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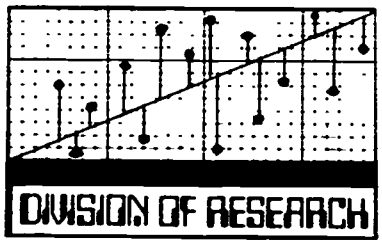
ABSTRACT

One of a series dealing with reading, mathematics, language arts, social studies, science, cultural arts, health, and physical education, this report on language arts is designed to help North Carolina teachers in planning instructional programs for public school students and to inform the general public of students' educational needs and attainments. This assessment contains results and analyses of tests administered to 2500 randomly selected third-grade students in North Carolina. The students' skills in language arts were assessed by a norm-referenced test (Iowa Test of Basic Skills) and an objective-based test (developed at the state level). Discussions of the nature of each of these tests and their interpretations as well as comparisons of achievement levels between North Carolina third graders and students throughout the United States are included. Numerous tables and graphs illustrate points made in the text. (LL)

GRADE 3 LANGUAGE ARTS



STATE ASSESSMENT OF EDUCATIONAL PROGRESS IN NORTH CAROLINA, 1973-74

DIVISION OF RESEARCH / NORTH CAROLINA DEPARTMENT OF PUBLIC INSTRUCTION / RALEIGH 27611

November, 1974

FOREWORD

As one of the ways to improve the quality of public education in the State, personnel in the State Department of Public Instruction conduct an annual assessment of educational performance. This assessment provides educational decision makers with accurate and objective information for planning and administering the State's public elementary and secondary schools.

This year, a series of reports will be released on the performance of third-grade students. The reports will include reading, mathematics, language arts, social studies, science, cultural arts, health, and physical education. Also, special surveys on teachers' and principals' opinions of education will be released. All of this information should also help the general public to be better informed about the status of their schools on a statewide basis.

Aware of the fact that patrons and educators at the local school level also wish to know more about the quality of education in their schools, the State Department of Public Instruction is initiating a program to assist local school personnel to conduct assessment programs. Constructive use of this information, as well as statewide data, will insure continuing progress in providing appropriate learning experiences for all children and youth in North Carolina.

State Superintendent
of Public Instruction

ACKNOWLEDGMENTS

In any major comprehensive effort such as the current Statewide Assessment of Education, it is impossible to recognize all individuals and groups who have made significant contributions. It is appropriate, however, to recognize a number of groups and agencies that have provided major services in this effort.

Were it not for the support of the members of the State Board of Education, funds and other resources would not have been allocated for the assessment program. The leadership provided by members of the Board is especially appreciated.

Special acknowledgments go to the personnel in the local school systems who cooperated and assisted with the assessment effort. The superintendents, the support staff, the principals, and the teachers proved to be accommodating and professionally dedicated in every respect. Their assistance was invaluable.

The Research Triangle Institute should be highly commended for assistance provided in several technical areas of the assessment.

The staff members from the Divisions of Reading, Language Arts, Mathematics, Science, Cultural Arts, Social Studies, and Health and Physical Education were vitally involved in the selection and development of tests for the assessment. Without their efforts, the comprehensiveness of the assessment would have been severely limited.

Finally, special appreciation is expressed to staff members in the Division of Research who successfully coordinated and completed this major assignment in a most efficient manner.

Wm. J. Brown Jr.

Director of The
Division of Research
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PREFACE

As part of his total effort to initiate better management techniques, the State Superintendent of Public Instruction indicated in 1970 that more and better information was needed for state-level planning. He initiated the State Assessment of Educational Progress in response to that need.

The assessment program was a collaborative effort from the beginning. Many levels of the education community contributed suggestions. Funds and services for the program were obtained from local, state, and federal sources. Cooperation among local and state components of the public school system and the nationally respected Research Triangle Institute was the backbone of the assessment. There was an open exchange of ideas, experiences, and services.

As a result of these cooperative relationships, the first State Assessment of Educational Progress took place in the spring of 1972 with minimal disruption to school programs. A statewide sample of sixth graders participated by completing exercises in reading, mathematics, language arts, career awareness, and several dimensions of student attitudes.

At the recommendation of the State Board of Education, the 1973 Legislature voted to fund the assessment program annually as part of the budget of the State Superintendent of Public Instruction. Concurrently, an advisory committee of legislators, businessmen, students, parents, and educators was formed to assist the State Board and the State Department of Public Instruction on aspects of statewide assessment and accountability.

A three-year cycle of assessment in grades three, six, and nine was established, beginning in 1974 with the State Assessment at the third grade. In the 1974 assessment, information was collected from teachers and principals as well as students. Student performance measures were taken in language arts, mathematics, cultural arts, reading, science, social studies, health, and physical education. Reports are now being prepared on the results.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES (CONTINUED)

INTRODUCTION

Purpose of the Assessment

In order to improve educational planning and decision-making in North Carolina, the State Department of Public Instruction initiated a statewide assessment of educational progress. The information gathered through this assessment operation has three basic purposes:

1) To examine the state's present educational position: Knowing the educational status will enable educators to plan better programs for improving learning and teaching. Objective information will help decision-makers set program priorities with more assurance and allocate resources on the basis of need. An accurate description of the current status will increase general public knowledge and understanding about the public schools.

2) To measure educational progress over a period of years: As time passes, a charting of the educational progress in this state can be made. These benchmarks of educational quality could become the basis for educational accountability for the state.

3) To seek means of improving North Carolina's education: As more information is collected in the state assessments, variables which affect learning can be examined, and those variables which show a positive influence on learning can be promoted.

In addition, the state assessment effort provides local units with technical assistance in planning similar local programs which aid the setting of local priorities. Goals may be set using meaningful state and regional norms which are made available from the statewide effort. Furthermore, assessment information collected in each school will assist teachers in planning better instructional programs for public school youngsters and help patrons and parents to better understand the educational needs and attainments of North Carolina children.

In a continuing attempt to develop and improve North Carolina's assessment program, the Legislature, adding its encouragement through program support, approved funds in 1973 as a part of the State Superintendent's program budget to underwrite the statewide assessment effort. This State Assessment at the third-grade level is the first stage in a proposed three-year assessment cycle. In 1974-75, assessment will occur in the sixth grade, and, in 1975-76, at the ninth-grade level.

Implementation of the Assessment

The Sample

Selecting third graders to participate in the assessment program was the responsibility of the Research Triangle Institute, assisted by the State Department of Public Instruction. The objective was to choose a representative sample of size sufficient to provide reliable estimates of test score averages for the State, the Coastal Plains, the Piedmont, and the Mountains. Independent samples of 2500 students were considered appropriate for each of the five areas described in the section entitled "Assessment Areas". The total third grade enrollment of the eighteen schools containing 1970-71 state-supported kindergartens provided approximately 2,000 students for a special assessment follow-up.

A two-stage sampling procedure was designed to select the 12,500 students for the first five areas. In order to give each third grade student in North Carolina an equal chance of being chosen, 618 schools were randomly selected with the probability of school selection based upon stratification according to the size of the third-grade enrollment.

Random selection of students within schools was controlled to preserve the proportion of ESEA Title I enrollment within the third-grade class.

Of the 93,752 third-grade students in North Carolina, the chance of selection for any child was ten out of seventy-four.

Field Procedures

An Assessment Coordinator was designated by the superintendent of each participating LEA to organize all assessment activities. The activities included: (1) selecting and coordinating the testing schedule, (2) distributing and collecting test packages and questionnaires, and (3) providing information and assistance to the test administrators and principals. With the approval of the superintendent, Assessment Coordinators also selected someone other than the student's classroom teacher to administer the tests. These administrators read aloud all items which did not test the student's ability to read. To insure standardization of test procedures, the Division of Research staff held workshops to acquaint coordinators and administrators with assessment procedures.

Assessment Areas

The 1973-74 Assessment of Third Graders consisted of five different assessment areas and an additional research package for the evaluation of third graders who had previously attended state-supported kindergarten. In addition to student measures, all teachers (grades K-6) and principals of the 618 schools included in the student sample were asked to respond to questionnaires designed to reflect their opinions about the educational needs and priorities in North Carolina.

The subjects included in the six assessment areas and the type of testing involved are listed in Table 1.

TABLE 1

OVERVIEW OF 1973-74 ASSESSMENT AREAS, TESTING, AND SAMPLING

Assessment Area	Type of Testing	Number of Students Sampled
Reading, Math, Language Arts	Norm Referenced (Iowa Tests of Basic Skills)	2,500
Reading, Math, Language Arts	Objective Based	2,500
Health and Physical Education	Objective Based Motor Performance	2,500
Cultural Arts	Perception Survey	2,500
Science and Social Studies	Objective Based	2,500
Third-Grade Kindergarten Follow-up	Norm Referenced (Iowa Tests of Basic Skills (Cognitive Abilities Test) (Self Observation Scale)	2,000

Types of Instruments

Reading, Language Arts, and Math were each assessed by both a norm-referenced test (Iowa Tests of Basic Skills) and an objective based test developed at the state level. The difference in the kinds of information provided by the two types of measurements should be considered when interpreting test results.

Nationally standardized achievement tests, such as the Iowa Tests of Basic Skills, are designed to provide information about student performance in given subject areas in relation to the performance of other students who are representative of the nation as a whole. The national sample of students taking the ITBS is the "norm" or reference group to whose performance we compare our state results. Thus, the ITBS provides information on the educational status of North Carolina third-grade students in relation

to the performance of a national sample of "typical" third graders. Such standardized tests also assume a continuum of achievement skills based upon the scores of the national sample. North Carolina's third-grade results may be considered against this continuum.

Norm-referenced tests are designed to spread out developmental scores on a continuum of skills spanning several grade levels. However, they do not tell us specifically what our students have achieved or how they perform on a given set of educational tasks. Some items on the ITBS can admittedly be grouped into subject area objectives, but the test is not designed for diagnostic purposes.

Therefore, objective-based tests were developed for the areas of reading, language arts, and mathematics in order to assess more specific knowledge of North Carolina's students. Program area specialists and researchers collaborated on this review and selection process. Questionnaires were developed, information gathered, standardized tests carefully reviewed, and objectives and items finally selected in accord with some of the major educational goals of North Carolina.

Objective-based tests, also known as criterion-referenced tests, are developed differently from norm-referenced tests. They facilitate assessing the extent to which students have learned some defined behavior domain or specific class of learner skills. These behavior domains are also referred to as objectives. Specific objectives considered important or crucial for later skills are selected for each subject area. Then, items selected to measure these objectives determine how well students have learned the knowledge or behavior described by the objectives. Objective-based tests are thus diagnostic of specific learning, rather than more broadly comparative in nature - as are the norm-referenced tests.

Strengths and weaknesses of a group of students for a given subject area are thus determined, and sometimes, though not necessarily, in relation to a norm group.

It is important in making educational program decisions to know specifically what students have learned as well as how they are generally performing in relation to other students. For this reason, the assessment of third graders included experimental objective-based tests for various subject areas. Norm-referenced and objective-based tests when combined, should provide a more complete picture of the performance of North Carolina students.

In addition to student performance tests, other instruments were used in the North Carolina assessment. Tests were developed on student perceptions in some subject areas, and a survey of teachers' and principals' needs was taken. The assessment staff also acquired school and community information on variables known to be associated with achievement.

Interpreting Test Scores

Norm-Referenced Tests

The knowledge that a student answered seventy-five items correctly on a ninety-item test tells little in itself about the achievement level of the student. If we know, however, that ninety percent of the students in the standardization sample earned scores lower than 75, we might conclude that the student in question performed rather well. The value assigned to a score, then, is determined by comparing that score with scores earned by members of the appropriate norm group. This process of comparing a student's score with a scale based on the test performance of the norm group gives useful, relative meaning to the individual student's score.

Systems have been developed for calibrating the distribution of norm group scores, making the comparison process easier and at the same time more informative. These systems clarify position of scores in relation to one another and deal with the problems of direction, distance and degree. However, as educational statisticians at the Research Triangle Institute have pointed out,... "no single statistic exists for completely meaningful interpretation of the degree of difference between (groups of scores)." Therefore, these reports will include a variety of reporting systems to aid in the perception of degree.

One system is based on the relationship between the average number of items answered correctly by groups from successive grades (grade equivalent). Another compares a student's performance against the percentage of students in the national norm group whose scores fell below the student's score (percentile rank). Still another system looks at item performance. (Norms for item performance are available for the ITBS.) The percentage of students in the national norm group who answered each item correctly provides a means of comparison for the item performance of North Carolina's students (item difficulty). Other systems compare the total distributions of the North Carolina group against the total distribution of scores in the national norm group

The procedure for establishing national norms for comparison involves choosing a "representative" national sample of students, administering the tests to them, and determining the distribution of their scores within each grade level. For example, if a median (average) vocabulary raw score of 18 was attained by students tested during the first month of their third-grade enrollment, the developmental concept grade equivalent (GE) would assign a score of 31.0 to the vocabulary raw score of 18.

Other grade equivalent scores are established from the median (average) raw score attained by students at the beginning of other grades (i.e., 21.0, 31.0, 41.0, etc.) on this test. Grade equivalent scores corresponding to each of the ten months of school development between grades (31.0 to 41.0, etc.) are determined by dividing the raw scores between the reference points into ten intervals for the months of the school year and summer. These ten points, of course, represent an <u>average</u> year's development. It would be unreasonable to expect below average students to obtain ten points in a year while talented students should obtain more. The estimate of developmental skill from such a system is helpful. However, it does have limitations, is often misinterpreted and misused, and, therefore, generally not recommended as the only reporting device (see Appendix A of the 1973 Assessment Report). The following paraphrased excerpt from the Teacher's Guide to the ITBS is informative.

> The grade equivalent is an estimate of where the pupil is along the developmental continuum measured by these items, <u>not</u> of where he should be placed in the graded organization of the school. A second grader with a grade equivalent score of 45 is at the 90th percentile of the second grade norm group, meaning that 90 percent of the second grade pupils scored lower and 10 percent scored as well or better. <u>This pupil should be considered as being in the upper 10 percent of the second grade.</u> His grade equivalent of 45 <u>does not</u> indicate that he is ready for fourth-grade work or that he should skip the third grade.

The publisher points out this limitation does not mean that grade equivalents should not be used at all. He continues, "They are valuable indicators of pupil growth [particularly for those not considerably above or below average] <u>but should not be used to determine a pupil's standing in his grade</u> .... Percentile norms and stanines are provided for ... this purpose." We concur and believe that looking at performance in several ways, while remembering <u>the limitations of each</u>, is the better approach to valid interpretation.

Objective-Based Tests

Generally, objective-based tests results are interpreted by looking at the percentage of items achieved (or answered correctly) for a given objective. The desired level of achievement for an objective is a considered, yet subjective decision on the part of educators. In some cases, 50 percent achievement of an objective at that grade level may be acceptable; in others, 100 percent may be considered necessary for acceptable performance. The level depends on both the purposes for assessing the objective and whether or not the objective has been previously taught. In the statewide survey, objectives were selected that appeared to be commonly relevant to the curricular area throughout the state or that had some importance for state-level planning. Acceptable achievement levels may therefore vary with different subjects and objectives. This same process could be repeated at the regional or local level and the final test may again have different objectives, depending on local priorities. A statewide sample of outstanding third-grade teachers reviewed the state selection of objectives this past summer for relevance and importance to their classes. They also examined the items and estimated the success they felt their students would achieve on them. However, due to possible differences which exist across the state, a "desired" achievement level was not set for North Carolina.

Another consideration is the number of items per objective. As mentioned earlier in the "Types of Instruments" section, objectives reflect specific areas or domains of student behaviors. Because only a limited number of items can be selected for a given group of behaviors (objectives) the results on these items should be carefully interpreted as "indicators" of general performance for the objective.

If there are only two items per objective, the possible achievement levels for the objective are necessarily 0 percent, 50 percent, and 100 percent achievement. Similarly with four items for the same objective, the possible achievement levels would be expanded to 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent. This increase in items enables a more specific reporting of results at both the student and group level. Further, we have a greater assurance that the students (or groups) have adequately learned the skills or behaviors stated in the objective if four items are used rather than two. However, no set rules can be given, as some objectives can be stated with greater specificity than others and require fewer items for adequate measurement.

Generally, statewide results will be reported by objectives and reflect the percentage of students who answer a given number of items correctly for the objective. For example, if an objective has three items, results will show what percentage of students answer one, two, three, or no items correctly. The number of items a student or group is expected to answer correctly is again a considered judgment based on the particular objective and the value or priority the user places on that objective.

Information at the item level also aids in interpretation as efforts are made to diagnose specific strengths and weaknesses. Thus, the objective-based test allows flexibility to curriculum specialists in assessing important developmental skills with greater accuracy. Certainly it adds a valuable perspective to those who plan North Carolina programs to meet specific needs of North Carolina youngsters.

Making Valid Comparisons of Test Scores in North Carolina

Comparisons of test scores may be less than useful if the individuals within the groups vary greatly on important characteristics. Comparisons of the test scores of classes, schools, local school districts, or states must be carefully interpreted in light of the inherent differences among groups and those individuals who comprise the group. Group comparisons can be made validly when the groups as a whole are similar on certain basic characteristics. This section will review important characteristics which are related to achievement and which differ among the regions of the nation. These characteristics should be considered by all who seek to make appropriate comparisons. The nature of the national norm group will also be described in order that state and national comparisons can be viewed from proper perspective.

Characteristics of the National Norm Group

In interpreting norm-referenced test scores in North Carolina, it is important for the reader to know the makeup of the norm group since the state's performance comparisons are against the standards set by the students who comprise this norm group.

Prescribed conditions were set forth in the selection of students for inclusion in the ITBS norm group. The pupils in the sample had to be representative of the various ability and achievement levels in the nation. The sample had to be sufficient in number to represent adequately the many diverse elements of population within the United States. Accordingly, a sample size of slightly more than 20,000 students per grade was selected.

Sampling procedures employed seven community size categories. A number to represent socioeconomic status was developed to further stratify each

size community. It was found that two important variables that measure socioeconomic status - (1) median years of education of the population 25 years and over and (2) median family income, in thousands of dollars - had similar variability. Therefore, these two variables were summed to form an index of socioeconomic status which served as a basis for stratification of communities within a size category.

In order to compensate for incomplete administrations due to absences and other losses, weights were assigned to all raw score frequencies. Size of system, socioeconomic status, region, and public-parochial school balance were all considered in assigning these weights. The weighted distributions are believed to closely approximate those of the total population of students in the United States for each grade.

The following tables display the results of this sampling procedure. The reader can compare the national norm sample of pupils with the general population figures for both the nation and North Carolina. Table 2 shows a comparison of the percentages of students in the weighted norm sample that are within each of the national regions. The corresponding population figures are shown for North Carolina and the United States.

TABLE 2

REGIONAL PERCENTAGES IN THE NORM SAMPLE AND THE TOTAL POPULATIONS OF N. C. AND U. S.

GROUP	REGIONS				
	Northeast	Midwest	Southeast	Southwest	Far West
Norm Sample	21.4	32.3	19.9	11.2	15.2
United States Population	26.7	29.1	18.8	10.0	15.4
North Carolina Population			100.0		

Table 3 compares the percentage distribution of the students in the norm sample among seven community sizes with the percentages within these community sizes in the nation and North Carolina.

TABLE 3

COMMUNITY SIZE PERCENTAGES IN THE NORM SAMPLE AND THE TOTAL POPULATIONS OF N. C. AND THE U. S.

Group	Lower Bounds of Community Size						
	1,000,000	250,000	100,000	50,000	25,000	10,000	1-10,000
Norm Sample	9.7	11.5	7.7	9.1	8.5	10.5	42.6
United States Population	9.2	11.5	6.7	8.3	9.0	10.2	45.6
North Carolina Population (1970)	0.0	8.1	23.2	1.8	8.2	6.4	52.4

The socioeconomic categories within community size are not available from the test manuals, however, the socioeconomic index ranged from 7 to 27. This range can aid in the interpretation of Table 4 which compares the U. S. and North Carolina populations.

TABLE 4

MEDIAN YEARS OF EDUCATION AND MEDIAN FAMILY INCOME (IN THOUSANDS OF DOLLARS) FOR THE 1970 TOTAL POPULATIONS OF N. C. AND THE U. S.

Group	Median Education	Median Family Income	Socioeconomic Index
U. S. Population	12.1	9.87	21.97
N. C. Population	10.6	7.77	18.37

Although ethnic membership was not a factor in selecting or weighting of the norm group, estimates of the percentages in the norm sample as well as the total North Carolina and the United States populations is given in the next table.

TABLE 5

ESTIMATES OF THE PERCENTAGE DISTRIBUTION WITHIN ETHNIC GROUPS IN THE NORM SAMPLE, THE NORTH CAROLINA SAMPLE, AND THE U. S. STUDENT POPULATION

Group	American-Indian	Black	Oriental	Spanish/American	White
Norm Sample	0.3	15.7	0.5	4.0	79.1
United States Population (1968)	0.4	14.5	0.5	4.6	80.0
North Carolina Sample	1.2	29.0	-	-	69.0

These tables indicate that the norm sample is representative of the nation and there are significant demographic differences between pupils in North Carolina and pupils in the nation.

Additional information about third graders in North Carolina and their environment is presented in the following tables.

TABLE 6

PUPIL CHARACTERISTICS OF THE THIRD-GRADE ASSESSMENT SAMPLE

Characteristic	State Assessment Sample
Sex	
. Male	51.3%
. Female	48.5%
Racial/Ethnic Membership	
. American Indian	1.2%
. Black	29.0%
. White	69.0%
Parental Education Level	
. Neither over eighth	5.9%
. One over eighth	25.9%
. One high school graduate	44.8%
. One over high school	23.5%
Family Income Estimate	
. Less than $3,000	15.4%
. $3,000 - $15,000	75.6%
. Over $15,000	8.1%
Any Kindergarten Experience	
. Yes	39.2%
. No	53.4%
. Unknown	6.8%

North Carolina Comparisons With Other States

Because learning does not stop at the end of the school day, it is helpful to review the environment in which this out-of-school learning occurs. North Carolina, the twelfth most populous state in the nation has been described as a "state of magnificent variety." The agriculture and industry of North Carolina are varied, with the state producing two-thirds of the country's flue-cured tobacco and leader in fabric and furniture

manufacture. Tourism also flourishes in North Carolina as thousands annually visit its mountains, parks, golf courses, shores, and sites for boating and fishing. Clearly, such diversification makes it difficult to describe the "typical" North Carolinian.

The diversity continues when such variables as individual income, occupation, race, and education are considered. These factors and the values placed on them vary not only by county and region, but within communities as well.

In studying educational status and change over time it is essential to examine achievement in conjunction with environmental factors. Of these elements, socioeconomic factors, in particular, are associated with educational opportunity and attainment, and these exert a major influence on a child's growth and development. Educators must consider these tangibles and, more importantly, the values and ethics implicit in a child's immediate environment. The remainder of this section will contrast the environment of the North Carolina pupil with the environment of pupils in other states.

A state's population, size, and population distribution are basic environmental factors. The following tables show North Carolina's relative ranking. More detailed information is included in the Appendix.

TABLE 7

NORTH CAROLINA'S RANK AMONG THE FIFTY STATES
ON BASIC DEMOGRAPHIC FACTORS

Factor	North Carolina's Rank
Land Area (1970)	29
Population (1973)	12
People Per Square Mile (1970)	17
Percentage Classified Rural (1970)	5
Percentage Black (1970)	6
Median Age (1970)	15

As evident here, North Carolina students are from a more populous state where the people are younger, more likely to be of a minority group, and live in smaller towns than people in most states. It is also apparent that the degree of rurality is twice that of the national average while the density is slightly above average.

TABLE 8

NORTH CAROLINA'S RANK AMONG THE FIFTY STATES
ON BASIC SOCIOECONOMIC FACTORS

Factor	North Carolina's Rank
Per Capita Income (1972)	34
Households With Cash Incomes of $3,000 or less (1972)	12
Per Family Income (1970)	40
Median Years of Education (1970)	46

North Carolina's students do not share in as much of the basic socioeconomic wealth as do students from other states. That is, North Carolina ranks among the lowest ten states on important characteristics such as income and education level of adults.

Thus, North Carolina's combination of factors associated with income, ethnic composition, degree of rurality, and adult education level seem to indicate a "non-typical" background for her youth. A picture emerges of an environment which may not reinforce maximum educational progress.

Comparisons Within North Carolina

Just as there are strong differences between North Carolina and the average composite for the nation, there are great variations within the state's boundaries. Particularly important is the variety which exists

with the differing traditions and personalities of its Mountain, Piedmont, and Coastal Plains groups. The following table describes some of these differences:

TABLE 9

GENERAL ENVIRONMENTAL FACTORS WITHIN NORTH CAROLINA

Factor	Mountains	Piedmont	Coastal Plains	State
Population (1970)	760,760 (15%)	2,692,975 (54%)	1,628,323 (32%)	5,082,059
Growth (1960-1970)	11%	21.3%	7.7%	11.5%
Distribution of Black Population (1970)	41,459 (4%)	569,575 (51%)	515,444 (46%)	1,126,478
Percentage Black (1970)	5.4%	21.1%	31.6%	22.2%
Percentage Classified Rural (1970)	75.1%	45.9%	60.6%	55.0%
Percentage That Moved (1965-70)	40.5%	46.0%	49.2%	46.2%

These basic environmental factors indicate that a majority of the people - black and white - live in the Piedmont; the Mountains have the highest percentage of the people living in rural areas; and the Coastal Plains population has a greater proportion that is black. Perhaps the major point in these figures is the variety between these three major geographical divisions. As disclosed earlier some of these same variables have been shown to be related to achievement.

Distribution of economic resources in these three regions also varies as the following table shows:

TABLE 10

SOCIOECONOMIC FACTORS WITHIN NORTH CAROLINA

Factor	Mountains	Piedmont	Coastal Plains	State
Family Income	8,059	10,234	7,757	9,139
Family Income Female Head (1970)	5,017	5,620	4,104	5,017
Average Percentage Free School Lunch	35.2%	37.6%	64.7%	47.8%
Percentage Living Below Poverty	20.2%	15.1%	28.8%	20.3%
Percentage of all Families Below Poverty with Children Under 18	10.7%	8.9%	19.2%	12.3%
Percentage of all Children Under 18 From Poverty Families	20.5%	17.4%	34.4%	23.6%
Percentage of Children Under 18 Living with Both Parents	82.6%	80.1%	73.7%	78.3%

Because socioeconomic status is a strong predictor of academic success, regional differences in educational achievement are to be expected. Thus, any academic comparisons should be carefully tempered by these background differences.

Still another factor associated with academic achievement is the educational environment. Regional patterns are suggested in the table below:

TABLE 11

EDUCATIONAL FACTORS WITHIN NORTH CAROLINA

Factor	Mountains	Piedmont	Coastal Plains	State
Average of Median Years of Education - Adults Over 25	9.5	10.2	9.9	10.6
Adult Education Index	2.50	2.82	2.56	2.69
Percentage of High School Graduates of Those 16-21 Not In School	49.7%	48.7%	44.0%	46.7%
Taxing for Education Index	417	507	439	478

These environmental, socioeconomic, and educational factors are a major influence on a child's educational growth and development. Educators who consider regional comparisons must be aware of the differential effects that these factors contribute within regions. Certainly, expectations are better determined with an awareness of the status of these variables irrespective of whether local, regional, or state comparisons are being made.

LANGUAGE ARTS INSTRUMENTATION

In this section, specific detail on both the norm-referenced and objective-based tests is discussed. Highlights of the report and the actual results will be presented following this section.

Norm-Referenced Test

The language section of the norm-referenced Iowa Tests of Basic Skills (ITBS) provides an indication of N. C. third-grade student performance in relation to certain language skills of third-grade students in the nation. These skills are grouped into four subtests designed to measure the essentials of effective written communication: spelling, capitalization, punctuation, and usage. Test results will be presented by four subtest scores and a total language score. The types of items, or tasks, involved in each subtest are as follows:

Spelling: Each item consists of three different words, one of which is misspelled. The three words are presented orally in the context of a sentence, and the student must mark the misspelled word in his test booklet.

Capitalization: Several short paragraphs are presented without appropriate capitalization. The student must mark (underline) the first letter of any word that is not properly capitalized.

Punctuation: The format of the punctuation subtest is similar to that of capitalization. Each paragraph deals with one specific punctuation mark. The student must mark the spaces where the designated punctuation mark is missing.

Usage: Items on the usage subtest are presented in written form in the test booklet but are administered orally. Each item consists of three sentences, and the student must select the best sentence. The other two sentences contain at least one common mistake in oral or written usage.

Objective-Based Test

General Description

The objective-based language arts test administered in the 1973-74 assessment of third graders was experimental in nature. It attempted to

identify specific strengths and weaknesses of students in one skill area, punctuation, across four learning modalities: (1) Listening, (2) Speaking, (3) Reading, and (4) Writing. Punctuation was selected, not because it was considered more important than other language areas, but because more straight-forward items could be developed to measure the conceptual framework. Students were also asked questions concerning basic concepts or rules of punctuation under a fifth category, Recognition of Information.

Ten punctuation skills (or objectives) were selected. Briefly, these were the use of:

1. the period as terminal punctuation
2. the question mark as terminal punctuation
3. the exclamation point as terminal punctuation
4. commas to separate words in a series
5. commas between city and state
6. commas in the date of the year
7. the apostrophe in contractions
8. commas after the greeting of a letter
9. commas after the closing of a letter
10. quotation marks before and after a direct quotation

Items for the first four punctuation skills were developed for all four modalities of learning. Due to the limits of test length, emphasis was placed on these first four skills. Items for skills 1 through 3 and 5 through 10 were developed for the Recognition of Information or rules category. The reading modality contains items for all ten skills.

TABLE 12

Conceptual Scheme for Objective-Based Punctuation Test

Punctuation Skill	Category of Assessment				
Period	Listening	Speaking	Reading	Writing (3 ways)	Recognition of Information (Rules)
Question Mark	Listening	Speaking	Reading	Writing (3 ways)	Recognition of Information (Rules)
Exclamation Point	Listening	Speaking	Reading	Writing (3 ways)	Recognition of Information (Rules)
Commas (Series)	Listening	Speaking	Reading	Writing (3 ways)	Recognition of Information (Rules)
Commas (City, State)	---	---	Reading	---	--- Recognition of Information (Rules)
Commas (Date, Year)	---	---	Reading	---	--- Recognition of Information (Rules)
Apostrophe	---	---	Reading	---	--- Recognition of Information (Rules)
Comma (Letter Greeting)	---	---	Reading	---	--- Recognition of Information (Rules)
Comma (Letter Closing)	---	---	Reading	---	--- Recognition of Information (Rules)
Quotation Marks	---	---	Reading	---	--- Recognition of Information (Rules)

Rationale

Current philosophy in the language arts area indicates that listening, speaking, and writing should be integrated into one program. However, there are few available suggestions in print for accomplishing this task. Little is known about how children actually learn language skills, and the exact relationships among these four learning modalities in language usage are unclear. For example, do children learn to recognize the intonation patterns appropriate for asking questions before they can reproduce those same patterns in their speech? Do they in turn use that skill to read questions with correct intonation and to write the symbols that indicate that pattern? Are these modalities hierarchical or do they develop "all of a piece"? Or are learning styles only individual?

