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ABSTRACT

Summary findings gathered by the National Assessment of Educational Progress (NAEP) in the 1973-74 national assessment of career and occupational development (COD) are reported. (NAEP is an information-gathering project that surveys the educational attainment of 9-year-olds, 13-year-olds, 17-year-olds, and adults (ages 26-35) in ten learning areas: Art, COD, citizenship, literature, mathematics, music, reading, science, social studies, and writing.) Focus of the report is on 17-year-old levels of ability; results for the other age levels are also included. Data are reported in three areas: (1) Making Career Decisions (knowledge about one's own interest and abilities, work-related experience, job-related values, and results for population groups), (2) Knowledge about Jobs (specific and general job knowledge, national percentage for success, and results for population groups), and (3) Basic Skills (computation and measurement, graphic and reference materials, written communication, manual and perceptual, national percentages of success, and results for population groups). Results are reported for different population groups based on the following variables: Males and females, blacks and whites, region, parental education, size and type of community, personal education, and family income. Data are reported in graph form. (TA)

NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

THE FIRST NATIONAL ASSESSMENT OF CAREER AND OCCUPATIONAL DEVELOPMENT

An Overview

Career and Occupational Development Report No. 05-COD-00

November 1976

NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS
Suite 700, 1860 Lincoln Street
Denver, Colorado 80295

Roy H. Forbes, Director

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FOREWORD

The National Assessment of Educational Progress (NAEP) is an information-gathering project that surveys the educational attainments of 9-year-olds, 13-year-olds, 17-year-olds and adults (ages 26-35) in 10 learning areas: art, career and occupational development, citizenship, literature, mathematics, music, reading, science, social studies and writing. Different learning areas are assessed every year, and all areas are periodically reassessed in order to measure change in educational achievement.

Each assessment is the product of several years' work by a great many educators, scholars and lay persons from all over the country. Initially, these people design objectives for each area, proposing specific goals that they feel Americans should be achieveing in the course of their education. After careful reviews, these objectives are then given to exercise (item) writers, whose task it is to create measurement tools appropriate to the objectives.

When the exercises have passed extensive reviews by subject-matter specialists and measurement experts, they are administered to probability samples from various age levels. The people who comprise these samples are chosen in such a way that the results of their assessment can be generalized to an entire national population. That is, on the basis of the performance of about 2,500 9-year-olds on a given exercise, we can generalize about the probable performance of all 9-year-olds in the nation.

The National Assessment also publishes a general information yearbook that describes all major aspects of the Assessment's operation. The reader who desires more detailed information about how NAEP defines its groups, prepares and scores its exercises, designs its samples and analyzes and reports its results should consult the *General Information Yearbook, Report 03/04-GIY.*

ACKNOWLEDGMENTS

Many people have made substantial contributions to the career and occupational development (COD) assessment, from the beginning of the National Assessment of Educational Progress (NAEP) in 1964 to this report of findings in the area of career and occupational development. Unfortunately, it is not possible to acknowedge them all here, and an apology is due to those whose names have been omitted.

The preparation of the objectives and exercises in the area of COD was handled by the American Institutes for Research, Palo Alto, California. There, materials were reviewed by dozens of consultants, including educators, employers and interested lay persons, under the general monitoring of the National Assessment staff.

Special mention must be made of several individuals and their contributions to the developmental phases: Marjorie Mastie, formerly of the National Assessment staff, who supervised the development of the COD exercises, and Dr. Ralph Bohn, San Jose (Calif.) State College, who contributed to the development of objectives and exercises and also was extremely helpful in suggesting analysis schemes.

The administration of the career and occupational development assessment was conducted by the Research Triangle Institute, Raleigh, North Carolina, and the Measurement Research Center (MRC), Iowa City, Iowa. Scoring and processing were carried out by MRC and by the NAEP staff. Louise Diana and Susan Worthen of MRC provided invaluable assistance in developing and refining the categories used to score the exercises.

The actual preparation of this report was a collaborative effort of the National Assessment staff. Special thanks must be given to the following people: Bill Ankeny, Hugh Cobb and Charlotte Ramlow for data processing support; Ava Powell for technical proofreading; Don Phillips, technical analysis planner and superviser; and Marci Reser and Jessica Grant for production. This report was written by Barbara Ward.

Roy H. Forbes
Project Director

HIGHLIGHTS

In 1971, growing concern over the inability of many students to either enter a job or pursue postsecondary education prompted Sidney P. Marland Jr., then commissioner of the U.S. Office of Education, to offer his support for the concept of "career education." Career education, as he defined it, should equip students for an occupation as well as prepare them for their roles as citizens, consumers and family members. In the ensuing years, federal, state and local monies have been invested in developing many different types of career education programs.

The 1973-74 national assessment of career and occupational development (COD), completed before large numbers of these programs became part of the curriculum, was designed to provide data that may be used as "benchmarks" against which the impact of new programs can be measured. It offers information about a number of COD objectives: (1) knowledge of own interests and abilities, (2) experiences related to the world of work, (3) values and attitudes related to work, (4) knowledge about jobs and (5) command of basic skills. Abilities in each of these areas are necessary for wise and informed choices in one's entry into, and continuing participation in, the labor force.

Some major findings of the COD assessment are:

1. Career decision skills and knowledge.

   a. Seventeen-year-old job aspirations appeared somewhat high. Many more desired professional jobs than probably will be able to obtain them in light of the current job market and in light of their own educational potential. Approximately 44% named a professional job as their first career choice, although current census reports show that only 20-25% of the young adult population currently graduate from a four-year college (generally necessary for a professional job today)[1] and only about 20-25% of the American working population hold managerial or professional jobs.[2]

   b. In seeking information about themselves, relatively few 17-year-olds had talked to a school counselor or advisor about their future plans. Only 35% claimed to have spoken with a counselor or advisor; however, 70% said that they had talked to some person who was both older than themselves and was aware of their skills, abilities and interests (this could include parents). Forty percent of the 17-year-olds and 62% of the adults stated that they had taken some type of an aptitude test.

   c. Most of the 17-year-olds and nearly all of the adults either were working at the time of the assessment or had worked in the past. (The definitionn of working for adults included homemaking and volunteer work.) Although 17-year-olds were not always employed at occupations that reflected possible career decisions.

[1] National Center for Education Statistics, *The Condition of Education, 1975* (Washington, D.C.: Government Printing Office, 1975), Table 1.

[2] Office of Management and Budget, *Social Indicators, 1973* (Washington, D.C.: Government Printing Office, 1973), Table 4/14.

and many had only worked at part-time employment, still the majority had had the experience of working for pay. Slightly over half the adults (55%) had taken some type of correspondence courses, on-the-job training or adult education courses. Forty-three percent of the adults felt that these courses had helped them in their work.

d. Although black average percentages were still below those for whites, the differences between black and white results were, in general, smaller on the items about self-appraisal skills, work-related experiences and job-related values than on the basic skills and the job knowledge content areas.

e. Females did slightly better than males on the job-related values items at ages 13 and 17; this may have been partly because many of the items required written responses.

2. Job knowledge.

a. Knowledge about specific jobs increased with age for the three younger age levels. Adults knew more about specific jobs than did 17-year-olds.

b. Male performance on specific job-knowledge items was slightly above that of females at age 17 and further above at the adult level. This may have been in part because more questions were geared toward jobs traditionally oriented toward males. On the general job-knowledge items, females did better at all age levels. This may have been partly due to the fact that written responses were required on a number of items.

c. Results for other groups were consistent with trends observed in other areas of the COD assessment. Blacks, low-metropolitan residents, people whose parents had little education and residents of the Southeast were below national levels, while whites, high-metropolitan residents, people whose parents had more education and residents of the Northeast and/or Central regions were above the nation in performance.

3. Basic skills.

a. People deficient in basic skills tended to be those who typically have more difficulty in finding employment — blacks, residents of impoverished communities, people whose parents had little education and, among adults, people with little personal education and low family income.

b. At all ages, males did better than females on computation/measurement items, and females showed greater ability on written communication skills. The male-female difference on computation/measurement skills was distinctly larger for adults than for the other three ages assessed.

c. Adults performed either at the same level or slightly better than 17-year-olds on all basic skills areas; they did not show a dropoff in ability.

d. A third to more than half of the 17-year-olds and adults had difficulty with such tasks as writing a job application letter and figuring a finance charge.

CHAPTER 1

REPORTING THE DATA: DEFINITIONS AND METHODOLOGY

This chapter contains definitions of the population groups analyzed in this study and a description of the conventions that are used to report the data.

In order to provide fair and accurate data on group performances, the National Assessment of Educational Progress (NAEP) makes every attempt to insure that its items are free from racial, ethnic or sexual bias. Although it is difficult to eradicate all the biases inherent in a testing situation, NAEP exercises and scoring guides were carefully reviewed by groups of consultants that included representatives of minority groups.

Population Groups Included in the Study

Sex

Results are presented for males (M) and females (F).

Race

Currently, results are reported for blacks (B) and whites (W).

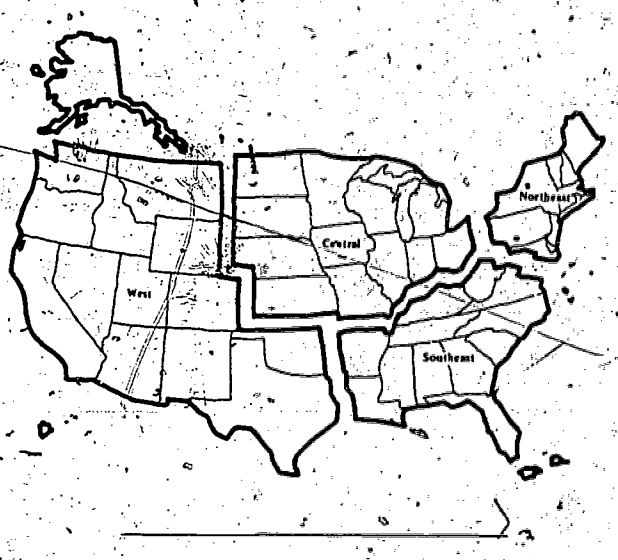
Region

The country has been divided into four regions — Northeast (NE), Southeast (SE), Central (C) and West (W). The states that are included in each region are shown in Figure 1.

Parental Education

Four categories of parental education are defined by National Assessment. These categories include: (1) those whose parents have had no high school education (NH), (2) those who have at least one parent with some high school education (SH), (3) those who have at least one parent who graduated from high school (GH) and (4) those who have at least one parent who has had some post-high school education (PH).

FIGURE 1. National Assessment Geographic Regions



Size and Type of Community

Community types are identified both by the size of the community and by the type of employment of the majority of people in the community.

High metro (HM). Areas in or around cities with a population greater than 200,000 where

a high proportion of the residents are in professional or managerial positions.

Low metro (LM). Areas in or around cities with a population greater than 200,000 where a high proportion of the residents are on welfare or are not regularly employed.

Extreme rural (ER). Areas with a population under 10,000 where most of the residents are farmers or farm workers.

Urban fringe (UF). Communities within the metropolitan area of a city with a population greater than 200,000, outside the city limits and not in the high- or low-metro groups.

Main big city (MBC). Communities within the city limits of a city with a population over 200,000 and not included in the high- or low-metro groups.

Medium city (MC). Cities with populations between 25,000 and 200,000.

Small Places (SP). Communities with a population of less than 25,000 and not in the extreme-rural group.

Personal Education and Family Income

Two additional types of population variables were studied for adults. These were the level of education and the level of total family income. The eight education categories appear in Table 1.

