DOCUMENT RESUME

ED 035 714 24 UD 009 715

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TITLE Follow-up Study of the Effects of a Language Stimulation Program upon Negro Educationally Disadvantaged First Grade Children. Final Report.
INSTITUTION Houston Univ., Tex.
SPONS AGENCY Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO BR-7-C-084
PUB DATE Oct 69
CONTRACT OEC-7-8-000084-0022(010)
NOTE 25p.

EDRS PRICE EDRS Price MF-$0.25 HC-$1.35
DESCRIPTORS Achievement Gains, Age Groups, Control Groups, *Educationally Disadvantaged, Experimental Groups, *Grade 1, Group Intelligence Testing, Intelligence Quotient, *Language Programs, Language Tests, Mental Tests, *Negro Students, Post Testing, Reading Ability, Test Results
IDENTIFIERS Ammons Ammons Full Range Picture Vocabulary Test, California Test of Mental Maturity Short Form, Durrell Analysis of Reading Difficulty, Lee Clark California Reading Test Grade 1, *Peabody Language Development Kit

ABSTRACT

Thirty-two pairs of disadvantaged Negro first grade children were matched on mental age (M.A.), chronological age (C.A.), intelligence quotient (I.Q.), and language age (L.A.). One of each pair was randomly assigned to be the experimental group, while the other formed the matched pair of the control group. A language stimulation program consisting of one hour per day for a twelve week period was administered to the experimental group. A post-test was administered immediately following termination of treatment, 80 weeks after, and 124 weeks after. The immediate gains in I.Q., M.A., and L.A. were maintained. Although there were no differences in reading immediately following treatment, differences were present at both 80 and 124 weeks later. It appears that, due to language treatment, the experimental group made significant gains and maintained them, developing parallel to the control group and always ahead. (PJ)

FINAL REPORT
Project No. 7-G-084
Contract No. OEG-7-8-000084-0022(010)

FOLLOW UP STUDY OF THE EFFECTS OF A LANGUAGE STIMULATION PROGRAM UPON NEGRO EDUCATIONALLY DISADVANTAGED FIRST GRADE BOYS

October 1969

U. S. DEPARTMENT OF
HEALTH, EDUCATION AND WELFARE

Office of Education
Bureau of Research

FOLLOW-UP STUDY OF THE EFFECTS OF A LANGUAGE STIMULATION PROGRAM UPON NEGRO EDUCATIONALLY DISADVANTAGED FIRST GRADE CHILDREN

JOHN L. CARTER, PH.D.

October 1969

The research reported herein was performed pursuant to a contract with Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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SUMMARY

Two groups of educationally disadvantaged Negro first grade children were carefully matched on Stanford-Binet M.A. and I.Q., chronological age, language age and social class. After careful individual matching, each child was randomly placed into one of two groups. Then one group was randomly designated as experimental. The second group became the control group. In all, there were 32 pairs of children including an equal number of boys and girls in each group.

The experimental group received treatment consisting of the first 40 lessons of the experimental edition of the Peabody Language Development Kit. Each lesson was slightly augmented by reading a colorful story to the children.

The effects of the treatment program were evaluated immediately following termination of the treatment. There were approximately 12 weeks between pre and posttest. The results indicated very significant gains for the experimental group ov er the control group in I.Q., mental age, language age. At that point in time there was no difference in reading ability, but girls consistently scored higher than boys. This concluded the evaluation of the immediate effects of the language stimulation program, or Stage I.

Stage II was concerned with longer range effects of the program. Twenty months after the cessation of treatment, the subjects were again evaluated. Essentially, the same results were obtained. The experimental group still scored significantly higher on all dependent variables. On this occasion the experimental group also scored significantly higher than controls on three reading tests. This completed Stage II.

Stage III was concerned with still another evaluation of the results of language stimulation nearly three years after termination of treatment. In the interim no special help or placement occrued to any child due to experimental group membership. Yet, the significant increments in language age, mental age, I.Q. and reading are still present. The experimental and control groups seem to be developing in a parallel fashion on these variables with the experimental children maintaining their lead.

All hypotheses were confirmed for long term results. A language stimulation program did result in significant increments in total language ability which in turn corresponded with a significant gain in I.Q. and M.A. These effects were also felt in reading achievement.

FOLLOW-UP STUDY OF THE EFFECTS OF A LANGUAGE STIMULATION PROGRAM UPON NEGRO EDUCATIONALLY DISADVANTAGED FIRST GRADE CHILDREN

The current investigation was designed as a three year follow-up study of the effects of a language stimulation program upon educationally disadvantaged children. Effects upon indices of intelligence, linguistic abilities, reading ability, and general achievement were focused upon.

Related Literature

During the past few years there has been a growing interest in and educational focus upon children from educationally disadvantaged home backgrounds. Generally, most research agreed that these children are at a severe disadvantage when starting school and competing with children from more verbally stimulating homes (Silberman, 14). Reissman (13) also noted that the vocabulary and language of deprived children are not those they use in school. Many studies have indicated that, in part as a result of language deficiency, disadvantaged children achieve poorly in school and that intelligence scores as assessed by the Stanford-Binet become progressively lower as these children grow older (Kennedy, et. al., 10).

A number of studies have pointed to the possibility of increasing intellectual ability through language stimulation (Kephart, 11; Kirk, 12; Skeels, 15; Smith, 16). Although a number of studies concerning the enhancement of intelligence of mentally retarded children were reported, few have focused upon the culturally disadvantaged child until recently. Also, most studies located reported upon language enhancement only. Few published experimental studies were located which purported to augment both linguistic and intellectual abilities of disadvantaged children through a language stimulation program. Nevertheless, there was research evidence which indicated that there is a good possibility that many children of lower socio-economic status owe their retardation, in part at least, to their deprived environment (Wakefield, 17). Silberman (14) stated that somehow "an impoverishment of environment---must be compensated for in some way if it is to be overcome," (p. 6). One more point should be mentioned. All too frequently, research interest ceases once immediate posttest results are tabulated. In these cases, longer-range or more permanent treatment results cannot be known. It is to this longer-range carry-over to academic abilities that this project will shed light and hopefully have curricular and program implications. There would seem to be a need for an array of intensive long range evaluations if decisions concerning curricular changes are to be soundly made and justified.

An apparent need at this time was a systematic investigation upon the effects of a language stimulation program early in an educationally deprived child's school experience. Similar research has been conducted with the educable mentally retarded, the trainable retarded, and the cerebral palsied (Smith, 16; Blue, 3; Hart, 8).

Hypotheses

Basically, the objective of this proposal was to determine if, after approximately three years, the positive results of the language stimulation program are still in effect. The specific hypotheses are as follows:

1; A language stimulation program will still result in higher language age scores for the experimental group than the control group.
2: A language stimulation program will still result in a higher mental ability for the experimental group than the control group.
3: A language stimulation program will result in a higher reading grade attainment for the experimental group than the control group.

