioned constructing a non-verbal, culture free instrument which would be reliable when used cross-culturally or with handicapped individuals, particularly those who were deaf. The original standardization procedure was applied to eighty public school children between the ages of four year, six months and twelve years, five months. Results of that standardization indicated that this test was measuring factors which accepted tests of general intelligence such

as the Stanford-Binet were measuring. Hunt (1961), comparing responses of mentally retarded children to the Leiter international Performance Scale and the Stanford-Binet Test found a high positive relationship between performance on the Leiter and the Mental Age obtained by administration of the Stanford-Binet. Matthews and Birch (1949) recommended it highly for use in testing individuals with speech and hearing defects because it did not penalize such individuals as did other standard measures. Other advantages suggested were that it was a relatively culture free instrument and demanded little prior experience or environmental stimulation on the part of the individual tested. In addition, the examiner was not required to try to interpret what the individual being tested had said, as he was when administering other standard intelligence measures.

The Peabody Picture Vocabulary Test (PPVT) was designed to estimate a subject's verbal intelligence through the measurement of his hearing vocabulary and was developed as a receptive measure. The PPVT was standardized on 4,012 white children and adolescents from two years, six months to eighteen years, living in and around Nashville, Tennessee. The author, Lloyd Dunn (1965), found that results were reliable with this normal population and believed it had special value for other groups as well, including the retarded. Blue (1969) found the PPVT a reliable instrument for use with the trainable mentally retarded. Other

investigators (Burnett, 1962; Dunn and Brooks, 1960; Dunn and Gottel, 1961; Milgram, 1967) have also found this test appropriate for the trainable level retardate. Nation (1964) investigated the use of the PPVT as a measure of expressive vocabulary (usage) as well as receptive vocabulary (comprehension). Subjects for his study were cleft palate and normal preschool children with average I.Q.s. He found comprehension scores significantly higher than usage scores, indicating that vocabulary comprehension significantly exceeded vocabulary usage when the same stimulus words were used to measure both types of vocabulary. As yet the PPVT as a measure of expressive vocabulary usage or ability has not been administered to a retarded population.

The Illinois Test of Psycholinguistic Abilities (ITPA) was designed for differential diagnosis of psycholinguistic deficiencies in children. The structure of the test is based on a communication model adapted from Osgood (1957), and is an attempt to diagnose rather than merely classify children by presenting a profile of their particular psycholinguistic functioning. The authors, McCarthy and Kirk (1961), provided a profile of nine different language skills and a total language age (LA) in their original experimental edition. Three dimensions of psycholinguistic abilities were postulated--level of organization, channel of communication and process of communication. It was standardized by testing 1,000 children between the ages of

two and nine years from the Decatur, Illinois public schools. The sample was randomly selected from the school population, but did not include Negroes, children with serious sensory or physical handicaps or subjects with I.Q. scores less than 80 or greater than 120. The authors reported that reliability for the test as a whole was in excess of .98, and internal consistency measures for individual subtests ranged from .70 to .95. McCarthy and Kirk (1963) justified restrictions on the normative sample by indicating that the main purpose of standardization was to provide a reference group composed of relatively normal children.

Although no standardization information was available for any but a normal I.Q. population, at least one extensive study has been employed using the original, experimental version of the Illinois Test of Psycholinguistic Abilities with a sample of trainable retardates. Mueller and Weaver (1964) compared ITPA performance of institutionalized and non-institutionalized (day school) trainable retardates between the chronological ages (CA) of eight and nineteen years. Contrary to their original hypothesis, and to previous research (Papania, 1954; Badt, 1958; Haggerty, 1959; Rheingold and Bayley, 1959), institutionalized trainable mental retardates (TMR) were superior on all aspects of language studied and were significantly higher on overall language age (LA) than non-institutionalized (day school) TMRs. They also found a significant correlation between MA,

LA, and speech ratings. Correlations were: (1) between LA and MA .76; (2) between LA and speech ratings, .66. Both correlations involving LA were significant at less than the .01 level of confidence.

A new revised edition of the Illinois Test of Psycholinguistic Abilities (1969) has been published, but no standardization norms have been made available for this edition. According to Kirk and McCarthy (1969), this edition was not only updated, but the administration of it has been simplified. The age level has also been extended upward a year and now goes to the ten year, six month level.

A recent study (Hubschman, Polizzotto and Kalinski, 1970), compared the original (experimental) and new (revised) editions of the Illinois Test of Psycholinguistic Abilities, found that both editions were reliable instruments for use with a retarded population.

As indicated earlier, a study by Mueller and Weaver (1964), rated speech of the trainable retardates as well as ITPA performance. The speech ratings they used were based on an informal four point rating scale in which a score of one indicated speech errors which seriously interfered with communication of the subject with the examiner, a two indicated that speech errors interfered to some extent with communication of the subject with the examiner, a three indicated a noticeable articulatory defect which, however, did not interfere with communication, and a four indicated

essentially normal speech.