This experimental objective-based test on punctuation was directed toward these and other questions. Can third graders use information they have about punctuation in listening, speaking, reading, and writing tasks?

Can they

- recognize rules of punctuation?
- hear and identify oral language?
- reproduce the appropriate intonation patterns in speaking?
- identify correctly and incorrectly punctuated sentences when those sentences are read?
- write sentences using the appropriate punctuation symbols?

Item Types

Items for the five different categories were necessarily of differing types. Recognition of Information dealt with the knowledge of rules of punctuation. The Listening modality consisted of items requiring the student to listen for the correct punctuation. The Speaking modality items involved the reading of sentences with the correct voice inflection, as indicated by the punctuation. Reading items were in a multiple choice format, with the student instructed to read by himself and choose the correctly punctuated sentence. There were three types of items under the Writing modality, each designed to assess one level of the student's ability to write using appropriate punctuation. These levels were:

A. supplying the correct punctuation for a sentence already written in the test booklet.

B. writing a dictated sentence and supplying the correct punctuation.

C. creating his own sentence, using the designated punctuation correctly.

For more detailed description of the tasks involved and examples of item types, see Appendix, page 67.

LANGUAGE ARTS HIGHLIGHTS

Two types of language arts tests were administered in the 1973-74 State Assessment of Educational Progress in North Carolina. The Iowa Tests of Basic Skills permitted norm-referenced comparisons between a national norm group and a sample of North Carolina's third graders. An experimental, objective-based Punctuation Test was also administered to a sample of third graders in an attempt to determine how students learn language skills as well as to pinpoint strengths and weaknesses among specific language skills.

The ITBS tested four broad language arts skill areas: spelling, capitalization, punctuation, and usage. North Carolina's third-grade performance was, on the average, below the nation on the total language score. Average subtest score comparisons were quite variable with North Carolina's third grader's average scores being slightly above the national average in spelling, somewhat below in punctuation and capitalization, and considerably lower in usage.

Detailed information on the composition of the nationally normed group and North Carolina's third graders indicates strong differences exist and that comparisons between the groups should be done with care. Statisticians suggest that no one number can express the degree of any difference between the two groups and therefore several reporting systems should be considered. One system reveals that the national normed group generally has a four to five month greater grade-equivalent average score than does the state group. Dividing the two score distributions into intervals reveals a disproportionate number of North Carolina students in the lowest intervals when compared with the national group, while the middle score intervals have about the same percentage of North Carolina and national norm students. Another system suggests that if the two groups were each represented by one hundred students, there would be ten to twelve more norm-group students with higher scores than North Carolina students at any score on the distribution of scores.

On the experimental Punctuation Test, North Carolina third graders performed as generally expected by third-grade teachers. Specifically, the results show:

> That student achievement was highest for punctuation skills involving the period, followed closely by the exclamation point and question mark, with poorest results being posted for using commas to separate words in a series;
>
> that a consistent hierarchy of modalities of learning (Reading, Speaking, Listening, and Writing) did not emerge across all punctuation skills assessed. However, Writing generally appeared to be the most difficult modality for using more advanced punctuation skills in the third-grade curriculum;
>
> that actual achievement by the third-grade students in the Writing tasks was slightly lower than the teachers expected;
>
> and that student punctuation performance was no lower when students created their own sentences. In fact, the students frequently used more difficult words correctly and involved more difficult structural patterns in producing their own sentences than were used in dictated sentences.

LANGUAGE ARTS: DETAILED DESCRIPTION OF RESULTS

Results on the norm-referenced and objective-referenced tests will be described in detail in this section of the report. As indicated in the discussion of data interpretation, the norm-referenced data (comparing North Carolina with the national third graders) should be examined through several systems: grade equivalent, percentile rank, item difficulty, and distribution comparisons. The combination of these sources provides a more complete picture.

Norm-Referenced

State comparisons with the national norm group will precede the three regional-state comparisons of this section. Information about performance within certain categories on variables such as sex and education level of parents will be included in both the state and region-state sections.

State-National Comparisons

Grade Equivalent

The grade equivalent estimates where the "typical" North Carolina third grader is along the development continuum, as measured by the items on this test. In order to use this concept, the grade equivalent estimated for the representative national sample at the time of year when our students were tested was determined. While skill development, as measured by this concept, is not necessarily uniform across actual months in school, the value which grade equivalent would assign to the mean an (average) students score for the period when North Carolina's third graders took the test is 38.0. Comparisons between the North Carolina results and the national norms may be made by use of the following table:

TABLE 13

NORTH CAROLINA AND NATIONAL NORM
RESULTS FOR LANGUAGE ARTS (ITBS)

Basic Skill Area	Middle or Average Score	
	North Carolina	National Norm
Language Arts		
. Spelling	38.9	38.0
. Capitalization	33.3	38.0
. Punctuation	34.1	38.0
. Usage	28.1	38.0
. Total	33.6	38.0

Differences at the middle or average score range from a national advantage of 9.9 in usage to a North Carolina advantage of 0.9 in spelling. When using the average as a reporting statistic, it is important to remember this figure represents the center of a wider distribution of scores. When this distribution of scores for the third-grade sample are divided into intervals based on national percentages, it is evident that some North Carolina students scored as high as some students in the national norm sample. The following table contains intervals which were established in reference to the national norm group. The first and last intervals were set at nine percent and the second and fourth were set at twenty percent with the balance of forty-one percent placed in the middle interval. After the range of scores had been resolved for the percentage of students who fell into these intervals in the national norm group, the percentage of students in North Carolina who had these scores was determined.

TABLE 14

COMPARISON OF NATIONAL AND NORTH CAROLINA SCORE INTERVALS IN LANGUAGE ARTS TOTAL SCORE (ITBS)

Label	Percentage of Students National	N.C.	Grade Equivalent Range
Much Above Average	9	3	56-65
Above Average	20	17	45-55
Average	41	35	31-44
Below Average	20	18	25-30
Much Below Average	9	26	13-24

These labels are suggestive of how the students performed in comparison with their peers. They do not suggest that students are not working to their potential. It is likely that the "much below average" group is making a best effort as is the "much above average" group. Thus, the table reflects not only that every student cannot be "average" but also that there will be fundamental differences in individual ability when peers are compared.

The comparison where percentage of students fall into the five intervals suggests that a greater proportion of North Carolina students scored in the lowest interval than students from the national sample. Certainly, this is not unexpected due to the implications of the differences in supportive environmental factors discussed earlier.

TABLE 15

PERCENTAGE OF NORTH CAROLINA AND NATIONAL STUDENTS IN GRADE EQUIVALENT INTERVALS FOR LANGUAGE ARTS TOTAL (ITBS)

Area	Grade Equivalent Intervals					
	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9
N.C.	10.1	31.0	26.8	20.6	10.3	0.9
Nation	2.0	25.0	31.0	22.0	14.0	5.0

The above table demonstrates the same points on distribution of scores and the greater proportion of higher scoring students in the national norm as does Table 14. The first table, based on an arbitrary choice of percentages, also indicates through the grade equivalent ranges, that finer distinctions are possible in the lower intervals. This finding is probably due to more items in lower level skill development on this test.

A greater percentage of this state's third graders fall in the lower intervals for capitalization, punctuation and usage than the students of the national norm group. Spelling results, however, show a greater proportion of North Carolina students in the higher intervals than the national sample. Again, it is important to note that students scored across the entire range of possible scores and that many scored in each interval. The average or middle score, therefore, reflects a central point in the score distribution and will be lower or higher in future years as the relative proportion of higher scores decreases or increases.

Percentile Rank

Another system of examining the state results is in relation to national student percentile norms. The following table describes the percentages of the national and North Carolina student groups who have scores equal to or higher than the score shown in the left column. (These scores were chosen as generally representative of the five intervals shown in Table 14). Because the percentage of students will accumulate as the scores increase, the relative change in percentage of students from the previous score is shown for each score as well.

TABLE 16

PERCENTILE INFORMATION ON CAPITALIZATION

Selected Grade Equivalent Scores	Cumulative Percentage Of Students Having Scores Equal To or Lower Than the Score		Relative Change In Percentage of Students From Previous Score	
	North Carolina	National Norm	North Carolina	National Norm
13	3.4	1	3.4	1
24	30.3	14	26.9	13
30	44.8	29	14.5	15
38	63.0	50	18.2	21
44	76.6	66	13.6	16
54	96.3	84	19.7	18
66	100.0	100	3.7	16

This data suggests two points. First, by subtracting the cumulative percentage of norm students from the percentage in the North Carolina group at each score (e.g., at score 44, 76.6 (N.C.) - 66 (national) = 10.6) we note that 10-12 more norm-group students (out of any representative 100) have higher scores than any representative group of 100 North Carolina third graders at any score on the distribution of scores. Secondly, a similar

relative change in percentages of students from previous scores is evident for the N. C. and national norm groups after the percentage changed from a score of 13 to a score of 24. For example, at score 30, the relative change from a score of 24 to a score of 30 is 14.5 for N. C. and 15 for the nation. These similar changes suggest an equivalent proportion of tudents in each group with scores in the intervals earlier labeled (Table 14) below average (scores 25-30), average (31-44), and above average (45-55). Additional information can be gleaned from the percentile rank through comparing a North Carolina student using the state averages as his scores on each subtest to the national norm percentiles. The percentage of students with scores falling at or below his score in the national group would be: spelling (55%), capitalization (40%), punctuation (41%), usage (28%) and total language arts (40%). These results using the percentile rank shed additional light on degree of North Carolina-National differences and confirm the state's generally higher performance in spelling as well as the national generally higher performance in capitalization, punctuation, and usage.

Item Difficulty

Student responses to the individual items on the several language arts subtests were also analyzed. Here a percentage comparison of the national norm group and N. C. third graders who answered the items correctly revealed the same directional patterns as those occurring in the grade equivalent and percentile rank. That is, North Carolina had a higher percentage than the national norm group who answered the spelling items correctly. Punctuation items were more evenly distributed, but the total count revealed more items on which norm group students demonstrated a greater percentage with correct answers. North Carolina student performance in capitalization revealed more items below the national student percentages while usage, the lowest subtest,

contained no items with better North Carolina performance. The distribution of differences between percentage of correct responses for the national norm group and North Carolina's third graders is shown in Table 17. The table presents the number of items falling into each of the five percentage point intervals above or below the zero interval. Zero on this table indicates no percentage difference between the state and norm groups answering an item correctly. Therefore, the interval 1 to 5 will contain these items in which the percentage of N. C. students answering the items correctly exceeds the national norm percentage of correct responses by 1, 2, 3, 4, or 5 percentage points. Conversely the -1 to -5 interval will contain the items where the national percentage exceeded the N. C. percentage correct by 1, 2, 3, 4, or 5 percent. All intervals with minus signs will contain items then in which a greater proportion of the norm group answered the item correctly.

TABLE 17

DIFFERENCE IN PERCENTAGE ANSWERING ITEM
CORRECTLY BETWEEN NORTH CAROLINA AND NATION

Percentage Difference Between N.C. and U.S.	Number of Items				
	Spelling	Capitali-zation	Punctu-ation	Usage	Total
16 to 20	2				2
11 to 15	4		3		7
6 to 10	8	6	5		19
1 to 5	4	9	17		30
Zero		5	1		6
-1 to -5	7	32	16	6	61
-6 to -10	4	17	20	7	48
-11 to -15		4	5	5	14
-16 to -20		2	1	3	6
-21 to -25				1	1
-26 to -30				1	1

This table suggests a national overall advantage but also suggests a possible pattern of state strengths and weaknesses at the item level. The national norm and state pattern of percentage answering each item correctly for the punctuation subtest is illustrated in Figure 4. (Figures for all subtests are contained in the Appendix as Figures 2 - 5.) The pattern of North Carolina responses is very similar to the national pattern on all subtests. Where the nation's students appeared to be stronger or weaker, North Carolina's students generally were also stronger or weaker.

Figure 4

STATE AND NATIONAL ITEM PERCENTAGE CORRECT PROFILE
ITBS PUNCTUATION SUBTEST (CONT.)

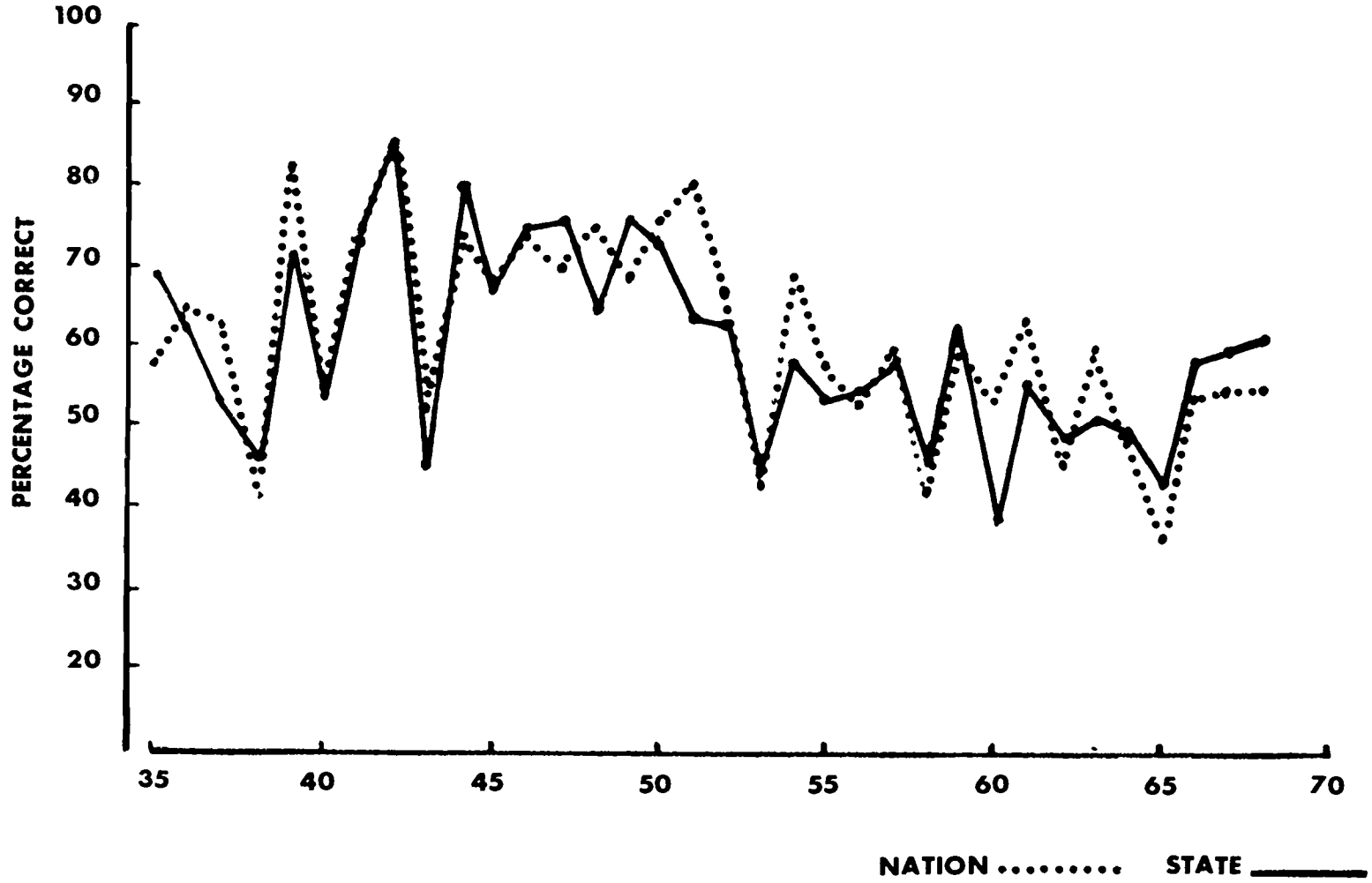
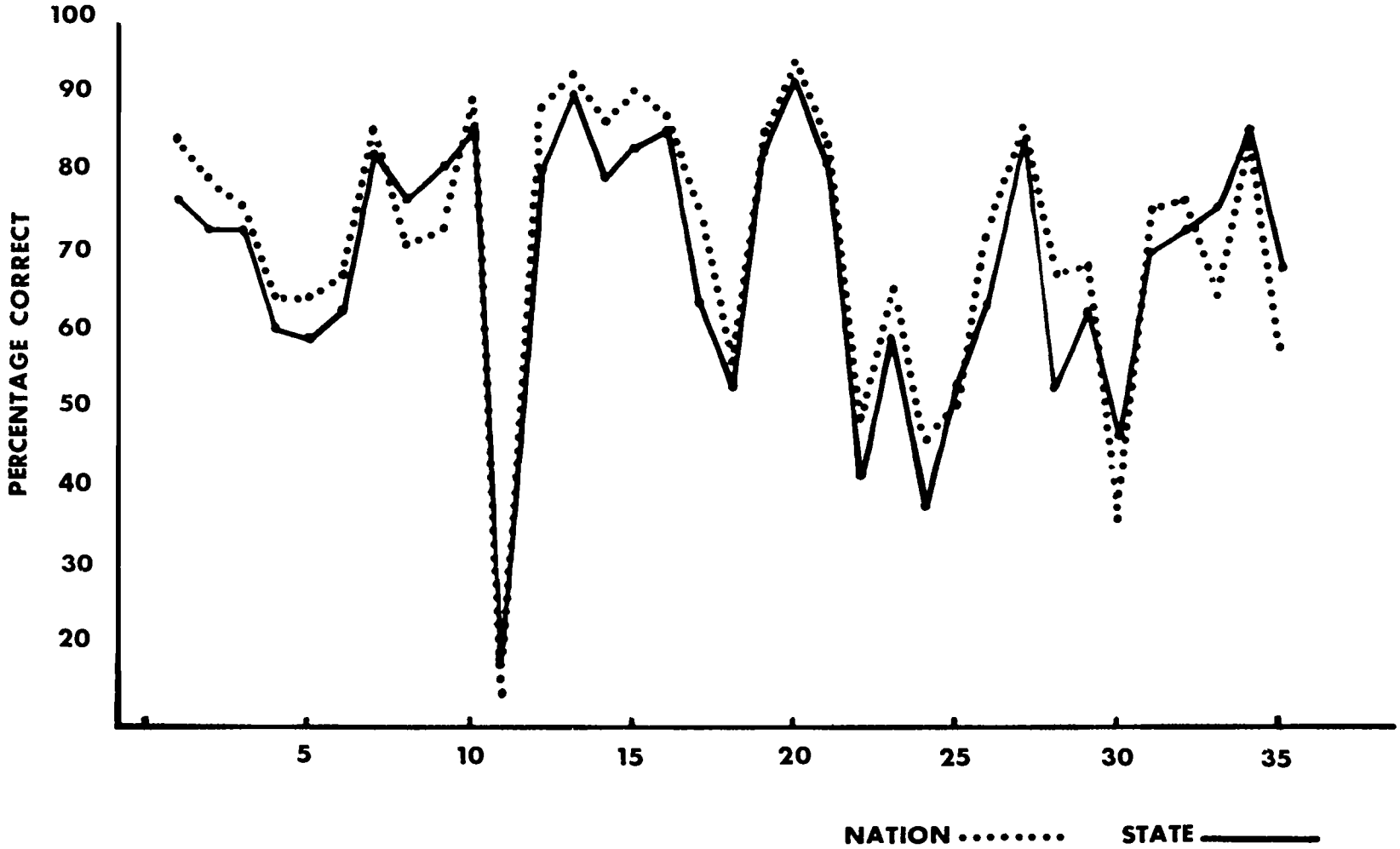


Figure 4

STATE AND NATIONAL ITEM PERCENTAGE CORRECT PROFILE
ITBS PUNCTUATION SUBTEST



The degree of difference at the item level between this state and the national norm group suggests the percentage difference in correct answers varies greatly by subtest. When all items are considered this difference is generally in the area of 10 to 12 percent.

The scores of students in North Carolina were analyzed by classification variables such as education level of parents, estimates of family income, and a two-way classification of sex by the two major ethnic groups within this state. Results from these breakdowns are reported in the next sections. The reader is again reminded to avoid simplistic cause-effect explanations from group membership alone. Membership in the classification groups may be simply a manifestation of many other factors and the purpose here is only to describe any difference which may exist.

State Results on ITBS According to Parental Education

Student scores were classified by the following four parental education levels:

1. Neither parent had more than an eighth grade education.
2. At least one parent attended, but did not complete high school.
3. At least one parent completed, but did not go beyond high school.
4. At least one parent has some education beyond high school.

The average score for all subtests sequentially increases as the parents' education level increases. Grade equivalents for each subtest and the language total by education level are presented in Table 18.

TABLE 18

GRADE EQUIVALENT AVERAGES FOR ITBS LANGUAGE
BY PARENTS' EDUCATION LEVEL

ITBS Language Areas	North Carolina Parents' Education Level			
	Neither Over 8	At Least One Parent Over 8	At Least One High School Graduate	At Least One Over High School
Spelling	31.5	34.1	40.7	45.3
Capitalization	25.4	27.7	35.5	40.8
Punctuation	26.5	29.1	35.6	41.9
Usage	20.4	22.9	28.2	38.1
Language Total	26.1	28.5	35.0	41.5

The pattern of state language strengths and weaknesses in comparison with the national norm group is not affected by level of parents' education. That is, spelling is the highest subtest within any education level and is followed by punctuation and capitalization with usage noticeably lower.

Figure 10 illustrates the pattern of averages for total language on the ITBS. (Figures 6 - 10 in the Appendix reveal the pattern for all subtests.) This figure visually demonstrates the sequential increase in average subtest scores with each education level as well as the relationship of subtest averages to the state and national averages. Comparisons of subtest averages to state averages within each level of parental education reveal a range of differences from 7.4 to 7.9 grade-equivalent months below for level 1, 4.8 - 5.6 below for level 2, 0.1 - 2.2 ahead for level 3, and 6.4 - 10.0 ahead for level 4.

Figure 10

AVERAGES ON ITBS TOTAL LANGUAGE SCORE BY EDUCATION LEVEL OF PARENTS

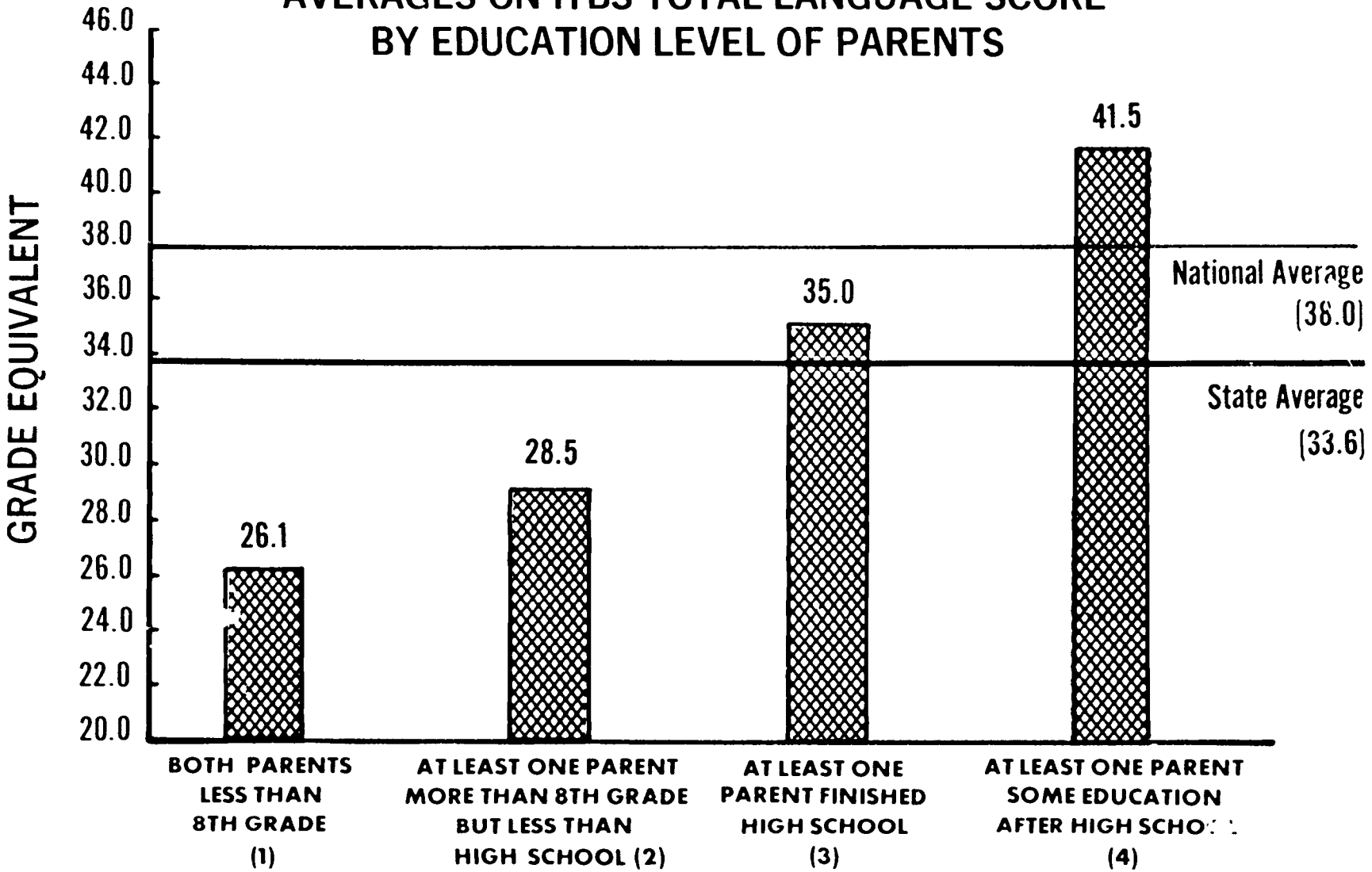
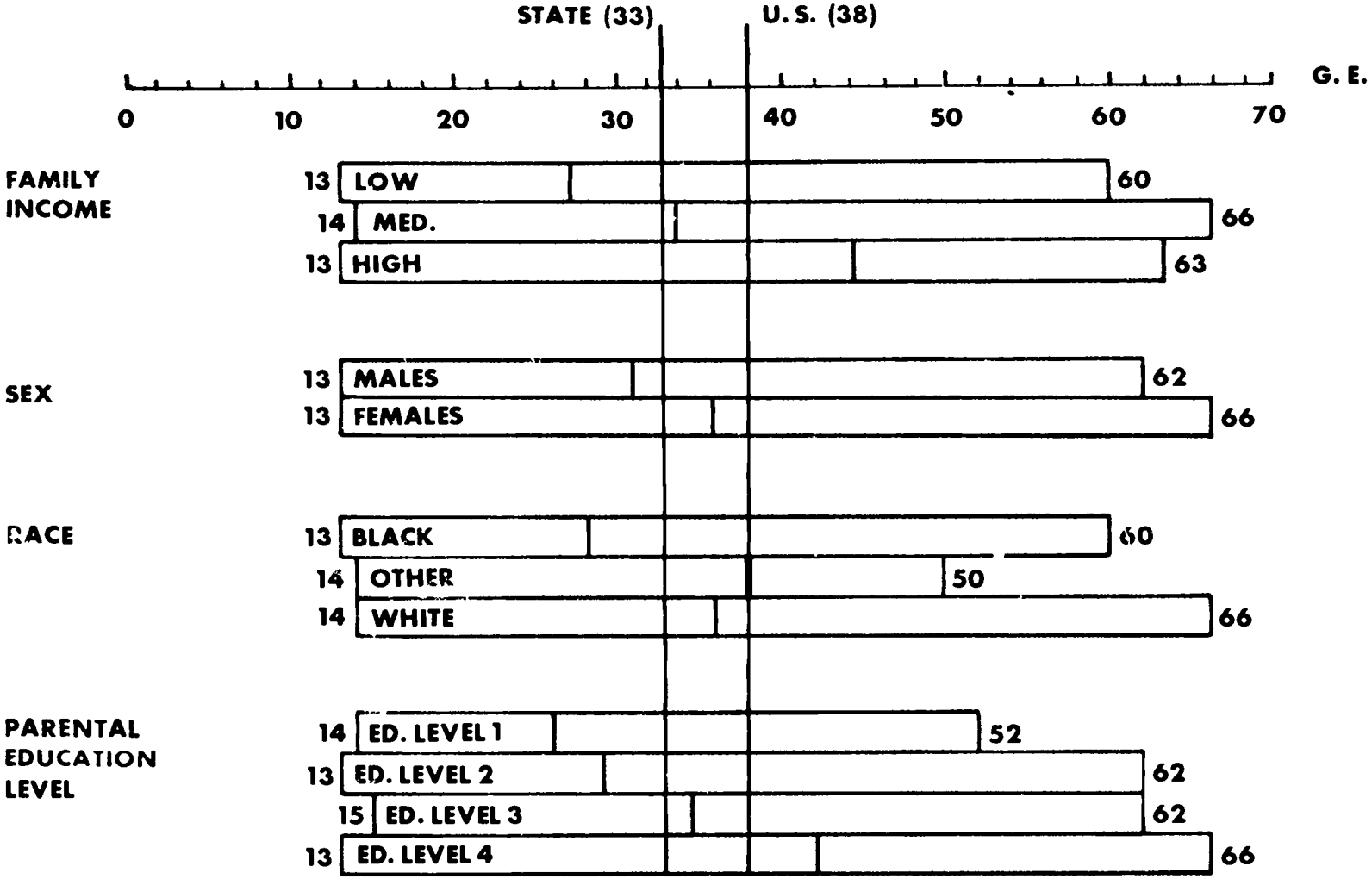


Figure 26

AVERAGE SCORES AND RANGES BY CLASSIFICATION VARIABLES ON ITBS LANGUAGE ARTS TOTAL SCORE



When compared to the national average, the language subtest scores for levels 1, 2, and 3 are all lower, with the exception of spelling in level 3. The scores for level 4 all exceed the national average. The degree to which subtest scores differ from the national average vary considerably within each parental education level. However, spelling demonstrates the most favorable relationship to the national average; usage is always least favorable.

