

DOCUMENT RESUME

ED 053 812

PS 004 912

TITLE Demonstration and Training Project for Migrant Children, McAllen, Texas. Early Childhood Learning System. Final Evaluation Report, 1970-71.

INSTITUTION Southwest Educational Development Lab., Austin, Tex.

SPONS AGENCY Office of Child Development (DHEW), Washington, D.C.; Office of Economic Opportunity, Washington, D.C.

PUB DATE Jul 71

NOTE 43p.

EDRS PRICE EDRS Price MF-\$0.65 HC-\$3.29

DESCRIPTORS *Bilingual Education, Community Involvement, *Early Childhood Education, Evaluation Techniques, *Mexican Americans, *Migrant Children, Parent Education, *Program Evaluation, Sequential Programs, Tables (Data)

IDENTIFIERS Parent School Community Involvement, PSCI

ABSTRACT

This is a report of the final year of a 3-year project to develop a sequential early childhood education program to meet the unique needs of 3-, 4-, and 5-year-old migrant Mexican American children. The bilingual program's major components are instructional materials, staff development, and parent-school-community involvement. Ninety children participated in the program in 1970-71, with two classes of 15 pupils each in each of the three age groups. Evaluation was based on criterion-referenced tests given to experimental pupils at the beginning and end of the school year; and norm-referenced tests, given to experimental classes and comparison groups of the same age, ethnicity, and socioeconomic background who attended day care centers without planned instructional programs. Test findings revealed that children in the laboratory program met the criterion on the curriculum-referenced tests on all but a few of the 25 units. Experimental pupils scored higher than comparison pupils on tests of Spanish and English comprehension, general concepts, and nonverbal intelligence. (Author/AJ)

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1970-71 FINAL EVALUATION REPORT
EARLY CHILDHOOD LEARNING SYSTEM

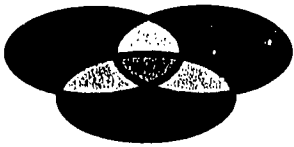
DEMONSTRATION AND TRAINING PROJECT
FOR MIGRANT CHILDREN
McALLEN, TEXAS

SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY
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July 1971

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Dear Dr. Grotberg:

Submitted herewith is the Final Evaluation Report for the Demonstration and Training Projects in Early Childhood Education at McAllen, Texas. The report covers the final year of the three-year sequence of grants from the U. S. Office of Economic Opportunity and the Office of Child Development covered by OEO contracts H 8303 C/H for Head Start Staff Training and CG 8223 C/1 for a Head Start Pilot Project.

This document contains the 1970-71 evaluation data for the Early Childhood Program for the three-, four-, and five-year-old Mexican American migrant children enrolled at the McAllen Demonstration and Training Center. The data indicated that these children benefited by the Laboratory's planned educational intervention preceding their entry into public schools.

The Laboratory will continue development activities at the McAllen Center during 1971-72, concentrating on adapting the learning system for Day Care Centers for migrant populations and for training of Day Care Center staffs.

Thank you for the continued cooperation and assistance the Laboratory has received from your office.

Respectfully submitted,

W. T. Kinnell
W. T. Kinnell
Interim Executive Director

WTK/bam

Enclosure

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CHAPTER I INTRODUCTION

During the 1970-71 contract period, the Southwest Educational Development Laboratory completed the final phase of its three-year sequential program for three-, four-, and five-year-old migrant Mexican American children. Funded by grants from the U. S. Office of Economic Opportunity and the Office of Child Development, the bilingual program was implemented at the Early Childhood Center in McAllen, Texas, home base of a large number of migrant families. The project had two basic purposes:

- . To design, pilot test, and refine a program to provide children from the target population with the experiential background essential to a successful first grade experience and potentially to continued success throughout their school years.
- . To develop staff training procedures and materials for working with young migrant Mexican American children and their parents.

The program began in the fall of 1967 when the Laboratory, in cooperation with the U. S. Office of Economic Opportunity and the McAllen Independent School District, design tested its Early Childhood Program with three- and four-year-old migrant children at the McAllen Early Childhood Center. By 1968-69, 30 three-year-olds and 60 four-year-olds were enrolled in the program. In 1969-70, with the additional support of the Office of Child Development and the Texas Education Agency, the Laboratory expanded the program to include 30 five-year-olds. During 1970-71 90 children, comprising two classes of each of the three age groups, participated in the experimental program.

The Laboratory program focuses on intellectual, physical, social, and emotional development. Emphasis is on teaching sensory-perceptual, cognitive,

and language skills. To insure optimum presentation of the curriculum as well as continued learning apart from the school setting, the program has three principal components -- instructional materials, staff development, and parent-school-community involvement. These components combine to form an early childhood program developed to meet the specific needs of the Mexican American migrant child.

RATIONALE

Staff members of the U. S. Office of Economic Opportunity, the Office of Child Development, and the McAllen Independent School District well know the academic problems facing economically disadvantaged Mexican American children, and they are equally aware of how these problems are compounded when children spend up to half of each year following the seasonal harvests. Spanish is the native language for these children. Most speak little English when they start school, and many are unfamiliar with Spanish in the standard form. They also are unfamiliar with the experiences, concepts, and values stressed by the traditional school system and the cultural base from which they stem. The accumulation of these factors result in a high first grade dropout rate for Mexican American children. According to the 1960 Texas census, the median school years completed by persons over 25 years of age was 11.5 years for Anglos but only 6.1 years for the Spanish-surnamed. (The 1970 census data were not available in time for this report; therefore, progress in the past decade cannot be judged.)

Because first grade failure is often a predictor of eventual educational failure in a scholastic setting, the Laboratory has developed a planned program to alleviate the basic problems which children of the target population face when they first enter school. Bilingual language development is emphasized; concepts are taught first in Spanish, then in English. Planned

activities are designed to provide the experiences and knowledge that are common to children from more advantaged circumstances, with the added illumination of the children's own cultural background and experiences of travel. Curriculum components stress the importance of the Mexican American as well as the Anglo culture so that each child can develop a positive self-concept and pride in his own cultural heritage.

THE SITE

As the home base for many Mexican American migrants, McAllen, Texas, is an appropriate site for testing an early childhood program for migrant children. It is located in the Rio Grande Valley in Hidalgo County, adjacent to the Mexican border. Because a large percentage of the 37,636 residents are Mexican American, the city's population is, in effect, bilingual, with Spanish used as often as English in economic activities. McAllen is the hub of a large farming area; principal industries are shipping and processing the fruits and vegetables grown in the region.

Farm and field work provide the main source of income for the migrants. Most live below the poverty level in isolated areas called "barrios," where they maintain a strong cultural identity and have little contact with the majority Anglo society.

CHAPTER II
THE EARLY CHILDHOOD EDUCATION PROGRAM.

The goals of the Bilingual Early Childhood Program are to

- . strengthen the child's self-concept
- . develop sensory-perceptual skills
- . develop language skills in both Spanish and English
- . develop thinking and reasoning skills

To achieve these goals, the Program has three major components -- instructional materials, staff development, and parent-school-community involvement -- each designed to complement the other components and each adapted to the unique needs of the migrant Mexican American child.

PROGRAM COMPONENTS

Instructional Materials

The five major instructional areas in the Program include: 1) visual training, 2) auditory training, 3) motor training, 4) English language, and 5) expanded language. At the Kindergarten level (five-year-olds) there are also 6) thinking and reasoning, and 7) independent work using ideas and concepts.