PROCEDURE

Selection and Matching of Subjects

The original subjects consisted of 32 matched pairs of Negro first grade children. Matching was done on the basis of language age, mental age, chronological age, sex, and social class affiliation of the parents. One of each pair was randomly assigned to one of two groups. When the two groups both contained 32 subjects, one was randomly assigned as experimental. The other became the control group. Each group had an equal number of boys and girls. Of the original 32 carefully matched pairs only 24 complete pairs were available at the time of this testing. The experimental and control groups had 24 children respectively. The first criterion of selection was that all subjects must be from the low social class home backgrounds. The McGuire-White Index of Social Status was obtained on the status parent of all children. This necessary information was obtained from recent school records and from the teacher and principal.

Table 1 shows the initial statistical data for all matching variables for the experimental and control groups. The first column presents data on the Index of Social Status. The mean scores of 70.41 and 70.34 for the experimental and control groups were analyzed for significance (6, pp. 278-281). A 't' value of .0383 indicated that two means do not differ significantly from chance variations. The F value of 1.3722 showed that the variance of the two groups was the same within sampling error.

With respect to chronological age, the second matching variable, the experimental group obtained a mean of 81.25 months; whereas, the control group mean was 81.34 months. Neither the "t" nor F tests proved significant. It can be assumed that the two groups did not differ with respect to chronological age.

TABLE I

STATISTICAL DESCRIPTION OF MATCHED GROUPS

Matching Variables

Pair No.	Social Class		Chronological age in months		Mental age in months		IQ		Language age in months	
	Exper.	Cont.	Exper.	Cont.	Exper.	Cont.	Exper.	Cont.	Exper.	Cont.
*01	68	70	80	80	74	79	91	86	59	54
*02	75	71	77	82	60	62	76	73	60	64
*03	68	70	80	77	70	67	86	86	69	66
04	66	68	82	84	67	67	80	78	61	58
05	65	76	97	98	65	63	65	62	53	60
*06	71	71	77	80	58	62	73	75	54	59
07	75	68	80	77	55	53	66	66	49	55
*08	76	71	76	75	62	60	80	78	54	61
*09	67	65	81	80	66	65	80	79	62	67
*10	66	70	76	76	58	60	74	77	62	57
11	70	67	85	85	68	70	78	80	64	65
*12	68	71	86	85	60	57	67	64	51	52
13	70	74	83	84	60	58	70	66	55	51
*14	68	62	76	77	66	68	85	87	71	63
*15	76	77	83	82	62	59	72	69	54	58
*16	73	70	81	81	68	67	82	80	59	65
17	71	70	81	81	57	69	68	70	51	64
18	69	62	77	77	63	64	80	81	63	62
19	74	68	86	89	58	62	64	67	55	62
20	75	76	86	83	64	64	73	75	57	62
*21	65	76	76	80	58	60	74	72	49	62
22	76	71	82	81	65	65	77	78	65	60
23	74	71	83	80	58	57	67	66	58	57
*24	70	71	86	85	52	61	69	69	55	52
25	65	71	78	79	56	57	69	69	63	54
*26	71	76	85	85	64	63	73	72	60	50
*27	68	71	73	78	61	60	82	82	56	51
28	68	76	85	83	62	58	70	67	51	57
29	73	70	80	76	62	59	75	75	57	60
*30	71	70	77	79	59	61	74	75	57	58
31	65	57	79	77	70	68	86	87	60	65
32	76	73	86	87	56	59	62	65	55	54
Means:	70.41	70.34	81.25	81.34	62.00	62.03	74.63	74.25	57.78	58.59
S. D.	3.68	4.31	4.63	4.56	4.92	4.13	7.07	7.09	5.31	4.93
"t"	.0383		.077		.027		.212		.633	
F	1.3722		1.135		1.419		1.025		1.119	

*Female pairs
"t" .975 for 31 df = 2.040

The third matching variable was mental age as determined by the Stanford-Binet, Form LM. Again, as shown in column 3 of Table 1, the difference between the mean score of the two groups was not significant. The experimental group mean was 62.00 months and the control group mean, 62.03 months. With respect to mental age, both the "t" test and the F test were not significant. As would be expected on the basis of the non-significant differences for chronological age and mental age, I.Q. differences too were non-significant. The mean I.Q.'s for the experimental group and control group were 74.63 and 74.25 respectively. The "t" test for matched groups yielded a "t" value of .212 and an F score of 1.025. The latter was also non-significant and indicated that the variance of the I.Q. scores were within sampling error.

Finally, the two groups were matched for total language age in months as determined by the Illinois Test of Psycholinguistic Abilities. A "t" value of .633 was not significant and indicated that the experimental and control group means of 57.78 and 58.59 months respectively were within sampling error. An F test of 1.119 was not significant and showed that the variances of the two groups were the same.

The F and "t" tests discussed demonstrated the precision of matching on all variables. It could be assumed that with respect to social class, chronological age, mental age, I.Q., and language age, both groups were drawn from a common population with the same means and variances.

Testing the Subjects

Individual testing for all testing periods was carried out by qualified psychological examiners who were uninformed as to the identity of the experimental or control group subjects. Subjects from both groups were pooled and randomly assigned to a psychological examiner.

Subsequent to matching and prior to treatment procedures, all children were administered the California Test of Mental Maturity, Short Form; the Lee-Clark California Reading Test, Grade 1; and the Ammons and Ammons Full Range Picture Vocabulary Test. All children selected for the study also received speech and hearing screening tests. Children with significant speech or hearing impairments were omitted. At the conclusion of the treatment period of ten weeks, each child in both groups was administered the entire pretreatment test battery with the exception of the hearing and speech screening tests. All pretests and both posttreatment testings were completed within two weeks' time. For posttest 2, it was necessary to make some test substitutions. The Lee-Clark California Reading Test was no longer appropriate for the children of this investigation because of their age and grade placement. Consequently, the California Reading Test was administered. For posttest 2, it was felt that an individually administered, as well as a group administered reading test would be in order. Therefore for this testing period, the Durrell Analysis of Reading Difficulty was individually administered to all children. The same instrumentation was used for posttest 3, the current study.

All group tests were administered by the teachers to both groups. For all testing sessions, all children were randomly assigned to one of eight groups where they were administered the test in groups of eight. Consequently, the composition of each group was a matter of chance.

Stage III focused upon the follow-up effects of the language stimulation program. During this stage, each child in the original Stage I study was located and administered the test battery. Of the original 32 pairs of subjects, or 64 children, 24 matched pairs were located in the same school.

The Teachers and Instruction

The teacher personnel consisted of two experienced primary grade teachers. They worked under the immediate supervision of the investigator throughout the treatment period. This was done to assure, further, the uniformity of methodology and presentation. This was deemed necessary even though the curriculum from the experimental edition of the Peabody Language Development Kit was utilized. Each of the four experimental groups was removed from regular classrooms four times weekly and taken to the room designated for treatment. These sessions were for ten weeks. Each of the four daily sessions began on the hour, beginning at 8:00 a.m. The experimental children were randomly placed into one of the four groups without regard to their regular classroom assignment. Consequently, each regular classroom had some children absent from that room and in the treatment sessions almost every hour in the morning. In this manner, randomization of regular classwork missed among the treatment group was accomplished.

