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ABSTRACT

To determine the effectiveness of Sesame Street in imparting basic facts and skills to children aged 3-5, data from the first year study was reanalyzed and a second-year research study was undertaken. The second-year study included a new study of 283 disadvantaged children and a followup study of 283 disadvantaged children from the first year study. Results showed significant gains in many basic skills, such as naming letters, matching by form, sight reading, recognizing numbers, naming numbers, and counting. The followup study findings showed that Sesame Street "graduates" who were frequent viewers and who entered school during the show's second year were, according to teacher rankings, better prepared than their non- or low-viewing classmates and adapted well to school. Regardless of racial, ethnic, or socioeconomic background, the children who viewed Sesame Street most learned most. (JY)

A SUMMARY OF THE MAJOR FINDINGS
IN
"THE SECOND YEAR OF SESAME STREET: A CONTINUING EVALUATION"

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Princeton, New Jersey

November 1971

Sesame Street's second season of experimental daily programs was presented between November 9, 1970 and May 28, 1971 on more than 260 non-commercial and commercial stations in the U. S. Its funding sources for the second season included the U. S. Office of Education (Department of Health, Education and Welfare), Carnegie Corporation of New York, the Corporation for Public Broadcasting, and the Ford Foundation.

Summary prepared by James J. Morisseau

BACKGROUND

Sesame Street, the innovative educational television program produced by the Children's Television Workshop (CTW), received its first "report card" in October 1970. An evaluation conducted by Educational Testing Service (ETS) -- a non-profit educational measurement and research organization in Princeton, New Jersey -- gave the program high marks for effectiveness in many of the stated goals for its first, 26-week broadcast season.

The study results, however, could not be taken as conclusive evidence of the long-term effectiveness of Sesame Street, its content, and its approach. All concerned recognized that additional studies should be undertaken during the program's second season. Among the questions to be answered were:

> Were the objectives of the second year of programming, including new and revised goals, achieved?
>
> What effects did the program have on first-year viewers who started formal schooling during the show's second year?
>
> What were the effects on first-year viewers who continued to watch second-year programs from their homes?

ETS again was asked by CTW to conduct the study and has published its findings in a report entitled "THE SECOND YEAR OF SESAME STREET: A CONTINUING EVALUATION." The following is a summary of some of the highlights and major conclusions in the full report.

HIGHLIGHTS

Sesame Street, in a second and more ambitious 29-week season, continued to demonstrate the effectiveness of television as a medium for teaching pre-school children.

The ETS study tended to support first-year findings that the program was effective in imparting basic facts and skills to children aged 3 to 5 and that those who watched most learned most.

At the same time, reanalyses of first-year study data indicated that the program was as effective with black disadvantaged children as with the white disadvantaged, that the disadvantaged among frequent viewers gained as much as did the advantaged, and that 3-year-olds among the most frequent viewers gained more and ended with higher total scores than older children who viewed less frequently.

And, there were other new and significant findings:

READINESS FOR SCHOOL -- Teacher evaluations suggest that the more frequent viewers of first-year Sesame Street programs were better prepared for school than the infrequent viewers among their classmates. More importantly, no basis could be found for fears expressed by some observers that Sesame Street viewers, accustomed to a fast-paced entertaining television format, would be "turned off" by conventional classroom instruction when they started school.

TWO-YEAR IMPACT -- First-year viewers who watched at home during the second year gained in most of the new and complex goal areas added in the second year.

THE NEW VIEWERS -- Children who started watching during the second year gained significantly more in most goal areas than did non-viewing children. Gains were greatest in first-year goal areas and least in new goal areas.

ENCOURAGEMENT -- Encouragement of children to view the program, carried out by community people, was an important factor affecting the gains among viewers.

ATTITUDES -- Measures of attitudes, employed this year for the first time, showed gains in favorable attitudes toward school and toward people of other races among at-home viewers of both program series.

RESULTS BY AGE -- Overall gains among 3-, 4-, and 5-year-olds were about equal, indicating the show is having a positive effect at all of the age levels for which it was designed.

SIDE EFFECTS -- Gains in vocabulary, mental age, and IQ never have been objectives of Sesame Street. But the new research suggests that, as a side effect, the program may be having a positive impact in these areas or at least in viewers' performance on one of the standardized tests used with preschool children.

YEAR ONE REVISITED

A full understanding of the new ETS findings requires some familiarity with the first-year study, test procedures, and results. It must be stressed, for example, that the first-year goals were more limited than those in the second year, falling more in such basic areas as recognizing and labeling letters and numerals and less in the more complex cognitive skills.

The first-year evaluation was conducted with a sample of 943 children from Boston, Massachusetts; Durham, North Carolina; Philadelphia, Pennsylvania; Phoenix, Arizona, and a rural area in northeastern California. The sample included disadvantaged, inner-city children (Boston, Durham, and Phoenix); advantaged suburban children (Philadelphia); rural children (California), and

disadvantaged Spanish-speaking children (Phoenix). By design, lower class outnumbered middle class, black disadvantaged outnumbered white disadvantaged, and, while some were 3- and 5-year-olds, most of the children were 4 years old.

Tests were developed by ETS to measure the children's progress in meeting the specific educational goals established by CTW. The tests, administered both before and after the viewing season, covered eight major goal areas, each of which included a number of subtests. (A comparative listing of tests and subtests for the first and second years is provided in Figure 1.) The test format was simple and tests were administered by trained adults from the children's neighborhoods. Information was also collected on each child's home background and on the extent of his exposure to Sesame Street.

Analyses of the first-year test results were based on a system of quartiles, in which the sample of 943 children was divided into four groups, according to the frequency they viewed Sesame Street. The quartiles ranged from Q1, in which children rarely or never watched the program, to Q4, where children viewed on an average of more than five times a week. As it turned out, Sesame Street proved so popular that there were few true non-viewers; many children in Q1 watched occasionally.

The results, as indicated earlier, were generally positive. For the sample as a whole, children in the highest viewing quartiles scored better on the pretest and gained more on the 203-question test (Q4 gained 47 points) than did infrequent viewers (Q1 gained only 19 points.) The finding held true for the 731 children classified as disadvantaged, as well as for all other groups studied. And statistical analyses determined that the differences could not have occurred by chance; amount of viewing proved to be a most important variable. One unexpected finding, with implications for the year-two

study, was that frequent viewers among a small group of 43 Spanish-speaking children sharply outgained all other groups in the sample.

YEAR TWO: THE PROGRAM

As indicated earlier, many of the second-year goals of Sesame Street were of greater scope and difficulty than those for year one. The new goals grew out of the producers' experiences with year one and, in some cases, the suggestions of Sesame Street's educational advisors, parents, and other interested parties. The scope of the changes is indicated by the fact that there were 63 specific goals for year two, compared to 40 for year one. The increased level of difficulty is reflected in some of the new goals themselves. In counting, for example, the goal in year one was 1 to 10; in year two, it became 1 to 20. Similarly, addition and subtraction were introduced. In reading skills, pronouncing the sounds of letters was added, along with the ability to recognize a 20-word vocabulary of commonly encountered words -- ran, set, big, danger, exit, love, to offer a sampling -- by sight. And, simple skills in the Spanish language were introduced. (A full list of the new goal tests is offered in the comparative listing in Figure 1.) Because the expanded goals had to be worked into the 60-minute format of the program, proportionately less time could be spend on many goal areas, a fact that has implications for the interpretation of the year-two research results.

YEAR TWO: THE TESTS

The year-two research effort had a number of basic objectives: to measure the effectiveness of the year-two program; to determine the effects of Sesame Street on disadvantaged first-year viewers entering school during

the show's second year; to test the effects of a second year of viewing on disadvantaged at-home viewers; to secure more definitive data on the program's impact on Spanish-speaking children, and to secure additional answers on the role of the child's race, sex, socioeconomic level, and age in the achievement of viewers.

The test instruments had to be expanded in both length and depth to measure the effectiveness of the expanded program. The 29 goal areas tested were primarily those that were emphasized on the show. Not all the new goals were tested but the number of questions employed to test the old and simpler goals was reduced to make way for questions testing the new material. And questions were added that, for the first time, attempted to measure the program's impact on children's attitudes toward race, school, and other people. (See example on closing pages.)

Information again was collected on home backgrounds and the frequency with which children viewed Sesame Street. Evaluative opinions were sought from teachers to measure the impact of the program on disadvantaged first-year viewers entering school. Teachers having Sesame Street graduates in their classes were asked to rank all children in their classes on seven different criteria relating to readiness for school. The teachers, who were not told which children were under study, submitted complete rankings shortly after the school year started and again in the spring.

YEAR TWO: THE SAMPLE

The second-year research effort included a "new study" of 283 disadvantaged children in Winston-Salem, North Carolina and Los Angeles, California. Winston-Salem was chosen because Sesame Street was not televised there the first year. In addition, a new cable-TV system then being installed made it possible to

control which homes in the test community could receive the show and which could not. In Los Angeles, Sesame Street was broadcast only on a UHF channel, limiting the first-year viewing audience. In both cities, children who had not seen the first-year series were tested. About half were encouraged to view and the rest not encouraged. Accordingly, unlike year one, it was possible to select a non-viewing control group with reasonable expectation that most of those children indeed would not watch second-year programs. In contrast to year one, where suburban advantaged and rural children were studied, the second-vear sample was limited to the urban disadvantaged. And, again unlike the first studv, none were in school; all were at-home viewers. A separate sample in Los Angeles was employed to retest the effectiveness of Sesame Street with children of Spanish background.

The research also included a follow-up study of 283 disadvantaged children in Boston, Phoenix, and Durham who had been tested during the first-year studv. Of the total, all of whom were disadvantaged, 152 started in nursery school, kindergarten, or first grade during year two. The balance did not attend school.

YEAR TWO: RESULTS

The New Study

Of 29 goal areas tested in the new study, 13 reflected a strong, positive influence by Sesame Street on the achievement of non viewers. In another 10, some positive effects were indicated, but the gains were not as definite. In the remaining six, there were no indications of a Sesame Street effect. However, in no case was a negative effect discovered; that is, in no case did non-viewers gain significantly more than viewers. (See Figures 6, 7, 8.)

The significant gains were found in: function of body parts, naming geometric forms, roles of community members, matching by form, naming letters, letter sounds, sight reading, recognizing numbers, naming numbers, counting, relational terms, classification (single criterion), and sorting.