The Laboratory program emphasizes sensory-motor skills not usually included in traditional early childhood programs because it is assumed the skills will be developed through normal maturation or casual experience. To compensate for the lack of these experiences in the lives of the economically disadvantaged, the Program provides a sequential presentation of activities, using language with each activity to build a broad experiential base.

Learning activities for each of the major training areas are presented in units created to develop and maintain the children's interest and to keep them active and involved.

Each content unit is composed of from five to seven daily lessons, with almost all the activities related to the unit topic. In this way each conceptual area can be explored and developed through the various senses. In each skill area the sequenced series of lessons begin with a low order of competency and proceed systematically to higher levels. Each lesson activity is written in behavioral terms, stating what the child should be able to do as a result of the particular learning experiences. The actual subject matter used for developing a process or skill is selected on the basis of its relevance to the child's past experiences.

Principal methods of instruction include:

- . Bilingual instruction -- all concepts are taught first in Spanish, then in English.
- . Pupil grouping -- large and small group activities are varied according to schedule and needs, and an effort is made to group the children by ability levels.
- . Scheduling -- lessons are balanced by alternating intensive and relaxed learning sessions.

Staff Development

The staff development component is designed to assure optimal use of the curricular materials. Through interviews and questionnaires, Laboratory staff learn what the teachers themselves believe is most essential. After identifying the major needs of the teachers, staff development modules, manuals, and video tapes are developed describing ways to use the materials most effectively.

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Workshops for site coordinators provide a chance for them to use the materials and the Laboratory staff an opportunity to demonstrate the techniques and methods used in the Program. The coordinators, then, return to their school districts, and train the teachers who will use the program.

Training materials are exportable, self-contained packages, presented in a way that they can easily be understood and used by the teacher without necessitating staff visits.

Parent Education and Parent-School-Community Involvement

The Parent Education Program is a method of teaching parents to teach their children. Activities and materials are designed for the parents to use at home to reinforce what their children have learned at school. Parents are taught specific skills, which help them feel secure in their own knowledge and develop a greater interest in the work their children are doing.

Activities developed for the parental involvement component include the use of pictures and books which can be used easily in the home. Everyday situations are capitalized upon and turned into educational experiences. Throughout the program, emphasis is given to building a positive expectation toward the child's ability to achieve.

The Parent-School-Community Involvement (PSCI) component is an integral part of the Early Childhood Program. In McAllen, the PSCI staff maintained a close relationship with the children's families, contacting them on a regular basis to provide information about the school, the educational role of parents, and any assistance that was perceived. Many activities for the families were sponsored. These included home visits, home activities, school visits, and community activities.

THE EXPERIMENTAL SITE

Facilities

The McAllen Early Childhood Demonstration Center is housed at Our Lady of Perpetual Help Church, where space rented in 1970-71 included seven classrooms of about 700 to 750 square feet each. The classrooms have central heat and air conditioning and ample fluorescent lighting as well as natural light. In addition to the classrooms, working spaces are provided for a nurse, the parental involvement staff, curriculum writers, and curriculum specialists. A separated area is also available for test administration activities. The main playground area is asphalt-covered, and there is a sodded, grassy space around part of the school.

Breakfast, midmorning and afternoon snacks, and lunch are provided for the pupils. The lunches are pre-packaged in styrofoam plates and delivered to the Center after preparation by trained food personnel. The Center has no kitchen facilities.

The Staff

The staff includes six teachers and six aides, all women. Two teachers are assigned to each age level, with 16 or fewer pupils per class. All teachers have teaching certificates and undergraduate college degrees. None has an advanced or professional certificate nor a graduate degree, but all indicate an interest in taking additional college courses in education. All are bilingual in Spanish and English, and all but one of the teachers has taught at the age level to which she was assigned for two to three years.

Additional staff members include a nurse, the Parental Involvement staff -- a specialist and a secretary -- two curriculum writers, and a curriculum specialist who is also the director of the Center.

The Pupils

Children participating in the Experimental Program are from Mexican American migrant families with income levels below the poverty range, as determined by the Orshansky Index. Most of the pupils were siblings of children who were in Central Elementary School in 1968-69; new pupils have continued to be drawn from participants' families.

In 1970-71, 83 pupils participated in the Program: 22 in Level I (three-year-olds), 30 in Level II (four-year-olds), and 31 in Level II (five-year-olds).

Although an attempt is made to place an equal number of boys and girls in each class, an equal balance was not achieved during 1970-71 because of a disproportionate number of girls in Level I and boys in Level II.

The Parents

When the Early Childhood Program was initiated in 1968, a major concern was how to interest and involve the parents. Home visits and explanatory sessions helped, and as the parents learned more about the program and its purposes they became increasingly receptive. After three years the parents now praise the Program and refer other parents to it.

The Parental-Involvement component has increased parents' interest in their children's education as well as their own. The attendance level is high at consumer education meetings, nutritional programs, sewing classes, and other educational programs held for parents at the Center. With greater understanding of what education has to offer, they are eager for their children's educational future and help them to attend school every day. They even participate willingly in television appearances and radio broadcasts publicizing the Early Childhood Program.

THE COMPARISON SITES

To aid in evaluating the Laboratory's Early Childhood Program implemented at the Demonstration Center, three day care centers serving nonmigrant, but economically disadvantaged, Mexican American children of the same ages served as comparisons for the project. These included the day care center in McAllen, the Albores Center in Edinburg, and the day care center in Mission, each of which had also served as a comparison facility in 1969-70.

The Laboratory collected certain data and administered agreed-upon tests to random samples of the children at each center.

Center Programs

Each of the centers provided a conventional day care program, with outdoor activities, free play, stories, and music. None offered specific cognitive developmental activities.

Facilities

The McAllen Day Care Center is housed in a two-story brick building that was formerly a parochial school operated by the Sacred Heart Church. The facilities still are owned by the church. There is adequate heat, but no air conditioning. The playground areas are asphalted and contain ample large equipment. There is also a kitchen and office facilities.

The Edinburg Day Care Center, which is part of the Albores Court government housing project for low income families, includes one classroom for each age group. The classroom for three-year-olds is part of the housing authority's administration building. The classrooms for four- and five-year-olds are two typical apartments of a housing unit adapted and modified.

Permanent walls still divide classroom areas, limiting classroom space but providing adequate private working space. Numerous windows let in fresh air. There is heating but no air conditioning. The playground area is spotted with trees and grassy areas and is adequately equipped.

The Mission Day Care Center is housed in a renovated, asbestos-sided frame church. The rooms have high ceilings; there is adequate lighting and ventilation, but no air conditioning. All classrooms are housed under one roof, with waist-high dividers partitioning the space into separate spaces of classroom size. Separate office and kitchen space is provided. The playground is adequately equipped and has both asphalted and sodded areas.

Each center has kitchen facilities on the site and provides morning and afternoon snacks and a lunch to the pupils attending the center.

The Staffs

Collectively, the three day care centers employed 10 female teachers and one male during 1970-71. They also employed aides to assist the teachers. None of the personnel has a college degree or a teaching certificate. The average teaching experience of the day care center personnel is less than that of the Early Childhood Center, but they are more experienced with pre-school children.