The experimental edition of the Peabody Language Development Kit by Dunn and Smith (5) comprised the curriculum with some minor changes. One weakness of similar speech and language stimulation programs has been the lack of precision in defining the curriculum. It was felt that using the Peabody curriculum would remedy this weakness as well as add significant information concerning the Kit's utility with educationally disadvantaged children. The Kit was made up of two hundred and eighty lesson plans with specific activities delineated for each day. The modifications were necessary in order to provide the 45 to 50 minutes daily language stimulation activities. The first change was that a story was read to the children at the conclusion of each lesson. Secondly, activities from lessons beyond Lesson 40 were selected to supplement each of the forty daily lessons used.

Overview of Sequence

Following is a brief overview of the sequence of procedures. First, all children were pretested and placed into matched pairs. One pair, the experimental group, received the language stimulation program for ten weeks.

Immediately upon completion of the language stimulation program, all subjects, both experimental and control, were administered the posttest 1 battery. This concluded Stage I. Stage II was essentially a long-range investigation to determine if the positive experimental results held up over time. Approximately 20 months after the cessation of treatment, both groups were administered posttest 2. Stage III was conducted as a follow-up approximately three years after treatment. Stage II had been reported (Carter, 1967) with very positive results. Hence, the follow-up, Stage III was deemed essential.

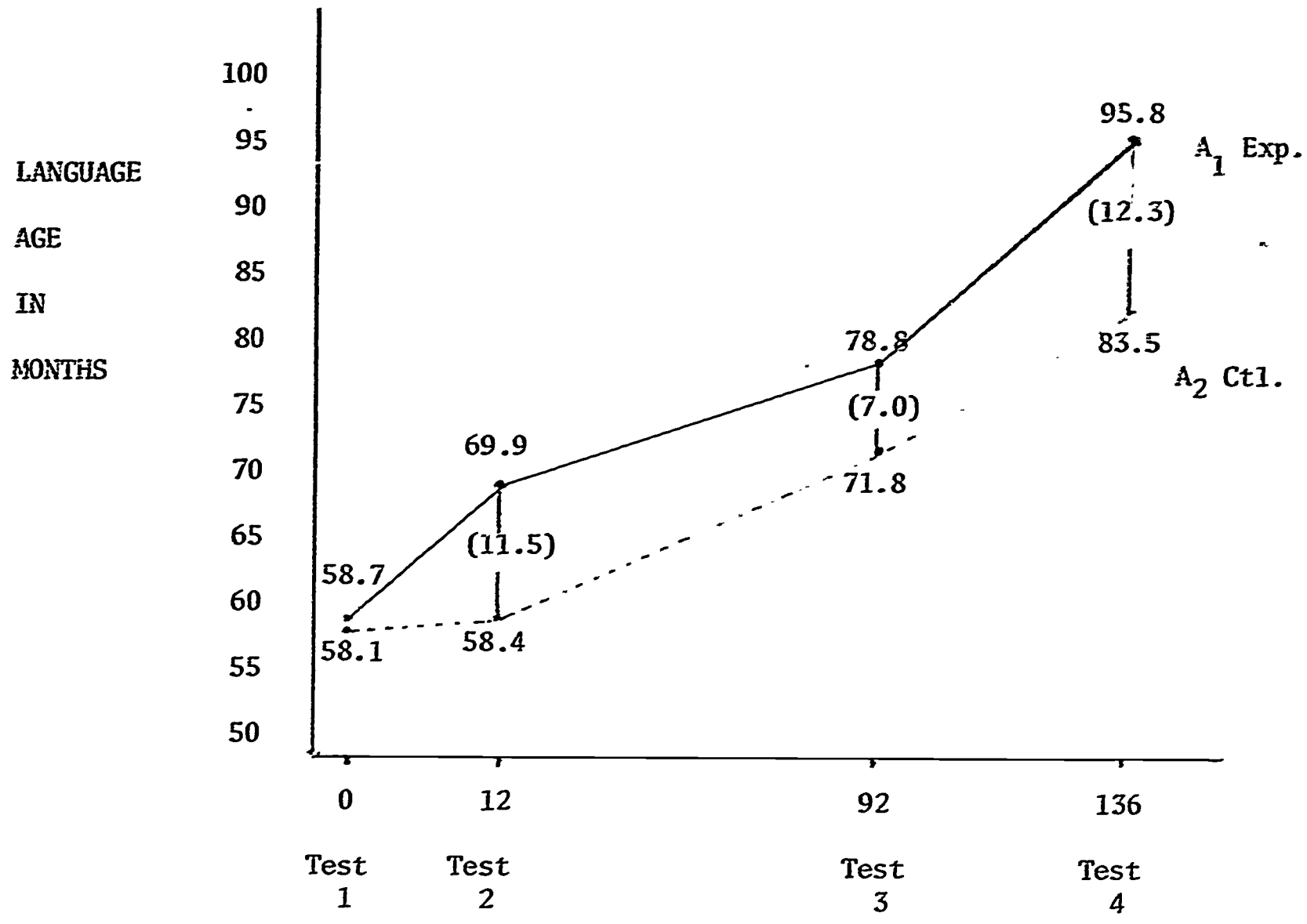
RESULTS

For clarity and continuity the results of Stage III will be presented and discussed in conjunction with Stages I and II. In addition, analysis of all data will be made in terms of the 24 matched pairs for whom all data is available. For this reason the results of pretest, posttest 1 and posttest 2 may be slightly at variance with those previously reported for Stages I and II where all original subjects were utilized. Each hypothesis will now be examined for Stage III results in prospective of results from Stages I and II.

Hypothesis 1 states: "A language stimulation program will still result in higher language age scores for the experimental group than the control group." To test this hypothesis, the Total Language Age of the Illinois Test of Psycholinguistic Abilities, Experimental Edition, (ITPA), was used as a dependent variable. Figure 1 presents a summary of results for all testing periods. The figure is scaled in weeks since Test 1 or pretest along the baseline. Both groups scored essentially the same on the first test prior to treatment. Immediately upon completion of treatment the experimental group scored 11.5 months higher than the control group. All of this was attributable to gain by the experimental group, 11.8 months since the control children did not gain. Approximately 80 weeks later the experimental groups' ITPA Language Age (L.A.) was 78.8 months or 7.0 months above that of the control group. Stage III testing was conducted 136 weeks or 34 months after the first testing. At this time the mean L.A. for the experimental and control groups was 95.8 and 83.5 months respectively. An analysis by means of a Scheffe Comparison was made. By this method all means can be compared two at a time for significance. In this case, any absolute value between two means greater than 1.043 is significant. Consequently, as would be expected, each group made significant gains from test period to test period, except for the control group from Test 1 to Test 2. Also, beginning with Test period 2, the experimental group consistently scored higher than the controls; this difference is significant at the five per cent level of confidence. Essentially, following the first or pretest, the two groups show parallel progress with the experimental group maintaining superiority apparently due to treatment. Hypothesis 1 is supported. It may be concluded that the language development program did enhance language age and that the effects were still operative and measurable nearly three years later.

