A study of speech problems of a select group of mentally retarded children

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A STUDY OF SPEECH PROBLEMS OF A SELECT GROUP OF MENTALLY RETARDED CHILDREN

A THESIS
SUBMITTED TO THE FACULTY OF THE SCHOOL OF EDUCATION ATLANTA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

BY
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SCHOOL OF EDUCATION

ATLANTA UNIVERSITY ATLANTA, GEORGIA JANUARY, 1967
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M. R. T.
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS .......................................... ii

LIST OF TABLES .................................................. v

Chapter

I. INTRODUCTION ............................................... 1

- Rationale .................................................. 1
- Evolution of the Problem .................................. 5
- Contribution to Educational Knowledge .................. 5
- Statement of the Problem .................................. 5
- Purpose of the Study ...................................... 5
- Definition of Terms ....................................... 6
- Subjects and Materials .................................... 7
- Method of Research ....................................... 8
- Limitations of the Study .................................. 8
- Procedural Steps .......................................... 8
- Survey of Related Literature ............................. 9

II. PRESENTATION AND INTERPRETATION OF DATA ............... 34

- Introductory Statement .................................... 34
- Data Concerning the Intelligence Quotients of the Subjects ............................................. 35
- Data Concerning Subjects' Chronological Ages ........ 35
- Data Concerning the Subjects' Mental Ages .......... 35
- Data Concerning the Incidence of Speech Defectives According to Intelligence Quotients .......... 37
- Data Concerning the Subjects' Intelligence Quotients, Handedness and Speech Defects .......... 37
- Data Concerning Subjects' Dominance and Speech Defects ...................................................... 39
- Data Concerning Subjects' Visual Acuity ............... 39
- Data Concerning Subjects' Visual Perception ........... 40
- Data Concerning Subjects' Emotional Stability ........ 41
- Data Concerning Attendance Habits of Subjects for School Year 1965-1966 ......................... 43
- Data Concerning the Physical Coordination of the Subjects ..................................................... 43
- Data Concerning the Percentile Rank of the Subjects' Scores on a Readiness Test .................. 45
TABLE OF CONTENTS (Continued)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>III. SUMMARY, CONCLUSIONS, AND IMPLICATIONS FOR EDUCATIONAL THEORY AND PRACTICES</td>
<td>46</td>
</tr>
<tr>
<td>Introductory Statement</td>
<td>46</td>
</tr>
<tr>
<td>Recapitulation of Research Design</td>
<td>47</td>
</tr>
<tr>
<td>Locale</td>
<td>47</td>
</tr>
<tr>
<td>Period of Study</td>
<td>47</td>
</tr>
<tr>
<td>Method of Research</td>
<td>47</td>
</tr>
<tr>
<td>Instruments</td>
<td>47</td>
</tr>
<tr>
<td>Criterion of Reliability</td>
<td>47</td>
</tr>
<tr>
<td>Procedure</td>
<td>47</td>
</tr>
<tr>
<td>Summary of Related Literature</td>
<td>48</td>
</tr>
<tr>
<td>Summary of Findings</td>
<td>60</td>
</tr>
<tr>
<td>Conclusions</td>
<td>62</td>
</tr>
<tr>
<td>Implications</td>
<td>63</td>
</tr>
<tr>
<td>Recommendations</td>
<td>64</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>65</td>
</tr>
<tr>
<td>APPENDIX</td>
<td>69</td>
</tr>
</tbody>
</table>

Specimen of Peabody Picture Vocabulary Test
Form A

Metropolitan Readiness Test Form B
Audiogram
Burks' Behavior Rating Scale

VITA | 73 |
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Data Concerning Subjects' Intelligence Quotients</td>
<td>34</td>
</tr>
<tr>
<td>2. Data Concerning Subjects' Chronological Ages</td>
<td>36</td>
</tr>
<tr>
<td>3. Data Concerning Subjects' Mental Ages</td>
<td>36</td>
</tr>
<tr>
<td>4. Incidence of Speech Defectives According to Intelligence Quotients</td>
<td>37</td>
</tr>
<tr>
<td>5. Data Concerning the Subjects' Intelligence Quotients, Handedness and Speech Defects</td>
<td>38</td>
</tr>
<tr>
<td>6. Data Concerning Subjects' Dominance and Speech Defects</td>
<td>40</td>
</tr>
<tr>
<td>7. Data Concerning Subjects' Visual Acuity</td>
<td>40</td>
</tr>
<tr>
<td>8. Data Concerning Subjects' Visual Perception</td>
<td>41</td>
</tr>
<tr>
<td>9. Data Concerning Subjects' Emotional Stability</td>
<td>42</td>
</tr>
<tr>
<td>10. Data Concerning Attendance Habits of Subjects for the School Year 1965-1966</td>
<td>44</td>
</tr>
<tr>
<td>11. Data Concerning the Physical Coordination of the Subjects</td>
<td>44</td>
</tr>
<tr>
<td>12. Data Concerning Percentile Rank of Subjects' Scores on a Readiness Test</td>
<td>45</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

Rationale.--If all the children of school age in the United States who are handicapped in speech were brought together in one place they would make a city the size of Los Angeles. Their number, approximately two million, equals or exceeds the respective population of 24 of the 50 states. They make up our largest group of exceptional children. In 1957-1959 approximately 307,000 speech handicapped children received special educational services in the public elementary and secondary schools of this country. There are more than twice as many children with speech defects being served as there are any other one type of handicapped child. Even so, there are scarcely more than one out of six speech handicapped children of school age receiving remedial speech instruction.

The great need for speech correction exists not only because the number of speech handicapped children is so large, as handicapped groups go, but also because the distinctive mark of humanity is speech, and the impairment of speech is, therefore, a distinctively human impairment. The number of persons who understand this in a clearly conscious and articulate fashion is becoming even greater in this highly verbal age of incessant world-wide communication. We know, as though by instinct, that speech gives wings to the human spirit, and those whose wings are
weak or unnimble command our sympathetic attention and our will to help.

It is clearly important that everything possible should be done to increase the number of well qualified speech correctionists. A complete program for the United States would require about 15,000 speech correctionists; this would be one to every 10,000 persons of all ages.

It is essential that classroom teachers in our schools be prepared, as well as they can be, to work effectively in partnership with the speech correctionists who are available, and to be as helpful as possible to the speech handicapped pupils in their classes. A teacher must set an example and create an atmosphere which is in some measure favorable or unfavorable to the best development of each child's speech. From a speech correction point of view, she creates each day a situation in which the child with a speech difficulty tends to be either demoralized or helped not only to improve his speech but also to live gracefully with his problem so long as it persists, and to grow as a person through the experiences he has had with it. A teacher can pay too much attention to a child's speech or too little. The main purposes of speech are satisfying self-expression and effective communication. The science of communication is rapidly becoming one of the most exciting, comprehensive, sophisticated, and socially important of all our many scientific disciplines.

We have learned that we can best serve a speech handicapped child not by placing him in a program that isolates him from his peers, but by training him always with a clear recognition of the fact that speaking is something that he must do to and with others and that through speech he must relate himself as an individual to others.
Speech impaired children profit from working in groups, sharing experiences with others, and forming relationships with other children who have problems similar to their own.

They gain motivation to improve by sharing the morale of the group and by contributing to it.

One of the most essential requirements for effective teaching of children with speech problems is sufficient knowledge about the problem that a particular child has, and about the physical equipment and the personality of the child who has the problem.

One of the most vivid characteristics of the American is his concern for the unfortunate. Many agencies are focusing their effort and wealth in the attempt to aid the crippled in mind and body to rejoin society.

We Americans feel a strong need to belong. We feel uneasy when we are unable to become a part of a group near us. We find great security and strength from the mere fact of membership.

The person who is different—the deviant individual—is, of course, faced with great difficulties when he attempts to enter the normal group, since much of their functioning depends upon communication.

The speech defective cannot talk his way in, yet they want to belong to the group to which normal individuals belong. No one can understand the problems of the handicapped except in terms of the penalties they pay. A problem of special concern to the writer is that of speech defects among the mentally retarded.

Speech involves more than the ability to pronounce sounds. It calls for the assimilation of sounds into words, then combinations of
words into units to make a meaningful whole. Thus speech becomes the
tool which assists in developing a formalized language. It is the re-
sult of visual, auditory, kinesthetic, and perceptual experiences, and
its aim is to convey some constellation of ideas to a listener. Its
lack is a problem in mental retardation and draws unfavorable attention
to the speaker.

Children with speech defects find it difficult to meet school
expectations which insure them a minimum level of personal-social com-
petency. Many of them, discouraged almost before they begin, drop out
of school as early as it is legally possible to do so and increase the
numbers of unproductive citizens. Severely disadvantaged children lack
the environmental background from which language facility and other
school foundations emanate. Characteristically, these children are in
school but socially and psychologically handicapped.

Speech which deviates from the average, whether through unpleasant
sound, inappropriateness to age level, or lack of intelligibility, may
be classified as defective. To be normal, speech should be pleasant,
should be audible, should be intelligible, and should not have any un-
desirable concomitants, such as grimaces, smacking of lips, or tongue
protrusion. Of interest to the investigator has been the question of
the relationship of speech problems of the mentally retarded to other
facets of development.

Speech is of great importance in today's world, and in order to
meet the challenge of working effectively with mentally retarded chil-
dren, the writer feels a need for wider knowledge in this area of study.
Once these developmental and underlying factors have been recognized,
and she knows the sequence of speech problems and their relationship to other variables, she can adjust her program to fit their individual needs.

**Evolution of the problem.**—The problem involved in this study grew out of the writer's interest in the speech problems of the pupils in a class of mentally retarded children. During the past few years the writer noticed the incidence of speech problems among the pupils. As a result of this observation, she began to wonder about the relationship of speech problems to intelligence, handedness, visual acuity, visual perception, emotional stability, auditory acuity and other variables.

**Contribution to educational knowledge.**—It was hoped the information contained in this study would prove valuable for those who are teaching mentally retarded children and concerned with improving the speech problems. The information in this study might be used as an aid to new teachers in the field of mental retardation. The writer believes that instruction can be greatly improved in the classroom once the developmental and underlying factors of speech problems have been recognized. When teachers understand the sequence of speech problems and their relationship to other variables the program can be adjusted to fit individual needs.

**Statement of the problem.**—This study was concerned with the speech problems of sixteen pupils who were enrolled in a primary class of educable mentally retarded children at Bouldercrest Elementary School of DeKalb County, Atlanta, Georgia.

**Purpose of the study.**—The general purpose of this study was to investigate the speech problems of a class of mentally retarded children
of Bouldercrest Elementary School, DeKalb County, Atlanta, Georgia. Those diagnosed as having speech defects, will be studied more extensively.

