DOCUMENT RESUME

ED 064 459 88 UD 012 811

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TITLE Final Evaluation Report of the 1970-1971 New Haven Bilingual Education Program.
INSTITUTION New Haven Board of Education, Conn.
SPONS AGENCY Dunlap and Associates, Inc., Darien, Conn.
REPORT NO DPSC-97-204
PUB DATE Sep 71
NOTE 50p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Bilingual Education; Caucasian Students; *Data Analysis; *Language Skills; Mathematics Education; Post Testing; Pretesting; Program Effectiveness; *Program Evaluation; Puerto Ricans; *Reading Comprehension; Self Concept; Sociometric Techniques; Teacher Attitudes; Test Results
IDENTIFIERS Connecticut; New Haven

ABSTRACT

This final evaluation report of the 1970-71 New Haven Bilingual Education Program's effectiveness in the various areas of instruction is a presentation of analyses of data gathered on student performance in oral language proficiency (English only), reading comprehension (English only), mathematics, and student self concept (administered in the dominant language only)--the students having been pre- and post-tested in these areas. The document presents only an assessment of the program's effectiveness insofar as achievement of product objectives (behavioral changes in students and other participants) is concerned, the processes or procedures used to achieve various program products having been assessed in an earlier report, the Interim Evaluation Report. Among the findings were: (i) teachers felt that the learning of a second language for Anglos was enough of an advantage to the students to include them as participants of the ESEA Title VII program--and the evaluators felt that the program must enhance its efforts in this area; (ii) analyses of sociometric data did not yield clearly discernable results--it being not possible to argue that the program had generally improved mixing between Puerto Rican and Anglo children; (iii) in word knowledge, reading, and mathematics, it was found that the program classes showed a positive and, in many cases, significant growth; and, (iv) in general, there was no significant difference between the program and control children on T-tests done on scores for self concept. (Author/RJ)

Dunlap ED 71-34 (433)

FINAL EVALUATION OF THE 1970-1971

NEW HAVEN BILINGUAL EDUCATION PROGRAM

September, 1971

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Preface

The evaluation team of Dunlap and Associates extends thanks to all who cooperated in this effort and apologies for the extended delay in publication of this document. Data analysis, especially regarding student self-concept and socio-interactions, were responsible for weeks of delay. The experimental procedures used to gather the data were not supported by any new developments in data analysis procedures. If we are unable to computerize these two affective measures before long, their use will be discontinued.

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FINAL EVALUATION REPORT 1970-71

I. INTRODUCTION

The evaluation team, under the direction of Mr. Bernard Cohen, has compiled sets of data which represent the 1970-71 New Haven Bilingual Education Program's effectiveness in various areas of instruction. This report is a presentation of analyses of data gathered on student performance in these areas. Students were pre- and post-tested in the following instructional areas:

- oral language proficiency (English only)
- reading comprehension (English only)
- mathematics
- student self-concept (administered in dominant language only)

This document presents only an assessment of the Program's effectiveness insofar as achievement of product objectives is concerned. (Product is seen as the behavioral changes in students and other participants.) Program processes or the procedures used to achieve various program products, were assessed in the evaluation team's Interim Evaluation Report, February 1971. This report is divided into numerous sections with each section being devoted to a particular program product. Due to certain time constraints as well as the fact that unexpected vacations delayed preparation of this report, we have been unable to translate this document into Spanish. However, in order to meet the standards set by the Interim Evaluation Report which was published

bilingually, the Spanish version of this report will be prepared as soon as possible.

More than five members of the Dunlap team participated in gathering and analyzing data related to this program's effectiveness. The effort was coordinated by Mr. Bernard Cohen, Director of Dunlap's Evaluation and Audit Program. Mr. Robert McCay provided inputs to the design of the sociogram while Mr. Bernard Stowens coordinated the analysis of sociometric data. Mrs. Betsy King coordinated data analysis in academic areas while Mr. Michael Nacht designed the data analysis procedures. Mesdames Stacy Shaw and Arlene Cleven assisted with data collection.

The evaluation team would like to thank JUNTA for its participation in data gathering procedures and would also like to thank all of the participating teachers for their cooperation. As we have pointed out in the past, the developing concepts involved in bilingual education result in developing concepts in related evaluation procedures. While Dunlap and Associates, Inc., has been involved in evaluating education and/or training programs for more than twenty years, very few of the procedures used to assess the New Haven Bilingual Education Program were ever used in past efforts. As a result, many of the procedures will fail or result in seriously modified evaluation procedures in the future. Unfortunately, we are pioneering in the evaluation area just as the teachers are pioneering in the classroom. It is for this reason that our evaluation design was modified from year one to year two and will again be modified for the program's third year.

As indicated in the analysis in baseline data section of the Interim Evaluation Report, a primary source for evaluating the impact of this program is the comparison of test scores at the start and finish of the academic year. This "post- versus pre-" test comparison includes six areas of analysis:

1. word knowledge
2. reading
3. mathematics
4. language
5. self-concept
6. sociometric factors

A summary of the number of classes examined in these areas follows.

Table I

Summary of Classes Examined for New Haven Title VII

Baseline and Post-Test Data

Subject Area	Code	Baseline (Pre-Test) Bi-Ling. Classes	Baseline (Pre-Test) Control Classes Prince	Baseline (Pre-Test) Control Classes Non-VII	Post-Test Bi-Ling. Classes	Post-Test Control Classes Prince	Post-Test Control Classes Non-T
Reading Readiness RR		-	-		6	2	
Language	RR	2	0		2	0	
	1	2	0		2	0	
	2	2	1		1	1	
	3	2	1		2	1	
Self-Concept	RR	2	0		2	0	
	1	2	0		2	0	
	2	2	1		2	1	
	3	2	1		2	1	
Sociometric Factors	RR	0	0		1	0	
	2	1	1		1	1	
	3	2	1		2	1	
Word Knowledge	2	2	1	4	2	1	4
	3	2	3	4	2	3	4
Reading	2	2	1	4	2	1	4
	3	2	3	4	2	3	4
Mathematics	2	2	1	4	2	1	4
	3	2	3	4	2	3	4

II. UPDATED PROCESS EVALUATION

Before presenting this year's product data, the evaluation team would like to present several additions to the Interim Evaluation Report which dealt primarily with program processes.

Program Management

The evaluation team presented an extensive assessment of program management in the Interim Report. At this time we would only wish to discuss one section - Dissemination. The Interim Report identified program dissemination as one of management's weak areas. In order to provide the Project Director with further assessment and needs analysis in this area, the evaluation team gathered data from a survey sent to all teachers who were not involved in Title VII but who were teaching in the participating schools. Approximately thirty teachers responded to an anonymous survey which asked questions in seven areas:

- had they heard of the program?
- do they understand the special teaching concepts used in Title VII?
- do they think that Puerto Rican children should be taught English as soon as possible?
- do they think Spanish dominant Puerto Rican children should be taught subject areas in Spanish?
- do they think that children should be segregated for intensive language training?

- should the Puerto Rican children in their classes have a bilingual education setting?
- would the non-Puerto Rican children have been provided a greater service if they were given a bilingual education setting during the past year?

Each of these areas reflects a certain philosophy related to bilingual education. It is important to remember that this survey was distributed to the teachers who are not involved directly in bilingual education. This, therefore. is an assessment of the program's ability to present public information to fellow teachers.