Figure 26 illustrates the span of scores for language total on each parental education level. (Figures 22 - 26 in the Appendix illustrate this data for all subtests.) The graph shows the mean for each parental education level, state means, and national means, as well as the full range of scores. These ranges illustrate the previous point that the mean does not reveal the complete picture. It should be noted that some students in levels 2, 3, and 4 obtained scores in the sixth grade equivalent range while level 1 indicates scores as high as the fifth grade equivalent range. At the lower end of the range, the difference in scores between levels was very small. Thus, there are students in each classification group who scored about as high or as low as any students in the other groups with which they are compared. The differences in education level averages is caused by the greater proportion of higher scoring students in the upper parental education levels.

State Results on ITBS According to Family Income

Scores were also analyzed by a teacher estimate of three levels of annual family income. These levels and the percentage of North Carolina "sample" students falling into each level are:

1. Less than $3,000 — Fifteen percent of sample students
2. $3,000 - $15,000 — Seventy-six percent of sample students
3. Above $15,000 — Eight percent of sample students

Results by grade equivalent averages for each level and all language areas is presented in Table 19.

TABLE 19

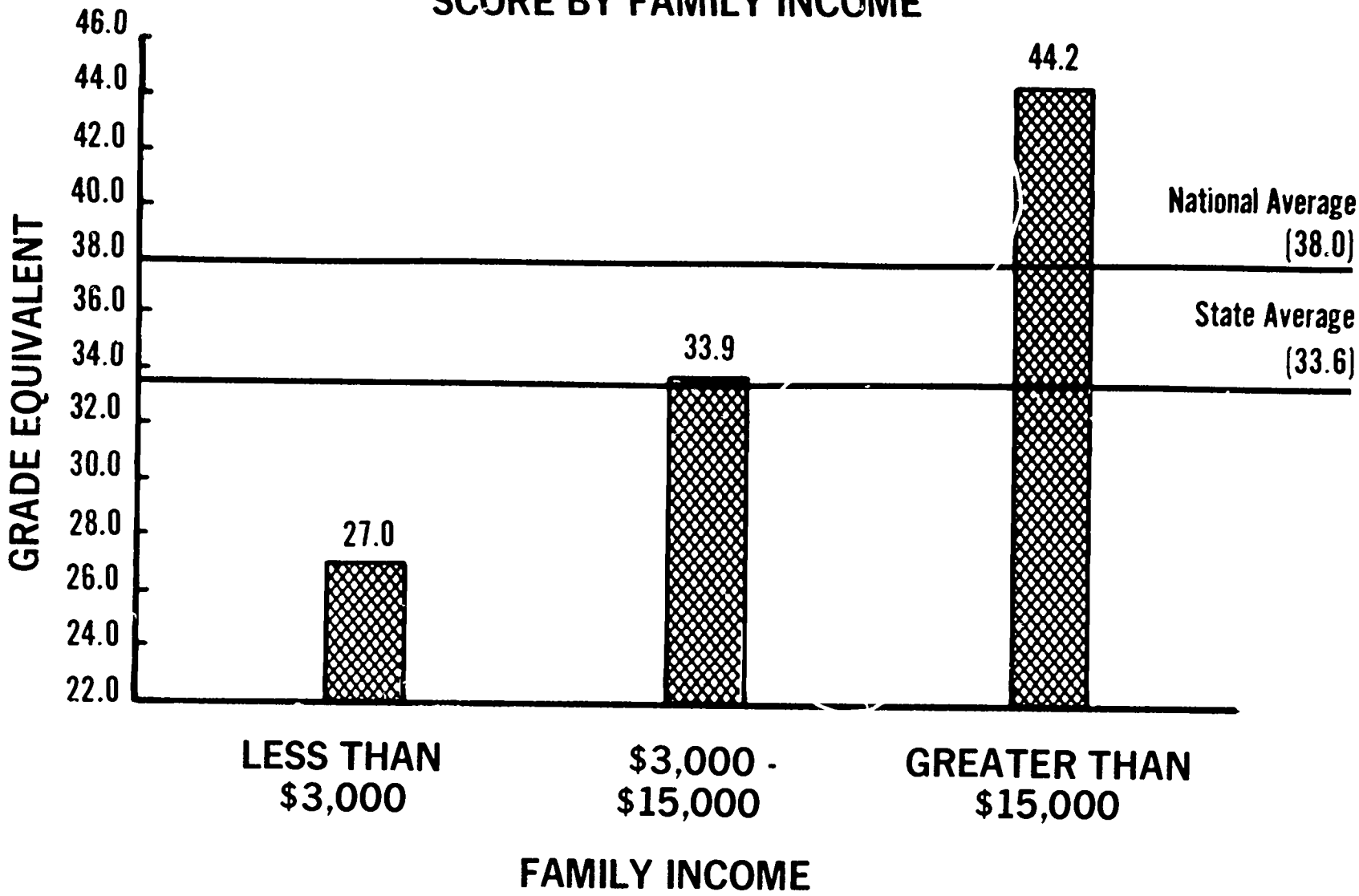
GRADE EQUIVALENT AVERAGES FOR ITBS LANGUAGE BY FAMILY INCOME LEVEL

ITBS Language Area	North Carolina Family Income Level		
	Less Than $3,000	$3,000 - $15,000	Over $15,000
Spelling	33.3	39.2	47.0
Capitalization	25.7	33.9	42.9
Punctuation	27.4	34.5	44.0
Usage	21.3	27.9	43.0
Language Total	27.0	33.9	44.2

The average score for each subtest increases sequentially as family income interval increases. Figure 15 on total language displays the pattern of averages for each family income level as well as the relationship of subtest averages to the state and national averages. (Figures 11 - 15 included in the Appendix indicate this relationship for all subtests.) The pattern of scores within each level of family income is similar to that of the total state scores, with spelling the highest average and usage the lowest average for any subtest. Average scores from the classification $3,000 - $15,000 are close to the state average

Figure 15

AVERAGES ON ITBS TOTAL LANGUAGE SCORE BY FAMILY INCOME



across all language areas. Level 1 (less than $3,000) average scores range 5.6 to 7.6 behind the subtest state averages, and Level 3 averages (more than $15,000) exceed the state averages by 8.1 to 14.9.

All subtest average scores for levels 1 and 2 fall below the national average, with the exception of spelling in Level 2, which exceeds the nation. The degree to which subtest average scores differ from the national average vary considerably within each family income level. However, spelling averages demonstrate the most favorable relationships to the national average while usage averages are usually least favorable.

Figure 26, on page 38, shows the full range of scores for language total on each level of family income. (Figures 23 - 27 are contained in the Appendix and illustrate this data for all subtests.) While students from the $3,000 - $15,000 and less than $3,000 levels show slightly lower average scores on some subtests at the lower end of the range of scores, all three income levels contained students scoring equally high on many subtests. It is of some interest that the highest scores were in the $3,000 - $15,000 level. However, the main point suggested by these figures is that there are students in each family income classification who scored about as high or as low as any students in the other income groups. As discussed previously, the differences in family income averages are caused by the greater proportion of higher scoring students in the upper family income levels.

State Results on ITBS According to Sex and Race

When the students were classified into the four categories of black boys, black girls, white boys, and white girls, the girls had consistently higher average scores in all areas of the ITBS language than did the boys in their respective races. Table 20 presents the grade equivalent averages for each level of sex and race for all language areas.

TABLE 20

GRADE EQUIVALENT AVERAGES FOR ITBS LANGUAGE
FOR STATE BY RACE AND SEX

ITBS Language Area	Race and Sex			
	Black Boy	Black Girl	White Boy	White Girl
Spelling	31.5	37.0	37.6	44.5
Capitalization	24.6	28.7	33.3	39.3
Punctuation	25.5	29.1	34.1	40.2
Usage	20.9	22.6	29.4	32.6
Language Total	25.6	29.4	33.6	39.2

The differences in score averages between boys and girls on the various subtests were greater for whites than blacks. The smallest difference in averages between sexes for both races was in usage while the greatest was in spelling. As evident in Figure 16, the pattern of average subtest scores for boys and girls in both races followed that of the total state averages, with spelling high and usage low.

Figure 16

ITBS LANGUAGE SUBTEST SCORES FOR THE STATE BY SEX WITHIN RACE

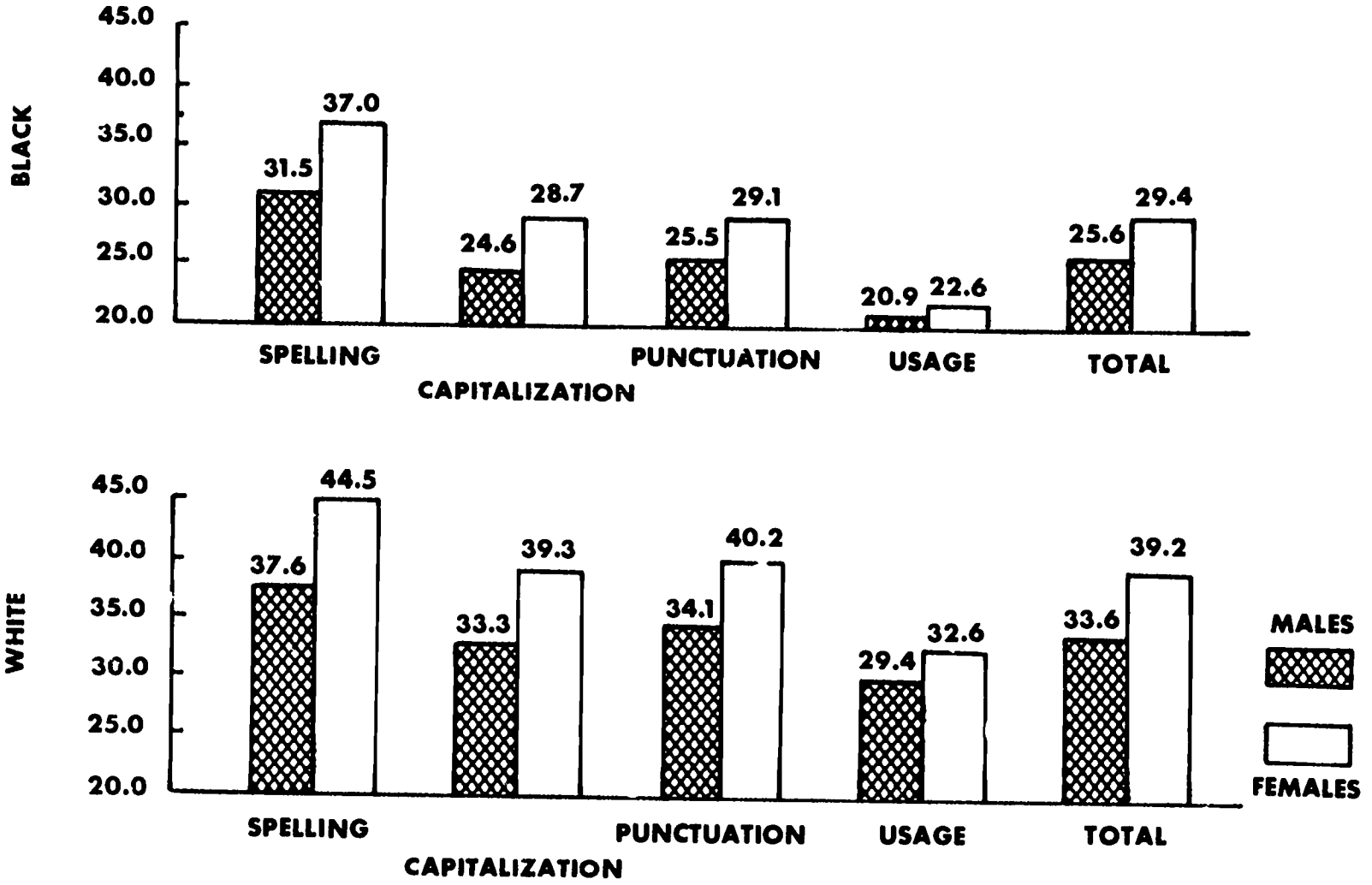


Figure 26, on page 38, shows the full range of scores for language total for all boys and girls as well as for the ethnic membership classes of black, other, and white. (Figures 22 - 26 are contained in the Appendix and illustrate this data for all language students.) The upper and lower scores are very similar for all sex and race classifications. Therefore, as earlier observed, there are students of each sex and race grouping who score about as high and as low as any student in the other sex or race groupings. The differences in sex and race averages are due to the greater proportion of higher scoring students in the girl and white groups.

Regional Results on the ITBS Language

Coastal Plains Region

Grade equivalent average scores for the Coastal Plains and state are in the following:

TABLE 21

GRADE EQUIVALENT AVERAGES FOR ITBS LANGUAGE
BY THE STATE AND COASTAL PLAINS REGION

Area of the States	ITBS Language Area				
	Spelling	Capitali-zation	Punctu-ation	Usage	Language Total
Coastal Plains	38.6	32.3	33.4	26.7	32.8
Total State	38.9	33.3	34.1	28.1	33.6

Again, the pattern of average scores is the same as the state's pattern. Spelling is very close to the state average and the highest subtest. However, the state subtest averages exceed the Coastal Plains averages by 0.7 in punctuation, 1.0 in capitalization, and 1.4 in usage. Examination of the total language averages shows a state advantage in averages of 0.8.

Black and white girls in the Coastal Plains consistently average higher scores than black and white boys respectively. The differences based on usage averages between sexes is similar for both races but the difference between averages on the other language areas is greater for whites than blacks. The following table contains the actual averages for these groups while Figure 17 in the Appendix illustrates the state-Coastal Plains averages and Figure 18 in the Appendix illustrates the sex and race averages for the Coastal Plains.

TABLE 22

GRADE EQUIVALENT AVERAGES FOR ITBS LANGUAGE
FOR COASTAL PLAINS BY SEX AND RACE

ITBS Language Area	Race and Sex			
	Black Boy	Black Girl	White Boy	White Girl
Spelling	33.5	39.0	36.6	44.5
Capitalization	24.8	30.2	32.4	39.9
Punctuation	26.0	30.5	33.8	41.2
Usage	20.2	23.6	29.2	32.4
Language Total	26.2	30.9	33.0	39.5

Piedmont Region

The Piedmont and state grade equivalent averages were as follows:

TABLE 23

GRADE EQUIVALENT AVERAGES FOR ITBS LANGUAGE
BY THE STATE AND PIEDMONT REGION

Area of The State	ITBS Language Area				
	Spelling	Capitali-zation	Punctu-ation	Usage	Language Total
Piedmont	38.4	33.0	33.9	28.6	33.5
Total State	38.9	33.3	34.1	28.1	33.6

Because most students reside in the Piedmont area, many of the state result patterns will reflect the Piedmont trends. Thus, it is not surprising that the language subtests averages will be the same as for the state, where spelling leads and usage is last.

When students are classified by sex within race, Piedmont girls' score averages are higher than the boys', for the same race. The difference between the score averages for boys and girls on individual subtests is greater for whites (3.5 to 6.7) than for blacks (0.2 to 5.1) -- a trend true for the state. The greatest differences between the averages for both sexes of both races is in spelling, and the least is usage -- also similar for the state. Table 24 contains this Piedmont data and Figures 19 and 20 in the Appendix illustrate the Piedmont and state averages as well as the sex and race averages.

TABLE 24

GRADE EQUIVALENT AVERAGES FOR ITBS LANGUAGE
FOR PIEDMONT BY SEX AND RACE

ITBS Language Area	Race and Sex			
	Black Boy	Black Girl	White Boy	White Girl
Spelling	29.9	35.0	37.5	44.2
Capitalization	24.5	27.0	33.3	38.6
Punctuation	25.3	27.8	39.0	39.5
Usage	21.4	21.6	29.6	33.1
Language Total	25.3	27.9	33.6	38.9

Mountain Region

Mountain and state grade equivalent averages are presented in the following table:

TABLE 25

GRADE EQUIVALENT AVERAGES FOR ITBS LANGUAGE
BY THE STATE AND MOUNTAINS REGION

Area Of The State	ITBS Language Area				
	Spelling	Capitali-zation	Punctu-ation	Usage	Language Total
Mountains	41.6	36.7	36.9	29.6	36.2
Total State	38.9	33.3	34.1	28.1	33.6

These averages indicate a mountain advantage on each area of the language test. The total language difference between state and Mountain averages is 2.6 grade-equivalent months based on a difference in spelling averages of 2.7, capitalization -- 3.4, punctuation -- 2.8, and usage -- 1.5. Furthermore, the best mountain performance, based on averages, is in spelling followed by punctuation, capitalization, and usage -- which is also true for the state. Figure 21 in the Appendix illustrates this point.

Objective-Based

In this section, the data obtained from the objective-based assessment in language arts will be presented. As discussed in the section on "Language Arts Instrumentation," the purposes of the norm-referenced and objective-based tests are complementary. The norm-referenced ITBS provides an indication of North Carolina's third-grade students' performance in certain broad language skills in relation to a national third-grade norm group. The objective-based test in language arts was experimental in nature and attempted to identify specific strengths and weaknesses of students in one broad language skill area, punctuation, across four learning modalities: (1) Listening, (2) Speaking, (3) Reading, and (4) Writing. A discussion of state results will be preceded by a review of the special testing necessary for this area.

Description of Sampling and Field Procedures

The written portion of the experimental punctuation test contained items for three of the modalities or categories of assessment and was taken by approximately 2,500 students using the procedures described earlier. Items for Recognition of Information (Rules), and for the Reading and Writing modalities were included in this portion.

The Listening and Speaking modality items involved tasks requiring small groups and individual administration. Therefore, a special subsample of 450 students was selected from 2,500 students. Administrators were specially trained in Raleigh to test this group of students.

Because these 450 were the only students who completed all test items

in the four modality and the Rules areas of assessment, comparisons across these areas must be done with care. Results of the subsample performance on the written areas (Reading, Writing, and Recognition of Information) were quite similar to the total sample, as evident in Table 26 in the Appendix. (Here subsample results are shown in parenthesis below the percent correct on test items taken by the total sample and the subsample.) Due to this similarity, it is felt that the subsample performance on the Listening and Speaking items is basically representative of the total sample.

State Results

The conceptual framework for the punctuation test requires that reporting be broken into two areas: modality of assessment and punctuation skill area.

Modality of Assessment

Table 27 in the Appendix indicates the percentage of students correctly answering a given number of the possible number of items for the modalities of Listening (8 items), Speaking (8 items), Reading (20 items) and Writing (4 items in each of 3 areas) as well as the area assessing Recognition of Information - Rules (9 items). When considering the results from these categories, it should be remembered that there are different numbers of possible items for each of the areas.

Information contained in this table indicates that one half of the items were answered correctly by over two-thirds of the students. Thus, in Recognition of Information (Rules), 67% of the students answered correctly over half the items, Reading--71%, and in the three levels of

Writing 70%, 70%, 68%. Higher percentages of students answering over half the items correctly were found for Listening (90%) and Speaking (83%).

When the standard is raised to the percentage of students who answered three-fourths of these items correctly, the results were fairly consistent, with Recognition of Information--49%, the three Writing levels 53%, 54%, 52%, and Speaking--51%. Reading had the lowest punctuation achievement level of 36%, while Listening was highest at 65%.

When the standard is raised to achievement of a correct response to all of the items in a given category, more variation is noted. Two factors should be recalled when evaluating these results. The first is that the number of items does vary by modality and the second is that the modality of Reading and the area of Recognition of Information (Rules) assessed more punctuation skills than the other modalities or categories as was shown in Table 12. The results are presented below in order from highest to lowest percentage of correct answers to all items. Because variation at this standard appears to be related to number of items, this information is also included in Table 28.

TABLE 28

PERCENTAGE ANSWERING ALL ITEMS

CORRECTLY IN EACH MODALITY OR CATEGORY OF ASSESSMENT

Modality or Category	Number of Items	Percentage All Correct Answers
Writing-Dictated Sentences	4	29
Writing-Created Sentences	4	29
Writing-Already Written Sentences	4	28
Recognition of Information (Rules)	9	19
Listening	8	19
Speaking	8	11
Reading	20	2

The data on assessment category may also be considered through the pattern of item scores for each of the first four skill areas. As Figure 27 illustrates, there is no consistent pattern for any skill across the modalities or for Recognition of Information (Rules). Moreover, there does appear to be some inconsistency in performance on Speaking and Listening items within the skills requiring use of period, question mark, exclamation point, and commas in a series. This lack of consistency on items may be due in part to a major difference in the difficulty of the item for third graders and/or to the experimental nature of the Listening and Speaking items in particular. The other modalities appear to have items which behave consistently within the skill areas, the three writing items being most notably consistent for each punctuation skill.

Punctuation Skill Area

To gain the greatest benefit from data on the Punctuation Test, it is important to review not only data on the basic modalities but also any information on the specific punctuation skills assessed. Table 12 revealed the conceptual scheme for this test and the reader could see that the first four skill areas received broader coverage than did the final six. Consequently, the number of items varies by skill area such that period, question mark, exclamation point have 10 items each and comma separating words in a series has 9 items while commas between city and state, commas in the date, apostrophe in contractions, commas in letter greetings, commas in letter closings, and quotation marks have 3 items each. Due to this variation, results will be divided into two groups. Before looking at these results, it is important to remember that the results for the first four skills are based largely on the subsample students. However, as discussed earlier, this group did appear to be basically representative of the total sample. Table 29, in the Appendix, presents the percentage of students correctly answering a given number of items when they are grouped by punctuation skill area.

First Four Skills. The percentage of students correctly responding to 5 or one-half of the items for the first four objectives was as follows: period (93%), question mark (76%), exclamation point (76%), and commas in a series (54%). When the standard was raised to those having three-fourths of the items correct (8 items for the first three skills and 7 for the fourth), the following percentages of students meeting that standard revealed: period (64%), question mark (43%), exclamation point (51%), and

commas in a series (30%). Some students answered all items correctly for these four skills: period (28%), question mark (10%), exclamation point (18%) and commas in a series (8%).

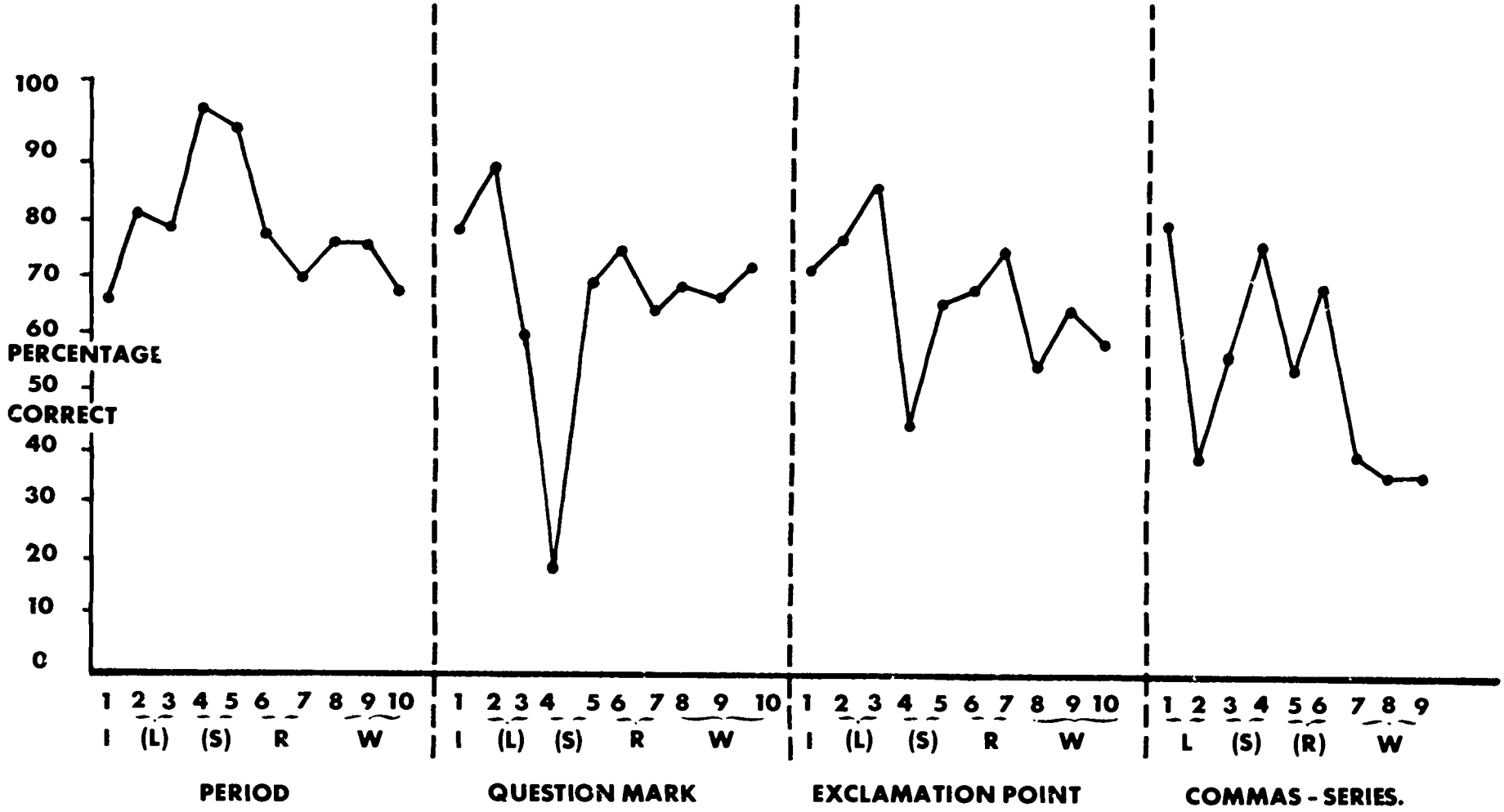
It is evident from the data in this table that the achievement level is higher for the skill involving the correct use of the period as terminal punctuation. Using the exclamation point correctly has the second best performance, followed closely by the question mark. The skill involving use of commas to separate words in a series has the lowest achievement level.

Figure 28 illustrates the plot of the percent correct for individual items of the four skills within each of the four modalities and the Rules category of assessment. Though individual item frequencies are, of course, more variable, the items dealing with the period are always among the higher percentage of correct items. The question mark and exclamation point items fluctuate but are generally in a middle range. Item percentages for the commas in a series also vary, but six of the nine comma items show the lowest percentage correct within this figure. This low percentage of correct responses for this comma skill was particularly noticeable in the Listening and Writing modalities. As discussed previously, the difficulty of the items in this experimental instrument may contribute to this performance -- particularly for this skill in the Listening modality.

Remaining Six Skills Three items were designed to measure each of the remaining six punctuation skills: commas used between city and state (Comma, City-State), commas used in the date of the year (Comma, Date),

Figure 28

MODALITY PATTERNS WITHIN FOUR PUNCTUATION SKILLS

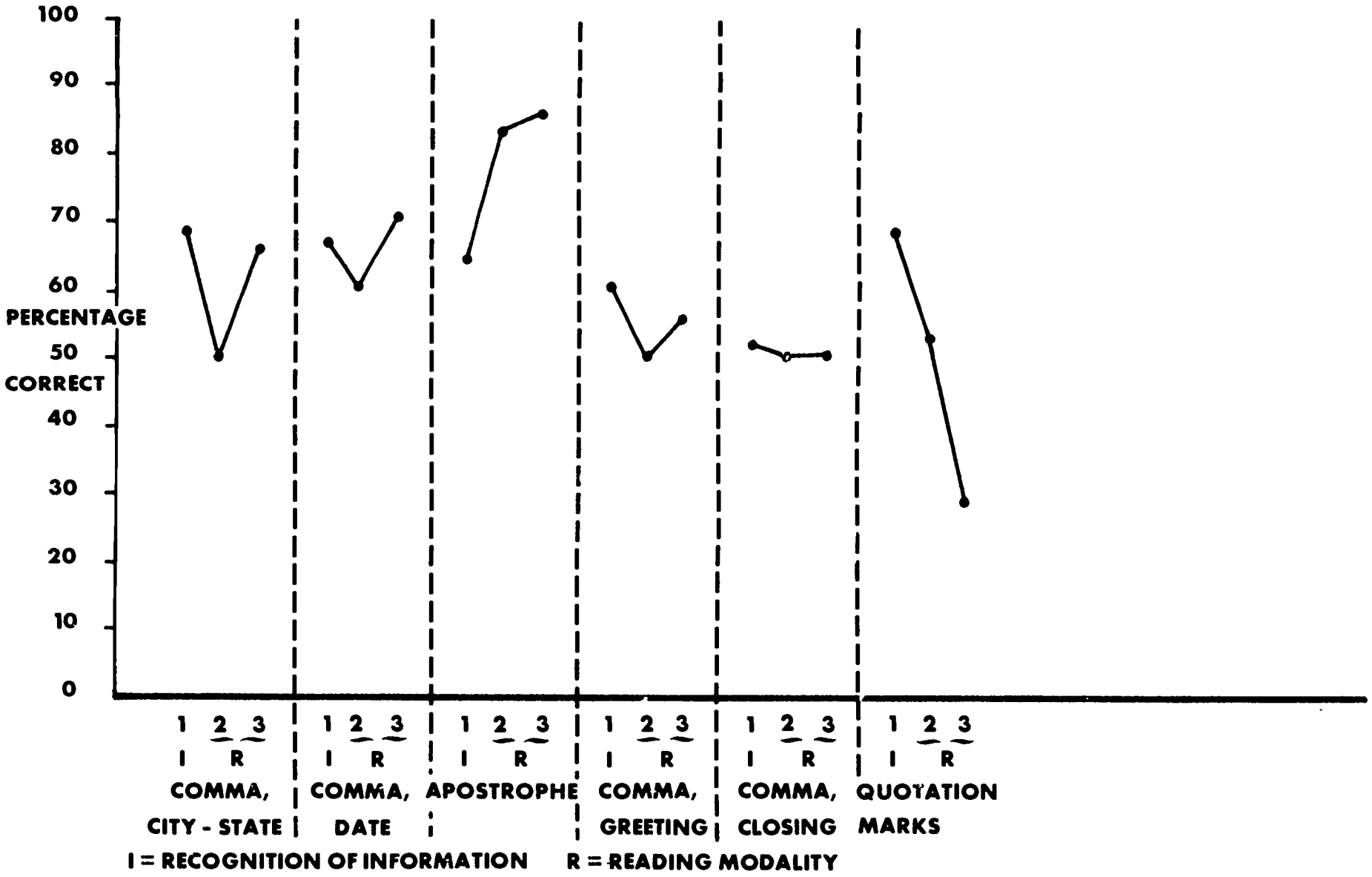


I = RECOGNITION OF RESPONSE L = LISTENING
S = SPEAKING R = READING W = WRITING

NOTE: MODALITIES IN WHICH ONLY SUBSAMPLE WAS TESTED ARE IN PARENTHESIS

Figure 29

PERCENT CORRECT FOR ITEMS WITHIN SIX PUNCTUATION SKILLS



commas used in the greeting (Comma, Greeting) and closing (Comma, Closing) of a letter, the apostrophe used in contractions (Apostrophe), and quotation marks before and after a direct quotation (Quotation Marks). The abbreviated terms in parenthesis will be used to refer to the skill areas throughout this section.