Specifically to:

1. Determine the incidence of speech defects in the class.
2. Determine the levels of intelligence, the chronological ages, mental ages, handedness for the group, and dominance, visual acuity and perception, emotional stability, attendance habits, auditory acuity, physical coordination and percentile ranks on readiness test for the speech defectives.

Definition of terms.—The terms used in this study follow:

1. "Educable mentally retarded" refers to those whose intelligence quotients ranged from 50-75.

2. "Mental retardation" refers to that group of conditions which is characterized by: (a) slow rate of maturation; (b) reduced learning capacity, and (c) inadequate social adjustment present singly or in combination, and associated with below average intellectual functioning, and is present from birth or early age.

3. The term "speech disorder" may be used as a general term to indicate disorders of speech or language.

4. The term "communication disorder" may be employed as a general term to include speech, language, or hearing disabilities.\(^1\)

All but one of the following terminologies are taken from the definitions of West, Kennedy, and Carr.\(^2\)


5. Van Riper has defined speech as being defective when it deviates so far from the speech of other people that it calls attention to itself, interferes with communication, or causes it possessor to be maladjusted.¹

6. Organic causes refer to organs or separately functioning parts of the speech mechanism. A disorder is organic when there is a defect of structure or tissue.

7. A disorder is functional when it is not one of voice or any part or tissues of the body but rather a disturbance of the reacting tissues.

8. The movements during speech of the organs that modify the stream of voiced or unvoiced breath into meaningful sounds are the functions of articulation.

9. Etiology refers to the study of the cause of an abnormal condition.

10. Stuttering is a disorder of speech arising from emotions, and is characterized by spasmodic interruptions of the rhythm of speech.

Subjects and materials.—The subjects of this study were children who were included in a primary class of sixteen educable mentally retarded children. Those with speech defects were studied more extensively.

Materials used in conducting this study were:

1. Survey tests:
   a. Psychological records from the school office
   b. Burks Behavior Rating Scale
   c. Test Results from the Speech Therapist's tests.
   d. Oral Handedness Test
   3. Snelling Eye Test

f. Peabody Picture Vocabulary Test  
g. An Audiometer Test  
h. A Coordination Test  
i. Metropolitan Reading Test  
j. Winter Haven Perception Test  

2. School Records  
3. Observations  

Method of research.—The Descriptive Survey method of research, employing the technique of observation and testing was used to collect the data for this study.  

Limitations of the study.—This study was limited to a primary class of sixteen educable mentally retarded pupils in the Bouldercrest Elementary School, DeKalb County, Atlanta, Georgia. Information presented in this study was limited to this specific group and generalizations may or may not hold true with similar groups. Another limitation of this study may be inadequate response to tests or misinterpretation of test results.  

Procedural steps.—The procedural steps used in the conduct of this study were as follows:  

1. Permission to make this study was obtained from the proper school official.  
2. Literature was reviewed, summarized and presented in the final thesis copy.  
3. Tests were administered and data from school records collected.  
4. These data were compiled and treated statistically for analysis and presentation.  
5. Students were observed.
6. The formulation of findings, conclusions, implications and recommendations were formulated and incorporated in the final thesis copy.

Survey of related literature.—Literature pertinent to this study was surveyed and organized for presentation by the writer. The significant aspects of this literature, as it relates to speech problems of the mentally retarded, is reviewed in the following paragraphs.

The incidence of speech problems among the mentally retarded has been reported in a number of studies and the incidence figures vary widely.

Sir Cyril Burt studied the speech of children in typical schools in London and Birmingham. In the group with I. Q.'s 70-85, he found 9 per cent of the children with mild speech defects and 5 per cent with severe speech defects. In the group with I. Q.'s 50-70, there were 13 per cent with severe defects. Burt estimated that at least 25 per cent of retarded children are speech defectives.¹

Fletcher cites a study by Cassel in Berlin in which it was reported that 33.5 per cent of defective children spoke imperfectly.

American incidence statistics are considerably higher than those of Burt. However, most of the American studies have been carried out in institutionalized populations and have included the speech of children too retarded to have entered regular school.²


Leewald investigated 533 patients in an institution and found that 56 per cent of all the patients had speech defects. Sirkin and Lyons examined 2,522 institutionalized mentally retarded. They reported that 50 per cent had no speech at all. Schlanger found that 68 per cent of 74 children in a private school for the retarded had speech defects. Kennedy studied speech defects in an institution population and found that 71.87 per cent of 27 imbeciles had dysalic speech. Of 249 morons 42.57 per cent had speech disorders ranging from slight to severe in nature. All of the 32 idiots studied lacked language beyond jabbering, crying, and utterance of isolated words.

Sachs examined 210 morons and imbeciles who were inmates at the Lynchburg State Colony in Virginia and found that 57 per cent of the borderline group and 79 per cent of the imbecile group had defective speech. Sirkin and Lyons found that 31 per cent of their institutionalized mentally retarded with I. Q.'s over 69 had speech defects. In the moron group 47 per cent had speech defects and in the imbecile group 74 per cent had speech defects.

Wallin found that in St. Louis more than one-fourth of the pupils in the special schools for the mentally defective were reported as having some form of speech defect. The speech defects of all kinds in these special schools were more than 10 times prevalent as they were among normal children in the white elementary schools.

Although the incidence figures of these studies vary, the data permits us to conclude that the incidence of speech defects in populations of mentally retarded is high—considerably higher than in the general population.¹

The question has been asked if the speech defects found among the mentally retarded are essentially different from those in non-retarded populations. Irwin is among the few investigators who feels that the mentally retarded child is not only delayed and defective in speech, but that his entire course of development of sounds is different from that exhibited by normal children. He studied ten children having I. Q.'s ranging from 7 to 48. He made transcriptions of their speech sounds with an interval of a year between times of testing. He found that these children used back vowels more frequently than front vowels. In this respect their speech resembled that of infants. The retarded child showed concentration in the labial, post-dental, and glottal sounds. The ratio of vowels to consonants in the retarded group was 1.1.² However, most investigators of the speech of older mentally retarded

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children find that speech defects in the mentally retarded are similar in kind to those found in non-mentally retarded populations.

On the other hand, Karlin and Strazulla listed consonant defects in order of occurrence in a population of retarded. The most frequent occurring defective consonant was s, followed by z, l, r, t, and d. This is similar to the order of occurrence of articulation problems that would be found in a non-retarded population.¹

Bangs made a most systematic study of the articulatory defects of the feeble-minded. His subjects of study were residents of Eastern State Custodial School, located at Medical Lake, Washington. The criteria set for the selection of the subjects were:

1. They must all be primary aments.

2. There must be no indication of retardation due to birth injury.

3. No cases of speech deficiency due to deafness or physiological causes were used unless such physiological deficiencies were directly associated with primary amentia.

4. No mute subjects were accepted.

5. No stutterers were chosen for testing.²

The following conclusions were reached:

1. The relationship between speech proficiency and mental age was found to be greater than that which existed between intelligence quotient and speech proficiency.

2. Chronological age has an inverse relationship with speech proficiency.


3. When the influence of mental age is disregarded, the chronological age assumes more significance as a determining factor in the speech proficiency of the feebleminded.

4. The predicative value of mental age is considerably greater than that of the chronological age of primary aments in so far as speech proficiency is concerned.

5. Phonetic data on the order of avoidance does not reveal much which is significantly different from the avoidances recorded in the speech of normal children.

6. The sounds most frequently substituted for each sound by the ament also are very similar to those used by the normal child.

7. Many of the minor substitutions made by aments are not in accordance with the usual ones made by children of normal intelligence.

8. Omissions constituted thirty-five per cent of all the errors made in final positions and twenty-one per cent of all errors made in all positions.

9. The speech of primary aments tends to correspond very closely to that of normal children with comparable mental age in so far as preferred sounds, sounds avoided, and most frequent substitutions are concerned.

10. The speech of the primary ament displays the same tendency toward retardation which is characteristically noted in other functions of the primary ament. Aside from more frequent omissions of final sounds, the articulatory speech defects of the primary aments do not differ qualitatively to any marked degree from the defects which might be found in children whose intelligence falls within the normal range.

Types of speech problems were further exemplified by the results of a study in New York State designed to measure development of trainable mentally deficient children in a number of areas over a two-year period (of 32 mentally deficient children attending public schools and 80 severely retarded residing in institutions). Eleven sounds were tested in the initial, final, and medial position of a word represented
by a picture.\textsuperscript{1}

An analysis of the tests showed:

1. There was a trend toward fewer committed errors as I. Q. increases.

2. On the initial test, the institution group scored a lower mean number of errors than the public school group.

3. The public school group articulated more of the 11 sounds and made slightly more improvement on each retest than the institution group.

4. Omissions were the most common type of error.

West, Kennedy, and Carr reported that amentia causes such defects as the following: The grammar lacks refinement of tense, number, person, mode, case, often even of gender. The thoughts expressed are concerned with things rather than with ideas. The pronunciation is confused though the articulation may be accurate. The vocabulary is small, apparently not so much because of lack of articulatory skills as because of failure to recognize the need of variety of meanings; onset of speech is delayed. Complete failure to develop speech can be ascribed to amentia only when the amentia is of the low-grade idiot.\textsuperscript{2}

Since secondary amentia more frequently shows complications with other disorders, the speech symptoms of these patients show a wider variety than that exhibited by primary aments. Hence, the speech of the idiot and the imbecile not only will appear more seriously affected in


\textsuperscript{2}West, \textit{loc. cit.}
degree than in addition to the characteristic dyslogia or mental impairments.¹

Tredgold and Soddy in their studies of mental deficiency found also that on the whole, defect of speech tends to be directly proportionate to the degree of mental defect. These authorities on mental deficiency listed the various types of speech found in aments that were studied.² They are as follows:

1. Motor Aphasia may be diagnosed when the individual can understand and obey commands, but is unable to speak, or at most is unable to say a few words. As might be expected, this occurs in cases of secondary amentia consequent of a traumatic or inflammatory lesion of the brain.

2. Stuttering is a disorder of speech arising from emotionalities, and is characterized by spasmodic interruptions of the rhythm of speech.

3. Stammering is a sudden bolt at a word and then its explosive utterance occurs more often.

4. Lisping is a disorder of the sibilant sounds, especially s and z. Lolling is characterized by defective r, l, t, d, or s sounds, and is largely due to sluggishness of the tongue tip.

5. Idioglossia is a form of speech disturbance which is occasionally met in mental defectives, although it is not confined to them. It consists of such an extreme substitution of sounds for the correct ones that the child speaks a language peculiar to himself, but he generally uses the same sound for the same word.