A speech rating (measure of articulatory proficiency) of the trainable level child would be desirable for correlation with language age (ability). As indicated earlier, much speech and language research with the retarded has concerned itself with measuring articulatory proficiency (Karlin and Strazzula, 1952; Bangs, 1942; Beirer, Starkweather and Lambert, 1969; Martyn, Sheehan and Slutz, 1969; Sheehan, Martyn and Kilburn, 1968). However, these studies have neglected a factor which would seem to be of primary importance--whether articulatory ability was consistent with mental age and language ability. They also failed to use a standard test to measure articulation proficiency with this population.

One currently available articulation test, the Arizona Articulation Proficiency Scale (Barker, 1963), was designed to provide a measure by percentage of correctly articulated speech sounds. It evoked a precise and objective measure of articulatory skill and progress of articulation development. It was arranged to test consonant sounds as they developed by chronological age level with weighting of the sounds assigned according to frequency of occurrence in the English language. Age levels are based on the studies by Templin (1957) which indicated the birthday by which 90% of children of average intelligence correctly articulated the specific test sounds. For example, by the third birthday,

90% of children have mastered the consonants [n], [m], [p], and [h].

The author, Janet Barker (1963), suggested the Arizona Articulation Proficiency Scale (AAPS) as a research tool because it was an objective measure of articulation and misarticulation which had demonstrated its validity in predicting judges' reactions (Barker, 1963) and because it yielded a score of communication ability which was meaningful when viewed in light of the development of articulatory proficiency.

At the present time, no standard measure of sociability has been developed which is appropriate for the trainable mentally retarded. Balthazar (1969a, 1969b) has developed a scale for the rating of social behavior among the most severely retarded population (I.Q. scores 20 and below). This scale, however, was primarily intended for use in a conditioning program with severe level retardates, and is not applicable to the TMR population (Balthazar, 1970). Its use is limited to those individuals with functioning levels too low to be evaluated by any standard test. Therefore, it was necessary to employ a brief and basic rating scale of social acceptability or social appeal designed particularly for purposes of the present investigation.

III. PURPOSES OF THE STUDY

Blount (1969) stated that the relationship between

language skills (ability) and social adjustment or acceptability had largely been overlooked with the trainable level retardate and its exploration was a pressing need. Therefore, it is the purpose of the present study to investigate the relationship which may exist between language ability and degree of social acceptance in the trainable mentally retarded. It will also explore the relationship between chronological age (CA) and language ability as well as the relationship between Mental Age and language ability, as suggested by Lillywhite and Bradley (1969). Information about these relationships is necessary in order to understand and to assess the trainable retardate as a functioning individual, for, as Schlanger (1953) suggested, emphasis should be placed on the individual rather than on the problem of retardation. Knowledge that can be gained is basic to the planning and execution of a program which will develop adequate skills, particularly those associated with communicative and social interaction, for integration of the Trainable Mentally Retarded into community or institution life.

Specific objectives of the study are as follows:

1. To explore the differences in speech and language performance, social acceptability (SA), and judged functioning level (JFL) between institutionalized and non-institutionalized; trainable mentally retarded children of different chronological ages and socioeconomic levels.

2. To determine the effect of chronological age (CA) and Mental Age (MA) on certain measures of speech and language functioning.
3. To study the relationship of language ability to judged social adequacy and functioning level.

Specifically, the following research questions are asked:

1. Do non-institutionalized (day school) trainable mentally retarded (TMR) children score significantly higher than institutionalized TMRs on measures of language (Illinois Test of Psycholinguistic Abilities), articulation (Arizona Articulation Proficiency Scale), social acceptability (SA), and judged functioning level (JFL)?
2. To what extent and in what way do chronological age (CA) and Mental Age (MA) indicate level of language abilities in trainable mentally retarded subjects (TMR)?
3. To what extent and in what way does language ability correlate with ratings of sociability (appeal) and judged functioning level in the trainable mentally retarded (TMR) and to what extent do social acceptability (SA) and judged functioning level (JFL) correlate with each other?

CHAPTER II

PROCEDURES

Subjects

Two groups of white, trainable mentally retarded, school-aged children (7 to 18 years) of both sexes, representing different socioeconomic (middle-low) backgrounds, different chronological and mental ages, different I.Q.s, and different placements (institutionalized and non-institutionalized) were selected as subjects. They came from two sources. Non-institutionalized children were obtained from a day school for the Trainable Mentally Retarded which is part of the East Baton Rouge Parish School system. . . . The institutionalized group was chosen from residents of a state school for the retarded. The structure of the day school population restricted the investigation to retardates from chronological age (CA) seven to eighteen years, and the composition of the two facilities limited the study to white subjects.

The only restriction exercised in the selection of subjects was that their I.Q. score obtained from the administration of the Leiter International Performance Scale be between 25 and 60, the trainable range as suggested by

Levine, Elzey and Paulson (1966).

In order to apply adequate data for statistical analysis 80 subjects (40 boys and 40 girls) were tested. They were matched for sex and for chronological age as nearly as possible. Because of the limited day school enrollment, only 30 subjects (15 boys and 15 girls) came from that facility. The remaining 50 subjects (25 boys and 25 girls) were selected from the state school for the retarded.

Tests

The following tests were administered to all subjects: (1) Leiter International Performance Scale, (2) Arizona Articulation Proficiency Scale, (3) Illinois Test of Psycholinguistic Abilities, and (4) Peabody Picture Vocabulary Test (PPVT) in both its receptive and expressive forms. A two week interval was allowed between administration of the two forms, the receptive form of the PPVT being administered first. This time interval was intended to minimize the effect of familiarity gained during the first administration on the performance of the second administration.