Less interpretable gains were found in: naming body parts, recognizing letters, initial sounds, decoding, left-right orientation, counting strategies, number/numeral agreement, addition and subtraction, double classification, and emotions.

And no significant gains were identified in: recognizing geometric forms, matching by position, alphabet recitation, enumeration, conservation, and parts of the whole. As in the first year, there was no evidence of changes in parental attitudes toward their children.

Interpretation of these results should take several factors into account. First, in its second year the program continued to be experimental and many new goals exceeding the scope of those in the first year were introduced, in part to test the boundaries of the program's effectiveness with its audience. Secondly, the year-two sample was limited to children who were heavily disadvantaged, even more so than those in the first-year disadvantaged sample. And third, the results reflect a conservative estimate of Sesame Street's effectiveness, since there were a few non-viewers among the encouraged or presumably viewing group and about 35 per cent of the control or presumably non-viewing group viewed in varying amounts. Without a pure viewer vs. non-viewer experimental control -- a difficult achievement, given the show's popularity and the impossibility of controlling the level of viewing -- the full extent of the impact of the show cannot be identified.

Children of Spanish Background

First-year research indicated dramatic gains for a small group of Spanish-background viewers. In the second year, a new sample of Spanish-background children was tested in an attempt to verify the first-year findings. The results of the new tests proved inconclusive because the attempt to maintain a control (non-viewing) group broke down when, for undetermined reasons, almost all children in the sample viewed the show.

The Follow-up Study

Most intriguing was the finding that Sesame Street graduates who were frequent viewers and who entered school during the show's second year were, according to teacher rankings, better prepared than their non- or low-viewing classmates, and, more important, adapted well to the school experience. They did not prove to be, as some had suggested, bored, restless, or passive participants in the formal classroom. Teacher rankings in the spring produced less distinct differences between viewers and non-viewers. Hopefully further and more systematic studies of Sesame Street veterans in the school environment will be conducted. (See Figure 5.)

Determination of the effects of a second year of viewing on follow-up children who viewed at home both years proved more difficult. The sample was fragmented into a wide range of groups when differences in viewing frequency over the first year, summer reruns, and second year were taken into account. The problem was further complicated by the fact that nearly all had viewed at least some of the first-year, summer, and second-year programs. An answer was found in the "age cohorts study," in which two groups of children who were

similar in all other respects were compared in such a way that the only significant variable was exposure to the second year of Sesame Street. This was accomplished by selecting a group that was 63 to 68 months old at the start of the program's second year and another that was 63 to 68 months at the close of the year, then comparing the pretest scores of the first group to the posttest scores of the second. The findings were that the second group scored significantly higher than the first in 12 of the 29 subtests. Most gains were in the new, second-year goal areas, primarily because most children in both groups had mastered the simpler, year-one goals and had been exposed to year-one programming. In another area, the second group scored significantly higher on measures of attitudes toward school and toward people of other races but not on a measure of attitude toward others. (See Figures 9, 10, 11.)

Vocabulary/Mental Age/IQ

The Peabody Picture Vocabulary Test (PPVT), a standardized measure of vocabulary frequently used with preschool children, was employed the first year solely as a descriptive device to compare children in the Sesame Street samples to other children of the same age and was administered only at pretest. In year two, however, the PPVT was administered again at posttest to determine, in response to inquiries from school psychologists and others, whether Sesame Street, as a side effect, was having an impact on the verbal ability of its viewers. In general, children who watched Sesame Street were found to have gained more in PPVT scores than those who watched little or not at all. Significant differences favoring viewers were found among children in the new study. The follow-up study results showed a similar pattern. It must be

stressed that the PPVT is not a direct measure of "intelligence" (no test is) but is an assessment of the child's oral vocabulary. However, the raw score can be used to estimate a mental age and IQ. In short, the results indicate that, in at least one conventional test of IQ for preschool children, Sesame Street is having a positive effect. (See Figures 6, 8, 9, 11.)

Race as a Factor

Available data from the year-one study were employed in an attempt to determine whether there was a difference in the impact of Sesame Street on black and white children. The analysis involved two groups of disadvantaged children, one white and one black, from Boston and Phoenix. Both groups were similar in background and about equal in the extent to which they viewed Sesame Street. With minor exceptions, the scores were highly similar at pretest and the gains of both groups were about equal. The results cannot be taken as conclusive, since the original sampling procedures were not designed to produce black-white comparisons and since it is impossible to insure the comparability of growing up white and growing up black. But at least to the extent the test gains can be taken as indicators, there would seem to be no important differences between Sesame Street's impact on blacks and its impact on whites. (See Figure 2.)

A similar analysis of the first-year data indicated that there were no significant differences in gains between disadvantaged and advantaged children who were frequent viewers. (See Figure 3.)

GENERAL CONCLUSIONS

The New Study

In its second year, Sesame Street again was successful in teaching certain basic facts and skills to 3-, 4-, and 5-year-old viewers. At the same time, it was less successful in achieving new and more ambitious goals incorporated in the second-year programs.

Children of different ages gained about equally by watching the program but different age groups gained more in some goal areas than in others. There appeared to be no differences in the gains of boys and girls.

The Follow-up Study

Viewers watching Sesame Street for a second year continued to gain, mainly in the new, second-season goal areas.

Frequent viewers who started school during the second year appeared, from teacher rankings, to be better prepared and to have better attitudes toward school than did infrequent viewers in their classes, although further study is required to verify this finding.

The program apparently is having an impact on the attitudes of its viewers toward school and toward people of other races.

Reanalyses

There appeared to be no differences in the program's impact on black and white disadvantaged children.

Disadvantaged children, if they watched as frequently, fared as well as their advantaged counterparts.

Side Effects

There is limited evidence that the program is having a positive effect on the IQ and mental age of its viewers, as measured by vocabulary level.

FIGURE 1

SESAME STREET TESTS

Tests were administered in these subject areas to determine impact of second season broadcasts.

Naming Body Parts
Function of Body Parts

Naming Forms
Recognizing Forms

Roles of Community Members

Matching by Form
*Matching by Position

Recognizing Letters
Naming Letters
*Letter Sounds
Initial Sounds
*Decoding
*Reading
*Left-Right Orientation
Alphabet (A to Z)

*Recognizing Numbers
*Naming Numbers
*Enumeration
*Conservation
*Counting Strategies
*Number/Numeral Agreement
*Addition & Subtraction
*Counting (1 - 20)

Relational Terms

Classification
*Double Classification

Sorting

Parts of Whole

*Emotions

**Attitude to School
**Attitude to Others
**Attitude to Race of Others
**Peabody Picture Vocabulary Test

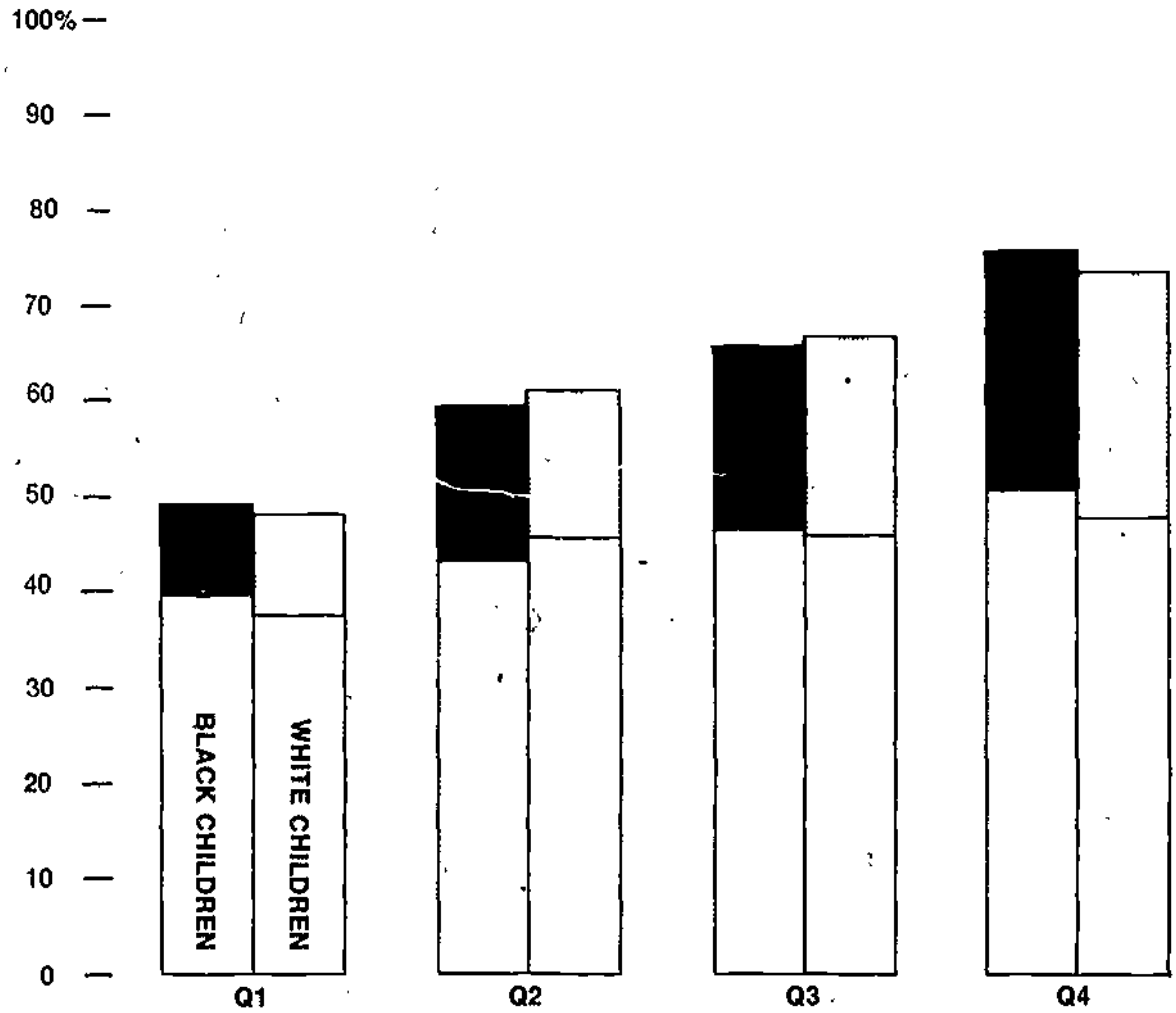
*indicates subject areas revised or introduced in the second year programs.

