

AN ANALYSIS OF CONSONANT ARTICULATORY DEFECTS  
OF EDUCABLE MENTALLY RETARDED CHILDREN

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## TABLE OF CONTENTS

CHAPTER	PAGE
1. THE PROBLEM AND DEFINITIONS OF TERMS USED . . .	1
The Problem. . . . .	1
Statement of the problem. . . . .	1
Importance of the study . . . . .	2
Definitions of Terms Used . . . . .	2
Articulation. . . . .	2
Articulatory tests. . . . .	3
Chronological age . . . . .	3
Educable mentally retarded . . . . .	3
Intelligence. . . . .	3
Noticeable physical defects. . . . .	4
II. REVIEW OF THE LITERATURE. . . . .	5
Literature on Articulatory Defects . . . . .	6
Literature on Speech Characteristics of the Mentally Retarded . . . . .	8
Literature on the Measurement of Speech Characteristics of the Mentally Retarded . . . . .	10
III. THE MATERIALS USED AND GROUPS STUDIED . . . . .	13
Test Materials and Methods Used . . . . .	13
The Bryngelson-Glaspey Articulation Test . . . . .	13
The Kendall Toy Test . . . . .	13

CHAPTER	PAGE
Groups Included in the Study . . . . .	15
Lyon County primary special education class . . . . .	15
Lyon County intermediate special education class. . . . .	17
Rice County primary special education class . . . . .	18
Rice County intermediate special education class. . . . .	19
IV. RESULTS OF THE STUDY . . . . .	23
Primary Level Articulatory Errors . . . . .	23
Lyon County primary special education class . . . . .	23
Rice County primary special education class . . . . .	24
Intermediate Level Articulatory Errors. . . . .	25
Lyon County intermediate special education class. . . . .	25
Rice County intermediate special education class. . . . .	25
V. SUMMARY, CONCLUSIONS, AND TOPICS FOR FURTHER STUDY . . . . .	27
Summary . . . . .	27
Conclusions. . . . .	28
Topics for Further Study . . . . .	29
BIBLIOGRAPHY . . . . .	30
APPENDIX A . . . . .	34
APPENDIX B . . . . .	35
APPENDIX C . . . . .	36

LIST OF TABLES

vii

TABLE

PAGE

I. Distribution of Students in Primary Special Education Classes in Lyon and Rice Counties . . . . . 21

II. Distribution of Students in Intermediate Special Education in Lyon and Rice Counties . . . . . 21

III. Distribution of Chronological Ages of Primary and Intermediate Special Education Students in Lyon and Rice Counties . . . . . 22

IV. Distribution of Mental Ages of Primary and Intermediate Special Education Students in Lyon and Rice Counties . . . . . 22

V. Analysis of Individual Consonants of Subjects in Special Education at the Primary and Intermediate Levels in Lyon and Rice Counties . . . . . 26

## CHAPTER I

### THE PROBLEM AND DEFINITIONS OF TERMS USED

The function of language in the developmental process of the normal child has been identified in recent years as a significant variable. Research on the characteristics of speech in the educable mentally retarded area, however, has been lacking. Researchers in the area of mental retardation have identified the need for research on speech characteristics of the mentally retarded.

#### I. THE PROBLEM

Statement of the problem. It was the purpose of this study to research the speech characteristics of a selected group of educable mentally retarded children. The areas analyzed were (1) an analysis of consonant articulatory speech defects in educable mentally retarded as compared to norms established for normal children of like chronological age based on the Poole Index; (2) an analysis of consonant articulatory speech defects in educable mentally retarded as compared to norms established for normal children of like mental age on the Poole Index; (3) to present evidence that consonant articulatory speech defect is a process relating more to mental age than to chronological age with the

educable mentally retarded; (4) to compare male educable mentally retardates with female educable mentally retardates in relation to consonant articulatory speech defects; and (5) to present evidence that consonant articulatory speech defects are equally distributed over the primary and intermediate special class age ranges.

Importance of the study. Speech is a major tool of our society. The retarded seem to be less able in this area than can be explained only because of slow mental development. In spite, however, of the general recognition by teachers that educable mentally retarded children have many speech problems, tools and studies in this area have been varied and results incomplete. In this study an attempt was made to clarify the degree of ineffectiveness the retardate brings to the speech situation.