The highest level of achievement (in terms of percentages of students with the correct answer) was in the Apostrophe skill. Generally, use of commas in City-State and Date were generally achieved slightly better than Quotation Mark or commas in Greeting and Closing of a letter. The greatest variation within a skill occurred with Quotation Marks. Because the number of items is small (3), information on what percentage of the students had correct answers for one-half or three-fourths of the items may be of limited use. However, the percentage who answered all items correctly is as follows: Apostrophe (52%); Comma, Date (42%); Comma, Greeting (30%); Comma, City-State (29%); Comma, Closing (23%); and Quotation Mark (12%).

Figure 30 illustrates the percent correct for each item in these six punctuation skills. The generally higher performance for the Apostrophe is shown graphically as well as the inconsistent performance on the Quotation Mark items. It is interesting to note that performance on the first item in each skill area, which deals with Recognition of Information (Rules), is similar across skills while the items for the Reading modality are more variable.

Teacher Ratings of Objectives and Items

Forty-two North Carolina teachers, who were identified as excellent third-grade teachers within their school districts, rated the objectives

and items for the Punctuation Test. They rated objectives on importance by whether or not they taught these objectives in their classrooms. Items for each objective were also rated for their difficulty level (what percentage of their students the teacher felt could answer the item correctly) and for quality (how well the item measured the stated objective). Only the items on the written test involving Recognition of Information (Rules), Reading, and Writing were rated while objectives were rated for all the four modalities and the Rules area. Teacher ratings for only the first four punctuation skills are discussed in this section. Complete results of the ratings for objectives and items are presented in the Appendix, page 103.

Almost all of the teachers rated the objectives as being "Very" or "Somewhat Important". Objectives that received the lowest of these generally high ratings were the exclamation point, commas-in-a-series for Reading, Writing, and Listening, and quotation marks for Reading. However, in the Speaking area (reading sentences aloud), all objectives received ratings of at least 80 percent for "Very Important." The period, question mark, and exclamation point were rated from 88-91%, while commas-in-a-series was rated at 83%. Thus, commas in a series is consistently rated somewhat lower in importance, though in varying degrees.

Although the vast majority of teachers rated the items to be good or adequate measures of the stated objective, the items for the exclamation point and for commas in a series received slightly lower "Good" ratings. This pattern is similar to the slightly lower ratings which the commas-

in a series objectives received. Many of these items are similar to those of the period and question mark so the slightly lower "Good" ratings could be related to less emphasis placed by teachers on these areas in the curriculum.

Teacher ratings of item difficulty were generally spread across the five levels of percent passing (0-20%; 21-40%; 41-60%; 61-80%; 81-100%). Because of this spread it was difficult to pinpoint a single level of achievement typical of teacher expectations for student performance. Therefore, the level rated by the highest percentage of teachers (plurality) was chosen as an indicator of teacher expectations.

In comparing actual student performance on items to the percent passing level chosen by a plurality of teachers, it appears that teachers are fairly perceptive in their judgments of how students will perform. On the other hand, this finding may indicate that the results of student performance reflect the emphasis of the language arts curricula in the state which, of course, may differ by individual teacher and district.

When considering student performance in relation to teacher ratings, it should be remembered that these teachers, while chosen from all geographical regions of the state, are only indicators of general teacher opinion. This group of "excellent" third-grade teachers accurately estimated that the exclamation point items would be lower in percent passing (i.e., greater difficulty), as actual lower achievement in student performance verified. However, they slightly overestimated the performance of students on the skill, commas in a series, for Writing levels B and C

(dictated and student created sentences). So although teachers expected lower performance here, the students did not quite meet teacher expectations. Teachers also overestimated student performance somewhat on the use of the period in punctuating already written or dictated sentences and for the question mark in punctuating student-created sentences.

In summary, while student performance matched teacher expectations for the most part, the general writing skills of our students may not be as satisfactory as our teachers would expect.

Summary and Conclusions for Objective-Based Punctuation Test

The purpose of the objective-based assessment in Language Arts was to identify specific strengths and weaknesses of third graders on one broad language area, punctuation. The conceptual framework included plans for collecting information on four learning modalities -- Listening, Speaking, Reading, and Writing -- as well as a fifth category concerning the concept of punctuation -- Recognition of Information (Rules). Data was also collected on ten specific punctuation skills -- period, question mark, comma (series), comma (city, state), comma (date, year), apostrophe, comma (letter greeting), comma (letter closing), and quotation marks -- with the first four skills receiving the greatest depth of assessment.

An effort was made to determine if certain fundamental skills received better student response on one learning modality rather than another modality. That is, an answer was sought for a question such as, "Do students punctuate

better orally than they do in written form?". In looking at individual item performance and the number of items achieved for each of the four modalities and the Recognition of Information (Rules) area, a definite or consistent effect by modality does not appear. Scores for the Listening modality did appear to be somewhat higher than other modalities with the exception of one item. While this may be a more fundamental or earlier developed modality, the experimental nature of these items should be remembered. The noticeably lower achievement or number of students who answered all items in Reading correctly may be, in fact, a result of the greater number of items for this area than the others. Thus, the data to support differences in performance by modality was not found in this experimental effort.

A more noticeable modality effect does appear among the punctuation skills. One of the weaker skills assessed across modalities was the use of commas to separate words in a series. Although the individual comma items fluctuated within modalities, they were consistently higher in Speaking and almost always lower within the Writing modality. The exclamation point was the second most difficult skill in the Writing modality, but performance was somewhat lower in Writing than in the other modalities.

Some interaction of modality and type of skill may be indicated. Perhaps there is some difference in modality as the particular skill is more difficult. For example, the correct responses to the exclamation point items in Writing were somewhat lower than other modalities, as were the comma-in-a-series Writing items. These skills were rated slightly less important by teachers and may still be in the developing stages in the third-grade curriculum. Therefore, skills that students have not mastered or are in the process of learning may be more easily expressed through certain modalities than others. This data suggests that Writing may be the most difficult.

The inconclusive effect of modality suggests several possibilities. First, the language arts program now in effect in the schools may have been able to integrate the modalities in teaching punctuation skills. Secondly, while individuals demonstrate strengths and weaknesses in certain learning modalities, a general hierarchical development for all students across modalities may not exist. A third possibility may be that a modality hierarchy exists but is evidenced only for the development of more difficult skills. Any conclusion should be tentative due to the experimental nature of the conceptual framework and test items

When the data were examined as separate punctuation skills, North Carolina's third graders did rather well on using the period correctly in terminal punctuation. Using the exclamation point correctly had the

second best record, followed closely by the question mark in the skills which were assessed in greatest depth. For the skills measured to a lesser degree, the use of apostrophes in contractions was answered correctly by more students.

The weakest student performance for the skills assessed at greater depth was on the skill of using commas to separate items in a series. For the other skills, the weakest and most inconsistent student performance was on the use of quotation marks before and after a direct quotation.

Input from a select group of excellent third-grade teachers indicated the experimental instrument contained objectives which were important and relevant to third-grade language arts programs. Most of these classroom experts felt that the items for assessing these objectives were adequate or good. Their estimates of how well students would do on these items were quite accurate. The greatest differences in teacher estimate and student performance occurred on general writing skills. This discrepancy may indicate that some students are not doing as well in writing punctuation as their teachers expect them to do.

One of the interesting results of the test was the pattern of the scores on the three levels of the Writing modality. It was hypothesized that the levels would be increasingly difficult, from (A) adding correct punctuation to written sentences, to (B) writing dictated sentences and supplying correct punctuation, to (C) making up sentences and using the correct punctuation. It is evident from the item percentages in Table

27 and the graphic illustrations in Figure 27 that this pattern did not occur. The item percentage correct for each level within each of the first four skills was quite consistent, decreasing in order from the period, to the question mark, to the exclamation point, and to commas in a series. Therefore, the hypothesis of the increase in difficulty from level to level did not hold.

The writing samples of students illustrated a wide range of ability in using this modality. Many of the made-up sentences demonstrated good sentence structure and accurate spelling of more difficult words. These words (e.g., "karate") may have special significance and use for the student as opposed to words or terms given to him. Teachers might explore this possibility in working with their own students in the language arts-reading area.

APPENDIX A

Description of Modalities and "Rules" Exercises

1. Recognition of Information: Multiple choice items asking which punctuation mark was appropriate for the given rule of punctuation. These items were read orally to minimize the effects of reading difficulties.

   Example:
   Which punctuation mark should be placed at the end of a telling sentence?

   (A) period (.)
   (B) quotation marks (" ")
   (C) question mark (?)
   (D) exclamation point (!)

2. Listening: Group administered items. Students listened to a previously taped sentence. They were then asked to decide whether the way in which the sentence was read matched the way the sentence was punctuated in their test booklets.

   Example:
   (Tape): Are you thirsty? (Read correctly, as a question)
   (Student booklet): Are you thirsty? (yes) no

3. Speaking: Individually administered. The students were asked to read each sentence aloud just the way the punctuation marks told them; that is, with the appropriate voice inflection. They were given a chance to identify words they did not know, before reading, in an effort to minimize the effects of reading difficulties. The student had two trials for each sentence.

   Example:
   "This question is right?"
   Administrator Instructions: The child is to read this sentence in such a way that his voice inflection shows that it is a question rather than a statement (e.g. rise in voice at end of sentence). Scored as correct, incorrect, marginal.

4. Reading: Multiple choice format. Each item consisted of a sentence which was punctuated three different ways. The student was directed to read each sentence and then to select the one that was punctuated correctly.

   Example:
   Item: (A) How old are you?
   (B) How old are you!
   (C) How old are you.

5. Writing: The writing skills of punctuation were measured by three types of items.
   A. Supplying the correct punctuation for a printed but unpunctuated sentence.

   Example:
   Do you like the way Ernie sings
   (copyright, Westinghouse Learning Corporation)

   B. Writing a dictated sentence and supplying the correct punctuation.

   Example:
   Administrator reads: "My father works in a store."
   (copyright, Westinghouse Learning Corporation)

   The student must write the sentence and punctuate it with a period. He is scored only for the punctuation, not other errors.

   C. Making up a sentence for the type of sentence explained by the administrator and supplying the correct punctuation.

   Example:
   Administrator: "I want you to make up a sentence all by yourself, that asks a question. Think of a question you could ask someone. Now, in the space in your book, write your sentence that asks a question. Be sure to put the right punctuation mark at the end of your sentence. (copyright, Westinghouse Learning Corporation)

APPENDIX B

TABLE 26

PERCENTAGE CORRECTLY ANSWERING PUNCTUATION TEST ITEMS BY MODALITIES AND SKILLS WITH SUBSAMPLE DATA IN PARENTHESIS

	Period (Terminal Punc.) 1	Question (Terminal Punc.) 2	Exclamation (Terminal Punc.) 3	Commas, Series 4	Commas City-State 5	Commas Date of Year 6	Apostrophe Contractions 7	Comma Greeting-Letter 8	Comma Closing-Letter 9	Quotation Marks 10
Recognition of Information	33. 66% (66%)	39. 78% (79%)	36. 72% (73%)	— —	34. 68% (68%)	35. (67%) (71%)	37. 64% (63%)	38. 60% (61%)	41. 52% (54%)	40. 68% (69%)
Listening (Subtest)	2. (81 4. (78	1. (88) 5. (61)	6. (77) 7. (86)	3. (79) 8. (42)						
Speaking (Subtest)	1. (97) 4. (95)	2. (19) 6. (69)	5. (46) 8. (66)	3. (57) 7. (76)						
Reading	2. 77 (78) 4. 70 (71)	3. 75 (72) 6. 64 (65)	1. 69 (63) 5. 75 (76)	7. 54 (58) 14. 69 (72)	8. 49 (46) 15. 66 (66)	9. 60 (59) 16. 71 (71)	10. 83 (80) 17. 85 (86)	11. 49 (50) 18. 59 (56)	12. 50 (50) 19. 52 (50)	13. 53 (48) 20. 28 (30)
Writing A.	22. 76 (78)	21. 69 (65)	23. 55 (58)	24. 41 (39)						
B.	26. 76 (68)	25. 67 (63)	27. 65 (65)	28. 38 (36)						
C.	30. 68 (69)	29. 72 (69)	31. 59 (59)	32. 38 (40)						

TABLE 27

PERCENTAGE OF STUDENTS CORRECTLY ANSWERING A GIVEN NUMBER OF ITEMS BY MODALITY AREAS AND RULES AREA

Number of Items	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Modalities																					
Recognition of Information (Rules)	2	96	92	85	67	67	59	49	36	19											
Listening	0	100	98	96	90	80	65	45	19												
Speaking	0	100	99	93	83	68	51	30	11												
Reading	0	97	97	97	97	95	92	89	84	78	71	64	57	50	43	36	29	22	15	8	2
*Writing - A	12	87	70	53	27																
Writing - B	12	84	70	54	29																
Writing - C	14	83	68	52	27																

*Writing - A = Already Written Sentences
Writing - B = Dictated Sentences
Writing - C = Creating Own Sentences

TABLE 29

PERCENTAGE OF STUDENTS CORRECTLY ANSWERING A GIVEN NUMBER OF ITEMS

FOR EACH PUNCTUATION SKILL

Punctuation Skills	0	1	2	3	4	5	6	7	8	9	10
Period	0	100	100	99	97	93	84	75	64	52	28
Question Mark	0	100	98	92	83	76	67	57	43	27	10
Exclamation Point	1	98	95	88	83	76	69	61	51	38	18
Commas - Series	1	99	95	86	68	54	43	30	21	8	
Comma - City-State	9	87	60	29							
Comma - Date	11	86	64	42							
Apostrophe	4	93	81	52							
Greeting	18	80	51	30							
Closing	20	76	47	23							
Quotation Marks	15	83	50	12							

Figure 1

NATIONAL VS. STATE AVERAGES ON THE ITBS LANGUAGE ARTS SUBTESTS AND TOTAL

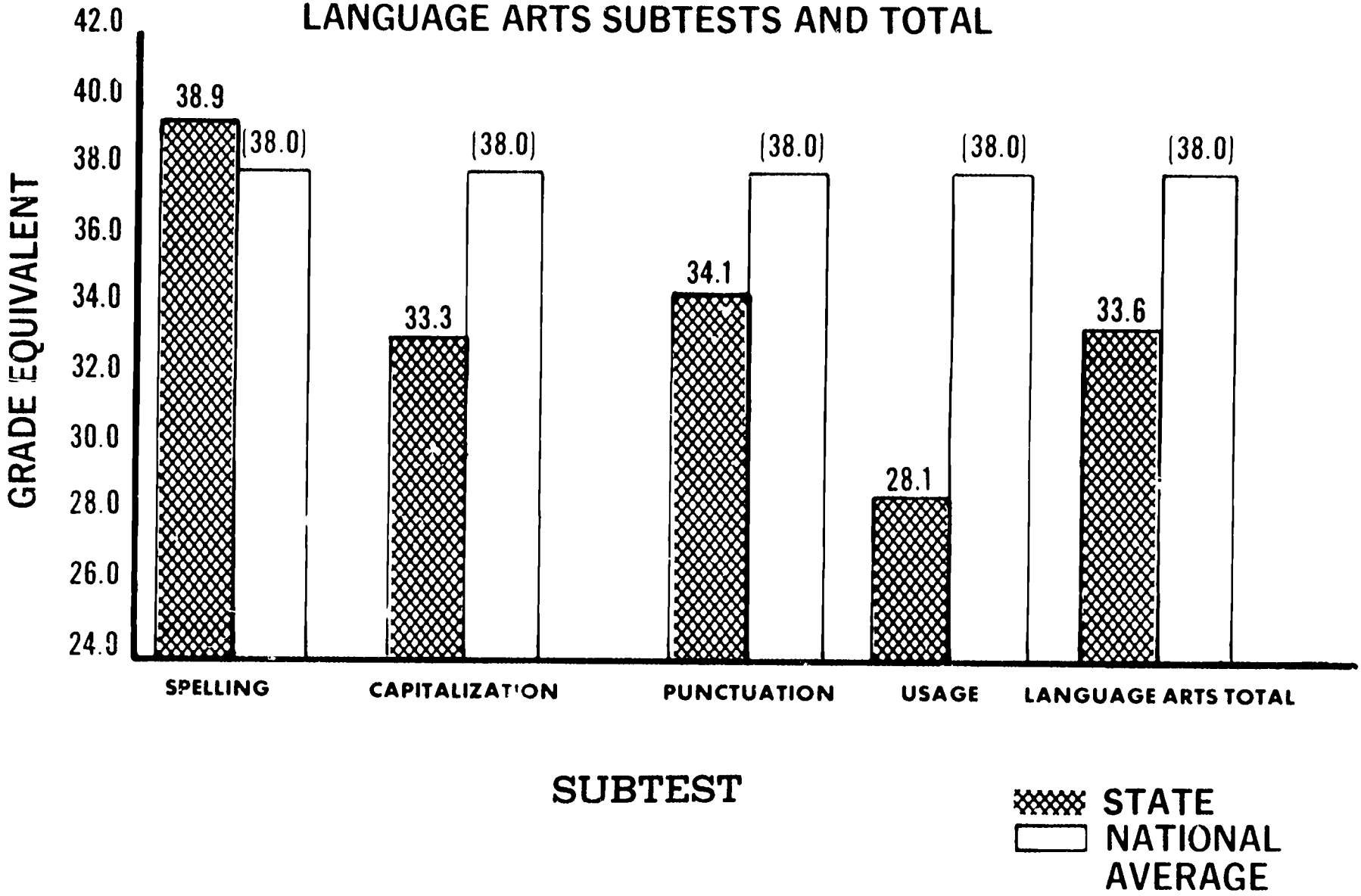


Figure 2

STATE AND NATIONAL ITEM PERCENTAGE CORRECT PROFILE
ITBS SPELLING SUBTEST

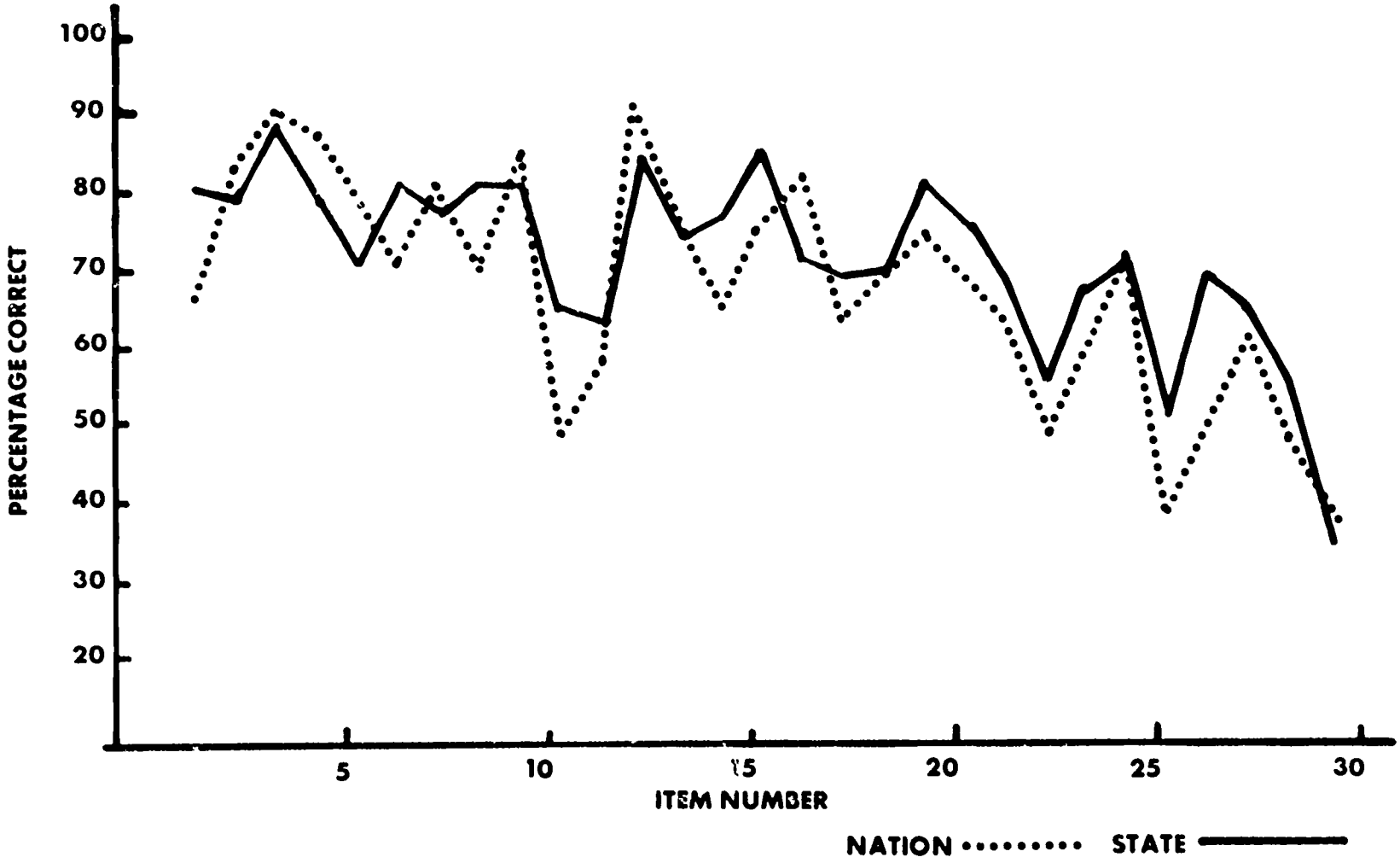


Figure 3

STATE AND NATIONAL ITEM PERCENTAGE CORRECT PROFILE
ITBS CAPITALIZATION SUBTEST (CONT.)

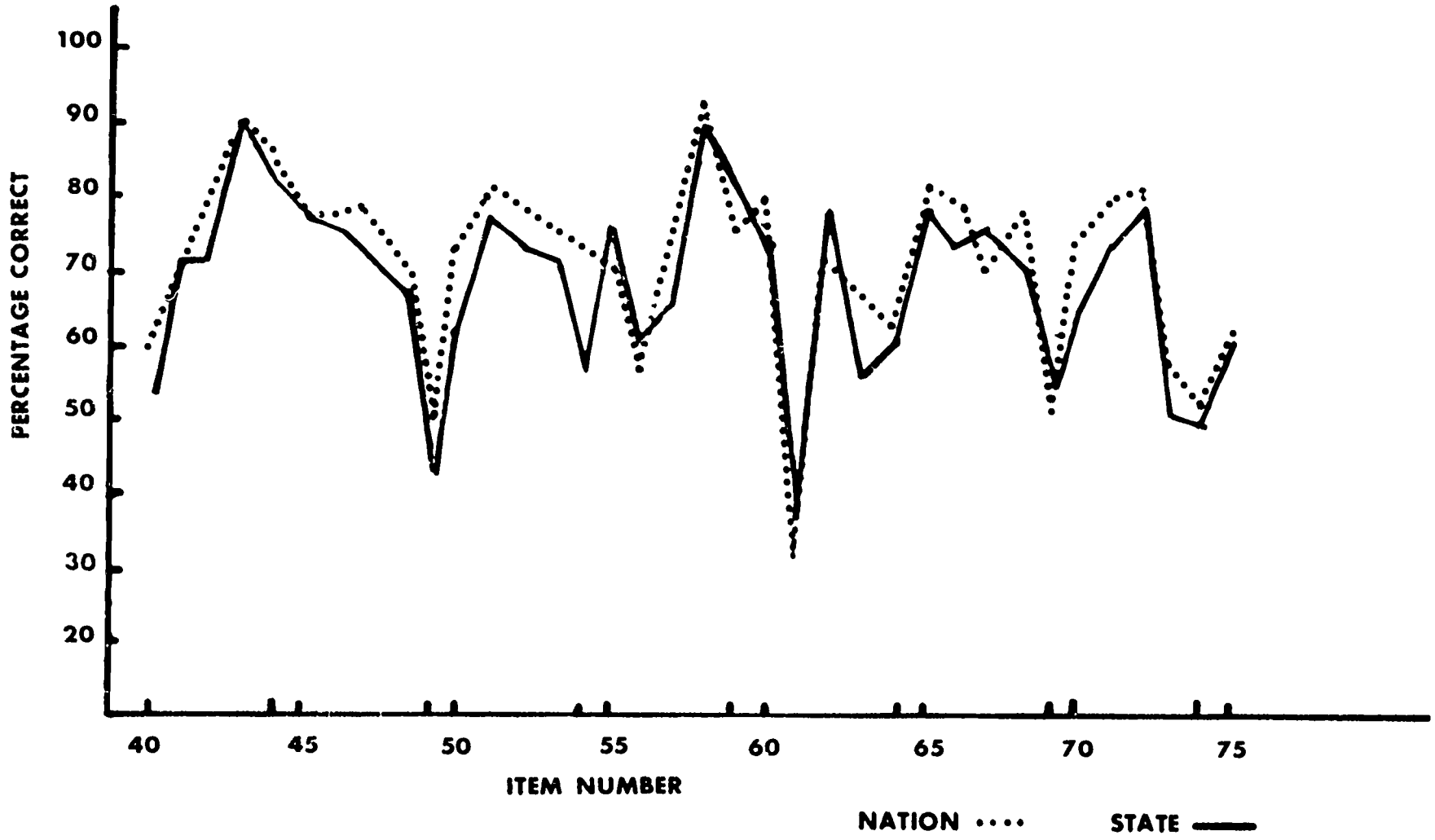


Figure 3

STATE AND NATIONAL ITEM PERCENTAGE CORRECT PROFILE
ITBS CAPITALIZATION SUBTEST

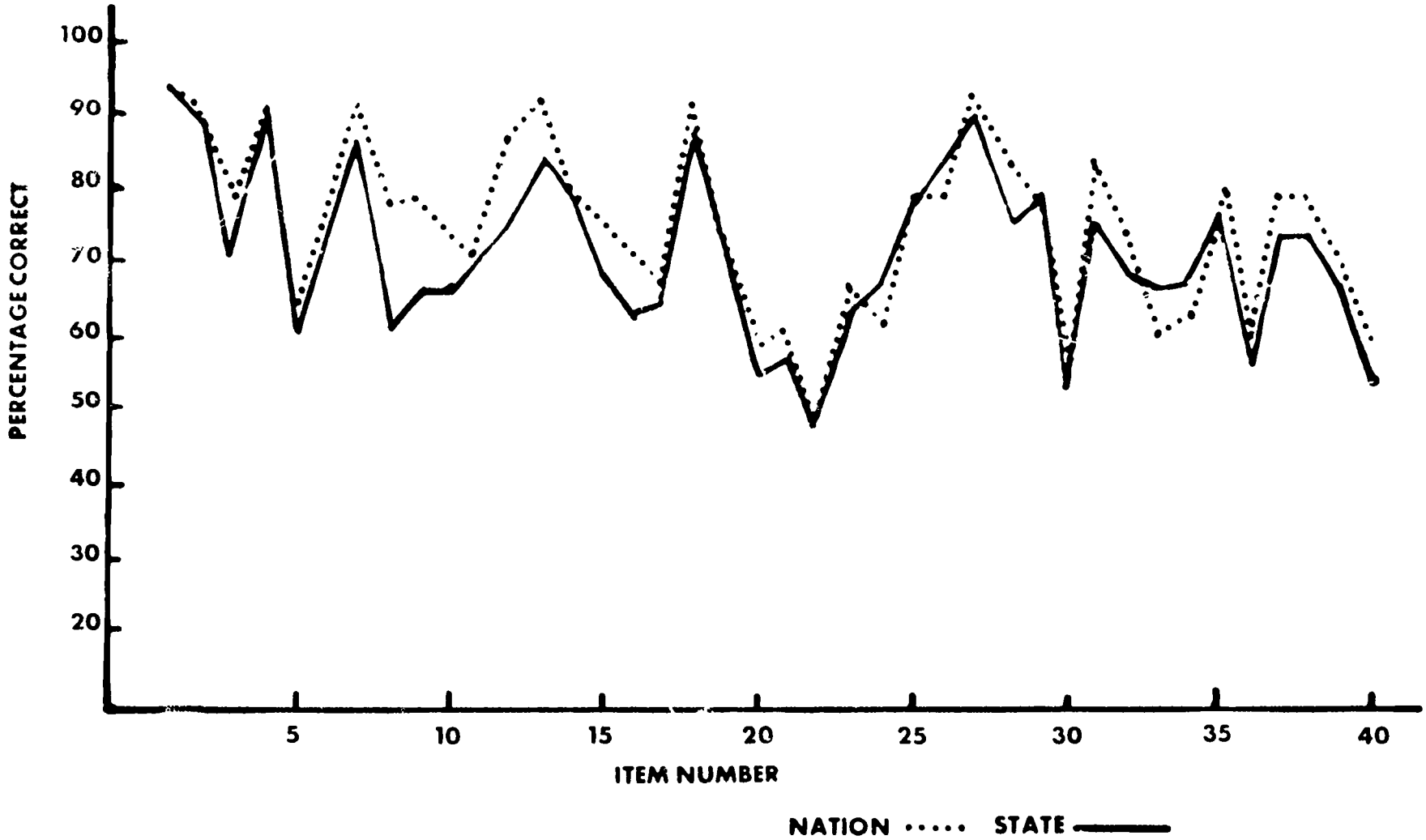


Figure 4

STATE AND NATIONAL ITEM PERCENTAGE CORRECT PROFILE
ITBS PUNCTUATION SUBTEST (CONT.)