Four levels of annual family income are analyzed: under $5,000 per year, $5,000-10,000, $10,000-15,000 and over $15,000.[1]

[1] Incomes are at 1973 levels and have not been adjusted for subsequent inflation. Earnings for the age level 26-35 are higher than census figures for the labor force as a whole, which includes all those over 16 who are either employed or looking for work.

TABLE 1. Educational Categories

1. Ninth grade or less
2. Some high school
3. Graduated high school, no vocational school
4. Graduated high school, attended vocational school
5. One year or less of college
6. Two-four years of college
7. Graduated from college
8. Attended graduate school
9. Unknown

Summarizing the Data

This report employs summary values to describe the general performance of various groups of the population on different sets of items. Summary values are useful in that they show typical achievement levels; however, it must be remembered that performance on individual items may vary widely.

In this report, the mean (simple average) of a set of results is used as the measure of central location. Percentages for each item in a particular content group were averaged to obtain a national mean. The differences in performance between a reporting group and the nation on each item were averaged for each group, providing mean differences from the national performance.

Conventions of Reporting the Data

National Assessment uses a national probability sample to estimate the percentage of individuals in a given group who could successfully complete a given item. Thus, for example, when we say that "85% of the adults gave a correct response," we mean that 85% is an estimate of the proportion of all adults in the country ages 26-35 who could have answered correctly. As in any sampling survey work, the percentage estimates are subject to sampling error because observations are made only on a sample, not on the entire population.

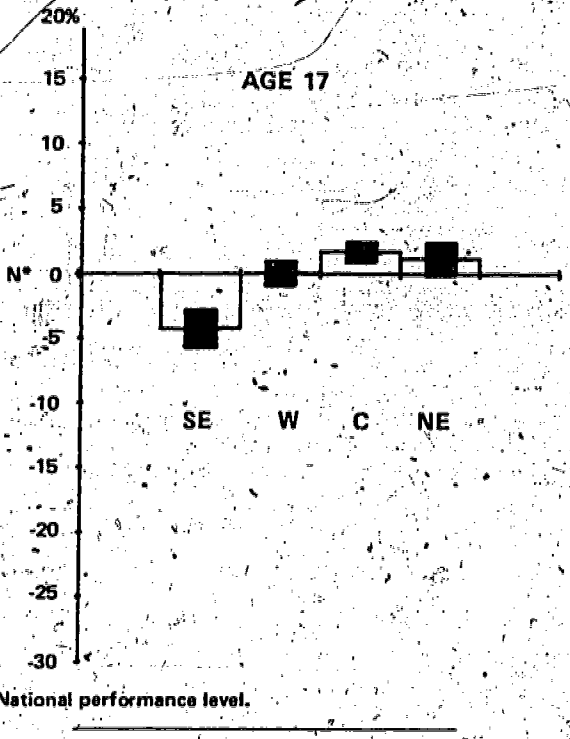
The particular sample used in this survey is one of a large number of all possible samples

of the same size that could have been selected using the same sample design. Percentages obtained from each of the possible samples would differ from each other, and the standard error of these percentages, it if were known, would provide a measure of the sampling variability among all possible samples. In this report, standard errors are estimated both for specific exercises and for the mean percentage on a group of exercises for each population group.

The standard error of a sample statistic can be used to construct a confidence interval for the estimate. The interval from two standard errors below to two standard errors above the particular sample value would include the average of all possible sample values in about 95% of the samples. An interval computed in this manner is called a "95%-confidence" interval to indicate how confident we are that the interval contains the average over all possible samples.

The graphs showing a group's mean difference from national performance display both the estimated mean and the 95%-confidence interval. An example of this type of graph appears in Figure 2; it illustrates performance of 17-year-olds in the four regional groups (Northeast, Southeast, Central and West) on specific job-knowledge items. The Central region has a mean difference of +1.7 and a standard error of 0.35. This mean is represented by the white bar on the graph, and a 95%-confidence interval, ranging from +1.0 to +2.4, is indicated by the black bars. The black bar shows the size of the confidence interval. Since this interval does not include the national level, represented by the zero line, we can say with 95% confidence that the performance of the Central region is above that of the nation. Similarly, we can be 95% confident that the performance of the Southeast is below that of the nation; however, we cannot make a 95%-confident statement about the performance of the Northeast or West relative to the nation. These graphs only display confidence in differences between groups and the nation, not between different groups.

FIGURE 2. Sample Graph Showing Mean Differences and 95%-Confidence Intervals on Specific Job-Knowledge Exercises: Regional Variable



Cautions in Interpreting the Data

Although National Assessment reports data on the achievement levels of various groups, the causes for the differences in achievement levels cannot be ascribed solely to membership in a particular group. Each person is, of course, a member of many groups. Everyone belongs to an education group, an income group, a community-type group. Some of the same people are found in a number of groups. For example, many of those who live in "inner-city" areas also have low incomes and low levels of education; many of those living in high-metropolitan areas have high incomes and high levels of education.

Released Exercises

National Assessment released approximately

half of the exercises administered in the COD assessment. The unreleased exercises will be reassessed in a future assessment to provide measures of change in ability levels. In this report, results for both released and unreleased exercises are summarized; however, exercise text appears only for released exercises. Copies of all released COD exercises are available from National Assessment upon request.[2]

[2] *Career and Occupational Development Technical Report: Exercise Volume, Report 05-COD-20* 1973-74 Assessment (Washington, D.C.: Government Printing Office, forthcoming).

Additional Career and Occupational Development Reports

This report is a general overview of all results from the COD assessment. Other reports include a report of adult performance on basic skills and job knowledge and a report on basic work skills for all ages. Technical reports include an exercise volume, which presents all released exercises with scoring guides and results for these exercises, and a summary volume, which will provide documentation for all summary results.

CHAPTER 2

MAKING CAREER DECISIONS

Deciding on a career is an important step — one that should only be taken after obtaining and evaluating the greatest amount of information possible. In addition to knowledge about possible careers, people need some important knowledge about themselves, such as an awareness of their own interests and abilities. They could also profit from experiences with the world of work. All too often, children have very little idea of how their parents earn a living, with the result that they may have very unrealistic expectations when they begin their working careers.

Although we most often think of career decisions as concerning 17-year-olds when they leave secondary education, younger students should begin building an awareness of work roles that will lead to informed decisions, and adults must sometimes reevaluate their career decisions in light of changing interests, abilities and job conditions. While the emphasis of this chapter will be on 17-year-old levels of ability, results for the other age levels will also be included.

Knowledge About One's Own Interests and Abilities

Some people have skills with numbers; others have facility with words; still others enjoy working with people. To make an informed career choice, one must be aware of personal likes, dislikes, interests, strengths and weaknesses that would affect performance and satisfaction in a career. In this assessment, 17-year-olds and adults responded to questions about their activities in seeking career planning advice and about their perceptions of their own interests and abilities.

Knowledge about oneself is a difficult concept to measure, since it is often hard to verify the accuracy of a self-appraisal. Thus, the items assessing knowledge of own skills and abilities measure mainly the ability to make a judgment about one's own interests and skills and do not inquire into the validity of the judgment.

17-Year-Old Results

One of the objectives in the area of preparing for career decisions was to "know own characteristics relevant to career decisions." Seventeen-year-olds were asked about their activities in obtaining information and assistance for career planning. Approximately 70% of the 17-year-olds had talked with someone other than their friends — for example, their parents, a school counselor or a teacher — about their plans for the future. Table 2 shows the types of people with whom 17-year-olds had discussed their plans.

TABLE 2. Types of People With Whom 17-Year-Olds Discussed Future Plans

Type of Person	Percentages Mentioning at Least Once*
School counselor, advisor	35
Teacher	14
Parents	62

**Percentages total more than 100% since respondents were given three opportunities to name persons they had talked with. This percentage indicates the percentage of people who named a certain type of person but eliminates credit for repetition of the same type.*

Seventeen-year-olds were also asked if they had ever taken an aptitude test (of the type that measures mechanical, clerical, etc. abilities). Only 40% of the 17-year-olds stated that they had done so, and only 16% said that they had discussed the results with someone who could advise them with their career plans.

After one becomes aware of one's personal interests and abilities, he or she should then be able to "relate personal characteristics to occupational requirements." Seventeen-year-olds were first questioned about the jobs that they would like to have and then about things that they would like or dislike about the particular job. Some 93% of this age group had thought about the kind of job that they would like to have in the future, and 86% then named a possible career field. In Table 3, percentages of 17-year-olds picking various categories as their first choice of a future job are shown.

TABLE 3. Percentages of 17-Year-Olds Choosing Various Job Categories as Their First Choice for a Future Job

Professional	44%	Military	2%
Clerical	9	Protective services	3
Craftsman	8	Housewife	2
Service	5	Farmer	1
Technical	5	Laborer	1
Manager, administrator	3	Sales	1
Operative	3	Owner of business	1*

*Percentages do not total 86% due to rounding error.

These job aspirations do not appear totally realistic. Most professional jobs require a four-year-college degree, and current statistics tell us that only one-fifth to one-fourth of the population graduates from a four-year institution, even though a considerably larger portion begins college work.[1]

[1] National Center for Education Statistics, *Digest of Educational Statistics, 1974* (Washington, D.C.: Government Printing Office, 1974), p. 13.

Seventeen-year-olds were not outstandingly successful in appraising the job that they named as their first choice. Eighty-one percent could think of at least two things that they would like about the job they picked, and 56% named at least two things they would dislike. Some of the 17-year-olds were vague on the skills and abilities needed for the particular job they named. Seventy percent of the 17-year-olds named at least one ability or skill that would be needed for the job. Only 49% were able to give two or more skills and/or abilities. Thus, even if they were aware of their own skills and abilities, they did not appear to pick jobs that necessarily corresponded to those abilities. This may indicate a general lack of knowledge about specific job requirements, or it may indicate that they have not tried to relate the job they desire to their own particular skills and abilities.

On the small sample of items discussed here, it does not appear that self-appraisal is an activity that 17-year-olds engage in intensively or realistically. Many of them have not discussed their plans with a cross-section of people who are in a position to advise them; many have job aspirations that do not precisely coincide with economic and educational realities. By the time that these 17-year-olds become adults and become established in the work world, their aspirations may become more realistic, but probably not without some disappointments and disillusionments along the way. Career education has a role to play in providing people with more information about careers and more assistance in the decision-making process before they leave secondary schools.

Adult Results

Adults were more likely than 17-year-olds to have sought information about themselves through aptitude tests. Sixty-two percent of the adults, compared to 40% of the 17-year-olds, had taken some type of aptitude test. About a third of the adults who had taken such a test had discussed the results with someone equipped to advise them.

To evaluate one's present career or to make

plans for career change, it is helpful for adults to know what they like and dislike about their present or most recent jobs. Adults were better able to articulate their job likes and dislikes than 17-year-olds possibly because in most cases they were thinking about an actual rather than a hypothetical work situation. And, like 17-year-olds, adults were able to think of considerably more things they liked than things they disliked about their jobs. Ninety-two percent could think of at least two things that they liked about their jobs, while only 66% named two or more things that they disliked about their jobs.

As another way of measuring their awareness of their feelings about their jobs, adults were asked what, if anything, gave them a sense of satisfaction about their work. Seventy-one percent named at least two things that gave them a sense of satisfaction about their jobs. Some of the things that gave them this sense of satisfaction are listed in Table 4. The "percentage mentioning at least once" indicates the percentage of people who used a certain category but eliminates credit for the repetition of the same idea. Percentages for housewives are listed separately because it was felt that their job satisfactions would be different from those for people working outside the home.

