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The Speech and Language Development Project, funded under ESEA Title I, was designed to improve the verbal skills of economically disadvantaged children in the primary grades in the Milwaukee public schools, and was later expanded to include older (7-13) educable mentally handicapped youth. The 325 participants worked regularly with six speech therapists in groups of six to eight to improve their receptive and expressive language. A four-group experimental-control research design was used to evaluate that part of the project involving the primary-grade children; a two-group experimental design using the project group and a nonproject group was used to evaluate the project's success with the educable mentally handicapped students. A followup study was done of a random sample of Head Start students who had had previous language training. Evaluative data was collected from teachers, administrators, and therapists. Project therapists compiled a curriculum guide (see UD 007 935). (EF)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

MILWAUKEE PUBLIC SCHOOLS

Division of Curriculum and Instruction

PROGRAM FOR DEVELOPING SPEECH AND LANGUAGE SKILLS IN THE EDUCATIONALLY DEPRIVED CHILD THROUGH THE UTILIZATION OF THE SPECIALIZED TRAINING OF SPEECH THERAPISTS

SEPTEMBER 6, 1966 - JUNE 16, 1967

PROGRAM EVALUATION

conducted by

DEPARTMENT OF PSYCHOLOGICAL SERVICES AND EDUCATIONAL RESEARCH

in conjunction with

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PROGRAM FOR DEVELOPING SPEECH AND LANGUAGE SKILLS IN THE ECONOMICALLY DEPRIVED CHILD THROUGH THE UTILIZATION OF THE SPECIALIZED TRAINING OF SPEECH THERAPISTS

INTRODUCTION

This project, organized and conducted by the Milwaukee Public Schools, Division of Curriculum and Instruction, Department of Special Education (Speech Therapy), was funded under Title I of the Elementary and Secondary Education Act of 1966 and was designed to serve elementary children from disadvantaged homes who are presenting an oral language delay.

According to the proposal submitted by the Supervisor of Speech Therapy, the general purpose of the project is to increase the verbal and conceptual ability of disadvantaged pupils by developing speech and oral language skills through the utilization of the specialized training of speech therapists.

Speech is important to the psychological development of a human being because it is a normal means of self expression as well as a means of relating to other people. Serious impairment in the ability to communicate orally is a frequent cause of personality disorders and emotional problems.

Speech is basic in education. Research indicates that speaking and listening are fundamental to the skills of reading and writing. The development of auditory discrimination, auditory memory and the articulation of speech sounds is basic to learning to read. Research has shown that language and communication is the weakest curriculum area for the culturally deprived. In school records, this need shows up most clearly as retardation in reading. Skill in reading is based on facility with language, which, in turn, is based on the perceptual skills, intellectual skills, and experiential background that these children lack.

According to Donovan (1965), "The onset of speech and the rate and manner of speech development are affected by the linguistic, psychological, and physical

environment of the child." By the time many children come to school, they have already acquired faulty habits of speaking. The so-called "disadvantaged" child, for example, may come from an environment in which there is little verbal communication or in which the speech he hears is inarticulate or fragmented. Such a child is usually delayed in speech development, has poor listening habits, and is less ready to learn to read and write than a child who has had stimulation favorable to speech and language development. Without language skills, success in the school curriculum is rarely possible. Milner (1951), found the environment of the lower-class home to be much less verbal than that of the middle-class home. Not only were there fewer books in lower-class homes, but lower-class children were read to less frequently and spoke less with their parents.

M. Deutsch (1964), found a relationship between the range of oral vocabulary and social-class level. The retarded language development of the lower-class child was described by Cohn (1959) as contributing to his dislike of and difficulty in school.

Bloom, Davis, Hess (1965), state that the lack of linguistic development before age six is often due to no corrective feedback of language in a culturally deprived home. The culturally deprived child often uses crude and limited language to communicate with parents and others. If he has a high IQ, he often overcomes the effects of the home, but as ability decreases, the home has a more serious effect.

Recent research (Deutsch, 1963), indicates that such disadvantage has a progressive cumulative effect. By the 7th grade or high school age, many children can be called psychological dropouts in the school program. Evidence continues to mount, indicating that lack of stimulus experiences can be overcome and that a compensatory program such as this project can materially improve the child's school progress.

According to M. Deutsch (1964), the most effective remedial and enrichment programming would have to follow developmental stages, and curriculum change should be introduced at the earliest time in the school experience in order to arrest the cumulative deficit. For as development goes on in the individual child, it is progresively more difficult to reverse the deficit, as there is more of it.

Dale (1965), states that the development of attentional and listening skills is an important first step with respect to language development. A sequential program must be planned which begins with these attentional or listening skills and moves to such higher levels as the labeling of objects and the labeling of similarities and differences in objects.

Hence, this program was constructed to emphasize language growth and concept development. Through a curriculum rich in verbal and auditory stimuli, diverse opportunities for manipulative and play experiences, and a series of structural units, speech therapists hoped to develop speech and language patterns which would serve as the basis for future school learning.

Dates of Inception and Conclusion

The Speech and Language Skills Development Program in the Milwaukee Public Schools was implemented on February 3, 1966, and continued operation during the 1966-1967 school year, concluding on June 16, 1967. (See project evaluation report of first semester's operation -- June, 1966.)

The report which follows describes the specific objectives of the project, the design of the study, the population served by the project, a description of the project, and a discussion of evaluation and data collection procedures. This report also reviews the results of the analysis of data together with a summary of these findings.

For purposes of evaluation, this report is divided into two sections. Section I pertains to the operation of the project involving children enrolled

in regular classes. Section II pertains to the operation of the project involving children enrolled in regular classes but who, having been identified as being educable mental retardates, are presently on waiting lists for Special "C" class placement.

Specific Objectives

The specific objectives of the program are:

1. To create in disadvantaged children, who are presenting a verbal language delay, skills in verbal usage which would enable them to function in competition with middle-class children of like age.

2. To compile a "curriculum" guide of effective techniques developed and employed by the project therapists for use by itinerant therapists and regular classroom teachers.

SECTION I

SPEECH AND LANGUAGE DEVELOPMENT PROGRAM FOR CHILDREN IN REGULAR CLASSES

PROJECT POPULATION

During the past school year, this project was carried on in seven elementary schools in the City of Milwaukee, involving 17 classes, P1 and P2 grade level, with a total enrollment of 536 children.

Table 1 presents the list of project schools and project class enrollments.

TABLE 1

PROJECT SCHOOLS AND CLASS ENROLLMENTS

School	No. of Classes	Enrollment
Dover	2	64
Fifth Street	2	62
Lee	3	94
Lloyd	2	64
Ninth Street	2	68
Siefert	3	95
Vieau	3	89
	17	536

A total of 17 classroom teachers was involved in these seven schools. Four speech and language therapists were assigned to the seven schools, and were in addition to the speech therapists regularly assigned to these buildings. Three project therapists served two schools each, one in the morning and one in the afternoon. The fourth therapist was assigned to one school (two classes) in the

afternoon, and served as coordinating therapist in the morning. The morning schools had three classes and the afternoon schools contained two project classes.

Of the 536 total enrollment in these 17 classes, 273 children received treatment under this project. According to project personnel and kindergarten teachers, these 273 children exhibited a limited or reduced verbal ability or presented an oral language delay. Hence, they were the ones most in need of the services.

PROJECT PROCEDURES AND ACTIVITIES

These particular seven schools were selected as project schools since they are located in the target area designated by the Social Development Commission of Milwaukee. Space was also available in these buildings for operation of the project.

These particular 17 classes were selected as project classes because they showed a special need for this type of program. In addition, the teachers exhibited a flexibility and willingness to participate in the operation of the project, and all had previous teaching experience with the culturally disadvantaged.

Each of the four project therapists selected holds a state license in speech therapy, has a specific knowledge of the effects of cultural deprivation, child development, speech and language development, and a general knowledge of educational and teaching procedures in the kindergarten and primary school. They averaged seven years of experience in this field. One therapist holds a Masters Degree, and three have Bachelors Degrees. They too were selected because of their ability to be flexible, their willingness to cooperate in the operation of the project and previous experience with culturally deprived children. All were project therapists during the first semester's operation of the project in Spring, 1966.

Project therapists were not in the main concerned with the conventional type of speech problems. These problems remained the responsibility of the school's

regularly assigned speech therapist. Primary responsibilities of the project therapists, in addition to working with project pupils on an intensive basis, included speech and language evaluation, preparation of materials and planning of activities for speech and language stimulation, and compilation of materials and development of techniques found to be especially suitable in working with this type of child.