100% of all teachers contacted had heard of the program. This is in direct contrast to last year's results which showed only 30% having heard of the program at the end of year one.

Only 52% of the teachers felt that they understood the concepts involved in instructing within a bilingual education setting. The evaluators suggest that two processes be implemented during the early weeks of the next school year. First of all, we suggest that the project administration circulate the Grade School Magazine article about bilingual education to all teachers in the New Haven Public School system. This article about bilingual education used the New Haven program as its referral source and continuously cites specific teaching methods used within the bilingual education setting. We would also suggest that the teachers involve themselves in a workshop open to all other teachers in the participating schools. This brief workshop could be conducted

during a lunch hour session and could be used to provide the non-participating teachers with an introduction to bilingual education.

100% of all surveyed teachers felt that Puerto Rican children should learn English as soon as possible. The evaluators expected no other result. On the other hand, only 46.4% of the responding teachers felt that Puerto Rican children should be instructed in Spanish insofar as the major subject areas are concerned. The instruction of Spanish dominant children in the dominant language is an important aspect of bilingual education. Therefore, it is necessary for next year's program administration to disseminate information about the advantages to bilingual education, especially in instructing students in their dominant language. Segregating students is one topic which causes teacher reactions to run high. In this instance 43.5% of all questioned teachers felt that students should be segregated for intensive language training. However, exactly the same percentage responded negatively with a few being unable to respond. Bilingual education does not segregate students on a classroom basis. Dividing children into language dominant groups within a classroom is permitted for certain types of instruction. This must be made clear to all of the non-participating teachers.

Finally, all teachers were asked whether or not they felt that their students during the school year 1970-1971 would have been provided a greater service had they been involved in a bilingual education setting. 35% of the surveyed teachers felt that the Puerto Rican children would have benefitted from such a classroom setting. However, 46% responded negatively with 17% abstaining.

Exactly the same percentage of teachers responded positively to a similar question pertaining to their non-Puerto Rican children. In other words, 35% of the teachers felt that their Anglo children would have been provided a greater service were they included in a bilingual education program. In this case, however, only 40% responded negatively. Several teachers felt that the learning of a second language for Anglos was enough of an advantage to the students to include them as participants of the Title VII Program.

As evaluators of the dissemination processes, we feel that the program must enhance its efforts in this area. Several of the Title VII teachers have been in the participating schools for many years. Using these teachers as "legitimizers" would serve to not only teach the non-participating teachers about bilingual education, but would improve the program's in-house image.

Although the products of dissemination have improved since the program's first year, the project management will need to pay still more attention to this area. As evaluators we have been in a position to observe the local school principals and their affect upon non-participating teacher attitude. The recent change in principals at the Truman School should result in an even greater improvement in next year's dissemination product measurement.

(All other aspects of program management were assessed in the last evaluation report and stand as so stated.)

Community Participation

Again, this process was evaluated in the Interim Evaluation Report. However, we would like to take this opportunity to update that report by documenting the community's participation in the evaluation processes. Once again, a representative from JUNTA, the local Puerto Rican Community Action Organization, actually gathered post-test data as a member of the evaluation team. Members of the Dunlap team trained the community participant to administer the John T. Daily Test of Language Facilities and the Dunlap Self-Concept Survey. Data gathered by the JUNTA representative was compared to that gathered by the Dunlap team in order to ensure that objectivity was being maintained.

During the next years's data gathering procedures, the evaluation team is going to seek participation from a more representative group. They will continue to use a JUNTA representative but will also employ a few program parents in ar attempt to extend community participation into parent participation.

Staff Development

The summer of 1971 saw a comprehensive workshop for teachers planned and implemented by the project administration. A survey will be sent to teachers in order to assess the summer workshop and make plans for improving next summer's workshop. The results of the survey will be presented in next year's Interim Process Evaluation.

The evaluation team can report on a series of interviews conducted by Mr. Bernard Cohen during the final days of the teacher workshop. A general summary of comments would discuss three issues. First of all, most teachers were quite satisfied with the presentations made and workshops conducted by guest consultants. Although some of them were said to speak on an academic level above the comprehension of some workshop participants, teachers felt that "you took what you needed and let the professor-type talk go on by." Other comments by the teacher-participants related to the fact that they were pleased to have time during the summer to prepare instructional materials for their classrooms.

On the other hand, it was unfortunate that the bilingual education workshop had to be scheduled at the same time as a special workshop for the open school teachers. All of the teachers who taught at Horace Day School last year will be moving to the open school situation and were required to attend the open school workshop. The bilingual education workshop, therefore, served only those teachers who are working at the Truman School.

In spite of not having all participating teachers attend this workshop, controversial issues were discussed with resolutions in many cases. For example, it was resolved that all Spanish dominant children will be taught subject area lessons in their dominant language. In the past, this was an accepted theory, but was not implemented in all classrooms.

III. ANALYSIS OF SOCIOMETRIC DATA

Analysis of sociometric data was carried out following transformation of the data into summary tables as shown in Appendix A. Each entry in these tables indicates the total number of cases in which a particular choice was made for a given class type across all situations of that type. For example, in the first table listed, the entry "45" indicates that in 45 different cases Puerto Rican students chose other Puerto Rican students in response to four different positive situations in Grade Two bilingual courses during pre-testing.

These data were examined with a view towards assessing the extent to which ethnic homogeneity is maintained during the bilingual program. In particular, a simple measure of statistical association known as Yule's Q was employed in this analysis.* For each summary table listed in Appendix A Yule's Q was computed. These statistics are summarized in Table 1. A general reaction to these statistics is their overall lack of strength. By this we mean that it has become common

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* For a 2x2 table as below, Yule's Q is computed as shown:

	B_1	B_2
A_1	a	b
A_2	c	d

$$\text{Yule's } Q = \frac{ad-bc}{ad+bc}$$

The Q value may range from -1 to +1. A Q value of +1 indicates perfect association between variables A_1 and B_1. A Q value of -1 indicates a perfect dissociation between variables A_1 and B_1 (and, in fact, a perfect association between A_1 and B_2. A Q value of O indicates that no association exists between the variables.

among users of this method to think of relatively strong associations between variables if Q values of 0.5 or greater or -0.5 or less.** Of the sixteen entries in Table 2, only five fit these criteria, indicating that the overall relationships measured are not one of uniformly strong associations. More specifically, a number of hypotheses were formulated and, using the Yule's Q results, their validity may be interpreted as follows:

Hypothesis 1: Within a grade, the amount of inter-ethnic association will be materially greater at the end of a school year than at the beginning for those in the bilingual program.

Result 1: Yule's Q results are mixed. Pre- versus post- comparisons for Grade 2 yield .09 versus .36 for positive situations, indicating a weak but increased intra-ethnic association. Grade 3 statistics are .67 versus .64 yielding virtually no change. For negative situations, Grade 2 statistics are -.37 versus .43 which is a move toward inter-ethnic association. Grade 3 results are the reverse tending from .10 to -.26, which is in the direction of increasing the intra-ethnic association. Therefore, comparisons of these statistics do not support the hypothesis that the overriding trend is toward increased inter-ethnic association.

