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ABSTRACT

Evaluated was a summer program of reading and mathematics for handicapped pupils in special education classes consisting of two components: the speech/language impairment component, including 377 students, and the component for mentally retarded pupils, including 315 students. The speech/language component, designed to improve academic skills through individual or small-group instruction, lacked good definition of the relationship between speech/language improvement concerns and attempts to improve reading skills and did not meet the evaluation objective of mastery of at least one instructional objective by 70% of the pupils. The mental retardation component, largely social-recreational in design, exceeded the evaluation objective of mastery of at least one instructional objective formerly failed by 70% of the pupils, with nearly 88% mastering at least one new objective. However, higher-functioning pupils were restricted due to an insufficiency of range in portions of the training/assessment technique. (Criterion-referenced testing is explained, and results are appended in tabular form.) (Author/IM)

EVALUATION REPORT

Function No. 09-61625(C)

SUMMER PROGRAM OF READING AND MATHEMATICS FOR HANDICAPPED PUPILS IN SPECIAL EDUCATION CLASSES: SPEECH/LANGUAGE IMPAIRED PUPILS AND MENTALLY RETARDED PUPILS

Summer 1975

Martin B. Miller

An evaluation of a New York City School District educational project funded under Title I of the Elementary and Secondary Education Act of 1965 and performed under contract with the Board of Education of the City of New York for the Summer of 1975.

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PROGRAM ABSTRACT

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A.	6 4 6 1 3	7 2 0	8 0 1
B.	6 4 4 1 3	7 1 5	8 0 1

Summer 1975 Program of Reading and Mathematics for Handicapped Pupils in Special Education Classes

(A) Language Impaired -- Speech

The speech/language impairment component of the summer program was ostensively designed to improve pupils' academic skills by remediating or improving speech and/or language functioning through an individual or small-group clinical approach. Speech clinics were conducted in 24 sites by 30 teachers for 377 pupils of varying age and degree of impairment, who received 30 minutes of clinical speech services each day of the 6-week program. The evaluation objective of mastery of at least one instructional objective by 70% of the pupils was not achieved in terms of reading skills, but was approximated non-academically, in terms of speech functioning. The program lacked good definition of relationship between speech/language improvement concerns and attempts to improve reading skills. Most pupils were not involved in any academically oriented summer program.

(B) Mental Retardation

The component for mentally retarded pupils was conducted at 5 centers, one per borough. Programming was fairly uniform across centers. Attendance was problematical at two of the centers, evidently a function of poor bus service. Functional academic skills training was embedded in a program largely social-recreational in design. The total group of 315 pupils consisted of approximately equal-size subgroups of trainable-level retarded youngsters stratified by age including primary -, intermediate -, and junior high-age subgroups. The evaluation objective of mastery of at least one instructional objective formerly failed by 70% of the pupils was exceeded, with nearly 88% of the pupils mastering at least one new objective. Nearly 48% of the pupils mastered three or more new instructional objectives. Higher-functioning pupils were restricted in their mastery of new skills due to non-availability in the program of sufficiently wide-ranging portions of the training/assessment technique. Nevertheless, the program was generally quite successful.

CHAPTER I: THE PROGRAM

INTRODUCTION

This report concerns two components of the Summer Program of Reading and Mathematics for Handicapped Pupils in Special Education Classes. The two program components are those designed for pupils who are (a) speech and/or language impaired, and (b) mentally retarded. Since programmatic and evaluative aspects of each program component are distinctive in several respects, this report will deal with each component separately.

(A) The Speech/Language Impairment Component

The program for pupils with speech and/or language impairment was designed and operated as an array of speech clinics. Under supervision of 3 supervisors, 30 speech teachers operating in 24 school sites were assigned caseloads of 10-15 pupils each. Cases were nominated by their public or non-public school teachers from their regular schools. Pupils were seen by the speech teachers either individually or in small groups (rarely exceeding 3 per group). Group members were homogeneous with respect to a given speech problem. Sessions were conducted for 30 minutes each day over a 6-week period. This is an unusually intensive regimen for speech or language therapy when compared to that which is generally feasible in the regular school year, and marked improvement of many problems in many cases was reasonably anticipated.

An assumption of the speech program made by its designers is that speech competence and adequate academic functioning are related. Therefore, to justify the program's place in a more general program concerned with improving academic skills in handicapped pupils, it is argued in the project description for the Summer Program that:

"Speech involves the mechanics of using words, is the oral expression of language, is basic to reading. As the child learns to pronounce sounds and to associate them with words and sentences, he is provided with the basic steps to reading and remediation in reading." (p. 30)*

It follows from the foregoing that (1) speech impairment leads to reading difficulty, and perhaps more importantly (2) improvement, or better correction of speech problems leads to improvement in reading, or at least sets the stage for such latter improvement.

In keeping with the foregoing, the speech clinics which functioned in the Summer Program made little or no direct attempt to remediate or even deal with academic skills; rather, they were directly and intensively concerned with speech or language problems whose remediation assumedly would have the indirect impact on reading or other academic functioning implied above.