The Pupils

The pupils at the three day care centers are from low income families and are predominately Mexican Americans, with a very small percentage of Blacks in some classes. A total of 219 pupils were enrolled in the classes at the centers: 65 in Albores, 79 in McAllen, and 75 in Mission. The McAllen and Mission centers have one class each for three- and five-year-olds and two classes for four-year-olds, and the Albores center has one class at each level.

CHAPTER III EVALUATION DESIGN

Each Laboratory learning or training system goes through a six-stage developmental process in order for the system to become a finished educational product. As a learning system, the Early Childhood Education Program pilot tested in McAllen follows these procedural steps.

The first step is context analysis, which entails defining the problem needs and looking at possible solutions. At this point educational experts settle on a single solution strategy and proceed to conceptual design. This second stage consists of developing objectives for the solution strategy. The next step is product design, where Laboratory staff design the product and test it with a small population. Following this design test, the product moves on to the pilot test stage. Here the Laboratory uses the product for an extended period of time with various populations under carefully monitored conditions. The object of this phase is to determine whether the product as a whole is successful and to make any necessary modifications. Once appropriate refinements have been made and the results from use of the product are satisfactory, it moves on to the field test stage, where it is used without Laboratory supervision. The Laboratory collects evaluative data at the end of the cycle and makes any necessary revisions in the program. If the product is revised significantly, it goes back through pilot test. The final step is marketing and diffusion, which involves distribution of the finished product. The length of time these steps take depends upon the nature of the product. The Early Childhood Education Learning System used in McAllen, Texas, is now ready for the field test stage.

Evaluation is essential to the developmental process. Without it, it would be impossible either to determine whether a product solved the problem it was designed to meet or to modify the product to suit the needs at hand.

The Laboratory's developmental process uses two basic types of evaluation during pilot and field testing: (1) formative and (2) summative.

Formative evaluation involves collecting information that will help in revising the product. It determines the utility and efficiency of the program under development. In conducting a formative evaluation, the Laboratory tests for (1) subject performance, (2) subject interest, and (3) feasibility. In McAllen during 1970-71, the Laboratory staff sought to determine (1) if the pupils at the Center meet the objectives of the Early Childhood curriculum and if they learn the appropriate content. The staff also attempted to find out (2) how enthusiastic the children are about the program, and (3) if the Program is feasible in terms of the time it takes a teacher to prepare for each unit and the cost of additional equipment and materials required. To answer its questions, the Laboratory used pupil performance on criterion-referenced tests developed specifically for the Program, teacher reports on the ease or difficulty of teaching the material, reports from trained observers, and reviews by experts.

Summative evaluation deals with the generalized, long-range effects of an educational product. It asks whether the concepts taught in a program are relevant to anything more general, such as cognitive development or language skills. Summative evaluation usually takes the form of several standardized tests administered on a pretest-posttest pattern (at the start and finish of the program).

As an aid to both formative and summative evaluation, the Laboratory administered a series of instruments relevant to the goals of the Early Childhood Education Learning System. Brief descriptions of the instruments used in the 1970-71 McAllen pilot test follow.

FORMATIVE EVALUATION

To help determine whether the pupils at the Center in McAllen were absorbing the actual content of the Early Childhood Education Learning System, the Laboratory administered criterion-referenced measures which were developed by the Laboratory with the specific program in mind.

Criterion Reference Tests

Unit Tests, based upon the unit objectives designated by the curriculum writers, are designed to cover specific information contained in each of the 26 units of curriculum. Mastery Tests are designed to cover the major concepts (i.e., terminal objectives) of several units which have been presented over a period of time.

Pre- and Posttests. The Pretest consists of a random selection of items developed from the content of the year's curriculum, and contains items which measure content of a general nature. The Posttest, based upon the terminal objectives of the Program, is designed to assess the pupil's grasp of the principal concepts presented in the year's curriculum.

Teacher Questionnaire

The Questionnaire, which is completed by the teachers, is designed to elicit the teacher's reactions to the Early Childhood Program. Questions concern staff training, adequacy of materials, ease of material use, effect on the children's learning, and degree of interest to the children.

SUMMATIVE EVALUATION

Three instruments were administered to help determine progress made by the McAllen children in reaching the long-range goals of the Early Childhood Program.

Carrow Auditory Test for Language Comprehension

The Carrow provides a measure of oral language development without requiring language expression from the examinee. It may be administered in both Spanish and English, with the stimulus given in both Spanish and English for the Mexican American child, or in English only for the Negro American or Anglo American child with no language other than English. Each of the 110 items of the Carrow contains a set of pictures representing referential categories and contrasts that can be signaled by form classes and function words, morphological markers, grammatical construction, and syntactic structure. The examiner reads a word (e.g., "farmer," "bicycle") or a statement (e.g., "The boy pushes the girl," "The girl isn't running") and the examinee selects the picture that best represents what was read. At this time there are no normative data for the Carrow.

Boehm Test of Basic Concepts (BTBC)

The BTBC is designed to assess beginning school children's knowledge of basic concepts. The instrument contains 50 pictorial items arranged in increasing order of difficulty. The examinee is instructed to mark the picture that best illustrates the concept being tested (e.g., "top," "through," "away from," "next to," "equal," and "least"). This test enables one to identify: (a) level of concept mastery of individual children and (b) concepts which may be unfamiliar to a large group of children.

Raven Progressive Matrices

The Raven is constructed to assess the intellectual development of English-speaking children as well as children who do not understand or speak the English language. Problems in the Raven are representative of systems of thought, permitting the tester to evaluate a student's capacity

for intellectual activity irrespective of his acquired knowledge. The three sets of problems constituting the Raven are arranged to assess the principal cognitive processes of children. The Raven has not been normed for poor Anglo, Black, and Mexican American children; however, norms based on English school children are available. These are included as a reference point.

CHAPTER IV FINDINGS AND CONCLUSIONS

Evaluation of the Early Childhood Program at McAllen assessed program objectives and experimental materials developed for the target population. Analyses compared test performance of children receiving Early Childhood Program materials both with their own entering behavior (e.g., their pre-test scores) as well as with the performance of children not receiving the special program curricula (Day Care group designation). Performance on criterion-referenced instruments, designed to measure specific program objectives and activities, was also analyzed.

TESTING PROGRAM DESCRIPTION

Seven tests - Carrow English, Carrow Spanish, Progressive Matrices (Raven), Preschool Attainment Record (PAR, Social), Boehm Test of Basic Concepts (for the five-year-olds only), Receptive Mastery, and Receptive Unit tests - were administered to three-, four-, and five-year-olds. These instruments were employed for evaluative and diagnostic purposes and for assessing relative program influence on the linguistic, social, and intellectual development of Experimental vs. Comparison pupils. PAR results were not evaluated due to discrepancies in the raters' perception. For the five-year-olds, percentile equivalents are presented for the Boehm and the Raven.

Children of each age group participated in one of two programs:

1. T1: Basic Experimental group receiving the Laboratory materials,
2. T2: Day Care Comparison group.

OVERALL RESULTS

Results obtained from each age group are discussed separately within this chapter. Descriptive statistics of the normative tests for all age levels are given in Table 1.

RESULTS: THREE-YEAR-OLDS

Students

Thirty-one Mexican American pupils (mean age = 50.58 months)¹ from the McAllen Early Childhood Center composed the Experimental, bilingual group. Sixty-nine primarily Mexican American pupils (mean age = 54.38 months) from Albores, McAllen, and Mission Day Care centers comprised the Comparison group.