The function of the supervisor was to administer the project as to selection of schools, classes and personnel. In addition, she had the major responsibility for inservice orientation of the project staff, ordering of supplies and the writing of summary reports and budgets as required. The supervisor holds a Master of Education Degree and a state license in Special Education. She has a total of 20 years' experience in this field as a teacher and administrator.

The function of the research associate was to design a research and evaluation plan for the project, to establish procedures and a timetable for data collection, and to design evaluative instruments to be used in the analysis of the project's worth. In addition, her responsibilities included a close working relationship with all project personnel (especially the supervisor and four project therapists), continuous feedback of information as to status of the evaluation plan, final analysis of data collected, and the writing of this summary report on the findings or results of the analysis of data in the project.

In-service training sessions were held at various stages in the project. Early in September 1966, the seven school principals were apprised of the purposes and goals of the project, together with its operational procedures.

A two-week training period for project therapists was conducted by the supervisor and helping teacher prior to the actual beginning of the project. These same persons met in several sessions at the conclusion of the project to write a summary of therapist activities which may be used by the classroom teacher in

working with small groups of culturally deprived children who exhibit a lack of verbal language ability.

An in-service training session was also conducted for project therapists at the beginning of the second semester when the second part of this project - language training for pupils on special class waiting lists - was implemented. These sessions included speakers on mental retardation, the Frostig test, and special class placement. A field trip was made to the Southern Colony Training Institute to observe language classes for the retarded.

Project therapists and the supervisor attended a training session on the use of the Peabody Language Development Kit held at the University of Wisconsin-Milwaukee. In addition, an 18-hour workshop and training course on the use of the Illinois Test of Psycholinguistic Ability (ITPA), conducted by the University of Wisconsin-Milwaukee, was attended by the project therapists and supervisor. Project therapists and supervisor met each Friday during the project for an exchange of ideas. The research associate attended several of these sessions to discuss data collection plans and evaluation procedures.

An in-service training session was also conducted by the Coordinator of Psychological Services of the Milwaukee Public Schools to instruct qualified substitute teachers in the administration of the Ammons Quick Test, an objective evaluative instrument used with randomly-selected pupils from the randomly-sampled experimental and non-experimental groups.

Operational Procedures

An intensive speech and language development program for children, P1 and P2 grade levels, who were exhibiting a lack of oral language ability, was begun in September, 1966 in the above-named schools and classes. Prior to treatment, project therapists administered a speech articulation test as a screening device to all of the children in the proj[illegible] classes. Therapists also consulted with

the classroom teachers and with previous kindergarten teachers in order to ascertain which children were most handicapped by a lack of oral language ability.

Using teacher recommendations, results of the articulation tests, and their own subjective evaluation, therapists ranked the children in each class as to their verbal ability, highest to lowest. The top 15% of each class was then eliminated since it contained the most verbal pupils. The lower 85% thus became the project population. This method of selection assured that pupils in greatest need of treatment would be selected in the sample.

Pupils comprising the lower 85% of each class were then randomly classified into four groups. One group was seen by project therapists on an intensive basis; i.e., 45 minutes per day - four days per week - for a designated time block of approximately 15 weeks (60 days) in groups of six to eight children per group. This experimental group is to be known hereafter as X_1. During the designated 15-week time block, a group of children from a specific room was given varied experiences in a more suitable climate for the development of both expressive and receptive verbal language patterns - the small group situation.

During the second semester, the second randomly classified group from the lower 85% was seen by the project therapists for a similar 15-week time block. This experimental group is to be known hereafter as X_2.

The remaining two randomly classified groups of the lower 85% served as non-experimental, or contrast groups, and will be known hereafter as C_1 and C_2. These groups did not receive any treatment in speech and language development from the project therapists.

EVALUATION PLAN

A Solomon four-group experimental-control research design, utilizing randomly classified groups and randomly sampled individual pupils from the 17 classes, was

used. The design paradigm indicates:

First Experimental Group	R	O_1	X	O_2		O_3
Second Experimental Group	R			O_4	X	O_5
First Control Group	R	O_6		O_7		O_8
Second Control Group	R			O_9		O_{10}

Such a design controls the problem of interaction effects such as treatment, testing and maturation. By paralleling the elements $O_1 - O_2$ and $O_6 - O_7$ with experimental and control groups lacking the pretest, both the main effects of testing and the interaction of testing and treatment are determinable.

The first experimental and first control groups were randomly sampled and a total of 124 children were given Forms 1 and 2 of the individual Ammons Quick Test by trained elementary substitute teachers as a pretest at the beginning of the project in September. Forms 1 and 3 were administered as a post-test to these same groups by the same testers in February. The second randomly sampled experimental group and second randomly sampled control group were given Forms 1 and 3 as a pretest measure in February, and all four groups were tested in May on Forms 2 and 3. A combination of two forms of the same test were used at each observation to increase the validity and reliability of the test results since the Ammons Quick Test is of short duration.

Table 2 presents the evaluation sample used on the Ammons Quick Test. In all other cases, the total project population (456) was used in data collection and evaluation where applicable.

TABLE 2

EVALUATION SAMPLE TESTED ON AMMONS QUICK TEST

Group	Fall Testing	Winter Testing	Spring Testing
First Experimental	73	67	62
Second Experimental		62	62
First Control	51	49	39
Second Control	___	57	54
Total	124	235	217

Baseline data, such as sex, grade, age, Pintner-Cunningham IQ scores, number of semesters in kindergarten, number of semesters in present school, other schools attended, whether or not the child is presently in speech therapy, and whether or not the child had been enrolled in Project Headstart during the summer of 1965, was collected on each of the 456 pupils in the total population.

Both classroom teachers and project therapists ranked their pupils as to their oral language ability at the beginning and end of each of the two treatment periods.

Three-minute taped sessions of individual children from four randomly selected groups working with the therapists were made at the beginning and end of both treatment periods. Three qualified speech therapists not connected with the project rated the tapes according to a nine-characteristic rating scale.

Classroom teachers and project therapists also rated pupils in both experimental groups, pre and post, as to their oral language ability.

A follow-up study of 81 randomly selected pupils from experimental and control groups who were in the project during the first semester's operation of the project

in spring, 1966 was made. These pupils were tested in March, 1967 by the same testers using the same forms of the Ammons Quick Test as had been used in May, 1966. The investigator was interested in seeing if the significant gains made by the experimental group in spring, 1966 had been maintained during the past year, even though the experimental group had had no treatment for almost one year.

Attendance records for all pupils in the experimental group in the 1966-1967 project were kept by the therapists. They also made an evaluation of the project as a whole at its conclusion and kept a log of instructional materials and techniques which they had found useful in working with the pupils in the treatment groups.

Each of the four project therapists also submitted a case study of an individual pupil who, in their opinion, had displayed dramatic change in oral language ability. The Peabody Language Development Kit was used by three of the four project therapists with two randomly selected groups of her total of five project classes during each treatment period. The coordinating therapist used it with one of her two groups each period. This made a total of seven classes of the 17 each time block.

Administrator and teacher reactions to the project as a whole were obtained at the conclusion of the project.

Table 3 indicates the data collection schedule for the Speech and Language Development Project.

TABLE 3

DATA COLLECTION TIMETABLE

1966	
Sept. 12-16	Articulation screening tests given to pupils as a criteria for selection.
Sept. 19	Class lists due for sampling.
Sept. 26	Testers trained by Coordinator of Psychological Services.
Sept. 26-30	Pretest pupils in X_1 and C_1 using Ammons Quick Test, Forms 1 and 2.
Oct. 3 - Jan. 18	Treatment period for X_1 group.
Oct. 3-6	1. Therapists make pre tape recording of pupils in X_1. 2. Therapists rank pupils in X_1 as to oral language ability. 3. Teachers rank all pupils (X_1, X_2, C_1, C_2) in class as to oral language ability.
Oct. 5	Collection of baseline data on project population.
Oct. 14	X_1 Pre Pupil Rating Scale completed by teachers and therapists.
1967	
Jan. 9-12	1. Post tape recordings made of X_1. 2. Therapists post rank X_1 group as to verbal language ability. 3. Teachers post rank all pupils in class as to verbal language ability.
Jan. 19-25	Post test Ammons X_1 and C_1 and pretest X_2 and C_2, Forms 1 and 3.
Jan. 20	Teacher-therapist post ratings of X_1 pupils.
Feb. 6 - May 18	Treatment period for X_2 group.
Feb. 6-9	1. Therapists make pre tape recordings of randomly selected X_2 groups. 2. Therapists rank X_2 pupils as to oral language ability. 3. Teachers rank all pupils in class as to oral language ability.
Feb. 13-17	X_2 Pre Pupil Rating Scale completed by teachers and therapists.