**indicates tests administered to determine possible side effects of the programs.

FIGURE 2

COMPARATIVE GAINS FOR
BLACK & WHITE DISADVANTAGED CHILDREN

Percentage of questions answered correctly



Pre-test Score

Gain

Q1: Children who watched rarely or never

Q2: Children who watched 2-3 times a week

Q3: Children who watched 4-5 times a week

Q4: Children who watched more than 5 times a week

FIGURE 3
PRETEST AND POSTTEST SCORES OF DISADVANTAGED AND ADVANTAGED 4-YEAR OLD CHILDREN

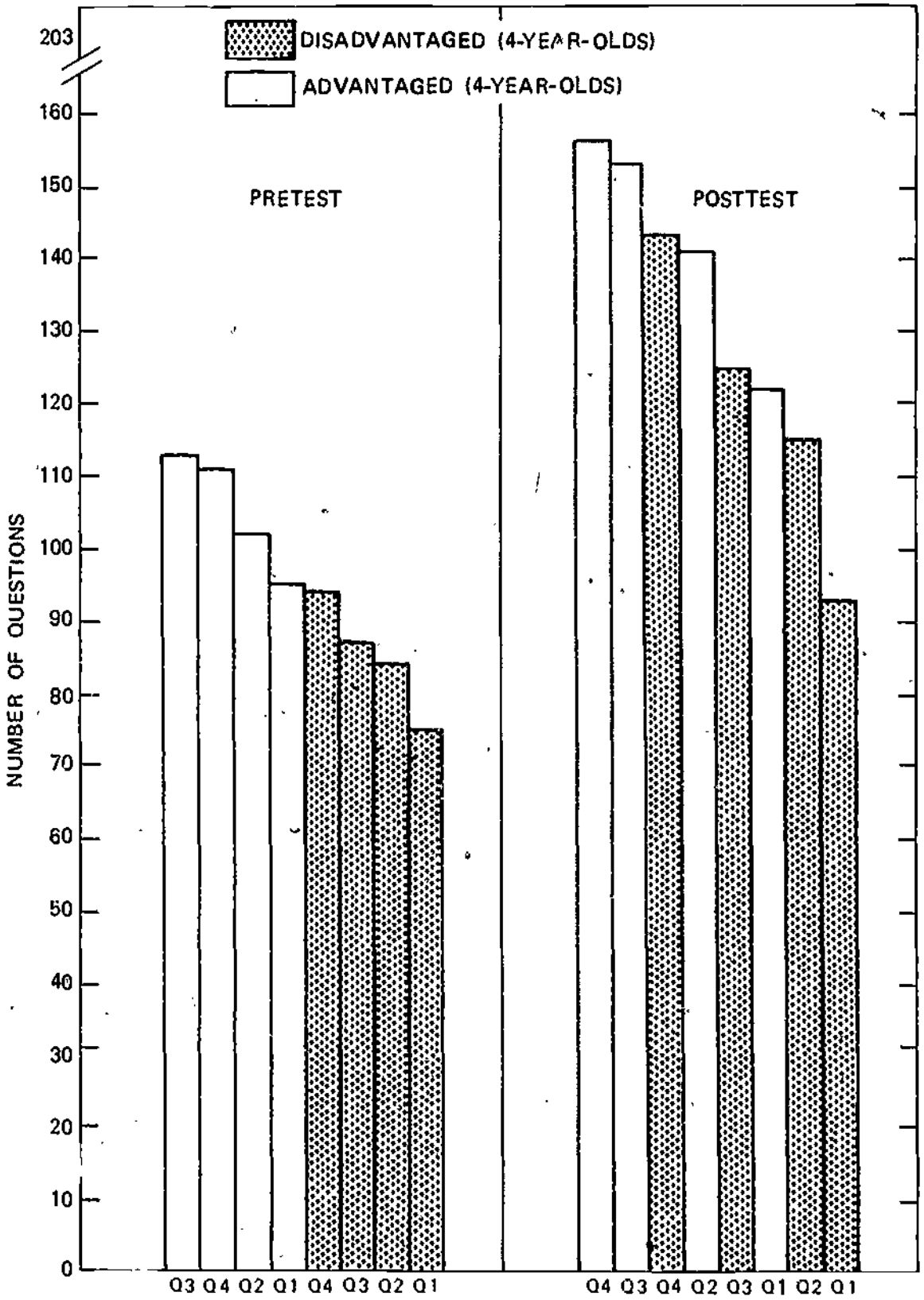


FIGURE 4

PRETEST AND POSTTEST SCORES OF 3, 4
AND 5-YEAR OLD DISADVANTAGED CHILDREN

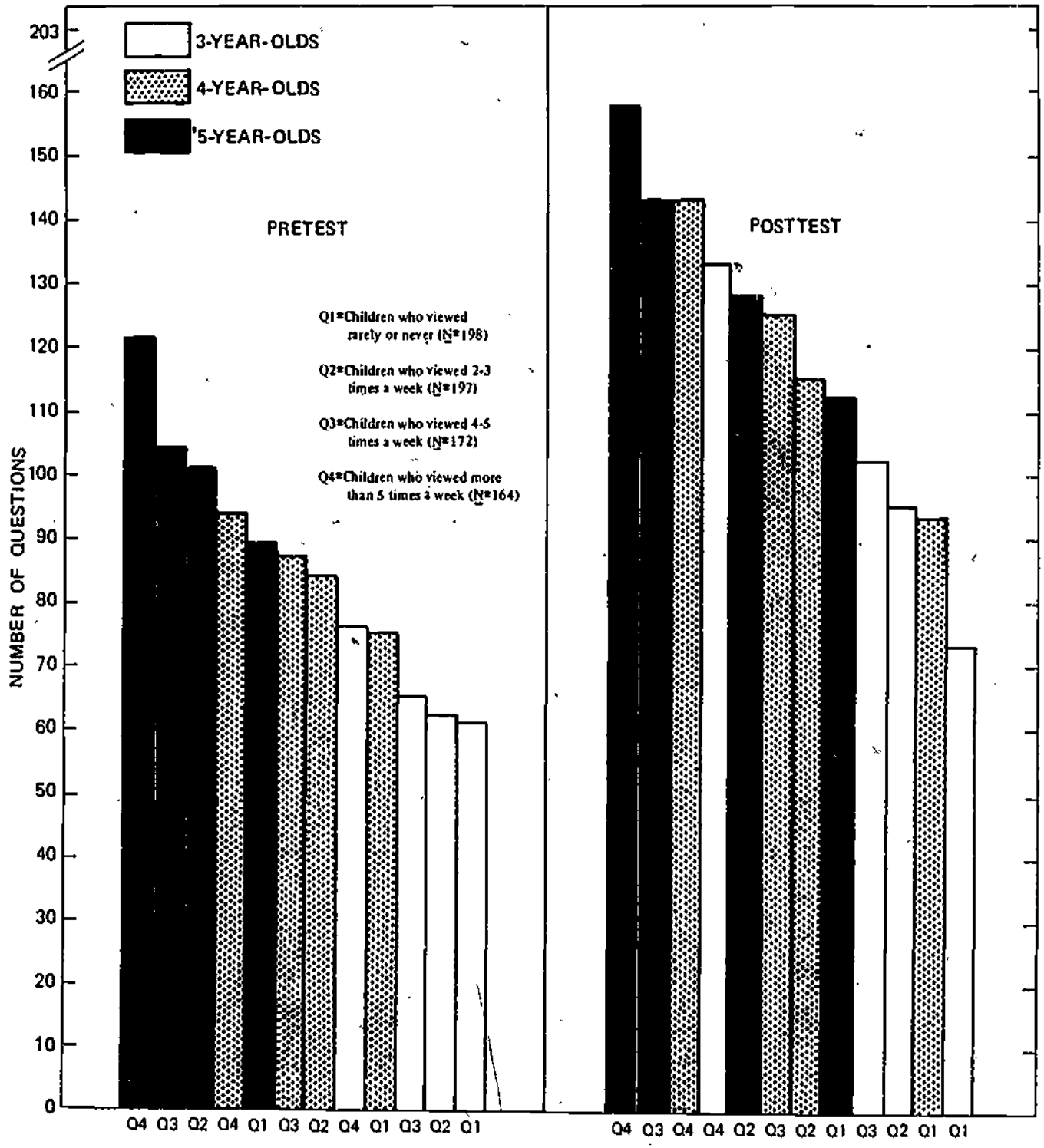


FIGURE 5

TEACHER RANKINGS OF BEGINNING STUDENTS

Sesame Street Viewers Compared:
average percentile rank by extent of viewing—Fall 1970