6. In echololia, although the child can use the proper words to express his feelings, and thoughts, questions

put to him are followed, not by a reply but by a repetition of the question, or of the last few words of it.

7. Coprolalia is a condition in which "filthy speech" exists. This is more or less a sudden outburst of language of the most vile and disgusting character. It has considerable analogy to the motor convulsions of the epileptic and is also common to the insane.

Morley in his studies of the development of speech in young children found a type of speech defect that he terms dyslalia. In dyslalia there is a consonant substitution, and this occurs when there is a general defect of mental development, frequently associated with delay in the development and use of language which is proportional to the general level of mental and motor development.

Van Riper asserts that not only are children of low intelligence slow to learn to talk, but their speech patterns are frequently slurred, confused with sound substitutions, and complicated by peculiar intonations. Motor skills are retarded, and speech, the most complicated of all motor skills, certainly demonstrates the effect of this retardation. The feeble-minded child's lack of discrimination, his distractability, and his lack of response to social stimulation, all contribute to inaccurate and defective speech.

There are specific types of children—the post-encephalitic, the epileptic, the mongol, and the cretin—who are physical as well as mental deviates. They are deficient in what they have to say and in

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2Van Riper, loc. cit.
their manner of saying it. Berry and Eisenson made studies of these types of children and their speech involvements, and they reported as follows:1

1. The speech involvements of the child who has suffered from encephalitis will be determined by the extent and degree of brain area injured or destroyed as a result of the disease. For the most part, the involvements are likely to be those generally associated with motor deficiency. The post-encephalitic person, because he is likely to be mentally deficient, will have difficulty in finding something he wants to say as well as saying it. Shortly after the onset of acute encephalitis, speech symptoms appear which resemble stuttering. The speech is arrhythmic and marked by blocks and hypertension of the muscles of the speech mechanism. These symptoms disappear after the acute stages and so are not to be observed by the average speech clinician.

2. Some of the speech defects of epileptic patients are probably etiologically associated with their general picture of physical disability. Others are attributed to their lowered intelligence and their personality picture. Although epilepsy per se is not directly the cause of any one speech disturbance, comments such as “He speaks hesitatingly and slowly” appear most often in the case histories of epileptic patients brought to speech clinics. Immediately after the attacks the epileptic patient is likely to manifest signs of perservation in his speech and his behavior in general. Repetition of sounds and a pattern of speech closely resembling chronic stuttering are to be expected. The voice of the epileptic is likely to be muffled, and lacking in the subtle pitch produced by the normal voice.

3. The mongul has structural abnormalities such as cleft lips and palate, faulty dental formation, union of fingers and toes. He has structural abnormalities of the articulatory and hearing mechanism. He has little urge to say it. His articulation is thick and marked by infantilisms, the tip of the tongue consonants being

poor. The voice is usually hoarse and is produced without modulation of pitch or intensity. Mongols who suffer hearing loss because of nerve deafness will present the speech picture usually associated with perception deafness.

4. The speech of the cretin, thyroid deficient child, shows delay in both linguistic and articulatory aspects. Because he is mentally deficient, the cretin's vocabulary will reveal expected impoverishment. Vocabulary development will be in closer keeping with the mental age of the child than it will be with his chronological age. In respect to articulation, a general thickness and a lack of precision prevail. Errors in consonant production are almost invariable. Sound substitution, introduction of extraneous sounds, prolongation and repetition of sounds, and sound omissions may be noted. In regard to consonant omissions, the "t" is frequently omitted, followed by l, r, d, and f. Next in order were s, k, n, and th.

The speech of the cretin is defective only when we compare it with that of normal children of his age. Lacking good muscle tone, inclined to be easily fatigued, and deficient in ability to execute fine and precisely coordinated motor movements, neither the articulation nor the voice of the cretin can be produced effectively.

Schlanger explored the articulation of a group of mentally deficient children. He investigated the interrelationship between these speech developmental factors, articulatory proficiency, chronological age, and mental age to consider relative influence of mental age and chronological age on these measures. His findings were as follows:¹

1. Thirty per cent had hearing loss.
2. There was marked deficiency in auditory memory span.
3. Sound substitutions found most frequently defective indicated immaturity of the speech of these children.
4. Correlation coefficients obtained to determine interrelationships of all measures used indicated that in every

¹Schlanger, loc. cit.
incidence the correlations between mental age and the other scores were higher than those between chronological age and the same scores.

In another study, Schlanger investigated environmental influences upon the speech of mentally retarded children. Twenty-one matched pairs of mentally retarded children from city and institution community environments were tested for verbal output. Comparisons of mean sentence length and words per minute scores indicated significant differences between these groups. The suggested causes for lower language output included loss of speech motivation, the complete association with peers and overstimulation from such continual contact. The severance of familial ties were also considered as blocking language development.

One of Schlanger's studies included a study of seventy-four retarded children whose mean age was 12. The following speech defects were found:

1. Voice defects -- 62 per cent
2. Articulatory -- 57 per cent
3. Stuttering -- 20 per cent

Further testing revealed deficiency in the following areas:

1. Articulation: 16 per cent sufficiently deviate to interfere with communication.

2. Mean Sentence Length: Mentally retarded demonstrate a shorter mean sentence length than do normals.

Since damages to the central nervous system so often are found as causes of amentia, there are also accompanying speech problems of a

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neuropathic nature. The brain-injured is likely to be dysphasic in proportion to the extent of the injury. Behavior disturbances as well as neurologic factors limit the potential of communication of the retarded brain-damaged child.¹

There is an aphasic type of speech disturbance. Diagnosis of aphasia should be made only when there is a difference between language facility as compared to mental capacity.² Such differences may be present in the mentally deficient and these conditions should be classified as mentally deficient with aphasia. Both the feeble-minded and the aphasic child may show generally slow speech development and later present very similar difficulties in reading and writing.³

Observations by the clinician of the child at play may provide some leads for a differential diagnosis.⁴

1. Is it difficult to obtain the child's attention?
2. If obtained, is attention fleetly and likely to be distracted?
3. Is there marked perservation that seems almost compulsive?
4. Does the child enter a new situation with apparent enthusiasm which disappears suddenly and quickly?
5. Does the child frustrate readily?

⁴Berry, op. cit., pp. 343-356.
6. Does the child, in general, show emotional stability?

"Yes" answers to these questions would suggest aphasic involvement rather than mental deficiency.

Stuttering and cluttering have a very specific relation to the problem of retardation. Cluttering, the disorderly precipitation of speech, is very frequent in these children as it depends to a great degree on heredity and lack of self-control. In the treatment of stuttering in retarded children there is a basic disturbance as characterized by precipitation, lack of vocabulary, grammatical shortcomings, expressive difficulties of speech, lack of ability to grasp or conceive generalized relationships. This group of symptoms has usually been called cluttering.1

The close relationship between speech and intellectual retardation works both ways. Retardation may be the source of speech defects and specific speech impairment may cause retardation.2 The problem of retardation in general has to be clearly distinguished from that of feeblemindedness. Practically every child who has not started to use some words by the end of the first year appears retarded to his surroundings. At three years of age the question of the onset of speech has to be considered as urgent. It may be useful to reinstate the main reasons for delayed start of speech:

1. Deafness or hardness of hearing
2. Malformation (e.g., cleft palate)
3. Child's aphasia or dysarthria
4. Psychosis

1Ibid., p. 97.
2Weiss, loc. cit.
5. Asocial attitudes due to neglect or spoiling
6. Feeble-mindedness
7. Rejection of speech (abulin)
8. Dyserosic diseases
9. Long-standing illness
10. Bilingualism

Malformations of the phonotory organs can retard the development of speech and therefore the intellectual development of the child. Feeble-mindedness is definitely one of the reasons for delayed start in speech, but it would be incorrect to assume it is the case of every child who did not start to speak on time.

The dependence of language upon intelligence can be illustrated by observing the frequent absence of language and speech in the severely mentally retarded. The relationship of speech to intelligence is sufficiently close enough to make any serious deficiency in intelligence almost certain to be reflected in speech retardation, the degree and amount of one being roughly proportionate to the loss in the other. Absence of language and speech has actually been employed as a basis of classification of the mentally retarded. Binet and Simon have employed this principle in defining the idiot: "An idiot is one who never learns to communicate with his kind of speech -- that is to say, one who neither can express his thought verbally nor understand the verbally expressed thought of others, this disability being due solely

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to defective intelligence, and not to any disturbance of hearing, not to any affection of the organs of phonation.\(^1\)

Tredgold has observed that in idiocy speech is usually absent, although a few do learn to articulate such simple monosyllables as man, cat, and dog, but none of them can form sentences. We have little accurate information concerning the average age at which individuals with varying degrees of mental retardation begin to babble, use words meaningfully, and combine words with phrases and sentences.\(^2\)

In her examination of the speech status of thirty-two idiots, Kennedy found twenty-two were altogether mute, nine could produce only jabbering, and only one produced recognizable words. Kennedy reported that some idiots gave evidence of understanding simple commands.\(^3\)

Town studying fifty idiots divided his samples into high-low-and-middle grade intelligence levels. He found that the degree to which language develops is directly dependent upon intelligence.\(^4\)

In an investigation of 1000 boys and girls whose I. Q.'s ranged from 10 to 159, Abit, Adler, and Bartelme correlated age of speech onset with intelligence (Stanford-Binet). The correlation between age of speech onset and intelligence was \(-.41\) for boys and \(-.39\) for girls.\(^5\)


\(^3\) Kennedy, *op. cit.*, pp. 604-620.


Mead studied 92 feeble-minded children (not defined in terms of I. Q.*) and reported that the typical feeble-minded child uses a word meaningfully at 34.2 months and that this behavior may have its onset at 12 months or up to 156 months.¹

Karlin and Strazulla investigated the age of babbling, word range, and sentence use in three groups of mentally retarded. Their data are summarized in Table 1 below.²

<table>
<thead>
<tr>
<th>Activity</th>
<th>I. Q. 15-20</th>
<th>I. Q. 26-30</th>
<th>I. Q. 51-70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babbling</td>
<td>25 months</td>
<td>20.4 months</td>
<td>20.8 months</td>
</tr>
<tr>
<td>Word Use</td>
<td>54.3 months</td>
<td>43.2 months</td>
<td>34.5 months</td>
</tr>
<tr>
<td>Sentence Use</td>
<td>153 months</td>
<td>93 months</td>
<td>89.4 months</td>
</tr>
</tbody>
</table>

Table 2 below shows a report of studies that point out clearly that on the average the mentally retarded child acquires language and speech considerably later than the child of normal intelligence.³

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Type Population</th>
<th>Time of Use of First Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karlin &amp; Strazulla (1952)</td>
<td>I. Q.'s from 15-20</td>
<td>54 months</td>
</tr>
<tr>
<td>Karlin &amp; Strazulla (1952)</td>
<td>I. Q.'s from 26-30</td>
<td>43.2 months</td>
</tr>
<tr>
<td>Lapage (1911)</td>
<td>Low grade defectives</td>
<td>41 months</td>
</tr>
<tr>
<td>Karlin &amp; Strazulla (1952)</td>
<td>I. Q.'s from 51-70</td>
<td>34.5 months</td>
</tr>
<tr>
<td>Mead (1913)</td>
<td>Non-defined retarded population</td>
<td>34.44 months</td>
</tr>
<tr>
<td>Wallin (1949)</td>
<td>Morons</td>
<td>18 months</td>
</tr>
</tbody>
</table>

Doll found that when chronological age was held constant, there

²Karlin, loc. cit.
³Ibid.
was a correlation of .39 between speech proficiency and mental age. In a study of twelve birth injured children with defective speech, Doll reported a correlation of .02 between I. Q. and the severity of the speech defect. Schlanger found a correlation of .37 between mental age and articulation; proficiency although the correlations just cited are low, they do point to a relationship between intelligence and degree of speech involvement.