**Note that Yule's Q is a distribution-free statistic. As such there is no comparison made between the computed value and a "tabular value" to determine the extent of significance. Interpretation of the meaning of the computed value is therefore left to "rules of thumb" rather than based on rigorous statistical grounds.
In general, a highly positive value for a "positive situation" condition indicates great intra-ethnic association, which was not considered as de-desirable as increasing inter-ethnic associations. A highly negative value for a "negative situation" condition indicates great inter-ethnic association.

		Pre-test		Post-test	
		Grade 2	Grade 3	Grade 2	Grade 3
BILINGUAL	Positive Situation	.09	.67	.36	.64
	Negative Situation	-.37	.10	.43	-.26
CONTROL	Positive Situation	.04	.67	.70	.02
	Negative Situation	-.16	-.19	-.06	-.52

Table 2 Yule's Q Values for Sociometric Summary Data Shown in tables of Appendix

Hypothesis 2: Inter-ethnic association will be substantially greater in bilingual than in control classes.

Result 2: For positive situations, Grade 2 statistics tend to confirm this hypothesis, but Grade 3 statistics do not. For Grade 2, the pre- to post-change is from .09 to .36 for bilingual students while control data indicate a shift from .04 to .70. Therefore, in this grade, there was a greater shift toward increasing inter-ethnic associations in the control classes than in the bilingual classes. For Grade 3, however, the bilingual classes remain relatively static (.67 versus .64) while the control classes find a sharply reduced degree of intra-ethnic association (.67 to .02). Although the program third grade classes did better than the control classes, the results must be inconclusive. The results for negative situations are equally conflicting with no discernible "mixing effect" readily attributable to the bilingual classes vis-à-vis the control classes.

Since the summary data results were both conflicting and inconclusive, a second phase of the sociometric analysis was performed whereby Yule's Q statistics were computed for each individual situation type. These statistics are summarized in Table 2. Pre- versus post- bilingual statistics indicate the following patterns:

#1. "Play" situations, both positive and negative, showed a trend toward increased inter-ethnic association (true for Grade 2 but not Grade 3).

#2. Negative "Work" and "Sit" situations exhibited increased inter-

Grade 2

		Bilingual		Control	
		Pre	Post	Pre	Post
Play	Positive	.556	.376	.333	.900
	Negative	-.555	.463	.214	-.368
Work	Positive	.157	.625	.447	.723
	Negative	-.601	.335	-1.0	.189
Sit	Positive	-.177	.247	.40	.380
	Negative	.132	.515	-.355	-.009
Lead	Positive	.384	.161	.200	.741

Yules Q for Individual Situation Sociometric Data

Grade 3

		Experiment		Control	
		Pre	Post	Pre	Post
Play	Positive	.707	.756	.729	-.034
	Negative	.009	-.487	.20	-.615
Work	Positive	.638	.742	.730	-.037
	Negative	-.055	-.199	-.466	-.607
Sit	Positive	.653	.547	.590	-.037
	Negative	.421	-.124	-.368	-.458
Lead	Positive	.594	.507	.641	-.189

Table 3

ethnic associations but positive "Work" and "Sit" situations exhibited increased intra-ethnic associations. (True for Grade 2 only).

#3. Leadership situations exhibited moderate increases in intra-ethnic associations both for Grades 2 and 3.

When comparing bilingual versus control classes, the following trends were present:

1. The most marked difference between bilingual and control classes was for Grade 2 positive play situations, where bilingual classes exhibited a movement toward increased inter-ethnic association (.556 to .376) while control classes greatly increased intra-ethnic association (.333 to .990).

2. The leadership situation for Grade 2 shows a substantial inter-ethnic association increase for bilingual classes (.384 to .161) while control classes were strongly increasing in intra-ethnic associations (.200 to .741).

3. In numerous other individual situations, both positive and negative, bilingual classes were not strikingly more inter-ethnically associated than control classes, and in some cases (e.g., Grade 3 work situations)they were far more intra-ethnically associated than control classes.

In summary, then, analysis of the sociometric data did not yield clearly discernible results. It is not possible, based on these results, to argue that the bilingual program has generally improved "mixing" between Puerto Rican and Anglo students. Such was the case in certain instances, but this was also found in selected control classes as well. Because of student and teacher

differences, as well as the effect of the sociometric test itself, it is not possible to isolate the contribution which the bilingual program has made toward improving inter-ethnic associations among the New Haven elementary school students as a result of last year's testing. However, we repeat, that growth was definitely observed in certain classes under certain conditions as measured by the sociometric test.

Table 4

1. Grade Two, Pre-test, Positive*

BILINGUAL

Chooser	Chosen: P.R.	Chosen: Anglo
Puerto Rican	45	42
Anglo	43	48

CONTROL

Chooser	Chosen: P.R.	Chosen: Anglo
Puerto Rican	12	25
Anglo	34	77

2. Grade Two, Pre-test, Negative**

BILINGUAL

Chooser	Chosen: P.R.	Chosen: Anglo
Puerto Rican	23	43
Anglo	38	33

CONTROL

Chooser	Chosen: P.R.	Chosen: Anglo
Puerto Rican	7	26
Anglo	22	58

3. Grade Three, Pre-test, Positive

BILINGUAL

Chooser	Chosen: P.R.	Chosen: Anglo
Puerto Rican	70	61
Anglo	55	240

CONTROL

Chooser	Chosen: P.R.	Chosen: Anglo
Puerto Rican	37	22
Anglo	20	60

4. Grade Three, Pre-test, Negative

BILINGUAL

Chooser	Chosen: P.R.	Chosen: Anglo
Puerto Rican	25	72
Anglo	50	178

CONTROL

Chooser	Chosen: P.R.	Chosen: Anglo
Puerto Rican	13	31
Anglo	23	37

* A positive social situation is one in which a child chooses to associate with another child for a particular activity.

**A negative social situation is one in which a child chooses not to associate with another child for a particular activity.

5. Grade Two, Post-test, Positive

BILINGUAL

Chooser	Chosen P.R.	Chosen Anglo
Puerto Rican	77	31
Anglo	51	44

CONTROL

Chooser	Chosen P.R.	Chosen Anglo
Puerto Rican	53	28
Anglo	22	65

6. Grade 2, Post-test, Negative

BILINGUAL

Chooser	Chosen P.R.	Chosen Anglo
Puerto Rican	54	29
Anglo	31	42

CONTROL

Chooser	Chosen P. R.	Chosen Anglo
Puerto Rican	26	33
Anglo	31	35

7. Grade 3, Post-test, Positive

BILINGUAL

Chooser	Chosen P.R.	Chosen Anglo
Puerto Rican	88	53
Anglo	59	164

CONTROL

Chooser	Chosen P.R.	Chosen Anglo
Puerto Rican	21	26
Anglo	35	45

8. Grade 3, Post-test, Negative

BILINGUAL

Chooser	Chosen P.R.	Chosen Anglo
Puerto Rican	28	79
Anglo	63	104

CONTROL

Chooser	Chosen P.R.	Chosen Anglo
Puerto Rican	9	27
Anglo	31	29

IV. ANALYSIS OF DATA IN ACADEMIC AREAS

In order to assess the effectiveness of the bilingual education program, the evaluation team used data in several academic areas and is now able to present an analysis of said data.

Tables 3 and 4 present results from the Munroe Reading Aptitude Test as achieved by the children in the bilingual education program in a control school.