## II. DEFINITIONS OF TERMS USED

Articulation. "At the present time, articulation refers to the acoustic impression, to the distinctness or acceptability of the speech sound."<sup>1</sup> For this study all

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<sup>1</sup>Charles Van Riper and John W. Irwin, Voice and Articulation (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1958), p. 1.



mentions of articulation are referring to initial, medial, and final position consonant sounds unless otherwise stated.

Articulatory tests. In this case the articulatory tests are the Bryngelson Glaspey Articulation Test and the Kendall Toy Test.

Chronological age. The child's exact age determined in years and months is called his chronological age in this study.

Educable mentally retarded. The term as used in this study refers to students who have been identified as mentally handicapped on a Stanford-Binet Intelligence Scale, including intelligence quotients ranging from fifty to seventy-seven points.

Intelligence. Stoddard offers the following definition:

Intelligence is the ability to undertake activities that are characterized by (1) difficulty, (2) complexity, (3) abstractness, (4) economy, (5) adaptiveness to a goal, (6) social value, and (7) the emergence of originals, and to maintain such activities under conditions that demand a concentration of energy and a resistance to emotional forces.<sup>2</sup>

Mental age. Mental age is the total years and months scored on an intelligence test or as revised from previous IQ test scores.

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<sup>2</sup>G. D. Stoddard, The Meaning of Intelligence (New York: The Macmillan Company, 1943), p. 8.

Noticeable physical defects. The term in this study referred to any individual whose physical handicap calls attention to itself, such as loss of a limb or partial paralysis, as rated by Iscoe' Scale.<sup>3</sup>

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<sup>3</sup>Ira Iscoe, "The Functional Classification of Exceptional Children," cited in E. Phillip Trapp and Phillip Himmelstein, (eds.) Readings on The Exceptional Child (New York: Appleton-Century-Crofts, Inc., 1962), pp. 6-11.

## CHAPTER II

### REVIEW OF THE LITERATURE

Only in recent years has attention been directed to the language of the educable mentally retarded. Since attention has focused upon the language of the mentally retarded, numerous monographs and books have been published concerning this area.

One of the major diagnostic characteristics of mentally retarded children is delay in speech and language development. The factors relating to this fundamental characteristic have been the subject of many articles.<sup>1</sup>

McCarthy has made the following observation concerning the development of vowels and consonants:

Vowel development seems to be analogous to the gross motor development and consonant development to the individuation of specific finer movements essential for the production of real words.<sup>2</sup>

Since this study was to determine the articulatory defects of the educable mentally retarded, a brief survey of the literature will be described in this chapter.

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<sup>1</sup>Samuel A. Kirk, "Research in Education," as cited in Harvey A. Stevens and Rick Heber (eds.) Mental Retardation (Chicago: The University of Chicago Press, 1964), p. 83.

<sup>2</sup>D. McCarthy, "Organismic Interpretation of Infant Vocalizations," Child Development, 23: 273-280, December, 1952.

The literature will be classified under the following headings: literature on articulatory defects, literature on speech characteristics of the mentally retarded, and literature on the measurement of speech characteristics of the mentally retarded.

#### I. LITERATURE ON ARTICULATORY DEFECTS

Research in the development of language indicates greater reliability when findings are based on results from use of consonant evaluations. Irwin studied forty infants during the first ten days of life. He found that only four vowels appeared. In a second study Irwin attempted to delineate the development of speech vowels and consonant types during later infancy. He recorded sounds uttered by ninety-five infants during the first two and one-half years of life. The International Phonetic Alphabet was used at regular bimonthly periods to transcribe the sounds uttered by each infant on thirty breaths. By age two and one-half the infant uses almost the full complement of vowel types found in adult speech, but only about two-thirds of the consonant types. Some of the consonant types cannot be produced with reasonable fidelity by children four or five years of age.<sup>3</sup>

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<sup>3</sup>H. P. Chen and O. C. Irwin, "Infant Speech Vowel and Consonant Types," Journal of Speech Disorders, II: 27-29, January, 1946.