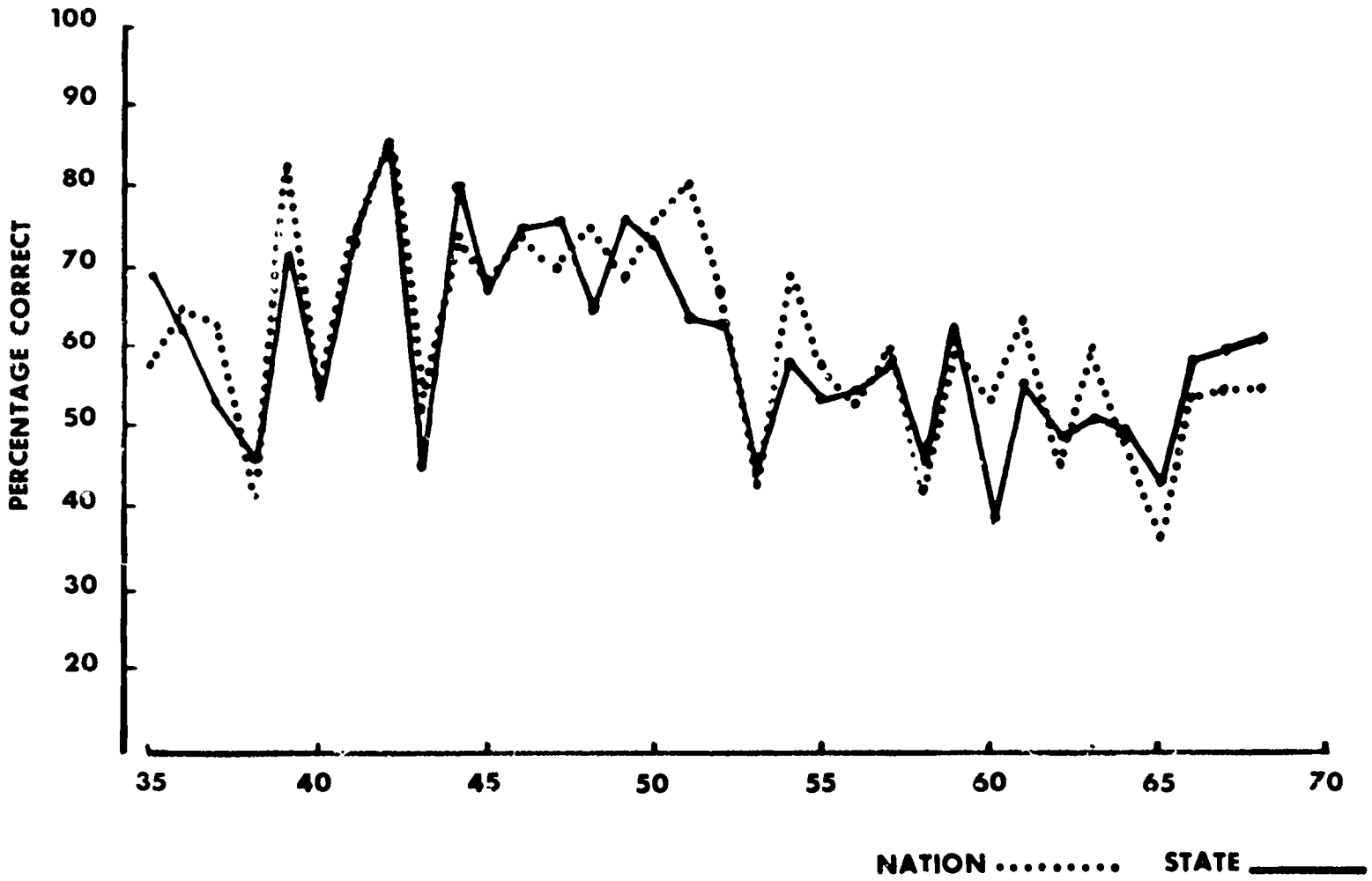


Figure 5

STATE AND NATIONAL ITEM PERCENTAGE CORRECT PROFILE

ITBS USAGE SUBTEST

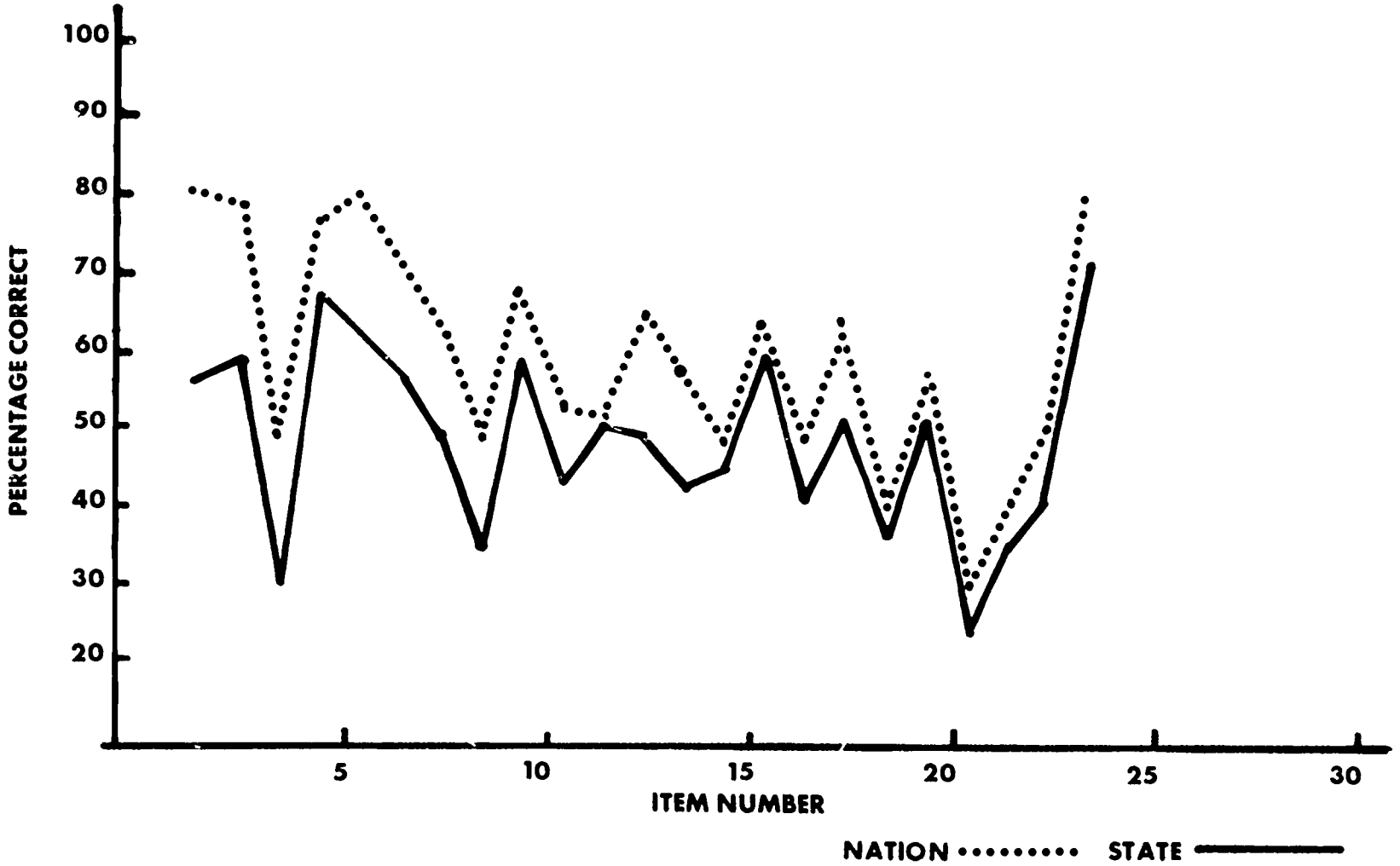


Figure 6

AVERAGES ON ITBS SPELLING SUBTEST BY EDUCATION LEVEL OF PARENTS

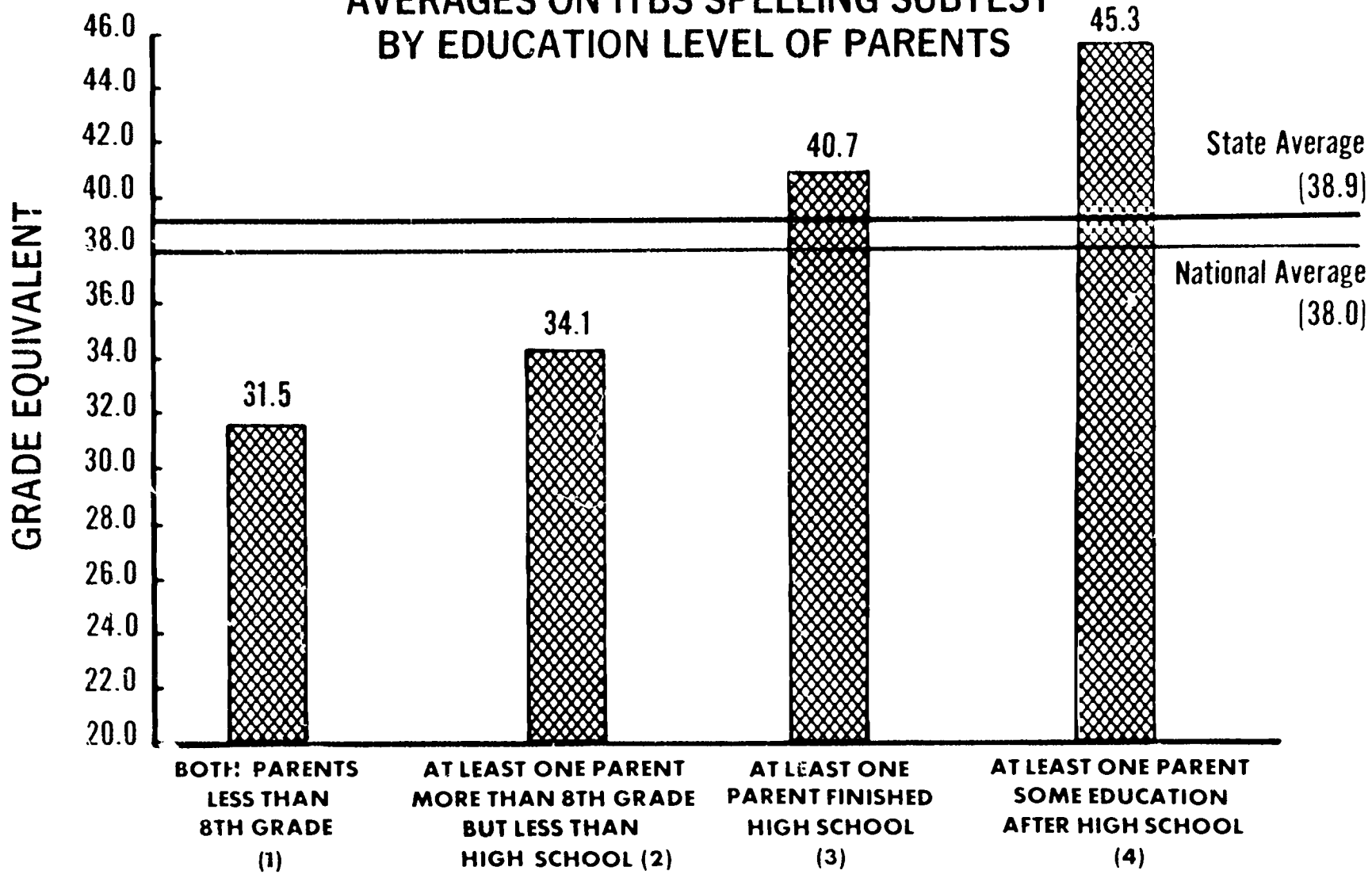


Figure 7

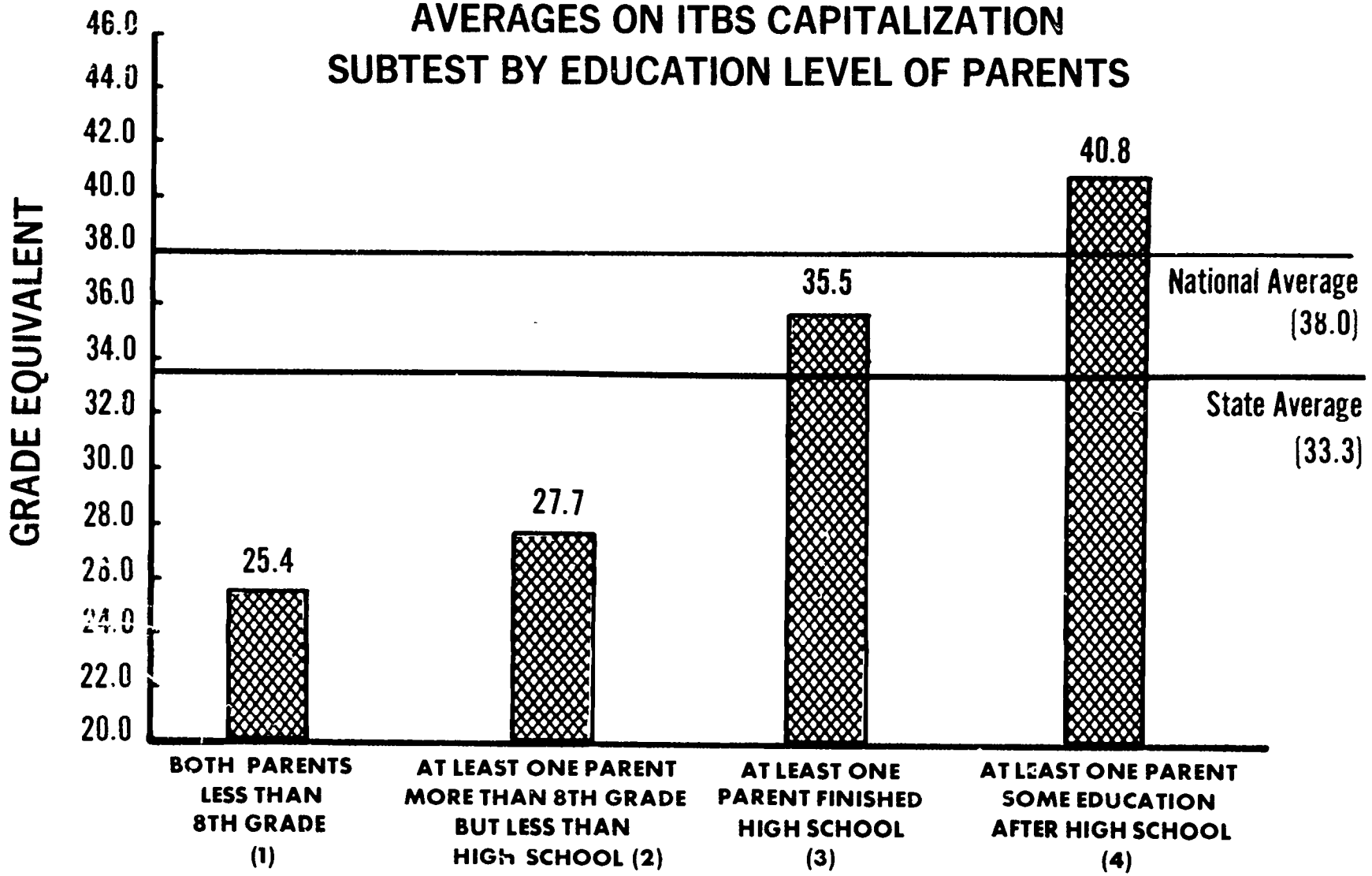

AVERAGES ON ITBS CAPITALIZATION
SUBTEST BY EDUCATION LEVEL OF PARENTS
GRADE EQUIVALENT
46.0
44.0
42.0
40.0
38.0
36.0
34.0
32.0
30.0
28.0
26.0
24.0
22.0
20.0
25.4
27.7
35.5
40.8
National Average
(38.0)
State Average
(33.3)
BOTH PARENTS LESS THAN 8TH GRADE (1)
AT LEAST ONE PARENT MORE THAN 8TH GRADE BUT LESS THAN HIGH SCHOOL (2)
AT LEAST ONE PARENT FINISHED HIGH SCHOOL (3)
AT LEAST ONE PARENT SOME EDUCATION AFTER HIGH SCHOOL (4)
EDUCATION LEVEL OF PARENTS