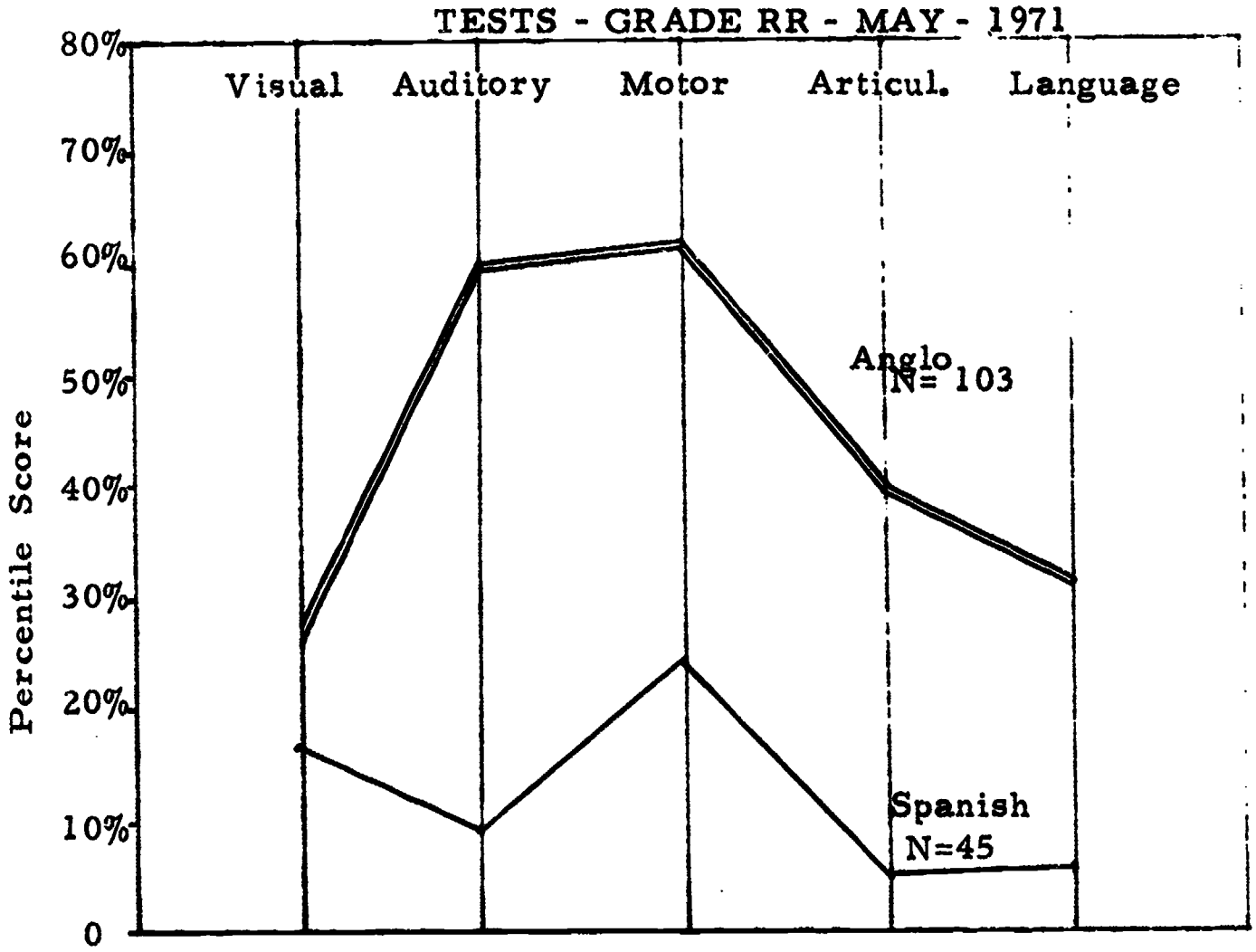
The post-median percentile scores for experimental and control situations are amazingly close. Differences lie only in two areas. The median percentile for Spanish surnamed children insofar as motor skills are concerned is 24%. In comparison, the control groups median score is 12%. On the other hand, the control groups median score for Spanish surnamed children insofar as articulation is concerned is 25%. The program's group, on the other hand, is only 5%. This testing was performed by the school with no control by the evaluation team. The Truman Horace Day schools did not test 24 of their children in auditory articulation and language skills. Therefore, these data are interesting but not to be used for any decision making.

Analysis of Product Data

Six subject areas were included in the data which were collected for product evaluation of the New Haven Title VII Bilingual Program. These included: 1) language, 2) self concept, 3) socio-metric factors, 4) word knowledge, 5) reading, 6) mathematics. Four different grade levels were involved in product data testing (reading readiness, first, second, third). Within these grades, pre- and post-testing was conducted for both bilingual classes and control classes. Control classes were divided into those within the Project Schools and those within a non-Title VII school. A summary of the number of classes examined in each of these areas is contained in Table I. In addition to the six subject areas cited above, the Table also indicates that reading readiness post-tests were conducted in six bilingual classes and two control classes, the control classes being within the Project Schools.

More detailed information on the reading readiness program is contained in Tables II and III and in Figure I. . Table II presents a summation of the test scores of the Monroe Reading Aptitude Test as achieved by the children in the bilingual education program. It indicates that 103 Anglo children and 45 Spanish children were involved in the testing. Table III presents a similar summary statistic for the control group, with 28 Anglos and 7 Spanish participating in the testing. Median percentiles for Anglo and Spanish children are presented at the bottom of each table. This allows one to readily compare performance between these two groups for visual, auditory, motor, articulation, and language subject areas. Figure I places these