FIGURE 1

MEAN LANGUAGE FOR THE EXPERIMENTAL
AND CONTROL GROUPS FOR ALL TESTING PERIODS



Hypothesis II states: "A language stimulation program will still result in a higher mental ability for the experimental group than the control group." Previous research (Carter, 1967) has pointed out and confirmed that a language stimulation program results in, among other things, higher scores on tests of mental ability. Stages I and II of this study also found this for immediate effects. At this point in time, the purpose is to determine whether the gains in I.Q. are stable over time, 32 months after the cessation of the language stimulation program. Again, the results can best be interpreted in light of the findings for Stages I and II. Figure 2 presents a summary of the mean mental ages for both groups for all testing periods. Again, as with Language Age, it can be seen that the two groups scored essentially the same in M.A. at the pretest prior to treatment. Immediately following treatment the experimental group scored 5.9 months more than the control groups and this difference was not only maintained but continued to diverge for each successive testing period. The differences continue to be significant at the five per cent level of confidence. It must be assumed that as a result of a language stimulation program M.A. can be enhanced significantly and this increment stabilizes, at least for nearly three years.

As could be expected, the same principle holds true for I.Q. Figure 3 presents this. Again, we see the two matched groups scoring approximately the same on the first test, then the experimental spurting ahead by 7.2 points for the second test, and this difference becoming larger for test periods 3 and 4. A Scheffe' Comparison was computed and any absolute difference of .938 I.Q. points or greater between test scores is indicative of significance at the five per cent level of confidence. Hence, both groups made significant gains from each previous test period and following the first or pretest the experimental group consistently scored significantly above the control group, and this difference is becoming greater with the passage of time.

Hypothesis II must be accepted. A language stimulation program apparently did effectively increase I.Q. and M.A. of the experimental children over the control children, and the gains are still present nearly three years following the completion of the language treatment program.

Whether a language stimulation program will work to enhance language ability or mental ability is not of paramount importance to educators. If significant gains are made, the question should be, "Will these gains result in greater achievement?" In other words, will the experimental group, which showed a significant increase in language age and mental ability over the control group, also show a higher level of achievement? Hypothesis III was tested to make this determination for reading ability. This is crucial in a very meaningful sense. Specificially, Hypothesis III states, "A language stimulation program will result in a higher reading grade attainment for the experimental than the control group."

FIGURE 2: Mean Mental Age for the Experimental and Control Groups for all Testing Periods

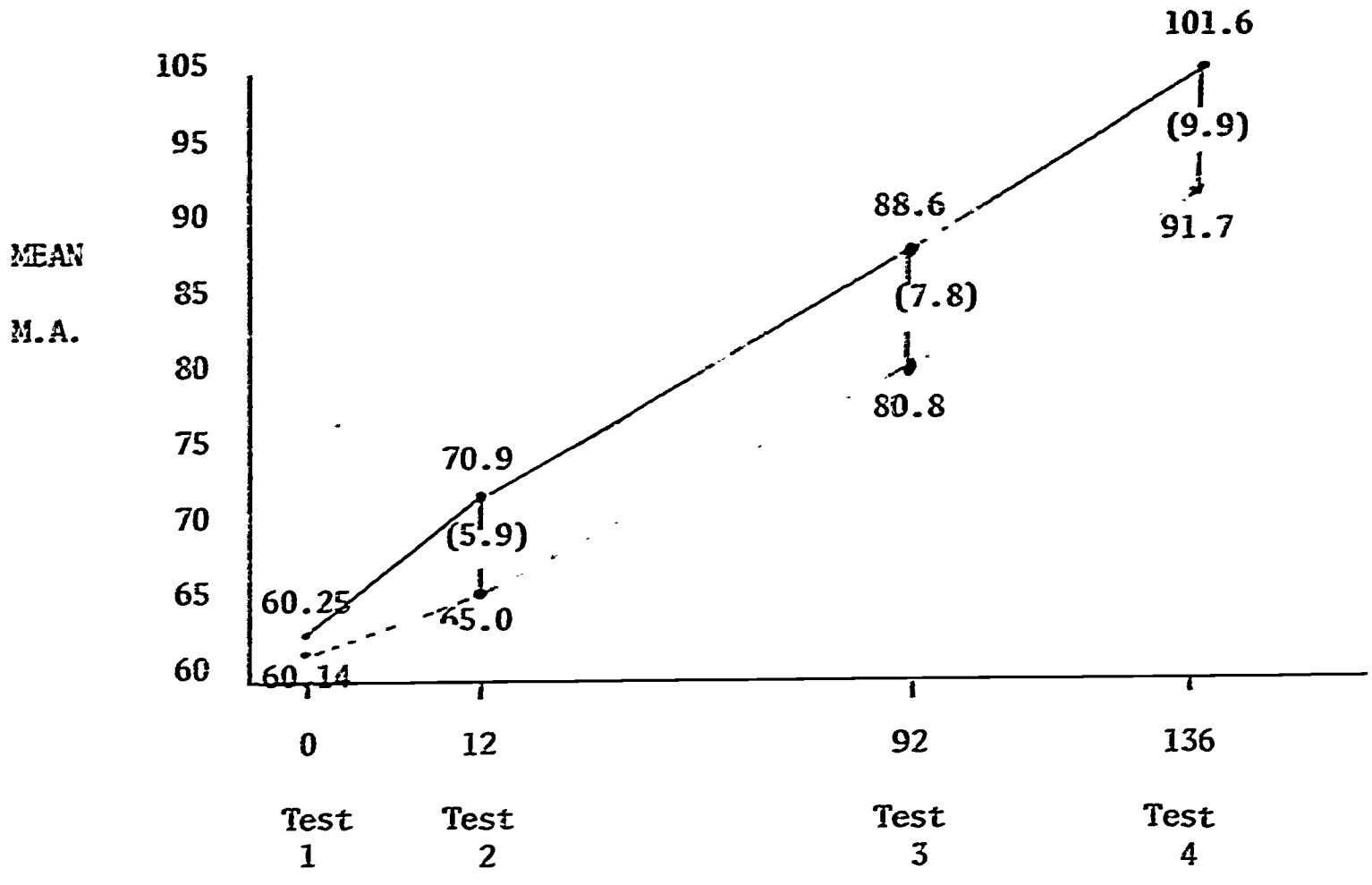
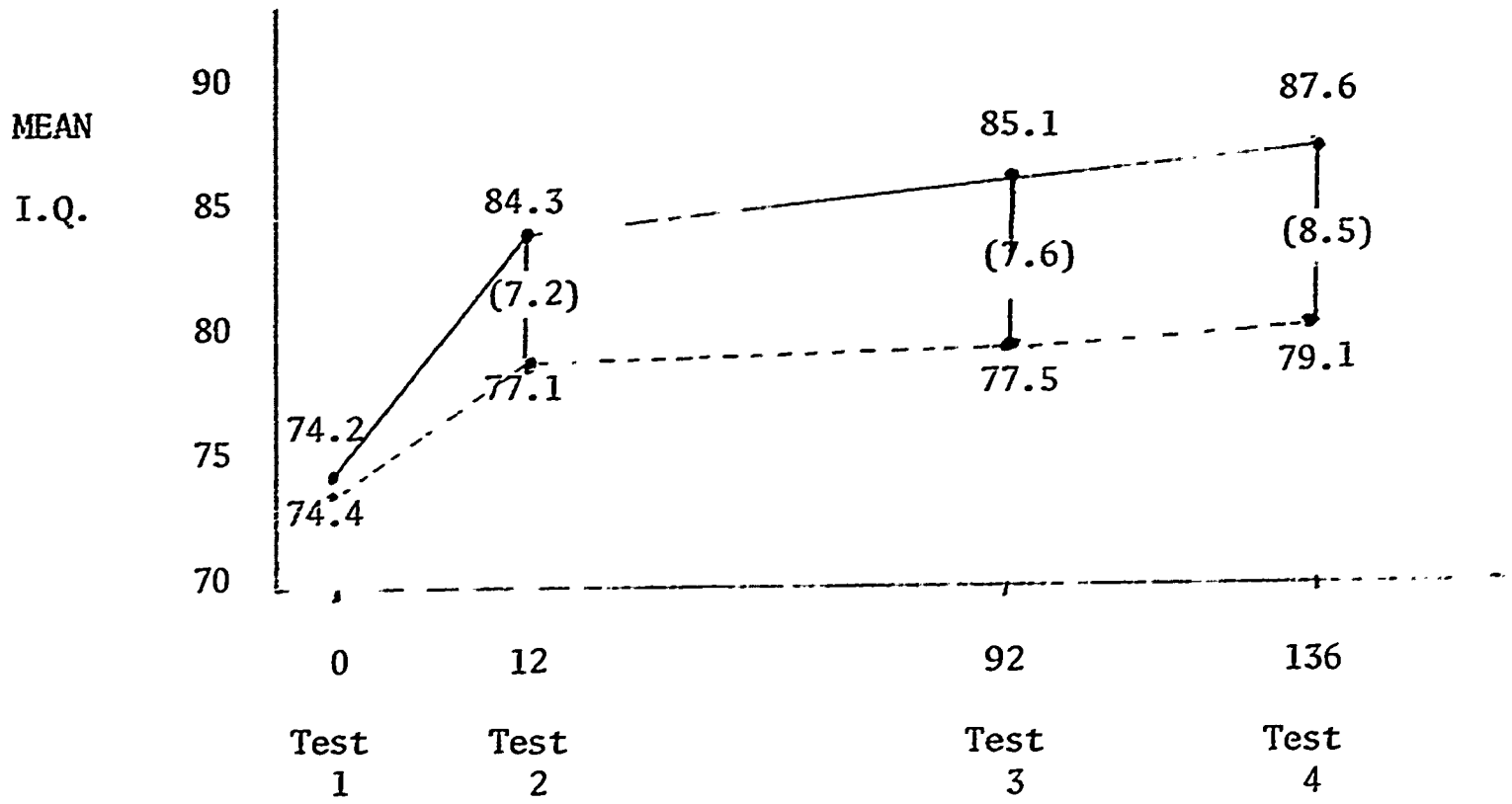