James Curtis identified articulatory problems as these in which the child did not produce the speech sounds in the usually acceptable manner. He classified articulation problems under one of the following: (1) omissions, (2) substitutions, and (3) distortions.<sup>4</sup>

The organs of articulation are: (1) the lips, (2) the teeth, (3) the teeth-ridge or gums, (4) the hard palate which also serves as the floor of the nose, (5) the velum or soft palate which is supported by the pillars of fauces and which terminates in the pendent, fleshy process called the uvula, and (6) the tongue....<sup>5</sup>

Van Riper listed the ages at which the average child will master the speech sounds. The first sounds mastered are the vowels, then the labials, then the dentals and gutturals (front- and back-tongue sounds t, d, n, k, ng), then the complicated lip and tongue sounds (f, v, l, r, s, z, sh, zh, ch, j), and finally the blends (st, gr, bl, and so on.) The ages at which these sounds are mastered completely are given for the average child: labials at three years, dentals and gutturals at about three and a half to four years, the f and v at about five years, the complicated tongue sounds during the sixth year, and the sibilants and blends during the early part of the seventh year.<sup>6</sup>

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<sup>4</sup>Wendell Johnson and others, Speech Handicapped School Children (New York: Harper and Brothers--Publishers, 1956), pp. 92-153.

<sup>5</sup>Elizabeth McGinley Nemoj and Serena Foley Davis, The Correction of Defective Consonant Sounds (Magnolia, Massachusetts: Expression Company--Publishers, 1954), p. 21.

<sup>6</sup>Charles Van Riper, Speech Correction Principles and Methods (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1954), p. 125.

The Poole Index serves as a guide for determining age of articulatory efficiency of twenty-three consonants.<sup>7</sup>

<u>Age</u>	<u>Sounds Mastered</u>
3½	b p m w h
4½	d t n g k ng j y
5½	f
6½	v th zh sh l
7½	s z r th hw

## II. LITERATURE ON SPEECH CHARACTERISTICS OF THE MENTALLY RETARDED

Strazzula and Karlin conducted a study of fifty children in a clinic for retarded children. The most common speech defects were found to be omission and substitution of sounds, stuttering, nasality, and huskiness.<sup>8</sup>

Sirkin found that the types of speech defects in order of frequency were sound substitution, defective phonation, mumbling, lisping, monophasia, and lalling.<sup>9</sup>

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<sup>7</sup>Irene Poole, "Genetic Development of Articulation of Consonant Sounds in Speech," as cited in Charles Van Riper and John V. Irwin, Voice and Articulation (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1958), p. 46.

<sup>8</sup>Millicent Strazzula and I. W. Karlin, "Speech and Language Problems of Mentally Deficient Children," Journal of Speech and Hearing Disorders, 17: 286-294, September, 1952.

<sup>9</sup>Jacob Sirkin and William F. Lyons, "A Study of Speech Defects in Mental Deficiency," American Journal of Mental Deficiency, 46: 74-80, July, 1941.

A study of seventy-four retarded children, conducted by Schlanger, found that 61 per cent had voice defects, fifty-seven per cent had articulatory defects, and 20 per cent had a stuttering problem.<sup>10</sup>

Spradlin came to the following conclusions concerning speech defects in the mentally defective:

1. An extremely high percentage (57 to 72) of institutionalized mental defectives have speech defects.
2. An equal or higher percentage (72 to 83) of severely retarded children in parent-sponsored day schools have speech defects.
3. Far fewer (8 to 26 per cent) of the children in special classes of the public schools have speech defects.
4. Articulation and voice problems constitute the largest percentage of speech difficulties among both mentally defective and nonmentally defective children.<sup>11</sup>

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<sup>10</sup> Bernard B. Schlanger, "Speech Measurements of Institutionalized Mentally Handicapped Children," American Journal of Mental Deficiency, 58: 114, July, 1953.

<sup>11</sup> Joseph E. Spradlin, "Language and Communication of Mental Defectives," Handbook of Mental Deficiency (New York: McGraw Hill Book Company, 1963), p. 524.

