

1959

A comparison of certain language and non-language abilities among speech defective and normal speaking children

<https://hdl.handle.net/2144/23941>

"Downloaded from OpenBU. Boston University's institutional repository."

Thesis
Messner, A.C.
1959

BOSTON UNIVERSITY
SCHOOL OF EDUCATION

Thesis

A COMPARISON OF CERTAIN
LANGUAGE AND NON-LANGUAGE
ABILITIES AMONG SPEECH
DEFECTIVE AND NORMAL
SPEAKING CHILDREN

Submitted By

Andrew C. Messner

(B.A., University of Maine, 1951)

In Partial Fulfillment of Requirements
for the Degree of Master of Education

1959

Boston University
School of Education
Library

First Reader: _____

Wilbert L. Pronovost
Professor of Speech and Hearing

Second Reader: _____

Albert T. Murphy
Professor of Speech and Hearing

ACKNOWLEDGMENTS

The writer wishes to express appreciation to Dr. Wilbert L. Pronovost, Professor of Speech and Hearing, for his guidance and assistance; and, to the teachers and administrators in the Public Schools of Manchester, Connecticut for their understanding and cooperation in this study.

TABLE OF CONTENTS

CHAPTER	Page
I. INTRODUCTION.....	1
Statement of Purpose.....	1
Justification.....	1
Scope.....	1
II. REVIEW OF RELATED LITERATURE.....	2
III. PROCEDURE.....	6
Selection of Experimental and Control Groups.....	6
Tabulation of Test Scores.....	7
Statistical Analysis.....	7
IV. RESULTS.....	8
Distribution of California Mental Maturity Intelligence Quotients for Speech De- fectives and Matched Pairs.....	8
Comparison of Total California Mental Maturity Language Results.....	8
Comparison of Total California Mental Maturity Non-Language Results.....	8
Comparison of Total Iowa Basic Skills Language Results.....	8
Comparison of Total Iowa Basic Skills Non-Language Results.....	12
Comparison of Groups According to Severity of Speech Problems.....	12
V. SUMMARY AND CONCLUSIONS.....	14
Summary.....	14
Conclusions.....	15
Limitations of the Study.....	15
Suggestions for Further Research.....	15
BIBLIOGRAPHY.....	17

LIST OF TABLES

Table	Page
1. Scores for Matched Pairs On All Sub-Tests.....	9
2. Mean Scores.....	11

CHAPTER I
INTRODUCTION

Statement of Purpose.-- The purpose of this study will be to compare the language and non-language abilities of speech defectives and normal speakers on the California Mental Maturity Test and the Iowa Basic Skills Test.

Justification.-- Upon investigation, it was found that no study of this nature to date had been done on children with functional speech defects. The implication in academic and social guidance for these children in grades four through twelve are such that it is important to determine whether there are any differences in performance in the language arts among speech defective children as compared to children with normal articulation.

Scope.-- The study was made on a group of sixty-eight pairs of children in the Public Schools of Manchester, Connecticut in order to determine if there is a variation in the California Mental Maturity Language and Non-Language scores, and the Iowa Basic Skills Language and Non-Language scores between the normal speakers and the children with functional articulatory defects. These articulatory defects consisted of the following: boys - S and Z lingual protrusion twenty-six, both R and L distortion 1, R distortion 9, TH distortion 1, Lateralized sounds 6; girls S and Z lingual protrusion 14, L distortion 1, R distortion 6, and lateralized sounds 4.

CHAPTER II

REVIEW OF RELATED LITERATURE

The sources screened for related literature were the Educational Indexes, the Index of graduate work in Speech Monographs, the Quarterly Journal of Speech, the Journal of Speech and Hearing Disorders, the Speech Monographs, the Psychological Abstracts and individual graduate theses.

In the Handbook of Speech Pathology by Travis and others,^{1/} Powers refers to several studies comparing normal speakers and functional articulatory defective speakers. One study cited was Carrell's,^{2/} in 1936, in which he found that functional articulatory defective speaking children had a lower intelligence level than normal speaking children. Other cases cited were Beckey,^{3/} in 1942, and Everhart,^{4/} in 1953, in which they conclude that speech defective children made lower ratings on intelligence tests. Sperling,^{5/} in 1948, compared the verbal and non-verbal results of functional articulatory defective speakers on in-

1/ Travis, Lee E., Handbook of Speech Pathology, Appleton-Century-Crofts, Inc., New York, (1957), 749.

2/ Carrell, J. A. 1936. A Comparative Study of Speech Defective Children. Arch. Speech, 1, 179-203.