Table 3 cont'd.

March 14-15	Testing for follow-up study of randomly selected spring, 1966 X and C pupils.
May 15-18	1. Therapists make post tapes for X_2. 2. Therapists post rankings of X_2 pupils as to verbal language ability. 3. Teachers post rankings of all pupils in class as to verbal language ability. 4. Teacher-therapist post ratings of X_2 pupils, using rating scale.
May 22 - June 2	Post test pupils in evaluation sample, X_1, X_2, C_1, C_2, using the Ammons Quick Test, Forms 2 and 3.
May 26	Principals', Teachers' and Therapists' project evaluation due.

Sample Selection

Pupils in the 17 classes were given individual articulation tests by the speech therapists. The results of this test together with subjective evaluations by the therapists, classroom teacher, and kindergarten teachers who had taught these pupils the previous year, formed the selection criteria for pupils to be considered in the project.

Therapists ranked the children in each class as to their oral language ability, highest to lowest. The top 15% of each class was then eliminated since it contained the most verbal pupils. The lower 85% thus became the project population. Pupils comprising this lower 85% were then randomly classified into four groups - X_1, X_2, C_1 and C_2.

Table 4 shows the project population enrollment by treatment and non-treatment groups.

TABLE 4

PROJECT POPULATION BY GROUPS

	Number
First Experimental Group	136
Second Experimental Group	137
First Control Group	98
Second Control Group	85
Total	456

Limitations of Data Collection Procedures

1. A concerted attempt is being made on the part of various personnel, such as the Supervisor, the Research Associate, the Coordinator of Psychological Services and the Supervisor of Testing of the Milwaukee Public Schools, to locate a more suitable standardized test instrument for measuring verbal-perceptual language ability. The instrument must be appropriate for culturally disadvantaged primary children and one that can be administered by easily-trained personnel other than licensed psychologists. At the present time, the Ammons Quick Test seems to be the most suitable instrument available.
2. Since research, Clark (1966), Wepman (1960), and Deutsch (1964), indicates that lower-class children are significantly lower than middle-class children in auditory discrimination ability, educational implications are apparent for the inclusion of auditory discrimination assessment and training in the educational program for the disadvantaged group.

This factor of language development should be assessed with regard to pupils in this project. The Wepman Auditory Discrimination Test (1958) could be used to measure this area of language development. Plans are being made to include this instrument in next year's project testing program.

RESULTS

Various statistical procedures were used in the analysis of both objective and subjective data. In analyzing the baseline data, it was found that the average chronological age of the project population at the beginning of the project was six years, five months. One hundred and forty-two boys and 131 girls were enrolled in the treatment groups. The non-treatment groups contained 89 boys and 94 girls.

The mean percentage of actual attendance in relation to maximum possible attendance for the experimental groups was 89.5 percent.

All pupils in the project population had been given the Pintner-Cunningham Intelligence Test as part of the city-wide testing program in kindergarten. Their mean score was found to be 83.98.

All pupils in the project had attended kindergarten an average of 2.3 semesters - the range being one to four semesters. All pupils in the project had attended their present schools an average of 2.1 semesters prior to the project, with the range being one-half to four semesters. Nineteen percent of the total project population had attended another school in addition to the present one since becoming of school age. Five percent attended two other schools and four percent had attended three or more schools in addition to their present one. This seems to bear out the fact that these schools are located in areas of high mobility.

Of the total population, 23 or nine percent were being seen by the regular speech therapist in each school in addition to participating in the project.

Seventy-three or 16.9 percent had been enrolled in Project Headstart during the summer of 1965.

Ammons Quick Test Results

The Ammons Quick Test, a shortened version of the Ammons Full Range Picture Vocabulary Test, is a well-known, quick-screening instrument for measuring verbal-perceptual intelligence.

A combination of two forms of the same test were used at each observation to increase the validity and reliability of the test results obtained. Forms 1 and 2 were administered in September at the start of the project to randomly sampled pupils in one experimental and one non-experimental group and Forms 1 and 3 were given at the middle observation four months later in January to the same pupils, plus the second treatment and non-treatment groups. Forms 2 and 3 were used at the final observation four months later in May with the entire evaluation sample - X_1, X_2, C_1 and C_2. All testing was done by the same substitute teachers who had been trained in the test's administration by the Coordinator of Psychological Services of the Milwaukee Public Schools.

A one-way analysis of variance was computed using Ammons Quick Test scores from the middle observation on the four groups - X_1, X_2, C_1 and C_2. An F ratio of 8.24 (significant at .01 level of confidence) was found, indicating that the effects of the four treatments were unequal. In order to ascertain the nature of the differences between means, a posteriori comparison by the Newman-Keuls procedure, as outlined in Winer, was made. Since the four groups had unequal N's, a harmonic mean was computed.

Table 5 summarizes the results of the tests on all ordered pairs of means for the middle observation.

TABLE 5

TESTS ON MEANS USING NEWMAN-KEULS PROCEDURE
MIDDLE OBSERVATION

Groups	X_2	C_2	C_1	X_1
Ordered Means	30.355	31.000	32.614	34.682
Difference Between Pairs X_2		.645	2.259	4.327*
C_2			1.614	3.682*
C_1				2.068*

$S\,E_{\bar{x}_i - \bar{x}_j} = .6708$

		r=2	r=3	r=4
	$q_{.05}$	2.86	3.44	3.79
$(q_{.05})(SE)$		1.9184	2.3075	2.5423

*Sig. at .05 level

Means were arranged in rank order from low to high. Differences between all possible pairs of ordered means were computed. A qr statistic was computed and significant differences at the .05 level of confidence on a studentized range table were found to exist between the mean of the X_1 and X_2 groups, between X_1 and C_1, and between X_1 and C_2. It should be noted that all subjects tested were randomly assigned to the four groups, were of the same approximate chronological age and grade level, had approximately the same IQ scores on the Pintner-Cunningham Intelligence Test, and were of similar socio-economic background. Only the X_1, group had had treatment as of the middle observation. Therefore, it would be expected that the mean for this group would be higher as compared to the others. By the same token, the mean for the C_1 group substantially exceeded those of X_2 & C_2,

although not to the point of statistical significance. None of these three groups had received treatment to this point but C_1 had been tested prior to the middle observation and X_2 and C_2 had not. Therefore, it appears that there was a testing interaction in the case of C_1, X_2, and C_2; and in the case of X_1, X_2, C_1 and C_2, both a testing and treatment interaction is evident.

The same procedure was used to analyze the data from the final observations on the four groups. An F ratio of 5.027 (significant at .01 level of confidence) was found on the one-way analysis of variance.

Table 6 summarizes the results of the tests on all ordered pairs of means for the final observation.

TABLE 6

TESTS ON MEANS USING NEWMAN-KEULS PROCEDURE
FINAL OBSERVATION

Groups		C_2	C_1	X_2	X_1
Ordered Means		31.870	32.718	33.742	35.420
Difference Between Pairs	C_2		.848	1.872	3.550*
	C_1			1.024	2.702*
	X_2				1.678

$SE_{\bar{x}_i - \bar{x}_j} = .7156$

		r=2	r=3	r=4
	q.05	2.86	3.44	3.79
(q.05)(SE)		2.0466	2.4616	2.7121

*Sig. at .05 level

Statistically significant differences at the .05 level of confidence between pairs of means were found to exist between X_1 and C_2 and between X_1 and C_1. The difference between means of the X_1 and X_2 groups was not statistically significant even though the X_1 mean still exceeded that of the X_2 group at the final observation. This indicates that the treatment given both groups was of a beneficial nature as measured by the Ammons Quick Test, since the means of both non-treatment groups were now lower than means of the treatment groups.

Again test interaction is evident since the mean of C_1 (which had been tested one more time than C_2) was higher than that of C_2. However, treatment interaction appears to have been more dominant than test interaction, as evidenced by the fact that X_2 with only two test observations exceeded C_1 with three test observations - treatment being the variable.

In analyzing the comparison of the means of X_1 and X_2, it must be remembered that, even though the difference is not statistically significant, treatment for the X_1 group had terminated four months prior to final testing, while treatment of the X_2 group immediately preceded final testing. This indicates that the treatment afforded in this project is of a cumulative and not transitory nature. Even when the treatment was discontinued, the X_1 group continued to maintain the gain made during the treatment period.