III. LITERATURE ON THE MEASUREMENT OF  
SPEECH CHARACTERISTICS OF THE  
MENTALLY RETARDED

Mecham developed tests of articulation, auditory discrimination, auditory digit memory span, and language development. He administered the tests to three groups of retarded children at Columbus State School, Columbus, Ohio. The experimental group consisted of twenty-one children, ages nine to eighteen, with IQ ranges of 41-75 (mean 58.5). From the same classes, a control group was randomly selected consisting of ten children, ages nine to fifteen, and IQs ranging from 55-81 (mean 67.9). A selection of a second control group consisting of ten other children was matched for chronological age, intelligence quotient, and sex. The experimental group and first control group were tested before and after the therapy period, while the second control group was tested only at the end of the therapy period. The experimental group showed significant improvement on the four tests as a result of speech therapy. Subjects who did not receive therapy made no significant improvement during the eight week period except for one instance of improvement in auditory span.<sup>12</sup>

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<sup>12</sup>Merlin J. Mecham, "The Development and Application of Procedures for Measuring Speech Improvement in Mentally Defective Children," American Journal of Mental Deficiency, 60: 301-306, October, 1955.



Griffith and Spitz studied mentally retarded adolescents' ability to make abstractions in relation to word meaning. The twenty-six boys were presented with twenty-four groups of three nouns and asked to name the common characteristic. In another session, the subjects were asked to define these nouns along with several new words. The correct abstractions of the triads were then compared with the definitions of the words to see if the definition combined the characteristics given in the abstraction. The results showed that the proportion of abstractions attained increased sharply when at least two of the words of the triad were defined in common.<sup>13</sup>

Dunn reviewed the Peabody Picture Vocabulary Test (PPVT) and its application to the study of speech in the mentally retarded child. The PPVT can be considered an auditory word comprehension test consisting of one hundred and fifty plates with four pictures to each plate. For each plate the examiner says a word and the child is to indicate to which picture the word refers. On the basis of results from administrations to 4,012 children between the ages of two years, six months, and eighteen years. Dunn concluded

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<sup>13</sup>B. C. Griffith and H. H. Spitz, "Some Relationships Between Abstractions and Word Meaning in Retarded Adolescents," American Journal of Mental Deficiency, 62: 247-251, September, 1958.

that the PPVT would be a useful instrument in evaluating auditory comprehension in the mentally retarded child.<sup>14</sup>

Blanchard, in a study conducted at Pacific State Hospital in California, studied the articulation of 350 mentally retarded children. "Articulation growth is measured by a simple game of naming things, in which misarticulations are recorded throughout the evaluation session...."<sup>15</sup> Blanchard concluded that maturation in verbal communication of institutionalized mentally retarded children can be assessed by measuring patterns of growth in articulation. Only one child in ten at Pacific State Hospital School has achieved acceptable adult speech, and five of every seven children enrolled reach only the four year level of articulatory competence.

Bangs, Irwin, McCarthy and other investigators have used numerous testing devices to elicit from the respondents any speech defects which may be present. / Researchers have indicated that standardization of the test instrument was unnecessary; however, the instrument must be applicable for replication under various conditions.

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<sup>14</sup>Lloyd M. Dunn, Peabody Picture Vocabulary Test Manual (Nashville, Tennessee: George Peabody College for Teachers, 1958).

<sup>15</sup>Irene Blanchard, "Speech Pattern and Etiology in Mental Retardation," American Journal of Mental Deficiency, 68: 612, March, 1964.

## CHAPTER III

### THE MATERIALS USED AND GROUPS STUDIED

This chapter describes the methodology and subjects in the study.

#### I. TEST MATERIALS AND METHODS USED

✓ The instruments used were the Bryngelson-Glaspey Articulation Test and the Kendall Toy Test. Both were chosen because of their simplicity and universal use by speech correctionists.

✓ The Bryngelson-Glaspey Articulation Test. This instrument is a consonant articulation test of pictures on cards to evaluate consonant sounds in initial, medial, and final positions. The test is administered individually to each child.

The Kendall Toy Test. This instrument is developed from suggested word lists. The test consists of specific objects for the child to identify which are representative of specific consonants.

The Bryngelson-Glaspey Articulation Test and the Kendall Toy Test were administered to each subject individually. Prior to testing the examiner was introduced to each class and briefly explained what procedure would be followed. Testing was conducted in the conference rooms at

Butcher Laboratory School, Kansas State Teachers College, Emporia, Kansas, and Village Elementary School, Emporia, Kansas. The nurse's office was used to test the Rice County intermediate special education class and a kindergarten classroom that was free of students was used to test the primary special education class.