TABLE 4. Reasons for Adults Having a Sense of Satisfaction About Their Jobs

Other Occupations — 80% of Population	Percentages Mentioning at Least Once
Ability to do the best you can/ produce high-quality product	39
Interpersonal relations	22
Job is worthwhile	18
Pay	10
Specific duties	10
Housewives — 19% of Population	
Sense of accomplishment	9
Take care of family	7
Time spent with family	6

Most adults could analyze their own skills and abilities. Eighty-three percent named at least one skill or ability they possessed that would aid them in selecting a job; fewer responded when asked to name skills that they lacked. Fifty-five percent of the adults named at least one skill or ability that they lacked.

13-Year-Old Results

Thirteen-year-olds responded to questions measuring the following two objectives: "be aware of current abilities and limitations" and "be aware of own current interests and values." Again, the intent of the questions was not to determine the accuracy of the reporting but merely to see if the respondents could identify a skill or interest. Ninety-eight percent of the 13-year-olds identified one thing that they could do well and 86% identified two things. Percentages identifying things that they could not do well were slightly lower — 93% identified one thing and 79% two things that they could not do well.

In identifying current interests, 70% expressed an interest in a game, hobby, sport or activity that they felt might be useful for a job. Seventy-four percent of the 13-year-olds stated that they had sought advice on how to improve a skill or ability, in response to a question measuring information-seeking from outside sources.

9-Year-Old Results

Nine-year-olds were almost as successful as 13-year-olds in identifying things that they did well and things that they did not do well. Ninty-two percent of this age level identified at least one thing that they did well, and 88% named at least one thing that they did poorly. When asked about their personal likes and dislikes, 9-year-olds were again fairly knowledgeable. Ninety-four percent named an activity that they enjoyed doing, and 84% named one that they did not enjoy. Only about 64% of the 9-year-olds stated that they had sought advice on how to do something better, compared to 74% of the 13-year-olds.

Work-Related Experience

An important component of career decision making is experience with the world of work. Although a student can learn about various jobs from books, movies and field trips, the actual experience of working at a job may be quite a different thing. For this reason, many career education programs include experience in the work world in cooperation with local businesses, agencies and industries.

As part of the assessment of career and occupational development (COD), the National Assessment of Educational Progress (NAEP) collected data on the work and work-related experiences of American 17-year-olds and young adults. Data on experiences of 9- and 13-year-olds were also collected, although these centered upon preparatory experiences such as visiting work places and performing tasks at school and around the home.

17-Year-Old Results

Seventeen-year-olds who were in school at the time of the assessment were asked about three types of work experience — paid employment, unpaid work and work at home. Eighty-six percent said that they had held a job for which they had been paid. The types of jobs most often cited are shown in Table 5. Most of the jobs were part-time. Twenty-four percent had worked at their jobs longer than a year; 49% had worked from two months to a year.

Forty-two percent of the 17-year-olds said they had participated in unpaid work of some type. Most 17-year-olds assisted with tasks around their homes — 90% named at least two tasks or chores that they performed.

At the time of the assessment, 44% of the 17-year-olds who were out of school said that they were working, and 38% said that this job was full-time. An additional 42% responded "yes" to the question "Have you ever had a job?" and 28% said that they had worked at their most recent job full-time.

TABLE 5. Types of Jobs Most Often Held by 17-Year-Olds

	Percentages Citing Each Job
Service (includes babysitting, waiter/waitress)	40
Clerical	11
Laborers	11
Farm laborers	5
Operatives	6
Sales	5
Craftsmen	4
Other	4

To measure 17-year-olds' willingness to "pursue education and training," one of the work-experience objectives, 17-year-olds both in and out of school were asked about their educational experiences outside of regular school. "Outside of regular school" included courses taken in summer school. Fifty-nine percent stated that they had taken two or more outside courses. The most popular type of lessons were for musical or artistic activities; these were mentioned at least once by 44% of the 17-year-olds. Thirty percent cited lessons in individual sports, such as swimming or tennis, and 17% mentioned lessons in a school or academic subject area at least once.

Adult Results

Young adults were also asked about their working experiences. For the purposes of the assessment, unpaid careers such as homemaking or community or religious work were counted as jobs. Using this definition, nearly all young adult Americans were either working at the time of the assessment or had worked in the past. Eighty-nine percent of the adults had a job; an additional 10% had held a job at some time in the past. Eighty-two

percent of those with current jobs and 8% of those who had held a job in the past worked at those jobs full time. Types of jobs held by those working at the time of the assessment appear in Table 6.

TABLE 6. Percentages for Types of Jobs Held by Adults Working at the Time of the Assessment

Housewife	19%	Proprietor, owner	3%
Professional	15	Sales	3
Manager, administrator	11	Technical	3
Clerical	9	Laborer	2
Craftsman	8	Farmer, farm manager	1
Operative	8	Protective service	1
Service	5		

*Figures do not total 89% due to rounding error.

Another question concerned activities adults had undertaken to improve or to change their job status. Approximately 82% made at least one acceptable suggestion on how they could improve their skills, and 61% had actually done one of the things that they suggested.

Slightly over half of the adults (55%) had taken some type of continuing-education courses, such as correspondence courses, on-the-job training courses or adult education courses. Forty-three percent of the adults felt that these courses had helped them in their work in some fashion.

9- and 13-Year-Old Work Experiences

Thirteen-year-olds answered questions about the same type of work experiences as 17-year-olds — paid work, unpaid work and tasks around the home. Eighty-two percent said that they either had or had had a paid job of some kind. Major categories of work done by 13-year-olds appear in Table 7.

Fifty-two percent of the 13-year-olds had participated in some type of unpaid work. Nearly all 13-year-olds did some type of work to help out in the home. Ninety-eight percent named at least one task that they performed, and 96% named at least two.

TABLE 7. Percentages for Major Categories of Work Done by 13-Year-Olds

Service workers (includes babysitting, waiter, waitress, maid, janitor, cleaning lady)	46%
Laborers (includes outdoor work such as cutting lawns, washing windows, washing cars, collecting garbage)	25
Farm laborers	6
Other	5

Nine-year-olds were not asked about paid or unpaid work experiences. They were asked about tasks that they did to help out at home. Ninety-six percent had done at least one task to help out at home, and 71% had done at least two.

9- and 13-Year-Old Work-Related Experiences

Nine- and 13-year-olds responded to questions about experiences they had had outside the "book-learning" part of formal education. Percentages visiting various community institutions and work places are shown in Table 8.

TABLE 8. Percentages of 9- and 13-Year-Olds Who Had Visited Various Places

	9-Year-Olds	13-Year-Olds
Library	97%	98%
Zoo	88	94
Museum	77	93
Airport	81	90
Farm	80	88
Factory	60	77
Aquarium	53	70
Dairy	48	61
College	41	60
Planetarium or observatory	29	58
Newspaper plant	16	35

Nearly everyone had visited a library; relatively few, even among the 13-year-olds, had seen a newspaper plant.

As a further indication of their experiences apart from the traditional academic pursuits, 9- and 13-year-olds were asked about their educational experiences outside regular school. Forty-four percent of the 9-year-olds and 62% of the 13-year-olds said that they had taken two or more kinds of lessons. Students at both ages were most likely to have taken lessons in musical or art activities or in individual sports. Lessons in group sports were also popular at age 13.

Both age levels answered questions about other experiences, some of which involved work around the home and some that might or might not occur in the typical school curriculum. Table 9 shows percentages of students who had participated in several selected activities.

TABLE 9. Percentages of 9- and 13-Year-Olds Who Have Participated in Various Activities

	9-Year-Olds	13-Year-Olds
Babysat	51%	81%
Baked cake or pie	33	62
Washed dishes	84	93
Built something out of wood	62	65
Repaired bicycle, wagon or skates	63	80
Painted an object (not a picture)	80	91
Ordered something from catalogue	33	49
Used card-catalogue in library	68	91
Wrote a letter	86	97

Job-Related Values

Getting and keeping a job depend on more than possessing a set of specific work skills. Effective work habits and a positive attitude toward work are also necessary for satisfactory job performance. The worker who is habitually late, who shirks responsibility or who does not get along with fellow workers is not a prime candidate for success.

National Assessment investigated a number of job-related values and attitudes. Questions about work habits included such things as assuming responsibility for one's own actions and having effective interpersonal skills. Items concerning attitudes toward work involved recognizing the ways to make changes in working conditions, the variety of reasons why people work and the reasons why work is often regulated by the government. The Assessment found that, in general, from ages 13 to 17 to adult there was a progressive development in ability to answer questions about work-related values.

17-Year-Old and Adult Results

The questions asked of 17-year-olds and adults in this group of items touched on a number of very different values and attitudes. Table 10 shows one of the exercises concerning concepts of worker responsibility.

To answer this item acceptably, the respondent had to state that the worker was at least in some measure responsible for his actions; 88% of 17-year-olds and 88% of the adults did so. This total is somewhat larger than the percentage responding "yes" to part A, since one could answer "no" in part A and give an acceptable answer to part B by recognizing moral responsibility but distinguishing it from other types of responsibility. These acceptable response categories were used for this exercise: (1) takes complete responsibility, (2) takes partial responsibility and (3) distinguishes moral from other responsibility. Percentages of responses in each category are also shown in the table.

Another item asked 17-year-olds and adults what they would do if their school or place of

employment made a new rule that they thought was unfair. Eighty-six percent of the 17-year-olds and 88% of the adults gave at least one acceptable answer. The most common acceptable responses and percentages giving these responses at least once (people had two opportunities to respond) are shown in Table 11.

The item shown in Table 12 was used to determine whether people recognized the differing motivations that people have for working and appreciated different values associated with different occupations.

TABLE 10. Job-Related Values: Sample Exercise and National Results for 17-Year-Olds and Adults

Suppose you are a factory worker operating a machine which has a special safety shield on it. You are required to put up the safety shield whenever the machine is being used so that hot pieces of metal which come off the machine cannot hit and burn other workers. One day you are operating the machine without putting up the safety shield. A piece of hot metal flies through the air and severely burns another worker who was in a place where he wasn't supposed to be.

A. Are you responsible for the injury to the other person?	National Percentages 17-Year-Olds	Adults
Yes	82	86
No	13	9
I don't know.	5	6*

B. Please give me a reason for your answer.

Acceptable – Age 17, 88%
Adults, 88%

Category	Percentages Responding in Each Category 17-Year-Olds	Adults
1. Takes complete responsibility	78	81
2. Takes partial responsibility	7	3
3. Distinguishes moral from other responsibility	3	4

**Figures may not total 100% due to rounding error.*

9- and 13-Year-Old Results

Objectives for job-related values and attitudes for 9- and 13-year-olds centered upon home and school situations that would serve as training experiences for later work attitudes and values. For example, 9-year-olds and 13-year-olds were asked a question similar to that given to 17-year-olds and adults about what they would do if their school made a new rule that they thought was unfair. Forty-seven percent of the 9-year-olds and 74% of the 13-year-olds gave at least one acceptable answer. Most common responses and percentages giving these responses at least once (people had two opportunities to respond) are shown in Table 13.

TABLE 11. Percentages for Most Common Response to Question About Unfair Rule: for 17-Year-Olds and Adults

Acceptable Responses	17-Year-Olds	Adults
Discuss with someone with authority in the company	70%	69%
Talk with fellow workers	20	18
Protest or petition	13	14
Discuss with other authorities	6	12
Unacceptable Responses		
Obey, no attempt to change	13	10

TABLE 12. Job-Related Values: Sample Exercise and National Results for 17-Year-Olds and Adults

A. Mr. Smith has a job. All day long he runs a machine that punches holes in leather belts. He does the same thing every day. Do you think it is possible that Mr. Smith likes his job?