Leiter International Performance Scale

The Leiter, a non-verbal intelligence test, which is appropriate for administration from age two years through the adult level, uses matching as its basic testing technique.

Through matching, the subject is required to demonstrate comprehension of concrete concepts (beginning age levels), abstract concepts (at older age levels), and to solve various types of problems.

Only those children with Leiter I.Q. scores between 25 and 60 were eligible to serve as subjects. The Mental Age (MA) of all subjects chosen, was used as the comparison for speech and language measures employed.

Arizona Articulation Proficiency Scale

As indicated in Chapter I, the Arizona Articulation Proficiency Scale (AAPS) provides a measure of correctly articulated speech sounds. It is arranged to test consonant sounds as they develop by chronological age, with weighting of the sounds assigned according to their frequency of occurrence in the English language. For example, by the third birthday, 90% of children of average intelligence have mastered the consonants [n], [m], [p], and [h]. Single sounds have weighted values from 0.5 to 7.0; those sounds with the most frequent occurrence having the greatest weighting. A total AAPS score is obtained by adding the value of all sound errors and subtracting this amount from 100. It is this total AAPS score which is of interest in the present study. The interpretation of the AAPS total score as presented by the author (Barker, 1963) is as follows:

- 95-100 Sound errors occasionally noticed in continuous speech
- 85-94 Speech is intelligible, although noticeably defective
- 70-84 Speech is intelligible, with careful listening
- 60-69 Speech intelligibility is difficult
- 45-59 Speech usually is unintelligible
- 0-44 Speech is unintelligible

Illinois Test of Psycholinguistic Abilities

The new, revised edition of the Illinois Test of Psycholinguistic Abilities (ITPA) provides a profile of ten different language skills which allows the examiner to determine the child's psycholinguistic strengths and weaknesses, such as auditory and visual comprehension and memory; auditory, visual, manual or verbal expression. The ITPA also yields a total psycholinguistic age (PLA) to which the subject's chronological age (CA) and Mental Age (MA) can be compared. It is the total psycholinguistic age (PLA) which will be used in this investigation.

Peabody Picture Vocabulary Test

In the receptive form of the Peabody Picture Vocabulary Test (PPVT) the subject indicates by pointing to one of four pictures which best illustrates the word spoken by the examiner. The objective of the test is to estimate a subject's verbal intelligence through measurement of his hearing vocabulary and, as in other tests, proceeds from

simple, concrete concepts to more complicated and abstract ones. For the purposes of the present study the PPVT (Form B) results were utilized as a measure of receptive vocabulary, as suggested by Nation (1964).

As also suggested by Nation (1964), the PPVT (Form B) was administered as an expressive measure. For this administration the subject is asked to name the stimulus picture pointed to by the examiner in order to arrive at a measure of his expressive vocabulary. The same stimulus pictures are used for both the receptive and expressive forms.

Socioeconomic Level

The socioeconomic level was determined from parental occupation, source of income, and level of education as suggested in the Index of Status Characteristics (1949). This information was obtained from the day school and institution records. Three levels were assigned. All families who were dependent (on welfare, aid to dependent children, social security) were assigned to level one. Those families who were independent, but low income and poorly educated (hospital orderlies, unskilled laborers, etc.) were assigned to level two. Level three included those families in the low-middle to mid and upper-middle class (barbers, teachers, engineers, etc.). No family included in this study was judged to be upper class.

Social Acceptability

Two measures of social adequacy, judged functioning level (JFL) and social acceptability (SA), were obtained after having judges observe all subjects at least once during the course of the child's usual school activities for a fifteen minute period. After observing each subject the judges independently rated him/her on the following 1 to 7 scale (1 being the poorest rating and 7 the best possible rating):

- Question 1. (JUDGED FUNCTIONING LEVEL) On a scale of 1 to 7, rate this child according to your estimate of his/her current functioning. (Here functioning refers to the child's estimated I.Q. as well as his ability to adapt to his environment.)
- Question 2(a). (SOCIAL ACCEPTABILITY) On a scale of 1 to 7, rate this child according to his appeal for you.
- Question 2(b). What is the main reason that this child does or does not appeal to you? (If physical appearance was your answer, state the next most important reason for his appeal or lack of it.)

Fifteen of the subjects were rated at two different times (with a two week interval between ratings) by each judge to

compare the similarity (reliability) of his (the judge's) ratings from one time to the next.

The judges were four advanced graduate students from Louisiana State University, two in clinical psychology and two in speech pathology, who judged functioning level and social acceptability of subjects in this study. They received no training and had no extensive knowledge of these particular children before rating them. However, they all had knowledge about functioning of the trainable level child, and previous experience working with such children. They were untrained for this study in order to eliminate the possibility of any of their judgments being biased by prior knowledge of or interaction with any of the subjects.

Design and Statistical Analysis

Data analyzed consisted of the scores obtained from administration of the Leiter International Performance Scale, Arizona Articulation Proficiency Scale, Illinois Test of Psycholinguistic Abilities, receptive and expressive forms of the Peabody Picture Vocabulary Test, and ratings of social acceptability or appeal and functioning level of the subjects.