Each test was administered individually. The examiner first established rapport with the subject. The subject was then asked to identify the pictures on the Bryngelson-Glaspey Articulation Test cards. Consonant articulation errors were noted on a check sheet. Errors in omission, distortion, and substitution of consonants were counted. For the Kendall Toy Test each subject identified objects from one box and placed them in another box. The items were chosen from five lists, included to evaluate production of specific consonant sounds.

The testing procedure was varied according to class independence as determined by the teacher. In the Lyon County primary special education class each child had to be taken individually to the testing situation while in the Rice County special education class one child accompanied another child to the testing situation. The second child waited his turn on a chair placed in the testing room. The

variation in procedure appeared to have no effect upon the test results. Results are based upon individual production of the consonants.

## II. GROUPS INCLUDED IN THE STUDY

The participants of the study were from four groups in two levels of special education in Lyon and Rice counties. Rice County was selected as a special education program in a rural setting while Lyon County's special education program was located in an urban area. Selection of Rice County also balanced the Spanish American environmental factor found in Lyon County. Both counties had a small percentage of Negro children enrolled in special education classes. Subjects outside the intelligence quotients of fifty to seventy-seven were excluded. Prior to evaluation the individual cumulative folders were examined to exclude any children with noticeable physical defects using Iscoe's techniques or intelligence quotients ranging outside the established boundaries.

Lyon County primary special education class. The primary class at Butcher Laboratory School, Kansas State Teachers College, Emporia, Kansas, included nine males and two females or 81.8 per cent males and 18.2 per cent females. From a class of twelve, eleven were included in this study. Subjects ranged in chronological age from seven years two

months to ten years seven months with a range of three years five months. The males ranged in chronological age from seven years two months to nine years eight months; and the females ranged from seven years four months to ten years seven months. Subjects ranged in mental age from three years seven months to six years five months with a total range of two years ten months in mental age. Males ranged in mental age from three years seven months to six years three months. Females ranged in mental age from four years eight months to six years five months. Intelligence quotients as measured on the Stanford Binet Form LM ranged from fifty to seventy-four with a total range of twenty-four points. The males ranged from fifty to seventy-four and the females ranged from sixty-one to sixty-five.

Observations during the testing situation and examination of each cumulative folder gave indications as to the socio-economic background. General low socio-economic status was indicated. Four subjects came from bilingual Spanish American families; and one subject was a Negro. Three subjects were members of families having more than one sibling enrolled in special education classes. The variables, bilingual and ethnic, were not investigated. Family discord and serious emotional problems were indicated in the case histories of two subjects.

As a group these subjects were overly dependent and sought affection going to and from the testing room. No subject came independently to the testing situation or returned to the classroom unaccompanied by the examiner. These data are presented in Tables I, III, and IV, pages 21 and 22.

Lyon County intermediate special education class.

The intermediate class at Village Elementary School, Emporia, Kansas, included nine males and two females or 81.8 per cent males and 18.2 per cent females. From a class of fourteen, eleven were included in this study. Subjects ranged in chronological age from ten years one month to fourteen years four months with a range of four years three months. The males ranged in chronological age from ten years one month to fourteen years four months; and the females ranged from twelve years four months to twelve years eight months. Subjects ranged in mental age from six years one month to ten years five months with a total range of four years four months. Males ranged in mental age from six years one month to ten years five months and females ranged from seven years seven months to eight years eight months. Intelligence quotients as measured on the Stanford Binet Form LM ranged from fifty-nine to seventy-seven with a total range of eighteen points. The males ranged from fifty-nine to seventy-seven and

the females ranged from sixty-two to sixty-nine. These data are presented in Tables II, III, and IV, pages 22 and 23.

As a class, these subjects were neatly dressed. One subject came from a bilingual Spanish American home. One subject received a thirty minute speech lesson every two weeks from a qualified speech therapist. Two of the subjects were siblings. Each subject came independently to the testing situation.