	National Percentages	
	17-Year-Olds	Adults
Yes	47	50
No	41	31
I don't know.	11*	19

B. Give a reason for your answer.

Percentages Saying Yes and Giving An Acceptable Reason	
17-Year-Olds	Adults
40	39

**Figures may not total 100% due to rounding error.*

The willingness to challenge, or at least to question, authorities increased from age 9 to 13. This is undoubtedly attributable to the overall increased maturity of the students as well as to increased learning about acceptable techniques for dissent.

TABLE 13. Percentages for Most Common Responses to Question About Unfair Rule: 9- and 13-Year-Olds

Acceptable Responses	9-Year-Olds	13-Year-Olds
Discuss with authority	35%	53%
Enlist aid of elected representative	1	12
Talk over with peers	4	13
Protest or petititon	2	12
Discuss with someone without authority (e.g., parent)	9	4
Unacceptable Responses		
Obey, no attempt to change	23	13

The item shown in Table 14 was used as a measure of the objective "practice effective work habits." This particular item investigated achievement of the subobjective "use initiative but seek assistance when needed." Acceptable answers included anything that involved asking the teacher. Nine-year-olds were much more likely to mention asking someone else — a classmate or a parent, for instance.

TABLE 14. Job-Related Values: Sample Exercise and National Results for 9- and 13-Year-Olds

Suppose you are the only person given a job to do by your teacher. You are to get the job done by tomorrow, but you don't quite understand just what it is that you are to do. What would you do to get help?

Acceptable — Age 9, 53%
Age 13, 88%

Results for Population Groups: Making Career Decisions

The exercises shown above are examples

of the types of items used to assess skills and knowledge regarding career decision making. Many additional items were used in the COD assessment.

It is difficult, if not impossible, to summarize results in a meaningful way for self-appraisal skills and work-related experiences since the items tended to stand more or less alone and measure slightly different aspects of ability. Different groups did perform differently on a number of items. To give some feel for these differences, sex- and race-group results on some of the items will be discussed.

Self-Appraisal Skills

More 17-year-old females (73%) than males (66%) have talked to an older person who was aware of their interests and abilities. Whites at age 17 had consulted such a person more often than blacks; 71% of the whites and 59% of the blacks had done so. Whites were more likely to have talked to their parents (see Table 15). Differences for blacks and whites consulting guidance counselors and teachers were not significant.

TABLE 15. Type of Person With Whom Black and White 17-Year-Olds Discussed Future Plans

Type of Person	Percentages Mentioning at Least Once*	
	White	Black
School counselor, advisor	36	31
Teacher	14	16
Parents	63†	48†

**Percentages total more than 100% since respondents were given three opportunities to name someone.*
†Indicates significant difference from national performance level (see Chapter 1, Conventions of Reporting the Data).

Approximately equal numbers of male and female 17-year-olds said that they had taken an aptitude test; however, at the adult level, 15% more males than females said that they had done so. Seventeen percent fewer 17-year-old blacks than whites said they had taken an aptitude test, and 22% fewer of the black adults said they had taken such a test.

Work-Related Experiences

Although adults obviously have the most actual work experience, the assessment focused upon work-preparatory experiences of 9-, 13- and 17-year-olds. This is in part because data on actual adult work experience, as opposed to attitudes, values and knowledge about work, are extensively reported upon in Census Bureau and Bureau of Labor Statistics publications.

Nine- and 13-year-olds were asked a number of questions about places they had visited and experiences they had had. Of 11 places listed, 57% of the 9-year-olds said they had visited 7 or more places. Table 16 shows male/female and black/white differences in percentages visiting 7 or more places.

TABLE 16. Percentages of 9- and 13-Year-Olds Visiting Seven or More Places

	9-Year-Olds	13-Year-Olds
National	57%	84%
Males	62	87
Females	52	81
Blacks	42	74
Whites	60	86

Males and females and blacks and whites showed some striking differences in the types of experiences that they had had. Blacks and females were far more likely to have had various types of household experiences; larger percentages of whites and males had had maintenance and building experiences.

Table 17 displays percentages of sex and racial groups who said they had had several different types of experiences.

TABLE 17. Percentages Having Different Types of Experiences by Sex and Racial Groups: 9- and 13-Year-Olds

In answer to the question "Have you ever . . . without help?"

	9-Year-Olds					13-Year-Olds				
Household Tasks	National	Male	Female	White	Black	National	Male	Female	White	Black
Babysat	51%	49%	53%	50%	56%*	81%	71%*	90%*	83%*	76%*
Changed sheets	74	68*	79*	72*	85*	91	84*	96*	90*	94*
Cooked a meal	27	21*	34*	26*	34*	53	31*	74*	54	55
Ironed clothes	57	42*	73*	53*	76*	79	60*	97*	76*	94*
Washed dishes	84	74*	94*	84	86	93	87*	99*	93	94
Other Tasks										
Built something out of wood	62	80*	45*	65*	55*	65	89*	43*	68*	53*
Repaired bicycle, skates, wagon	63	75*	50*	63	61	80	95*	65*	81*	72*
Shopped at a store	74	75	74	77*	63*	96	95	96	97*	91*
Taken own temperature with thermometer	34	37*	32*	36	27*	54	54	54	59*	31*

*Indicates significant difference from national performance level.

Work experiences for 17-year-olds in school and 17-year-olds out of school were assessed separately. For the in-school 17-year-olds, more males said they had held a job for pay, but more females claimed an involvement in unpaid work and extracurricular courses. Similarly, for the out-of-school 17-year-olds, more males said they either were holding or had held a job, and more females said they had taken extracurricular courses. Approximately 9% fewer black 17-year-olds in school than whites were holding or had held a job for pay; approximately 10% fewer had taken at least one extracurricular course. Among the black 17-year-olds who were out of school, approximately 9% fewer than out-of-school whites claimed that they either have a job presently or had had one at some time in the past.

At the adult level, approximately the same percentages of males and females said they either were holding or had held a job. For adults, unpaid jobs such as homemaking or volunteer work were counted as jobs. More males than females, 62% compared to 48%, claimed to have taken some type of continuing education.

Percentages of black and white adults who either were working or had held a job in the past (including homemaking and volunteer work) were not significantly different. Percentages of blacks and whites who had taken some type of continuing education did vary. Fifty-six percent of the whites and 48% of the blacks said they had participated in continuing education efforts.

Job-Related Values

Group results for job-related values were summarized since there were a larger number of exercises in this set than in the previous two areas discussed, and group results on most exercises were fairly consistent. Differences in results for the two sex groups at ages 13 and 17 did exist on these items, with females outperforming males. At the

adult level, sex-group differences from the nation were not significant. The better performance of females at ages 13 and 17 may be due in part to the fact that many of these items required written responses, and females tended to do better than males on written communication skills.

Blacks averaged 8 to 10 percentage points below the nation on the "job-related values" items. Average differences between blacks and whites were smaller on these items than for the basic skills and the job-knowledge items.

Additional Variables — Region, Parental Education, Size and Type of Community

Summary results for the job-related values items for region-of-the-country, level-of-parental-education and size-and-type-of-community groups were very similar to those for basic skills and job-knowledge items. Regional results showed the Central region performing consistently above the nation and the Southeastern region consistently below. Level of parental education was related to performance levels — increased amounts of parental education was related to performance levels — increased amounts of parental education meant higher average performance levels. The only size-and-type-of-community groups to demonstrate consistent differences from the nation were the high- and low-metropolitan groups, the high-metropolitan group performing above the nation and the low-metropolitan group falling below.

Although results for these additional variables are not summarized for the "self-appraisal" and "work-related experiences" items, most exercises tended to follow the patterns described for the "job-related values" items.

CHAPTER 3

KNOWLEDGE ABOUT JOBS

Increasing students' knowledge about different occupations and about the world of work in general is a major objective of career education programs. Knowledge about a wide range of occupations is essential to making informed choices about a career. Knowledge about situations and attitudes that may confront one in any job is helpful for a smooth transition from the educational setting to the work place.

Table 18 lists some of the tasks included in the job-knowledge section of the career and occupational development (COD) assessment. Job knowledge was divided into two categories: (1) knowledge about specific jobs and (2) knowledge about jobs in general.

To provide a background for looking at average results and group differences on the job-knowledge items, results for several sample exercises follow.

TABLE 18. Examples of Job-Knowledge Items Assessed

Specific Job Knowledge	General Job Knowledge
Know relative salaries of various jobs	Recognize that people seek different things from their jobs
Know type and/or approximate length of training needed for different jobs	Know methods of improving job skills
Recognize duties of a number of jobs	Recognize factors that affect hiring and promotion
	Recognize good and bad job interview techniques

Specific Job Knowledge

Table 19 shows an exercise about job duties that was administered to 13-year-olds, 17-year-olds and adults.

TABLE 19. Specific Job Knowledge: Sample Exercise and National Results for 13-, 17-Year-Olds and Adults

Which person below spends the most time helping people with their personal and family problems?

	13-Year-Olds	17-Year-Olds	Adults
○ Policeman	14%	4%	2%
○ Teacher	2	1	1
● Social worker	77	92	95
○ Banker	4	2	1
○ I don't know.	3	2*	1

**Figures may not total 100% due to rounding error.*

Most 17-year-olds and adults were familiar with the main duties of social workers; some 13-year-olds saw the police as performing their function.

The exercise shown in Table 20 was administered to 9- and 13-year-olds. Some 9-year-olds had a tendency on this and other exercises to respond with an answer containing words that were mentioned in the exercise.

TABLE 20. Specific Job Knowledge: Sample Exercise and National Results for 9- and 13-Year-Olds

"I work in radio and television. I tell people about what has been happening in the world and I sometimes tell people about the weather and about sports.

What is the name of my job?"

	9-Year-Olds	13-Year-Olds
○ Actor	1%	0%*
○ Radio or television repairman	8	2
○ Newspaper editor	4	1
● Newscaster	85	96
○ Camera operator	1	0*
○ I don't know.	2†	0*†

**Rounded percents less than one.*
†Figures may not total 100% due to rounding error.

Seventeen-year-olds and adults were asked several questions about the training required for various jobs. Even at these age levels, misconceptions existed. Table 21 displays an example of an item concerning job training.

Adults proved to be much more familiar with training requirements than were 17-year-olds.

On five questions about training needed for various occupations, the 17-year-old average percent correct was 54%, while that for adults was 75%.

TABLE 21. Specific Job Knowledge: Sample Exercise and National Results for 17-Year-Olds and Adults

Which one of the following jobs usually requires the LONGEST period of training?

	17-Year-Olds	Adults
○ Manicurist	11%	4%
● Plumber	63	80
○ Assembly line worker	11	6
○ Truck driver	8	4
○ I don't know.	8	6

General Job Knowledge

The general job-knowledge items covered career planning, job application skills and factors influencing hiring and promotions. Nine-year-olds were not asked to respond to any questions in this area.

The exercise shown in Table 22 involved planning for career development or change. To be included in the percentage of persons answering the question correctly, a respondent had to give five or more "acceptable" responses.

TABLE 22. General Job Knowledge: Sample Exercise and National Results for 13-, 17-Year-Olds and Adults

List ten different things that a person should think about in choosing a job or career.

(1) _____ (6) _____
(2) _____ (7) _____
(3) _____ (8) _____
(4) _____ (9) _____
(5) _____ (10) _____

Percentages Giving Five or more Acceptable Responses

13-Year-Olds	17-Year-Olds	Adults
59	83	81

Table 23 shows the most frequently used "acceptable" categories for this exercise and the percentage of people who gave at least one response in these categories. This percentage indicates the percentage of people who used a certain category, but eliminates credit for repetition of the same category on more than one line.