Some preliminary work with babies under a year yielded inclusive results. The project was further pursued with eighty other infants. The fact was established that even at a year and a half the relationship is not very dependable, but that from the twentieth to the thirty-eighth month there are reliable correlations between the several speech sounds -- Indices and the Kuhlman Anderson Intelligence Test and also the Catell Infant Intelligence Tests. It is apparent that after the twentieth month the factor of intelligence is a definite, although not an exclusive one in the development of infant speech.

In case studies cited by Stinchfield and Young, there was evidence to the effect that when children are taught to speak there is a concomitant increase in their intelligence quotients. Whether this increase results directly from the ability of the child to use language in a conventional manner, or whether the child who speaks makes a generally more adequate adjustment to his environment, and to the taking of in-

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2Schlanger, loc. cit.
3Irwin, loc. cit.
telligence tests is not certain.¹

Because language plays so important a part in most tests of intelli-
gence, the exact relationship between language development and intel-
gence is not known. There seems, however, no cause to doubt that
the more intelligent children have richer vocabulary and in general a
control of language which is superior to that of dull and normal chil-
dren.² Hildreth found that children who scored well on verbal intel-
gligence tests were also superior to average scoring children in non-
language tasks involving drawing and motor skills.³ Mead found that
mentally deficient children began to talk about a year later than
mentally normal children of superior intelligence.⁴ Town reported
from one of his studies that superior children began to talk earlier
than those who were of average intelligence. It should not be con-
cluded, however, that a child who begins to talk late is necessarily
retarded or at best "just normal" in intelligence. It would be much
safer to conclude that feeble-minded children as a group begin to talk
at a later age than do those who are normal or bright, but that some
normal or bright children may begin to talk as late as many dull chil-
dren.⁵

Mental defect may also interfere with full comprehension for speech

²Berry, *op. cit.*, p. 98.
⁴Mead, *loc. cit.*
⁵Town, *loc. cit.*
although in the majority of such children with normal hearing understanding for simple speech associated with the basic needs of life may be adequate unless the mental defect is severe.

A certain type of intelligence is necessary to learn speech. West believes the type of intelligence necessary for learning any motor skills, especially speech, is one in which two basic and opposite tendencies or mental attitudes are balanced one against another. There are two types of feeble-minded who do not achieve good speech: (1) Those who are too apathetic and inactive to make experimental efforts towards good speech. They learn little because they attempt little. (2) We have those who lack the ability to observe the results of their experimental effects. They are the children who learn little because they see little to learn. These two types of the feeble-minded may be characterized by the terms apathetic and manic. The learning of speech requires a nice balance between experimentation and observation. The apathetic ament does not learn to utter the sound "K", because he does not experiment with his tongue; the manic does not learn the sound "K" to use it as speech because although he makes many experimental sounds, he does not pause to observe them and to distinguish the appropriate from the inappropriate articulation.¹

Kirkpatrick says, "Philogogists and others interested in the origin of language and the development of intellect find very striking analogies between the development of speech and intelligence in the race and in child."²

¹West, loc. cit.
In selecting a mental test for speech defectives one should avoid those that employ language in the administration of the problems presented or in their solution. In interpreting the mental test score of the speech defective one should ask these questions: (1) What is the general level of intelligence—that is, his mental age? (2) What is the intelligence quotient? (3) What is his intelligence profile, that is, are his intellectual faculties all developed to about the same level? One general question may then be asked. Does the test reveal any intellectual impairments that bear direct relation to the defects of speech?

The role of handedness in speech disorders has not been adequately determined. It is interesting to note that there is a higher incidence of lefthandedness in mentally deficient populations than in normal groups. Karlin and Strazulla reported 16 per cent of the mentally retarded children they studied were lefthanded as compared to three per cent in a normal population. The percentage of established handedness increased with I. Q. level.

In Table 3 it is interesting to note that as the level of the I. Q. group increased, the greater was the per cent of established handedness.

<table>
<thead>
<tr>
<th>I. Q. Range</th>
<th>C. A.</th>
<th>M. A.</th>
<th>Handedness Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-25</td>
<td>3 yr. 9 mo.</td>
<td>0 yr. 6 mo.</td>
<td>56%</td>
</tr>
</tbody>
</table>

1Berry, loc. cit.
2Travis, loc. cit.
### TABLE 3 (Continued)

<table>
<thead>
<tr>
<th>I. Q. Range</th>
<th>C. A.</th>
<th>M. A.</th>
<th>Handedness Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-50</td>
<td>3 yr. 0 mo. to 13 yr. 7 mo.</td>
<td>1 yr. 3 mo. to 6 yr. 0 mo.</td>
<td>65%</td>
</tr>
<tr>
<td>51-70</td>
<td>3 yr. 9 mo. to 14 yr. 1 mo.</td>
<td>1 yr. 8 mo. to 7 yr. 11 mo.</td>
<td>92%</td>
</tr>
</tbody>
</table>

From these figures a definite relationship is indicated between the establishment of handedness and the degree of mental retardation.\(^1\)

Lewald found approximately 20 per cent of 466 mentally retarded either left-handed or without hand dominance.\(^2\) Burt reported that 7.4 per cent of the mentally deficient children in Birmingham and 12.3 per cent of those in London were left-handed. Left-handedness or lack of hand dominance is found much more frequently in populations of mental defectives than in the normal population.\(^3\)

As long ago as 1914, Lewis Termin described the speech defective in one of his books. Of these defectives he wrote:

"The victims whole existence is poisoned. The more sensitive stutterer comes to prefer silence to ridicule. He retires into himself, and as a result often becomes ill-tempered, hypochondriac, suspicious of others or disagreeable. Life long moral suffering and permanent defects of character may be the issue of a speech defective."\(^4\)

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\(^1\) Karlin, loc. cit.
\(^2\) Lewald, loc. cit.
\(^3\) Travis, loc. cit.
\(^4\) Termin, loc. cit.
Speech and personality grow, develop, differentiate, and become refined together. Speech is a phase of personality. In many respects speech and personality are one and the same thing. Genuine speech improvement depends upon personality development. Moreover, personality is the result of social interaction; and any limitation in the means of expression and communication correspondingly stifles and distorts personality, and speech is the chief means of expression.

The effect of speech problems upon the personality of the child has been evidenced by analysis of test responses. Matthews and Birch have pointed out that required responses of tests are verbal. Children with speech defects (normal and mentally retarded) often are very self-conscious about speaking. They will sometimes feign ignorance rather than make a speech attempt that will lead to their embarrassment. Often the responses of a child with defective speech cannot be understood. This difficulty is especially noticeable in testing individuals with severe articulatory problems or with delayed speech. Both conditions are often found in severely involved cerebral palsy cases.

The feeble-minded child is frequently oppressed by his failures in school, in playground competitions, and in social adjustments. These

3Anderson, loc. cit.
failures engender within his personality a definite feeling of inadequacy, which in turn serves further to impair his speech.

Case studies presented by West, Kennedy and Carr pointed out the following trends concerning the relation of speech problems to personality:¹

1. The majority of cases with speech defects also had personality maladjustments.

2. The longer a defect was allowed to remain with an individual, the harder it was for the individual to correct.

3. Some cases which have been defective over a period of years before retraining is begun never make complete adjustment.

Van Riper has estimated that 96 per cent of the speech handicapped children of school age go without retraining, and he goes on to say that "too many show a yearly increase both in severity of the actual defect and in the abnormalities of personality which are built around it."²

A high incidence of hearing loss is found in populations of the mentally retarded. Tredgold stated: "Defects of hearing are fairly common in the aments and include complete deafness, tonal deafness, and word deafness. Some of these conditions may be due to developmental anomalies or disease of the peripheral organ, but others are of central origin. Even where no actual deafness is present the acuity and range of auditory perception are usually below normal."³

Abernathy administered audiometer tests to children with I. Q.'s ranging from 20 to 69 with C. A.'s ranging from 7 to 20. He computed

¹West, loc. cit.
²Van Riper, loc. cit.
the media threshold (in sensation units) for 373 subjects for eight
frequencies. His results are summarized below:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>64</th>
<th>128</th>
<th>256</th>
<th>512</th>
<th>1024</th>
<th>2048</th>
<th>4096</th>
<th>8192</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensation Unit Loss</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>10</td>
</tr>
</tbody>
</table>

Birch and Matthews found that over half of a mentally defective
population of 247 persons from 10 to 39 years of age had hearing losses. Schlanger in a study of 70 mentally retarded children reported data on hearing loss in substantial agreement with Birch and Matthews.

MacPherson sent questionnaires to various institutions for mentally retarded patients committed for mental retardation. He found that 22 schools considered 50 per cent of their patients had at least moderate hearing loss.

Foale and Patterson measured the hearing loss of 100 juvenile patients at Lennox Castle Institution for the mentally deficient in Scotland. The mean I. Q. of the patients was 66. Of the boys tested, 67 per cent had good hearing in both ears and approximately 13 per cent were handicapped by their hearing impairment.

Although there is not complete agreement among all the investigators as to the incidence of hearing loss in mentally retarded cases,

1 Travis and Others, loc. cit.
2 Birch, loc. cit.
3 Schlanger, loc. cit.
there is a clear-cut indication that the incidence of hearing loss among the mentally retarded is considerably greater than that in non-retarded populations.¹

In view of the high incidence of speech and hearing problems among the mentally retarded, it is not surprising that communication disorders are often thought to result from mental deficiency. The well-trained speech and hearing therapist should recognize that there may be many explanations of delayed or defective speech which have no relation to intellectual retardation. Brain injury, glandular dysfunctions, emotional disturbances, and hearing loss, all may cause retardation in the development of language or result in poor articulation.²

¹Travis and Others, loc. cit.
CHAPTER II

PRESENTATION AND INTERPRETATION OF DATA

Introductory statement.—The purpose of this chapter is to present findings which have been compiled as a result of the analysis of permanent school records, intelligence and other test scores, health records, teacher observations, and reports from the speech therapist concerning sixteen selected students who were enrolled in a class for the educable mentally retarded during the 1965-1966 school year. The findings are presented in accordance with the stated purposes of the study.