MEDIAN SCORE PROFILES OF MUNROE READING APTITUDE TESTS - GRADE RR - MAY - 1971



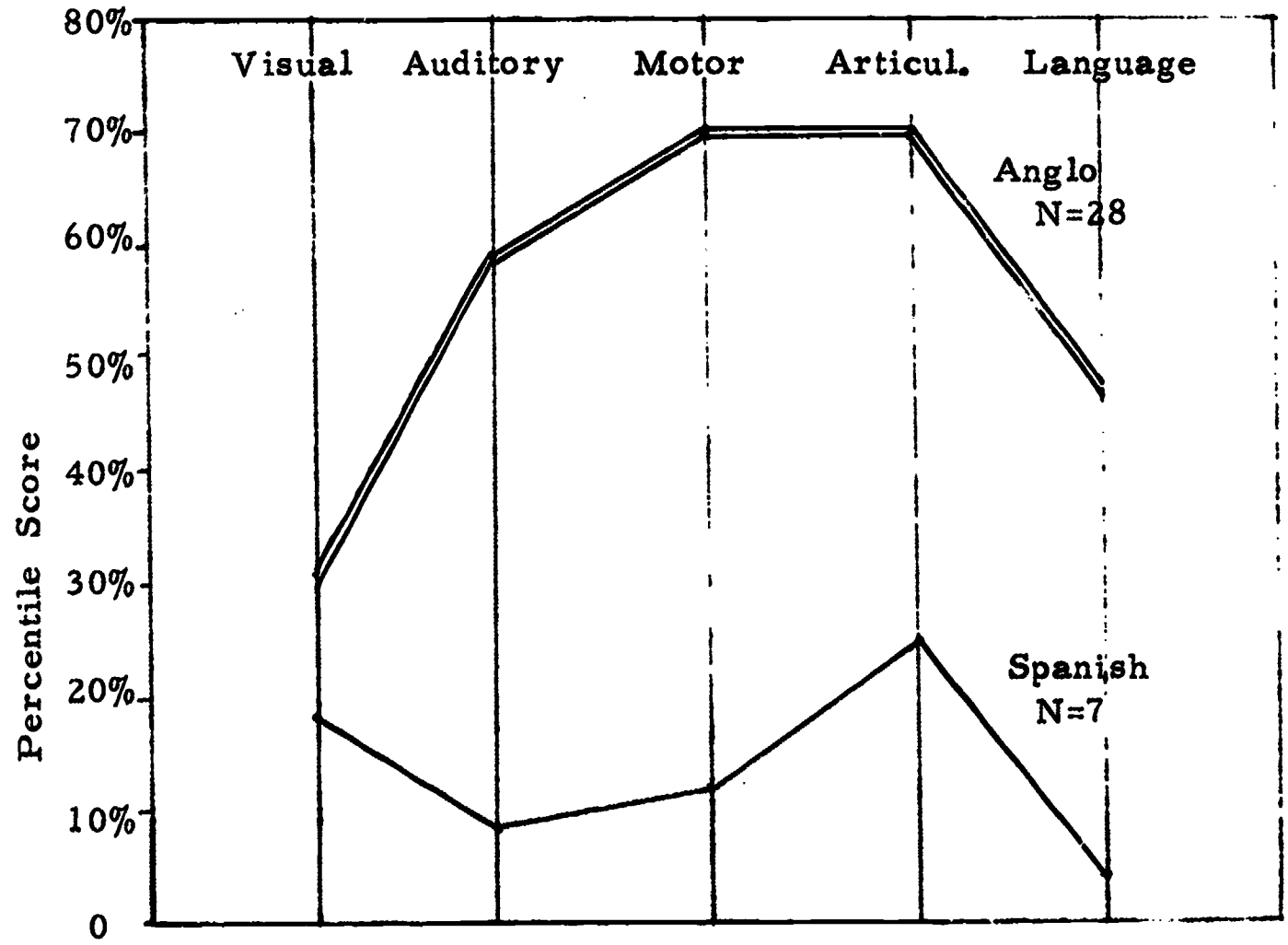


Table 5

Truman and Horace Day Schools Reading Readiness Program

Frequency of scores May 1971

Percentile		Visual		Auditory		Motor		Articul.		Language	
		A	S	A	S	A	S	A	S	A	S
95-99	%	1	1	9	1	1	1	1			
90-94	%	3		9	2	8		2		1	
85-89		5		6		7	3	4		7	
80-84	%	2		7	1	7	3	7		3	
75-79				9		6	1			1	
70-74	%	4		4		9	3	7		8	
65-69		7	2	3		9		2		3	
60-64	%			4		7	3	7	1	3	2
55-59		9	6	8		5	2	3		1	
50-54	%	5		6	1	1		7	1	4	
45-49				3		2	1	4		5	
40-44	%	6	3	2	1	2	1	6	1	7	1
35-39		4	1	5		3		2	1	5	
30-34	%	4	3	2		5	4	4		8	1
25-29		13	5	7	2	4		8		5	
20-24	%			1		4	2	4	2	6	1
15-19		11	3	6		7	2	4		7	
10-14	%	5	1	2	2	2	3	8	1	4	
5- 9		10	9	6	7	7	8	11	4	12	2
0-4	%	14	11	3	4	4	8	9	10	10	11
Median	%	26%	17%	59%	9%	62%	24%	39%	5%	32%	6%

Summation of the Test scores for the Munroe Reading Aptitude Test as achieved by the children in the Bilingual Education Program. Total Anglos (A) childre=103; Total Spanish speaking or Spanish surname (S)=45. 24 of the Spanish children did not take the Auditory, Articulation, or Language tests.

Table 6

Prince School Reading Readiness Program 1971

Frequency of Scores - May 1971

Percentile		Visual		Auditory		Motor		Articul.		Language	
		A	S	A	S	A	S	A	S	A	S
95-99	%			2	1			1			
90-94		1				3		3	2		
85-89	%	1				4		4		2	
80-84		1			1	4		2			
75-79	%	1	1	3		2		1		1	
70-74				1		1		4			2
65-69	%	1		3		3				2	
60-64				1		1	2		1	3	
55-59	%	2		6		1		3		1	
50-54		2		2		2		2		2	
45-49	%			1		2	1			5	
40-44		2		1				1		4	
35-39	%			1		1					
30-34		3				1		1		2	
25-29	%	3		3		1			1	1	
20-24								3	1	2	
15-19	%	4	3	3		1		2			
10-14		5		1	1		2			1	
5- 9	%	2	1		3	1		1		1	1
0- 4			2		1		2		2	1	4
Median %		29%	18%	58%	8%	70%	12%	70%	25%	47%	4%

Summation of the Test scores for the Munroe Reading Aptitude Test as achieved by the childrenin the control group. Total Anglo (A) children = 28; total Spanish speaking or Spanish surname (S) = 7.

Table 7

statistics in better perspective by presenting median score profiles of the Monroe Reading Aptitude Tests. Examination of this figure indicates that profiles of Anglo and Spanish students in the bilingual schools and the control school were similar in appearance. The most notable difference in performance between bilingual and control groups was in the articulation subject area. In this area, the median percentilefor Anglo students in the bilingual classes was 39% compared with 70% for Anglo students in the control group. For Spanish students in the bilingual classes, the median percentile in articulation was 5%, contrasted with 25% for Spanish children in the control group. A close examination of English speech patterns of the kindergarten Bilingual Teacher will be made in order to determine whether or not she set poor examples for articulation.

Language Facility

With respect to the language subject area, testing for baseline data was conducted in eight bilingual classes (two classes in each of the reading readiness, first, second, and third grades). One second grade and one third grade control class was used in the pre-test phase. In post testing the same arrangement prevailed except that only one second grade bilingual class was involved in post-testing. All language test scores were placed in a paired scores format and was subjected to t-tests for correlated variables. Table III indicates summaries of statistics for the reading readiness and first grades. Table IV presents similar statistics for grades two and three. Since no

LANGUAGE FACILITY - GRADE RR

		Bilingual			Control		
		Pre	Post	Matched Pair t tst	Pre	Post	Matched Pair t tst
Spanish	N=	10	15	9	4		
	X=	6.90	8.60	XD=.55	6.00		
	o=	3.31	4,48	t = .272	1.41	NO	
Anglo	N=	22	21	12	7		
	X=	8.68	9.28	XD=-.58	6.86	DATA	
	o=	3.08	4.91	t 6 .461	.90		

LANGUAGE FACILITY - GRADE ONE

		Bilingual			Control		
		Pre	Post	Matched Pair t tst	Pre	Post	Matched Pair t tst
Spanish	N=	30	36	19			
	X=	8.10	10.63	XD=3.32			
	o=	2.76	5.16	t = 2.77		NO	
Anglo	N=	19	10	9			
	X=	10.37	12.60	XD=3.33		DATA	
	o=	2.59	3.86	t = 3.25			