TABLE 23. Most Frequently Used Acceptable Categories and Percentages Giving at Least One Response in These Categories: Planning for a Job or Career, 13-, 17-Year-Olds and Adults

	13-Year-Olds	17-Year-Olds	Adults
Working conditions, benefits of job	82%	89%	90%
Personal satisfaction, interests, desires or goals	66	84	71
Prestige, status, opportunity for advancement	9	28	50
Qualifications one has for job (training, experience, education)	35	51	45
Personal abilities or constraints (intelligence, personality, physical ability)	42	49	42
Availability (present and future) of the job	9	26	39
Responsibility and challenge of the job	10*	15*	19*

**Percentages do not total 100% since respondents had more than one opportunity to respond.*

Values in planning a career shifted somewhat from age 17 to adult. The responses indicate that 17-year-olds placed more emphasis on personal satisfaction, while adults were more concerned with opportunities for advancement, responsibility and challenges of the job. Seventeen-year-olds gave slightly more weight to their abilities or lack thereof, while adults were more worried about job availability.

Another exercise concerned methods of getting information about jobs (see Table 24). This item was administered only to 13- and 17-year-olds.

Over half the 13-year-olds and nearly three-fourths of the 17-year-olds could think of at least two places to go to find information about jobs. Table 25 shows the sources that were named most often.

Seventeen-year-olds were more likely to consider a counselor or guidance officer as a source of information than 13-year-olds; however, less than a third of the 17-year-olds listed someone in a counseling role as an information source.

TABLE 24. General Job Knowledge: Sample Exercise and National Results for 13- and 17-Year-Olds

Suppose you want to find out more about a job you are interested in. What are five things you could do NOW to find out more about the job before you take the job or begin job training?

(1) _____ (4) _____

(2) _____ (5) _____

(3) _____

Percentages Giving at Least Two Acceptable Responses

13-Year-Olds	17-Year-Olds
52	72

National Percentages of Success: Job-Knowledge Items

An average of results for a group of exercises gives a way to summarize national performance on an entire set of items; it also provides a basis for comparing results for

different population groups. The exercises displayed in the preceding pages of this chapter are samples of job-knowledge exercises. Results from many more items are included in the computation of the averages for the content areas.

TABLE 25. Most Frequently Used Acceptable Categories and Percentages Giving at Least One Response in These Categories: Finding Out About a Job, 13- and 17-Year-Olds

	Percentages Giving Response at Least Once*	
	13-Year-Olds	17-Year-Olds
Talk to or observe people in field	48	69
Obtain and/or read material about it	37	44
Contact personnel office, employer, employment office or company	28	42
Talk to counselor, advisor, guidance officer	5	28

**Percentages do not add to 100% since respondents had more than one opportunity to respond.*

To give a more comprehensive picture of levels of success on the job-knowledge items, average percentages of success are presented in two ways. Table 26 presents average percentages for each age level on both the specific and the general job-knowledge items. This shows the average for each age level on all the items taken by that particular age level. Since each age level did not respond to identical sets of items, these percentages should not be compared across age groups. Nine-year-olds did quite well on the specific job-knowledge questions administered to them; an average of 85% answered correctly. Thirteen- and 17-year-olds did not do as well on the questions given to them; however, they responded to more items and the items themselves were more difficult.

TABLE 26. Job-Knowledge Items: National Percentages of Success for 9-, 13-, 17-Year-Olds and Adults

	9-Year-Olds	13-Year-Olds	17-Year-Olds	Adults
Specific job knowledge	85%	74%	76%	84%
General job knowledge	*	68	69	64

**No items were administered at age 9.*

For all age levels, performance was lower on the general than on the specific job-knowledge items.

Table 27 shows percentages of success for groups of two consecutive age levels on the *same* exercises. This provides a basis for a comparison of achievement across age levels.

TABLE 27. Percentages of Success on Identical Exercises for Consecutive Age Levels

	Age 9	Age 13	Age 13	Age 17	Age 17	Adults
Specific job knowledge	86%	97%	68%	80%	75%	84%
General job knowledge	*	*	67	80	64	64

*No items were administered at ages 9 and 13.

In looking at these figures, it becomes apparent that with age comes more knowledge about specific jobs — duties, salaries, training, etc. However, adults did not perform better than 17-year-olds on the general job-knowledge items. The similarity of the results may indicate that 17-year-olds and adults retain about the same amount of information about such things as applying for jobs, reasons for hiring and firing and career planning. The question remains whether the amount of information possessed by either age level is adequate.

Results for Population Groups: Job-Knowledge Items

Although comparing average percentages of success on different sets of exercises is not appropriate, it is meaningful to look at group differences from the nation for different age levels and obtain a rough comparison of differences in group performance across ages. The use of differences from the nation reduces the effect of varying levels of exercise difficulty. When looking at the charts of group differences, the reader should remember that while the difference in performance between males and females or blacks and whites is not a function of sample size, the location of the national performance, or zero line, depends upon the relative population sizes of the groups involved.

Sex

Males and females followed distinctly different patterns of achievement on the job-knowledge items. Male performance was significantly above that of the nation at ages 17 and adult on the specific job-knowledge exercises, while females at all age levels did better than males on the general job-knowledge questions. Female superiority on the general job-knowledge items may be, in part, due to the fact that many of the items required written responses, and females, as has been noted elsewhere, have better writing ability than males.

At ages 9 and 13, males and females showed approximately equal amounts of knowledge about specific jobs. Figure 3 shows the performance of males and females on the specific and general job-knowledge items.

Race

On all job-knowledge items, performance of whites was superior to that of blacks. Figure 4 shows differences from national performance levels for both racial groups on the job-knowledge exercises.

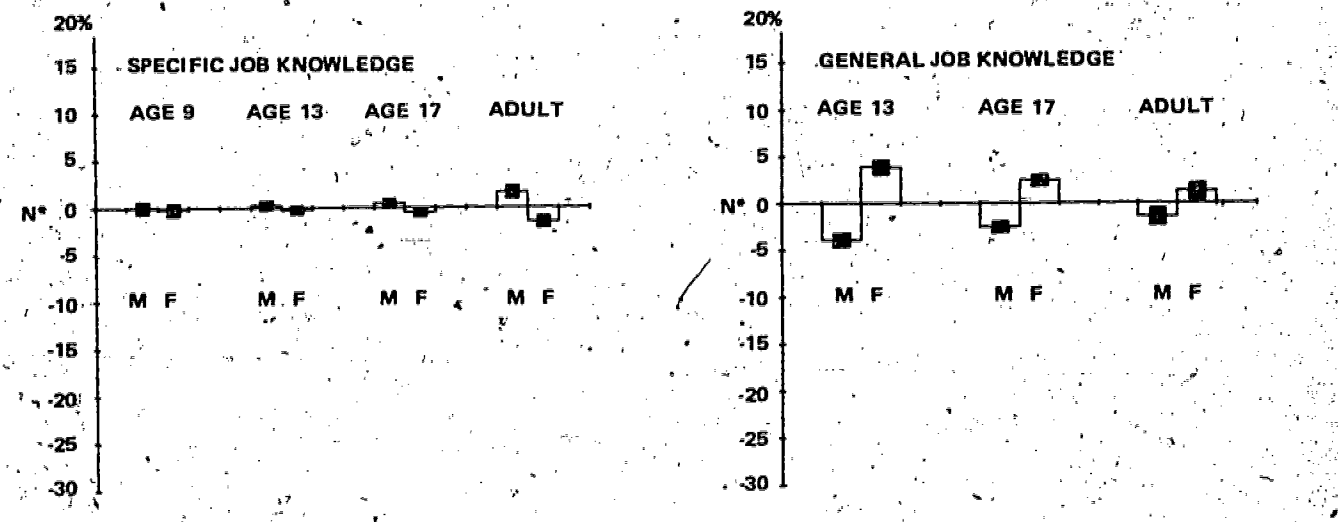
Region

The Southeastern region performed significantly below the national level at all ages on both the general and specific job-knowledge items. While the Northeastern region's performance was above that of the nation at age 13, on both types of items it slipped to the national level at age 17. Northeastern adults displayed better than national achievement only on the specific

job-knowledge skills. The Central region was significantly above the nation in all but one case (13-year-olds on specific job knowledge).

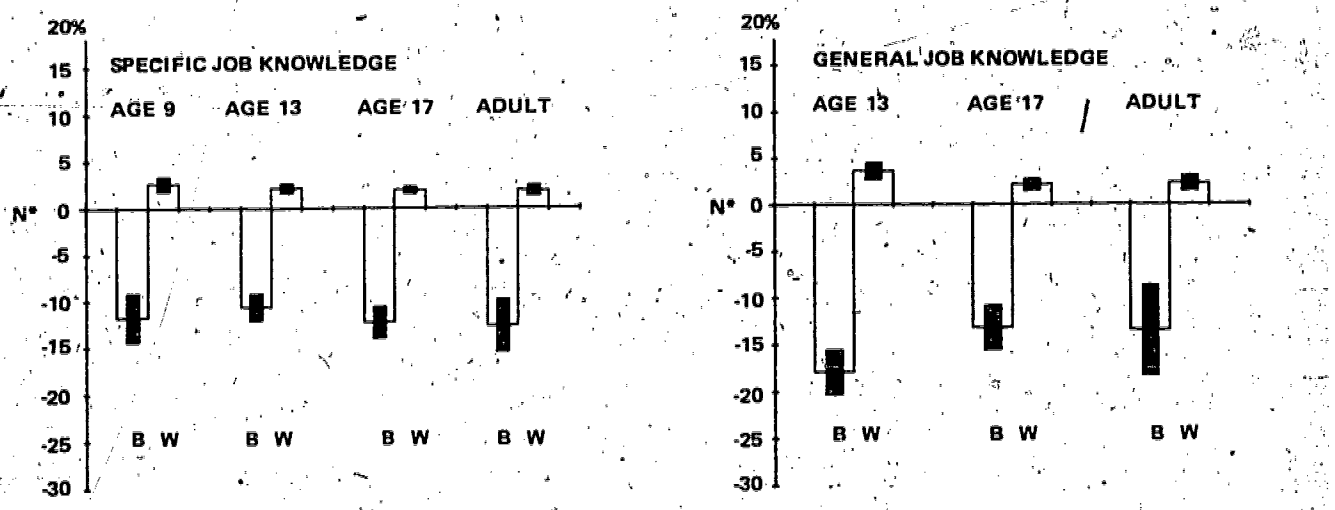
Figure 5 displays regional trends in performance on the job-knowledge items.