Figure 8

AVERAGES ON ITBS PUNCTUATION SUBTEST BY EDUCATION LEVEL OF PARENTS

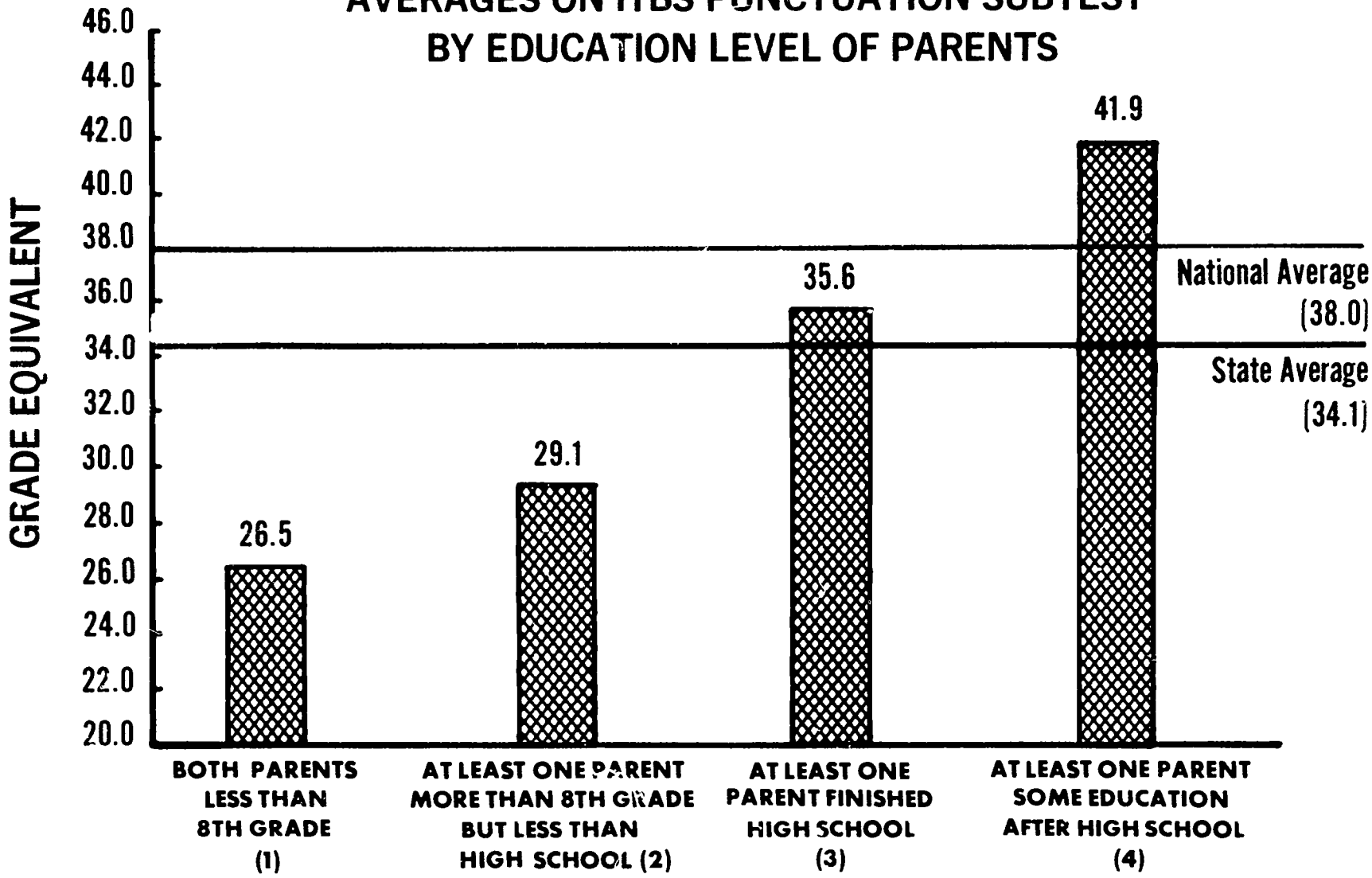


Figure 9

AVERAGES ON ITBS USAGE SUBTEST BY EDUCATION LEVEL OF PARENTS

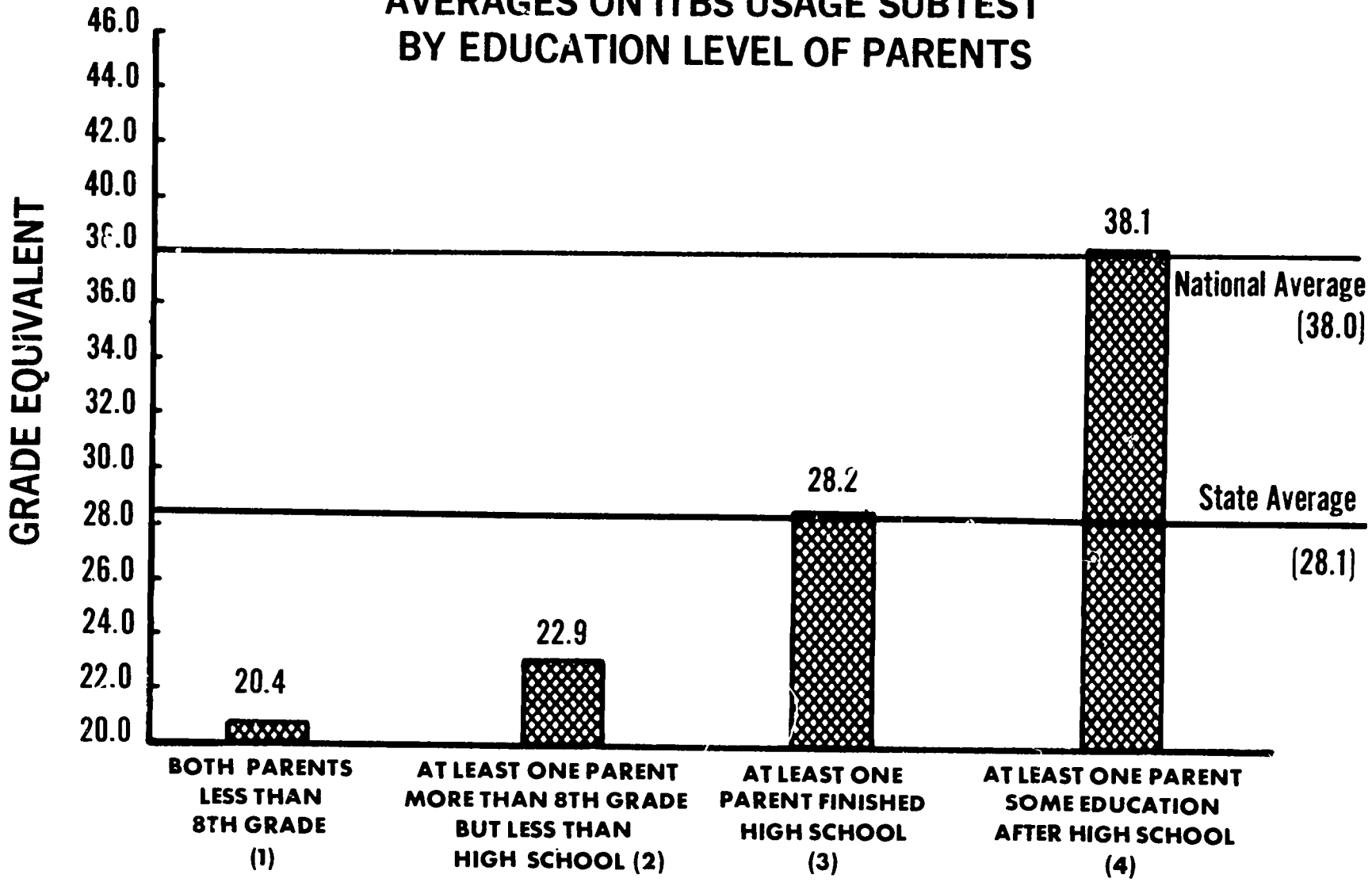


Figure 10

AVERAGES ON ITBS TOTAL LANGUAGE SCORE BY EDUCATION LEVEL OF PARENTS

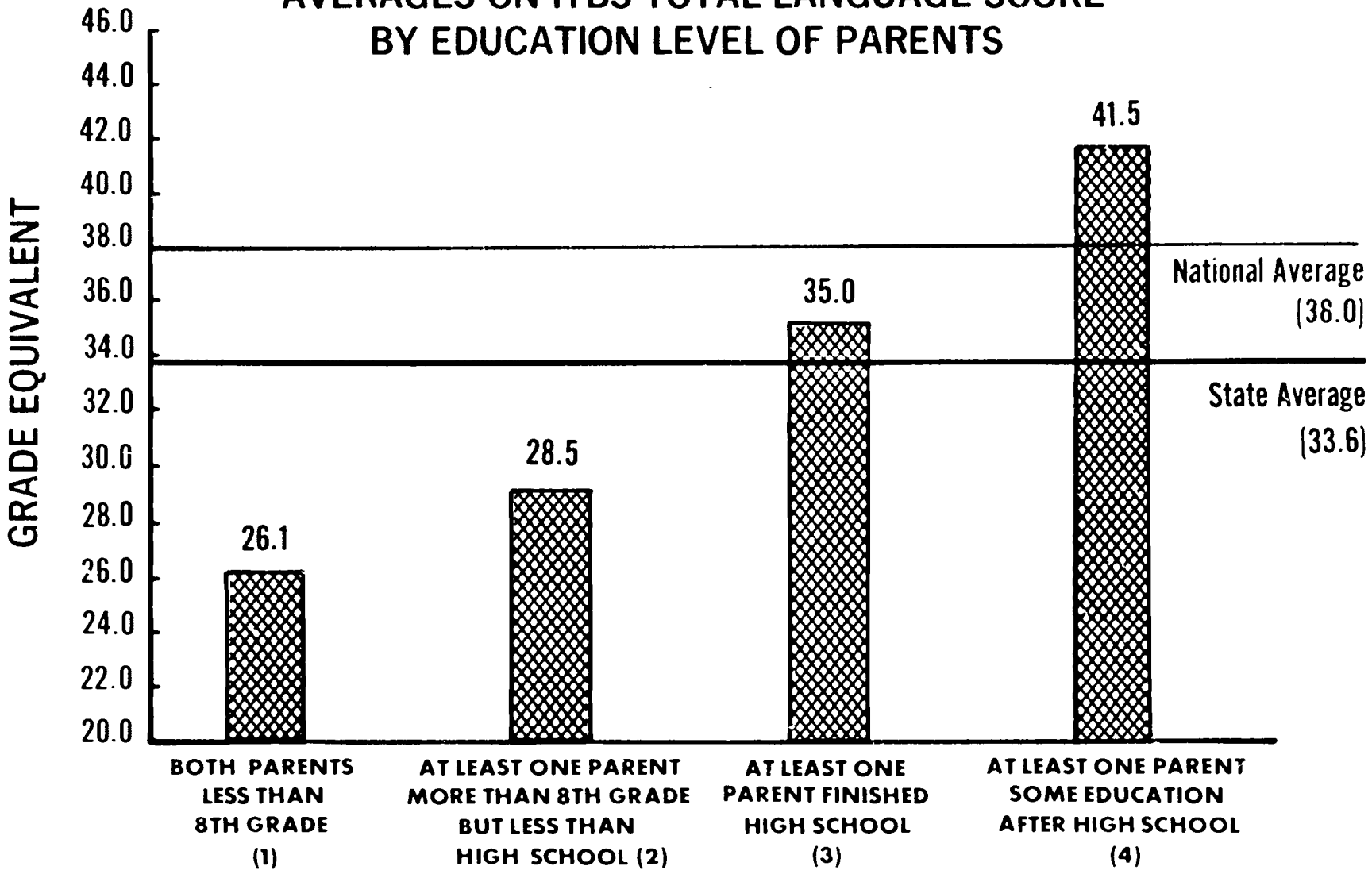


Figure 11

AVERAGES ON ITBS SPELLING SUBTEST BY FAMILY INCOME

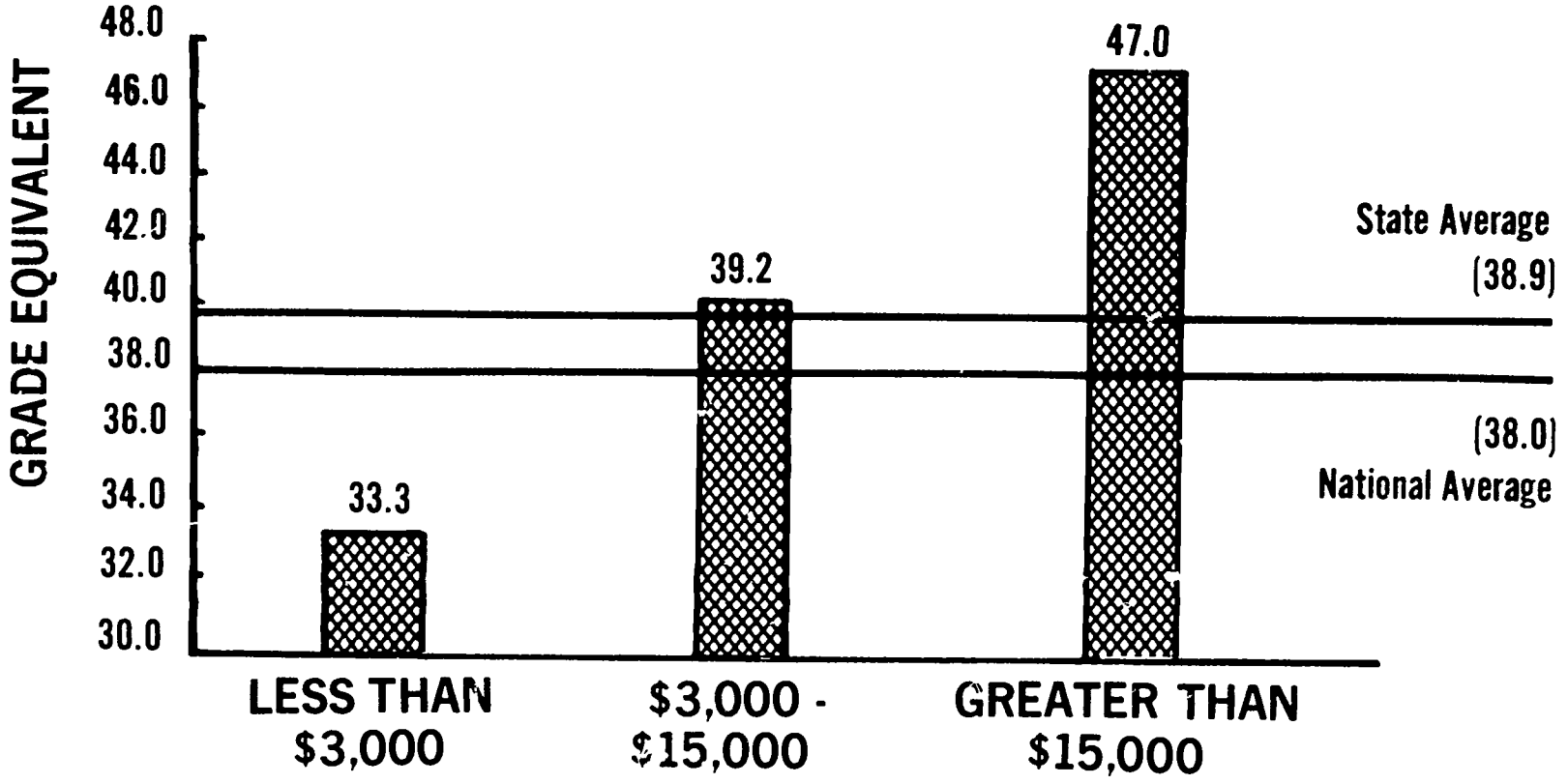


Figure 12

AVERAGES ON ITBS CAPITALIZATION SUBTEST BY FAMILY INCOME

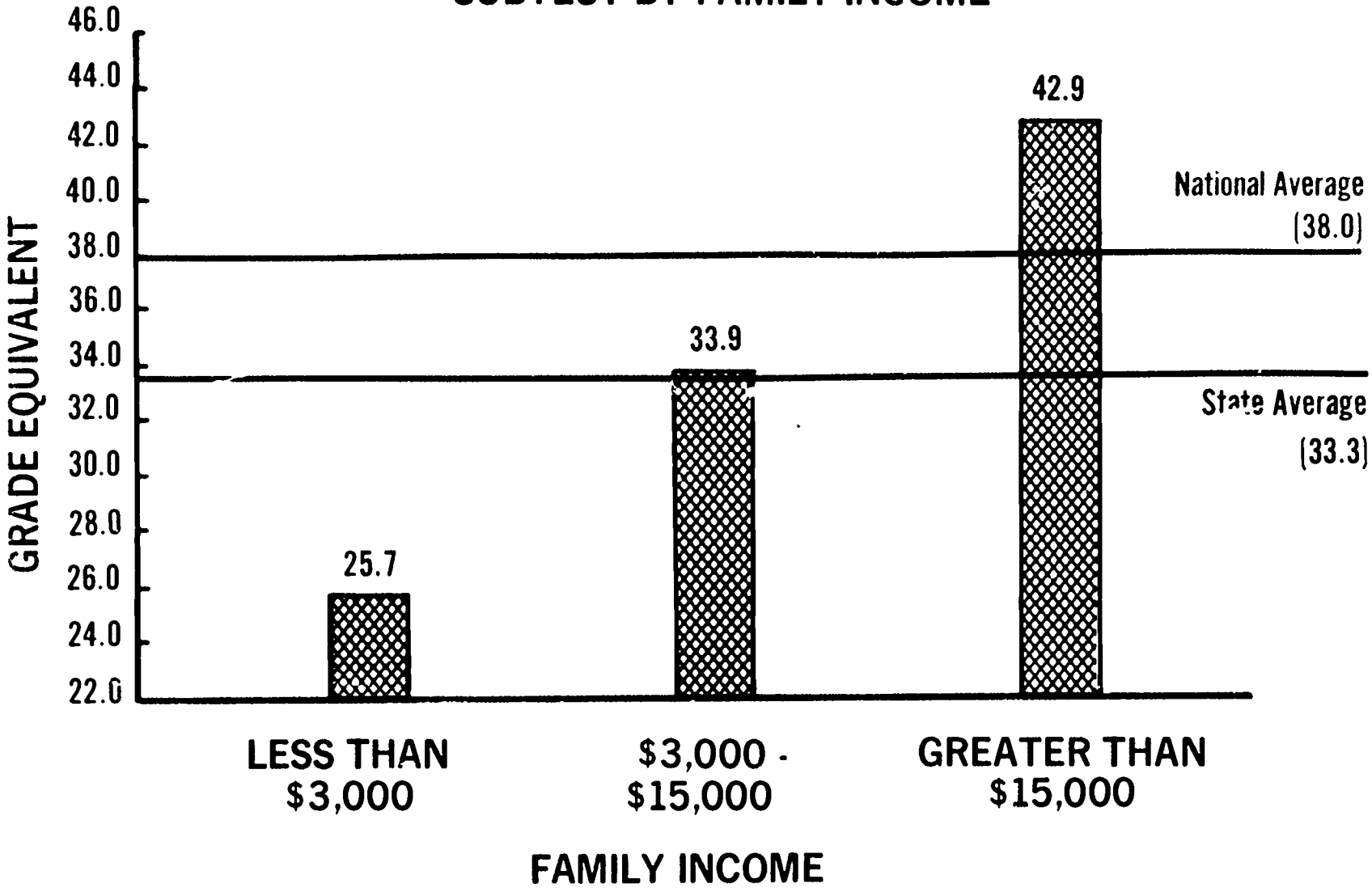


Figure 13

AVERAGES ON ITBS PUNCTUATION SUBTEST BY FAMILY INCOME

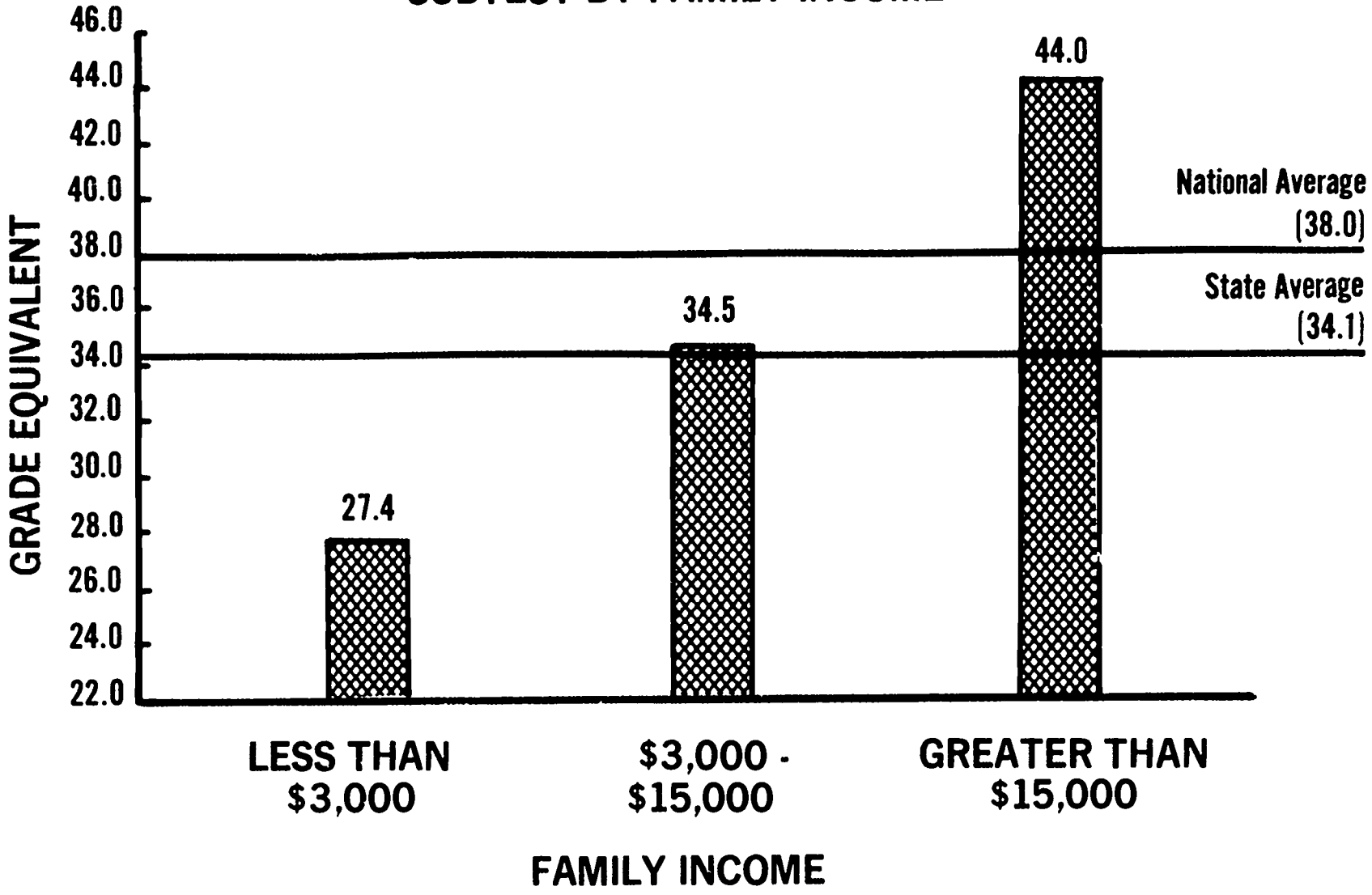


Figure 14

AVERAGES ON ITBS USAGE SUBTEST BY FAMILY INCOME

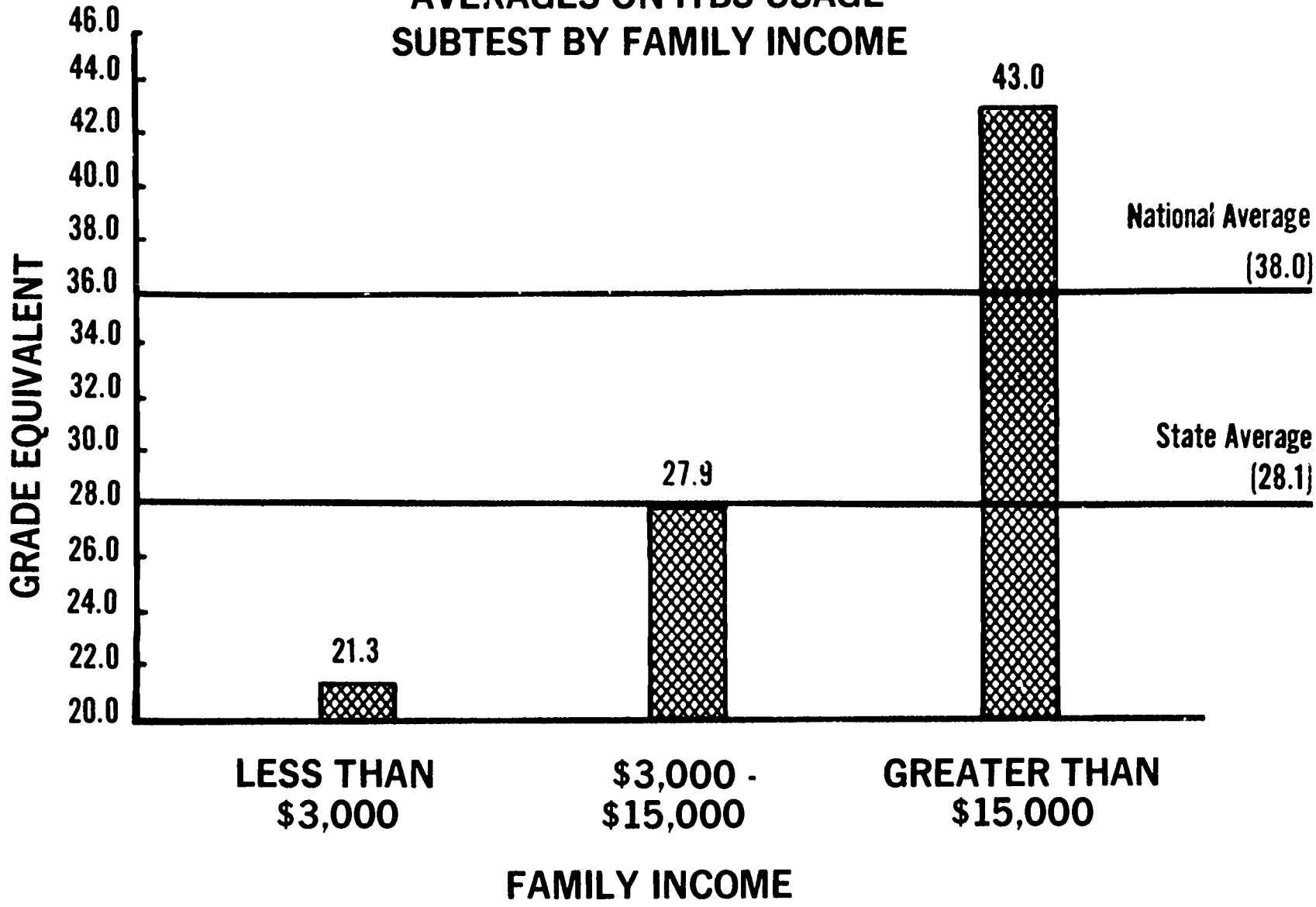


Figure 15

AVERAGES ON ITBS TOTAL LANGUAGE SCORE BY FAMILY INCOME

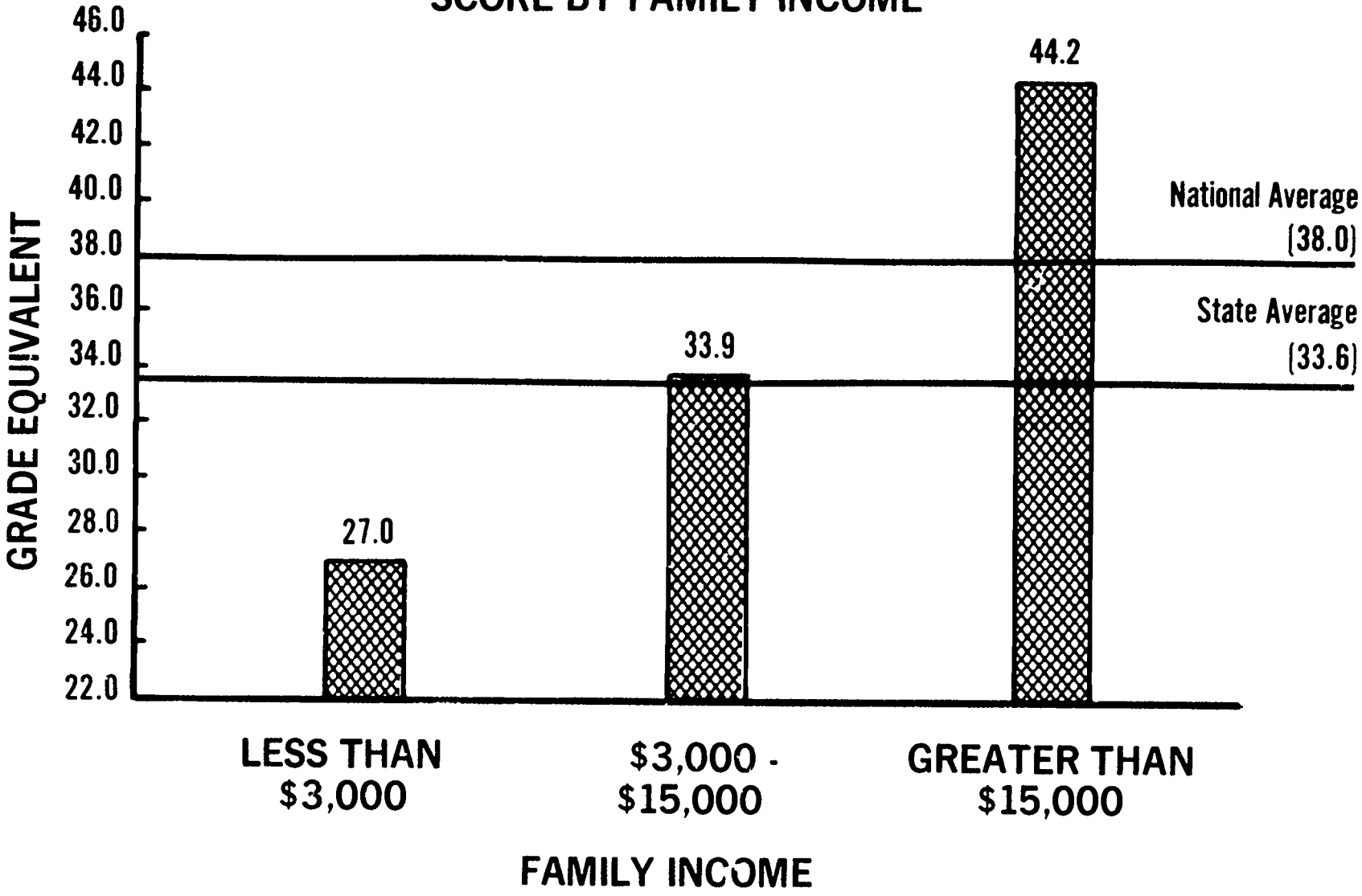


Figure 16

ITBS LANGUAGE SUBTEST SCORES FOR THE STATE BY SEX WITHIN RACE

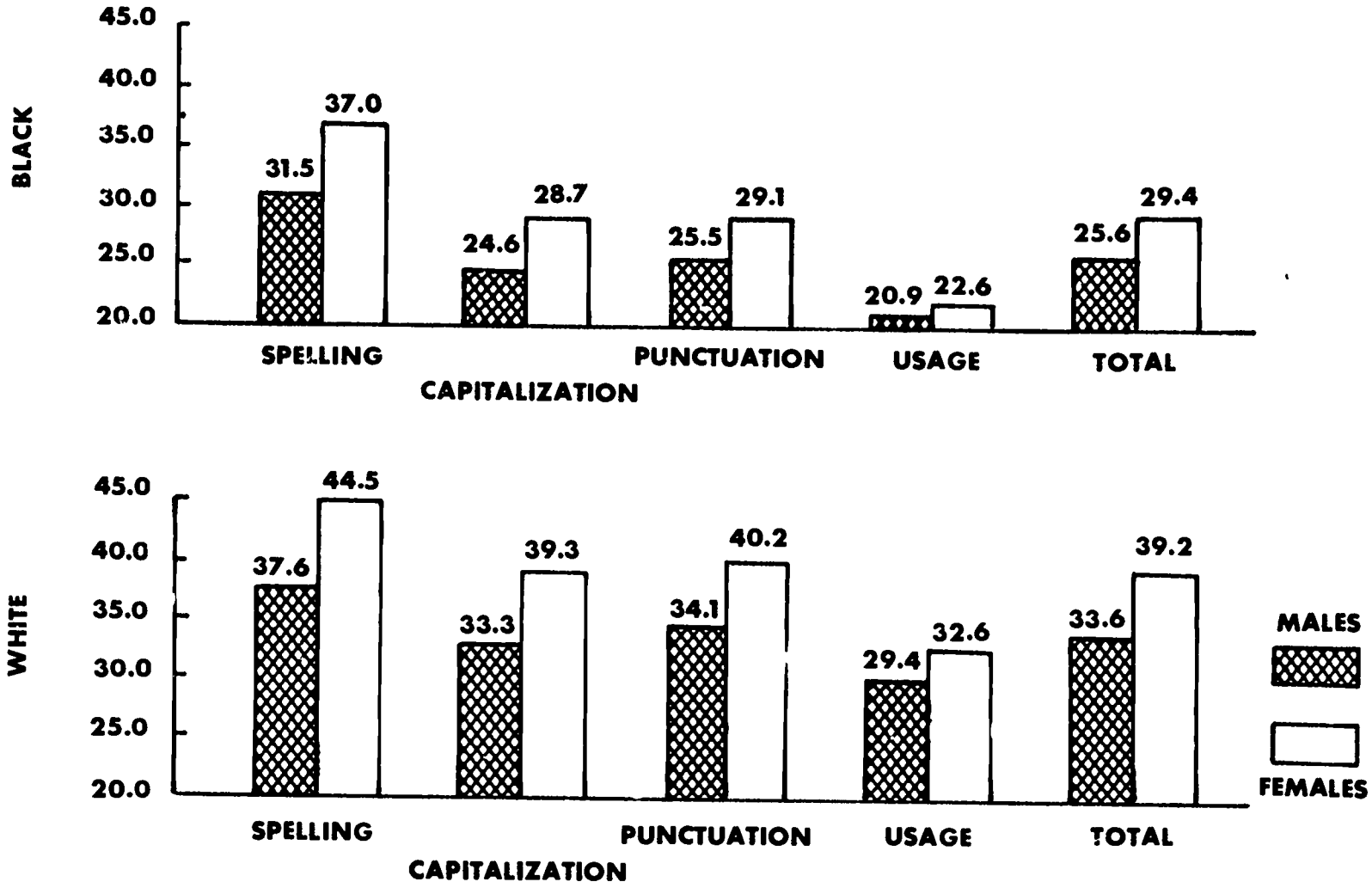


Figure 17

COASTAL PLAINS VS. STATE AVERAGES ON THE ITBS LANGUAGE ARTS SUBTESTS AND TOTAL

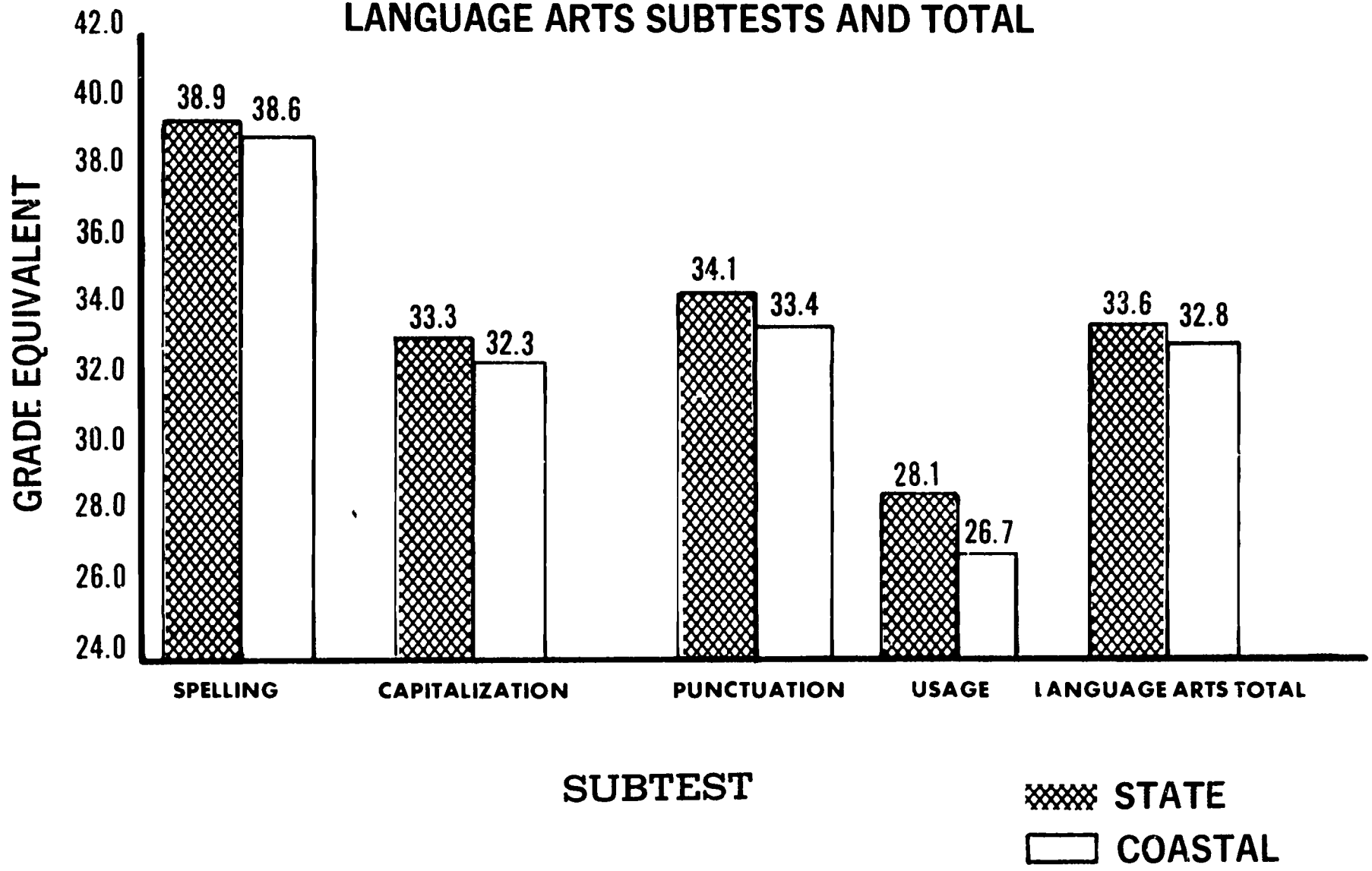


Figure 18