Pupil Performance

Normative Instruments. Pretest and posttest means, standard deviations and score ranges for each group on each normative instrument are presented in Table 1. Table 1 indicates that the average posttest scores obtained by Day Care pupils on Carrow English and Raven instruments were above scores obtained by Experimental pupils; Experimental students exceeded Comparison pupils in Carrow Spanish performance.

Tests of significance (*F* tests) of the difference between posttest means indicated that scores obtained by Experimental pupils on the Carrow Spanish measure exceeded the Comparison group mean to a statistically significant degree ($F = 8.25, df = 1, 15, p < .05$)². Although the mean difference is significant, the meaning of the significance must be interpreted with

¹All ages presented in this report are those recorded at posttest administration.

²*p* stands for probability level. Statisticians typically accept the value $p < .05$ when discussing "statistical significance." As employed in this report, $p < .05$ means that under these treatment conditions and with this sample the obtained value can be expected to occur by chance less than five in one hundred times.

caution, since the pretest mean of the Experimental group was 7.4 points higher than the pretest mean of the Comparison group. Mean differences between groups on the Carrow English and Raven (subscales and total scores) failed to reach statistical significance.

While the three-year-old children did not show significant gains in English, they were not expected to do so. The Laboratory's Early Childhood Program is based on the theory that it is important to develop a dominant language before focusing on a second tongue. In accordance with this theory, 80 percent of the instruction at the three-year-old level is in Spanish, and in this language improvement was shown. Verification of the rationale appears in the results of the program for four- and five-year-olds. At these levels, English plays an increasingly important role in the program, resulting in concomitant gains in English language development.

Mastery Test. The percentage of pupils (N=26) passing each pretest and mastery test items (Level I, curriculum units 1-10) is presented in Table 2. Pretest item scores (October administration) were ranked within each basic area according to the percent of pupils passing that item. There was a substantial gain in the percentage of pupils passing a pretest item from the percentage passing the matching mastery test item (January administration) on all mastery items. Twenty of 25 mastery items met the 75 percent pass criterion and 18 the 90 percent pass criterion. Thirty percent of the responses made to all pretest items were correct; 88 percent of all mastery test responses were correct.

Mastery items (April administration) covering curriculum units 11-18 are presented in Table 3. Seventy-five percent of the 23 pupils passed 20 of 25 items; 90 percent of the pupils passed 12 items. Eighty-four percent of the responses made to all 25 mastery items by all pupils were correct.

Unit Tests. Twenty-two unit tests were given to the three-year-olds. The percentage of correct responses for each unit are shown in Figure 1. All results above the horizontal line at the 75 percent met the Laboratory's criterion; those which fell below the 75 percent line will be reviewed.

Only five of the 22 Level I units fell below the 75 percent criterion: Unit 1, 68 percent; Unit 2, 70 percent; Unit 4, 67 percent; Unit 5, 71 percent; and Unit 7, 73 percent. Generally, unit test results were favorable and indicated that a large improvement had been made over last year's curriculum.

TABLE 1
DESCRIPTIVE STATISTICS
THREE-YEAR-OLDS

Auditory Test for Language Comprehension
Carrow English (Maximum= 110)

Age	Group	N	Pretest			N	Posttest		
			Mean	S. D.	Range		Mean	S. D.	Range
3	T1	6	43.83	4.45	37-50	6	55.33	8.03	42-65
3	T2	7	43.43	5.73	36-55				

Auditory Test for Language Comprehension
Carrow Spanish (Maximum= 110)

Age	Group	N	Pretest			N	Posttest		
			Mean	S. D.	Range		Mean	S. D.	Range
3	T1	8	54.00	4.30	48-60	8	69.13	5.42	63-79
3	T2	8	46.63	17.96	0-60	9	60.00	6.72	47-71

Progressive Matrices (Raven)
(Maximum= 36)

Age	Group	N	Scale	Pretest			N	Posttest		
				Mean	S. D.	Range		Mean	S. D.	Range
3	T1	11	A	4.00	1.15	2-6	11	4.83	1.21	3-6
	T2	11	A	3.36	1.97	0-8	11	5.33	1.60	2-7
3	T1	11	AB	2.67	1.25	1-5	11	2.67	.94	1-4
	T2	11	AB	2.27	.62	1-3	12	2.58	1.75	1-6
3	T1	11	B	2.83	.69	2-4	11	2.50	.95	1-4
	T2	11	B	2.82	1.27	1-4	12	2.58	1.38	0-5
3	T1	--	TOTAL	9.50	1.26	8-11	--	10.00	1.83	7-12
	T2	--		8.45	2.64	5-14	--	10.50	3.80	6-17

EARLY CHILDHOOD EDUCATION PROGRAM
INSTRUCTIONAL UNITS

Unit	Level I (Age 3)	Level II (Age 4)	Level III (Age 5)
1	School	School	School
2	Body Awareness	Family and/or Persons	School
3	Body Awareness	Animals	Community Helpers
4	Body Awareness	Vehicles	Community Helpers
5	Clothing	Clothing	Community Helpers
6	Food	Musical Instruments	Body Awareness
7	Food	Food	Body Senses
8	The House	Community Workers	Body Senses
9	Household Equipment	Tools	Clothing
10	Animals	Body Awareness	Clothing
11	Animals	Buildings	Food
12	Vehicles	Money	Food
13	Musical Instruments	Toys	Health
14	Toys	Furniture	Toys
15	Family	Animals	Family
16	Community Helpers	Animals	Classroom Environment
17	Community Helpers	Family	Classroom Environment
18	Buildings	Food	Community Environment
19	Body Awareness	Clothing	Community Environment
20	Body Awareness	Furniture	Materials
21	Clothing	Tools	Plants
22	Food	Buildings	Animals
23	Food	Community Helpers	Transportation
24	Houses	Musical Instruments	School
25	Natural Environment	Toys	Self Awareness
26	Community Environment	Body Awareness	Self Awareness