Population. The pupils served by the summer speech clinics represented a rather heterogeneous group in terms of speech or language functioning. The overall group of 377 pupils included 95 pupils whose primary defect was classified as an articulatory defect, and 95 lispers; together, these two subgroups constituted a little better than 50% of the total. At another extreme, there were 10 pupils who were members in a program for severely mentally retarded children, few of whom had any functional language skills. This latter subgroup received language developmental services from one specially selected speech teacher. In most other instances, the caseloads of individual speech teachers were quite mixed, consisting of cases which ranged from relatively mild (lispers, for instance) to pupils classified as "aphasoid syndrome" or "delayed speech and language." The age range of

*ESEA Title 1 Project Description, Summer '75 Program of Reading and Mathematics for Handicapped Pupils in Special Education Classes, DSEPPS, Function #0961623. New York: Board of Education, Bureau of ESEA - Title 1 Program Development, 1975.

pupils served was similarly wide, varying from Pre-Kindergarten to beyond Grade 8. Further, cases were drawn from both public and non-public schools, and included some children who received no clinical speech services during the regular school year, as well as many who received such services regularly or sporadically. Finally, while a substantial number of cases were delayed in academic areas, some pupils performed academically at or beyond grade level.

(B) Mentally Retarded Pupils Component

The program for pupils who are mentally retarded was conducted with striking uniformity of design over the five (5) centers, one per borough, in which it functioned. In each center, pupils were grouped as homogeneously as possible according to their chronological and/or mental development, yielding four groups per center. Each such group was cycled through a daily program running for six (6) weeks consisting of four areas: crafts, motor development, drama, and photography. Each of the four (4) teachers per center was a specialist in one of the four areas. Each area was to serve as a vehicle for improving academic skills, especially reading, but also including some mathematics. The program component also called for pupils making frequent field trips as part of their programs, coupled with the photography area, which were to be converted into academically beneficial activity, as with the development of experience charts based on their trips.

Population. The overall group of 315 pupils was about equally subdivided into four (4) subgroups according to chronological age as well as level of cognitive functioning. The four subgroups included (1) trainable-

level youngsters ranging in age from 7-17, with IQs below 50; (2) educable-level children in the primary age range, 7-10 years, with IQs 50-75; (3) educable-level youngsters in the intermediate age range, 11-13 years, IQs 50-75; (4) educable-level youngsters in the junior high range, 14-17 years, IQs 50-75.

CHAPTER II: EVALUATIVE PROCEDURES

(A) The Speech/Language Impairment Component

Two general evaluation objectives regarding this program component were: (1) to establish if, as a result of participation in the program, 70 percent of the speech or language impaired pupils showed mastery of at least one instructional objective which prior to the program they did not master, and (2) to determine, as a result of program participation, the extent to which speech and/or language impaired pupils demonstrated mastery of instructional objectives.

The program was evaluated in terms of a criterion-referenced approach, as mandated. However, a series of unfortunate circumstances led to several problems. First, no systematic baseline evaluation took place until more than half of the 6-week program had transpired. Second, the evaluation instrument selected, the Woodcock Reading Mastery Tests, was not optimal for the program, nor was it the ideal criterion-referenced instrument. The third factor concerns the Woodcock Tests. The publisher (American Guidance Service) offers alternate forms A and B, which could have provided a basis for studying changes in pupil performance from one form to the other, thus minimizing practice effects or other biasing factors. However, only Form A was ordered from the publishers.

Three subtests of the Woodcock were administered; Letter Identification, Word Identification, and Word Comprehension. Furthermore, for each subtest, two scores were derived, one pro forma score in terms of reading, the other based on the quality of speech. This provided an opportunity to directly consider the relationship between speech and reading upon which the program

was premised. In addition, despite rather serious limitations which should be raised, including the use of the same form and the brevity of the pre-post interval (which in some cases was only a few days), tests were repeated. This provided a crude opportunity to consider whether improvement in speech or language functioning would be related to reading improvement.

(B) Mentally Retarded Pupils Component

Two general evaluation objectives for the program component for mentally retarded pupils were (1) to determine if, as a result of participation in the program, 70 percent of mentally retarded pupils mastered at least one instructional objective which prior to the program they did not master, and (2) to determine the effects of program participation on the extent of mastery of instructional objectives by mentally retarded pupils.

In accordance with the mandate that evaluation of the program should follow a criterion-referenced approach, Levels 1 and 2 of the Random House Criterion Reading System were utilized. All pupils were examined in terms of as few as 6 to as many as 24 instructional obejctives. In four of the five centers, home room teachers administered baseline testing during the first few days of the program. In the fifth center, testing was done, also in the early stages of the program, by teacher trainees who were subsequently rotated into other program components. In all cases, tests of mastery as a result of participation were administered by home room teachers.