Intelligence quotients, mental ages, and chronological ages of the subjects.—Data regarding the intelligence quotients, mental ages, and chronological ages of the sixteen subjects of this study are shown in Tables 1, 2, and 3.

The frequencies, percentages, and mean of the subjects are also indicated.

TABLE 1
DATA CONCERNING SUBJECTS' INTELLIGENCE QUOTIENTS

<table>
<thead>
<tr>
<th>Intelligence Quotients</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>79 - 75</td>
<td>3</td>
<td>19.0</td>
</tr>
<tr>
<td>74 - 70</td>
<td>3</td>
<td>19.0</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td></td>
</tr>
</tbody>
</table>
Data concerning the intelligence quotients of the subjects.--The intelligence quotients of the subjects ranged from 49 and below to between 75 and 79. Four or 25.0 per cent, ranged between 55 and 59. The mean intelligence quotient for the group was 66.5.

Data concerning subjects' chronological ages.--The frequencies, percentages and mean of the subjects' chronological ages are shown in Table 2, page 36. The chronological ages ranged from 6.0 to 9.11. The majority, or 75 per cent ranged between 8.0 and 9.11. The mean chronological age for the group was 8.9.

Data concerning the subjects mental ages.--The frequencies, percentages and mean of the subjects' mental ages are shown in Table 3, page 36. Table 3 revealed that the mental ages ranged from 4.3 to 8.2. The majority, or 43.75 per cent ranged between 4.3 and 5.2. The mean mental age of the group was 5.5.

---

**TABLE 1--Continued**

<table>
<thead>
<tr>
<th>Intelligence Quotients</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>69 - 65</td>
<td>3</td>
<td>19.0</td>
</tr>
<tr>
<td>64 - 60</td>
<td>1</td>
<td>6.0</td>
</tr>
<tr>
<td>59 - 55</td>
<td>4</td>
<td>25.0</td>
</tr>
<tr>
<td>54 - 50</td>
<td>1</td>
<td>6.0</td>
</tr>
<tr>
<td>49 - below</td>
<td>1</td>
<td>6.0</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Mean -- 66.5
**TABLE 2**
DATA CONCERNING SUBJECTS' CHRONOLOGICAL AGES

<table>
<thead>
<tr>
<th>Chronological Ages</th>
<th>Frequency</th>
<th>Per Cent</th>
<th>Speech Defect</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.11 - 9.0</td>
<td>6</td>
<td>37.50</td>
<td>3</td>
<td>37.50</td>
</tr>
<tr>
<td>8.11 - 8.0</td>
<td>6</td>
<td>37.50</td>
<td>3</td>
<td>37.50</td>
</tr>
<tr>
<td>7.11 - 7.0</td>
<td>2</td>
<td>12.50</td>
<td>2</td>
<td>25.00</td>
</tr>
<tr>
<td>6.11 - 6.0</td>
<td>2</td>
<td>12.50</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>100.00</strong></td>
<td><strong>8</strong></td>
<td><strong>100.00</strong></td>
</tr>
<tr>
<td>Mean -- 8.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 3**
DATA CONCERNING SUBJECTS' MENTAL AGES

<table>
<thead>
<tr>
<th>Mental Ages</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.2 - 7.3</td>
<td>3</td>
<td>18.75</td>
</tr>
<tr>
<td>7.2 - 6.3</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>6.2 - 5.3</td>
<td>5</td>
<td>31.25</td>
</tr>
<tr>
<td>6.2 - 4.3</td>
<td>7</td>
<td>43.75</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>100.00</strong></td>
</tr>
<tr>
<td>Mean -- 5.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Data regarding intelligence quotients and mental ages of the subjects in comparison with their chronological ages substantiate their placement in a special class for the educable mentally retarded.

Data concerning the incidence of speech defectives according to intelligence quotients.—Table 4, below reveals that of the 16 children studied, six or 37.5 per cent had I. Q.'s ranging from 70 to 85. Of these six or 37.5 per cent, three or 50 per cent had speech defects. Nine or 56.2 per cent of the subjects' I. Q.'s ranged from 50-69. Of these nine or 56.2 per cent, four or 45 per cent had speech defects. One or 6.3 per cent had an I. Q. of below 50 and had a speech defect. The table also shows that eight or 50 per cent of the subjects had speech defects. It also indicates that the incidence of speech defects increased as the I. Q.'s decreased.

### TABLE 4

INCIDENCE OF SPEECH DEFECTIVES ACCORDING TO INTELLIGENCE QUOTIENTS

<table>
<thead>
<tr>
<th>I. Q.'s</th>
<th>Total Sample</th>
<th>Per Cent</th>
<th>Speech Defectives</th>
<th>Per Cent</th>
<th>Total</th>
<th>Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 - 85</td>
<td>6</td>
<td>37.5</td>
<td>3</td>
<td>50.0</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>50 - 69</td>
<td>9</td>
<td>56.2</td>
<td>4</td>
<td>45.0</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Below 50</td>
<td>1</td>
<td>6.3</td>
<td>1</td>
<td>100.0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>100.0</strong></td>
<td><strong>8</strong></td>
<td><strong>50.0</strong></td>
<td><strong>16</strong></td>
<td></td>
</tr>
</tbody>
</table>

Data concerning the subjects' intelligence quotients, handedness and speech defectes.—Table 5, page 38, revealed that of the 16 children
<table>
<thead>
<tr>
<th>I. Q.</th>
<th>Total</th>
<th>Per Cent</th>
<th>Right Hand</th>
<th>Per Cent</th>
<th>Left Hand</th>
<th>Per Cent</th>
<th>Right Hand</th>
<th>Per Cent</th>
<th>Left Hand</th>
<th>Per Cent</th>
<th>Total</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 - 85</td>
<td>6</td>
<td>37.5</td>
<td>4</td>
<td>66 2/3</td>
<td>2</td>
<td>33 1/3</td>
<td>2</td>
<td>50.0</td>
<td>1</td>
<td>50.0</td>
<td>3</td>
<td>100.0</td>
</tr>
<tr>
<td>50 - 69</td>
<td>9</td>
<td>56.2</td>
<td>6</td>
<td>66 2/3</td>
<td>3</td>
<td>33 1/3</td>
<td>2</td>
<td>33 1/3</td>
<td>2</td>
<td>66 2/3</td>
<td>4</td>
<td>100.0</td>
</tr>
<tr>
<td>Below 50</td>
<td>1</td>
<td>6.3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>100.0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>100.0</td>
<td>1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Totals | 16 | 10 | 6 | 4 | 4 | 8 | 38 |
studied six or 37.5 per cent had I. Q.'s ranging from 70-85. Of these six or 37.5 per cent, four or 66 2/3 per cent were right handed. Two or 33 1/3 per cent were left handed. Of these four right handed children, two or 50 per cent had a speech defect. Of the two left handed children, one or 50 per cent had a speech defect. Of the nine or 56.2 per cent whose I. Q.'s ranged from 50-69, six or 66 2/3 were right handed and 2 or 33 1/3 per cent had a speech defect. Three or 33 1/3 per cent of the nine subjects were left handed and of this group two or 66 2/3 per cent had a speech defect. One or 6.3 per cent had an I. Q. below 50 and had a speech defect.

The table shows that four of the ten right handed subjects had a speech defect and four of the six left handed subjects had a speech defect. This indicated a larger percentage of left handed children with a speech defect.

**Data concerning subjects' dominance and speech defects.**--Table 6, page 40, shows the results of a test of dominance designed to test handedness, eyedness, footedness and general use of the torso. Of the eight subjects diagnosed as speech defectives, two or 25 per cent showed a tendency to be right dominant, while six or 75 per cent tended to be mixed dominant.

**Data concerning subjects' visual acuity.**--Table 7, page 40, shows the visual acuities of the subjects diagnosed as speech defectives. The monocular acuities for the right and left eyes ranged from 20/20 to 20/100 for the group. The binocular acuity for the group ranged from 20/20 to 20/40. Four or 50 per cent had a binocular acuity of 20/30. The data as analyzed by the qualified optometrist indicated that the
Table 6
 DATA CONCERNING SUBJECTS' DOMINANCE AND SPEECH DEFECTS

<table>
<thead>
<tr>
<th>Dominance</th>
<th>Speech Defect</th>
<th>Audibility</th>
<th>Type</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right</td>
<td>Defective Articulation</td>
<td></td>
<td></td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>Left</td>
<td>--</td>
<td>--</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mixed</td>
<td>Defective Articulation</td>
<td></td>
<td></td>
<td>6</td>
<td>75.0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 7
 DATA CONCERNING SUBJECTS' VISUAL ACUITY

<table>
<thead>
<tr>
<th>Snelling Visual Acuities</th>
<th>Monocular</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Right</td>
</tr>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>20/100</td>
<td>1</td>
</tr>
<tr>
<td>20/40</td>
<td>1</td>
</tr>
<tr>
<td>20/30</td>
<td>4</td>
</tr>
<tr>
<td>20/20</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
</tr>
</tbody>
</table>

majority, or 62.5 per cent had a refraction and that this percentage would probably require corrective glasses.

Data concerning subjects' visual perception.—Table 8, page 41, revealed the results of the Winter Haven Visual Perception Test. The highest possible score to be obtained on this test is 100 with a set
TABLE 8

DATA CONCERNING SUBJECTS' VISUAL PERCEPTION

<table>
<thead>
<tr>
<th>Visual Perception Scores</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>74 - 65</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>64 - 55</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>54 - 45</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>44 - 35</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>34 - 25</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>24 - 15</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Mean -- 39

mean of 50. The subjects of this study scored from 15 to 74. The majority, or 50 per cent scored below 39. These results indicated visual perceptual problems that tend to distort near at hand projection and copying ability.

Data concerning subjects' emotional stability.--Table 9, page 42, revealed the ratings as derived from Burks Behavior Rating Scale. The vegetative-autonomic section of the rating scale showed that four or 50 per cent of the subjects diagnosed as speech defectives rated two, indicating that the described behavior had been noticed to a slight degree. Three or 37.5 per cent rated one, indicating that the described behavior had not been noticed at all. Only one rated three,
TABLE 9

DATA CONCERNING SUBJECTS' EMOTIONAL STABILITY

<table>
<thead>
<tr>
<th>Described Behavior</th>
<th>Rating</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vegetative Autonomic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>50.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Perceptual Discrimination</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>50.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Social Emotional</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>62.5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
indicating that the described behavior had been noticed to a considerable degree. A total look at this section indicates that the vegetative-autonomic behavior of the group is above average.