Rice County primary special education class. The primary class for Rice County was located in the Chase Elementary School, Chase, Kansas. From a class of eleven, nine were included in this study. The group consisted of five males and four females or 56 per cent males and 44 per cent females. Subjects ranged in chronological age from six years two months to nine years zero months with a range of two years eight months. The males ranged in chronological age from six years two months to nine years zero months; and the females ranged from seven years two months to eight years zero months. Subjects ranged in mental age from four years zero months to six years five months with a total range of two years five months. Males ranged in mental age from four years zero months to six years five months and females ranged from four years six months to six years one month. Intelligence quotients as measured on the Stanford Binet Form LM ranged from fifty-nine to seventy-four with a total



range of fifteen points. The males ranged from sixty-one to seventy-three and the females ranged from fifty-nine to seventy-four. These data are presented in Tables I, III, and IV, pages 22 and 23.

This group of subjects was representative of middle and lower socio-economic families. The group included three Negro children from a lower socio-economic group. Two of these Negro children were siblings while the third Negro child was a cousin. The group also included twin girls. Each subject was brought to the testing situation by a classmate and each subject returned independently to the classroom.

Rice County intermediate special education class.

The intermediate class for Rice County located in the Lyons Elementary School, Lyons, Kansas, included two males and five females or 30 per cent males and 70 per cent females. From a class of fourteen, seven were selected for this study. Five students were absent due to inclement weather. Subjects ranged in chronological age from ten years two months to sixteen years three months with a range of six years one month. The males ranged in chronological age from ten years eight months to sixteen years three months; and the females ranged from ten years two months to twelve years six months. Subjects ranged in mental age from six years five months to nine years five months with a total range of three years zero months. Males ranged in mental age from six years five

months to nine years zero months and females ranged in age from six years eleven months to nine years five months. Intelligence quotients as measured on the Stanford Binet Form LM ranged from fifty-eight to seventy-seven with a total range of nineteen points. The males ranged from fifty-eight to sixty-one and the females ranged from seventy to seventy-seven. These data are presented in Tables II, III, and IV, pages 22 and 23.

This group of students appeared to be representative of middle socio-economic families as judged from teacher records of family income, occupation, and location of home. This group of students was neatly dressed and well mannered. Each subject came independently to the testing situation.

TABLE I  
 PRIMARY SPECIAL EDUCATION CLASSES IN  
 LYON AND RICE COUNTIES

Sex	County		Total
	Lyon	Rice	
Male	9	5	14
Female	2	4	6
Totals	11	9	20

TABLE II  
 DISTRIBUTION OF STUDENTS IN INTERMEDIATE  
 SPECIAL EDUCATION IN LYON  
 AND RICE COUNTIES

Sex	County		Total
	Lyon	Rice	
Male	9	2	11
Female	2	5	7
Totals	11	7	18

TABLE III

DISTRIBUTION OF CHRONOLOGICAL AGES OF PRIMARY  
AND INTERMEDIATE SPECIAL EDUCATION STUDENTS  
IN LYON AND RICE COUNTIES

County	Level	Range in Years & Months	
		Males	Females
Lyon	Primary	7.2 to 9.8	7.4 to 10.7
Rice	Primary	6.2 to 9.0	7.2 to 8.0
Lyon	Intermediate	10.1 to 14.4	12.4 to 12.8
Rice	Intermediate	10.8 to 16.3	10.2 to 12.6
Total Range		6.2 to 16.3	7.2 to 12.8

TABLE IV

DISTRIBUTION OF MENTAL AGES OF PRIMARY AND  
INTERMEDIATE SPECIAL EDUCATION STUDENTS  
IN LYON AND RICE COUNTIES

County	Level	Range in Years & Months	
		Males	Females
Lyon	Primary	3.7 to 6.3	4.8 to 6.5
Rice	Primary	4.0 to 6.5	4.6 to 6.1
Lyon	Intermediate	6.1 to 10.5	7.7 to 8.8
Rice	Intermediate	6.5 to 9.0	6.11 to 9.5
Total Range		3.7 to 10.5	4.6 to 9.5

## CHAPTER IV

### RESULTS OF THE STUDY

This chapter summarizes the findings of articulation errors at the primary and intermediate levels. Analysis of the Lyon County primary special education class shows a range in consonant articulation errors from two to twenty while consonant articulation errors in the Rice County primary special education class ranged from zero to seven. Three subjects in the Rice County special education class had no consonant articulatory speech defects while some degree of consonant error was isolated in all subjects from the Lyon County special education class.

The Lyon County intermediate special education class had a range in consonant articulation errors from zero to sixteen while consonant articulation errors in the Rice County intermediate special education class had a range in consonant articulation errors from zero to twenty-four. Five subjects in the Lyon County class and two subjects in the Rice County class had no articulatory speech defects.