CHAPTER III: FINDINGS

Of the 377 pupils on the class registers of the program, no more than 307 were evaluated with any of the Woodcock subtests. On the Letter Identification Test, 33 pupils were systematically excluded as "non-readers," this group including the 10 severely retarded pupils. On the Word Identification Test, 48 pupils were excluded as "non-readers," so that only 77% of the possible cases yielded even a baseline on this measure. On the other hand, 28 pupils (7.4%) mastered all objectives prior to instruction. For the third subtest, Word Comprehension, only cases which received both pre and post administrations were reported, again about 77% of the pupils on the class registers.

For the Letter Identification and Word Identification subtest, three different levels of mastery were considered in terms of both reading and speech performance: 50% mastery, 70% mastery, and 90% mastery. Results relative to Letter Identification are summarized in Tables 1, 2 and 3. Table 1 shows comparative results on the reading and speech measures for Letter Identification for each level of mastery.

INSERT TABLE 1

In general, the extent of improvement on the speech measure is greater than is true for the reading measure. Table 2 is similar to Table 1, except that each column represents a discrete group of pupils (while in Table 1, there is redundancy between columns, i.e., "pupils who failed at all levels" includes some of the same pupils who "failed 90%," etc.)

INSERT TABLE 2

Table 1

ACHIEVEMENT OF THREE DIFFERENT LEVELS OF MASTERY ON LETTER IDENTIFICATION TEST, PRE AND POST, FOR READING AND SPEECH

	Reading Level of Mastery			Speech Level of Mastery		
	50%	70%	90%	50%	70%	90%
(1) Number of pupils achieving mastery: pretest	254	213	139	272	216	117
(2) Number of pupils failing to achieve mastery: pretest	47	94	168	35	91	190
(3) Number of pupils failing mastery on pre-test who show mastery on post-test	14	27	23	22	57	91
(4) Percent improved: Line(3) / Line(2)	29.8	28.7	13.7	62.9	62.6	47.9

TABLE 2

IMPROVEMENT IN MASTERY LEVEL ON LETTER IDENTIFICATION TEST FROM PRE TO POST, CONTROLLING OVERLAP BETWEEN PRETEST MASTERY LEVELS

	Reading			Speech		
	On pretest, failed at all levels	On pretest passed 50%, failed 70% and 90%	On pretest failed 90%	On pretest, failed at all levels	On pretest passed 50%, failed 70% & 90%	On pretest failed 90%
(1) Number of pupils on pretest	47	47	74	35	55	100
(2) Percent of pupils on pretest	15.3	15.3	24.1	16.9	17.9	32.6
(3) Number of pupils improved	14	24	18	22	48	67
(4) Percent improved who had failed: Line(3) / Line(1)	29.8	46.7	24.2	62.9	87.2	67.0

Once again, the percent of improvement on the speech measure clearly exceeds that for reading. Also noteable in Table 1 is the number of pupils who are successful at the 90% level on either measure of the pretest: 45% on reading, and 38% on speech.

While not tabularized, it was possible to examine the extent of relationship between reading and speech performance on the Letter Identification pretest in terms of a Contingency Coefficient (C) for level of mastery on each measure. (This statistic is related to Chi Square.) The result of this analysis is a $C = .533$, significant beyond the $p < .001$ level. Thus, there is striking evidence that reading ability is related to speech competence for this test.

Table 3 shows the relationship between reading and speech improvement, excluding data in this analysis for those pupils who showed 90% mastery on either or both the reading or speech measure for the Letter Identification pretest.

INSERT TABLE 3

In this case, the extent of relationship approaches but does not achieve significance at the $p > .05$ level. Thus, it cannot be concluded that improvement in speech is related to reading improvement, on this measure.

A similar series of analyses may be reported with respect to the Word Identification test. These are summarized in Tables 4 through 6.

INSERT TABLES 4, 5 and 6

TABLE 3

CONTINGENCY χ^2 FOR IMPROVEMENT IN READING AND SPEECH ON LETTER IDENTIFICATION TEST

		Speech: Did not Improve	Speech: Improved	
Reading	Improved	7	36	43
	Did not Improve	27	57	84
		34	93	127*

$\chi^2 = 3.65$; $< .10$ $p > .05$

*Excludes cases passing at all levels on either the reading or the speech pretest.

TABLE 4

ACHIEVEMENT OF THREE DIFFERENT LEVELS OF MASTERY ON WORD IDENTIFICATION TEST, PRE AND POST, FOR READING AND SPEECH

	Reading Level of Mastery			Speech Level of Mastery		
	50%	70%	90%	50%	70%	90%
(1) Number of pupils achieving mastery: pretest	110	94	83	117	104	86
(2) Number of pupils failing to achieve mastery: pretest	180	196	207	187	200	218
(3) Number of pupils failing mastery on pretest who show mastery on post-test	72	52	36	126	103	74
(4) Percent Improved: $\frac{\text{Line (3)}}{\text{Line (2)}}$	40.0	26.5	17.4	68.5	51.5	33.9