3/ Beckey, R. E. 1942. A Study of Certain Factors Related to Retardation of Speech. Journal of Speech Disorders, 7, 223-249.

4/ Everhart, R. W. 1953. The Relationship Between Articulation and Other Developmental Factors in Children. Journal of Speech and Hearing Disorders, 18, 332-338.

5/ Sperling, S. L. 1948. A Comparison Between Verbal and Non-Verbal Test Results of Children With Articulatory Speech Defects. Unpublished Master's Thesis, Univ. Mich.

telligence tests. She felt that one intelligence test is not enough in making a prediction for speech-training for these children.

Van Riper points out,^{1/} "An excellent paper-and-pencil test which does not stress language skills is the California Test of Mental Maturity. We must always remember, however, that defective speech may interfere with expression."

Pronovost^{2/} writes,

Within the range of normal and above normal intelligence, there does not appear to be a relationship between intelligence and speech and hearing difficulties. However, research indicates that there is a higher incidence of speech disorders among children of subnormal intelligence.

Some children with speech or hearing disorders may appear to be slow learners. The speech or hearing loss may cause them to do poorly on intelligence testings. Therefore, individual intelligence testing is essential for any child who is suspected of being subnormal in intelligence. The individual test should be chosen carefully. Tests with many verbal items, such as the Stanford-Benet, may penalize the speech or hearing handicapped child. A test such as the Wechsler-Bellevue Scale for Children, with its opportunity to compare verbal and non-verbal items, is much more effective in separating the child with intelligence for the child whose performance in intelligence tests is handicapped by language deficiency.

1/ Van Riper, Charles. *Speech Correction Principles and Methods*. Prentice-Hall, Inc., New York, (1949), 48.

2/ Pronovost, Wilbert. *The Teaching of Speaking and Listening in the Elementary School*. Longmans, Green and Co., New York, London, Toronto, (January, 1959), 299-300.

Yedinack,^{1/} in 1949, found that children with functional articulation defects are inferior in both silent and oral reading to normal speaking children. Ball,^{2/} in 1958, concluded that there is a low positive correlation between speaking ability, verbal comprehension and general reasoning. Carrell and Pendergast,^{3/} in 1954, found that in general, there is no significant difference between children with functional articulation defects and normal speaking children in spelling ability. Schneiderman,^{4/} in 1955, in her study of articulatory ability and language ability, found that when chronological age and mental age were held constant, "...the differences in articulatory ability among three groups representing different levels of language ability were not significant..." In a study of bilingual children on language functioning, Carrow,^{5/} in 1957, found that the only reportable difference in the language func-

1/ Yedinack, J. G. 1949. A Study of the Linguistic Functioning of Children With Articulation and Reading Disabilities. Journal of Genetic Psychology, 74, 23-59.

2/ Ball, Joe., 1958. The Relationship Between the Ability to Speak Effectively and the Primary Mental Abilities, Verbal Comprehension and General Reasoning. Speech Monographs, 25, 285-290.

3/ Carrell, James and Pendergast, Kathleen. 1954. An Experimental Study of the Possible Relation Between Errors of Speech and Spelling. Journal of Speech and Hearing Disorders, 19, 327-334.

4/ Schneiderman, N., 1955. A Study of the Relationship Between Articulatory Ability and Language Ability. Journal of Speech and Hearing Disorders, (Dec.). 20, 359-363.

5/ Carrow, Sister Mary Arthur, 1957. Linguistic Functioning of Bilingual and Monolingual Children. Journal of Speech and Hearing Disorders, 331-338.

tioning between bilingual children and monolingual children was that the bilingual children made more and different types of grammatical and articulatory errors than the monolingual children. Turner,^{1/} in 1957, found that good speakers achieve better academically and are better adjusted personally and socially than poor speakers.

Although much has been written to date in related areas, no study of this exact nature has been done on children with functional articulatory defects.

1/ Turner, D. 1957. A Study of Speech Effectiveness and Personal and Social Adjustment Among Ninth Grade Pupils. Ed. D Thesis, Boston Univ.

CHAPTER III PROCEDURE

Selection of Experimental and Control Groups.-- The experimental group was confined to children with functional articulatory speech defects with no known contributing physical or emotional factors. The children had been rated for severity of the articulation problem at the time of speech testing. A rating of one plus indicated on a severity scale of a desirability for speech therapy, a rating of two indicated a necessity for speech therapy, and a rating of three indicated a severe need for therapy.