Table 8

LANGUAGE FACILITY - GRADE TWO

		Bilingual			Control		
		Pre	Post	Matched Pair t tst	Pre	Post	Matched Pair t tst
Spanish	N=	22	14	5	7	9	6
	X=	9.59	11.79	XD=-.80	8.57	9.66	XD=2.00
	o=	3.40	4.42	t = .39	3.15	3.84	t = .906
Anglo	N=	16	13	7	13	12	9
	X=	11.87	12.15	XD=-2.57	9.46	10.17	XD=.55
	o=	4.41	4.22	t = 1.18	2.60	4.65	t = .356

LANGUAGE FACILITY - GRADE THREE

		Bilingual			Control		
		Pre	Post	Matched Pair t tst	Pre	Post	Matched Pair t tst
Spanish	N=	13	20	6	8	5	3
	X=	12.62	13.20	XD=3.50	5.38	9.00	XD=2.33
	o=	2.87	6.30	t =1.94	1.85	2.92	t=7.06
	N=	29	22	20	9	9	9
	X=	12.38	14.18	XD=.55	10.55	12.44	XD=2.33
	o=	3.62	5.41	t =.885	2.01	6.41	t= 1.48

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Table 9

post-test control data were available for the language test in the reading readiness and first grades, the only comparisons made were pre versus post within bilingual classes. The computed t statistics indicate that there was no significant difference in pre-post scores in the reading readiness grade for either Spanish or Anglo groups. In the first grade, however, both Spanish and Anglo groups experienced a significant post-test improvement as compared with their pre-test scores. In grades two and threem pre versus post comparisons within bilingual classes and bilingual versus control comparisons were made. For grade two, within bilingual classes, pre versus post test comparisons for Spanish and Anglo groups were not significant. Comparison of bilingual versus control post-test scores, for both Spanish and Anglo groups, failed to reveal any significant difference. For grade three, however, the reverse situation exists. That is to say, within bilingual classes pre versus post comparisons of both Spanish and Anglo showed significant differences at the .05 level. Inaddition, comparison of bilingual and control post-test scores with Spanish children revealed significant differences, although this finding is mitigated because of significant differences in their pre-test scores as well.

The John T. Dailey Test of Language Faciltites was used to gather data. Although the instrument finally worked, the scoring system is under question. Using the Dailey scoring system, progress is demonstrated by all of the bilingual classes. But, the progress is not of a significant nature. Dr. Sanford Cohen of Stanford University has devised a new scoring system for

MEAN RANK ORDER - BILINGUAL CLASSES - LANGUAGE FACILITY

		Grade RR		Grade One		Grade Two		Grade Three	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Spanish	N=	9	9	19	19	5	5	6	6
	$\bar{X}$=	12.55	12.11	16.28	14.95	8.6	7.4	10.42	8.08
Anglo	N=	12	12	9	9	7	7	20	20
	$\bar{X}$=	9.83	10.63	10.72	13.55	5.00	5.86	14.43	15.5
Class	N=	21	21	28	28	12	12	26	26
	$\bar{X}$=	11.00	11.26	14.50	14.50	6.5	6.5	13.5	13.5

MEAN RANK ORDER - CONTROL CLASS - LANGUAGE FACILITY

		Grade RR		Grade One		Grade Two		Grade Three	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Spanish	N=	NO		NO		6	6	3	3
	$\bar{X}$=	DATA		DATA		9.58	7.17	10.83	9.50
Anglo	N=	NO		NO		10	10	9	9
	$\bar{X}$=	DATA		DATA		8.45	9.30	5.05	5.5
Class	N=					16	16	12	12
	$\bar{X}$=					8.5	8.5	6.5	6.5

Table 10 Mean rank order data presented by group for only those children who participated in both the pre-test and the post test for language facility.

this test which we will use with next year's data analysis. Using it this year would only indicate that the evaluators "juggled" data.

Word Knowlege, Reading, and Mathematics

Testing in the word knowledge, reading, and mathematics subject areas was conducted in grades two and three. Table VI presents summary statistics of all comparisons made in the second grade. These include:

1. Pre-test score comparisons of bilingual and control classes.
2. Pre-test score comparisons of Title VII and non-Title VII classes in the same schools.
3. Post-test score comparisons of bilingual and control classes.
4. Post-test score comparisons of Title VII and non-Title VII classes in the same schools.

The table shows t statistics based on comparisons of all children who participate in the pre-testing and all children who participate in the post-testing. Tables VI, VII, AND VIII provide the more detailed statistics which led to the computation of the t statistic for word knowledge, reading, and mathematics, respectively.

For grade two the results of the statistics may be summarized in the following manner:

1. In pre-test comparisons, there is no significant difference between the pre-test scores of Spanish in the bilingual program and Spanish children in the control school for word knowledgem reading, or mathematics. This indicates that the groups were similar to

begin with.

2. There is a significant difference between the scores of Anglo children in the bilingual program and the control group in all three subjects.

3. There is also a significant difference between the scores of Anglo children in the Ttile VII program and those in the same school but not in the Title VII program. This finding is true in word knowledge and reading. It is not true in mathematics.

4. The difference between non-Title VII children and control group children is significant in pre-test scores of reading and mathematics. Word knowledge scores for this category are not significantly different.

5. In pre to post-test score comparisons, significant differences abound. There are significant differences between bilingual and non-bilingual students in Title VII schools; between bilingual and control groups not in Title VII schools (both for Spanish and Anglo children); and this significance exists in word knowledge, reading, and mathematics.

6. There is no significant difference in post-test score comparisons between bilingual and control groups in word knowledge, reading, or mathematics for Spanish-speaking children. The statistically significant pre-test differences between scores of the Anglo bilingual program children and the control group children is repeated for word knowledge and reading in the post-test scores. In arithmetic, the

control group children "caught up" to the bilingual program children. (Their scores are similar.)

7. The Anglo children in the Title VII program had significantly higher scores than the children in the same school who were not in the Title VII program. However, the fact that their pre-test scores were also higher must be taken into consideration when evaluating these pst-test score differences.

8. When viewing the statistics in terms of mean change for paired scores, the results indicate that the control group showed greater mean change for both Spanish and Anglo children than bilingual program.

The program classes showed a positive and in many cases significant growth. However, in several cases, identified in the earlier paragraphs, the control classes did better. This was especially true in the third grade. The third grade program teachers, in the opinion of the evaluator, were among the best in the city. They established an unusually good team situation and did exceptionally well with their classes. However, the central class had even greater advantages which evaluators did not discover until late in the school year. The control third grade teacher was Puerto Rican and used a great deal of Spanish. He also was blessed with an unusually small class (18) and an aide, and a reading specialist who took his children to remediation. Next year's control will be more representative of the school system.

Turning now to grade three, summary statistics are presented in Table IX similar to the ones presented for grade two in Table V. Pre-test comparisons

were made between bilingual and control classes, Title VII and non-Title VII classes in the same schools, post-test comparisons between bilingual and control classes, and post-test comparisons between Title VII and non-Title VII classes in the same schools. More detailed statistics upon which these comparisons were made are presented in Tables X, XI, and XII for knowledge, reading, and mathematics, respectively.

As a result of pre-test comparisons, it was found that no significant difference existed in the word knowledge scores of the Spanish children in the bilingual program and those in the control group. However, significant differences did exist for these groups when examining their reading and mathematics scores.