The Perceptual-Discrimination section of the rating scale showed that six or 75 per cent had a rating of two and above, indicating that the described behavior had been noticed to a slight degree or not at all. Three or 25 per cent had a rating of three or below, indicating that the described behavior had been noticed to a considerable degree. A total look at this section indicated that the perceptual discriminative behavior of the group is above average.

The Social-Emotional section of the rating scale showed that all or 100 per cent of the group rated two or above, indicating that the described behavior had been noticed to a slight degree or not at all. The social emotional behavior of the group is above average.

Results from the Burks Behavior Rating Scale indicated that there was no serious behavioral problems in this group.

Data concerning attendance habits of subjects for school year 1965-1966.—Table 10, page 44, shows the frequency of school attendance based on the previous years' attendance. The register showed that five or 62.5 per cent of the subjects attended regularly or from 171-180 days during this school year. One or 12.5 per cent attended from 161-170 days. Two or 25 per cent attended from 0-140 days. The overall attendance for the group was excellent.

Data concerning the physical coordination of the subjects.—Table 11, page 44, shows that the results of the Metropolitan Readiness Test
### TABLE 10

**DATA CONCERNING ATTENDANCE HABITS OF SUBJECTS FOR THE SCHOOL YEAR 1965-1966**

<table>
<thead>
<tr>
<th>Days Attended</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>180 - 171</td>
<td>5</td>
<td>62.5</td>
</tr>
<tr>
<td>170 - 161</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>160 - 151</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>150 - 141</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>140 - 131</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>130 - 0</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### TABLE 11

**DATA CONCERNING THE PHYSICAL COORDINATION OF THE SUBJECTS**

<table>
<thead>
<tr>
<th>Coordination Scores</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 - 10</td>
<td>3</td>
<td>37.5</td>
</tr>
<tr>
<td>5 - 7</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>2 - 4</td>
<td>4</td>
<td>50.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Mean -- .4
revealed scores ranging from two to ten in physical coordination. The majority, or 50.0 per cent of the group received a score of four or below while three or 37.5 per cent received a score of 8-10. One, or 12.5 per cent received a score of from 5-7. These scores indicated that the physical coordination of the group was below average.

Data concerning the percentile rank of the subjects' scores on a readiness test.—Table 12, below, revealed the percentile rank of the subjects' readiness scores. The Metropolitan Readiness Test percentiles for this group ranged from the 20th to the 73rd. The majority, or 50.0 per cent had a percentile rank of 29, another indication of retardation and lack of readiness for academic pursuits.

<table>
<thead>
<tr>
<th>Percentile Rank</th>
<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 - 79</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>60 - 69</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>50 - 59</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>40 - 49</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>30 - 39</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>20 - 29</td>
<td>4</td>
<td>50.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Mean -- 29th
CHAPTER III

SUMMARY, CONCLUSIONS, AND IMPLICATIONS FOR EDUCATIONAL THEORY AND PRACTICES

Introductory statement.—This was a study of the speech problems of sixteen mentally retarded children enrolled in a primary class at the Bouldercrest Elementary School, DeKalb County, Atlanta, Georgia.

An attempt was made to determine the incidence of speech defects in the class, the levels of intelligence, handedness, auditory acuity, visual acuity, coordination, emotional stability, attendance habits, visual perception and the general expectancy of the sixteen children enrolled in the class.

Attention was given to their performance on the following tests:

a. Burks Behavior Rating Scale Test
b. Snelling Eye Test
c. Peabody Picture Vocabulary Test
d. Audiometer Test
e. A Coordination Test
f. Metropolitan Readiness Test
g. Winter Haven Perception Test
h. Test results from the Speech Therapist
i. Oral Handedness Test

Permanent school records were checked for attendance habits of the subjects. Psychological records were studied and personal observation
Recapitulation of research design.—The significant aspects of the locale and research design of this study are indicated below:

Locale - This study was undertaken at Bouldercrest Elementary School, DeKalb County, Atlanta, Georgia. The subjects were sixteen mentally retarded children in a primary class at Bouldercrest School.

Period of study - This research was carried out during September, October, November and December of 1966.

Method of research - The Descriptive-Survey method of research was utilized in conducting this study.

Instruments - The instruments used in this study were (a) permanent school records; (b) observations; (c) psychological records; (d) records of the speech therapist; (e) Snelling Eye Chart; (f) audiometer; (g) Burks Behavior Rating Scale; (h) Peabody Picture Vocabulary Test; (i) Coordination Test; (j) Metropolitan Readiness Test, and (k) Winter Haven Perception Test.

Criterion of reliability.—The criterion of reliability for appraising the data obtained was the complete and carefully kept school records, authentic psychological records, the carefully kept records of the speech therapist and the assistance of a psychologist in administering, scoring and interpreting the data.

Procedure.—The following procedural steps were used to achieve the purposes of this study:

1. The related literature was surveyed, summarized and presented in the final thesis copy.

2. The writer requested permission to conduct the study from the proper school authorities.

3. Permission of the principal of the school in question, to extract information from the permanent school records of the subjects as needed in accordance with the purposes of this study, was requested.
4. Tests were administered and treated statistically for analysis and presentation.

5. Personal interviews were conducted with each subject.

6. The data from school records and psychological records were analyzed and presented.

7. The formulation of findings, conclusions, implications, and recommendations were compiled for inclusion in the final thesis copy.

Summary of related literature.—A survey of literature related to this investigation revealed that extensive research has been done investigating speech problems of the mentally retarded.

Literature relevant to this study is reviewed and summarized below:

1. Burt studied the speech of children in typical schools in London and Birmingham. In the group with I. Q.'s 50-70, there were 13 per cent with severe defects. Burt estimated that at least 25 per cent of retarded children are speech defectives.

2. Fletcher cited a study by Cassel in Berlin in which it was reported that 33.5 per cent of defective children spoke imperfectly.

3. Lewald investigated 533 patients in an institution and found that 56 per cent of all the patients had speech defects.

4. Sirkin and Lyons examined 2,522 institutionalized mentally retarded. They reported that 50 per cent had no speech at all.

5. Schlanger found that 68 per cent of 74 children in a private school for retarded had speech defects.

6. Kennedy studied speech defects in an institution population and found that 71.87 per cent of 27 imbeciles had dysalic speech, of 249 morons 42.57 per cent had speech disorders.

7. Sachs examined 210 morons and imbeciles who were inmates at the Lynchburg State Colony in Virginia and found that 57 per cent of the borderline group and 79 per cent of the imbecile group had defective speech.
8. Wallin found that in St. Louis more than one-fourth of the pupils in the special schools for the mentally retarded were reported as having some form of speech defect. The speech defects of all kinds were more than ten times prevalent as they were among normal children in regular elementary schools.

9. Irwin found that the mentally retarded child is not only delayed and defective in speech, but that his entire course of development of sounds is different from that exhibited by normal children. He tested and found the retardates used back vowels more frequently than front vowels. The ratio of vowels to consonants in the retarded group was 1.1.

10. Karlin and Strazulla listed consonant defects in order of occurrence in a population of retarded. The most frequent occurring defective consonant was s, followed by z, l, r, t, and d.

11. Bangs made a most systematic study of the articulatory defects of the feeble minded. The following conclusions were reached:

   a. The relationship between speech proficiency and mental age was found to be greater than that which existed between intelligence quotient and speech proficiency.

   b. Chronological age has an inverse relationship with speech proficiency.

   c. When the influence of mental age is disregarded, the chronological age assumes more significance as a determining factor in the speech proficiency of the feeble-minded.

   d. The predicative value of mental age is considerably greater than that of the chronological age of primary aments in so far as speech proficiency is concerned.

   e. Omissions constituted thirty-five percent of all the errors made in final positions and twenty-one percent of all errors made in all positions.

   f. The speech of primary aments tends to correspond very closely to that of normal children with comparable mental age in so far as preferred sounds, sounds avoided, and most frequent substitutions are concerned.
g. The speech of the primary ament displays the same
tendency toward retardation which is characteristic-
ally noted in other functions of the primary ament.
Aside from more frequent omissions of final sounds,
the articulatory speech defects of the primary
aments do not differ qualitatively to any marked
degree from the defects which might be found in
children whose intelligence falls within the normal
range.

12. Types of speech problems were further exemplified by the
results of a study in New York State designed to measure
development of trainable deficient children in a number
of areas over a two-year period (of 32 mentally deficient
children attending public schools and 80 severely retarded
residing in institutions). Eleven sounds were tested in
the initial, final, and medial position of a word repre-

tented by a picture.

An analysis of the tests showed:

a. There was a trend toward fewer committed errors as
I. Q. increases.

b. On the initial test, the institution group scored
a lower mean number of errors than the public
school group.

c. The public school group articulated more of the
11 sounds and made slightly more improvement on
each retest than the institution group.

d. Omissions were the most common type of error.

13. West, Kennedy, and Car reported that amentia causes such
defects as the following: The grammar lacks refinement
of tense, number, person, mode, case, often even of
gender. The thoughts expressed are concerned with
things rather than with ideas. The pronunciation is
confused though the articulation may be accurate. The
vocabulary is small, apparently not so much because of
lack of articulatory skills as because of failure to
recognize the need of variety of meanings; onset of
speech is delayed. Complete failure to develop speech
can be ascribed to amentia only when the amentia is of
the low-grade idiot.

14. Tredgold and Soddy in their studies of mental deficiency
found also that on the whole, defect of speech tends to
be directly proportionate to the degree of mental defect.
These authorities on mental deficiency listed the various
types of speech found in aments that were studied. They are as follows:

a. Motor Aphasia may be diagnosed when the individual can understand and obey commands, but is unable to speak, or at most in unable to say a few words. As might be expected, this occurs in cases of secondary amentia consequent of a traumatic or inflammatory lesion of the brain.

b. Stuttering is a disorder of speech arising from emotionalities, and is characterized by spasmodic interruptions of the rhythm of speech.

c. Stammering is a sudden bolt at a word and then its explosive utterance occurs more often.

d. Lisping is a disorder of the sibilant sounds, especially s and z. Lolling is characterized by defective r, l, t, d, or s sounds, and is largely due to sluggishness of the tongue tip.

e. Idioglossia is a form of speech disturbance which is occasionally met in mental defectives, although it is not confined to them.

f. In echolalia, although the child can use the proper words to express his feelings, and thoughts, questions put to him are followed, not by a reply but by a repetition of the question, or of the last few words of it.

g. Coprolalia is a condition in which "filthy speech" exists. This is more or less a sudden outburst of language of the most vile and disgusting character. It has considerable analogy to the motor convulsions of the epileptic and is also common to the insane.