TABLE 5

IMRPOVEMENT IN MASTERY LEVEL ON WORD IDENTIFICATION TEST FROM PRE TO POST, CONTROLLING OVERLAP BETWEEN MASTERY LEVELS

	Reading			Speech		
	On pretest failed at all levels	On pretest, passed 50% failed 70% & 90%	On pretest, failed 90%	On pretest, failed at all levels	On pretest, passed 50% failed 70% and 90%	On pretest, failed 90%
(1) Number of pupils on pretest	180	18	9	187	19	12
(2) Percent of pupils on pretest	62.1	6.2	3.1	61.5	6.2	4.0
(3) Number of pupils improved	72	10	7	126	13	11
(4) Percent improved who had failed Line (3) / Line (1)	40.0	55.5	77.8	68.5	68.4	91.7

TABLE 6

CONTINGENCY χ^2 FOR IMPROVEMENT IN READING AND SPEECH ON WORD IDENTIFICATION TEST

		Speech: Did not Improve	Speech: Improved	
Reading	Improved	9	67	76
	Did not Improve	38	51	89
		47	118	165*

$\chi^2 = 26.12$; $p < .001$

*Excludes cases passing at all levels on either the reading or the speech pretest.

Several differences for Word Identification results relative to those for Letter Identification are noteable. The number of pupils showing mastery at a high level on the Word Identification pretest islower than was true for Letter Identification. However, this is probably an artifact, in that the Word Identification test was administered up to the point of one grade beyond expected grade level, while Letter Identification (a generally easier task), was administered in its entirety to all pupils who were tested. These factors probably also account for the lesser extent of improvement for Word Identification compared to that for Letter Identification.

As was the case for Letter Identification, the extent of relationship between pretest levels for reading and speech on Word Identification was substantial, $\underline{C} = .605$, significant well beyond the $p < .001$ level. But unlike Letter Identification, and as shown in Table 6, there was also a highly reliable relationship between reading and speech <u>improvement</u> for the Word Identification Test. Unfortunately, this effect can easily be attributed to artifact, since the administration of the speech component on this test led to inevitable coaching on test items (i.e., when a pupil failed to read an item successfully, the teacher presented the word orally and asked the pupil to repeat the word for the speech measure.) Given the brief time period separating pre and post testing, carry-over from such coaching would appear highly probable. This would have been obviated if Form B of the Woodcock had been used as an alternate form.

Data for the Word Comprehension Test, which report pre vs. post-test changes in Woodcock's mastery scores were not included in this analysis

because the unusually large pre-to-post changes for the brief treatment period suggest possible errors in test administration and/or recording of results. Practice or coaching effects may also have played a role. Data analyses on this test were therefore not performed.

With respect to the general evaluation objectives, it was not the case that 70% of the speech/language impaired pupils mastered one or more reading-related instructional objectives. Nearly 70% of the cases did show improvement with respect to speech on one Woodcock-derived measure, the Word Identification Test (see Table 5.) Tables 1, 2, 4, and 5, as discussed above, indicate the extent to which mastery of instructional objectives was achieved by speech/language impaired pupils.

In only a few sites of the summer program for speech/language impaired pupils, did any other academic activity for the pupils besides the speech clinic take place. Most pupils merely came for their 30-minute daily sessions at the appointed time, then returned home. In many instances, parents were counseled by the speech teachers on special drills that could be conducted at home, which often provided very useful program continuity. However, a distinct minority of cases participated in summer programs of a more extended nature. One example was a program for severely mentally retarded youngsters run by the Association for the Help of Retarded Children, a voluntary agency. There, the speech teacher was quite effective in facilitating language development. On the other hand, four of the sites in which summer clinics were established were district offices, where there was not even a semblance of academic activity.

Teachers used a variety of clinical aids, including tape recorders, mirrors, tongue depressors, and games. Some teachers used reading materials, both formal and informal. Reading materials and texts which had been made available to participating speech teachers by program supervisors were used by only a few teachers. Some teachers were observed to be using materials and tasks of a mathematical nature.

Teachers generally were seen as competent and well-motivated in terms of their speech/language correction concerns, which is especially noteworthy given the austere circumstances several functioned in, as in the district offices. Some teachers showed a striking degree of ingenuity and enthusiasm, particularly useful for difficult cases involving severe language delay. The opportunity to work on a daily basis appeared to be beneficial to both pupils and teachers, the latter group profiting by rapid feedback on the effectiveness of individual programs and drill procedures.

(B) Mentally Retarded Pupils Component

The first general evaluation objective concerned determination of whether 70 percent of the pupils achieved mastery of at least one instructional objective which prior to the program they did not master. Analyses of data (see especially Table 8, below) showed that nearly 88% of the mentally retarded pupils mastered at least one instructional objective which they had failed to master prior to instruction.

Tables 7 to 10 express the outcome of evaluations via the Criterion Reading system as utilized. These tables have pertinence to the second general evaluation objective: determination of the extent of mastery of instructional objectives by mentally retarded pupils as a function of program participation. From inspection of Table 7, it is evident that a substantial majority of pupils -- more than 62% -- showed mastery of more than half of the objectives they were tested on prior to instruction.