FIGURE 3. Job Knowledge: Mean Differences From National Performance—Sex



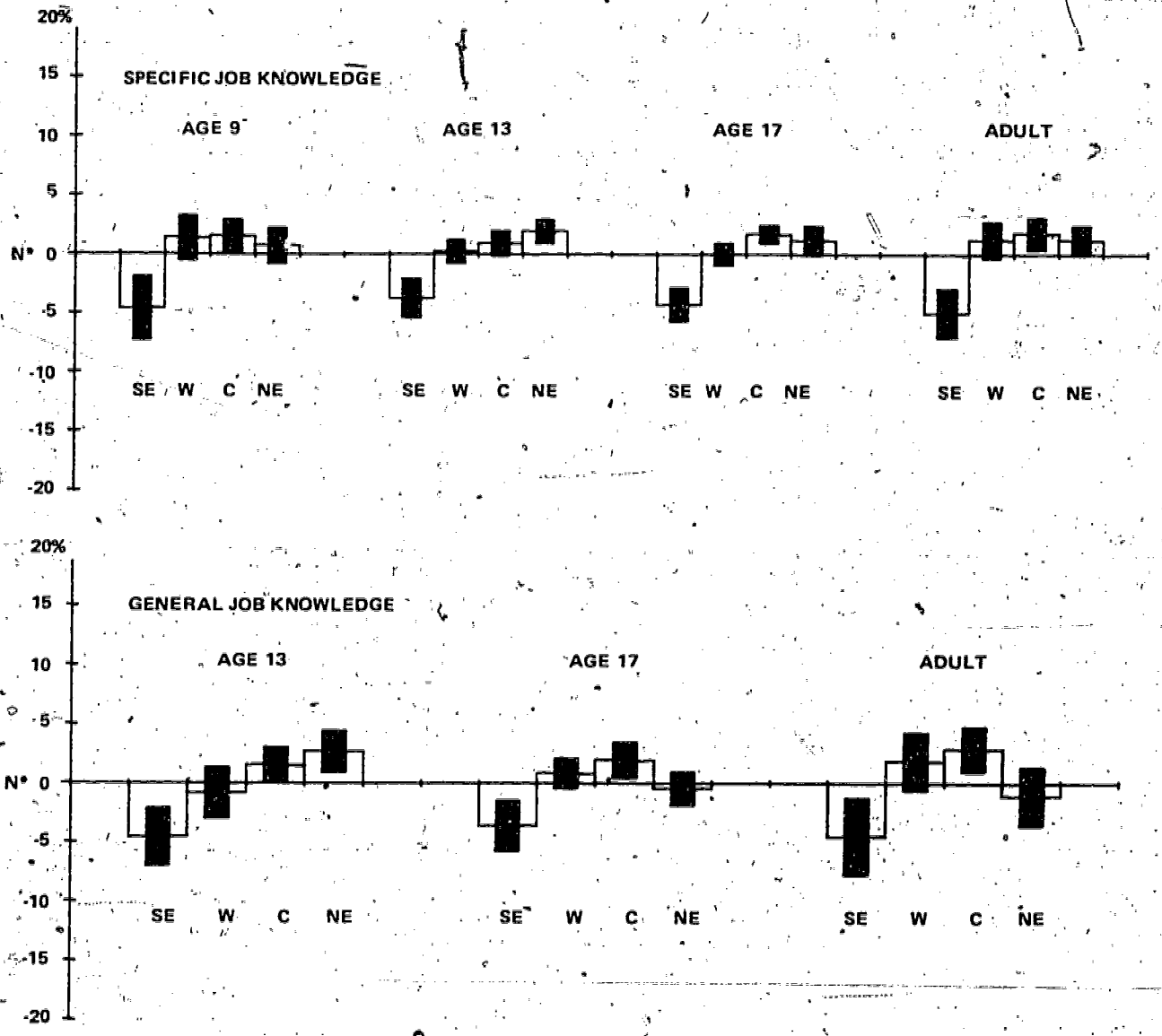
*National performance level.

FIGURE 4. Job Knowledge: Mean Differences From National Performance — Race



*National performance level.

FIGURE 5. Job Knowledge: Mean Differences From National Performance — Region

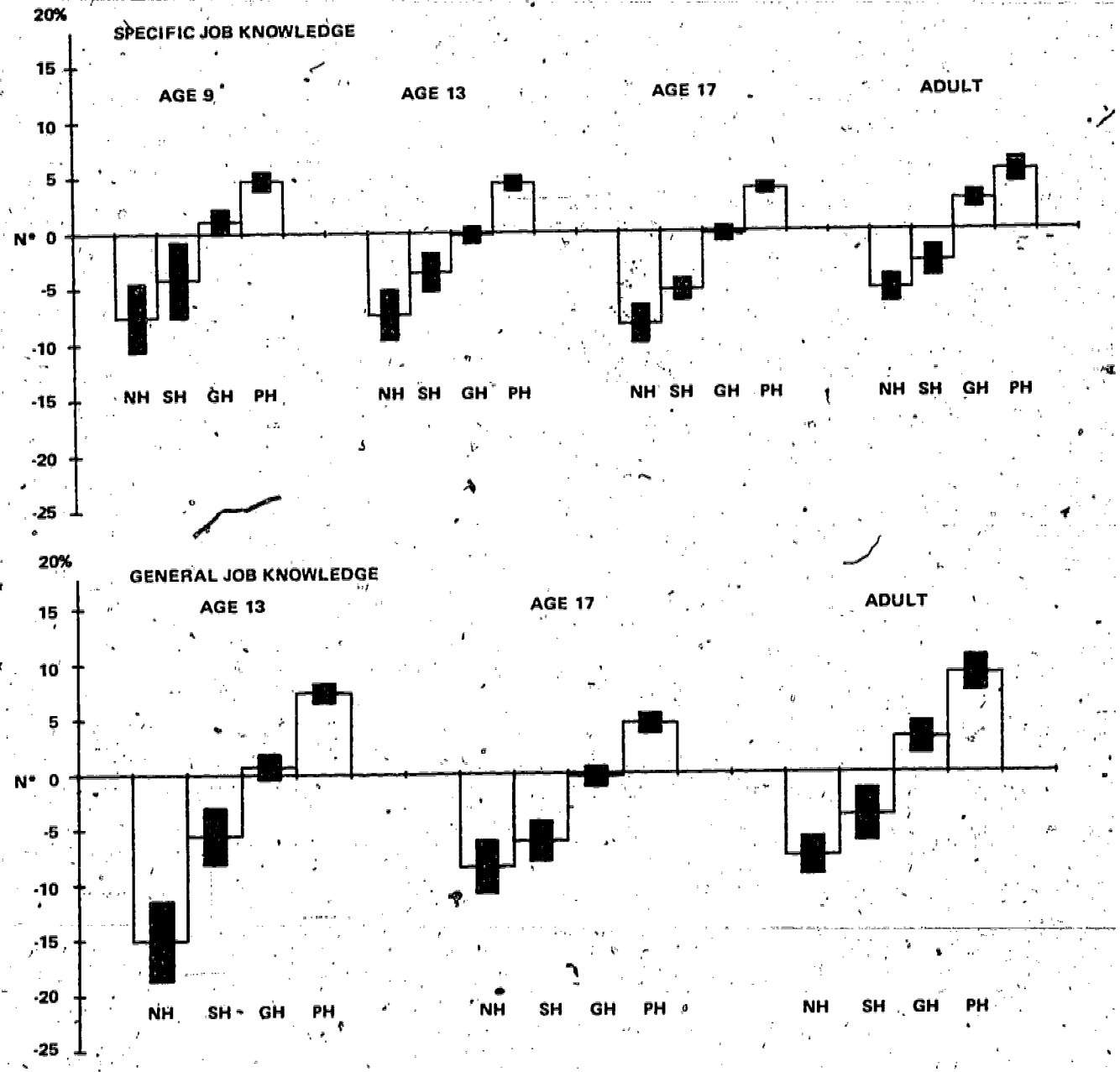


*National performance level.

Parental Education

The relationship between parental-education level and achievement was not identical for adults and school-aged respondents. Adults having at least one parent who graduated from high school were significantly above the national level, but school-aged respondents in the same group performed at the national level. The relationship of parental education and achievement was always positive — that is, more parental education went together with a higher level of achievement in every case. Figure 6 presents results for the four parental-education groups on the job-knowledge items.

FIGURE 6. Job Knowledge: Mean Differences From National Performance — Parental Education.

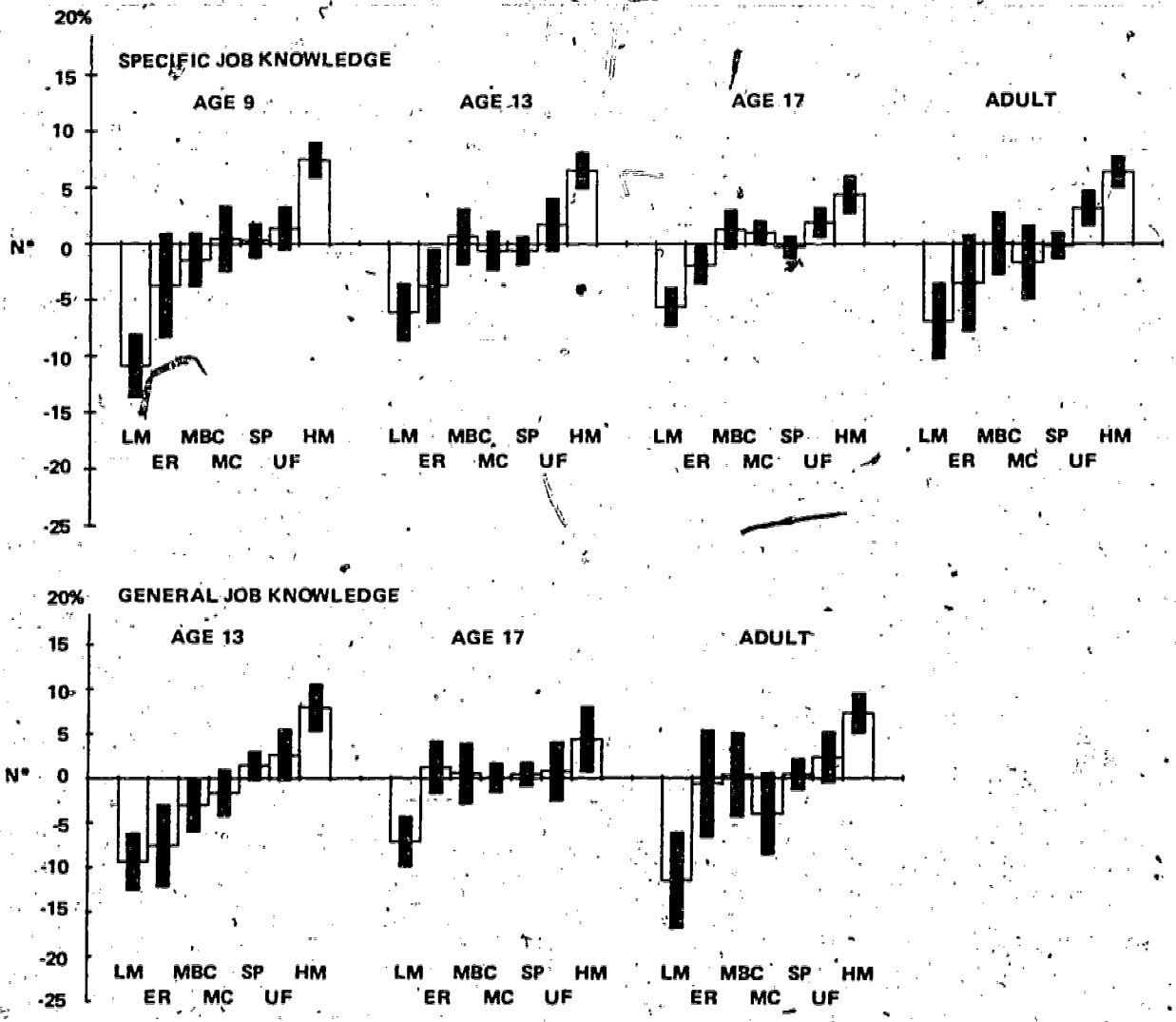


*National performance level.

Size and Type of Community

Only the high- and low-metropolitan community types showed consistent significant differences from the nation. The extreme-rural group at age 13 displayed a significant variation below the nation on both types of job-knowledge items. A significant difference for extreme rural occurred only on specific job-knowledge items for 17-year-olds and does not show up at all for adults. Figure 7 shows size-and-type-of-community results.