In addition, it is evident that recency of treatment did not produce a significantly higher mean for the X_2 group as compared to the X_1 group.

Teacher Rankings

Classroom teachers were asked to rank their pupils as to their oral language ability. The following factors were to be considered in ranking the children from highest to lowest:

1. Expressive speech - Does he speak freely when called upon? Does he volunteer?

2. Understanding speech - Does he understand directions? Does he understand the meaning of the spoken word?

3. Hostility - Does he use aggressive acts rather than words as a method of communication?

4. Withdraws - Does he participate in group or verbal activities?

Only the lower 85% of each class, as determined by selection criteria as mentioned previously in this report, was ranked by each teacher at the beginning and end of each 15-week treatment period. It was expected that pupils receiving treatment from the project therapists would change their ranks to a higher position with respect to their peers who did not receive treatment when pupils in the entire class were placed in rank order.

The Mann-Whitney U Test was the statistical test used to evaluate this area of change in language ability. A U statistic for each of the independent samples (X and C) was computed for the 17 classes in both treatment periods. Siegel's U tables giving the probability associated with the value of U were consulted. None of the U values were significant at the .05 level of confidence.

A less stringent non-parametric test of significance, the Median Test, was then applied. The essential idea of the median test is to compare the numbers of individuals in each group whose ranks are above (+) and below (-) the median of the combined group. The number of scores that are above and below the median is then tabulated for each distribution separately, arranging them in a 2x2 contingency table. Computation of Chi-square in the usual way followed and a table giving the probability associated with X^2 values was entered. Only one of the 34 X^2 values obtained was significant at the .05 level.

It appears that in the estimation of the classroom teachers no significant change in rank position occurred as a result of treatment. It should be noted that teachers ranked the pupils in the experimental group on the basis of their language

ability within the total class environment. Perhaps, since the treatment was on an intensive small group basis, significant changes in rank within the large group would not be evident. Teachers, however, were asked on a project evaluation questionnaire: "Was there any evidence of transfer of language training from the small group to the regular classroom situation?" Eleven of the 17 teachers said that they saw evidence of this transfer.

Therapist Rankings

Project therapists ranked pre and post the pupils whom they were seeing on an intensive basis in each of the two treatment periods, considering the same speech factors as the classroom teachers. Spearman Rank correlations were computed on the therapist to therapist rankings.

Nine of the 17 Spearman Rank correlation coefficients were significant at the .05 level of confidence for the first treatment period, and eight of the 17 were significant for the second treatment period. It appears that therapist vs. therapist ranking correlations were fairly consistent between pre and post. Because of this finding, further research based on subjective evaluation of the language ability of pupils by project therapists should be done. Therapists might possibly observe pupils in the classroom prior to treatment and, according to their evaluation, decide which of those observed will actually profit the most from the type of language training afforded by this project.

Effect of Project Headstart

Early in the 1966-1967 school year, it was ascertained which of the pupils in the project evaluation sample had been enrolled in Project Headstart in the summer of 1965 as preschool pupils. In order to investigate whether this Headstart experience would make a significant difference as to the oral language

ability of these pupils two years later in first grade, a comparison was made of their scores on the final testing of the Ammons Quick Test to scores made by pupils in three other categories.

The effect of project language training was also to be investigated. Therefore, four categories of pupils resulted:

1. Pupils who had had both Headstart and language training - N=36
2. Pupils who had Headstart but no language training - N=37
3. Pupils who had language training but no Headstart - N=74
4. Pupils who had no language training and no Headstart - N=63

A two-way analysis of variance, as outlined in Hays, was used as the statistical technique to measure the effects of these treatments. Since the N's were unequal, a table of random numbers was used to eliminate those in excess of 36 in each group. Thus, total N equalled 144 or 36 per group.

Table 7 presents the results of the analysis of variance as to Headstart and language training.

TABLE 7

SUMMARY OF THE ANALYSIS OF VARIANCE
OF THE FOUR TREATMENT GROUPS

Source	SS	df	MS	F
Rows (Language - No Language)	406.6944	1	406.6944	14.992*
Columns (Headstart - No Headstart)	1.0000	1	1.0000	.0368
Interaction	1.7777	1	1.7777	.0655
Error (within cells)	3797.8335	140	27.1273	
Totals	4207.3056	143		

*Sig. beyond the .005 level.

From the data summarized in this table, the following assertions may be made regarding this sample:

1. Project language training does seem to affect oral language ability.
2. There was apparently little or no continuing effect of this Headstart experience on oral language ability.
3. There is apparently little or no interaction between project language training and this Headstart experience.

Since an F value of approximately 6.84 is required for statistical significance at the .01 level of confidence, and since the obtained F of 14.992 far exceeds this, it can be concluded with considerable confidence that row effects do exist.

Follow-up Study of Project Pupils - Spring, 1966

At the conclusion of the first semester's operation of the project in June, 1966, data obtained indicated that pupils in the treatment groups made statistically significant gains over pupils in the non-treatment group. In order to see if this difference was still evident one year later, a random sampling of 81 children in the evaluation sample was made, resulting in 48 pupils from the experimental group and 33 from the non-experimental group.

All pupils had been tested on Forms 2 and 3 of the Ammons Quick Test in May, 1966. The same forms of this test were administered to these 81 pupils in March, 1967 for the purpose of follow-up. A "t" test of uncorrelated data on gain scores was used as the statistical test of significance.

Table 8 indicates a summary of the result of the "t" test of uncorrelated data.

TABLE 8

RESULT OF "t" TEST OF SIGNIFICANCE ON FOLLOW-UP STUDY

Treatment	Sample Size	Sample Variance	Criterion Mean Gain	"t" Value
Experimental	N_a=48	S_a^2=9.06	$\overline{X}_a$=2.54	1.1594*
Control	N_b=33	S_b^2=18.13	$\overline{X}_b$=1.54	

*Sig. at .15 level.

The data in Table 8 indicates that the experimental group made a mean gain significant at the .15 level of confidence as compared to the control group. It appears that the experimental group in spite of expected regression continued to maintain the gain over the control group even though the experimental group had received no treatment since May, 1966.

Tape Recording Ratings

Three-minute taped sessions of individual pupils in four randomly selected groups, being seen by the therapists on an intensive basis, were made pre and post in each treatment period.

Three licensed speech therapists not connected with the project rated the tapes from each time block according to a nine-characteristic rating scale (Appendix A). The tapes were not identified as to pre and post, or as to school or therapist.

Characteristics of oral language which were rated according to a three-point Likert scale - above average, average, below average - were:

1. Speaks freely when called upon
2. Correct grammatical usage

3. General articulation pattern

4. Length of response

5. Estimate of vocabulary size

6. Quality of words chosen

7. Response consistent, plausible

A "t" test of correlated data was computed for each of the two treatment groups - X_1 and X_2 - in order to test the significance of the mean difference between pre and post tapes.

Table 9 shows the results of these "t" tests of the differences between paired observations.

TABLE 9

RESULTS OF "t" TESTS OF SIGNIFICANCE ON TAPE RECORDING RATINGS

Groups	N	Variance of Difference	Criterion Mean Difference	"t" Value
First Treatment - X_1	16	2.6044	2.1250	3.2637**
Second Treatment - X_2	21	1.7168	1.6190	4.3219**

**Sig. beyond the .01 level.

It appears from the data in Table 9 that both treatment groups had statistically significant mean differences in a positive direction between pre and post tape recordings as rated on nine language characteristics by speech therapists.

Pupil Rating Scale

Teachers and therapists were asked to rate pupils in the experimental group before and after treatment in each time block. Each pupil in X_1 and X_2 group was rated on a five-point Likert Scale as to seven language characteristics (Appendix B):

1. Speaks freely when called upon
2. Volunteers in class discussions
3. Understands directions
4. Participates in verbal group activities
5. Uses words rather than aggressive acts as a means of communication
6. Understands the meaning of the spoken word
7. Uses vocabulary and language structure appropriate to peer group

The statistical procedure used to analyze the data obtained on the pupil rating scale was the "t" test of significance for uncorrelated data. Each of the positions on the Likert Scale was assigned a numerical value as follows:

5 - Very frequently

4 - Frequently

3 - Occasionally

2 - Seldom

1 - Never

Fourteen "t" tests were computed for pupils in the first treatment group - one for each characteristic rated by the teachers and one for each characteristic rated by the therapists.

Table 10 presents the results of the 14 "t" tests for pupils in the first treatment group.