FIGURE 1

PERCENT OF CORRECT RESPONSES
ON UNIT TESTS
THREE-YEAR-OLD EXPERIMENTAL PUPILS

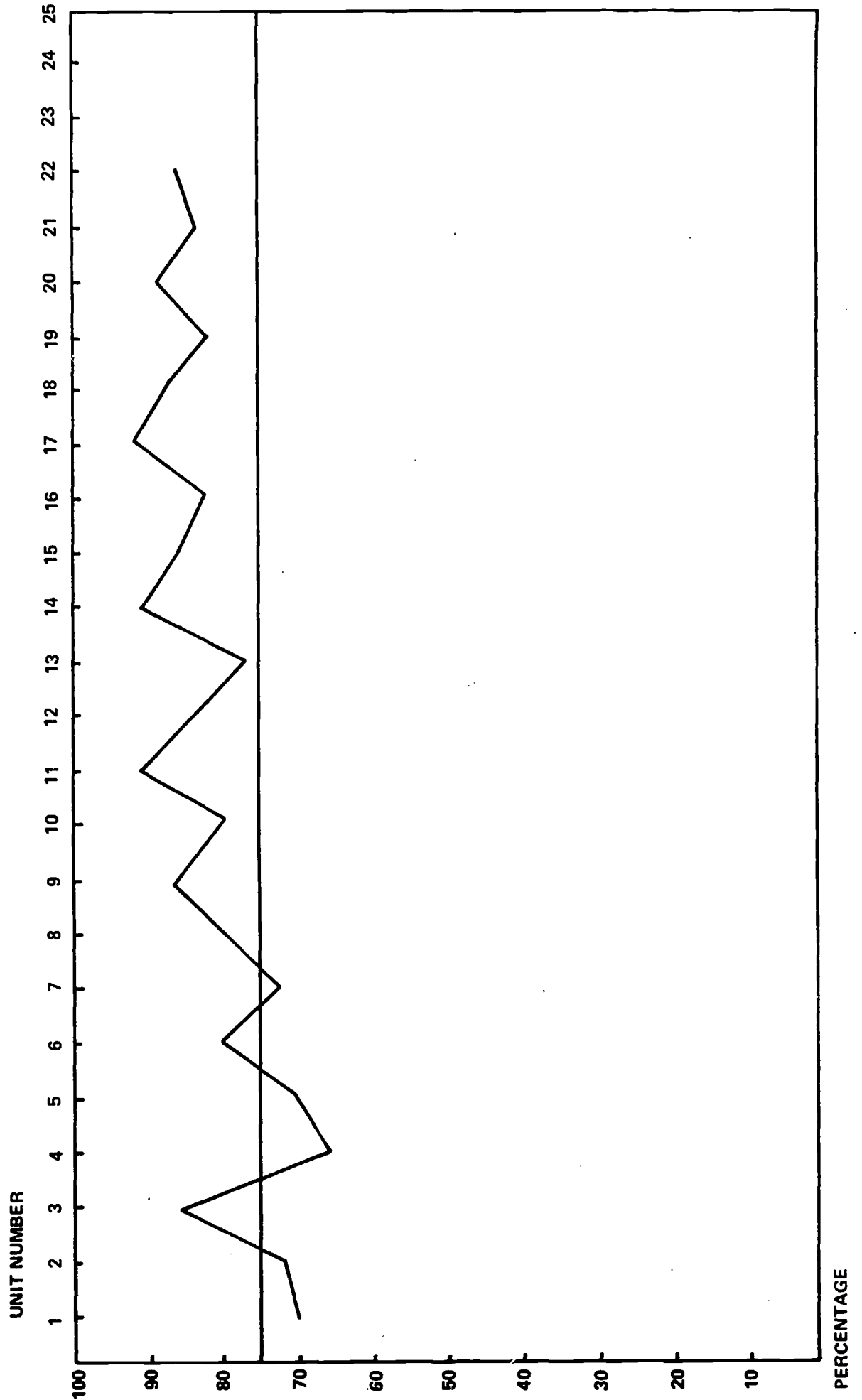


FIGURE 2

PERCENT OF CORRECT RESPONSES
ON UNIT TESTS
FOUR-YEAR-OLD EXPERIMENTAL PUPILS

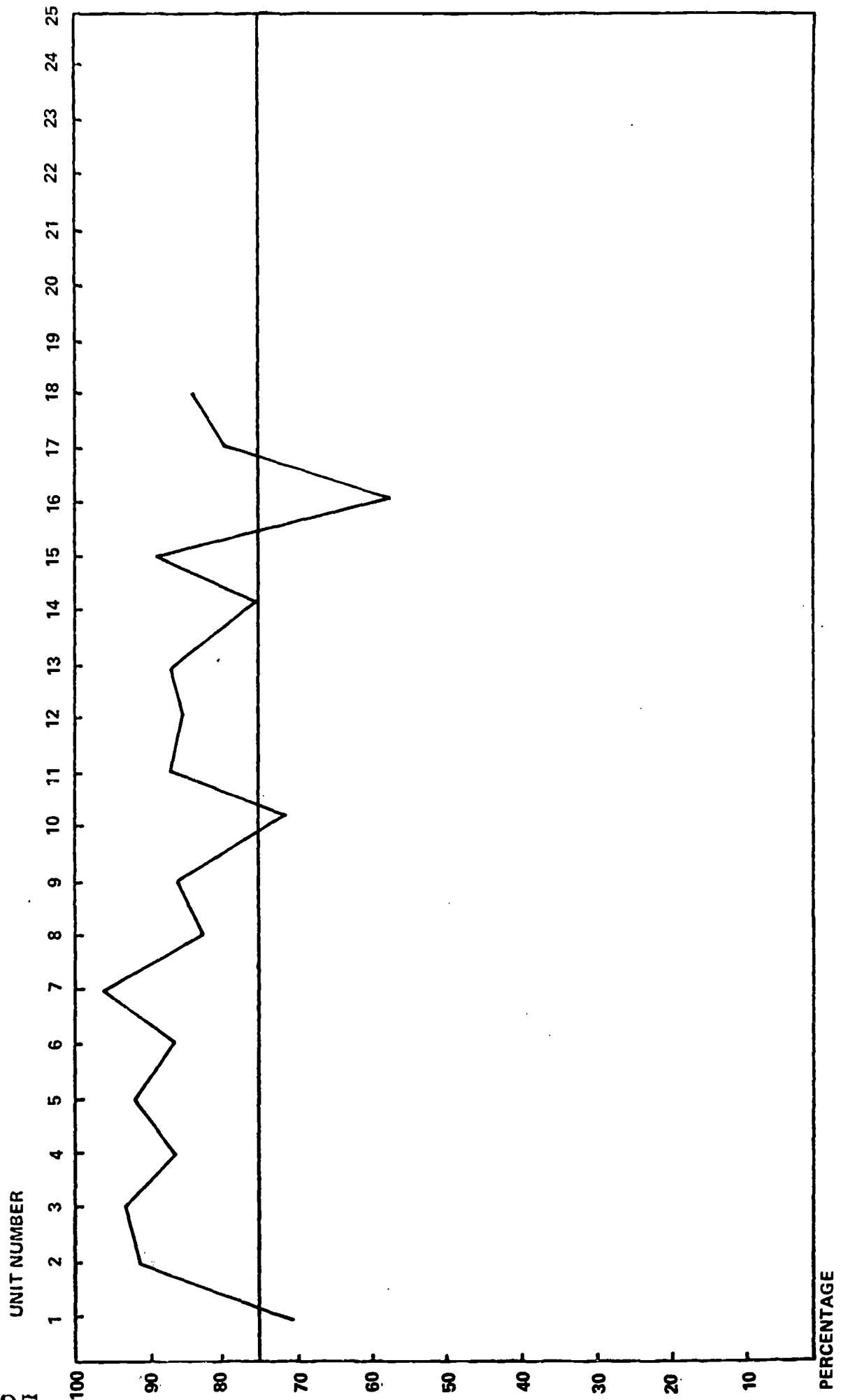


FIGURE 3

PERCENT OF CORRECT RESPONSES
ON UNIT TESTS
FIVE-YEAR-OLD EXPERIMENTAL PUPILS

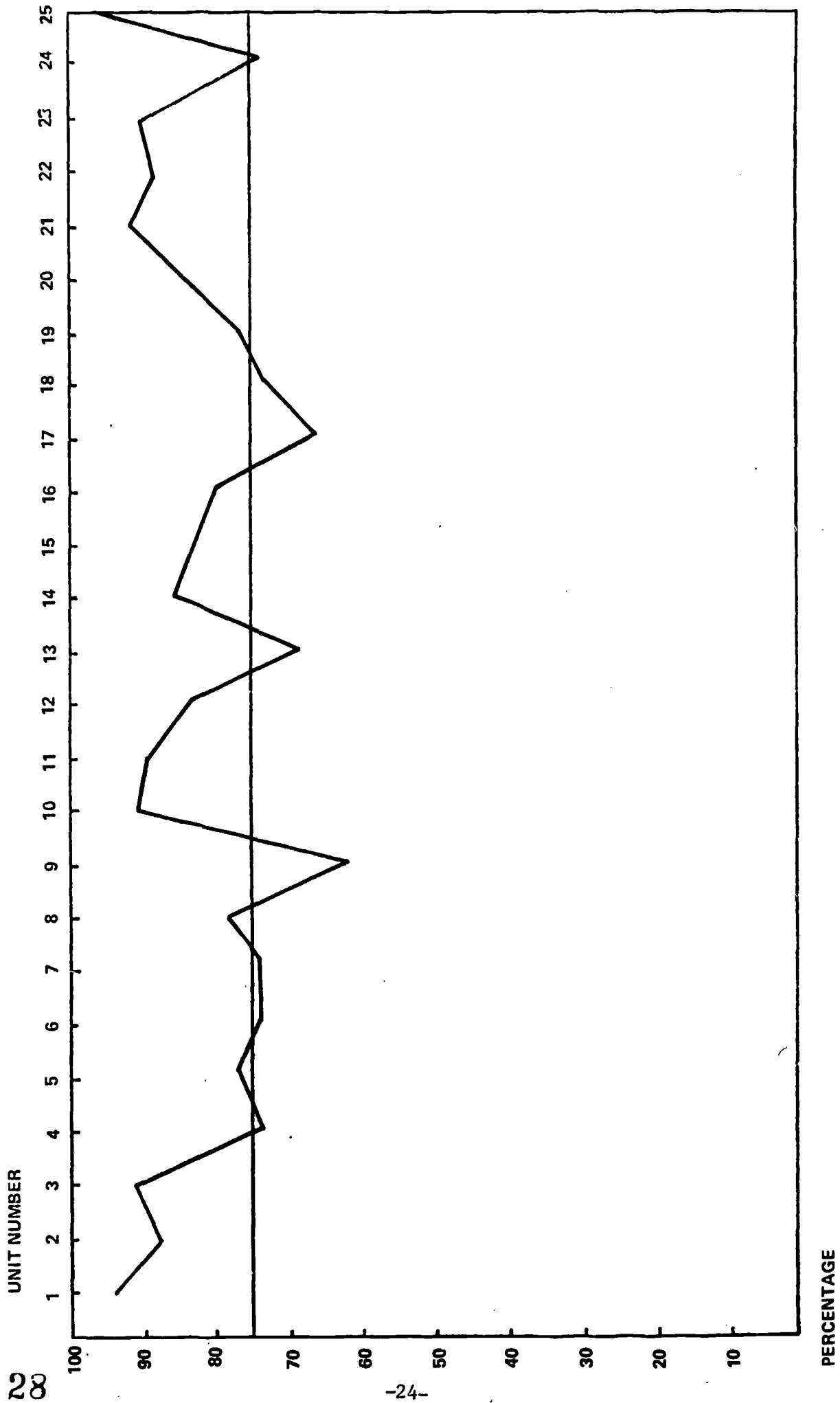


TABLE 2
PERCENT PASSING MATCHED ITEMS OF THREE-YEAR-OLDS
ON UNITS 1-10, LEVEL I

Area	PRETEST % Subjects Passing	MASTERY % Subjects Passing	Diff.
1. Language	46	96	+50
2. "	42	92	+50
3. "	38	100	+62
4. "	38	92	+54
5. "	35	92	+57
6. "	23	92	+69
7. "	19	92	+73
8. "	8	65	+57
9. "	0	73	+73
<hr/>			
10. Auditory	58	100	+42
11. "	50	96	+46
12. "	19	65	+46
13. "	19	38	+19
14. "	0	88	+88
<hr/>			
15. Visual	69	100	+31
16. "	38	96	+58
17. "	35	96	+61
18. "	35	85	+50
19. "	15	100	+85
<hr/>			
20. Motor	73	100	+27
21. "	35	96	+61
22. "	27	92	+65
23. "	19	92	+73
24. "	15	100	+85
25. "	4	73	+69
<hr/>			
Percent Correct over items	30	88	
N	26	26	

TABLE 3
 PERCENT OF THREE-YEAR-OLDS PASSING MASTERY, LEVEL I
 UNITS 11-18

Area	MASTERY Percent Subjects Passing
1.	96
2.	87
3. PROBLEM-SOLVING	87
4.	65
5.	61
<hr/>	
6.	100
7.	91
8. AUDITORY	91
9.	87
10.	61
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11.	100
12.	100
13.	96
14. VISUAL	91
15.	83
16.	76
17.	43
<hr/>	
18.	100
19.	96
20. MOTOR	91
21.	87
22.	83
23.	52
<hr/>	
24. PROBLEM-SOLVING	100
25.	83
<hr/>	
Percent correct over items	84
N	23

RESULTS: FOUR-YEAR-OLDS

Students

Thirty-two Mexican American pupils (mean age = 62.73 months) from the McAllen Center composed the Experimental, bilingual group (T1). One hundred thirty-two pupils, primarily Mexican American, (mean age = 57 months) from Albores, McAllen, and Mission Day Care centers comprised the Comparison group.