FIGURE 7. Job Knowledge: Mean Differences From National Performance — Size and Type of Community

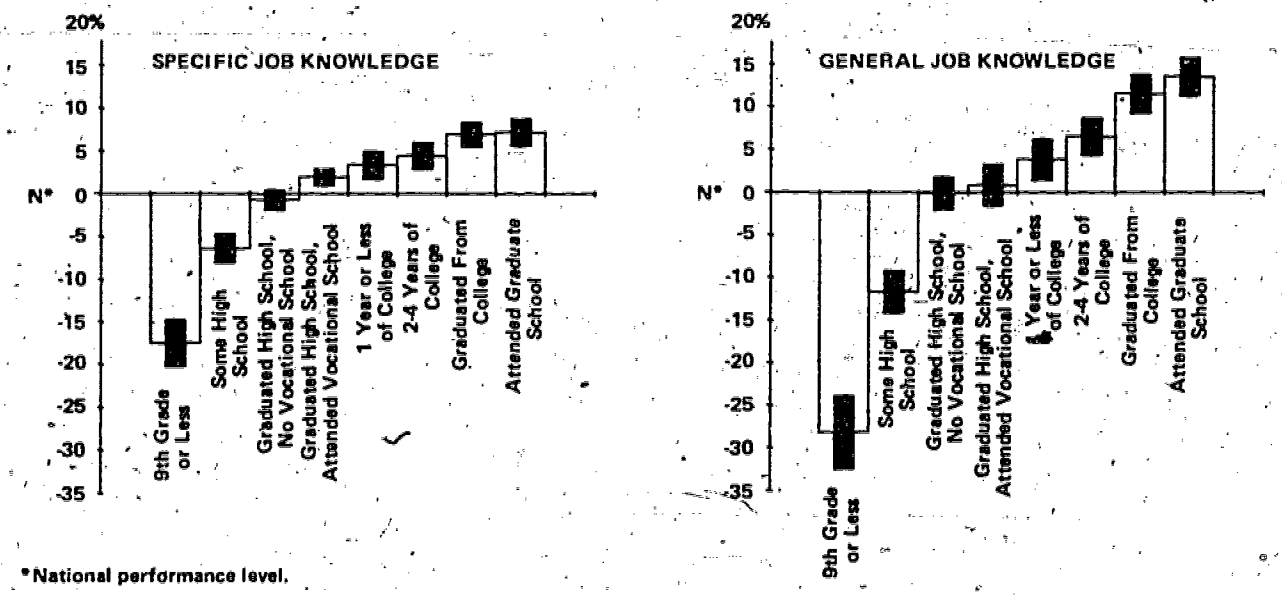


*National performance level.

Adult Variables — Personal Education and Family Income.

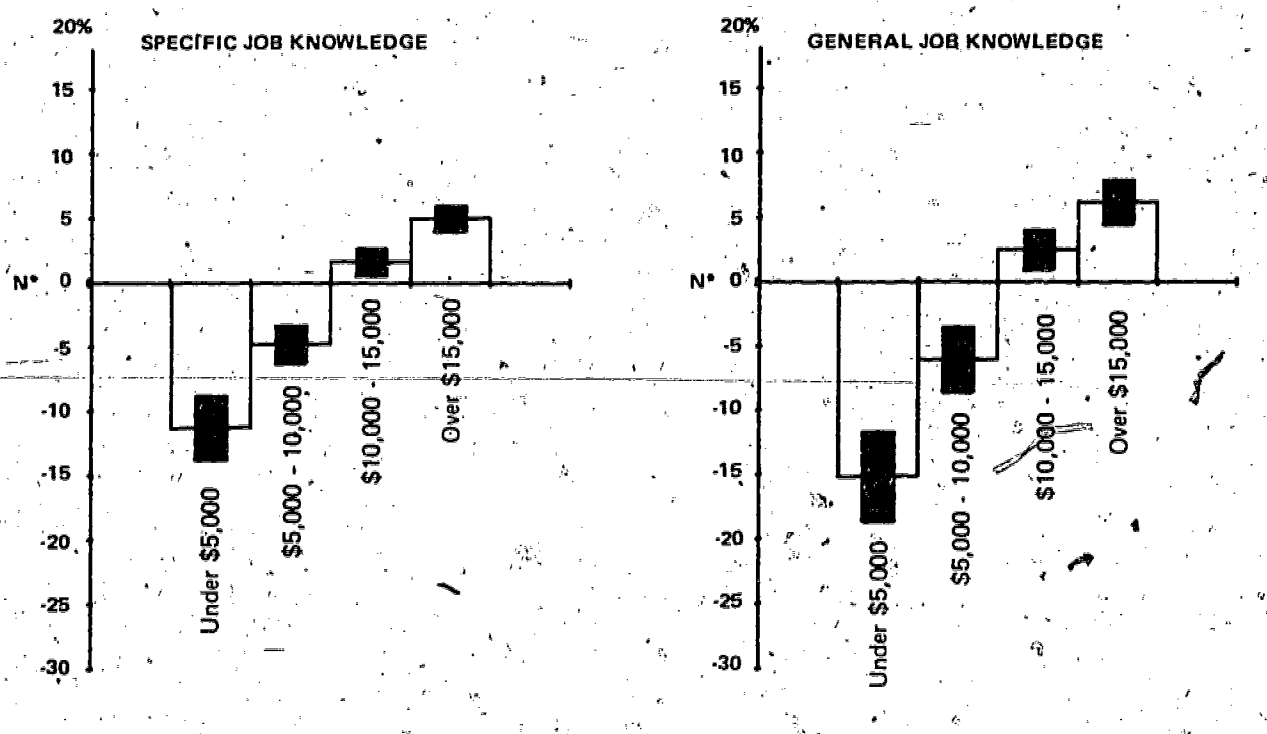
Adults were also categorized by their level of formal education and by family-income level. Figure 8 shows performance of each of the eight personal-education groups on general and specific job-knowledge items. Level of personal education, like level of parental education, was related positively to achievement. As shown in Figure 9, a similar phenomenon occurs with respect to family income: persons with greater family income display higher levels of achievement, and persons with low levels of family income display the reverse.

FIGURE 8. Job Knowledge: Mean Differences From National Performance -- Personal Education



*National performance level.

FIGURE 9. Job Knowledge: Mean Differences From National Performance -- Family Income



*National performance level.

CHAPTER 4

BASIC SKILLS

A person needs certain "basic" skills to get almost any job. Accordingly, competency in basic skills forms part of the objectives for most career education programs. The U.S. Office of Education lists competency "in the basic academic skills..." as Goal 1 of its 10 learner outcome goals.[1] To assess basic skills, the National Assessment of Educational Progress measured abilities in four areas: (1) computation and measurement, (2) graphic- and reference-materials skills, (3) written communication and (4) manual and perceptual skills. Following are results for each of these skill areas.

Computation and Measurement Skills

The computation and measurement items assessed skills in working with numbers and numerical concepts. There were problems requiring basic computation — addition, subtraction, multiplication and division — for their solution and also tasks that involved common measurement conventions. Table 28 is a sample of an exercise administered to all four age levels.

The exact answer to the question was 3 3/8 inches, but since the rulers were not of high quality, anything between or including 3 1/4 to 3 1/2 inches was considered acceptable. Most 9-year-olds did not appear to be familiar with the concept of measuring in eighths. Although performance improved for older school-aged respondents, abilities of 17-year-olds and adults were about the same.

Displayed in Table 29 is a relatively common mathematical problem. This item was administered to 13-, 17-year-olds and adults.

Thirteen-year-olds were probably unfamiliar with the whole concept of finance charges. However, it is somewhat surprising that only about half of the 17-year-olds answered the question correctly. Although the percentage answering correctly was considerably higher for adults, still one-third of them did NOT give the right amount.

Graphic- and Reference-Materials Skills

Graphic and reference skills dealt with the ability to obtain and interpret information by using various materials such as reference books, graphs, tables and measuring instruments. The items measure proficiency in a number of practical operations. For example, 9-year-olds were asked to read the time off a clock dial; 13-year-olds were asked to select, according to topic, one book from a list of books; 17-year-olds and adults were asked to use a table from a federal income tax form.

Table 30 shows the percentage at each age level who accurately found a telephone number in a telephone book in three minutes or less.

The sample exercise shown in Table 31 required the use of a simple table. Although

[1] Kenneth B. Hoyt, *An Introduction to Career Education: A Policy Paper of the U.S. Office of Education* (Washington, D.C.: Government Printing Office, 1975), p. 11.

17-year-olds and adults were more familiar with this type of task than 13-year-olds, still 13-14% of the two older age levels failed to use the table correctly.

TABLE 28. Computation and Measurement Skills: Sample Exercise and National Results for 9-, 13-, 17-Year-Olds and Adults

Use the ruler you have been given to find the length of the line ABOVE. Write your answer on the answer line BELOW.

ANSWER (3 3/8) inches

	9-Year-Olds	13-Year-Olds	17-Year-Olds	Adults
3 3/8, 3 6/16 inches	1%	28%	47%	46%
3 1/4, 3 1/2 inches	45	44	35	36
Acceptable	46	72	82	82

TABLE 29. Computation and Measurement Skills: Sample Exercise and National Results for 13-, 17-Year-Olds and Adults

Suppose you purchased $200.00 worth of merchandise from a store on an installment plan. You are to make 24 monthly payments of $11.35 each. How much money in finance charges will you have paid at the end of two years?

ANSWER ($72.40)

13-Year-Olds	17-Year-Olds	Adults
11%	49%	66%

TABLE 30. Percentages Finding Correct Number in Three Minutes or Less: 9-, 13-, 17-Year-Olds and Adults

9-Year-Olds	13-Year-Olds	17-Year-Olds	Adults
39%	71%	88%	93%

Written Communication Skills

The exercises measuring writing ability were strictly practical items that required certain writing skills but did not demand any particular creative ability. For example, one exercise involved filling out a mail order form and another concerned job application skills.

TABLE 31. Graphic and Reference-Materials Skills: Sample Exercise and National Results for 13-, 17-Year-Olds and Adults

SIZE TABLE FOR SOCKS

Shoe Size	Sock Size	Shoe Size	Sock Size
6-6½	9½	9-9½	11
7-7½	10	10-10½	11½
8-8½	10½	11-11½	12

According to the table, what size socks should you buy if you wear size 10 shoes?

- 7
- 7 1/2
- 10
- 10 1/2
- 11
- 11 1/2
- I don't know.

13-Year-Olds	17-Year-Olds	Adults
67%	86%	87%

Table 32 presents an exercise administered to 9- and 13-year-olds.

Fifty percent of the 9-year-olds included all parts of the address and return address correctly. The percentage including all parts of the addresses correctly increased to 88% at age 13.

Seventeen-year-olds and adults were asked to write a job application letter. The presence or absence of a number of different elements in the letter determined its acceptability. For example, an effective letter included such things as a proper greeting, closing and signature, a method for the employer to contact the applicant and the applicant's qualifications for the job. Table 33 shows percentages of success for 17-year-olds and adults on several of the various elements scored in the letter.

TABLE 32. Written Communication Skills: Sample Exercise

Pretend that your name is Dale Roberts and you live at 1545 [illegible] Street in Narka, Kansas. The zip code for Narka, Kansas, is 66960. You have written a letter to John Way. He lives at 345 Moose Street, Nome, Alaska. The zip code for Nome, Alaska, is 99762. Address the envelope below. Make sure you write down everything that should go on the envelope.