Four two by two by three analyses of variance were used to examine interrelationships among the three independent (treatment) variables--sex, institutionalization and socioeconomic level, for each dependent variable--Arizona

Articulation Proficiency Scale, Illinois Test of Psycholinguistic Abilities, social acceptability and judged functioning level.

Simple and multiple regression analyses were used to explore relationships among the language variables measured by the Arizona Articulation Proficiency Scale (AAPS), Illinois Test of Psycholinguistic Abilities (ITPA), receptive Peabody Picture Vocabulary Test (PPVT_r) and expressive Peabody Picture Vocabulary Test (PPVT_e) with chronological age (CA) and Mental Age (MA), as well as social acceptability (SA) and judged functioning level (JFL). Language variables were then correlated with each other, as were social acceptability (SA) and judged functioning level (JFL). Also, multiple regression analyses were used to assess the relationship of language and speech variables and judged functioning level (JFL) with social acceptability (SA). Regression analyses yielded information regarding the significance, strength and degree of relationships expressed.

CHAPTER III

RESULTS

The sample ranges of all variables included are presented in Table 1; means examined in the analyses of variance are presented in Table 2.

Analyses of Variance

A least-squares analysis of variance was used to determine the influence of sex, placement and socioeconomic level (the independent variables) upon each of the dependent variables--articulation (Arizona Articulation Proficiency Scale), language (Illinois Test of Psycholinguistic Abilities), social acceptability (SA), and judged functioning level (JFL). Four analyses were utilized. Each analysis involved a two by three way (sex by placement by socioeconomic level) analysis. Means reported for each analysis are adjusted least-squares means. Because of disproportionate numbers of subjects in different cells resulting from missing socioeconomic information on eight subjects and inability to completely match subjects by chronological age, means were adjusted to covary out the effects of the disproportionate numbers and chronological age.

TABLE 1
SAMPLE RANGE FOR EACH OF THE VARIABLES

Variables	Range
Leiter Mental Age (years and months)	2-3 to 7-9
PPVT _r M.A. (years and months)	2-2 to 10-1
PPVT _e M.A. (years and months)	1-9 to 4-9
AAPS (total score)	30.5 to 100
ITPA (PLA in years and months)	2-3 to 6-2
Social Acceptability (1 to 7 scale)	2.5 to 7.0
Functioning Level (1 to 7 scale)	2.3 to 6.5
Chronological Age (in years and months)	7-2 to 18-9

TABLE 2

ADJUSTED* LEAST-SQUARES MEANS FOR ALL SUBJECTS
ON THE AAPS, ITPA, S.A., AND JFL FOR SCHOOL,
SEX AND SOCIOECONOMIC LEVEL

	N	AAPS	ITPA	S.A.	JFL
Total	72	83.4	4.1	4.8	4.5
School					
Day School (N-In)	22	86.4	4.0	4.7	4.9
Institution (In)	50	80.4	4.2	4.8	4.2
Sex					
Male	36	87.3	4.5	5.1	4.8
Female	36	79.4	3.7	4.4	4.2
Socioeconomic Level (SEL)					
1	15	83.4	4.2	5.0	5.0
2	32	85.3	4.4	4.6	4.4
3	25	81.4	3.8	4.6	4.2
Interactions					
Male, N-In	11	90.2	4.5	5.0	5.2
Male, In	11	82.5	3.6	4.5	4.6
Female, N-In	25	84.3	4.5	5.2	4.4
Female, In	25	76.4	3.8	4.4	3.9
N-In, SEL 1	0	0	0	0	0
N-In, SEL 2	12	89.6	4.3	4.5	4.6
N-In, SEL 3	10	83.0	3.7	4.7	4.6
In, SEL 1	15	80.4	4.2	5.1	4.6
In, SEL 2	20	80.9	4.4	4.7	4.6
In, SEL 3	15	79.8	3.8	4.6	3.7
Male, SEL 1	7	88.7	5.1	5.6	5.4
Male, SEL 2	15	92.5	4.6	4.8	4.6
Male, SEL 3	14	80.7	3.9	4.8	4.4
Female, SEL 1	8	78.0	3.3	4.5	4.6
Female, SEL 2	17	78.1	4.2	4.3	4.1
Female, SEL 3	11	82.2	3.6	4.5	4.0

*Adjusted for chronological age (CA) and disproportionate numbers of subjects in some cells.

Arizona Articulation Proficiency Scale

Results of the first analysis of variance are reported in Table 3 for the Arizona Articulation Proficiency Scale (AAPS). There were no significant main effects or interaction effects. However, there was a significant linear effect of chronological age (CA), the covariance factor, $p < .05$ ($F = 5.53$).

Illinois Test of Psycholinguistic Abilities

Analysis of variance for the Illinois Test of Psycholinguistic Abilities (ITPA) scores is reported in Table 4. There is a significant sex main effect ($F = 8.4$), males having higher psycholinguistic age (PLA) scores than females, $p < .01$. There was a significant sex by socioeconomic level interaction, with lower socioeconomic level males scoring higher on the ITPA than both females and other males, $p < .05$ ($F = 3.42$). There was also a significant linear effect of chronological age (CA), the covariance factor, $p < .05$ ($F = 7.4$).