FIGURE 3: Mean I.Q. for the Experimental and Control Groups for all testing periods.



To test this hypothesis two different measures of reading ability were independently administered. The California Reading Test was used as a group measure and the Durrell Analysis of Reading Difficulty was used as an individually administered test of reading.

Figure 4 presents a summary of results of the group reading tests for all test periods. Again, the figure is scaled in weeks since test one or the pretest. The Lee-Clark Reading Readiness Test was used for Tests 1 and 2, while the total reading score of the California Reading Test was used for Tests 3 and 4. As can be seen, both groups scored essentially the same on the first two testing periods. Immediate effects of language treatment were nil. The results of Tests 3 and 4 indicate that the experimental group is significantly higher than the control group. An analysis by the Scheffe Comparison technique yielded results significant at the five per cent level of confidence in favor of the experimental group. Consequently, it must be assumed that language treatment did result into generalizing to reading ability as measured by the California Reading Test.

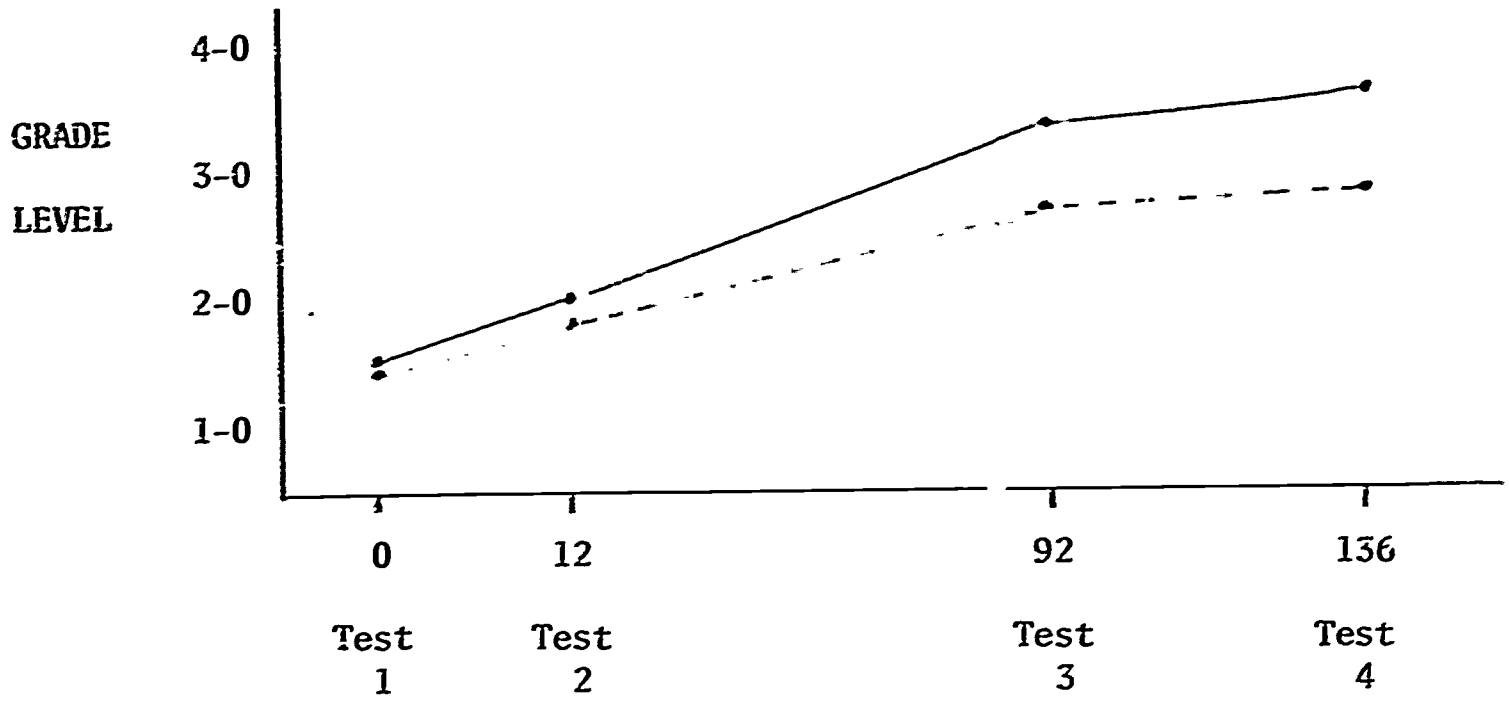
Turning to the Durrell Analysis of Reading Difficulty, Figures 5, 6, and 7 show that the experimental group did consistently score higher on Oral and Silent reading as well as in Listening Comprehension. A Scheffe Comparison indicates that the differences are significant at the five percent level. It must be assumed that the intervening variable of language stimulation did generalize over time to reading ability.