ITBS LANGUAGE SUBTEST SCORES FOR COASTAL PLAINS BY SEX WITHIN RACE

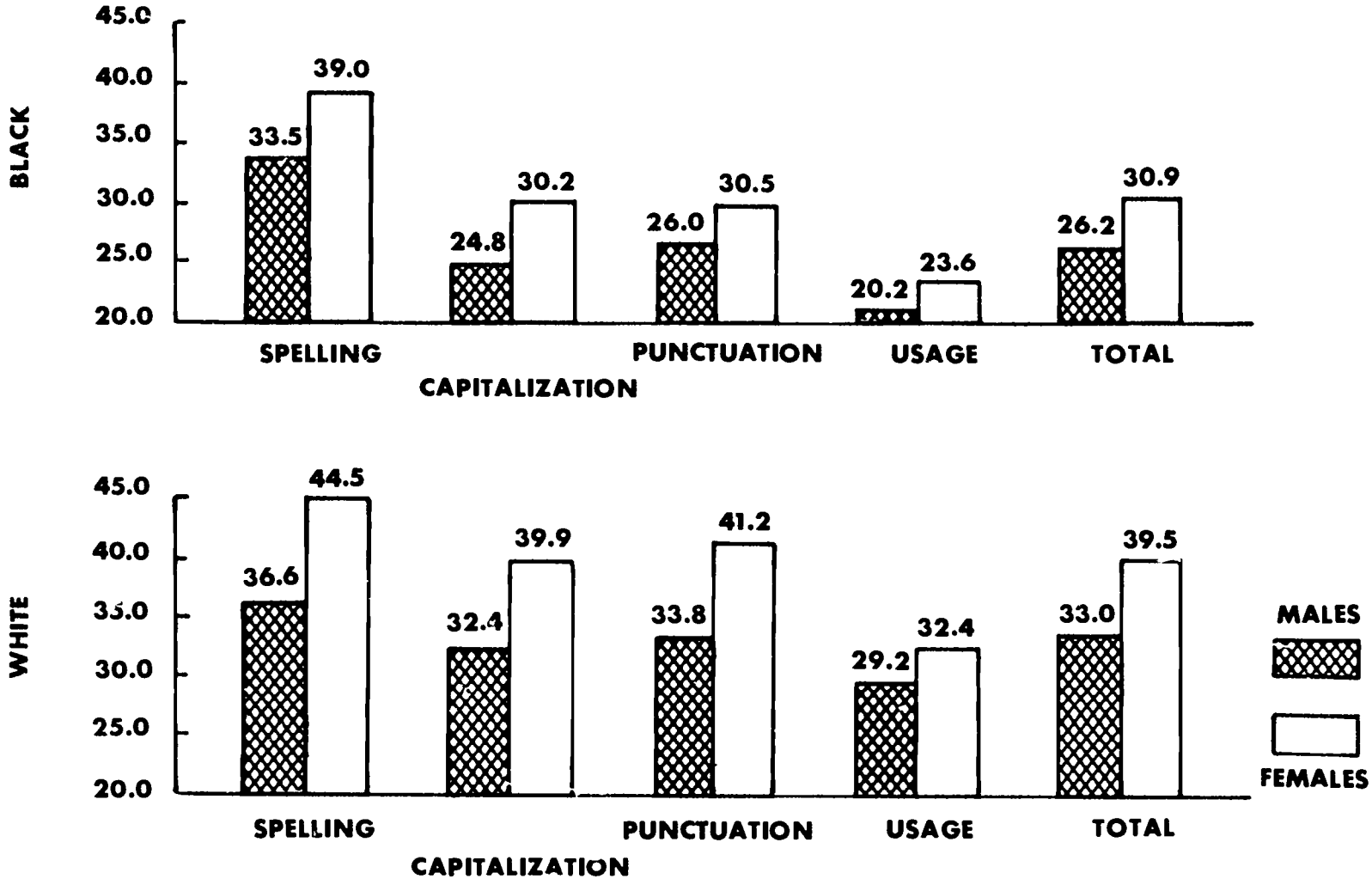


Figure 19

PIEDMONT VS. STATE AVERAGES ON THE ITBS

LANGUAGE ARTS SUBTESTS AND TOTAL

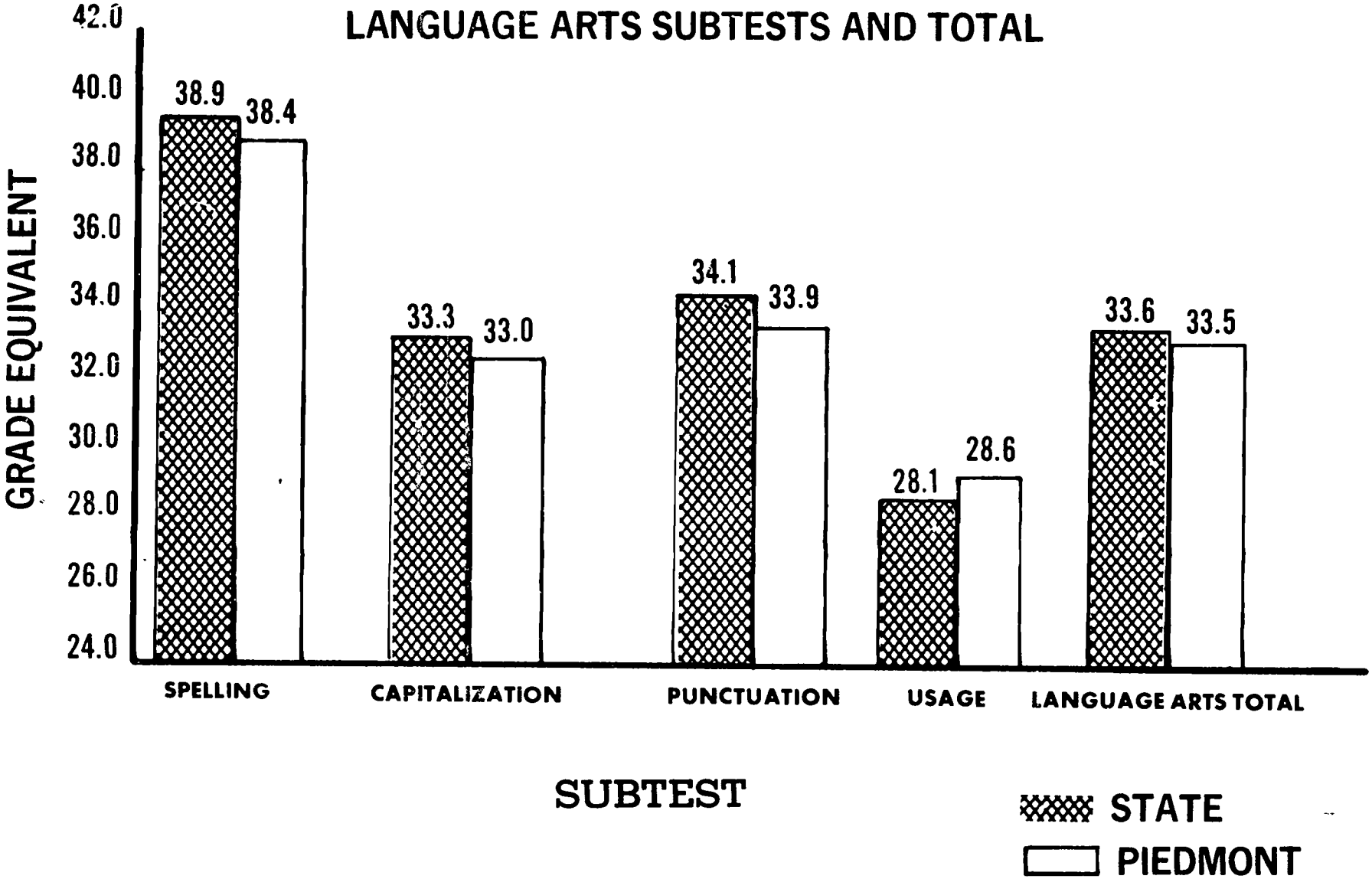


Figure 20

ITBS LANGUAGE SUBTEST SCORES FOR THE PIEDMONT BY SEX WITHIN RACE

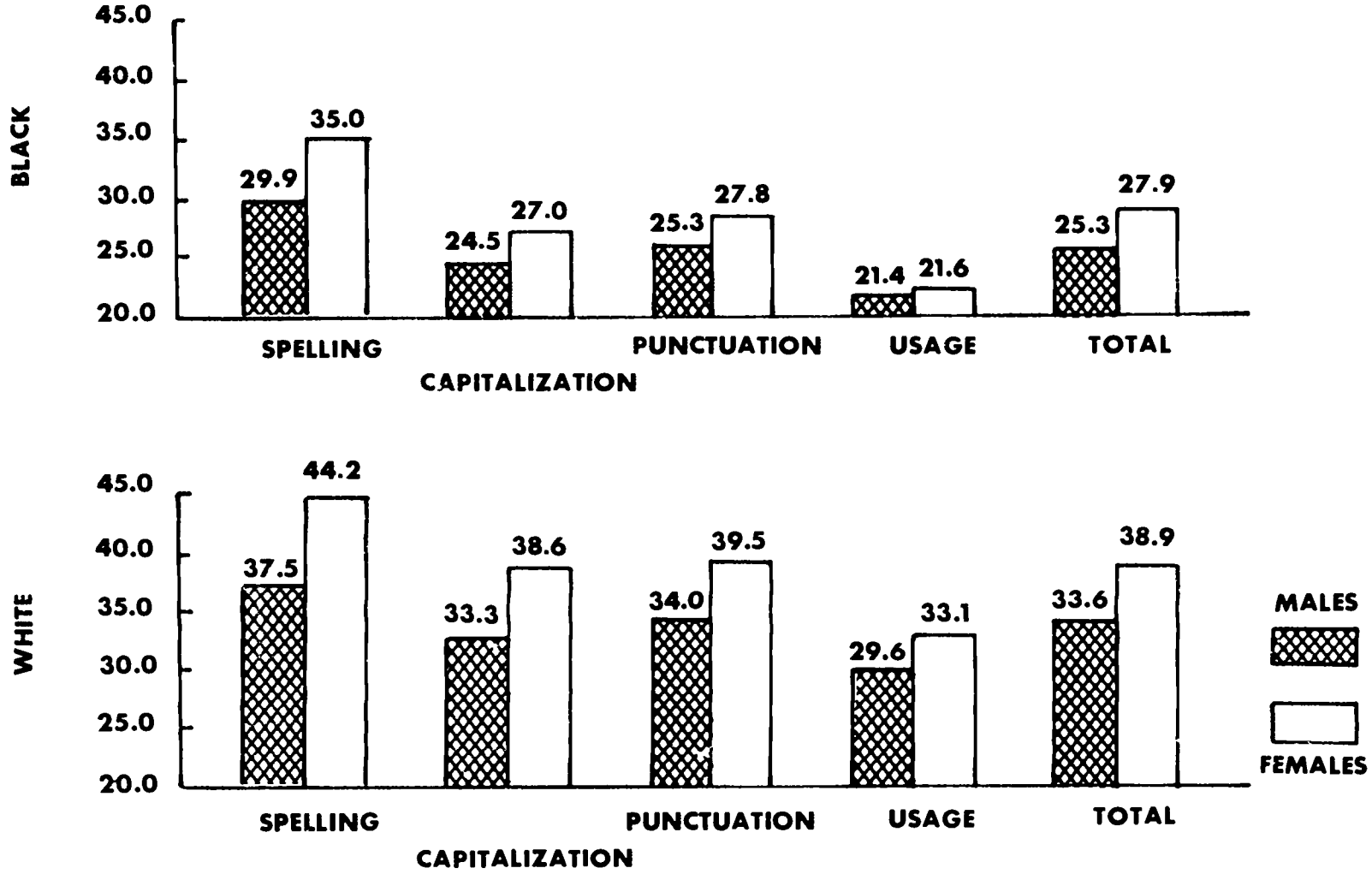


Figure 21

MOUNTAIN VS. STATE AVERAGES ON THE ITBS

LANGUAGE ARTS SUBTESTS AND TOTAL

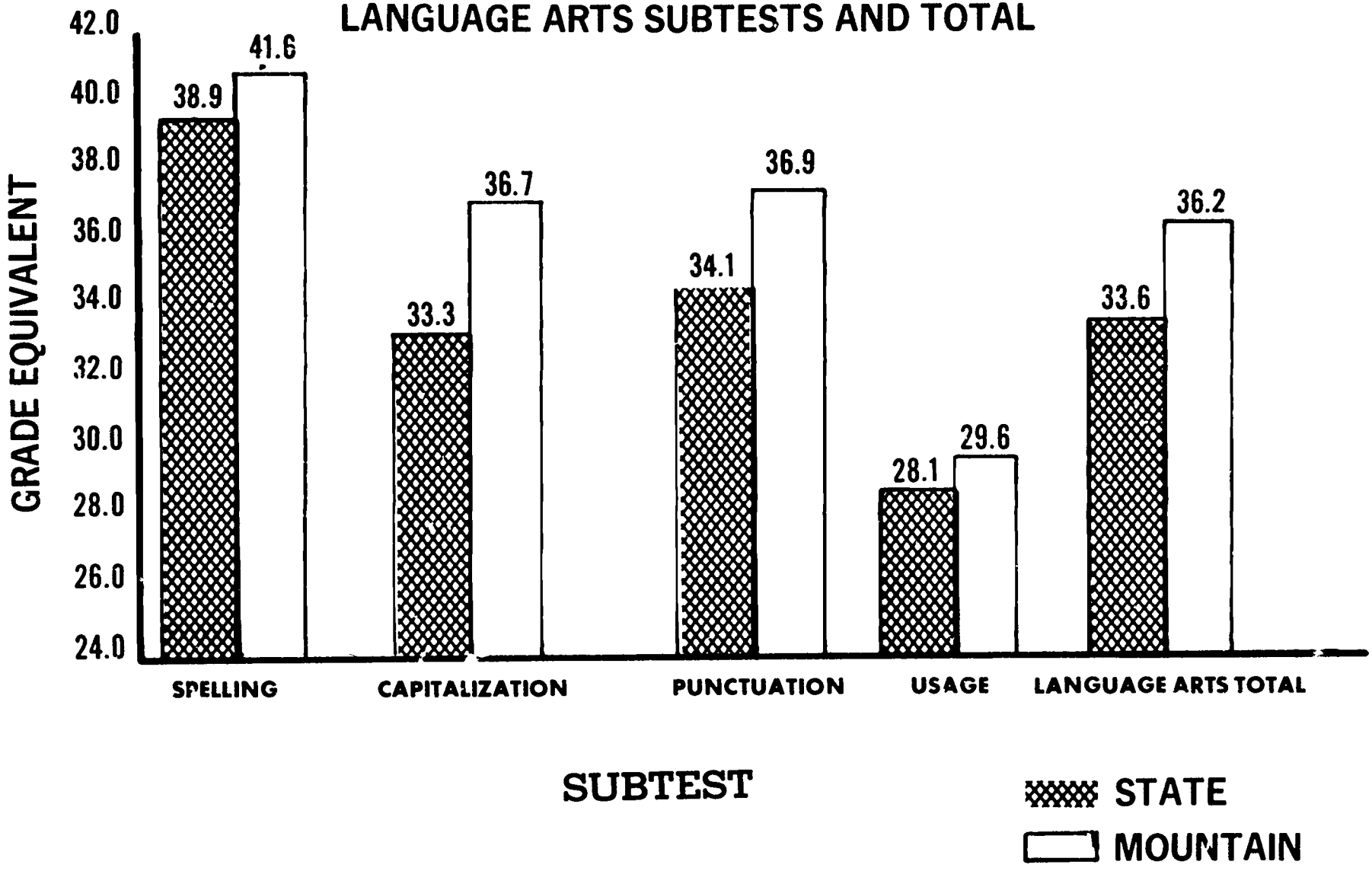


Figure 22

AVERAGE SCORES AND RANGES BY CLASSIFICATION VARIABLES ON THE ITBS SPELLING TEST

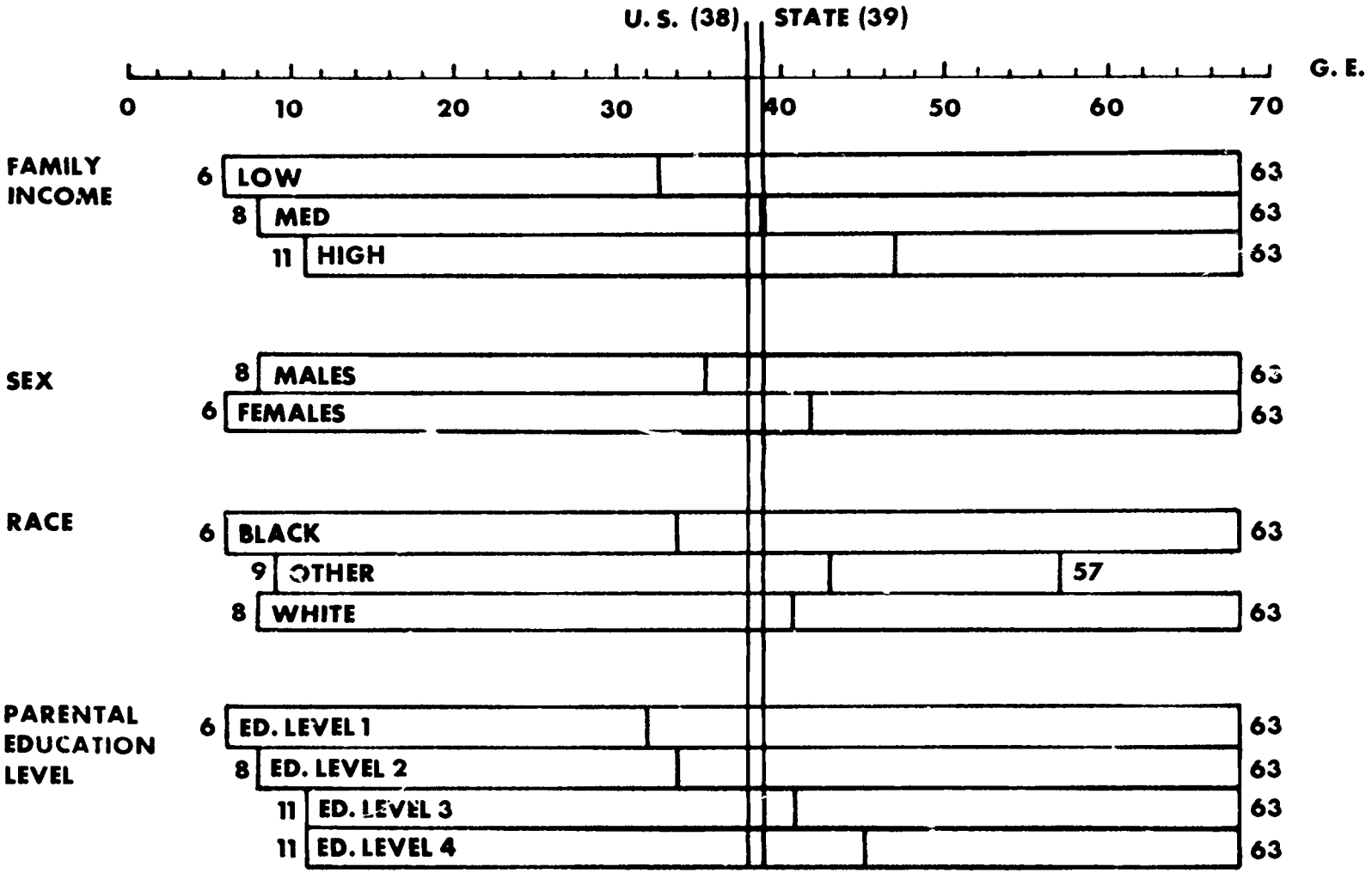


Figure 23

AVERAGE SCORES AND RANGES BY CLASSIFICATION VARIABLES ON THE ITBS CAPITALIZATION TEST

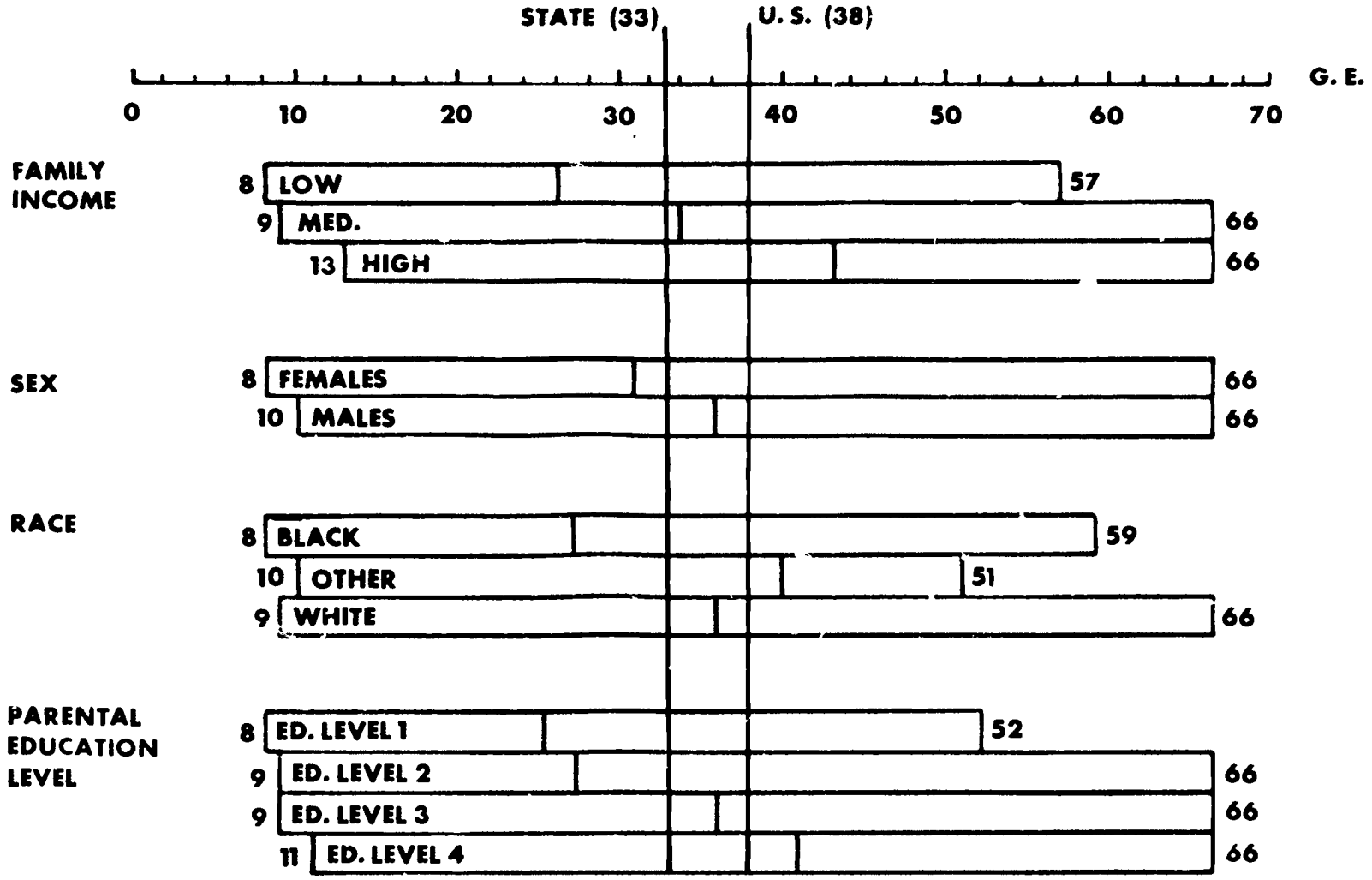


Figure 24

AVERAGE SCORES AND RANGES BY CLASSIFICATION VARIABLES ON THE ITBS PUNCTUATION TEST

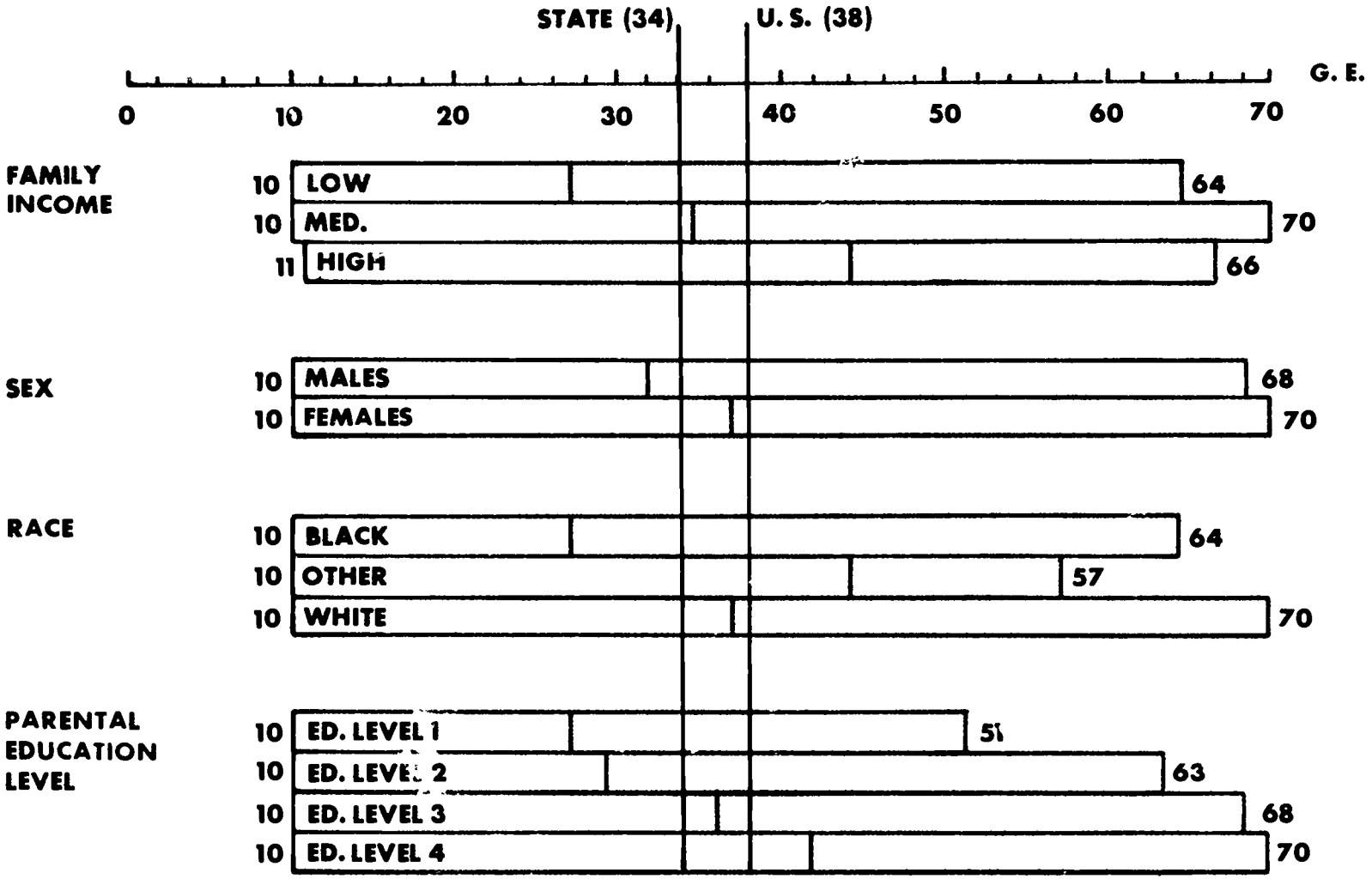


Figure 25

AVERAGE SCORES AND RANGES BY CLASSIFICATION VARIABLES ON THE ITBS USAGE TEST

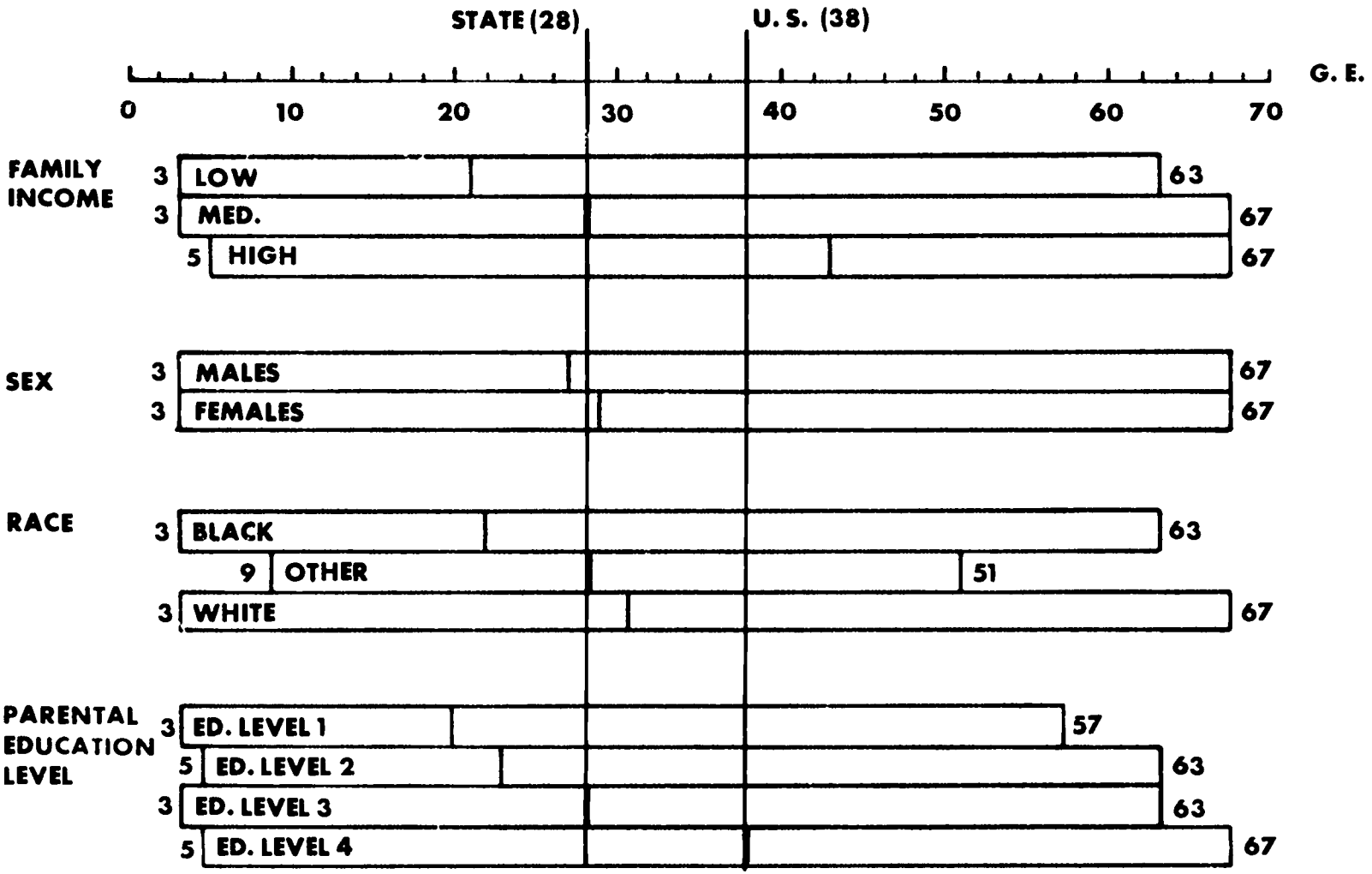


Figure 26

AVERAGE SCORES AND RANGES BY CLASSIFICATION VARIABLES ON ITBS LANGUAGE ARTS TOTAL SCORE

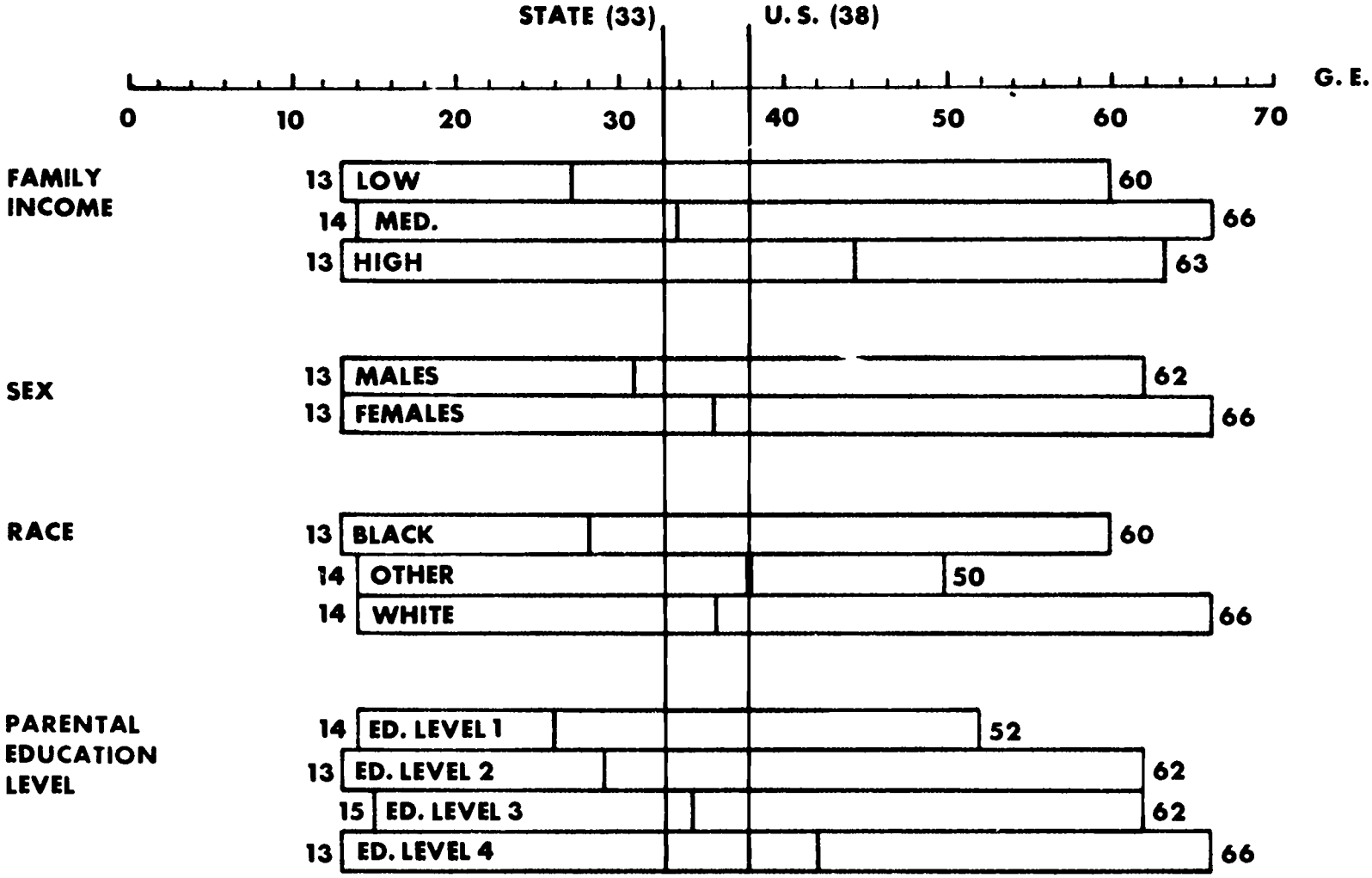
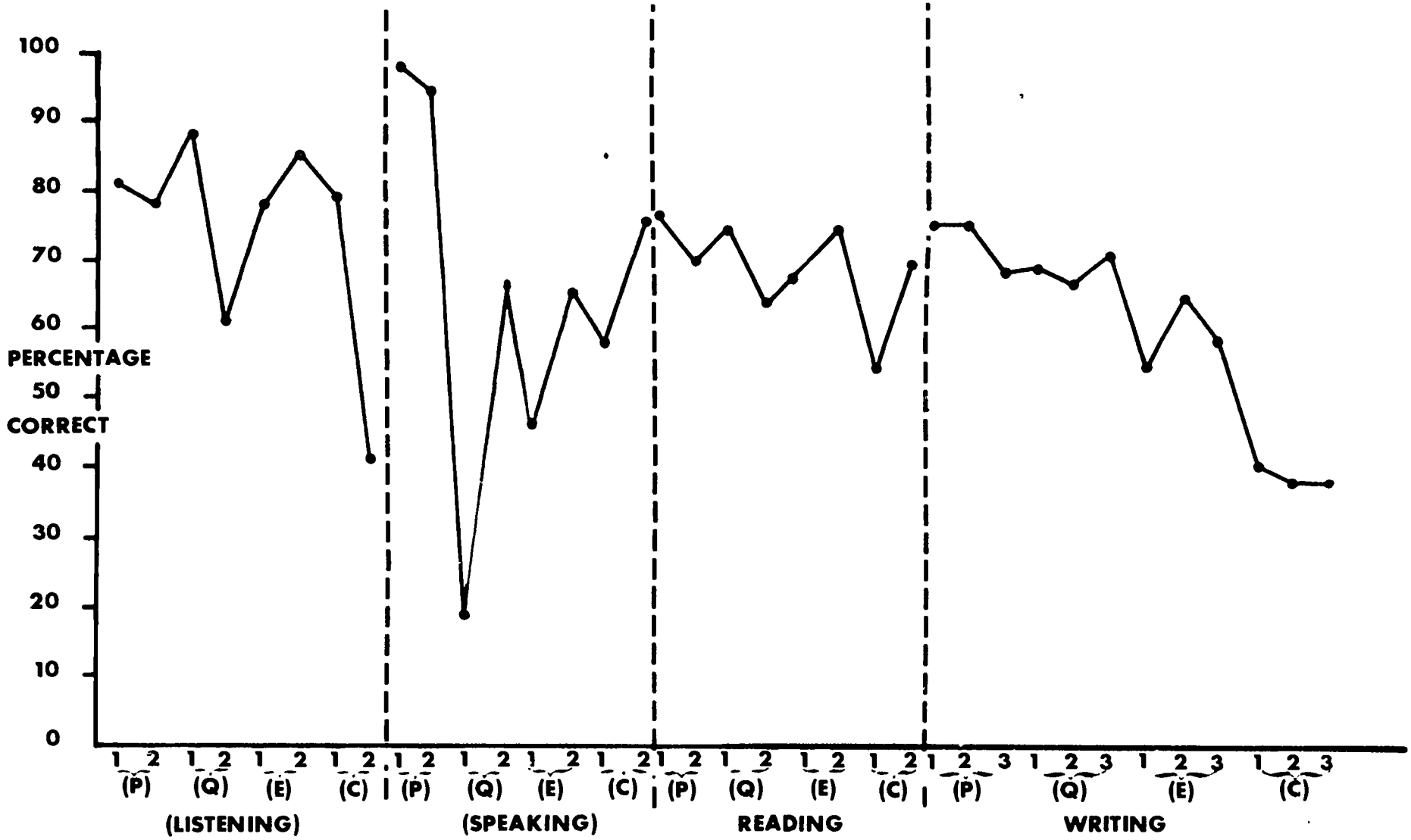