INSERT TABLE 7

Included in that majority are 22.5% of the pupils who showed mastery of more than 75% of the objectives they were tested on prior to instruction. The program coordinator reported that children were grouped for instruction on the basis of previous achievement data from school records as well as pre-test results. It is also noteworthy that this was a first experience with a criterion referenced system in the summer program. Nevertheless, it is likely that the above findings are reflecting a floor effect, i.e., testing and subsequent instruction for many pupils was limited to a level that was too easy. Pupils in the trainable range were generally tested in terms of Level 1 objectives and some of those pupils could probably have profited by Level 2 testing and concomitant instruction. Similarly, other pupils could probably have responded to levels of the Criterion Reading System -- Level 3 and up -- which were not employed in the program's evaluation and training procedures.

Table 8 shows that most pupils gained mastery on from one to four instructional objectives. It should be noted that the potential for gain

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INSERT TABLE 8

Table 7

DISTRIBUTION OF MASTERY BY MENTALLY RETARDED PUPILS OF INSTRUCTIONAL OBJECTIVES PRIOR TO INSTRUCTION

Percentage of Mastery of Instructional Objectives	Number of Pupils	Percentage of Pupils
76-100%	71	22.54%
51-75%	125	39.68%
26-50%	85	26.98%
0-25%	34	10.79%

TABLE 8

DISTRIBUTION OF THE NUMBER OF INSTRUCTIONAL OBJECTIVES MASTERED AFTER INSTRUCTION BY MENTALLY RETARDED PUPILS

Number of Instructional Objectives Mastered	Number of Pupils	Percentage of Pupils
None	33	12.31
1-2	107	39.93
3-4	78	29.10
5-6	28	10.45
7-8	13	4.85
9-10	6	2.24
11-12	3	1.12

in mastery is partly a function of the number of objectives available to master. As noted above, many pupils were left with few tasks to master. Therefore, achievement of four instructional objectives is considerable gain for a 6-week program. It is also noteworthy that nearly 19% of the pupils showed mastery of 5 or more objectives.

As shown in Table 9, nearly a third of all pupils mastered less than 30% of potential objectives, suggesting that instruction may have been less than optimal for those pupils.

INSERT TABLE 9

Finally, Table 10 dramatizes the fact that 315 mentally retarded pupils were exposed in varying degrees to individualized instruction from among a selected group of fully 89 different instructional objectives.

INSERT TABLE 10

In addition, some pupils were evaluated on four other objectives, which all pupils mastered prior to instruction. Such a great variety of objectives for mastery is evidence that programming was quite individualized, especially given the small number of pupils trained in any given objective.

In other respects, while there was consistency of programming across the five centers, there were also noteable differences. In two of the centers in the northern part of the city, bus operations were apparently inadequate,

TABLE 9

DISTRIBUTION OF PERCENTAGE OF MENTALLY RETARDED PUPILS ACHIEVING LEVELS OF MASTERY OF INSTRUCTIONAL OBJECTIVES

Percentage of Mastery of Instructional Objectives (# Objectives Achieved) (# Objectives Attempted)	Number of Pupils	Percentage of Pupils
90-100%	32	11.94
80-89%	18	6.72
70-79%	21	7.84
60-69%	30	11.19
50-59%	34	12.69
40-49%	31	11.57
30-39%	18	6.72
20-29%	27	10.07
10-19%	22	8.21
0-9%	35	13.06

TABLE 10

PROGRAM FOR MENTALLY RETARDED PUPILS: DISTRIBUTION OF PUPIL MASTERY BY INSTRUCTIONAL OBJECTIVES AS A RESULT OF INSTRUCTION

Instructional Objectives	Ratio of # pupils achieving mastery / # pupils attempting mastery	Percentage of mastery
1. Locating parts of body	7/9	77.8
2. Balancing on one foot	14/22	63.6
3. Skipping	3/4	21.4
4. Balance-beam walking	13/17	76.5
5. Swinging arms in circle	0/1	0.0
6. Identifying speech difficulties	0/4	0.0
7. Eye movements	4/9	44.4
8. Holding a pencil	0/1	0.0
9. Holding scissors	3/8	37.5
10. Connecting dots, straight line	7/23	30.4
11. Connecting dots, wavy line	9/12	66.7
12. Tracing lines of shapes	2/4	50.0
13. Tracing numbers	0/1	0.0
14. Tracing letters	0/1	0.0
15. Tracing 3-Dimensional shapes	7/25	28.0
16. Cutting along line with scissors	16/38	42.1
17. Tying shoelaces	7/11	63.6
18. Tapping a rhythm	6/16	37.5
19. Throwing a beanbag	1/3	33.3
20. Identifying right and left hands	13/15	86.7
21. Identifying objects	0/1	0.0
22. Remembering order of objects	8/10	80.0
23. Matching basic colors	27/47	57.4
24. Copying shapes of different sizes	8/23	34.8
25. Identifying objects in pictures	13/24	54.2
26. Recognizing order of pictures	1/1	100.0