Of particular interest is the apparent consistency of findings on all dependent variables. Figures 1, 2, 3 and 4 point out that both groups scored essentially the same on the pretest, the experimental made significant gains in mental and language maturity over the control group, and then continued to develop parallel with the control group at a significantly higher level. On all measures of reading skills, both groups started about the same on Test 1 and then scored within sampling error on Test 2. But during the intervening 80 weeks from Test 2 to Test 3 the experimental group was able to increase their reading ability to a significant degree over the control group and now both groups appear to be developing along parallel lines. It should be noted that Test 2, the test immediately following treatment, did not yield a significant difference in reading. Therefore, it must be concluded that the experimental children because of their relatively greater language facility were able to generalize this facility to another set of linguistic abilities found in reading. This is consistent on all measures of reading.

One disconcerting note, however, is that even the experimental group is not scoring up to grade level. The children were tested near the end of third grade placement. On the California Reading Test the experimental children scored three months into the third grade or approximately five months lower than actual placement, while the control group mean was beginning third grade or eight months behind actual placement. On the Durrell, experimental children scored at grade level on oral reading; this was exactly one year ahead of their control counterparts. Table 2 presents a summary of all test results for the four testing periods for both groups.

FIGURE 4

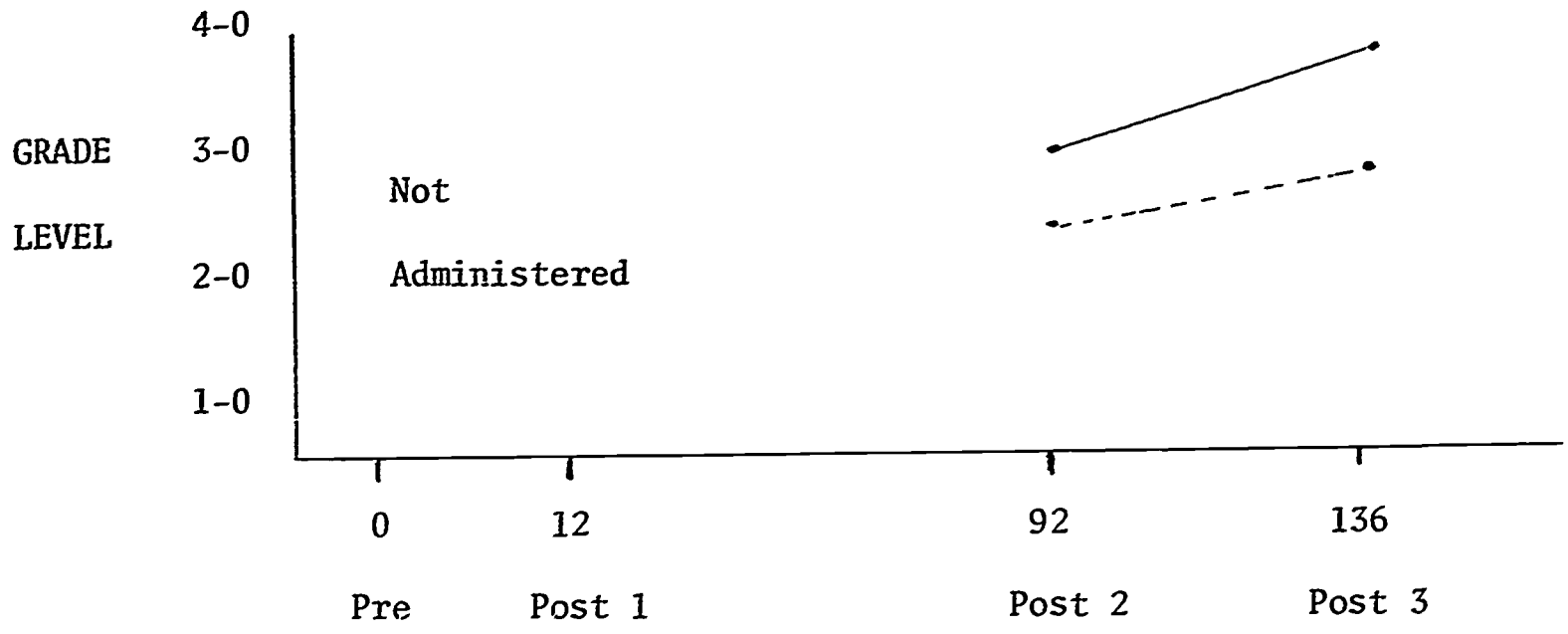
SUMMARY OF GROUP READING TEST:
LEE-CLARK AND CALIFORNIA



Tests 1 and 2: Lee-Clark
Tests 3 and 4: California Reading Test Total

FIGURE 5

SUMMARY OF DURRELL ORAL READING
(Instructional Level)