Pupil Performance

Normative Instruments. Pretest and posttest means, standard deviation and score ranges for each group on each normative instrument are presented in Table 4. Table 4 indicates that average posttest scores obtained by program pupils were consistently superior to scores obtained by Comparison pupils.

Tests of significance (F tests) of the difference between posttest means indicated that scores obtained by Experimental pupils on Carrow English, Carrow Spanish and Raven (A scale, only) instruments exceeded Comparison group means to a statistically significant degree. Mean differences between groups on the Raven AB ($p > .50$), B ($p > .50$) and total score ($p < .07$) measures were in the expected direction but failed to reach statistical significance.

Mastery Test. The percentage of students ($N = 25$) passing each pretest and mastery test item (Level II, curriculum units 1-10) is presented in Table 5. Pretest item scores (October administration) were ranked within each basic area according to percent of pupils passing that item. Twenty-two of 25 mastery items (January administration) were superior to pretest items. Two mastery items failed to evidence superiority because of the 100

TABLE 4
DESCRIPTIVE STATISTICS
FOUR-YEAR-OLDS

Auditory Test for Language Comprehension
Carrow English (Maximum= 110)

Age	Group	N	Pretest			N	Posttest		
			Mean	S. D.	Range		Mean	S. D.	Range
4	T1	-----	-----	-----	-----	11	73.09	10.70	53-90
4	T2	9	46.11	4.86	37-53	26	59.08	11.40	40-83

Auditory Test for Language Comprehension
Carrow Spanish (Maximum= 110)

Age	Group	N	Pretest			N	Posttest		
			Mean	S. D.	Range		Mean	S. D.	Range
4	T1	-----	-----	-----	-----	9	84.00	6.20	75-93
4	T2	7	55.14	5.46	45-62	26	63.15	9.09	46-81

Progressive Matrices (Raven)
(Maximum= 36)