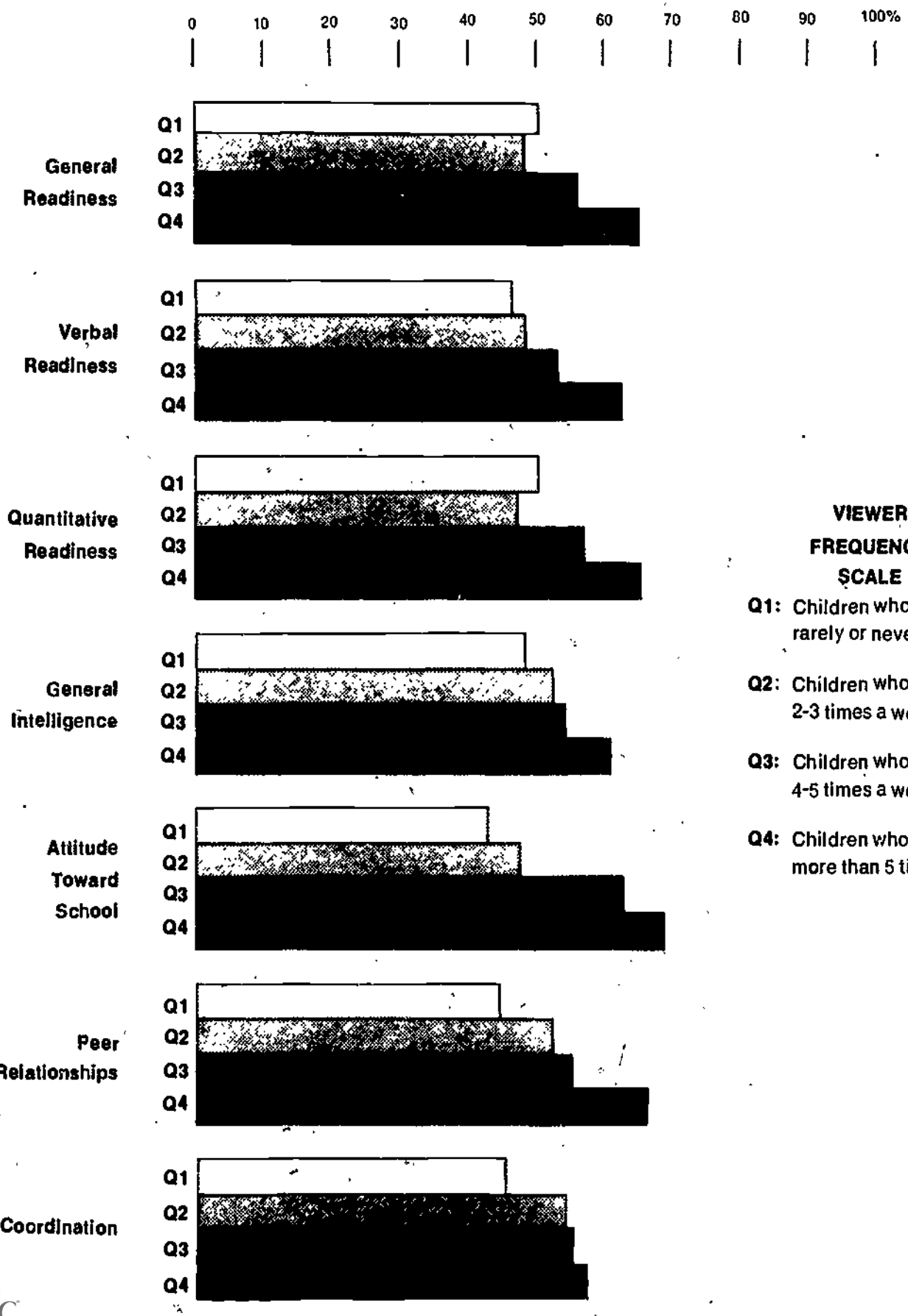


FIGURE 6

PERCENTAGE OF ITEMS ANSWERED CORRECTLY BY ALL CHILDREN AT PRETEST AND POSTTEST
(TOTAL SCORES)

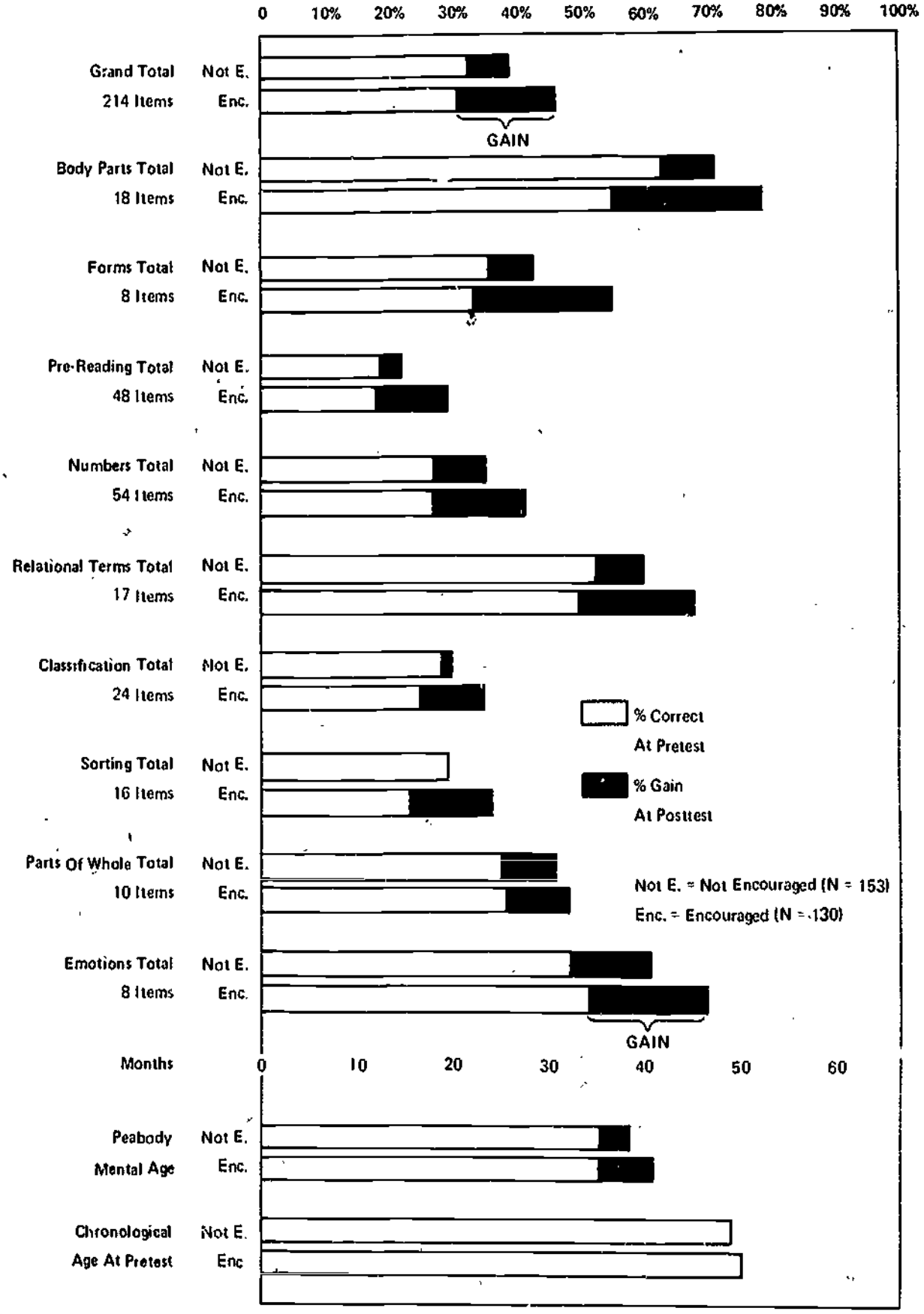


FIGURE 7

PERCENTAGE OF ITEMS ANSWERED CORRECTLY BY ALL CHILDREN AT PRETEST AND POSTTEST
(SELECTED SUBTESTS SCORES)