15. Morley found a type of speech defect that he termed dyslalia. There is a consonant substitution, and this occurs when there is a general defect of mental development.

16. Van Riper asserted that not only are children of low intelligence slow to learn to talk, but their speech problems are slurred, confused with sound substitutions, and complicated by peculiar intonations.

There are specific types of children who are physical as well as mental deviates.
17. Berry and Eisenson made studies of these types of children and their speech involvements, and they reported as follows:

a. The speech involvements of the child who has suffered from encephalities will be determined by the extent and degree of brain area injured or destroyed as a result of the disease. For the most part, the involvements are likely to be those generally associated with motor deficiency. The post-encephalitic person, because he is likely to be mentally deficient, will have difficulty in finding something he wants to say as well as saying it. Shortly after the onset of acute encephalitis, speech symptoms appear which resemble stuttering. The speech is arrhythmic and marked by blocks and hypertension of the muscles of the speech mechanism. These symptoms disappear after the acute stages and so are not to be observed by the average speech clinician.

b. Some of the speech defects of epileptic patients are probably etiologically associated with their general picture of physical disability. Others are attributed to their lowered intelligence and their personality picture.

c. The mongul has structural abnormalities such as cleft lips and palate, faulty dental formation, union of fingers and toes. He has structural abnormalities of the articulatory and hearing mechanism. He has little to say and little urge to say it. His articulation is thick and marked by infantilisms, the tip of the tongue consonants being poor. The voice is usually hoarse and is produced without modulation of pitch or intensity. Mongols who suffer hearing loss because of nerve deafness will present the speech picture usually associated with perception deafness.

d. The speech of the cretin, thyroid deficient child, shows delay in both linguistic and articulatory aspects. Because he is mentally deficient, the cretin's vocabulary will reveal expected impoverishment. Vocabulary development will be in closer keeping with the mental age of the child than it will be with his chronological age. In respect to articulation, a general thickness and a lack of precision prevail. Errors in consonant production are almost invariable.
The speech of the cretin is defective only when we compare it with that of normal children of his age. Lacking good muscle tone, inclined to be easily fatigued, and deficient in ability to execute fine and precisely coordinated motor movements, neither the articulation nor the voice of the cretin can be produced effectively.

18. Schlanger explored the articulation of a group of mentally deficient children. He investigated the interrelationship between these speech developmental factors, articulatory proficiency, chronological age, and mental age to consider relative influence of mental age and chronological age on these measures. His findings were as follows:

a. Thirty per cent had hearing loss.

b. There was marked deficiency in auditory memory span.

c. Sound substitutions found most frequently defective indicated immaturity of the speech of these children.

d. Correlation coefficients obtained to determine interrelationships of all measures used indicated that in every incidence the correlations between mental age and the other scores were higher than those between chronological age and the same scores.

In another study, Schlanger investigated environmental influences upon the speech of mentally retarded children. Twenty-one matched pairs of mentally retarded children from city and institution community environments were tested for verbal output. Comparisons of mean sentence length and words per minute scores indicated significant differences between these groups. The suggested causes for lower language output included loss of speech motivation, the complete association with peers and over-stimulation from such continual contact. The severance of familial ties were also considered as blocking language development.

One of Schlanger's studies included a study of seventy-four retarded children whose mean age was 12. The following speech defects were found:

a. Voice defects - 62 per cent

b. Articulatory - 57 per cent

c. Stuttering - 20 per cent
Further testing revealed deficiency in the following areas:

a. Articulation: 16 per cent sufficiently deviate to interfere with communication.

b. Mean Sentence Length: Mentally retarded demonstrate a shorter mean sentence length than do normals.

There is an asphasic type of speech disturbance. Diagnosis of aphasia should be made only when there is a difference between language facility as compared to mental capacity.

Observations by the clinician of the child at play may provide some leads for a differential diagnosis.

a. Is it difficult to obtain the child's attention?

b. If obtained, is attention fleetly and likely to be distracted?

c. Is there marked perseveration that seems almost compusive?

d. Does the child enter a new situation with apparent enthusiasm which disappears suddenly and quickly?

e. Does the child frustrate readily?

f. Does the child, in general, show emotional stability?

"Yes" answers to these questions would suggest aphasic involvement rather than mental deficiency.

According to Mylobust, stuttering and cluttering have a very specific relation to the problem of retardation. Cluttering, the disorderly precipitation of speech, is very frequent in these children as it depends to a great degree on heredity and lack of self-control. In the treatment of stuttering in retarded children there is a basic disturbance as characterized by precipitation, lack of vocabulary, grammatical shortcomings, expressive difficulties of speech, lack of ability to grasp or conceive generalized relationships. This group of symptoms has usually been called cluttering.

The close relationship between speech and intellectual retardation works both ways. Retardation may be the source of speech defects and specific speech impairment
may cause retardation. The problem of retardation in general has to be clearly distinguished from that of feeble-mindedness. Practically every child who has not started to use some words by the end of the first year appears retarded to his surroundings. At three years of age the question of the onset of speech has to be considered as urgent. It may be useful to reinstate the main reasons for delayed start of speech:

a. Deafness or hardness of hearing  
b. Malformation (e.g., cleft palate)  
c. Child's aphasia or dysarthria  
d. Psychosis  
e. Asocial attitudes due to neglect or spoiling  
f. Feeble-mindedness  
g. Rejection of speech (abulin)  
h. Dyserosic diseases  
i. Long-standing illness  
j. Bilingualism

Malformations of the phonotory organs can retard the development of speech and therefore the intellectual development of the child. Feeble-mindedness is definitely one of the reasons for delayed start in speech, but it would be incorrect to assume it is the case of every child who did not start to speak on time.

The dependence of language upon intelligence can be illustrated by observing the frequent absence of language and speech in the severely mentally retarded. The relationship of speech to intelligence is sufficiently close enough to make any serious deficiency in intelligence almost certain to be reflected in speech retardation, the degree and amount of one being roughly proportionate to the loss in the other. Absence of language and speech has actually been employed as basis of classification of the mentally retarded.

20. Binet and Simon have employed this principle in defining the idiot: "An idiot is one who never learns to communicate with his kind of speech—that is to say, one who neither can express his thought verbally nor understand the verbally expressed thought of others, this
disability being due solely to defective intelligence, and not to any disturbance of hearing, not to any affliction of the organs of phoneration.

21. Tredgold has observed that in idiocy speech is usually absent, although a few do learn to articulate such simple monosyllables as man, cat, and dog, but none of them can form sentences. We have little accurate information concerning the average age at which individuals with varying degrees of mental retardation begin to babble, use words meaningfully, and combine words with phrases and sentences.

22. In her examination of the speech status of thirty-two idiots, Kennedy found twenty-two were altogether mute, nine could produce only jabbering, and only one produced recognizable words. Kennedy reported that some idiots gave evidence of understanding simple commands.

23. Town studying fifty idiots divided his samples into high-low-and-middle grade intelligence levels. He found that the degree to which language develops is directly dependent upon intelligence.

24. In an investigation of one thousand boys and girls whose I. Q.'s ranged from 10 to 159, Abit, Adler, and Bartelme correlated age of speech onset with intelligence (Stanford-Binet). The correlation between age of speech onset and intelligence was -.41 for boys and -.39 for girls.

25. Mead studied ninety-two feeble-minded children (not defined in terms of I. Q.) and reported that the typical feeble-minded child uses a word meaningfully at 34.44 months and that this behavior may have its onset at twelve months or up to 156 months.

26. Doll found that when chronological age was held constant, there was a correlation of .39 between speech proficiency and mental age. In a study of twelve birth injured children with defective speech, Doll reported a correlation of .02 between I. Q. and the severity of the speech defect.

27. Schlanger found a correlation of .37 between mental age and articulation proficiency although the correlations just cited are low, they do point to a relationship between intelligence and degree of speech involvement.

Some preliminary work with babies under a year yielded inclusive results. The project was further pursued with eighty other infants. The fact was established that even at a year and a half the relationship is not very dependable, but that from the twentieth to the
thirtieth month there are reliable correlations be-
tween the several speech sounds--Indices and the
Kuhlman-Anderson Intelligence Test and also the Gatell
Infant Intelligence Tests. It is apparent that after
the twentieth month the factor of intelligence is a
definite, although not an exclusive one in the develop-
ment of infant speech.

28. In case studies cited by Stinchfield and Young, there
was evidence to the effect that when children are
taught to speak there is a concomitant increase in
their intelligence quotients. Whether this increase
results directly from the ability of the child to use
language in a conventional manner, or whether the
child who speaks makes a generally more adequate
adjustment to his environment, and to the taking of
intelligence tests is not certain.

29. Because language plays so important a part in most
tests of intelligence, the exact relationship be-
tween language development and intelligence is not
known. There seems, however, no cause to doubt that
the more intelligent children have richer vocabulary
and in general a control of language which is superior
to that of dull and normal children. Hildreth found
that children who scored well on verbal intelligence
tests were also superior to average scoring children
in non-language tasks involving drawing and motor
skills.

30. Mead found that mentally deficient children began to
talk about a year later than mentally normal children
of superior intelligence.

31. Town reported from one of his studies that superior
children began to talk earlier than those who were
of average intelligence. It should not be concluded,
however, that a child who begins to talk late is
necessarily retarded or at best "just normal" in
intelligence. It would be much safer to conclude
that feeble-minded children as a group begin to talk
at a later age than do those who are normal or bright,
but that some normal or bright children may begin to
talk as late as many dull children.

32. A certain type of intelligence is necessary to learn
speech. West believes the type of intelligence
necessary for learning any motor skill, especially
speech, is one in which two basic and opposite ten-
dencies or mental attitudes are balanced one against
another. There are two types of feeble-minded who
do not achieve good speech: (a) Those who are too
apathetic and inactive to make experimental efforts towards good speech. They learn little because they attempt little. (b) We have those who lack the ability to observe the results of their experimental effects. They are the children who learn little because they see little to learn. These two types of the feeble-minded may be characterized by the terms apathetic and manic. The learning of speech requires a nice balance between experimentation and observation. The apathetic ament does not learn to utter the sound "K", because he does not experiment with his tongue; manic does not learn the sound "K" to use it as speech because although he makes many experimental sounds, he does not pause to observe them and to distinguish the appropriate from the inappropriate articulation.

33. Kirkpatrick says, "Philologists and others interested in the origin of language and the development of intellect find very striking analogies between the development of speech and intelligence in the race and in the child."