Age	Group	N	Scale	Pretest			N	Posttest		
				Mean	S. D.	Range		Mean	S. D.	Range
4	T1	--	A	-----	-----	-----	10	6.80	1.33	4-9
	T2	--	A	-----	-----	-----	20	5.15	1.35	3-8
4	T1	--	AB	-----	-----	-----	10	3.30	1.55	1-5
	T2	--	AB	-----	-----	-----	20	2.90	1.61	0-7
4	T1	--	B	-----	-----	-----	10	3.60	1.56	2-6
	T2	--	B	-----	-----	-----	20	3.20	1.5	1-6
4	T1	--	TOTAL	-----	-----	-----	--	13.70	3.32	8-18
	T2	--		-----	-----	-----	--	11.25	3.11	6-18

TABLE 5
 PERCENT OF FOUR-YEAR-OLDS PASSING MATCHED ITEMS
 ON UNITS 1-10, LEVEL II

Area	PRETEST Percent Subjects Passing	MASTERY Percent Subjects Passing
1. LANGUAGE	24	64
2.	4	64
3.	0	36
<hr/>		
4.	96	100
5.	80	100
6. AUDITORY	24	84
7.	8	36
8.	0	20
9.	0	0
<hr/>		
10.	60	72
11.	48	100
12. VISUAL	44	88
13.	20	88
14.	4	36
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15. MOTOR	100	100
16.	92	100
<hr/>		
17.	100	100
18.	80	100
19.	52	100
20. PROBLEM-SOLVING	48	96
21.	32	96
22.	28	100
23.	12	100
24.	0	100
25.	0	88
<hr/>		
Percent Correct over items	38	79
N	25	25

TABLE 6
 PERCENT OF FOUR-YEAR-OLDS PASSING MASTERY, LEVEL II
 UNITS 11-18

Area	MASTERY Percent Subjects Passing
1.	97
2.	90
3. LANGUAGE	86
4.	83
5.	72
<hr/>	
6.	100
7.	100
8. AUDITORY	86
9.	66
10.	52
<hr/>	
11.	100
12.	97
13. VISUAL	86
14.	83
15.	79
16.	79
<hr/>	
17.	100
18. MOTOR	100
19.	100
<hr/>	
20.	100
21.	100
22. PROBLEM-SOLVING	100
23.	93
24.	93
25.	76
<hr/>	
Percent Correct Over Items	89
N	29

percent "ceiling effect" obtained at pretesting. Seventeen of 25 mastery items met the 75 percent pass criterion and 13 met the 90 percent pass criterion. Thirty-eight percent of the responses made to all pretest items were correct; 79 percent of all mastery test responses were correct.

Mastery items (April administration) covering curriculum units 11-18 are presented in Table 6. Seventy-five percent of the 29 pupils passed 22 of the 25 items; 90 percent of the pupils passed 14 items. Eighty-nine percent of the responses made to all 25 mastery items by all pupils were correct.

Unit Tests. Eighteen unit tests were administered to four-year-olds. Percentage of correct responses for each unit are shown in Figure 2. Three of the 18 Level II units failed to meet the 75 percent criterion: Unit 1, 72 percent; Unit 10, 73 percent; and Unit 16, 59 percent. As in the case of the Level I curriculum, unit test results indicate that relatively few revisions are needed. For the most parts, units are meeting criterion.

RESULTS: FIVE-YEAR-OLDS

Students

Thirty-six Mexican American pupils (mean ages= 74.41 months) from the McAllen Center composed the Experimental, bilingual group. Seventy-one Mexican American (mean age= 72.25 months) from Albores, McAllen, and Mission Day Care centers, comprised the Comparison group.

Pupil Performance

Normative Instruments. Pretest and posttest means, standard deviations and score ranges for each group on each normative instrument are presented in Table 7. Table 7 indicates that average scores obtained by program pupils were consistently superior to scores obtained by Comparison pupils.

Tests of significance (F tests) of the difference between posttest means indicated that scores obtained by Experimental pupils on the Carrow Spanish, Boehm, and Raven (total scores, A scale and AB scale) exceeded Comparison group means to a statistically significant degree. Mean differences between groups on the Carrow English ($p < .07$) and Raven B scale ($p < .90$) were in the expected direction but failed to reach statistical significance.

Percentile equivalents for lower socioeconomic level children at the beginning and midyear kindergarten year and the beginning of the first grade are presented in Table 7. As the mean age of this group is approximately six years, the Experimental group raw score of 29.8 falls in the 30th percentile (beginning first grade) whereas the raw score for the Comparison group (22.4) falls in about the 10th percentile. Percentile equivalents for the Book Form of the Raven for five-and-one-half and six-year-old pupils are also given in Table 7. Norms were obtained on British school children and are not available for three- and four-year-old age groups. The Experimental group mean of 17.4 for the McAllen five-year-old group falls in the 90th percentile for five-and-one-half-year-olds. The Comparison group mean was lower (13.6), falling in the 25th and 50th percentile.

Mastery Test. The percentage of students ($N = 28$) passing each pretest and mastery test item (Level III, curriculum units 1-10) is presented in Table 8. Pretest item scores (October administration) were ranked within each basic area according to percent of pupils passing that item. Twenty-four of 25 mastery items (January administration) were superior to pretest items. Twenty-three mastery items met the 75 percent pass criterion and 16, the 90 percent pass criterion. Fifty percent of the responses made to all pretest items were correct; 91 percent of all mastery test responses were correct.

TABLE 7
DESCRIPTIVE STATISTICS
FIVE-YEAR-OLDS

Auditory Test for Language Comprehension
Carrow English (Maximum= 110)

Age	Group	Pretest			Posttest				
		N	Mean	S. D.	Range	N	Mean	S. D.	Range
5	T1	-----				11	85.36	8.50	71-95
5	T2	-----				17	78.71	8.76	65-92

Auditory Test for Language Comprehension
Carrow Spanish (Maximum= 110)

Age	Group	Pretest			Posttest				
		N	Mean	S. D.	Range	N	Mean	S. D.	Range
5	T1	-----				8	90.00	5.77	81-100
5	T2	-----				16	72.19	10.05	58-95

Boehm Test of Basic Concepts
(Maximum= 50)

Age	Group	Pretest			Posttest				
		N	Mean	S. D.	Range	N	Mean	S. D.	Range
5	T1	-----				28	29.82	6.05	12-42
5	T2	-----				53	22.40	7.98	9-42

Boehm-Percentile Equivalents of Raw Scores
for Lower Socioeconomic Children

Raw Score	Beginning Kindergarten Percentile	Midyear Kinder. Percentile	Beginning 1st grade Percentile
20	30	15	10
22	35	20	10
25	50	35	15
30	70	60	30

Progressive Matrices (Raven)
(Maximum= 36)

Age	Group	N	Scale	Pretest			N	Posttest		
				Mean	S. D.	Range		Mean	S. D.	Range
5	T1	--	A	-----		10	7.60	1.11	6-10	
	T2	--	A	-----		20	6.25	1.44	4-9	
5	T1	--	AB	-----		10	5.80	1.89	3-9	
	T2	--	AB	-----		20	4.10	1.79	2-8	
5	T1	--	B	-----		10	4.00	.77	3-5	
	T2	--	B	-----		20	3.20	1.25	1-6	
5	T1	--	TOTAL	-----		--	17.40	2.42	14-22	
	T2	--		-----		--	13.55	3.41	9-22	