Data in Table 10 indicate that no statistically significant differences were

TABLE 10

RESULTS OF "t" TESTS OF SIGNIFICANCE COMPUTED FROM DATA ON PUPIL RATING SCALE FOR FIRST TREATMENT GROUP (X_1)

Characteristic	Teacher Ratings					Therapist Ratings				
	Pre		Post		"t"	Pre		Post		"t"
	Mean	N	Mean	N	Value	Mean	N	Mean	N	Value
Speaks freely when called upon	3.14	132	3.38	125	1.7089	3.25	125	3.84	120	4.2102**
Volunteers in class discussions	3.07	132	3.14	125	.4445	3.30	131	3.99	122	5.3119**
Understands directions	3.48	131	3.58	125	.6526	3.54	126	3.90	122	3.0600**
Participates in verbal group activities	3.10	132	3.28	125	1.2875	3.23	126	3.93	122	5.3617**
Uses words as a means of communication rather than aggressive acts	3.36	132	3.52	126	1.2372	3.60	126	3.97	120	3.2459**
Understands the meaning of the spoken word	3.80	132	3.78	125	-.1421	3.52	126	3.97	121	4.0918**
Uses vocabulary and language structure appropriate to peer group	3.60	132	3.49	125	-.8195	3.20	126	3.78	122	4.5838**

** Sig. beyond .01 level.

found to exist between pre and post ratings of project pupils when considered as a group as rated by the classroom teachers. However, differences statistically significant at beyond the .01 level of confidence were found to exist between pre and post ratings of the same pupils as a group when made by the project therapists.

It appears that the therapists rated pupils in the treatment groups on the basis of their performance in the small group of six to eight, while the classroom teacher evaluated the child as to his performance within the total class. Gains in speech and language skills were apparently less evident in the larger group.

Table 11 shows the results of the 14 "t" tests for pupils in the second treatment group.

The data in Table 11 indicates that four of the seven language characteristics showed statistically significant gains between pre and post pupil ratings on the second treatment group by the classroom teachers. All seven differences were statistically significant when the pupils were rated as a group by the therapists. It appears that the teachers were either becoming more sensitive in observing changes in speech and language characteristics in the classroom or that pupils in the second treatment group exhibited greater change in these seven areas than the pupils in the first treatment group.

In order to ascertain inter-rater reliability between classroom teachers and therapists, scores on individual pupils from the post rating scales for both X_1 and X_2 groups were analyzed by computing correlation coefficients using the Pearson product-moment method. It should be noted that therapists rated the pupils as to their oral language performance in a small group situation, while teachers rated the same pupils as to how they functioned in the total class environment.

The correlation coefficient on the first experimental group (N=122) was .44 and on the second treatment group (N=110) was .56. A "t" test of significance

TABLE 11

RESULTS OF "t" TESTS OF SIGNIFICANCE COMPUTED FROM DATA ON PUPIL RATING SCALE FOR SECOND TREATMENT GROUP (X_2)

Characteristic	Teacher Ratings					Therapist Ratings				
	Pre Mean	N	Post Mean	N	"t" Value	Pre Mean	N	Post Mean	N	"t" Value
Speaks freely when called upon	3.18	135	3.51	124	2.2917*	3.27	125	3.83	117	4.2142**
Volunteers in class discussions	3.06	135	3.30	122	1.5245	3.26	123	3.96	116	5.2997**
Understands directions	3.57	135	3.74	130	1.2543	3.57	124	4.02	115	3.9238**
Participates in verbal group activities	3.21	135	3.39	122	1.2681	3.21	124	3.89	116	5.0961**
Uses words as a means of communication rather than aggressive acts	3.29	135	3.67	123	2.8228**	3.77	124	4.09	113	3.0421**
Understands the meaning of the spoken word	3.64	135	3.89	123	2.0229*	3.44	124	3.98	115	4.8517**
Uses vocabulary and language structure appropriate to peer group	3.54	135	3.81	123	2.0988*	3.15	124	3.76	116	5.0705**

* Sig. at .05 level.
** Sig. at .01 level.

for the Pearson product-moment correlation was computed for each treatment group and standard "t" values of 5.3679 and 7.0057, respectively, were obtained. Both of these are statistically significant from 0 beyond the .01 level of confidence thus indicating that the correlations show a real relationship and not one arising by chance. Apparently, when ratings on <u>individual</u> pupils are examined, teachers and therapists show considerable agreement in their ratings.

SECTION II

SPEECH AND LANGUAGE DEVELOPMENT OF IDENTIFIED EDUCABLE MENTAL RETARDATES ON SPECIAL "C" CLASS WAITING LISTS

PROJECT POPULATION

During the period from January 26, 1967 to June 16, 1967, this part of the Speech and Language Development project was in operation in four elementary schools in the City of Milwaukee and involved 52 children, ages 6-6 to 13-0, with grade levels of P1 through 6A. Table 12 presents the list of project schools and treatment group enrollments.

TABLE 12

PROJECT SCHOOLS AND TREATMENT GROUP ENROLLMENTS

School	No. of Groups	Enrollment
Holmes	2	11
MacDowell	2	11
Palmer	3	15
Siefert	3	15
Totals	10	52

Unlike Section I of this project, these 52 children came from 38 different classrooms in these four schools. Two speech and language therapists were assigned to the four schools and were in addition to the speech therapists regularly assigned to these buildings. In the case of Siefert School, a project therapist serving pupils in the other part of this project was also assigned. The morning schools had three treatment groups and the afternoon schools contained two experimental groups.

By means of individual psychological evaluation, 71 pupils at these four schools had been previously identified by Milwaukee Public School psychologists as being educable mental retardates. They had been placed on waiting lists for assignment to Special "C" classes. Even though the Milwaukee Public Schools is now operating 53 classes for educable mentally retarded children in elementary schools in the target area, the demand for this type of class placement is so great that most schools have waiting lists. As a consequence, these 71 pupils were enrolled in regular classes during the project and were, in addition to their mental handicap, exhibiting a significant lag in oral language ability.

PROJECT PROCEDURES AND ACTIVITIES

These particular four schools were selected as project schools since each had a heavy concentration of children on waiting lists for special class placement. In addition, all are located in the target area of high population density and mobility. Space was also available in these buildings for operation of the project.

These 71 pupils were selected because they exhibited a special need for this type of program in addition to being mentally retarded. All had been recommended by the principals of the four schools and by the Supervisor of Special Education-Mental Retardation.

Both of the project therapists hold a state license in speech therapy, have Masters Degrees, and have had experience in working with mentally retarded children. Like their counterparts in the other part of the project, the therapists were not in the main concerned with the conventional type of speech problems. Their primary responsibilities included working with project pupils on an intensive basis and the preparation of materials and planning of activities for speech and language stimulation. They also attended the in-service training sessions for therapists and combined with the other project therapists in compiling the curriculum guide.

Operational Procedures

Pupils in the four schools who had been placed on special class waiting lists were stratified as to age and then randomly sampled into treatment and non-treatment groups. Since project personnel were desirous of giving treatment to as many as could be accommodated in groups of four or five, 52 pupils comprised the experimental population and 14 the contrast group. Therapists gave intensive language training, i.e. 45 minutes per day - four days a week for approximately 15 weeks (60 days) to pupils in the treatment group. It should be remembered that all of the pupils in the project population had been identified as being educable mental retardates and were waiting special class placement. However, during the operation of the project, they were enrolled in regular classes.

During the treatment period, children in small groups of four or five were given varied experiences in both receptive and expressive language.

EVALUATION PLAN

A two-group experimental design using the project group and a non-project group as the control was used for evaluation purposes. In February, pupils in both groups were pre-tested on the Illinois Test of Psycholinguistic Ability (ITPA) by six speech therapists outside of the project who had attended an 18-hour workshop on the administration and use of the ITPA conducted by the University of Wisconsin-Milwaukee in 1966. The ITPA is a standardized instrument designed to measure linguistic ability. It is composed of nine subtests which measure nine basic psycholinguistic abilities. These abilities as described by Bateman and Wetherell (1965) are:

1. Auditory decoding - the ability to understand what is heard
2. Visual decoding - the ability to understand what is seen
3. Auditory-vocal association - the ability to draw relationships from what is heard

4. Visual-motor association - the ability to draw relationships from what is seen

5. Vocal encoding - the ability to express ideas verbally

6. Motor encoding - the ability to express ideas manually

7. Auditory-vocal automatic - the ability to use the structure of the language (grammar) automatically

8. Auditory-vocal sequential - the ability to reproduce a series of symbols presented auditorily

9. Visual-motor sequential - the ability to reproduce a series of symbols presented visually.

The same instrument was administered early in June as a post-test to the same children by the same testers. A total of 42 pupils in the treatment group and 12 in the contrast group were tested both pre and post.