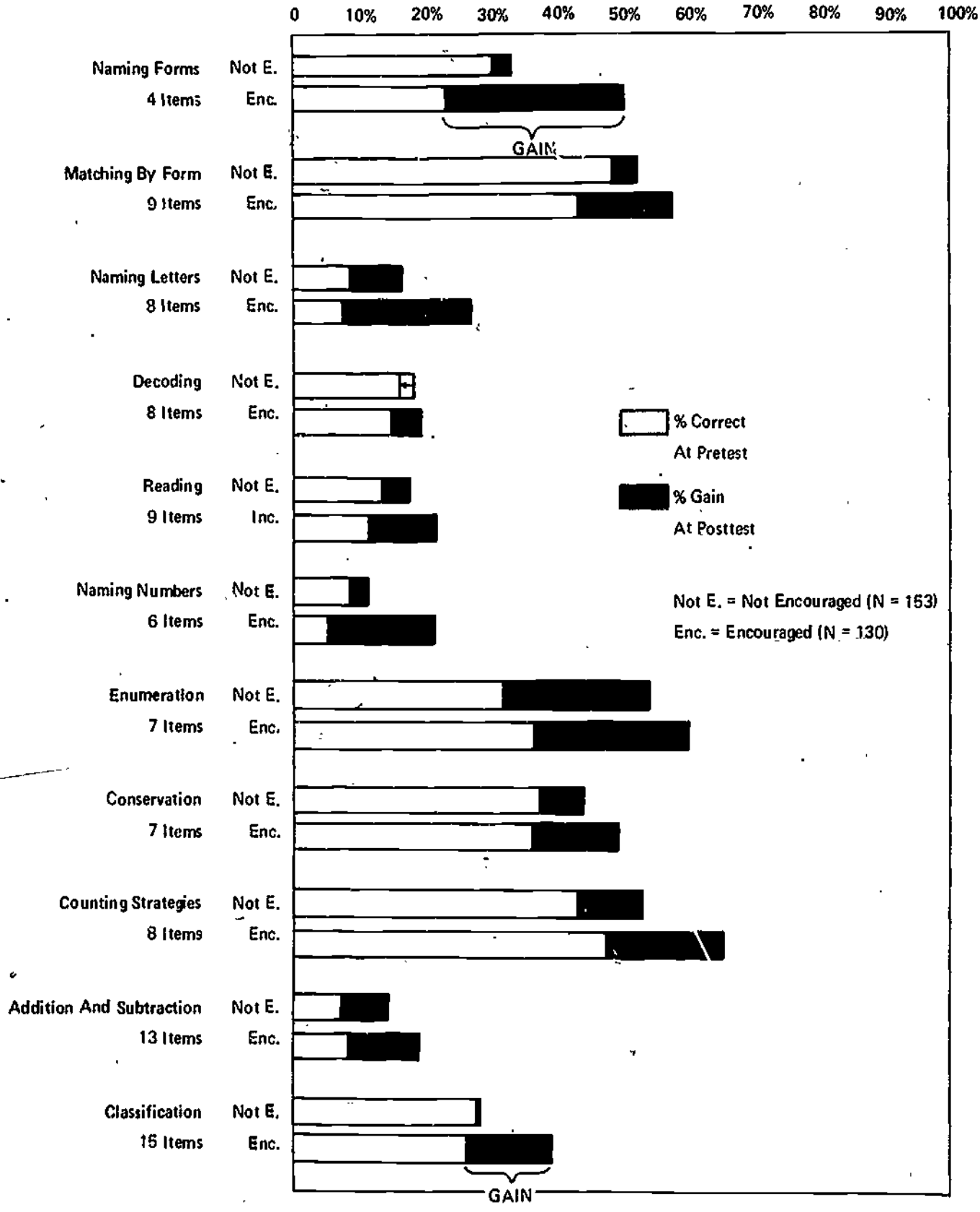


FIGURE 8
Pretest and Gain Scores for All Encouraged and Not-encouraged Children

Test and Subtest	Maximum Possible Score	Not Encouraged N = 153				Encouraged N = 130			
		Pretest		Gain		Pretest		Gain	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Naming Body Parts	10	7.4	3.1	0.8	3.5	6.5	2.9	2.1	3.0
Function of Body Parts	8	4.0	2.5	0.6	2.9	3.4	2.5	2.0	2.6
Body Parts Total	18	11.4	4.9	1.4	5.6	9.9	5.0	4.2	4.6
Naming Forms	4	1.2	1.3	0.1	1.4	0.9	1.2	1.1	1.3
Recognizing Forms	4	1.7	1.4	0.4	1.7	1.7	1.3	0.6	1.6
Forms Total	8	2.9	2.4	0.5	2.5	2.6	2.1	1.8	2.3
Roles of Community Members	4	2.1	1.4	0.3	1.7	2.0	1.4	1.1	1.4
Matching by Form	9	4.4	2.0	0.2	2.4	3.9	1.9	1.2	2.0
Matching by Position	3	1.1	0.9	0.1	1.2	1.1	0.9	0.2	1.2
Recognizing Letters	4	1.5	1.2	0.1	1.5	1.2	1.1	0.6	1.6
Naming Letters	8	0.7	1.6	0.6	2.1	0.6	1.4	1.5	2.3
Letter Sounds	4	0.3	0.9	0.0	1.0	0.2	0.7	0.5	1.2
Initial Sounds	6	0.7	1.0	0.3	1.3	1.0	1.3	0.4	1.6
Decoding	8	1.4	1.3	-0.1	1.8	1.2	1.3	0.3	1.6
Reading	9	1.3	1.3	0.3	1.5	1.1	1.0	0.8	1.5
Left-Right Orientation	4	1.0	1.1	0.4	1.4	1.3	1.1	0.7	1.7
Alphabet (A to Z)	20	3.2	5.9	5.5	7.5	4.9	7.0	6.2	7.5
Pre-reading Total	48	9.1	6.4	1.6	6.7	8.5	5.8	5.3	7.9
Recognizing Numbers	4	1.2	1.1	0.1	1.3	0.9	1.0	0.8	1.4
Naming Numbers	6	0.5	1.3	0.2	1.3	0.3	0.9	1.0	1.7
Enumeration	7	2.3	2.0	1.5	2.3	2.5	2.0	1.7	2.0
Conservation	7	2.6	1.5	0.5	2.0	2.5	1.5	0.9	2.0
Counting Strategies	8	3.4	2.4	0.8	2.9	3.8	2.5	1.4	2.8
Number/Numeral Agreement	3	1.0	0.9	0.2	1.2	1.0	1.0	0.4	1.2
Addition & Subtraction	13	0.9	1.5	0.9	2.0	1.1	1.8	1.2	2.0
Counting (1-30)	30	5.2	7.0	5.7	7.7	5.5	6.9	7.7	7.4
Numbers Total	54	14.5	7.6	4.4	7.6	14.6	8.3	8.0	8.7
Relational Terms Total	17	9.0	3.7	1.2	4.0	8.5	3.5	3.0	3.8
Classification	15	4.2	3.4	0.2	3.5	3.9	3.1	1.6	3.6
Double Classification	9	2.6	1.8	0.1	2.3	2.1	1.7	0.7	2.5
Classification Total	24	6.8	4.7	0.3	4.9	6.0	4.0	2.3	5.0
Sorting Total	16	4.6	3.0	-0.2	3.4	3.7	2.6	2.1	3.4
Parts of Whole Total	10	3.8	1.8	0.8	2.5	3.9	1.9	0.9	2.4
Emotions Total	8	3.8	2.3	1.1	3.1	4.1	2.8	1.5	3.5
Attitude to School*	7	Posttest		5.8		Posttest		6.1	
Attitude to Others*	4			2.9				2.9	
Attitude to Race of Others*	6			4.5				4.5	
Grand Total	214	71.7	28.7	11.8	26.9	67.3	29.4	31.2	27.5
Peabody Raw Score	---	25.7	12.7	3.2	11.7	25.0	14.0	6.7	11.8
Peabody Mental Age in Months	---	35.9	13.2	2.0	12.6	35.9	16.5	4.7	14.5
Chronological Age in Months	---	48.9	9.7	---	---	49.9	10.2	---	---