Percentile Equivalents for Book Form
Progressive/Matrices (Raven)

Percentile	5 1/2-Year-Old Raw Score	6-Year-Old Raw Score
25	12	13
50	14	15
75	15	17
90	17	20
95	19	21

TABLE 8
 PERCENT OF FIVE-YEAR-OLDS PASSING MATCHED ITEMS
 ON UNITS 1-10, LEVEL III

Area	PRETEST Percent Subject Passing	MASTERY Percent Subject Passing
1.	79	100
2.	75	100
3. LANGUAGE	64	89
4.	46	86
5.	39	96
6.	36	89
7.	29	96
<hr/>		
8. AUDITORY	46	75
<hr/>		
9.	86	93
10.	68	93
11.	68	100
12. VISUAL	61	93
13.	46	100
14.	39	93
15.	21	100
<hr/>		
16.	61	100
17.	50	93
18. MOTOR	43	96
19.	14	61
20.	4	89
<hr/>		
21.	93	89
22.	68	96
23. PROBLEM-SOLVING	57	96
24.	39	79
25.	18	61
<hr/>		
Percent correct over items	50	91
N	28	28

TABLE 9
 PERCENT OF FIVE-YEAR-OLDS PASSING MASTERY, LEVEL III
 UNIT 11-18

Area	MASTERY Percent Subjects Passing
1.	100
2.	100
3. LANGUAGE	97
4.	88
5.	85
6.	53
7.	26
<hr/>	
8.	91
9.	88
10. AUDITORY	85
11.	79
12.	65
<hr/>	
13. VISUAL	100
14.	97
<hr/>	
15. MOTOR	85
<hr/>	
16.	94
17.	91
18.	91
19. PROBLEM-SOLVING	82
20.	69
21.	79
22.	76
<hr/>	
23. CLASSIFICATION	88
24.	74
<hr/>	
25. PREWRITING	21
<hr/>	
Percent Correct over items	91
N	34

Mastery items (March administration) covering curriculum units 11-18 are presented in Table 9. Seventy-five percent of the 34 pupils passed 20 of 25 items; 90 percent of the students passed 9 of the 25 items; and 81 percent of the responses made to all 25 mastery items by all pupils were correct.

Unit Tests. Twenty-five unit tests were administered to five-year-olds. The percentages of correct responses for each unit are shown in Figure 3. Seven of the 25 Level III units failed to meet criterion, although only three of them missed the 75 percent standard by a wide margin. These seven units were Unit 4, 74 percent; Unit 6, 73 percent; Unit 7, 73 percent; Unit 9, 63 percent; Unit 13, 68 percent; Unit 17, 65 percent; and Unit 24, 73 percent. Results indicated that with the possible exception of Units 9, 13, and 17, the Level III curriculum needed little revising to reach its objectives.

SUMMARY

Generally, test results from the Early Childhood Program at McAllen are favorable and indicate an improved system when compared to last year's program. Criterion-referenced test results make this evident. With the exception of a few units, children were able to meet criterion on the curriculum-embedded tests. Norm-referenced test results were somewhat equivocal because of missing tests on some children. These results are positive in that Experimental children scored significantly higher than Comparison pupils in the spring on tests of Spanish language comprehension (all ages), English language comprehension (four-year-olds), a general concepts test (five-year-olds), and a nonverbal intelligence test (five-year-olds).

TABLE 10
DESCRIPTIVE STATISTICS

Auditory Test for Language Comprehension
Carrow English (Maximum= 110)

Age	Group	N	Pretest			N	Posttest		
			Mean	S. D.	Range		Mean	S. D.	Range
3	T1	6	43.83	4.45	37-50	6	55.33	8.03	42-65
3	T2	7	43.43	5.73	36-55	9			
4	T1	-----				11	73.09	10.70	53-90
4	T2	9	46.11	4.86	37-53	26	59.08	11.40	40-83
5	T1	-----				11	85.36	8.50	71-95
5	T2	-----				17	78.71	8.76	65-92

Auditory Test for Language Comprehension
Carrow Spanish (Maximum= 110)

Age	Group	N	Pretest			N	Posttest		
			Mean	S. D.	Range		Mean	S. D.	Range
3	T1	8	54.00	4.30	48-60	8	69.13	5.42	63-79
3	T2	8	46.63	17.96	0-60	9	60.00	6.72	47-71
4	T1	-----				9	84.00	6.20	75-93
4	T2	7	55.14	5.46	45-62	26	63.15	9.09	46-81
5	T1	-----				8	90.00	5.77	81-100
5	T2	-----				16	72.19	10.05	58-95

Boehm Test of Basic Concepts
(Maximum= 50)

Age	Group	N	Pretest			N	Posttest		
			Mean	S. D.	Range		Mean	S. D.	Range
5	T1	-----				28	29.82	6.05	12-42
5	T2	-----				53	22.40	7.98	9-42

Boehm-Percentile Equivalents of Raw Scores
for Lower Socioeconomic Children

Raw Score	Beginning Kindergarten Percentile	Midyear Kinder. Percentile	Beginning 1st grade Percentile
20	30	15	10
22	35	20	10
25	50	35	15
30	70	60	30

Progressive Matrices (Raven)
(Maximum= 36)

Age	Group	N	Scale	Pretest			N	Posttest		
				Mean	S. D.	Range		Mean	S. D.	Range
3	T1	11	A	4.00	1.15	2-6	11	4.83	1.21	3-6
	T2	11	A	3.36	1.97	0-8	11	5.33	1.60	2-7
4	T1	--	A	-----			10	6.80	1.33	4-9
	T2	--	A	-----			20	5.15	1.35	3-8
5	T1	--	A	-----			10	7.60	1.11	6-10
	T2	--	A	-----			20	6.25	1.44	4-9
3	T1	11	AB	2.67	1.25	1-5	11	2.67	.94	1-4
	T2	11	AB	2.27	.62	1-3	12	2.58	1.75	1-6
4	T1	--	AB	-----			10	3.30	1.55	1-5
	T2	--	AB	-----			20	2.90	1.61	0-7
5	T1	--	AB	-----			10	5.80	1.89	3-9
	T2	--	AB	-----			20	4.10	1.79	2-8
3	T1	11	B	2.83	.69	2-4	11	2.50	.96	1-4
	T2	11	B	2.82	1.27	1-4	12	2.58	1.38	0-5
4	T1	--	B	-----			10	3.60	1.56	2-6
	T2	--	B	-----			20	3.20	1.50	1-6
5	T1	--	B	-----			10	4.00	.77	3-5
	T2	--	B	-----			20	3.20	1.25	1-6
3	T1	--	TOTAL	9.50	1.26	8-11	--	10.00	1.83	7-12
	T2	--		8.45	2.64	5-14	--	10.50	3.80	6-17
4	T1	--	TOTAL	-----			--	13.70	3.32	8-18
	T2	--		-----			--	11.25	3.11	6-18
5	T1	--	TOTAL	-----			--	17.40	2.42	14-22
	T2	--		-----			--	13.55	3.41	9-22

Percentile Equivalents for Book Form
Progressive/Matrices (Raven)

Percentile	5 1/2-Year-Old Raw Score	6-Year-Old Raw Score
25	12	13
50	14	15
75	15	17
90	17	20
95	19	21