Weeks since First Test

FIGURE 6

Summary of Durrell Silent Reading

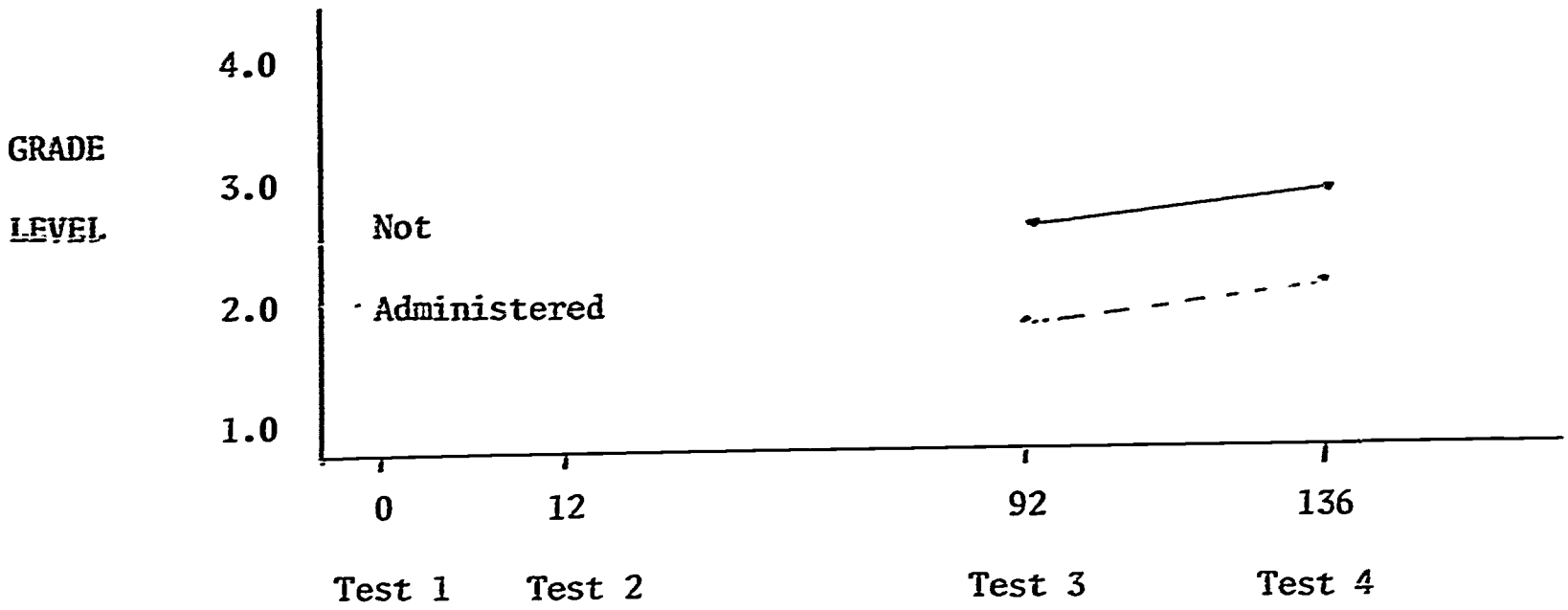


FIGURE 7

Summary of Durrell Listening Comprehension

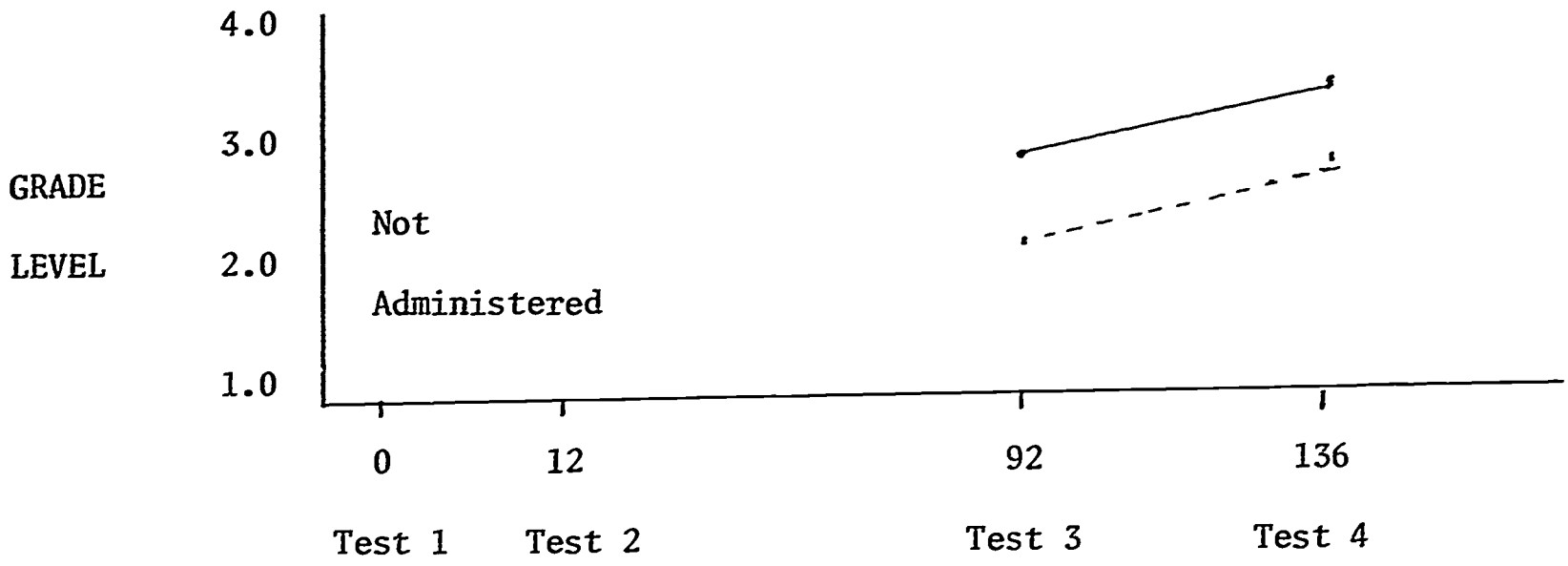


TABLE 2: Summary of all Major Tests Administered

Tests	Pre	Post$_1$	Post$_2$	Post$_3$	Pretest	Post$_1$	Post$_2$	Post$_3$
I.Q.	74.2	84.3	85.1	87.2	74.4	77.1	77.5	79.1
M.A.	60.3	70.9	88.6	101.6	60.1	65.0	80.8	91.7
ITPA L.A.	57.8	69.0	76.9	90.1	58.6	56.8	72.0	83.0
Reading								
Lee Clark	1.6	1.9			1.5	1.8		
California								
Vocabulary			3.1	3.4			2.8	3.0
Comprehension			2.9	3.2			2.8	2.8
Total			3.2	3.3			2.8	3.0
Durrell								
Oral			3.0	3.8			2.4	2.8
Silent			2.4	2.7			1.9	2.3
Listening			2.8	3.2			2.3	2.6

A question of great significance is, "What happened that was different between the two groups following treatment?" If some type of selective differential placement occurred, perhaps this could account for the significant gains in reading by the experimental group. But such special programming did not occur. The school did obtain an ESEA Title I grant to enhance its reading program, but children were not identified or placed into the program as a consequence of this study. In fact, after the termination of the language development project, the writer could discern no differential treatment of subjects.

DISCUSSION AND IMPLICATIONS

This discussion is presented primarily to attempt to synthesize the major results of this study with the findings of other related research.

The immediate results of this study presented evidence concerning the efficacy of a group language stimulation program in increasing language age and mental age of culturally disadvantaged children within a ten week period, a relatively short period of time. The experimental edition of the Peabody Language Development Kit was selected prior to the testing of the children; therefore, the program was not clinical or aimed at remediating specific language disabilities. For practical educational purposes, the economy of a general language stimulation rather than a clinically determined program is obvious. Considerable time and effort were saved in differential evaluation and program planning.