#### PRIMARY LEVEL ARTICULATORY ERRORS

Lyon County primary special education class. The primary class had a range of errors among males from two

to twenty and a range among females from three to four. Two females and nine males had some degree of consonant articulatory speech defect. Consonants defective in all eleven subjects were voiced and voiceless Th. Analysis of the data revealed the S consonant defective in seven subjects, the V consonant defective in six subjects, the L consonant defective in five subjects, and the R consonant defective in four subjects. The D, K, G, Z and Sh consonants were each defective in three subjects. The T, N, F, Ch, J, Zh, B and Y consonants were each defective in two subjects. The P, M, and W were each defective in one subject.

Rice County primary special education class. In comparison to the Lyon County primary class, the Rice County primary class had a range from zero to seven consonant articulation errors among males and zero to three consonant errors among females. Four males and two females had some degree of consonant speech defect. Analysis of the data showed the voiced and voiceless Th consonants defective in six subjects; the Ch and S consonants defective in four subjects; the L consonant defective in three subjects and the K, G, R, Sh, J, M, W, and Y consonants defective in one subject. These data are presented in Table V, page 26.

## INTERMEDIATE LEVEL ARTICULATORY ERRORS

Lyon County intermediate special education class.

This class had a range of errors among males from zero to sixteen and a range among females from one to two. Two females and four males had some degree of articulatory speech defect. Analysis of the data showed the voiced and voiceless Th and the S consonant defective in four subjects; the Z, L, Sh, Ch, Zh, J and V consonants defective in three subjects; the T, D, R, K, and G consonants defective in two subjects and the M and F consonants defective in one subject.

Rice County intermediate special education class.

This class had a range of errors among males from one to twenty-four and a range among females from zero to five. Two males and three females had some degree of articulatory speech defect. Analysis of the data showed the L consonant defective in four subjects; the R and S consonants defective in three subjects; the Ch and Sh consonants defective in two subjects; and the B, P, M, W, Wh, D, T, N, F, V, K, G, Y, Z, Zh, J, voiced and voiceless Th consonants defective in one case. These data are shown in Table V, page 26.

TABLE V

ANALYSIS OF INDIVIDUAL CONSONANTS OF SUBJECTS  
IN SPECIAL EDUCATION AT THE PRIMARY AND  
INTERMEDIATE LEVELS IN LYON  
AND RICE COUNTIES

County	Level	Consonant	Number of Subjects Having the Consonant Defective
Lyon	Primary	Th	11
		S	7
		V	6
		L	5
		R	4
		D, K, G, Z, Sh	3
		T, N, F, Ch, J, Zh, B, Y	2
		P, M, W	1
Rice	Primary	Th	6
		Ch, S	4
		L	3
		K, G, R, Sh, J, M, W, Y	1
Lyon	Intermediate	Th, S	4
		Z, L, Sh, Ch, Zh, J, V	3
		T, D, R, K, G	2
		M, F	1
Rice	Intermediate	L	4
		R, S	3
		Ch, Sh	2
		B, P, M, W, Wh, D, T, N, F, V, K, G, Y, Z, Zh,	
		J, Th	1



## CHAPTER V

### SUMMARY, CONCLUSIONS, AND TOPICS

#### FOR FURTHER STUDY

This paper has been an attempt to contribute to the understanding of consonant speech development in the educable mentally retarded child. The central concern has been with consonant development. In Chapter II, the literature was reviewed and the major areas being investigated were identified.

#### I. SUMMARY

The problem of this study was to determine the significance of consonant speech development in relation to several factors. The areas analyzed were (1) an analysis of consonant articulatory speech defects in educable mentally retarded as compared to norms established for normal children of like chronological age based on the Poole Index; (2) an analysis of consonant articulatory speech defects in educable mentally retarded as compared to norms established for normal children of like mental age on the Poole Index; (3) to present evidence that consonant articulatory speech defect is a process relating more to mental age than to chronological age with the educable mentally retarded; (4) to compare male educable mentally retardates with female educable mentally

retardates in relation to consonant articulatory speech defects; and (5) to present evidence that consonant articulatory speech defects are equally distributed over the primary and intermediate special class age ranges. The studies dealing with the speech of educable mentally retarded have dealt primarily with institutionalized children. This study was limited to primary and intermediate special education classes in Lyon and Rice counties.