*N's for these subtests: Not-encouraged = 77 Encouraged = 79

FIGURE 9

AGE COHORTS

PERCENTAGE OF ITEMS ANSWERED CORRECTLY ON TOTAL TESTS BY COHORTS 1 AND 2

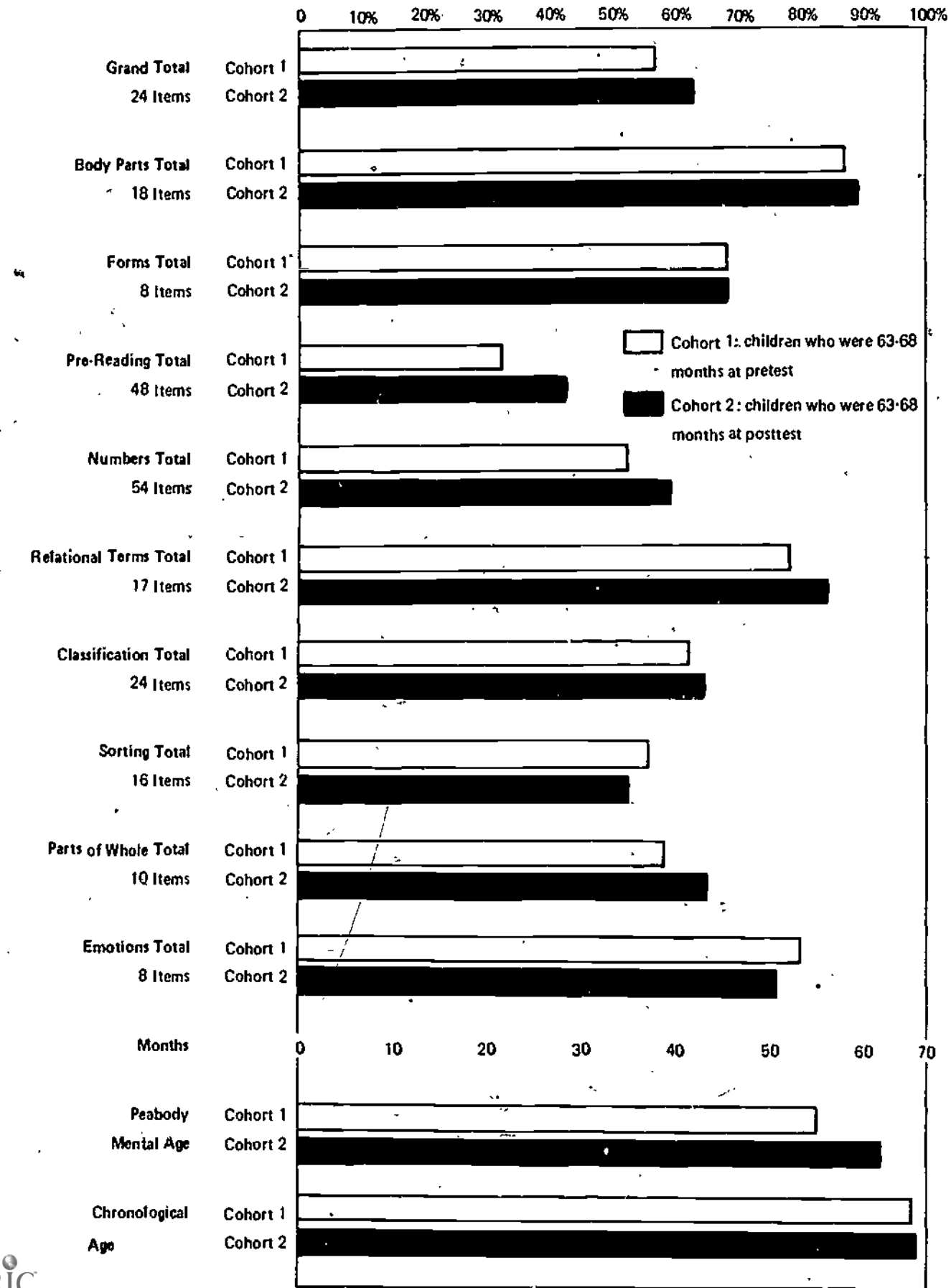


FIGURE 10

AGE COHORTS

PERCENTAGE OF ITEMS ANSWERED CORRECTLY ON SELECTED SUBSCORES BY COHORTS 1 AND 2

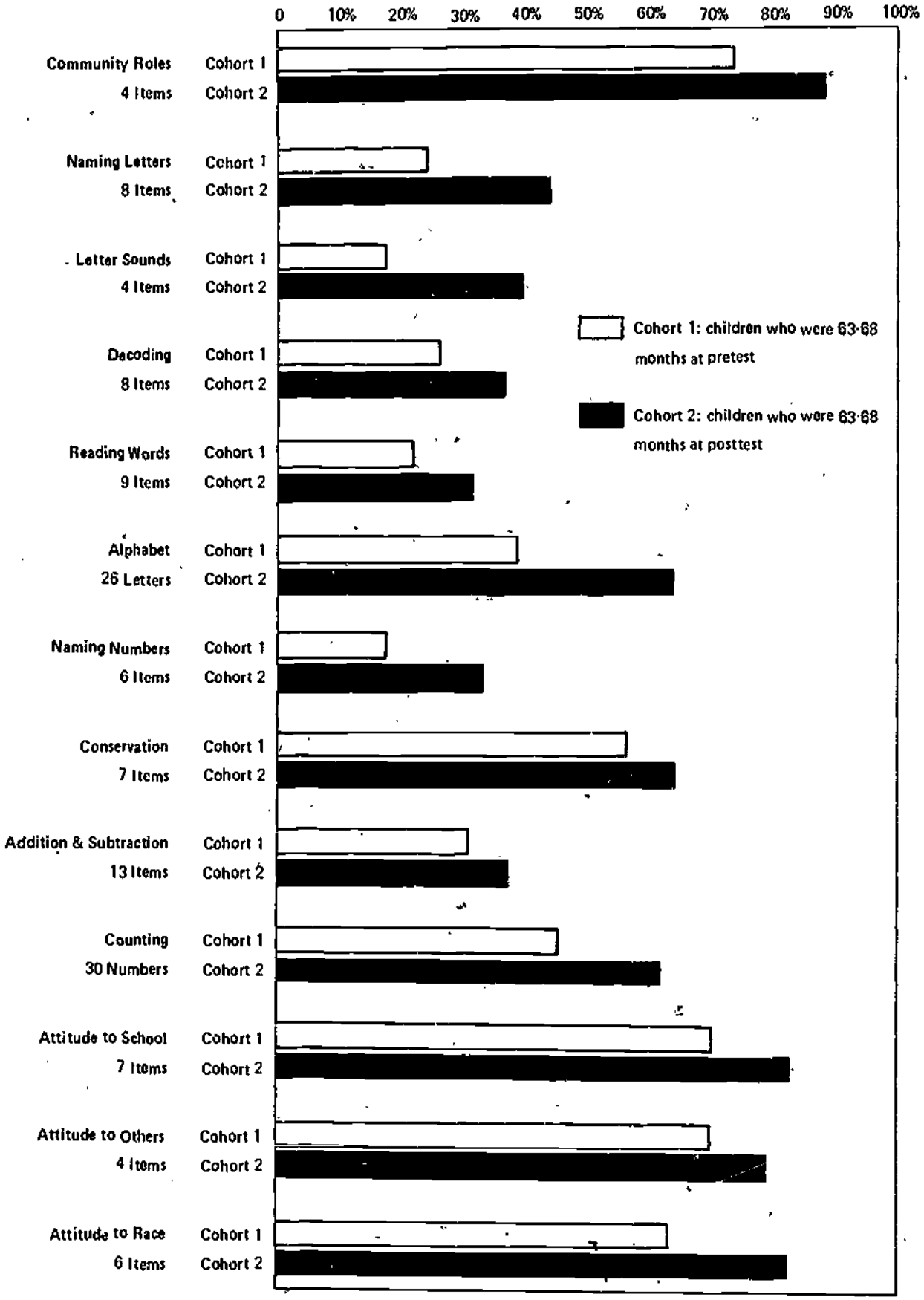


FIGURE 11

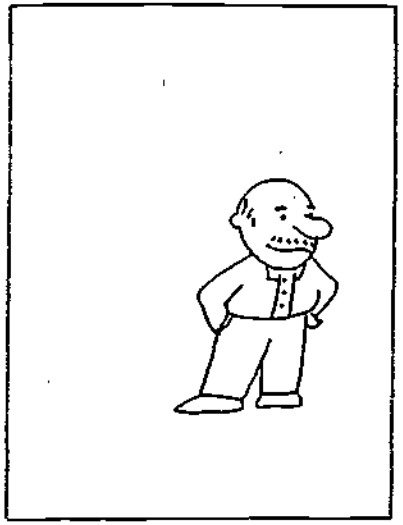
Follow-Up Age Cohorts Study

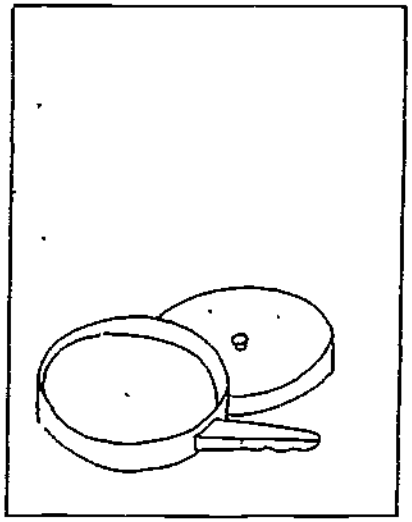
Cohort 1 = Children who were 63-68 months at pretest Year II
Cohort 2 = Children who were 63-68 months at posttest Year II

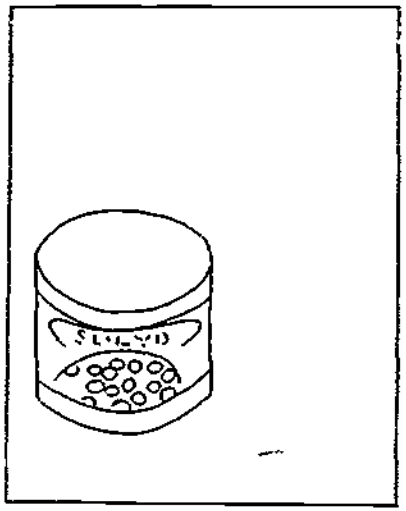
Test and Subtest	Maximum Possible Score	Cohort 1 N=29 Pretest Mean	SD	Cohort 2 N=31 Posttest Mean	SD
Naming Body Parts	10	9.2	1.6	9.4	1.1
Function of Body Parts	8	6.4	1.4	6.7	1.4
Body Parts Total	18	15.6	2.7	16.1	2.1
Naming Forms	4	2.5	1.3	2.6	1.4
Recognizing Forms	4	3.0	1.2	2.9	1.4
Forms Total	8	5.5	2.2	5.5	2.6
Roles of Community Members	4	2.9	1.1	3.5	1.0
Matching by Form	9	6.1	1.3	6.1	1.5
Matching by Position	3	1.6	.8	1.5	.8
Recognizing Letters	4	2.3	1.2	2.6	1.1
Naming Letters	8	1.9	2.5	3.5	3.1
Letter Sounds	4	.7	1.2	1.6	1.7
Initial Sounds	6	1.6	1.3	1.6	1.7
Decoding	8	2.1	1.5	2.9	2.0
Reading	9	2.0	1.3	2.9	2.0
Left-Right Orientation	4	1.8	1.4	2.2	1.3
Alphabet (A to Z)	26	10.2	9.2	16.5	10.1
Pre-reading Total	48	15.6	7.9	20.4	10.2
Recognizing Numbers	4	1.9	1.1	2.3	1.2
Naming Numbers	6	.7	1.0	2.0	1.9
Enumeration	7	5.6	1.1	5.7	1.4
Conservation	7	4.0	1.5	4.5	1.2
Counting Strategies	8	6.7	1.1	6.4	1.5
Number/Numeral Agreement	3	2.0	.9	2.0	.9
Addition & Subtraction	13	4.0	1.6	4.8	2.8
Counting (1-30)	30	13.8	6.5	18.6	9.8
Numbers Total	54	28.6	6.3	32.1	8.0
Relational Terms Total	17	13.3	2.3	14.3	2.5
Classification	15	11.0	3.8	10.9	3.5
Double Classification	9	3.9	1.4	4.6	2.1
Classification Total	24	14.8	4.7	15.5	5.0
Sorting Total	16	8.9	4.0	8.4	5.0
Parts of Whole Total	10	5.8	1.7	6.5	1.8
Emotions Total	8	6.4	1.5	6.1	1.5
Attitude to School*	7	4.9	1.8	5.8	1.2
Attitude to Others*	4	2.8	1.0	3.1	1.0
Attitude to Race of Others*	6	3.8	1.7	4.9	1.4
Grand Total	214	122.8	26.5	133.6	34.0
Peabody Raw Score	---	45.1	8.1	48.4	10.7
Peabody Mental Age in Months	---	54.9	12.7	61.3	19.2
Peabody IQ	---	85.3	14.5	88.9	19.8
Chronological Age in Months	---	65.4	1.9	65.5	1.6

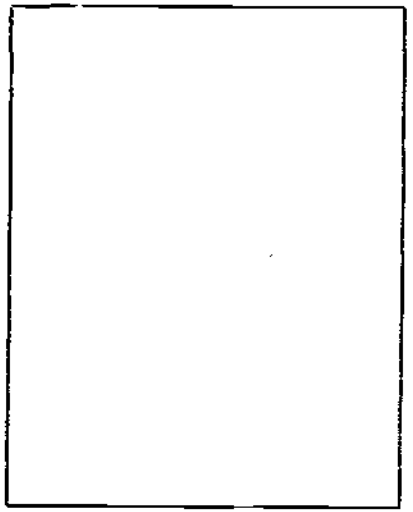
*N's for these subtests: Cohort 1 N = 24 Cohort 2 N = 17

THIS IS MAN, PAN, AND CAN. THE WORDS END THE SAME. ONE WORD IS MISSING.

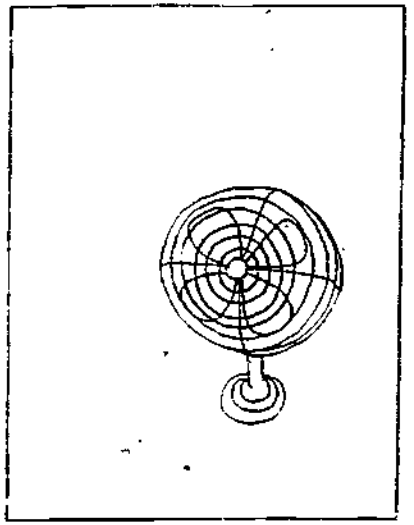


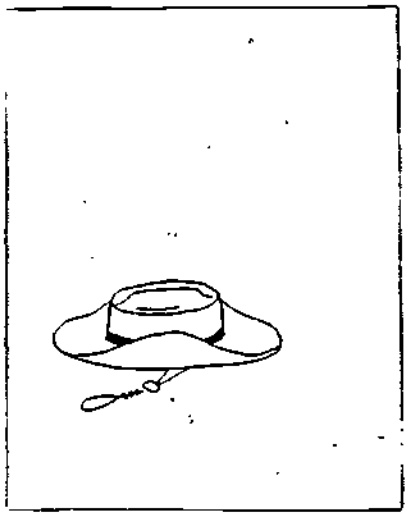


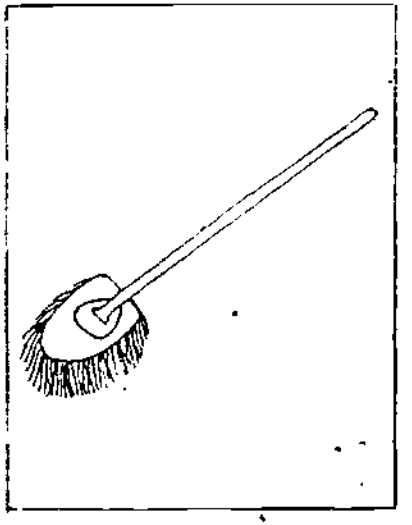




THIS IS BUG, FAN, HAT, AND MOP. WHICH ONE ENDS THE SAME AS MAN, PAN, AND CAN? WHICH ONE GOES WITH THE OTHERS?