In locating children for the experimental group, it was necessary to first list all children with functional speech defects in the fifth grade and above who had had their speech tested in the fourth and fifth grades. All children with reported physical and emotional problems were eliminated. It was also necessary to ascertain whether or not they had been tested in the fourth grade with the California Mental Maturity Test and in the fifth grade with the Iowa Basic Skills Test. Of two hundred and three children with functional articulatory defects, sixty-eight met the above criteria.

The control group consisted of children who were matched individually to each child of the experimental group by intelligence quotients on the California Mental Maturity Test. All of these children exhibited normal speech at the times of testing.

Tabulation of Test Scores.-- The scores for each group were tabulated as follows. In both the experimental and control groups, scores were tabulated for intelligence quotients, language and non-language scores in the California Mental Maturity Test and the language and non-language results of the Iowa Basic Skills Test.

Statistical Analysis.-- The means and standard deviations were computed for the experimental and control groups and for the children with speech severity ratings of one plus, two, or three.

CHAPTER IV

RESULTS

Distribution of California Mental Maturity Intelligence Quotients for Speech Defectives and Matched Pairs.-- The mean for these scores is 105.90 and the standard deviation is 15.20. The scores of ten pairs fall below ninety. The scores of ten pairs are above 120. Forty-eight pairs of scores fall within the average range of intelligence. The range of intelligence scores are from the area of sub-normal to the area of gifted. The individual scores appear on Table No. 1.

Comparison of Total California Mental Maturity Language Results.-- Table No. 2 shows the means and the standard deviations for all sub-test scores. The mean for the experimental group is 105.53 and the standard deviation is 15.65. The mean for the control group is 105.57 and the standard deviation is 14.05. The variation between the scores is negligible.

Comparison of Total California Mental Maturity Non-Language Results.-- The mean for the experimental group is 106.07 and the standard deviation is 21.85. The mean for the control group is 106.57 and the standard deviation is 20.05. The variation between these scores is negligible.

Comparison of Total Iowa Basic Skills Language Results.-- The mean for the experimental group is 55.01 and the standard deviation is 15.35. The mean for the control group is 55.91 and the standard deviation is 13.80. The variation between

TABLE I
SCORES FOR MATCHED PAIRS ON ALL SUB-TESTS

	<u>Experimental Group</u>					<u>Control Group</u>			
	California			Iowa		California		Iowa	
	<u>I.Q.</u>	<u>Lang.</u>	<u>Non-Lang.</u>	<u>Lang.</u>	<u>Non-Lang.</u>	<u>Lang.</u>	<u>Non-Lang.</u>	<u>Lang.</u>	<u>Non-Lang.</u>
1.	73	82	61	59	49	80	65	36	51
2.	74	73	76	34	44	90	58	61	53
3.	80	92	62	55	55	80	69	46	46
4.	84	90	78	31	40	79	89	32	42
5.	85	89	81	53	42	85	82	39	58
6.	86	104	63	57	57	88	84	39	37
7.	87	105	64	60	65	81	95	46	44
8.	87	96	75	32	45	88	85	38	44
9.	88	80	100	38	37	95	78	46	44
10.	88	98	72	55	49	89	86	52	47
11.	90	93	87	40	48	81	105	47	42
12.	90	97	82	38	42	82	102	64	46
13.	92	83	107	61	71	104	76	49	52
14.	93	91	97	58	44	92	95	55	51
15.	93	78	115	31	35	85	105	44	40
16.	94	90	102	48	44	114	68	45	33
17.	95	97	90	45	55	96	92	45	40
18.	95	96	91	54	50	85	111	47	52
19.	96	107	81	33	42	98	92	42	40
20.	97	96	99	90	73	95	100	45	49
21.	97	100	93	49	45	104	89	56	55
22.	99	102	94	49	43	105	91	61	41
23.	100	93	83	52	78	91	115	40	40
24.	101	96	107	35	46	102	100	67	66
25.	101	95	112	30	43	101	101	49	55
26.	101	101	102	44	44	111	88	74	69
27.	101	95	110	52	54	96	109	55	53
28.	102	104	96	69	53	110	88	53	55
29.	102	100	106	49	55	102	102	60	51
30.	102	100	105	30	58	97	110	49	51
31.	103	90	124	61	53	107	96	66	58
32.	104	101	111	79	63	97	116	36	40
33.	105	121	84	63	44	100	114	32	43
34.	106	107	104	56	57	102	114	34	46
35.	106	90	132	51	40	95	125	40	37
36.	107	113	99	48	50	101	117	58	52
37.	107	113	99	48	50	108	106	40	48
38.	108	94	131	44	38	106	110	53	58
39.	109	109	109	53	62	97	132	55	76
40.	109	109	109	53	62	110	106	60	54
41.	109	109	109	53	62	110	107	70	67
42.	110	99	125	47	52	100	122	41	44