Demographic data such as sex, age and individual intelligence test scores were collected on the evaluation sample.

Three-minute taped sessions of individuals in two randomly selected groups working with the therapists were made at the beginning and end of the treatment period. Three licensed speech therapists not connected with the project rated the tapes according to a nine-characteristic rating scale.

Classroom teachers and project therapists also rated the experimental pupils pre and post as to their oral language ability. They also made an evaluation of the project as a whole at its conclusion and kept a log of instructional materials and techniques which they had found useful in working with these children.

Both of the therapists submitted a case study of an individual pupil who, in their opinion, had displayed dramatic change in language ability. The Peabody Language Development Kit was used by each therapist with one randomly selected group of her total of five project classes. Administrator reactions to the project as a whole were collected at the conclusion of the project.

Table 13 indicates the data collection schedule for this section of the Speech and Language project.

TABLE 13

DATA COLLECTION TIMETABLE - EMR

Feb. 3-7	Pretest pupils in X and C using the ITPA.
Feb. 10	Beginning of treatment.
Feb. 13-16	Therapists make pre tape recordings of pupils in one randomly selected treatment group.
Feb. 20-23	Teachers and therapists complete Rating Scale for X pupils.
Feb. 14	Baseline data from Cumulative Record cards due to Educational Research.
May 15-18	1. End of treatment. 2. Make post tape recordings. 3. Teacher-therapists rate pupils (post) on Rating Scale.
May 29 - June 2	Post test pupils in evaluation sample using the ITPA.
June 2	Principals', teachers' and therapists' project evaluations due.

RESULTS

For purposes of evaluation, a sample consisting of the 42 experimental and 12 non-experimental pupils who had been tested both pre and post on the ITPA was used. The mean IQ of the evaluation sample was 69.1. The mean chronological age was 9 years 8 months. There were 27 boys and 28 girls.

ITPA Results

Forty-two pupils in the experimental group and 12 in the non-experimental group were pre and post tested on the Illinois Test of Psycholinguistic Ability. "T" tests of significance on uncorrelated data (differences between pre and post) were computed for each of the nine subtests and for the instrument as a whole. Table 14 presents the results of this analysis.

TABLE 14

RESULTS OF "t" TESTS OF SIGNIFICANCE ON THE ITPA

N=54

Subtest	Mean Diff. X	Variance X	Mean Diff. C	Variance C	"t" Values
1	1.000	35.170	2.500	41.000	.758
2	2.547	12.741	1.416	4.447	1.377
3	1.952	4.290	2.583	6.628	.880
4	1.452	14.546	2.666	22.969	.917
5	4.3333	24.8617	6.2500	28.3863	1.1571
6	2.2142	9.2944	2.8333	17.7878	.5678
7	2.3333	13.6422	4.3333	10.7878	1.6921***
8	1.2619	22.9785	- 1.5000	24.8181	1.7454***
9	.2619	20.1004	- .5833	39.9015	.5238
Total Test	16.9523	195.4123	7.9230	239.9102	1.9845***

***Sig. at .10 level

The data in Table 14 indicate that the differences between the experimental and control groups were statistically significant at the .10 level on only two of the nine subtests. One (subtest 8, auditory-vocal sequential) was in favor of the experimental group. The other (subtest 7, auditory-vocal automatic) was in favor of the control group. However, the mean difference on the total test was statistically significant in favor of the experimental group.

At the outset of the project, it was hypothesized that the younger group of EMR children would profit more from this type of oral language training than the older children. Research indicates that with normal children language patterns are fairly well set and more difficult to change after the age of 10. Therefore, early intervention is necessary in order to produce change. If this also is true with EMR's and if this hypothesis is accepted, then this would have implications for the organization and operation of this section of the project in the future. Therapists would then concentrate their efforts on the younger EMR child.

In order to accept or reject this hypothesis, an analysis of covariance was used as the statistical procedure with age serving as the covariant. Using the post-test scores on the total ITPA as the criterion scores, and the pretest scores as the predictor scores, comparisons were made between means and within groups for three age categories: a younger group, 6-7 through 9-0 years; a middle group, 9-1 through 10-5 years; and an older group, 10-6 through 13-0 years. Table 15 shows the results of this analysis of covariance.

TABLE 15

RESULTS OF ANALYSIS OF COVARIANCE BY AGE ON THE ITPA

Source	df	SS	MS	F
Between Means	2	67.35	33.67	.16
Within Groups	38	7622.48	200.59	-
Total	40			

As can be seen the F ratio is not significant and any difference is attributable to chance. Therefore, age does not seem to be a significant factor with regard to gains made on the ITPA. Apparently the type of speech and language training being given by speech therapists to these educable mental retardates who are waiting for special class placement is just as beneficial to the older child as to the younger. Therefore, the hypothesis stated above would have to be rejected.

Tape Recording Ratings

Three-minute taped sessions of individual pupils in two randomly selected treatment groups were made pre and post. Three licensed speech therapists not connected with the project rated the tapes according to the nine-characteristic rating scale mentioned in the first section of this report. The tapes were not identified as to pre or post. A "t" test of correlated data was computed resulting in a "t" value of 1.4175, which was not statistically significant. It appears that any discernible difference between the pre and post recordings as rated by the therapists was due to chance.

Pupil Rating Scale

Teachers and therapists were asked to rate pupils in the experimental group before and after treatment. Each pupil was rated on a five-point Likert scale as to seven language characteristics (see Pupil Rating Scale in Section I.) Fourteen "t" tests of significance for uncorrelated data were computed - one for each characteristic rated by the teachers and one for each characteristic rated by the therapists.

Table 16 presents the results of these "t" tests.

Data in Table 16 indicate that teachers observed statistically significant changes in a positive direction on only one of the characteristics; namely, speaks freely when called upon. On the other hand, therapists' ratings of three language characteristics were statistically significant at the .05 level of confidence.

TABLE 16

RESULTS OF "t" TESTS COMPUTED FROM DATA
ON PUPIL RATING SCALE - EMR

Characteristic	Teacher Ratings					Therapist Ratings				
	Pre Mean	N	Post Mean	N	"t" Value	Pre Mean	N	Post Mean	N	"t" Value
Speaks freely when called upon	2.76	51	3.18	45	2.0895*	3.10	41	3.43	39	1.2879
Volunteers in class discussions	2.46	50	2.71	45	1.1682	3.22	41	3.66	39	1.6191
Understands directions	2.73	51	2.78	45	.2903	3.80	41	4.15	39	1.9582
Participates in verbal group activities	2.54	46	2.76	45	.9954	3.24	41	3.96	39	2.4009*
Uses words as a means of communication rather than aggressive acts	3.00	51	3.09	45	.3997	3.49	41	4.03	39	2.5447*
Understands the meaning of the spoken word	3.02	51	3.13	45	.5867	3.73	40	3.69	39	.2037
Uses vocabulary and language structure appropriate to peer group	2.92	51	2.80	46	.6017	3.10	41	3.60	35	2.0871*

* Sig. at .05 level.

TOTAL PROJECT EVALUATIONS

Peabody Language Development Kit

Each of the therapists used the Peabody Language Development Kit with two randomly selected groups of her five project classes during each treatment period, making a total of 18 of the 44 classes. Therapists were asked to evaluate the suitability of this instructional aid. Positive comments were categorized as follows:

1. Content areas included are essential to developing good thinking skills.
2. A useful supplementary tool.
3. Tapes with songs and stories are useful for auditory memory and as a stimulus for dramatization using the hand puppets.
4. Organization of material is excellent.
5. Pictures provide good language stimulation.
6. Guide book includes many excellent teaching techniques.
7. Outstanding for use with EMR children as they like the repetition.
8. Pictures are excellent in helping the Spanish-speaking children to expand their vocabularies.

Negative comments were:

1. Lessons are too uniform if used as other than a supplementary instructional aid.
2. Choral work and activities requiring imagination were not successful.
3. Manual should be indexed as to units of study and concept building techniques.
4. Too repetitious and not enough variety of procedures for average children.
5. The Kit doesn't follow a true sequential level of language development.

All therapists agreed that the Peabody Language Development Kit was a good tool to be used in developing oral language patterns, but that best results were obtained when it is used in conjunction with other language teaching aids and not used exclusively.