Social Acceptability

Table 5 presents results for the analysis of variance source table for social acceptability (SA) comparisons. There were no significant main effects or interaction effects found.

TABLE 3
LEAST-SQUARES ANALYSIS OF VARIANCE
SOURCE TABLE FOR AAPS

Source	df	MS	F
School	1	451.900	1.88
Sex	1	704.206	2.93
S.E.L.	2	85.907	0.36
School x Sex	1	0.070	0.00
School x S.E.L.	1	83.835	0.35
Sex x S.E.L.	2	387.834	1.62
Linear effect of C.A.	1	1352.425	5.53*
Error	62	240.108	
Total	71		

* $\underline{p} < .05$

TABLE 4
LEAST-SQUARES ANALYSIS OF VARIANCE
SOURCE TABLE FOR ITPA

Source	df	MS	F
School	1	0.125	0.14
Sex	1	7.734	8.84**
S.E.L.	2	2.209	2.52
School x Sex	1	0.235	0.27
School x S.E.L.	1	0.000	0.00
Sex x S.E.L.	2	2.837	3.24*
Linear effect of C.A.	1	6.160	7.04**
Error	62	0.875	
Total	71		

*p < .05

**p < .01

TABLE 5
LEAST-SQUARES ANALYSIS OF VARIANCE SOURCE
TABLE FOR SOCIAL ACCEPTABILITY

Source	df	MS	F
School	1	0.029	0.02
Sex	1	4.995	3.60
S.E.L.	2	0.942	0.68
School x Sex	1	0.264	0.19
School x S.E.L.	1	0.471	0.34
Sex x S.E.L.	2	0.777	0.56
Linear effect of C.A.	1	0.012	0.01
Error	62	1.387	
Total	71		

Judged Functioning Level

Analysis of variance results for judged functioning level (JFL) are presented in Table 6. There was significance for two of the main effects--sex and school placement. Day school children were rated as functioning at a higher level than institutionalized children, $p < .01$ ($F = 7.49$). Males were judged as functioning generally at a higher level than females, $p < .05$ ($F = 4.96$).

Correlational Data Results

The correlation matrix for all factors included in the regression analyses is presented in Table 7.

Simple and multiple regression analyses were used to explore relationships among the language variables measured by the Arizona Articulation Proficiency Scale (AAPS), Illinois Test of Psycholinguistic Abilities (ITPA), receptive Peabody Vocabulary Test ($PPVT_r$) and expressive Peabody Picture Vocabulary Test ($PPVT_e$) with chronological age (CA) and Mental Age (MA). Relationships of the language measures with each other were also explored.

For correlational analyses Guilford's (1956) interpretation of correlational levels and their significance was followed. These levels are: r less than .20 is a slight and almost negligible relationship; r .20 to .40 is a definite but small relationship; r .40 to .70 is a moderate, substantial relationship; r .70 to .90 is a high and marked

TABLE 6
LEAST-SQUARES ANALYSIS OF VARIANCE SOURCE
TABLE FOR JUDGED FUNCTIONING LEVEL

Source	df	MS	F
School	1	6.375	7.49**
Sex	1	4.228	4.96*
S.E.L.	2	2.444	2.87
School x Sex	1	0.032	0.04
School x S.E.L.	1	0.505	0.59
Sex x S.E.L.	2	0.274	0.32
Linear effect of C.A.	1	1.056	1.24
Error	62	0.851	
Total	71		

*p < .05

**p < .01

TABLE 7

INTERCORRELATIONS AMONG MEASURES OF INTELLIGENCE,
LANGUAGE FUNCTIONING, ARTICULATION, SOCIAL
ACCEPTABILITY, AND CHRONOLOGICAL AGE

	2	3	4	5	6	7	8
1. Leiter M.A.	.61**	.61**	.26*	.79**	.23*	.41**	.48**
2. PPVT _r M.A.		.79**	.37**	.76**	.19	.34**	.46**
3. PPVT _e M.A.			.38**	.78**	.30**	.40**	.44**
4. AAPS				.42**	.06	.37**	.26*
5. ITPA (PLA)					.33**	.43**	.40**
6. Social Acceptability (SA)						.68**	.03
7. Functioning Level (JFL)							.18
8. Chronological Age (C.A.)							---

*p < .05

**p < .01

relationship; \underline{r} above .90 is a very high, very dependable relationship.

Since socioeconomic level information was not necessary for these correlations, all 80 subjects were included in the following correlations.

Correlation of Chronological Age with Other Tests

Correlation of chronological age (CA) with the Leiter International Performance Scale M.A. was significant at the .01 level ($\underline{r} = .48$). This is a moderate, substantial relationship; C.A. accounting for 23 percent of the variance in M.A.

The chronological age (CA) and Arizona Articulation Proficiency Scale (AAPS) correlation was significant at the .05 level ($\underline{r} = .26$). However, C.A. accounts for only 7 percent of the variance in the AAPS, a slight almost negligible relationship.

Results of the correlation between chronological age (CA) and the Illinois Test of Psycholinguistic Abilities (ITPA) were significant at the .01 level ($\underline{r} = .40$). This indicated a real, but moderate relationship accounting for 16 percent of the variance in the ITPA.