27. Matching shapes	17/27	63.0
28. Matching equal numbers of shapes	17/30	56.7
29. Tracing letters and numbers	6/7	85.7
30. Letter and number completion	5/9	55.6
31. Copying letters and numbers	5/13	38.5
32. Remembering order of 4 letters	4/6	66.7
33. Connecting matching letters	4/11	36.4
34. Circling matching letters	7/19	36.8
35. Matching words	5/11	45.4
36. Identifying different words	7/20	35.0
37. Identifying common sounds	0/2	0.0
38. Repeating a rhythm	3/8	37.5
39. Identifying shapes	7/16	43.8
40. Identifying biggest object	15/28	53.6
41. Identifying smallest object	3/5	60.0
42. Understanding "above"	11/38	29.0
43. Understanding "below"	9/39	23.1
44. Understanding "between"	11/40	27.5
45. Understanding "within"	3/15	20.0
46. Understanding "together"	2/19	10.5
47. Understanding "apart"	2/16	12.5
48. Understanding "in front of"	3/10	30.0
49. Understanding "behind"	5/7	71.4
50. Understanding "around"	1/13	7.7
51. Understanding "across"	1/19	5.3
52. Understanding "beneath"	1/9	11.1
53. Understanding "right"	11/23	47.8
54. Understanding "left"	10/25	40.0

55.	Understanding "top of"	2/13	15.4
56.	Understanding "botton of"	4/13	30.8
57.	Understanding "nearest"	2/2	100.0
58.	Identifying parts of body	10/15	66.7
59.	Identifying objects	6/14	42.9
60.	Identifying upper-case letters	11/22	50.0
61.	Identifying lower-case letters	0/10	0.0
62.	Identifying pairs of upper, lower case	7/17	41.2
63.	Identifying same beginning sounds	12/17	70.6
64.	Identifying same ending sounds	6/11	54.6
65.	Identifying same-sounding words	4/7	57.1
66.	Classifying upper with lower-case letters	14/30	46.7
67.	Identifying initial single-cons. sounds	10/25	40.0
68.	Identifying final single-cons. sounds	13/33	39.4
69.	Identifying singular possessive nouns	15/22	68.2
70.	Identifying comparative adjective ends	16/26	61.5
71.	Identifying compound words	7/29	24.1
72.	Identifying colors	5/12	41.7
73.	Identifying cardinal numbers	9/16	56.2
74.	Identifying ordinal numbers	24/58	41.4
75.	Identifying shapes	21/36	58.3
76.	Identifying sizes	10/26	38.5
77.	Identifying objects by properties	23/51	45.1
78.	Identifying functions	16/34	47.1
79.	Identifying words of possessions	12/26	46.2

80.	Classifying by category	11/50	22.0
81.	Identifying statements	20/60	33.3
82.	Identifying questions	21/65	32.3
83.	Identifying negative sentences	5/63	7.9
84.	Inferring mood	4/19	21.0
85.	Predicting details	23/50	46.0
86.	Identifying the main idea	24/61	39.3
87.	Inferring the writer's purpose	19/36	52.8
88.	Judging relevance	15/54	27.8
89.	Identifying causal relationships	18/49	36.7

so that pupils were often left at their doorstep and never brought to the program. In those two centers attendance was generally poor. This was in contrast to generally high attendance rates at the other three centers, where bus service was fully operational.

It was also observed that while mentally retarded pupils shared site facilities with other summer programs in most program centers, interaction between the programs was infrequent. Integration of activities between handicapped and non-handicapped pupils, of particular consequence, was practiced to a limited degree in one center. In that center, a teacher of non-handicapped pupils from a vacation day-camp program "challenged" a teacher of mentally retarded pupils to a ball game between the pupils. Similar exchanges between youngsters from these two programs apparently occurred throughout the summer. Also at that center, pupils shared a common lunch period, although the pupils from the different programs sat in separate parts of the lunchroom. In other centers, circumstances may have been less conducive for the integration of activities. In one of the centers, no other programs operated in the school. Nevertheless, it did not appear that integration of handicapped and non-handicapped youngsters was as aggressively pursued as might have been possible in the various settings. It is noteable that there was no evidence of such pursuit as a program objective in any documents related to the program component.

A derivative of the program was the development of a set of teacher-prepared materials that appeared to have many good ideas for the enhancement of functional reading skills in mentally retarded pupils. These materials were to be developed by the end of the program, reviewed and reproduced in

the fall for use in the summer of 1976. Teachers worked on their own time over a 30 day period in order to accomplish this task. The primary person writing these materials was selected for this task on the basis of prior experience in CRMD curriculum development. Nevertheless, it is hoped that the Bureau for Children with Retarded Mental Development will review these materials critically for their aptness.

The photography area in this component's program was noteable for the considerable pupil enthusiasm generated by a very innovative photography consultant who serviced all centers. Local photography teachers appeared to capitalize on the high level of motivation by teaching new reading vocabulary and mathematics that related to such activities.

CHAPTER IV: SUMMARY OF MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

(A) Speech/Language Impairment Component

Summary of Findings. Findings with respect to the speech/language impairment are equivocal. There is evidence of improvement in speech or language functioning, but only minimal evidence of academic improvement. There is also the suggestion of a relationship between speech and reading functions, but this relationship may be attributable to methodological artifacts.