## II. CONCLUSIONS

The results of this study indicate several findings in relation to the consonant articulation of primary and intermediate educable mentally retarded children. An incidence of consonant speech defect was present in 85 per cent of subjects at the primary level and in 61 per cent of subjects at the intermediate level. This finding indicates that these selected subjects do not attain the level of consonant proficiency found in the majority of normal children as judged on the Poole Index. A comparison between chronological age and mental age indicates a greater incidence of consonant speech defect in relation to chronological age. Incidence at the primary level indicates that 33 per cent of the Chase County primary class and 36 per cent of the Lyon County primary class are not defective in consonant articulation in relation to their mental age. No significant difference was found at the intermediate level.

This study indicates a higher incidence of consonant speech defect among males than among females. This finding holds true for the normal population. Results of this study indicate that consonant speech defects are a process relating more to mental age than to chronological age. In a majority of cases, advancement in chronological age does not alleviate the problem of consonant speech defect.

### III. TOPICS FOR FURTHER STUDY

This study showed the incidence of consonant speech defects in a sample population of school children in primary and intermediate special education classes. It is not possible, however, to generalize from this study as to other age levels of special education.

Another study might be conducted which would include upper levels of special education. A replication study might include other county programs, particularly a more urban area.

Another area for investigation is the use of a control group and an experimental group. The experimental group would receive speech therapy from a qualified pathologist and results would be measured after a specified length of time.

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## APPENDIXES

**APPENDIX A**

**SPEECH RECORD BLANK**

NAME . . . . . SEX. . . . . RACE. . . . . AGE. . . . . GRADE. . . . .

SCHOOL. . . . . TEACHER. . . . . DATE. . . . .

Be sure to read directions before giving test.

Retest Date . . . . .

**KEY:** Mark substitutions with sound substituted; omissions (-); indistinct (ind.)

CARD	Test 1			COMMENTS	Retest		
	1	2	3		1	2	3
1. sun, bicycle, bus							
2. sled, stairs, squirrel							
3. zipper, scissors, nose							
4. thumb, toothbrush, teeth							
5. thread, feather, swing							
6. { red, barn, car yellow, house, white							
7. tree, ice cream cone, drum							
8. lamp, balloon, ball							
9. airplane, clock, blocks							
10. jacks, soldier, orange							
1. chair, pitcher, watch							
2. shoe, washing machine, fish							
3. cat, chicken, milk							
4. gun, wagon, pig							
5. fork, telephone, knife							
6. valentine, davenport, stove							



## APPENDIX B

## KENDALL TOY TEST

The Kendall Toy Test consists of five lists of words, each of twelve paired monosyllabic nouns. An object is provided for each child to identify. List I contains the following: knife, fish, house, car, brush, bus, pipe, cow, string, bath. List II contains the following: fork, pin, boat, tree, shoe, key, horse, tin, spoon, soap. List III contains the following: gate, egg, sheep, mat, dog, match, wheel, plate, bed, watch. List IV contains the following: duck, boat, cat, brick, ball, cup, pig, mat, fork, stone. List V contains the following: horse, doll, pig, hen, bus, dog, egg, ball, glove, pin.

## APPENDIX C

## ISCOE'S SCALE

## PROPOSED RATING FORM

Circle the number most appropriate to the child.  
Ratings are always made comparative to normal children of  
the same sex and age.

## VISIBILITY

1. The physical appearance gives no indication of the condition.
2. There are some very slight indications of the condition, apparent to the trained specialist but not to the layman.
3. There are some fairly obvious signs of the disability or condition. It would be apparent to the layman.
4. There are moderately severe indications of the condition. The child stands out more than in 3 but less than in 5.
5. The condition is severe, it stands out clearly to all concerned.

## LOCOMOTION

1. No apparent or reported difficulty in this area.
2. A little restriction but not enough to warrant special help.
3. Moderate restriction. Can keep up with his peers in some ways; in others, needs help or direction of others.
4. Moderately severe restriction. Needs help or direction most of the time; more than in 3, less than in 5.
5. Severe restriction of locomotion. Needs constant help and direction.