Correlation of chronological age (CA) with the receptive Peabody Picture Vocabulary Test (PPVT_r) was significant at the .01 level ($\underline{r} = .46$). This is a moderate, substantial relationship; C.A. accounting for 21 percent of

the variance in the receptive form of the PPVT.

A significant correlation was found between chronological age (CA) and the expressive form of the Peabody Picture Vocabulary Test (PPVT_e). Significance was at the .01 level ($\underline{r} = .44$). This is a moderate, substantial relationship with C.A. accounting for 19 percent of the variance in the expressive form of the PPVT.

Correlation of Mental Age with Other Tests

Correlation of Leiter International Performance Scale Mental Age (MA) with the Arizona Articulation Proficiency Scale (AAPA) was significant at the .05 level ($\underline{r} = .26$). This is a definite, but small relationship which accounts for only 7 percent of the variance in the AAPS.

Results of the correlation between Leiter Mental Age (MA) and the Illinois Test of Psycholinguistic Abilities (ITPA) were significant at the .01 level ($\underline{r} = .79$). This is a high and marked relationship indicating that M.A. accounts for 62 percent of the variance in the ITPA.

A significant correlation was found between Leiter Mental Age (MA) and the receptive form of the Peabody Picture Vocabulary Test (PPVT_r). Significance was at the .01 level ($\underline{r} = .61$). This indicates a moderate, substantial relationship with M.A. accounting for 37 percent of the variance in the receptive form of the PPVT.

Correlation of Leiter Mental Age (MA) with the expressive Peabody Picture Vocabulary Test ($PPVT_e$) was significant at the .01 level ($r = .61$). This is a moderate, substantial relationship; M.A. accounting for 37 percent of the variance in the expressive form of the PPVT.

Correlation of Language Measures with Each Other

The Illinois Test of Psycholinguistic Abilities (ITPA) and receptive Peabody Picture Vocabulary Test ($PPVT_r$) correlation was significant at the .01 level ($r = .78$). This is a high and marked relationship with the ITPA accounting for 58 percent of the variance in the $PPVT_r$.

Correlation between the Illinois Test of Psycholinguistic Abilities (ITPA) and the expressive Peabody Picture Vocabulary Test ($PPVT_e$) was significant at the .01 level ($r = .78$). This indicates a high and marked relationship; ITPA accounting for 61 percent of the variance in the $PPVT_e$.

Results of the correlation between receptive and expressive forms of the Peabody Picture Vocabulary Test ($PPVT_r$ and $PPVT_e$) were significant at the .01 level ($r = .79$). This is a high and marked relationship accounting for 62 percent of the variance present.

Variables Possibly Relating to Social Adequacy

Correlational analyses were also used to assess

relationship of age (CA and MA) and speech and language variables with judged functioning level (JFL) and social acceptability (SA).

Judged Functioning Level

Reliability. Four judges who received no special training for this study participated in rating subjects on functioning level using a 1 (poorest) to 7 (best) scale. Interjudge reliability was determined by having the judges observe the subjects at the same time and independently rate each one on the seven point scale. Criterion for agreement was a rating within one point of the ratings of the other judges. The following formula was used:

$$\text{Percent of Agreement} = \frac{\text{NA}}{\text{NA} + \text{ND}}$$

where NA was the number of agreements and ND was the number of disagreements.

Intrajudge reliability was determined by having each judge rate fifteen of the subjects again after a time lapse of two weeks.

Analysis yielded a coefficient of .88 for interjudge reliability. Intrajudge reliability, percent of agreement of each judge with himself, yielded the following four coefficients (one for each judge): .93, .87, .67, 1.00.

It was concluded that the judges who participated in this study were in general agreement among and with themselves on the rating of functioning level.

Variables Possibly Relating to Judged Functioning Level. The correlation between chronological age (CA) and judged functioning level (JFL) was not significant ($\underline{r} = .18$).

Correlation between Mental Age (MA) and judged functioning level (JFL) was significant at the .01 level ($\underline{r} = .41$). This is a moderate, substantial relationship with Mental Age (MA) accounting for 17 percent of the variance in judged functioning level (JFL).

The Arizona Articulation Proficiency Scale (AAPS) and judged functioning level (JFL) correlation was significant at the .01 level ($\underline{r} = .37$). This indicated a definite, but small relationship which accounted for 13 percent of the variance in judged functioning level (JFL).

Correlation of the Illinois Test of Psycholinguistic Abilities (ITPA) with judged functioning level (JFL) was significant at the .01 level ($\underline{r} = .43$). This is a moderate, substantial relationship; ITPA accounting for 18 percent of the variance in judged functioning level (JFL).

Results of the correlation between the receptive form of the Peabody Picture Vocabulary Test ($PPVT_r$) and judged functioning level (JFL) were significant at the .01 level ($\underline{r} = .34$). The relationship, however, is small and accounts for only 12 percent of the variance in judged functioning level (JFL).

Correlation of the expressive form of the Peabody Picture Vocabulary Test ($PPVT_e$) and judged functioning level

(JFL) was significant at the .01 level ($r = .40$). This is a real, moderate relationship with the PPVT_e accounting for 16 percent of the variance in judged functioning level (JFL).