	<u>Experimental Group</u>					<u>Control Group</u>				
	<u>California</u>			<u>Iowa</u>		<u>California</u>		<u>Iowa</u>		
	<u>I.Q.</u>	<u>Lang.</u>	<u>Non-Lang.</u>	<u>Lang.</u>	<u>Non-Lang.</u>	<u>Lang.</u>	<u>Non-Lang.</u>	<u>Lang.</u>	<u>Non-Lang.</u>	
43.	110	116	102	43	49	109	111	67	54	
44.	111	94	134	56	43	119	98	69	57	
45.	112	91	155	58	58	121	100	54	47	
46.	112	109	115	52	43	127	88	68	71	
47.	113	104	127	66	52	106	123	70	67	
48.	113	116	109	47	53	106	123	70	67	
49.	114	117	107	38	49	124	98	63	44	
50.	114	113	89	65	62	117	107	38	49	
51.	114	114	113	51	54	123	100	72	61	
52.	116	114	121	41	47	108	127	67	67	
53.	117	123	117	61	62	126	105	60	73	
54.	118	103	146	61	89	112	127	51	56	
55.	118	117	119	61	61	108	136	66	49	
56.	119	122	114	70	66	115	125	72	56	
57.	120	112	131	56	57	118	122	65	46	
58.	122	130	105	76	69	112	137	66	60	
59.	122	126	115	72	70	117	129	63	70	
60.	122	139	94	98	73	114	135	79	76	
61.	123	111	147	79	67	123	123	67	66	
62.	126	129	121	84	70	135	108	55	69	
63.	127	121	130	91	64	125	135	64	57	
64.	128	124	137	66	61	121	143	52	77	
65.	132	134	127	56	85	128	144	94	87	
66.	136	135	140	81	73	139	131	79	79	
67.	137	142	129	62	73	138	135	78	73	
68.	142	142	142	63	81	146	142	86	80	

Table No. 2

MEAN SCORES

<u>SUB-TESTS</u>		<u>NORMAL SPEECH</u>	<u>TOTAL SPEECH DEFECTIVE</u>	<u>1</u>	<u>2</u>	<u>3</u>
California Mental	Mean	105.57	105.53	102.60	105.83	115.11
Maturity Language	S.D.	14.05	15.65	14.75	15.65	14.50
California Mental	Mean	106.57	106.07	103.03	108.40	108.11
Maturity Non- Language	S.D.	20.05	21.85	19.25	24.10	15.15
Iowa Basic Skills	Mean	55.91	55.01	54.03	54.90	58.55
Language	S.D.	13.80	15.35	15.95	13.50	16.70
Iowa Basic Skills	Mean	54.23	55.44	51.51	53.57	63.22
Non-Language	S.D.	13.15	12.30	9.60	13.15	11.45

the mean scores is negligible. The standard deviations suggest a wider variation in the experimental group scores.

Comparison of Total Iowa Basic Skills Non-Language Results.-- The mean for the experimental group is 55.44 and the standard deviation is 12.30. The mean for the control group is 54.23 and the standard deviation is 13.50. The variation between these scores is negligible.

Comparison of Groups According to Severity of Speech Problems.-- The children with speech severity one plus have a mean of 102.60 with a standard deviation of 14.75 on the California Mental Maturity Language score. They have a mean score of 103.03 with a standard deviation of 19.25 on the California Mental Maturity Non-Language score. This group had a mean of 54.03 with a standard deviation of 15.95 on the Iowa Basic Skills Language Test. On the Iowa Basic Skills Non-Language Test, they had a mean score of 51.51 with a standard deviation of 9.60. A tendency for a more central grouping is indicated by the standard deviation of the Iowa Basic Skills Non-Language results. It may be noted that the mean scores for this group fall below the scores for the control group.

The children with speech severity two have a mean of 105.83 with a standard deviation of 15.65 on the California Mental Maturity Language score and a mean of 108.40 with a standard deviation of 24.10 on the California Mental Maturity Non-Language score. This group scored a mean of 54.90 with a standard deviation of 13.50 on the language section of the Iowa Basic Skills Test. They scored a mean of 53.57

with a standard deviation of 13.45 on the Iowa Basic Skills Non-Language Test. It may be noted that the mean scores for this group compare closely to the mean scores of the control group.

The children with speech severity three have a mean of 115.11 with a standard deviation of 14.50 on the California Mental Maturity Language scores. They have a mean of 108.11 with a standard deviation of 15.15 on the California Mental Maturity Non-Language score. This group has a mean of 58.55 with a standard deviation of 16.70 on the Iowa Basic Skills Language Test. It has a mean of 63.22 with a standard deviation of 11.45 on the Iowa Basic Skills Non-Language Test.