Conclusion. Given the brevity of the treatment period related to reading, it is difficult to draw conclusions in this regard. While there appears to be little doubt that the summer speech program leads to significant benefits in terms of speech functioning, the role of such improvement on academic functioning remains unclear.

Recommendations. In line with the foregoing state of affairs, two alternative approaches for future summer speech programs are recommended for consideration:

1. The speech program design should very deliberately reflect reading skills improvement as well as speech improvement. This would require careful analysis of various reading programs to cull out those specific attributes which have significant bearing on speech, and vice versa.

2. Alternatively, the summer speech program could be tied as an ancillary service to other program components of the Summer Program umbrella which are more academic in nature. Many pupils served by other components could profit by speech improvement services, and in this way, the speech program would not have to compromise its useful clinical mission.

3. A separate recommendation concerns the question of relationship between speech and reading. An effort should be made to systematically study the relationships between speech and reading for the purpose of knowing whether the presumptive structure between reading and clinical speech improvement as a therapeutic approach is operative.

4. Recycling of the speech improvement program component of the total Title I umbrella cannot be recommended without modifications as suggested above.

(B) Mentally Retarded Pupils Component

Summary of findings. Pupils in the program component for mentally retarded pupils showed clear gain in their 6-week program in terms of mastery of instructional objectives, with nearly 88% of the pupils showing mastery of at least one new instructional objective. On the other hand, extent of gain was unduly restricted for some pupils by limiting instruction and assessment to levels of functioning already within the competence of those pupils. Problems of attendance in the Bronx and Manhattan centers appeared to be associated with the quality of operations of bus systems for those two centers.

Conclusion. The reading skills aspect of this program component was generally successful, if unnecessarily limited.

Recommendations.

1. Future programs re this component should broaden the range of instructional objectives to be more useful to higher functioning youngsters.

2. Specially developed materials should be critiqued and pre-tested, then introduced systematically into the program.

3. Given increasing emphasis on maximizing the extent of social integration for mentally retarded with non-handicapped persons, future programs for retarded pupils should explicitly pursue ways of enhancing such integration. This is especially logical and feasible for the summer program, given its social-recreational design. To implement this, a necessary condition is that program centers be located in common with programs for non-handicapped pupils.

4. Competent transportation for at least two program centers seems to be a recurrent problem. Since the company which provided transportation for the program apparently did not give adequate service, alternatives should be explored. One alternative would be private contracting for bus service. This should not only improve service to pupils, but would probably lead to substantial reduction of costs.

5. The recycling of the summer program component for mentally retarded pupils is strongly endorsed, although it is hoped that the foregoing recommendations will be incorporated in future programs.

APPENDIX A

30. Criterion Referenced Test Results: In the table below, enter the requested information about criterion referenced test results used to evaluate the effectiveness of short treatments (less than 60 hours) in reading or mathematics. Use the instructional objective codes provided on pp.2-4 of the instruction manual. Provide only those instructional objective codes which were addressed by the treatment and provide separate data for each test used and each level tested. Use additional sheets if necessary. Record in columns 2, 3 and 4 only those participants who completed both tests.

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* Code	Instructional Objective	Publisher	Level	Component Code 1/	Subgroup 2/	Pretest No. of Pupils Passing (1)	Pretest No. of Pupils Failing (2)	Posttest No. of Pupils from Col. 2 Passing	Posttest No. of Pupils from Col. 2 Failing
11-1	Locate Parts of Body	Random House	1	64413	H	65	9	7	2
11-2	Balance on Foot	" "	1			43	22	14	8
11-3	Skipping	" "	1			18	14	3	11
11-4	Balance Beam	" "	1			10	17	13	4
11-5	Swing Arms, Circle	" "	1			4	1	0	1
11-7	Identify Spch. Diffs.	" "	1			17	3	0	3
11-8	Eye Movements	" "	1			23	8	4	4
11-10	Hold Pencil	" "	1			32	1	0	1
11-11	Hold Scissors	" "	1			1	8	3	5
11-13.2	Straight Line	" "	1			17	20	7	13
11-13.3	Wavy Line	" "	1			7	10	9	1
11-13.4	Tracing Shapes:Lines	" "	1			12	4	2	2
11-13.5	Trace Numbers	" "	1			11	1	0	1
11-13.6	Trace Letters	" "	1	↓	↓	11	1	0	1

1/ Indicate the component code used in previous sections of this report used to describe treatment and population.

2/ Provide data for the following groups separately: Neglected (code as N), Delinquent (code as D), Bilingual code as B) and Handicapped (code as H). Place the indicated code letter in the last column to signify the subgroup evaluated.

*Instructional objectives for mentally retarded pupils include psychomotor (sensorimotor) skills which are side of the 4-digit NYSED codes for reading and mathematics cognition. Hence, the 5-digit Random House Codes motor skills objectives are listed for this component.

Criterion Referenced Test Results: In the table below, enter the requested information about criterion referenced test results used to evaluate the effectiveness of short treatments (less than 60 hours) in reading or mathematics. Use the instructional objective codes provided on pp.2-4 of the instruction manual. Provide only those instructional objective codes which were addressed by the treatment and provide separate data for each test used and each level tested. Use additional sheets if necessary. Record in columns 2, 3 and 4 only those participants who completed both tests.