The results concerning the increase in language age with culturally disadvantaged children were consistent with similar results obtained through experimentation with exceptional children. Smith (16) demonstrated the efficacy of a similar program with educable retarded children: he, too, used a generalistic approach. Using a clinical or remedial approach, Blessing (1) was able to enhance language ability of educable retarded children. Increments in mental age following a language development program have also been reported for trainable retarded children (Blue, 3) and cerebral palsied children (Hart, 8).

In relation to culturally deprived children, the results of this study were in agreement with a few others which have been located. Gray and Klaus (7) instituted a summer program followed with home contact at two preschool age levels, 3 1/2 and 5 years. They used a design utilizing matched control groups. The younger experimental group gained 10.1 I.Q. points while their matched controls lost 5 points. Treatment was over a fifteen month period. The older experimental children, age 5 at the beginning of the study, increased 5.1 points in I.Q. and the controls showed a decrease from 88.00 to 85.5 or 2.5 points over the same period of time. No indication of increments in language was noted. In the present study the experimental children showed an immediate gain of 8.81 months on the Stanford-Binet during the ten weeks of the experimental treatment and an

additional 3.4 point gain in the twenty month interim between posttest 1 and posttest 2 or a total of 12.2 I.Q. points in the approximately two years between pretest and posttest 2. The control group, on the other hand, showed immediate gains of 2.6 months between pretest and posttest 1, followed by a 4.6 gain in the twenty months between posttest 1 and posttest 2. The total gain was 7.2 I.Q. points in the two year interim between pretest and posttest 2.

The studies mentioned were concerned with preschool educational intervention. According to Bloom (2, p. 72) I.Q. scores of culturally disadvantaged children tend to "decrease after about age 5." Kennedy, et. al. (10) demonstrated the decrease dramatically in their Southern States survey using the Stanford-Binet. In a similar vein, Deutsch (4) reported that studies indicate that social class differences in language ability tend to increase with age. Disadvantaged children not only first enter school linguistically handicapped in their ability to compete with higher social class peers, but their relative linguistic ability decreases as they pass through the grades. This decrease in the ability to compete not only results in lowering linguistic age, mental age, and I.Q. over time, but it also generalizes to school achievement. Hill and Giamatteo (9) point out that by grade 3 children from lower social class were 8 months behind children from higher social class in vocabulary achievement, 9 months behind in reading comprehension, 6 months behind in arithmetic and 7 months behind in total achievement. It has been repeatedly pointed out that children from the lower social class simply have not received the background of preschool home experience requisite for adequate first grade work; that these children especially lack the language skills which the school expects. Although the success in enhancing language age and mental age of disadvantaged children at the preschool age has been pointed out, a second question arises. Can the school, within its regular administrative framework, enhance language and mental ages? The results of this study would indicate an affirmative answer to this question. Not only can language age and mental age be enhanced immediately following a relatively short language stimulation program, but also these gains tend to remain for at least two years and appear to generalize to overall reading abilities. And this is the crux of the current investigation from a very pragmatic point of view. The experimental children are performing at a significantly higher level in reading than are the control children. The efficacy of a language stimulation program has been measured against scholastic progress and fared well. Regrettably, a more comprehensive achievement test battery was not employed.

One other point should be made. This deals with the necessity of follow-up evaluations of the effects of programs rather than relying solely upon immediate effects. In this study, the significances of the generalization to reading achievement would not have been noted if the research had been terminated after the immediate posttest, Test 2. Also, the parallel development in reading, language age, and mental age would not have been detected

and a most important result unknown. Too many studies employ only the test-treatment-test paradigm. Perhaps much useful information concerning the "real" effects of intervention programs are lost for this reason.

Implications for Research

A myriad of ideas for extending this research project in order to gain further knowledge is suggested. Following is a brief discussion of a few possible directions for further research which may be stimulated from this project.

First, what is the maximum size of the group in order to insure the desired results? In the present study, each group contained eight children. Would the results have been as effective with 10, 15, 20, or 30 children? If the number can be increased to 25 or 30 with similar results, the educational implications would be dramatic. Perhaps, most first grade teachers could conduct a language stimulation program for the entire class, if given appropriate training. Or a language developmentalist could work with an entire class rather than with segments of a class required in small grouping. A number of studies similar to the present one utilize small groups, eight to fifteen children. Is this done to help insure obtaining statistical significance? On what basis should the judgment concerning group size be made? Only more research can add facts to guide this judgment. At the present time the investigator is conducting a project which should help answer this question as well as the one to follow.

The second variable, which may be considerable for research, concerns the length of time or duration of a language stimulation program. This, and other studies, was of relative short duration. One could hardly expect proportionate increments in language and mental age over two or three years' time as the gains obtained in this investigation in a period of ten weeks. Weihart (18) presents tentative evidence which indicates that initial gains in mental age are lost by the end of the second year, the control group means increase to equal the means for the experimental group. Is this an artifact of his design or methodology?

Perhaps a program similar to the current study but for an entire year would be more effective in long range benefits accruing to the experimental children. In addition, one wonders if the effects of the program would be more likely to stabilize or become permanent in a treatment program of longer duration. In a longer period of time the benefits of a language stimulation program may generalize to achievement in school subjects such as reading. If this is found to be true, disadvantaged children enrolled in such a program may find more satisfaction with the school and consequently not be so eager to drop out. Only further research will answer these questions and provide facts for further programming.

A third area for research concerns the best age for maximum returns for the inauguration of a language stimulation program. As noted previously, a number of writers indicate that early preschool intervention produces the most positive results. The results of the present study indicate that a language stimulation program is effective in enhancing language age and mental age of disadvantaged first grade children. An investigation systematically controlling the age of entrance into such a program is sorely needed. Such a study would of necessity include following the children through the elementary grades.

Fourth, future research needs to be directed toward other culturally deprived groups of children such as the various Spanish speaking, Oriental, and Indian groups. Would a program such as this yield results as conclusive as those of this study? The term "culturally deprived" encompasses a number of types or groups of individuals. Would the same language stimulation program be equally effective with all groups?

Finally, who would conduct the language stimulation program? Whether the regular class teacher is capable of doing this effectively, or whether a language developmentalist is required for significant results is open to speculation at this time. The use of an itinerant teacher is possible. Another possibility lies in the use of a resource teacher acting as a language development consultant to the regular class teachers. Would each method be equally beneficial? Research and experience will provide the answers in time.

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ABSTRACT

Thirty-two pairs of disadvantaged Negro first grade children were matched on C.A., M.A., I.Q., and L.A. One of each pair was randomly assigned to be the experimental group, the other formed the matched pair of the control group. A twelve week, one hour per day language stimulation program was administered to the Experimental children. A posttest was administered immediately following termination of treatment, 80 weeks after, and 124 weeks after. The immediate gains in I.Q., M.A., and L.A. were maintained. Although there were no differences in reading immediately following treatment, differences were present at both 80 and 124 weeks later. Apparently, due to language treatment, the Experimental group made significant gains and maintained them, developing parallel to the control group and always ahead.