It may be noted that although there is no real difference between the standard deviations of the groups classified as to severity, as the severity increases, the means increase.

CHAPTER V
SUMMARY AND CONCLUSIONS

Summary.-- The purpose of this study was to determine whether children with functional articulatory defects score differently from normal speakers in the non-language vs. language sections of the California Mental Maturity Test or the Iowa Basic Skills Test.

Sixty-eight children with functional articulatory defects were matched with sixty-eight normal speaking children by means of their California Mental Maturity Intelligence Quotients. The groups were compared on the language and non-language scores of the California Mental Maturity Test and the Iowa Basic Skills Test. Total scores for both the experimental and control groups were tabulated. Then, scores for the children from the experimental group with relatively minor articulatory defects, moderate articulatory defects and severe articulatory defects were tabulated.

Children with functional articulatory defect ratings of one plus had means on all sub-tests below both the total experimental and control group means. Children with functional articulatory defect ratings of two had means within one point of both the control and experimental groups on all sub-tests except the Iowa Basic Skills Non-Language Test. Children with functional articulatory defect ratings of three had means on all sub-tests above both the total experimental and control group means.

Conclusions.-- The variations between language and non-language scores of the individual groups are not enough to be significant. The results indicate that children with functional speech defects score as well on the language section of the California Mental Maturity Intelligence Test or the Iowa Basic Skills Language Test as normal speaking children. This tends to indicate that children in the fourth and fifth grade levels with functional speech defects are not handicapped in other areas of communication.

Limitations of the Study.-- The following limitations of the study are noted: (1) the decreased size of the experimental group due to the lack of complete information on defective speakers of the type used in this study; (2) only functional articulatory problems were used in this study; (3) only two tests were used in determining the results; (4) both tests used in this study were of the pencil-paper type.

Suggestions for Further Research.-- The following suggestions for further research are made:

1. Investigation of the language and non-language abilities of children with organic speech defects in order to determine if their speech problems interfere with other areas of communication.
2. Investigation into the attitudes of children with functional and organic speech defects in order to study the

extent of these attitudes in determining whether or not the speech defects constitute a handicap.

3. Investigation of language vs. non-language results of children with functional and organic speech defects on individual intelligence tests such as the Wechsler-Bellevue Intelligence Scale.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Ball, Joe., 1958. The Relationship Between the Ability to Speak Effectively and the Primary Mental Abilities, Verbal Comprehension and General Reasoning. Speech Monographs, 25, 285-290.
2. Beckey, R. E., 1942. A Study of Certain Factors Related to Retardation of Speech. Journal of Speech Disorders, 7, 223-249.
3. Carrell, J. A., 1936. A Comparative Study of Speech Defective Children. Arch. Speech, 1, 179-203.
4. Carrell, James and Pendergast, Kathleen. 1954. An Experimental Study of the Possible Relation Between Errors of Speech and Spelling. Journal of Speech and Hearing Disorders, 19, 327-334.
5. Carrow, Sister Mary Arthur, 1957. Linguistic Functioning of Bilingual and Monolingual Children. Journal of Speech and Hearing Disorders, 331-338.
6. Everhart, R. W., 1953. The Relationship Between Articulation and Other Developmental Factors in Children. Journal of Speech and Hearing Disorders, 18, 332-338.
7. Pronovost, Wilbert, The Teaching of Speaking and Listening In the Elementary School, Longmans, Green and Co., New York, London, Toronto, (January, 1959), 299-300.
8. Schneiderman, N., 1955. A Study of the Relationship Between Articulatory Ability and Language Ability. Journal of Speech and Hearing Disorders (Dec.), 20, 359-363.
9. Sperling, S. L., 1948. A Comparison Between Verbal and Non-Verbal Test Results of Children With Articulatory Speech Defects. Unpublished Master's Thesis, Univ. Mich.
10. Travis, Lee E., Handbook of Speech Pathology. Appleton-Century-Crofts, Inc., New York (1957), 749.
11. Turner, D., 1957. A Study of Speech Effectiveness and Personal and Social Adjustment Among Ninth Grade Pupils. Ed. D Thesis, Boston Univ.
12. Van Riper, Charles, Speech Correction Principles and Methods. Prentice-Hall, Inc., New York, (1949), 48.
13. Yedinack, J. G., 1949. A Study of the Linguistic Functioning of Children With Articulation and Reading Disabilities. Journal of Genetic Psychology, 74, 23-59.