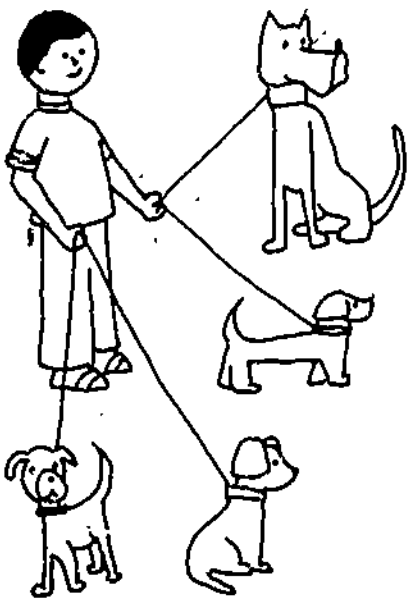


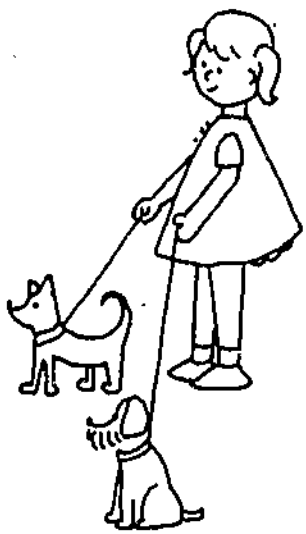




ADDITION

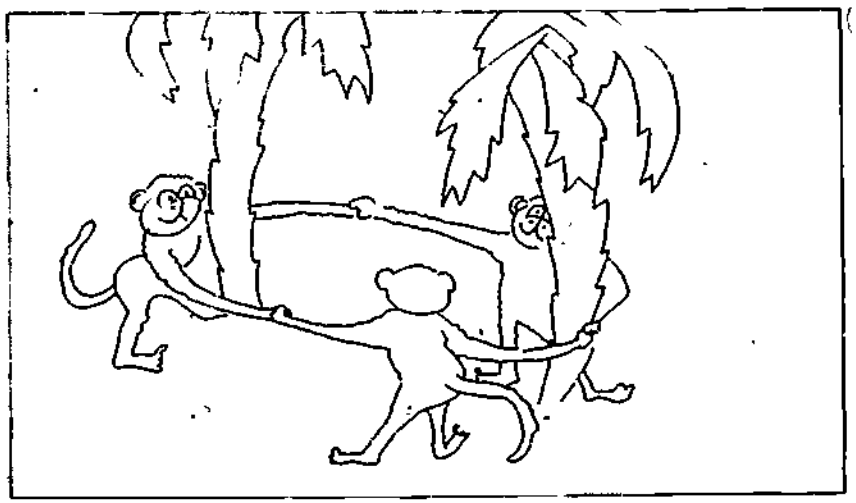
RICKY HAS 4 DOGS AND LINDA HAS 2 DOGS.
HOW MANY DOGS DO THEY HAVE TOGETHER?

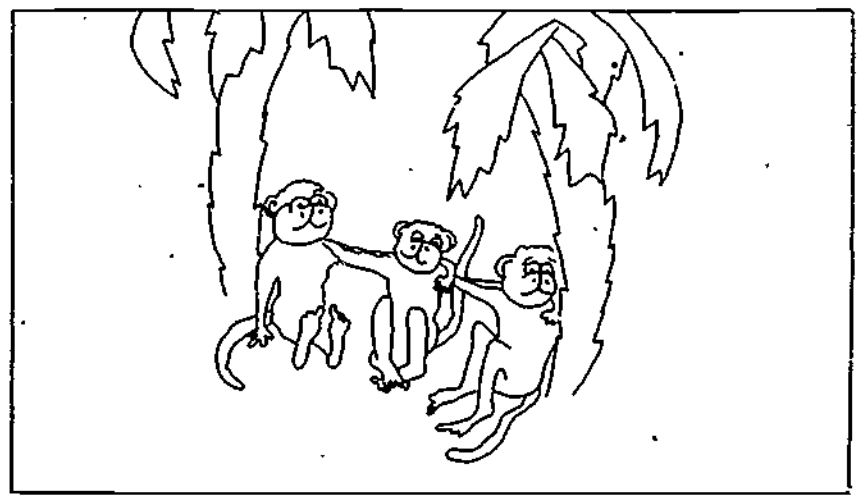


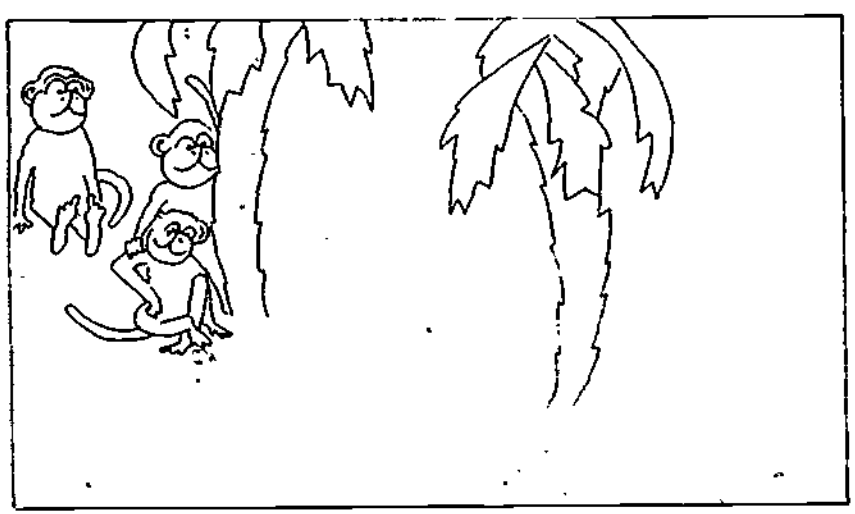


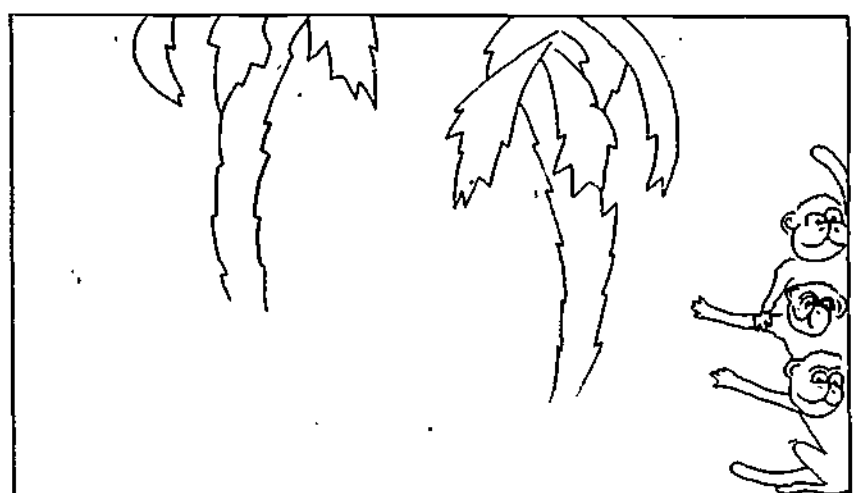
RELATIONAL TERMS

HERE ARE 4 PICTURES OF MONKEYS AND TREES.
WHERE ARE THE MONKEYS BETWEEN THE TREES?