The Anglo children in the bilingual program differed significantly in their pre-test scores from those of the Anglo children in the control group for all three subject areas. However, for the children in the non-Title VII program in the same schools as the Title VII program, no significant differences existed in pre-test scores in any of the subject areas which were examined. In pre- versus post-test score comparisons, all groups (that is, Spanish students in bilingual, non-Title VII, control classes, and Anglo students in these same groups) experienced significant improvements in reading, word knowledge, and mathematics. In post-test score comparisons, there was no significant differences in the scores of Spanish children in the bilingual program versus Spanish children in the control classes. These post-test comparisons also failed to show significance when examining Anglo bilingual versus Anglo control

students and this holds for word knowledge, reading, and mathematics. It may be noticed that the Spanish controlled children did perform exceedingly well, but these data are based on an extremely small smaple (N = 4) and are not statistically significant. Finally, it may be observed that as in the second grade, third grade Anglo children in the non-Title VII program of Horace Day and Truman Schools had significantly higher scores than the Anglo children in their bilingual program.

Summary

To operationalize the preceding pages of statistical "gibberish":

- Title VII children increased in all areas to a level which was higher than non-Title VII children. However, the differences at the end of the year were not significant.
- Title VII children showed better improvement than did non-Title VII children in language facilities but not to a significant degree.
- Spanish surname kindergarten children require more of the readiness lessons in Spanish, as noted by data presented.
- All of the Title VII groups showed significantly better gains in self-concept than did the control groups.

WORD KNOWLEDGE - GRADE TWO

		Bilingual Program (Title VII)			Non-Title VII in Title VII Schools			Control School (Prince)		
		Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test
Puerto Rican	N	27	29	22				7	5	4
	X	16.59	26.41	XD=10.09				18.29	28.60	XD=13.50
	G.E.	1.5	1.9	t =6.365				1.5	2.0	t=6.68
	o	8.661	6.42	sst=4.78*				5.498	4.827	sst=3.084*
Anglo	N	24	24	24	67	67	53	19	13	13
	X	22.87	31.21	XD=8.08	19.21	29.34	XD=10.23	17.05	28.85	XD=12.77
	G.E.	1.8	2.2	t=6.156	1.6	2.0	t=12.29	1.5	2.0	t=7.467
	o	7.588	3.425	sst=4.847*	6.588	5.558	Lst=9.631	6.398	4.355	sst=5.658*

* these t values are based on the pre-post-test scores of all children taking the tests. the matched pairs t test t's are the results of the comparison s of the pre to post-test difference for children taking both tests.

N number of children involved in the test
X̄ mean score of " " " " "
G.E. grade equivalent of that score
o standard deviation
t t statistic
Lst, sst large sample t test or small sample test t statistic

Table 11

READING - GRADE TWO

		Bilingual Program (Title VII)			Non-Title VII in Title VII Schools			Control School (Prince)		
		Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test
Puerto Rican	N	26	29	22				7	5	4
	X	17.27	25.93	XD=10.32				13.43	25.60	XD=13.50
	G.E.	1.6	1.9	t=5.285				1.4	1.9	t=4.40
	o	8.729	9.265	sst=3.519*				3.69	6.54	sst=3.748*
Anglo	N	24	24	24	69	83	54	19	13	12
	X	20.58	32.00	XD=10.73	16.23	28.39	XD=12.28	11.37	25.00	XD=15.58
	G.E.	1.8	2.2	t=6.229	1.6	2.0	t=10.57	1.3	1.9	t=6.822
	o	9.568	8.15	sst=4.399*	5.721	8.696	Lst=10.33*	4.016	7.047	sst=6.777*

* see note on preceding page concerning t statistic for all scores

Table 12

ARITHMETIC - GRADE TWO

		Bilingual Program (Title VII			Non-Title VII in Title VII Schools)			Control School (Prince)		
		Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test
Puerto Rican	N	28	29	23				6	5	3
	X	30.25	47.83	XD=18.96				31.66	55.00	XD=25.00
	G.E.	1.5	2.3	t=9.535				1.5	3.0	t=4,968
	o	13.037	10.589	sst=5.560*				4.84	5.65	sst=6.691*
Anglo	N	24	24	24	67	81	52	17	13	12
	X	37.25	53.79	XD=15.79	37.60	50.99	XD=14.62	30.18	50.62	XD=20.42
	G.E.	1.7	2.7	t= 11.38	1.7	2.5	t=12.79	1.5	2.5	t=6.02
	o	9.241	5.356	sst=7.497*	8.051	8.130	lst=1003	9.16	8.722	sst=6.016*

* see preceding note

Table 13

WORD KNOWLEDGE - GRADE THREE

		Bilingual Program (Title VII)			Non-Title VII in Title VII Schools			Control Schools (Prince)		
		Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test
Puerto Rican	N	15	15	14				8	6	4
	X	18.60	25.93	XD=6 79				15.00	23.83	XD=8.50
	G.E.	2.4	2.7	t=5.022				2.1	2.6	t=5.469
	o	6.822	7.439					7.653	7.60	
Anglo	N	31	26	25	66	63	55	43	35	34
	X	20.94	26.04	XD=5.08	20.80	31.79	XD=10.05	17.98	24.46	XD=6.5
	G.E.	2.4	2.7	t=3.808	2.4	3.3	t=14.02	2.3	2.6	t=6.728
	o	9.258	9.083		7.807	4.789		7.887	6.639	

Table 14

READING - Grade Three

		Bilingual Program (Title VII)			Non-Title VII in Title VII Schools			Control School (Prince)		
		Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test
Puerto Rican	N	16	15	14				8	6	5
	X	20.25	29.73	XD=9.93				14.50	24.67	XD=9.60
	G.E.	2.3	2.7	t=7.132				1.7	2.6	t=3.382
	σ	8.128	9.074					6.524	9.912	
Anglo	N	31	25	22	64	65	52	40	34	33
	X	21.29	27.60	XD=7.27	22.83	32.32	XD=9.65	17.15	25.62	XD=8.48
	G.E	2.3	2.7	t=3.61	2.3	2.9	t=10.18	2.0	2.6	t=6.25
	σ	9.795	10.45		8.828	7.295		6.96	9.54	

Table 15

ARITHMETIC - GRADE THREE

		Bilingual Program (TITLE VII)			Non-Title VII in Title VII Schools			Control School (Prince)		
		Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test	Pre Test	Post Test	Matched Pairs t test
Puerto Rican	N	16	15	14				6	6	4
	X	54.31	75.73	XD=23.71				37.66	87.33	XD=42.75
	G.E.	2.4	3.2	t=8.118				1.9	3.6	t=4.844
	o	16.87	19.79					17.64	9.67	
Anglo	N	28	26	22	62	66	51	38	34	31
	X	57.82	77.85	XD=20.45	59.56	84.41	XD=24.96	48.37	80.71	XD=33.03
	G.E.	2.5	3.3	t=8.311	2.5	3.5	t=13.91	2.3	3.4	t=11.16
	o	17.11	15.79		18.08	13.62		13.67	11.71	