Instructional Materials Evaluation

In addition to the evaluation of the Peabody Kit, therapists kept a log of some of the other instructional materials which they found to be most helpful in working with the experimental group. The following is a compilation of these:

1. Language Master
2. Tape recorder
3. Instructo flannel materials
4. Film strip viewer m strips
5. Frostig Kits
6. Sound and Patte nguage
7. Record player
8. Puppet theater
9. Slide projector
10. Camera
11. Doll house and furniture
12. See Ques sequence puzzles

Teaching Techniques Evaluation

Therapists were also asked to list some of the most valuable teaching techniques which they had used in working with the experimental group and which could be used by regular classroom teachers in working with economically deprived children. A compilation follows:

1. Games requiring some type of memory and special listening.
2. Taping stories and conversations.
3. Using battery-powered telephones to elicit conversation.
4. Dramatizations.
5. Weekend diaries.
6. Field trips.
7. Show and Tell times.
8. Keeping notebooks for new vocabulary development.

Curriculum Guide

One of the specific objectives of this project was to compile a "curriculum" guide of effective techniques and activities employed by the project therapists for use by itinerant therapists and regular classroom teachers. These suggested activities and unit study for the development of oral, verbal language skills were compiled at the conclusion of the project and are available for dissemination to

these persons. It consists of five parts: introduction; suggested activities in the areas of decoding, memory, association and encoding; unit on the "City"; listing of books and materials; and a bibliography.

Case Studies

Each therapist submitted a case study of an individual pupil who had shown dramatic change in his oral language ability after having had the intensified language training in the small group situation. These case studies follow.

Bernard (EMR)
CA 7-11 IQ 73
P4 grade level

"According to the classroom teacher Bernard never offered any verbal participation in the classroom. After six weeks of language class, the teacher approached me and asked, 'What are you doing with Bernard in language class? What a change, he's opening up in class, volunteers answers now in class.'

"The same result was also noted in the language class, an excellent increase in his verbal output, the ability to retain concepts taught, and the capacity to give them back with comprehension and application."

Alice
CA 7-7
P2 grade level

"When Alice first began to attend language class she lacked confidence in herself and vouldn't try anything new. She demonstrated this type of behavior in her regular classroom also. During the last semester Alice has changed considerably. Although Alice is academically slower than many of her peers, she is now taking an active interest in her surroundings and usually has something to talk about. Her ability to retain and relate a story has amazed me and what's more she is not afraid to get up in front of the entire class to do it. This improvement has carried over into her regular classroom. Alice still has a long way to go, but at least she is willing to try and has gained self confidence."

Bernetta
CA 6-8
P1 grade level

"Bernetta was an excellent choice for the language development program. She is an extremely shy, soft-spoken quiet child. She was very hesitant with her responses which were never more than one word. She never volunteered answers to questions and had a difficult time participating in any activity. After several weeks there was a noticeable change, she began answering questions with three and four word responses and occasionally would volunteer. During the last several weeks of treatment, there was a dramatic change, she constantly raised her hand to answer questions and in using spontaneous speech she had many interesting events to relate about happenings at home and at school."

Dennis
CA 7-3
P2 grade level

"The first two weeks Dennis sat in language class contributing nothing. It was difficult to determine if he was just shy or very slow. When after two weeks Dennis finally ventured a response, it was apparent that he had a speech problem. His articulation was poor and he stuttered. Gradually, as he became more comfortable in the class, he would answer a question put to him, but never voluntarily.

"The turning point for Dennis came late in the semester when we took a field trip to the Y.M.C.A. Dennis was fascinated by the swimming pool and bowling alley. He chattered excitedly all of the time we were there. The following day he volunteered to give a summary of our trip.

"Since then Dennis has become an active part of our class. He is not self conscious and volunteers readily. He is still not the most verbal child in the group, but he has shown much growth and progress."

Jerome (EMR)
CA 7-3 IQ 64
P1 grade level

"Jerome was very reticent to speak when he began in the language classes and replied with gestures or one-word replies. During the first weeks he would frequently hide his face with his hands and cry. No demands to speak were made and slowly he began to volunteer in group activities. His many articulation errors made his speech difficult to understand. However, he began using sentences and speaking quite freely especially to the therapist prior to class. He was the only pupil the therapist worked with who would stop class proceedings with, 'What does _____ mean?' when someone used a word he did not know. He thrived on individual attention, continued to suck his thumb frequently, and evidenced a need to be physically close to the therapist.

"It would seem that this type of class was of benefit to him in the free, accepting atmosphere it provided as well as in the language experiences given."

Janie
CA 7-4
P3 grade level

"Janie was very reticent about speaking at the beginning of the current semester. According to her classroom teacher, she never volunteered in a class discussion and, if called on, never spoke freely. Her behavior was the same in the language class even with the smaller audience. She also exhibited many 'nervous' behaviorisms.

"Because she was one of two non-Spanish speaking children in the language class, she often knew labels when other children did not. These little successes encouraged her to respond verbally not only more often, but also in greater length. For example, her first contribution to the weekend diary (an activity designed to encourage the children to verbally relate personal experiences) was a sentence of three words, 'I helped Mother.' Her final contribution was a lengthy story of how she discovered a mouse in her house - 54 words and much more sophisticated structure.

"Her classroom teacher also reports that she is very pleased with Janie's growth. While she still ranks near the bottom of the verbal scale in relation to her classmates, her behavior has changed significantly: she frequently approaches the teacher to relate home experiences and can successfully carry on a conversation in a one-to-one situation, and she has eliminated most, if not all, of the 'nervous' habits she once had."

Project Evaluation by Therapists

Therapists were asked to evaluate the project at its conclusion. A tabulation of their responses is shown in Appendix C. All therapists felt that most of the pupils selected for the project exhibited a lack of language facility; that the articulation test used for screening was not a satisfactory means of identifying pupils most in need of treatment; and that instructional materials were generally appropriate. Four of the six felt that they would benefit from additional in-service sessions and half of the therapists felt that classroom teachers had not been sufficiently informed as to project activities and objectives. Five of the six said that pupil behavior at the end of the treatment was better than at the beginning. All six evaluated the overall effectiveness of the project favorably or very favorably.

Therapists were asked to make suggestions that would improve pupil selection. These were categorized as follows: utilize referrals from kindergarten and first grade teachers, classroom observations by therapists, and conversations with pupils. Additional instructional aids needed were: overhead projectors, movie projector and films, and more story-type books. Therapists felt parents could be involved to a greater degree by better communication as to project activities and goals, parent observation of class sessions, group meetings, and use of social workers to contact parents.

Therapists were asked "What changes would you make in this project?" The responses were categorized: (1) eliminate random assignment in order to treat the most severely language retarded, (2) allow certain pupils to continue in project classes for a full year, (3) increased communication among therapists, classroom teachers and parents, (4) more field trips.

Project Evaluation by Classroom Teachers

A questionnaire was sent to the 17 teachers in the regular project and 17 or 100% responded. Their responses were tabulated and appear in Appendix D. Twelve of the 17 felt that the pupils selected for language training exhibited a lack of language facility. Nine of the 17 felt that they had been sufficiently informed as to project activities and objectives. Fourteen of them said that the therapist coordinated her curriculum with the on-going classroom curriculum. Thirteen of the 17 said that the oral language facility of pupils in the experimental group was better after the treatment. Fourteen of the teachers felt that their pupils have listening problems. Of the 17 teachers 12 said there was evidence of the transfer of language training from the small group to the regular classroom situation. This was evident in the following ways: Pupils would tell what they were doing in the language class, eager to share small group activities with classmates (field trips), increased vocabulary, less shyness about speaking in the larger environment, volunteered more frequently, interest aroused where there was apathy before.

Thirteen of the 17 teachers evaluated the overall effectiveness of the language development project favorably or very favorably. Four were neutral.

Administrator Reaction to Oral Language Development Project

Principals of the 10 project schools were asked to rate the project as to how well it met four criteria (Appendix E). A three-point scale was used:

3 - Outstanding
2 - Satisfactory
1 - Unsatisfactory

Table 17 indicates these criteria and the results:

TABLE 17

MEAN RATINGS OF THE PROJECT AS A WHOLE BY ADMINISTRATORS

	Mean Rating
As a result of this project, there has been improvement in:	
1. Teaching-Learning Environment	2.44
2. Social Development of Pupil	2.11
3. Pupil-Teacher Relationship	2.44
4. Curriculum Materials	2.33

These data seem to indicate that the 10 principals are quite positive about the impact of the program in these areas.

SUMMARY

The Speech and Language Development project as operated by the Milwaukee Public Schools was designed to improve the verbal language skills of economically deprived children through the utilization of the specialized training of speech therapists.