Figure 27

PUNCTUATION SKILL PATTERNS WITHIN THE FOUR MODALITIES

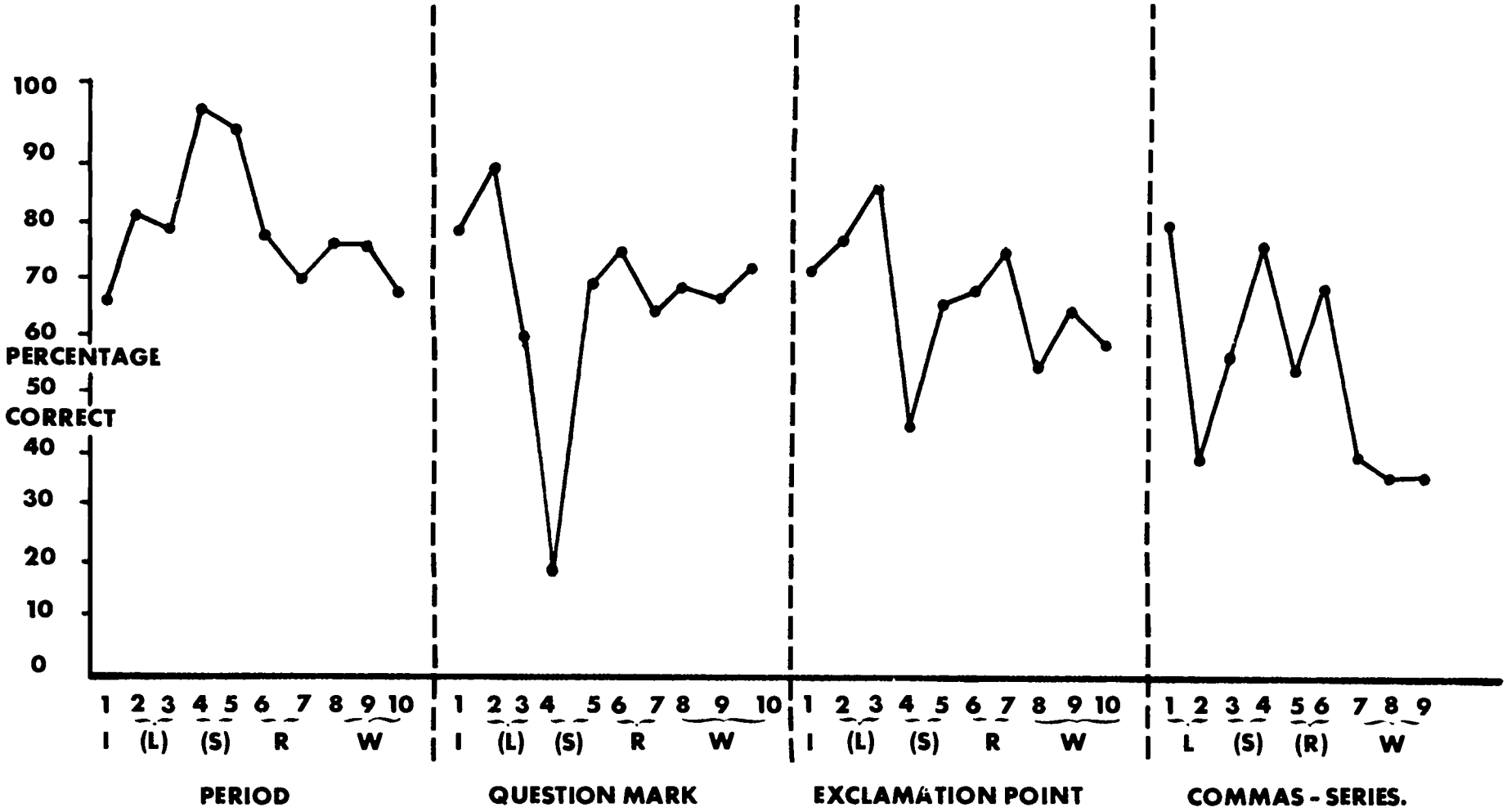


P = PERIOD Q = QUESTION MARK E = EXCLAMATION POINT C = COMMA TO SEPARATE A SERIES OF WORDS

NOTE: MODALITIES IN WHICH ONLY SUBSAMPLE WAS TESTED ARE IN PARENTHESIS

Figure 28

MODALITY PATTERNS WITHIN FOUR PUNCTUATION SKILLS

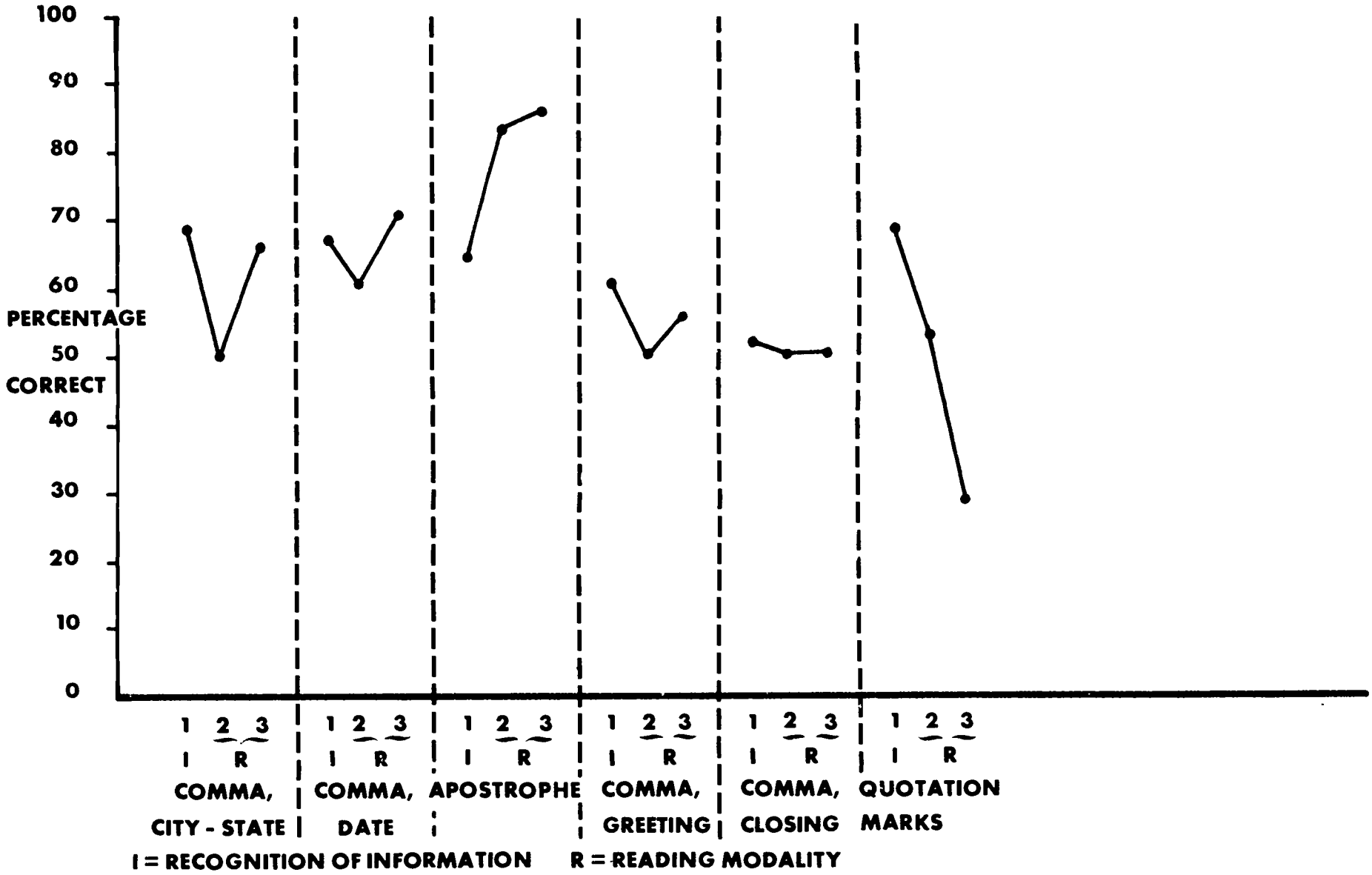


I = RECOGNITION OF RESPONSE L = LISTENING
S = SPEAKING R = READING W = WRITING

NOTE: MODALITIES IN WHICH ONLY SUBSAMPLE WAS TESTED ARE IN PARENTHESIS

Figure 29

PERCENT CORRECT FOR ITEMS WITHIN SIX PUNCTUATION SKILLS



APPENDIX C

TEACHER RATINGS

LANGUAGE ARTS ASSESSMENT OBJECTIVES

Questionnaire Instructions

The third grade Language Arts Test for the 1973-74 statewide assessment was experimental and was designed to look at the theory that children may learn differently through the various modalities. It was decided to look only at the area of punctuation, not because it was considered the most important area of language arts, but because more straightforward measures could be developed for this area. Specific skills were identified for the area of punctuation and items were developed for each skill across five modalities of learning (or styles of learning): recognition of information, listening, speaking, reading, writing.

Specific punctuation skills of placing the period, question mark, exclamation, comma, apostrophe and quotation marks were measured for five modalities of learning. Three modalities (recognition of information, reading, and writing) were measured in group administrations. Two modalities (listening and speaking) were measured in individual administrations. This questionnaire deals only with those objectives based on three modalities measured in group administrations: recognition of information, reading, writing.

There are two levels of objectives: (1) intermediate objectives, identified by roman numerals, and (2) instructional or student performance objectives, numbered consecutively after the intermediate objectives. You are requested to rate each of the objectives (both intermediate and instructional) for three areas of concern: Importance, Being Taught, District Curriculum. There are three rating columns, one for each area. circle one number in each column which best reflects your thinking.

Column A, Importance: In this column you should rate the objective for its overall importance to third grade students. Is it important for these students to know or to be able to do? Does it reflect an important learning skill for them? You should judge here on the general importance of the objective and not whether it is currently being taught. Circle one number.

1 - Very important
2 - Somewhat Important
3 - Not Very Important

Column B, Being Taught: Here you are asked to rate the objective as to whether it is being taught to your students. That is, do you teach to this objective? If you are a member of a team teaching situation and do not teach this particular subject, please make a judgment as to whether other team teachers teach to this objective. (This will help us to know if the objectives selected are ones that the students in North Carolina generally encounter.) Circle one number.

1 - Yes, I (or team member) teach to this objective.
2 - This objective is not specifically covered with my students but they have highly similar content and activities.
3 - No, my students are not taught this objective.

Column C, District Curriculum: This rating asks for your best judgment as to whether this objective is generally covered in the curriculum throughout your local school system. Thus, you might teach an objective which few others teach and would mark "No". Or you might not teach a particular objective which many others might teach and would mark "Yes". This rating is, of course, very subjective and the results will be considered only as general indicators. Circle one number.

1 - Yes, this objective is generally taught.
2 - No, this objective is not generally taught.
3 - I do not know.

The numbers in the rating columns have headings only on the first page of the questionnaire. In order to keep in mind the meaning of each number, refer back to the instructions (which may be separated from the questionnaire if desired) or the front page of the questionnaire.

LANGUAGE ARTS OBJECTIVES

PUNCTUATION SKILLS

		(A) Importance			(B) Being Taught			(C) District Curriculum		
		Very Imp.	Somewhat Im.	Not Very Im.	Yes, Taught	Similar Obj.	No, Not Tau.	Yes, Gen.	No, Not Gen.	I Don't Know
		1	2	3	1	2	3	1	2	3
I.	The student will recognize the correct use of punctuation marks when given several examples.	71-	21-	0	74-	5-	0	76-	2-	0
	1. The student will recognize the appropriate use of terminal punctuation by selecting the sentence which uses the correct terminal punctuation mark for that particular sentence.									
	A. Period	95-	5-	0	98-	2-	0	98-	2-	0
	B. Question Mark	93-	7-	0	98-	2-	0	98-	2-	0
	B. Exclamation Point	71-	26-	0	93-	2-	0	83-	7-	2
	2. The student will recognize the appropriate use of commas to separate words in a series by selecting the sentence containing a series of words which illustrates correct comma usage.	71-	24-	0	88-	10-	0	86-	7-	5

	(A) Importance			(B) Being Taught			(C) District Curriculum		
	1	2	3	1	2	3	1	2	3
3. The student will recognize the appropriate use of contractions by selecting the correct form of the contraction when given the two component words.	93-	7-	0	98-	2-	0	95-	5-	0
4. The student will recognize the correct use of the comma in the greeting of a friendly letter by selecting the correctly punctuated greeting from several given examples.	88-	12-	0	95-	5-	0	88-	7-	5
5. The student will recognize the correct use of the comma in the closing of a friendly letter by selecting the correctly punctuated closing from several given examples.	88-	12-	0	98-	2-	0	93-	2-	5
6. The student will recognize the correct use of the comma in separating city and state names by selecting the correctly punctuated sentence from several given examples.	95-	5-	0	95-	2-	2	93-	5-	2
7. The student will recognize the correct use of the comma to separate the day, month, and year by selecting the correctly punctuated date from several given examples.	93-	7-	0	93-	7-	0	93-	5-	2
8. The student will recognize the correct use of quotation marks by selecting the correctly punctuated sentence from several given examples.	62-	36-	2	71-	26-	2	71-	17-	12

		(A) Importance			(B) Being Taught			(C) District Curriculum		
		1	2	3	1	2	3	1	2	3
II.	The student will demonstrate the ability to punctuate correctly (in writing).	83-	10-	7	86-	7-	7	83-	10-	7
1.	The student will be able to supply the end punctuation for given unpunctuated sentences that require either a period or a question mark.	92-	7-	0	90-	10-	0	93-	7-	0
2.	The student will be able to supply the end punctuation for given sentences that require exclamation points as terminal punctuation.	62-	36-	2	71-	29-	0	74-	19-	7
3.	The student will demonstrate his understanding of the appropriate use of commas to separate words in a series by supplying the necessary commas when given a sentence (with no internal punctuation) which contains words in a series.	67-	31-	2	71-	29-	0	74-	17-	9
4.	The student will be able to write and correctly punctuate a dictated sentence which requires one of the following terminal punctuation marks:									
A.	Question mark (Can you play ball with us?)	88-	12-	0	88-	12-	0	86-	4-	10
B.	Period (My father works in a store.)	91-	9-	0	88-	12-	0	86-	5-	9
C.	Exclamation point (Our house is on fire!)	71-	26-	2	79-	19-	0	76-	12-	10

	(A) Importance			(B) Being Taught			(C) District Curriculum		
	1	2	3	1	2	3	1	2	3
5. The student will be able to write and correctly punctuate a dictated sentence which requires that commas be used to separate words in a series.	60-	38-	2	61-	32-	7	67-	16-	17
6. The student will be able to make up and write an example for each of the following punctuation rules:									
A. A sentence that asks a question.	93-	7-	0	91-	9-	0	91-	7-	2
B. A sentence that tells something.	95-	5-	0	88-	10-	0	88-	7-	2
C. A sentence that shows excitement, surprise, or pleasure.	81-	19-	0	79-	21-	0	79-	19-	2
D. A sentence that has a list of several things in it.	79-	21-	0	74-	24-	2	71-	17-	12
III. The student will recognize the correct answer for given rules and purposes of punctuation.	62-	33-	2	64-	33-	0	71-	17-	10
1. The student will select the correct punctuation mark for stated rules for terminal punctuation.	69-	29-	2	69-	31-	0	81-	17-	2
2. The student will select the correct punctuation mark for stated rules regarding the use of commas.	62-	33-	5	69-	29-	2	71-	21-	7

	(A) Importance			(B) Being Taught			(C) District Curriculum		
	1	2	3	1	2	3	1	2	3
3. The student will select the correct punctuation mark for a stated rule regarding the use of the apostrophe.	64-	33-	2	69-	31-	0	69-	21-	10
4. The student will select the correct punctuation mark for a stated rule regarding the use of quotation marks.	57-	36-	7	64-	33-	2	64-	26-	10
5. The student will select the correct answer regarding statements about the purposes of punctuation marks.	62-	33-	5	69-	29-	2	64-	19-	17
IV. The student will recognize the correct sound of punctuation in spoken language.	71-	26-	2	74-	26-	0	76-	14-	10
1. The student will demonstrate understanding of punctuation used in spoken sentences by indicating if the oral punctuation he hears in a sentence matches the mark used in the written example of the same sentence.									
A. Question mark	86-	14-	0	88-	12-	0	86-	7-	7
B. Period	86-	14-	0	86-	14-	0	86-	7-	7
C. Exclamation point	81-	17-	2	79-	21-	0	76-	10-	14
D. Commas in a series	74-	24-	2	79-	21-	0	71-	10-	19

	(A) Importance			(B) Being Taught			(C) District Curriculum		
	1	2	3	1	2	3	1	2	3
V. The student will be able to use punctuation in reading skills.	88-	5-	7	88-	2-	2	79-	10-	5
1. The student will be able to read sentences with correct intonation patterns for the punctuation marks employed in those sentences:									
A. Question mark	91-	9-	0	91-	9-	0	86-	12-	2
B. Period	91-	9-	0	91-	9-	0	86-	12-	2
C. Exclamation point	88-	10-	2	88-	12-	0	83-	12-	5
D. Commas in a series	83-	12-	5	79-	21-	0	81-	12-	7

TEACHER RATINGS

LANGUAGE ARTS: OBJECTIVE-ITEM CONGRUENCE

Questionnaire Instructions

In this questionnaire, you are asked to look at each item on the Language Arts Test and make a judgment about how well it seems to measure the objective for which it is listed. Two types of ratings are requested: one dealing with how well you think the item measures the objective with which it is listed, and the second dealing with how difficult you think the item would be for your students.

Column A, Measure: Here you are to judge the excellence of the item as a measure of the objective listed. Circle the number that best reflects your own opinion.

1 - A very good measure of the stated objective
2 - Adequate or generally acceptable measure of the objective
3 - A poor measure of the stated objective

Column B, Difficulty: Please rate each item on its difficulty level, or on what percentage of third-grade students you have taught you think would pass that item in the Spring. Ratings range from "1" (Very Difficult) to "5" (Very Easy). In order for the responses from all the raters to be comparable, please use the following guidelines for ranking each item. The percentages represent the number of your students you believe could answer the item correctly.

1 - 0 - 20% answer correctly
2 - 21 - 40% answer correctly
3 - 41 - 60% answer correctly
4 - 61 - 80% answer correctly
5 - 81 -100% answer correctly

Below each objective, the item(s) measuring that objective is (are) listed. You must refer to that item number in the enclosed Language Arts Test booklet. In order to completely understand some of the items, the instructions for the test administrator are also necessary. Therefore, we have combined the administrator instructions with the test items so you only have to refer to one booklet. For example, items 2 and 4 are measures of the first objective listed. You should turn first to item number 2 in the test booklet, read the item completely. After completing the item, rate it on the two scales described above: Measure and Difficulty. Then do the same for item number 4. Follow this procedure for the items listed for each objective.

The test items are generally boxed in to separate them from any administrator's instructions. When reviewing the items, keep in mind that all items were read aloud to the students (except for those items measuring reading skills) in order to reduce the influence of poor reading on the answers.

You may refer back to these instructions if necessary in order to keep the rating scales in mind. If helpful, you may separate this sheet of instructions from the rating questionnaire itself.

ITEM RATING SCALE

		1-Good 2-Adequate 3-Poor	1: 0 - 20% 2: 21 - 40% 3: 41 - 60% 4: 61 - 80% 5: 81 -100%
	Item	(A) Measure 1 2 3	(B) Difficulty 1 2 3 4 5
I. The student will recognize the correct use of punctuation marks when given several examples.			
1. The student will recognize the appropriate use of terminal punctuation by selecting the sentence which uses the correct terminal punctuation mark for that particular sentence.			
A. Period	2	88- 12- 0	0- 0-10-43-47
	4	81- 14- 2	0- 0-14-36-48
B. Question mark	3	95- 5- 0	0- 0- 9-36-55
	6	91- 9- 0	0- 0-12-38-50
C. Exclamation point	1	52- 43- 5	2-12-26-41-17
	5	74- 21- 5	0- 7-21-37-35

	Item	(A) Measure 1 2 3	(B) Difficulty 1 2 3 4 5
2. The student will recognize the appropriate use of commas to separate words in a series by selecting the sentence containing a series of words which illustrates correct comma usage.	7	71- 21- 0	0- 7-43-26-17
	14	79- 21- 0	0-12-41-33-14
3. The student will recognize the appropriate use of contractions by selecting the correct form of the contraction when given the two component words.	10	83- 14- 0	0- 5-21-31-43
	17	88- 12- 0	0- 7-21-36-36
4. The student will recognize the correct use of the comma in the greeting of a friendly letter by selecting the correctly punctuated greeting from several given examples.	11	91- 7- 0	2- 2-17-38-38
	18	93- /- 0	5- 0-16-36-43
5. The student will recognize the correct use of the comma in the closing of a friendly letter by selecting the correctly punctuated closing from several given examples.	12	79- 19- 2	0- 5-21-48-26
	19	60- 31- 9	2- 9-41-31-17
6. The student will recognize the correct use of the comma in separating city and state names by selecting the correctly punctuated sentence from several given examples.	8	71- 29- 0	0- 7-38-33-21
	15	83- 14- 0	0- 7-24-31-36

	Item	(A) Measure	(B) Difficulty
		1 2 3	1 2 3 4 5
7. The student will recognize the correct use of the comma to separate the day, month, and year by selecting the correctly punctuated date from several given examples.	9	98- 2- 0	2- 5-21-38-33
	16	93- 5- 2	5- 5-19-33-38
8. The student will recognize the correct use of quotation marks by selecting the correctly punctuated sentence from several given examples.	13	71- 24- 5	10-28-43-14- 5
	20	64- 29- 7	12-35-36-12- 5
II. The student will demonstrate the ability to punctuate correctly (in writing).			
1. The student will be able to supply the end punctuation for given unpunctuated sentences that require either a period or a question mark.	21	83- 14- 2	5- 0-12-52-31
	22	81- 17- 2	5- 0- 9-41-45
2. The student will be able to supply the end punctuation for given sentences that require exclamation points as terminal punctuation.	23	57- 36- 7	10-14-40-29- 7
3. The student will demonstrate his understanding of the appropriate use of commas to separate words in a series by supplying the necessary commas when given a sentence (with no internal punctuation) which contains words in a series.	24	71- 26- 2	5- 7- 48-38- 2

	Item	(A) Measure 1 2 3	(B) Difficulty 1 2 3 4 5
4. The student will be able to write and correctly punctuate a dictated sentence which requires one of the following terminal punctuation marks:			
A. Question mark (Can you play ball with us?)	25	79- 17- 2	2- 7-21-33-33
B. Period (My father works in a store.)	26	79- 17- 2	5- 5-21-26-41
C. Exclamation point (Our house is on fire!)	27	79- 17- 2	5-12-31-24-26
5. The student will be able to write and correctly punctuate a dictated sentence which requires that commas be used to separate words in a series.	28	67- 21- 12	7-17-38-33- 5
6. The student will be able to make up and write an example for each of the following punctuation rules:			
A. A sentence that asks a question.	29	81- 17- 2	5- 5-12-28-50
B. A sentence that tells something.	30	83- 14- 2	7- 5-10-26-52
C. A sentence that shows excitement, surprise, or pleasure.	31	71- 24- 5	2-12-36-31-17
D. A sentence that has a list of several things in it.	32	67- 31- 2	2-19-48-26- 5

	Item	(A) Measure 1 2 3	(B) Difficulty 1 2 3 4 5
III. The student will recognize the correct answer for given rules and purposes of punctuation.			
1. The student will select the correct punctuation mark for stated rules for terminal punctuation.	33	76- 21- 2	2- 2-17-33-45
	36	74- 19- 2	0- 5-24-48-19
	39	81- 12- 2	2- 2- 7-38-45
2. The student will select the correct punctuation mark for stated rules regarding the use of commas.	34	71- 21- 7	2- 7-29-41-21
	35	64- 26- 10	2- 7-29-36-26
	38	74- 21- 5	2-10-21-43-24
	41	69- 26- 5	2-12-26-41-19
3. The student will select the correct punctuation mark for a stated rule regarding the use of the apostrophe.	37	62- 31- 7	5-19-24-40-12
4. The student will select the correct punctuation mark for a stated rule regarding the use of quotation marks.	40	62- 33- 5	2-24-41-24- 9
5. The student will select the correct answer regarding statements about the purposes of punctuation marks.	42	69- 19- 12	7-10-21-33-29
	43	69- 26- 5	2- 7-19-52-19
	44	71- 26- 2	2-12-26-43-17

NORTH CAROLINA AND NATIONAL DEMOGRAPHIC DATA

Variable (Year)	Source Code	North Carolina	U.S.(Average)	Rank
Estimated Population (1973)	1-3	5,273,000	209,851,000	12
Median Years of Schooling Completed by the Population 25 Years Old and Older (1970)	2	10.6	(12.1)	46
Median Family Income (1970)	2	$7,770	($9,867)	40
Percent of Population that is Black (1970)	2	22.2	(11.1)	6
Land Area (Square Miles)	2	48,798	3,536,855	29
Population Per Square Mile (1970)	2	104	(57)	17
Percent of Population Classified Rural (1970)	2-4	55.0	(26.5)	5
Median Age of Population (1970)	2	26.6	(28.3)	15
Per-Capita Personal Income (1972)	1-5	$3,799	($4,492)	34
Average Household Effective Buying Income (1972)	1-6	$7,441	($8,605)	39
Percent of Household with Cash Incomes Under $3,000 (1972)	1-6	19.4	(15.4)	12
Percent of Housing Lacking Some or All Plumbing Facilities (1970)	2	13.9	(5.5)	7
Percent of Housing with 1.01 or More Persons Per Room (1970)	2	10.0	(8.0)	13
Percent of Homes with Telephone Available (1970)	2	77.5	(87.3)	45
State and Local Tax Revenue Per $1,000 of Personal Income During 1971-72	3-1	$111.17	($126.94)	37
Percentage of Persons 25 Years and Over with Less Than 5 Years of School Completed (1970)	2	10.0	(5.5)	7
Percentage of Persons 25 Years and Over With 4 Years of High School or More (1970)	2	38.5	(52.3)	48
Per-Capita State and Local Tax Revenue During 1971-72	3-1	$376.58	($522.49)	43
Per-Capita Direct General Expenditures of State and Local Governments During 1971-72	3-1	$563.45	($801.38)	49

Variable (Year)	Source Code	North Carolina	U.S.(Average)	Rank
Amount of Expenditures for Local Schools by State and Local Governments per $1,000 of Personal Income During 1971-72	3-1	$44.98	($53.27)	46
State and Local Government Expenditures for All Public Education As a Percent of Total General Expenditures in 1971-72	3-1	42.7	(38.9)	15
Per-Capita Total Expenditures of State and Local Governments for all Education During 1971-72	1-1	$240.41	($311.60)	45
Per-Capita State and Local Governmental Expenditures for Higher Education (includes community colleges) During 1971-72	1-1	$76.80	$76.57	26
Per-Capita State and Local Expenditures for Local (public) Schools (Including Capital Outlay) During 1971-72	1-1	$152.37	($219.27)	47
Revised Current Expenditure Per Pupil in Average Daily Membership: 1971-72	1-2	696	906	36
1972-73	1-2	765	968	37
(Estimate) 1973-74	1-2	846	1048	33

Source Code:
First Digit is Main Scource

1 = National Education Association Ranking of the States, 1974

2 = Bureau of the Census, County and City Data Book, 1972

3 = Tax Research Division, North Carolina Department of Revenue, "Ranking of North Carolina Among the 50 States With Respect to Revenues and Expenditures, March, 1974"

Second Digit is Primary Source

1 = Bureau of Census, Governmental Finances in 1971-72

2 = NEA, Estimates of School Statistics

3 = Bureau of Census, Estimates of the Population of the States

4 = Bureau of Census, General Social and Economic Characteristics

5 = "Survey of Current Business"

6 = "Sales Management"