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11-13	Trace 3-D Shapes	Random House	1	64413	H	49	24	7	17
11-14	Cut with Scissors, Line	" "	1			93	36	16	20
11-15	Tying Shoelaces	" "	1			16	11	7	4
11-16	Tap Rhythms	" "	1			15	13	6	7
11-17	Throw Beanbag	" "	1			0	3	1	2
11-19	Identify Right, Left Hands	" "	1			33	15	13	2
12-1	Identify Objects	" "	1			10	1	0	1
12-2	Remember Order of Objects	" "	1			6	10	8	2
12-3	Match Basic Colors	" "	1			88	44	27	17
12-5	Copying Shapes	" "	1			40	22	8	14
12-6	Identify Objects in Pictures	" "	1			73	23	13	10
12-7	Recognize Order, Pictures	" "	1			1	1	1	0
12-8	Match Shapes	" "	1			57	24	17	7
12-9	Match Equal Number of Shapes	" "	1	✓	✓	32	26	17	9

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12-11.1	Trace Letters, Numbers	Random House	1	64413	H	17	7	6	1
12-11.2	Letter, Number Completion	"	1			23	6	5	1
12-11	Copying Letters, Numbers	"	1			46	11	5	6
12-12	Remember Order of Four Letters	"	1			17	5	4	1
12-13.1	Connect Matching Letters	"	1			25	9	4	5
12-13.2	Circling Beginning & End Match Letters	"	1			13	18	7	11
12-13	Matching Words	"	1			41	10	5	5
12-14	Identify Different Word	"	1			23	14	7	7
13-1	Identify Common Sounds	"	1			9	2	0	2
13-2	Repeat a Rhythm	"	1			2	8	3	5
13-4	Identify Shapes	"	1			26	14	7	7
13-5	Identify Big Object	"	1			52	26	15	11
13-6	Identify Small Object	"	1			31	5	3	2
13-7	Understand "Above"	"	1	↓	↓	30	36	11	25

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13-8	Understand "Below"	Random House	1	64413	H	18	36	9	27
13-9	Understand "Between"	"	1			20	35	11	24
13-10	Understand "Within"	"	1			21	11	3	8
13-11	Understand "Together"	"	1			6	16	2	14
13-12	Understand "Apart"	"	1			9	13	2	11
13-13	Understand "In Front Of"	"	1			13	10	3	7
13-14	Understand "Behind"	"	1			17	6	5	1
13-15	Understand "Around"	"	1			24	12	1	11
13-16	Understand "Across"	"	1			13	18	1	17
13-17	Understand "Beneath"	"	1			11	6	1	5
13-18	Understand "Right"	"	1			20	20	11	9
13-19	Understand "Left"	"	1			19	22	10	12
13-21	Understand "Top Of"	"	1			2	12	2	10
13-22	Understand "Bottom Of"	"	1	↓	↓	2	12	4	8

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13-23	Understand "Nearest"	Random House	1	64413	H	0	2	2	0
13-25	Identify Parts of Body	"	1			60	15	10	5
13-26	Identify Objects	"	1			22	14	6	8
13-30.1	Identify Upper-Case Letters	"	1			14	19	11	8
13-30.2	Identify Lower-Case Letters	"	1			2	10	0	10
13-30	Identify Pairs of Upper Lower Case Letters	"	1			22	16	7	9
13-37.1	Identify Same Beginning Sounds	"	1			7	14	12	2
13-37.2	Identify Same Ending Sounds	"	1			9	8	6	2
13-37	Identify Words Sounding the Same	"	1			13	5	4	1
24-1	Classifying Upper with Lower-Case Letters	"	2			83	30	14	16
24-2	Identify Initial Single Cons. Sounds	"	2			70	25	10	15
24-3	Identify Final Single Cons. Sounds	"	2			62	31	13	18
25-1	Identify Singular Possessive Nouns	"	2			54	21	15	6
25-2	Identify Compound Adjective Endings	"	2	↓	↓	50	24	16	8

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25-3	Identify Compound Words	Random House	2	64413	H	47	26	7	19
26-1	Identify Colors	"	2			122	12	5	7
26-2	Identify Cardinal Numbers	"	2			108	13	9	4
26-3	Identify Ordinal Numbers	"	2			83	47	24	23
26-4	Identify Shapes	"	2			80	32	21	11
26-5	Identify Sizes	"	2			72	20	10	10
26-6	Identify Objects By Properties	"	2			76	42	23	19
26-7	Identify Functions	"	2			94	28	16	12
26-8	Identify Words For Possession	"	2			68	21	12	9
26-9	Classifying By Category	"	2			64	44	11	33
27-1	Identifying Statements	"	2			60	51	20	31
27-2	Identifying Questions	"	2			52	55	21	34
27-3	Identifying Negative Statements	"	2			63	54	5	49
28-1	Inferring Mood	"	2	↓	↓	57	15	4	11

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