Social Acceptability

Reliability. The four untrained judges who participated in this study rated subjects on social acceptability (appeal) using a 1 (poorest) to 7 (best) scale. Interjudge reliability was determined by having judges observe the subjects at the same time and independently rate each one on the seven point scale. Criterion of agreement was a rating within one point of the ratings of the other judges. The following formula was used:

$$\text{Percent of Agreement} = \frac{NA}{NA+ND}$$

where NA was the number of agreements and ND was the number of disagreements.

Intrajudge reliability was determined by having each judge rate fifteen of the subjects again after a time lapse of two weeks.

Analysis yielded a coefficient of .88 for interjudge reliability. Intrajudge reliability, percent of agreement of each judge with himself, yielded the following four coefficients (one for each judge): .93, 1.00, .80, 1.00.

It was concluded that judges who participated in this study agreed among and with themselves on the rating

of social acceptability (appeal).

Variables Possibly Relating to Social Acceptability (Appeal). The correlation of chronological age (CA) with social acceptability (SA) was not significant ($\underline{r} = .03$).

Correlation between Mental Age (MA) and social acceptability (SA) was significant at the .05 level ($\underline{r} = .23$). Although reaching significance, this relationship is small and M.A. accounts for only 5 percent of the variance in social acceptability (SA).

The correlation between the Arizona Articulation Proficiency Scale (AAPS) and social acceptability (SA) was not significant ($\underline{r} = .06$).

The Illinois Test of Psycholinguistic Abilities (ITPA) and social acceptability (SA) correlation reached the .01 level ($\underline{r} = .33$). This is a definite but small relationship; the ITPA accounting for 11 percent of the variance in social acceptability (SA).

There was no significant correlation found between receptive Peabody Picture Vocabulary Test (PPVT_r) and social acceptability (SA) ($\underline{r} = .19$).

The correlation between the expressive Peabody Vocabulary Test (PPVT_e) and social acceptability (SA) reached significance at the .01 level ($\underline{r} = .30$). This is a definite, but small relationship; the PPVT_e accounting for only 9 percent of the variance in social acceptability (SA).

Results of the correlation between judged functioning level (JFL) and social acceptability (SA) were significant ($r = .68$) at the .01 level. The relationship is a moderate, substantial one; JFL accounting for 47 percent of the variance in social acceptability (SA).

Of the correlations reported thus far in this study, those reaching significance have demonstrated a linear relationship.

Multiple Correlations

A multiple regression technique was used to further assess the nature of the relationship of the articulation, language and judged functioning level results with social acceptability. Of particular interest was determining whether these relationships were linear, quadratic, or cubic, or any combination of these functions.

Regression of the articulation measure (AAPS) on social acceptability - SA, SA^2 and SA^3 - revealed no significant relationships on any level.

The relationship obtained between social acceptability and the language variable (ITPA) reflected a curvilinear and quadratic effect and yielded a significant R value of .42. The relationship between the language variable (ITPA) and social acceptability is a moderate and substantial one, with language (ITPA) accounting for 18 percent of the variance in social acceptability.

The relationship between social acceptability and judged functioning level reflected a linear and cubic effect and yielded a significant R value of .68. This is a moderate, substantial relationship; judged functioning level accounting for 47 percent of the variance in social acceptability. Note that the simple, linear correlation reported between these two variables (judged functioning level and social acceptability) was also .68.

Regarding social acceptability, it should be noted that two of the combined factors studied, language and judged functioning level, contributed 65 percent of the variance in social acceptability. The other 35 percent is not accounted for in the present study and may be due to other factors or individual variance within subjects or both of these.

CHAPTER IV

DISCUSSION

Age

Among noteworthy results of this investigation were effects of chronological and mental age upon test performance. Chronological age affected mental age as well as affecting speech and language variables in a linear way. As chronological age increased, all test performances improved, but only slightly. However, the effect of Mental Age was much more marked on speech and language variables. Supporting the suggestion of Lillywhite and Bradley (1969) that M.A. rather than C.A. should be used as the basis of evaluation when dealing with a retarded population.

Articulation

It was also discovered, for these subjects at least, that degree of articulatory ability or performance is essentially unrelated to their acceptability and only slightly related to their judged functioning level. This suggests that traditional therapy, stressing articulation, is probably not practical with the trainable retardate. On the basis of the M.A. range of the subjects in this investigation (2 years, 3 months to 7 years, 9 months) restricted articulation would be expected. According to the studies

conducted by Templin (1957), all sounds are not expected to be correctly produced until the developmental age of eight years to eight years, six months. If articulation therapy were attempted with this group, those children with the highest M.A. scores would be the best candidates to receive it.

Language, Judged Functioning Level,
Social Acceptability

Language ability predicts the social acceptability ratings of these subjects to a considerable extent. The Illinois Test of Psycholinguistic Abilities scores and the receptive and expressive Peabody Picture Vocabulary Test scores together account for approximately 23 percent of social acceptability. Additionally, the three scores taken together (ITPA, PPVT_r, PPVT_e) account for almost half (46%) of the TMR's judged functioning level. Speech therapy, then, could more profitably be directed toward the development of language skills in the TMR.