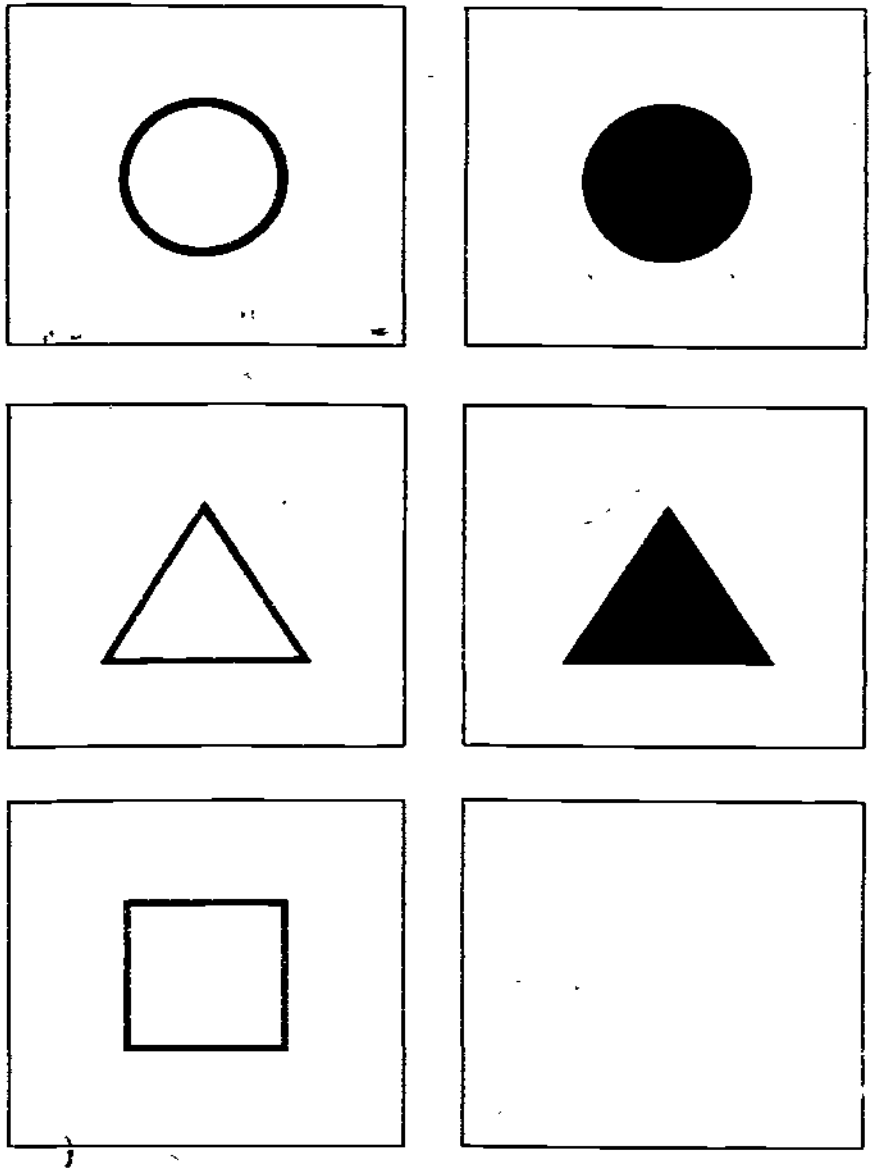




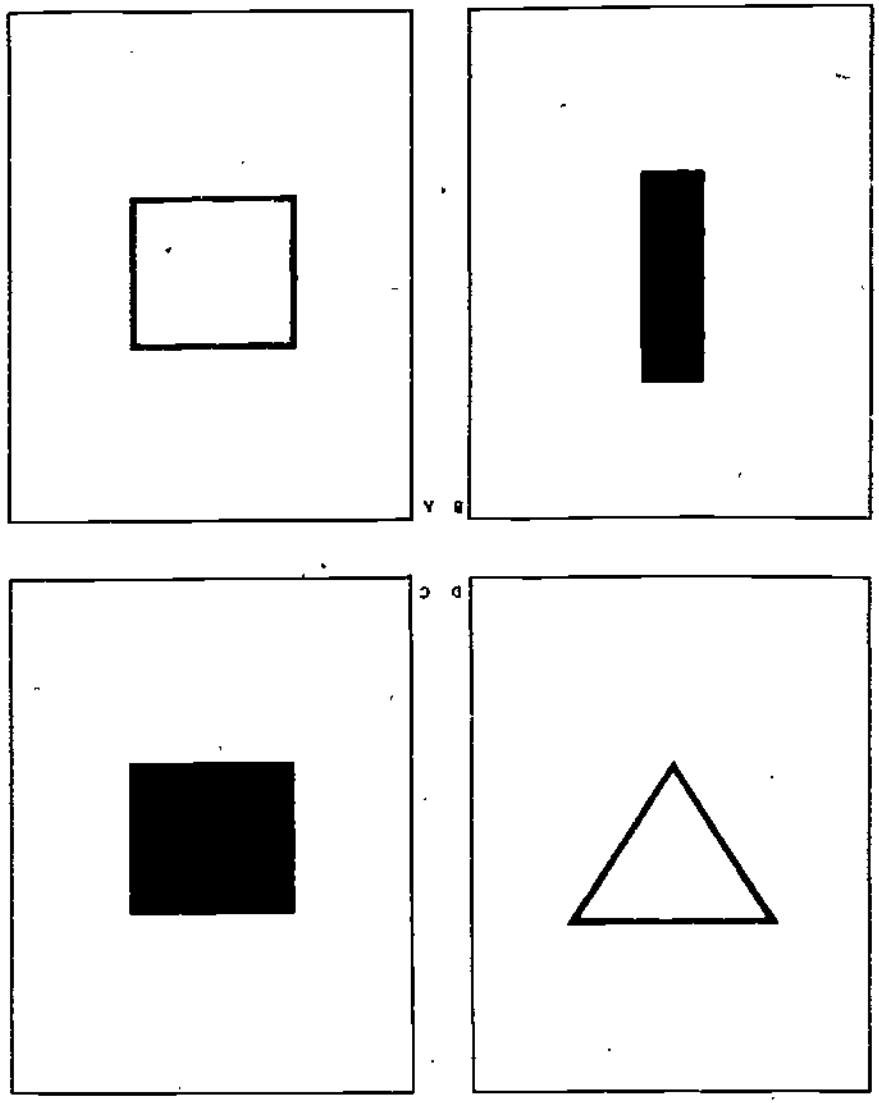


DOUBLE CLASSIFICATION

LOOK AT THE SHAPES HERE. ONE SHAPE IS MISSING IN THIS BOX.

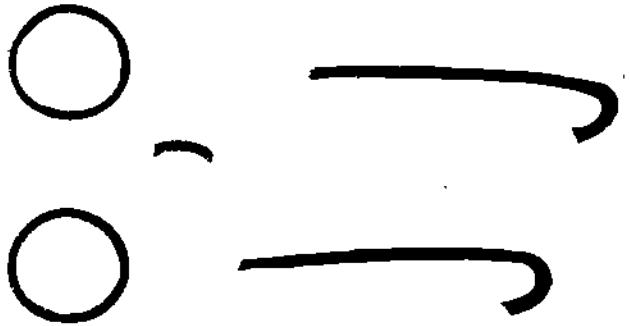


LOOK AT THE SHAPES HERE. WHICH OF THESE GOES IN THE MISSING BOX?

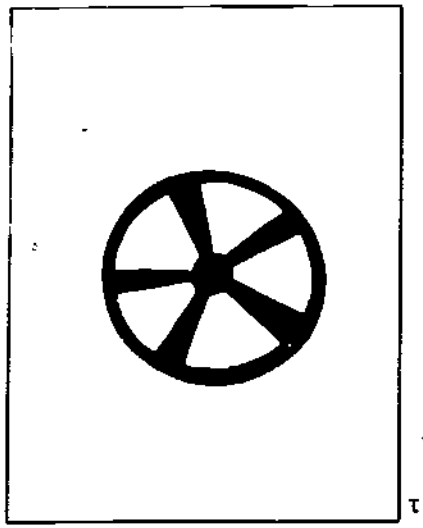


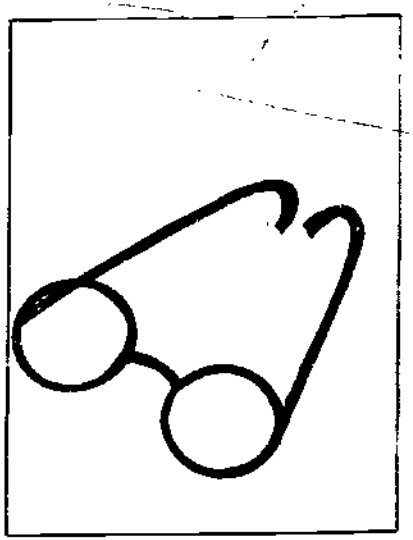
PARTS OF WHOLE

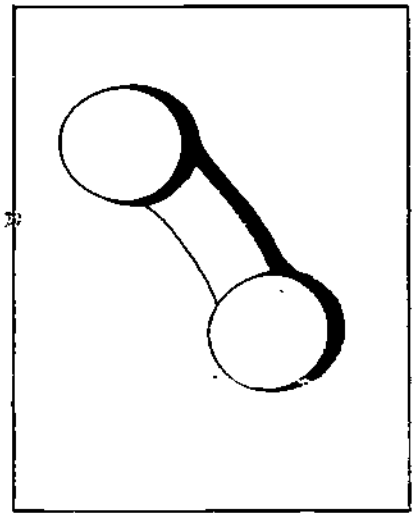
LOOK AT THESE PARTS. THE PARTS CAN BE PUT TOGETHER TO MAKE ONE OF THESE.

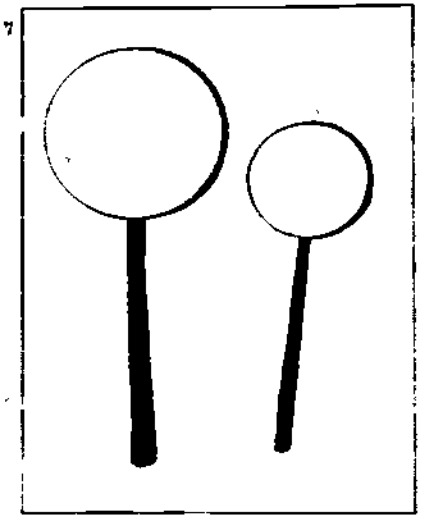


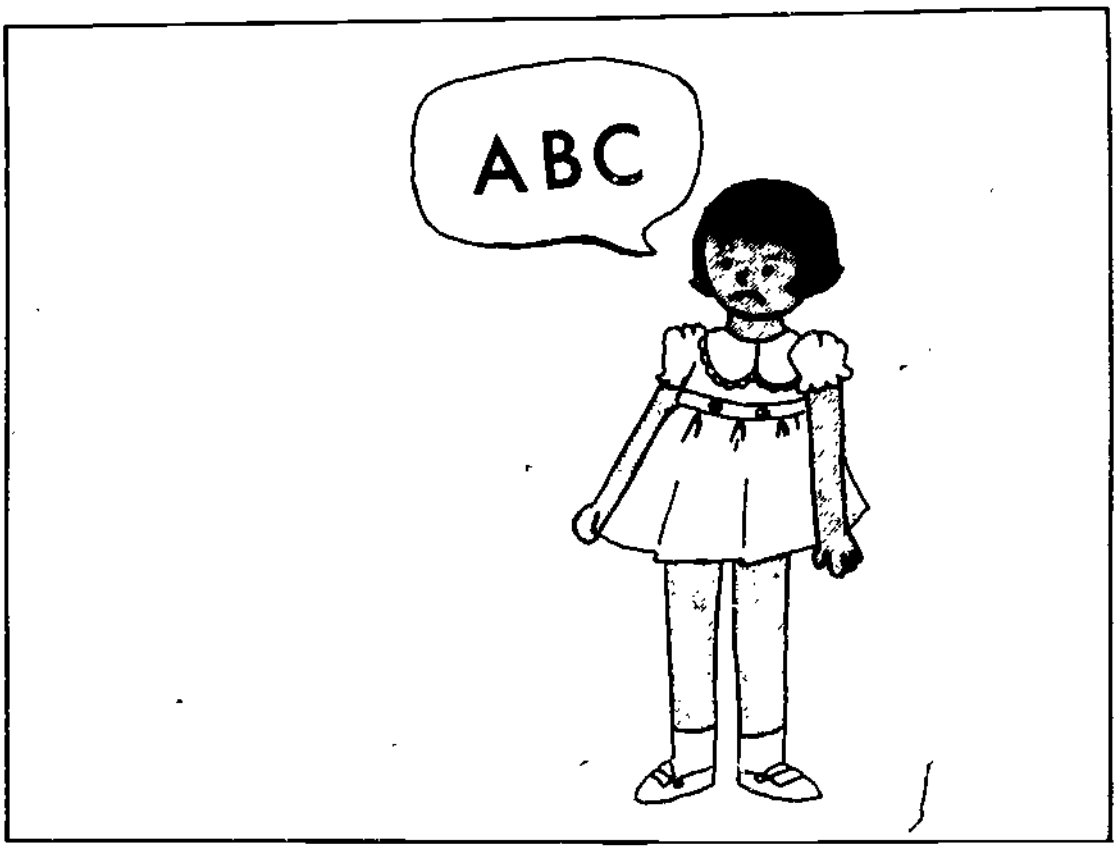
LOOK AT THIS, THIS, THIS, AND THIS. WHICH ONE CAN YOU MAKE WITH THE PARTS?











HERE'S (child's name). ARE YOU SAD OR ARE YOU HAPPY WHEN YOU ARE SAYING THE ABC'S?