During the past year, 325 pupils in 10 elementary schools in the target area participated in the project. This included 273 pupils from 17 primary classes and 52 children who were on waiting lists for special class placement (EMR's).

These pupils, who were exhibiting a lack of oral language ability, were seen by the six speech therapists on an intensive basis; i.e., 45 minutes per day, four days per week, over a period of 15 weeks, in groups of six to eight children per group (EMR's were seen in groups of four or five). These children were provided with a variety of experiences in both receptive and expressive language.

A Solomon four-group experimental-control research design was used to evaluate that part of the project involving children in regular classes. A two-group experimental design, using the project group and a non-project group as the control, was used to evaluate that portion of the project involving children who were on waiting lists for special class placement (EMR's). Descriptive data obtained from teacher, therapist and administrator questionnaires were also used in the evaluation.

Children in Regular Classrooms

Using data obtained from a standardized test of verbal-perceptual ability (Ammons Quick Test), comparisons were made among the four groups (two experimental and two control). Statistically significant differences at the .05 level of confidence between pairs of means were found to exist on the final observation between X_1 and C_1 and between X_1 and C_2. The difference between means of the two treatment groups was not statistically significant at the .05 level. However, the mean of X_1 still exceeded that of the X_2 group even though treatment for the X_1 group had terminated four months prior to final testing, while treatment of the X_2 group immediately preceded final testing. This seems to indicate that the treatment afforded in this project is of a cumulative and not transitory nature.

A follow-up study was done of a random sampling of pupils who had had language training under this project and had also participated in Project Headstart in the summer of 1965. A two-way analysis of variance revealed that for the pupils in this sample:

1. Project language training seems to affect oral language ability.
2. There was little or no continuing effect of this Headstart experience on oral language ability.
3. There is apparently little or no interaction between project language training and this Headstart experience.

A follow-up study of a random sampling of spring, 1966 project pupils revealed that the experimental group made a mean gain significant at the .15 level of confidence as compared to the control group when tested 10 months later.

Children on Waiting Lists for Special Class Placement (EMR's)

Using data obtained from a standardized test of linguistic ability (Illinois Test of Psycholinguistic Ability), comparisons were made between treatment and non-treatment groups. The mean difference between pre and post tests was statistically significant at the .10 level in favor of the treatment group. An analysis of covariance, with age as the covariant, indicated that the age of children in the treatment group does not seem to be a significant fa.tor with regard to gains made on the ITPA.

Total Project Evaluation

Subjective evaluations by therapists and classroom teachers indicate that a majority of the pupils participating showed an increase in oral-verbal language ability and benefited by working in a smaller group situation.

Five of the six therapists said that pupil behavior at the end of the treatment was better than at the beginning. All six evaluated the overall effectiveness of the project favorably or very favorably. Twelve of 17 classroom teachers said there was evidence of the transfer of language training from the small group to the regular classroom situation. Thirteen of the 17 evaluated the overall effectiveness of the project favorably or very favorably. Four were neutral.

Administrators of the 10 project schools felt that there had been improvement in the areas of teacher-learning environment, social development of pupils, pupil-teacher relationships, and curriculum materials as a result of this project.

Project therapists compiled a curriculum guide of effective techniques and activities used by them to develop speech and language skills with economically deprived children. This guide will be disseminated to itinerant speech therapists and regular classroom teachers.

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APPENDIXES

APPENDIX A

LANGUAGE DEVELOPMENT PROJECT
ELEMENTARY
RATING SCALE FOR TAPE RECORDINGS

Time Block_____

	Above Average	Average	Below Average
Speech and Language			
Speaks freely when called upon			
Correct grammatical usage			
General articulation pattern			
Length of response			
Estimate of vocabulary size			
Quality of words chosen			
Response consistent, plausible (not bizarre or invalid)			

APPENDIX B

PUPIL RATING SCALE

Pupil _____ School _____

Teacher _____ Date _____

Directions: Place a mark (✓) in the appropriate column after each characteristic.

	Never	Seldom	Occasionally	Frequently	Very Frequently
Speaks freely when called upon					
Volunteers in class discussions					
Understands directions					
Participates in verbal group activities					
Uses words as a means of communication rather than aggressive acts					
Understands the meaning of the spoken word					
Uses vocabulary and language structure appropriate to peer group					

THERAPIST EVALUATION FORM

ELEMENTARY SPEECH AND LANGUAGE PROJECT

1. Do you feel that the pupils selected for language treatment generally exhibited a lack of language facility?

[6] Yes [0] No

2. What suggestions can you make that would improve the pupil selection criteria for the project?

3. Do you feel that the preliminary articulation test used for screening at the beginning of this year was a satisfactory means of identifying the pupils most in need of treatment?

[ ] Yes [4] No

4. What other methods can you suggest for identification?

5. What would be the ideal size of each group in a school?

Regular	EMR
[2] 4-5	[6] 3-4
[4] 6-8	[ ] 5-6
	[ ] 7-8

6. Have the instructional materials generally been appropriate and satisfactory for the classes?

[6] Yes [ ] No

7. What changes could be made with regard to taping of pupils' speech?

8. Do you feel that you personally have been sufficiently involved in the structuring and planning of this project?

[6] Yes [ ] No

9. What additional instructional aids would have been helpful to you?

_____

_____

_____

10. How would you rate the help that you received from your supervisory staff?

6 Good _____ Fair _____ Poor

11. Do you feel that you would benefit from additional inservice sessions?

[4] Yes [2] No

12. a. Would you like to have more field trip experiences included in the project?

[5] Yes [1] No

b. If so, which ones?

_____

_____

13. In what ways do you think the parents could be involved in the project?

_____

_____

_____

14. Do you feel that the project teachers have been sufficiently informed as to project activities and objectives?

[3] Yes [3] No

15. Were you able to coordinate the content of your curriculum with the teacher's classroom curriculum?

Frequently	Sometimes	Never
	4	2

16. How did the behavior of most of your pupils at the end of a treatment period compare with their behavior at the beginning?

Much Better	Better	Same	Worse	Much Worse
1	4	1		

17. What changes would you make in this project?

_____

_____

_____

18. How do you evaluate the overall effectiveness of the language development project?

Very Favorably	Favorably	Neutral	Unfavorably	Very Unfavorably
1	5			

E-8 5/2/67
LD:as

APPENDIX D

TEACHER EVALUATION FORM

ELEMENTARY SPEECH AND LANGUAGE PROJECT

1. Do you feel that the pupils selected for language development training generally exhibited a lack of language facility?

[12] Yes [5] No

2. Do you feel that you as the classroom teacher have been sufficiently informed as to project objectives and activities?

[9] Yes [8] No

3. Did the project therapist coordinate the content of her curriculum with your classroom curriculum?

[6] Frequently [8] Sometimes [3] Never

4. Do you feel that there is sufficient interaction between the project therapist and classroom teacher?

[10] Yes [7] No

5. Compare oral language facility before and after the treatment of most of your pupils who worked with project therapists.

2	11	4		
Much Better	Better	Same	Worse	Much Worse

6. Do you feel that most of your pupils have auditory discrimination or listening problems?

[14] Yes. [3] No

7. a. Was there any evidence of transfer of language training from the small group to the regular classroom situation?

[11] Yes [5] No

b. If yes, what evidence did you see?

_____

_____

_____

8. How do you evaluate the overall effectiveness of the language development project?

6	7	4		
Very Favorably	Favorably	Neutral	Unfavorably	Very Unfavorably

E-8 5/67
LD:as

School _____

Rating Key
3 = Outstanding
2 = Satisfactory
1 = Unsatisfactory
0 = No Opinion

OBJECTIVES (AIMS OR GOALS OF PROJECTS)

Objective	As a result of this project, there has been improvement in:	SAMPLE: Lower Pupil-Teacher Ratio Project No. XX	E-1 School Library Services	E-2 Expanded Reading Center Services	E-4 Additional Non-teaching Vice-Principals	E-5 Special Physical Education Teacher Program	E-6 Art Experience Program	E-7 Music Experience Program	E-8 Speech & Language Skills Building Program	E-10 Outdoor Education	E-12 Handicapped Children - Recreation	E-13 R & I	E-14 Remedial Teachers	SS-1 Expansion of Psychological Services	SS-1E Programmed Learning	SS-6 School Social Work
A.	Teaching-Learning Environment															
B.	Teaching Performance in This Area															
C.	Pupil Attitude															
.	Social Development of Pupil															
E.	Pupil-Teacher Relationship															
F.	Home-School Relations															
G.	Out-of-School Activities															
H.	Curriculum Materials															
I.	Teacher Morale															
J.	Supervision															

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