Table 16

t Statistics - Grade Two - Word Knowledge, Reading, and Arithmatic

Pre-test Scores to Pre-test Scores		Comparison (Title VII)Bilingual to Control(Prince)	
Subject	Group	t	Signifigance
Word Knowledge	Puerto Rican	.479	-
Reading	"	1.106	-
Arithmatic	"	.254	-
Word Knowledge	Anglo	2.641	<.05
Reading	"	3.876	<.05
Arithmatic	"	2.389	<.05

Pre-test Scores to Pre-test Scores		Comparison Title VII to Non-VII in same schools	
		t	Signifigance
Word Knowledge	Anglo	2.098	<.05
Reading	"	2.105	<.05
Arithmatic	"	.163	-

Post-test Scores to Post-test Scores		Comparison (Title VII)Bilingual to Control(Prince)	
		t	Signifigance
Word Knowledge	Puerto Rican	.708	-
Reading	"	.074	-
Arithmatic	"	1.439	-
Word Knowledge	Anglo	1.776	<.05
Reading	"	2.559	<.05
Arithmatic	"	1.342	-

Post-test Scores to Post-test Scores		Comparison Title VII to Non-VII in same schools	
		t	Signifigance
Word Knowledge	Anglo	1.92	<.05
Reading	"	1.88	<.05
Arithmatic	"	1.98	<.05

Table 16 t statistics based on the comparisons of all the children in the pre-tests and all the children in the post tests in Grade Two.

t Statistics - Grade Three - Reading, Word Knowledge , and Arithmatic

Pre-test Scores to Pre-test Scores

Subject	Group	Comparison (Title VII) Bilingual to Control (Prince) t	Signifigance
Word Knowledge	Puerto Rican	1.105	-
Reading	"	1.670	.10
Arithmatic	"	1.948	<.05
Word Knowledge	Anglo	1.442	<.10
Reading	"	1.996	<.05
Arithmatic	"	2.411	<.01

Pre-test Scores to Pre-test Scores

		Comparison Title VII to Non-VII in same schools t	Signifigance
Word Knowledge	Anglo	.068	-
Reading	"	.740	-
Arithmatic	"	.439	-

Post-test Scores to Post-test Scores

		Comparison (Title VII) Bilingual to Control (Prince) t	Signifigance
Word Knowledge	Puerto Rican	.554	-
Reading	"	1.076	-
Arithmatic	"	1.310	-
Word Knowledge	Anglo	.781	-
Reading	"	.748	-
Arithmatic	"	.812	-

Post-test Scores to Post-test Scores

		Comparison Title VII to Non-VII in same schools t	Signifigance
Word Knowledge	Anglo	3.059	<.01
Reading	"	2.072	<.01
Arithmatic	"	1.863	<.05

Table 17 t Statistics based on the comparisons of all the children in the pre-tests and all the children in the post tests in Grade Three.

V. ANALYSIS OF SELF-CONCEPT DATA

T-tests done on the pre-scores of the children taking the self-concept tests show no significant difference between the Bilingual Program children and the Control Group children in grade two. In grade three, however, there is a significant difference between the Anglo program children and the Anglo control children. This is to the level of .025 (T=2.281). The Spanish children have similar pre-scores in grade three.

The post bilingual/post control scores show no significant differences in grades two or three for Spanish or Anglo except in grade three Anglo (T=1.747).

Grouped, grades two and three also show no significant difference in either group, Spanish or Anglo.

Children in the Reading Readiness and first grade classes under Title VII did show a significant improvement in self-concept. On the other hand, control children did not show a significant improvement ($P < .05$).

Similar results were seen in third grade with program children showing significant gains ($P < .05$) and control showing very little.

Second graders in program and control classes showed little or no change. This is attributed to the fact that one group of Puerto Rican children had a weak model and showed scores that reflected her weakness. (She is no longer with the program).

SELF CONCEPT RATING - GRADE RI

		Bilingual			Control		
		Pre	Post	Matched Pair t tst	Pre	Post	Matched Pair t tst
Spanish	N=	10	15	9	4		
	X=	41.60	31.67	XD=-822	31	NO	
	σ=	9.43	8.36	t = 1.99	8.64		
Anglo	N=	22	21	12	7	DATA	
	X=	35.55	25.48	XD=-9.75	34.43		
	o=	9.76	4.99	t = 3.17	8.85		

Note: a decrease in score indicates an increase in self esteem.

SELF CONCEPT RATING - GRADE ONE

		Bilingual			Control		
		Pre	Post	Matched Pair t tst	Pre	Post	Matched Pair t tst
Spanish	N=	31	36	18			
	X=	35.74	28.19	XD=-9.77		NO	
	o=	12.28	6.89	t = 4.02			
Anglo	N=	19	10	10			
	X=	31.79	26.20	XD=-5.20			
	o=	8.20	6.49	t = 1.55		DATA	

Table 19

SELF CONCEPT RATING - GRADE TWO

		Bilingual			Control		
		Pre	Post	Matched Pair t tst	Pre	Post	Matched Pair t tst
Spanish	N=	11	14	7	8	9	6
	$\bar{X}$=	32.64	30.64	$\bar{X}$D=-4.00	37.38	32.11	$\bar{X}$D=-7.00
	σ=	8.94	7.04	t = .66	9.32	9.03	t= 1.75
Anglo	N=	13	13	12	12	13	11
	$\bar{X}$=	28.00	27.23	$\bar{X}$D= -1.33	30.00	30.77	$\bar{X}$D=+.36
	σ=	9.08	5.72	t = .763	11.53	10.13	t = .131

Note: a decrease in score indicates an increase in self esteem.

SELF CONCEPT RATING - GRADE THREE

		Bilingual			Control		
		Pre	Post	Matched Pair t tst	Pre	Post	Matched Pair t tst
Spanish	N=	19	19	9	8	6	4
	$\bar{X}$=	38.47	33.26	$\bar{X}$D=-4.22	39.25	39.00	$\bar{X}$D=1.50
	σ=	9.44	7.81	t =1.87	9.88	12.60	t = . 453
Anglo	N=	32	24	22	8	8	8
	$\bar{X}$=	36.63	31.96	$\bar{X}$D=-4.32	29.25	27.38	$\bar{X}$D=-1.75
	σ=	8.12	6.92	t = 2.85	7.50	3.46	t = .61

Table 20

MEAN RANK ORDER - BILINGUAL CLASSES - SELF CONCEPT

		Grade RR		Grade One		Grade Two		Grade Three	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Spanish	N=	9	9	17	17	7	7	9	9
	X=	12,67	14. 06	16. 97	13.15	12.14	10. 57	12. 77	12.55
Anglo	N=	12	12	11	11	12	12	22	22
	X=	9. 75	8. 71	10. 68	13. 32	8. 75	9. 58	17. 32	17.41
Class	N=	21	21	28	28	19	19	31	31
	X=	11	11	14. 5	14. 5	10	10	16	16

MEAN RANK ORDER - CONTROL CLASS - SELF CONCEPT

		Grade RR		Grade One		Grade Two		Grade Three	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Spanish	N=	N O		N O		6	6	4	4
	X=	DATA		DATA		12. 42	9. 92	9. 63	9. 38
Anglo	N=	N O		N O		11	11	8	8
	X=	DATA		DATA		7. 14	8. 45	4. 94	5, 06
Class	N=					17	17	12	12
	X=					9. 00	8. 97	6. 5	6. 5

Table 21 Mean rank order data presented by group for only those children who participated in both the pre-test and the post-test for self-concept.