Taken together, language and judged functioning level accounts for 65 percent of social acceptability. However, 35 percent of social acceptability was unaccounted for by the variables studied. Reviewing comments made by the judges in this investigation--"Johnny smiled," "Mike looked normal," "Margaret was fat and not very neat," "Susie looked happy," etc.--physical appearance, very broadly defined, may be responsible for a good deal of the remaining variance.

Although trained to deal with atypical individuals who are outside the normal range, these judges still rated the subjects in light of what they considered to be the normal. Therefore, it appears that for these subjects, those more nearly approaching normal or average appearance were judged more favorably.

In regard to functioning level, judges rated the day school pupils higher and viewed males as functioning better than the females, generally. The most likely reason for the day school preference is that the day school pupils were generally better dressed--clothes were better matched and in better condition. Males were probably seen as functioning better than females because of the more aberrant appearance of the females--many were large and fat, unkempt, or had unusual features.

The finding of no significant difference in language (ITPA) performance between the two groups (institutionalized and non-institutionalized) contradicts the previous literature (Mueller and Weaver, 1964; Haggerty, 1959; Badt, 1958; Papania, 1954).

An additional language-related finding is that males in socioeconomic level one (dependent families on welfare, aid to dependent children, social security) had significantly better ITPA scores than females and other males. The investigator is unable to suggest any reason for such a finding.

Peabody Picture Vocabulary Test

A most useful and practical result of the investigation was the high relationship found between the two forms of the Peabody Picture Vocabulary Test (PPVT) and the Illinois Test of Psycholinguistic Abilities (ITPA). Between the ITPA and receptive PPVT there was an R of .76, and between ITPA and expressive PPVT an R of .79; both high, significant relationships. Peabody results account for as much as 62 percent of the variance in the ITPA. Therefore, if time for test administration is limited or a subject is uncooperative, administration of the receptive and expressive forms of the PPVT would be quick, appropriate and could be considered as reliable indicators of language ability in a trainable mentally retarded population.

SUMMARY AND CONCLUSIONS

The purpose of this study was to explore the language ability of the trainable mentally retarded and its relationship to chronological and mental age, as well as to sex and placement (institutionalized or non-institutionalized). The nature of the relationship between language ability and social acceptability was also investigated.

Eighty subjects in the trainable mentally retarded range constituted the sample studied. A measure of intelligence (Leiter International Performance Scale), four speech and language measures (Arizona Articulation Proficiency Scale,

Illinois Test of Psycholinguistic abilities, receptive and expressive Peabody Picture Vocabulary Test), and ratings of functioning level and social acceptability were obtained for each subject. The functioning level and social acceptability judgments were made by four judges who were trained speech pathologists or psychologists, the assumption being that they represented key professionals who were largely responsible for the assessment and training of the retarded.

The following conclusions were reached:

1. Analyses of variance indicated that institutionalization does not significantly affect language ability or social acceptability. However, it does affect judged functioning; day school pupils being judged superior. Males in both settings were judged as functioning better than females.
2. With regard to the TMR, the relationship between mental age and speech and language test performance is much stronger and probably more reliable than that between chronological age and test performance.
3. Articulatory proficiency or ability is not related to social acceptability, however, language ability was found to account for more than 20 percent of the variance in social acceptability and almost half the variance (46%) in judged functioning level.

4. A strong relationship (62%) was found between receptive and expressive forms of the Peabody Picture Vocabulary Test and the Illinois Test of Psycholinguistic Abilities. Therefore, the PPVT is an acceptable and rapid measure of language with the TMR.
5. All relationships found in this investigation were essentially linear, with the exception of the relationship between language (measured by the Illinois Test of Psycholinguistic Abilities) and social acceptability, which was curvilinear.
6. Thirty-five percent of the variance in social acceptability ratings of the TMR's in this study was unaccounted for by the variables explored. Comments made by the judges after observing the subjects suggest that their physical appearance (including such things as neatness and deportment as well as physical features) may account for a sizeable proportion of the remaining 35 percent of the variance. Therefore, the establishment of a reliable scale to predict acceptability of the trainable Mentally Retarded according to physical appearance seems indicated.

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VITA

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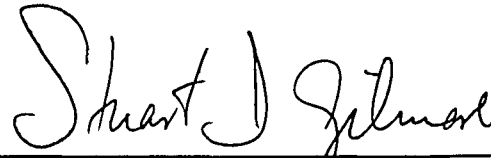
EXAMINATION AND THESIS REPORT

Candidate: Susan Hofman King

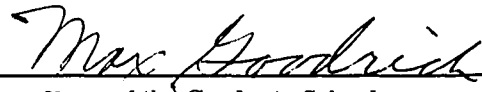
Major Field: Speech

Title of Thesis: The Relationships Between Mental Age, Level of Language
Functioning and Social Acceptability of the Trainable
Mentally Retarded

Approved:

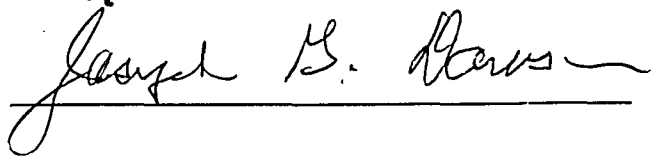


Major Professor and Chairman



Dean of the Graduate School

EXAMINING COMMITTEE:



Date of Examination:

July 22, 1970