34. The role of handedness in speech disorders has not been adequately determined. It was interesting to note that there was a higher incidence of left-handedness in mentally deficient populations than in normal groups. Karlin and Strazulla reported 16 per cent of the mentally retarded children they studied were left-handed as compared to three per cent in a normal population. The percentage of established handedness increased with I. Q. level.

35. Lewald found approximately 20 per cent of 466 mentally retarded either left-handed or without hand dominance. Burt reported that 7.4 per cent of the mentally deficient children in Birmingham and 12.3 per cent of those in London were left-handed. Left-handedness or lack of hand dominance is found much more frequently in populations of mental defectives than in the normal population.

36. As long ago as 1914, Lewis Termin described the speech defective in one of his books. Of these defectives he wrote:

"The victim's whole existence is poisoned. The more sensitive stutterer comes to prefer silence to ridicule. He retires into himself, and as a result often becomes ill-tempered, hypochondriac, suspicious of others or disagreeable. Life long moral suffering and permanent defects of character may be the issue of a speech defective."
Speech and personality grow, develop, differentiate, and become refined together. Speech is a phase of personality. In many respects speech and personality are one and the same thing. Genuine speech improvement depends upon personality development. Moreover, personality is the result of social interaction; and any limitation in the means of expression and communication correspondingly stifles and distorts personality, and speech is the chief means of expression.

37. The effect of speech problems upon the personality of the child has been evidenced by analysis of test responses. Matthews and Birch have pointed out that required responses of tests are verbal. Children with speech defects (normal and mentally retarded) often are very self-conscious about speaking. They will sometimes feign ignorance rather than make a speech attempt that will lead to their embarrassment. Often the responses of a child with defective speech cannot be understood. This difficulty is especially noticeable in testing individuals with severe articulatory problems or with delayed speech. Both conditions are often found in severely involved cerebral palsy cases.

The feeble-minded child is frequently oppressed by his failures in school, in playground competitions, and in social adjustments. These failures engender within his personality a definite feeling of inadequacy, which in turn serves further to impair his speech.

38. Case studies presented by West, Kennedy and Carr pointed out the following trends concerning the relation of speech problems to personality:

a. The majority of cases with speech defects also had personality maladjustments.

b. The longer a defect was allowed to remain with an individual, the harder it was for the individual to correct.

c. Some cases which have been defective over a period of years before retraining is begun never make complete adjustment.

39. Van Riper has estimated that 96 per cent of the speech handicapped children of school age go without retraining, and he goes on to say that "too many show a yearly increase both in severity of the actual defect and in the abnormalities of personality which are built around it."
A high incidence of hearing loss is found in populations of the mentally retarded. Tredgold stated: "Defects of hearing are fairly common in the aments and include complete deafness, tonal deafness, and word deafness. Some of these conditions may be due to developmental anomalies or disease of the peripheral organ, but others are of central origin. Even where no actual deafness is present the acuity and range of auditory perception are usually below normal."

Birch and Matthews found that over half of a mentally defective population of 247 persons from 10 to 39 years of age had hearing losses. Schlanger in a study of seventy mentally retarded children reported data on hearing loss in substantial agreement with Birch and Matthews.

MacPherson sent questionnaires to various institutions for mentally retarded patients committed for mental retardation. He found that twenty-two schools considered 50 per cent of their patients to be either deaf or very hard of hearing. Fourteen schools estimated that about 50 per cent of their patients had at least moderate hearing loss.

Foale and Patterson measured the hearing loss of 100 juvenile patients at Lennox Castle Institution for the mentally deficient in Scotland. The mean I. Q. of the patients was 66. Of the boys tested, 67 per cent had good hearing in both ears and approximately 13 per cent were handicapped by their hearing impairment.

Although there is not completely agreement among all the investigators as to the incidence of hearing loss in mentally retarded cases, there is a clear-cut indication that the incidence of hearing loss among the mentally retarded is considerably greater than that in non-retarded populations.

**Summary of findings.**—The findings of this study are listed below:

1. The intelligence quotient of the 16 educable mentally retarded students ranged from 49-79. The mean intelligence quotient for the group was 66.5.

2. The chronological ages of the 16 educable mentally retarded
Students ranged from 6.0 to 9.11. The mean chronological age was 8.9.

3. The mental ages of the 16 educable mentally retarded students ranged from 4.3 to 8.3. The mean mental age for the group was 5.5.

4. Of the 16 educable mentally retarded students, eight, or 50 per cent were diagnosed by the speech therapist as being speech defective. Four or 45 per cent of nine whose intelligence quotients ranged from 50 to 69 had a speech defect. Three or 50 per cent of six whose intelligence quotient ranged from 70 to 85 had speech defects and one or 100 per cent of one whose intelligence quotient ranged from 49 and below had a speech defect.

5. Four of the 10 right handed subjects had a speech defect and four of the six left handed subjects had a speech defect.

6. Of the eight subjects diagnosed as speech defective six or 75 per cent tended to be mixed dominant while two or 25 per cent tended to be right dominant.

7. The visual acuities of the subjects diagnosed as speech defectives ranged from 20/20 to 20/100 in the right and left eyes for the group. The binocular acuity for the group ranged from 20/20 to 20/100. Four or 50 per cent had a binocular acuity of 20/30.

8. The visual perception of the subjects of this study ranged from 15 to 74. The majority or 50 per cent scored below 39 out of a possible score of 100.

9. For the majority, the vegetative autonomic behavior of the group was rated as two and above; the perceptual discriminative behavior was rated two and above and the social emotional behavior was rated two and above.

10. The school attendance of the subjects showed that five or
62.5 per cent attended school from 171 to 180 days. One or 12.5 per cent attended school from 161 to 170 days and two or 25 per cent attended from zero to 140 days.

11. The audiometer test revealed that there were no significant hearing defects among the group.

12. Fifty per cent of the group received a score of four or below on a physical coordination test, while three or 37.5 per cent received a score of eight to ten. One or 12.5 per cent received a score of from five to seven.

13. The percentile ranks of the subjects' scores on a readiness test ranged from the twentieth to the seventy-third. Fifty per cent had a percentile rank of 29.

Conclusions.—The analysis and interpretation of the data seem to warrant the following conclusions:

1. The subjects of this investigation were mentally retarded according to intelligence quotients and mental age, criterion commonly used for such classification.

2. Speech defects were common in this group.

3. There were more left-handed speech defectives than right handed speech defectives.

4. The majority of the subjects tended to be mixed dominant.

5. The majority of the subjects need adequate eye care.

6. A large number of these subjects seem to have visual perceptual problems.

7. The emotional stability of the group is above average.

8. The majority of the subjects attended school regularly.

9. The subjects of this study had no hearing defect.
10. The physical coordination of the subjects of this study is below average.

11. The majority of the subjects of this study lack readiness for reading as indicated by their performance on a readiness test.

**Implications.**—The implications of this study are listed below:

1. It appears that the incidence of speech defects increases as the intelligence quotient decreases.

2. It appears that left handedness and speech defects are closely related.

3. It appears that mixed dominance and speech defects are closely associated.

4. It would appear that the visual acuity of the speech defectives shows greater discrepancies than that of the non-speech defectives.

5. It would appear that visual perception and speech defects are closely related, in that visual problems limit one's ability to learn at the maximum potential learning level.

6. As a group it would appear that the emotional stability presents no significant problems.

7. It appears that school attendance is not affected by speech problems.

8. It would appear that there is no significant auditory defect among the group.

9. The physical coordination of the group was below average and may relate in some way to speech defects.

10. The low percentile ranks may indicate retardation or lack of language development, both of which are closely related to speech.

**Recommendations.**—It is the belief of the writer that the findings of this research warrant the following recommendations:

1. That the speech therapist work closely with students who have been diagnosed as speech defectives.

2. That more research be done on handedness as it relates to speech defects.
3. That more research be done on dominance as it relates to speech defects.

4. That these students be referred to an ophthalmologist for further diagnosis.

5. That teachers of mentally retarded students with speech defects include ways and means of improving visual perception in their course of study.

6. That though there is no significant behavioral problems among this group that continued interest and research in this area be pursued.

7. That the students be encouraged to continue to attend school regularly.

8. That a more intensive test of hearing be administered since speech defects and hearing defects are so closely related.

9. That teachers of mentally retarded children include means and ways of improving the physical coordination of these students in their courses of study.

10. That continued emphases be placed on readiness activities at the primary level in order to facilitate academic learning at sequential levels.


**Articles and Periodicals**


Unpublished Materials

DEKALB COUNTY DEPARTMENT OF INSTRUCTION
PROGRAM FOR EXCEPTIONAL CHILDREN
SPEECH THERAPY

AUDIOTRAN

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Frequencies in cycles per second

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S.T. doing test: ____________________________

Revised September 70
BURKS' BEHAVIOR RATING SCALE

Please rate each and every statement by patting an X in the appropriate square after the statement. The squares are numbered from 1 to 5 and represent the degree to which you have noticed the described behavior. The bases for making a judgment are given below:

1. You have not noticed this behavior at all.
2. You have noticed the behavior to a slight degree.
3. You have noticed the behavior to a considerable degree.
4. You have noticed the behavior to a large degree.
5. You have noticed the behavior to a very large degree.

Vegetative-Autonomic

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1. Hyperactive and restless
2. Erratic, flighty, or scattered behavior
3. Easily distracted, lacks continuity of effort and perseverance
4. Behavior goes in cycles
5. Quality of work may vary from day to day.
6. Daydreaming, alternating with hyperactivity
7. Explosive and unpredictable behavior
8. Cannot seem to control self (will speak out or jump out of seat).
9. Poor coordination in large muscle activities (games, etc.)
Perceptual-Discrimination

10. Confusion in spelling and writing
11. Inclined to become confused in number processes; gives illogical responses
12. Reading is poor
13. Lacks a variety of responses; repeats himself in many situations
14. Upset by changes in routine
15. Confused in following directions
16. Confused and apprehensive about rightness of responses; indecisive
17. Classroom comments are often "off the track" or peculiar
18. Difficulty reasoning things out logically with others

Social-Emotional

19. Demands much attention
20. Tends to be destructive, especially of the work of others
21. Many evidences of stubborn uncooperative behavior
22. Often withdraws quickly from group activities, prefers to work by self
23. Constant difficulty with other children and/or adults (apparently purposeless)
24. Shallow feeling for others
25. Cries often and easily
26. Often more confused by punishment
27. Seems generally unhappy
28. Often tells bizarre stories

VITA

TOLAR, MARY RUTH

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Experience: Former Kindergarten, first, second and third grade teacher. Presently employed in Special Education, DeKalb County School System, Decatur, Georgia.

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Personal Information: Married, mother of two sons