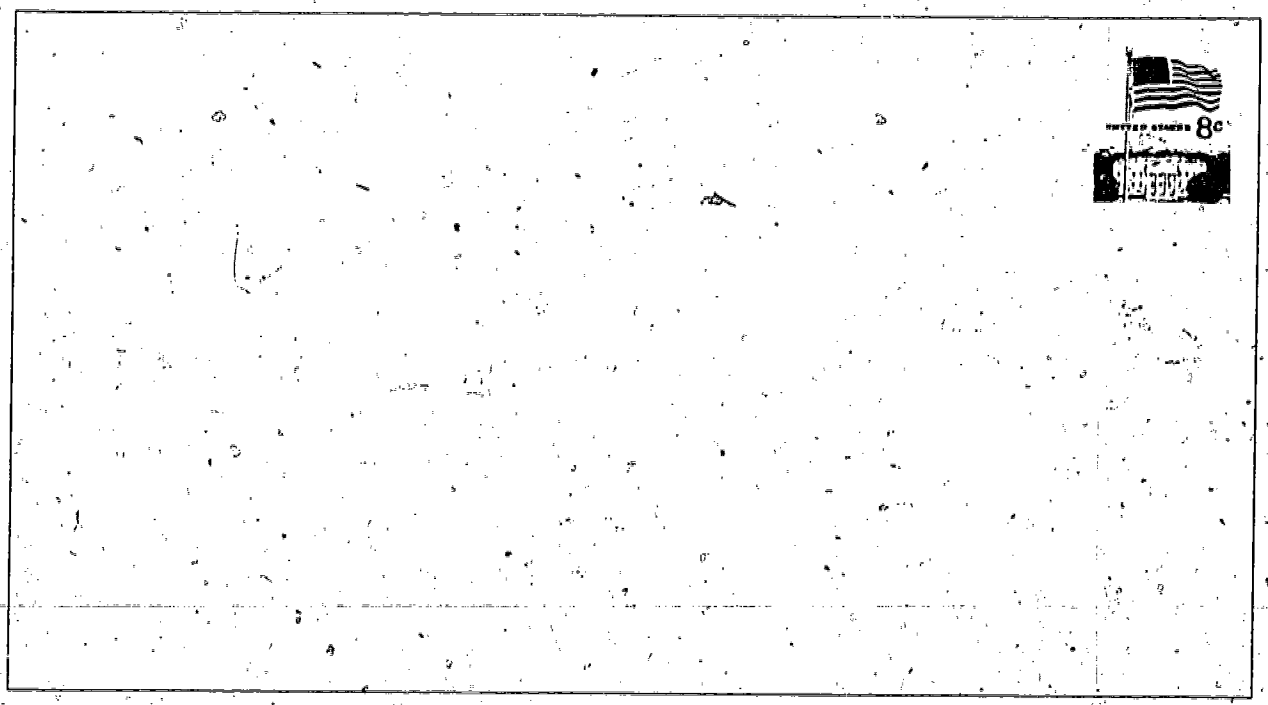


TABLE 33. 17-Year-Old and Adult Results on Job Application Letter

Letter Format	17-Year-Olds	Adults	Letter Content	17-Year-Olds	Adults
Greeting	92%	88%	Gave qualifications	93%	90%
Closing and signature	80	78	Gave method of contacting	36	42
Return address	20	24	Described job applying for	78	82
Inside address	33	39			

Manual and Perceptual Skills

Included in the manual-and-perceptual-skills section of the assessment were such things as manipulating small objects according to directions and using measurement instruments.

Table 34 shows an exercise given to 9- and 13-year-olds. The exercise was administered individually, i.e., to one respondent at a time. To be correct, the respondent must take the two pieces of paper, put them together, fold them and staple them, in that order. The papers had to be folded the short way, not lengthwise, and had to be stapled together somewhere along the longest edge.

Respondents in the three upper age levels — 13, 17 and adult — were asked to draw the three-dimensional object shown in Figure 10. Three aspects of the drawings were scored: (1) the relative positions of the four objects, (2) three-dimensionality of the objects and (3) relative size of the objects. Table 35 displays national percentages correct for the three age groups for each of the three elements.

National Percentages of Success: Basic Skills

The exercises in the preceding sections are examples of the exercises used to measure the four areas of basic skills. Results from many additional items were included in the summaries of national and group performances. Readers desiring to review all released COD exercises should consult the *Career and Occupational Development Technical Report: Exercise Volume.*[2]

TABLE 34. Manual and Perceptual Skills: Sample Exercise and National Results for 9- and 13-Year-Olds

(Hold up Handout: 2 sheets of paper folded together and stapled. Say:)

"Here are two pieces of paper that have been folded together and stapled.

"Show me the fastest way to fold and staple two pieces of paper together so that they look like this."

(Hold up sample.)

(Place 2 sheets of paper and stapler in front of respondent. The 2 pieces of paper must be separate, *not* on top of each other.)

Percentages Folding and Stapling Papers Together Correctly

9-Year-Olds	13-Year-Olds
75	90

Table 36 displays the average percent correct for each age level on each of the four basic skills areas.

[2] *Career and Occupational Development Technical Report: Exercise Volume, Report 05-COD-20* 1973-74 Assessment (Washington, D.C.: Government Printing Office, forthcoming).

FIGURE 10. Three-Dimensional Object

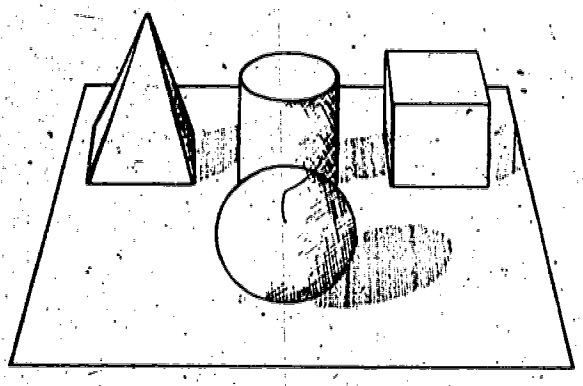


TABLE 35. Percentages Correct — Three-Dimensional Drawing: 13-, 17-Year-Olds and Adults

	13-Year-Olds	17-Year-Olds	Adults
Position	73%	77%	70%
Three-dimensionality	52	62	56
Relative size	18	21	21

Some caution must be used in interpreting these figures. Exercises for the various skill areas were not necessarily of the same difficulty, and each age level did not take exactly the same set of exercises for each skill area. The exercises taken by 17-year-olds and adults were identical for all of the basic skills, thus, direct comparisons can be made for these two age levels. Performance of adults was slightly better than that of 17-year-olds for everything but manual and perceptual skills, indicating that basic skills are not lost and may, in fact, improve after one leaves secondary school.

The exercise sets taken by 9- and 13-year-olds were not identical and also varied somewhat from those taken by the two older age levels. Contrary to the usual pattern, 13-year-olds had a higher average percent correct than 17-year-olds and adults on the written communication items. This is primarily because 13-year-olds were not asked to write a job application letter or a classified ad, tasks that proved difficult for the older age groups.

Results for Population Groups: Basic Skills

Average percentages of success across age levels should not be compared, since the exercises administered were not identical for all age levels assessed. However, group differences can be used to provide a rough comparison of performance of different groups across age levels. Readers should bear in mind that while difference between groups are not affected by sample size, the difference from the national level may be affected by the relative sizes of the groups.

Sex

Figure 11 shows differences from national performance levels for the sex groups at each age on the four basic skills areas. Differences

TABLE 36. Basic Skills: Average Percent Correct for 9-, 13-, 17-Year-Olds and Adults

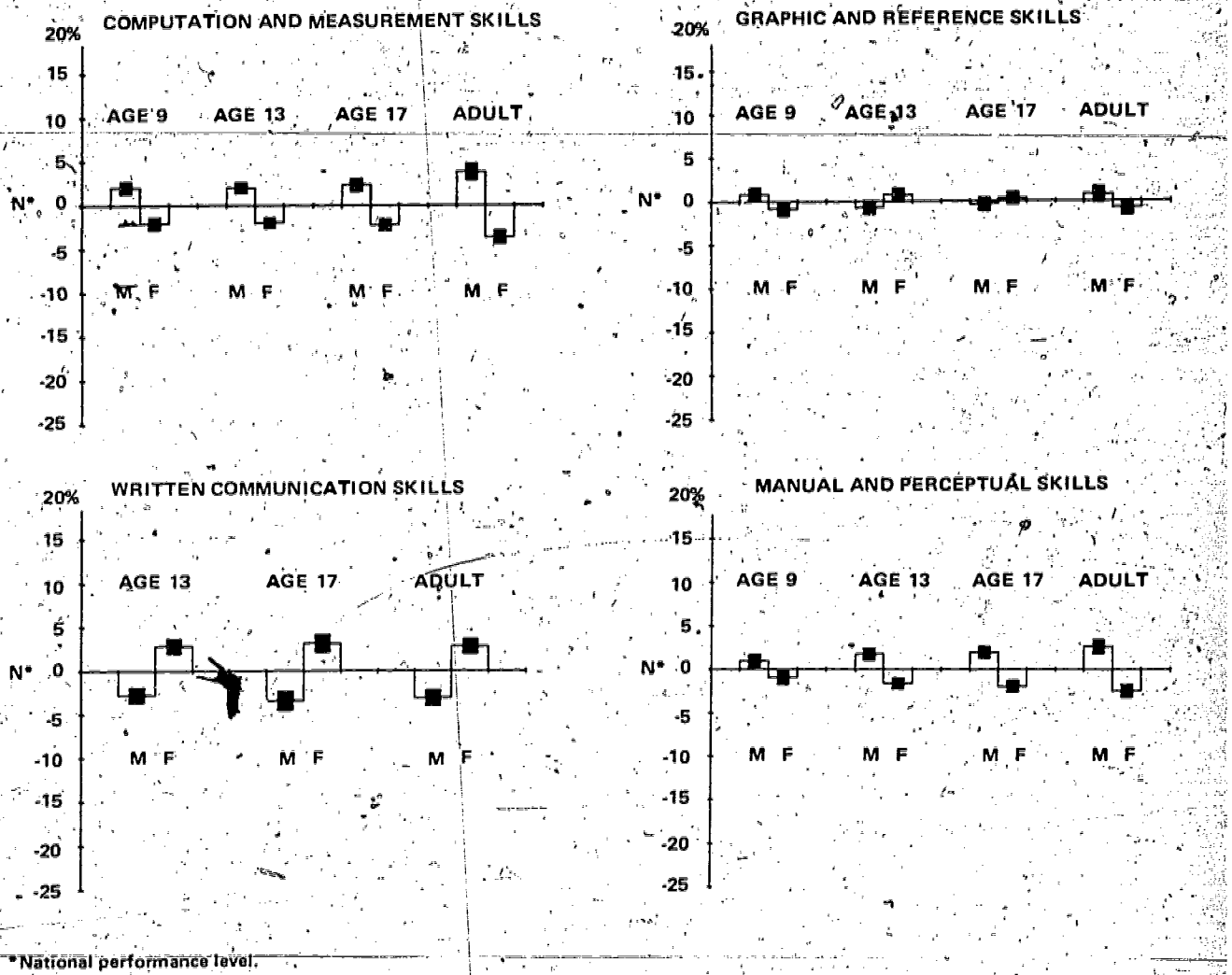
	9-Year-Olds	13-Year-Olds	17-Year-Olds	Adults
Computation and measurement skills	45%	58%	70%	72%
Graphic- and reference-materials skills	49	76	80	83
Written communication skills	*	77	63	66
Manual and perceptual skills	56	68	66	66

**Number of exercises administered was too small for a meaningful summary.*

do not appear for written communication at age 9 as the number of exercises was too small to provide a meaningful summary.

Results for males and females varied with the type of skills being assessed. Males did better than females at all ages on computation/measurement and manual/perceptual skills, with the largest difference appearing between adult males and females on the computation/measurement items. On the other hand, female percentages of success were much higher than males for written communication skills. Differences in performance on the graphic- and reference-materials skills were not, in the majority of cases, statistically significant.

FIGURE 11. Basic Skills: Male/Female Differences



*National performance level.

Similar patterns of differences have been found in other learning areas assessed by National Assessment.[3] The reasons for these disparities should be investigated so that steps can be taken to provide equivalent learning experiences for both males and females.

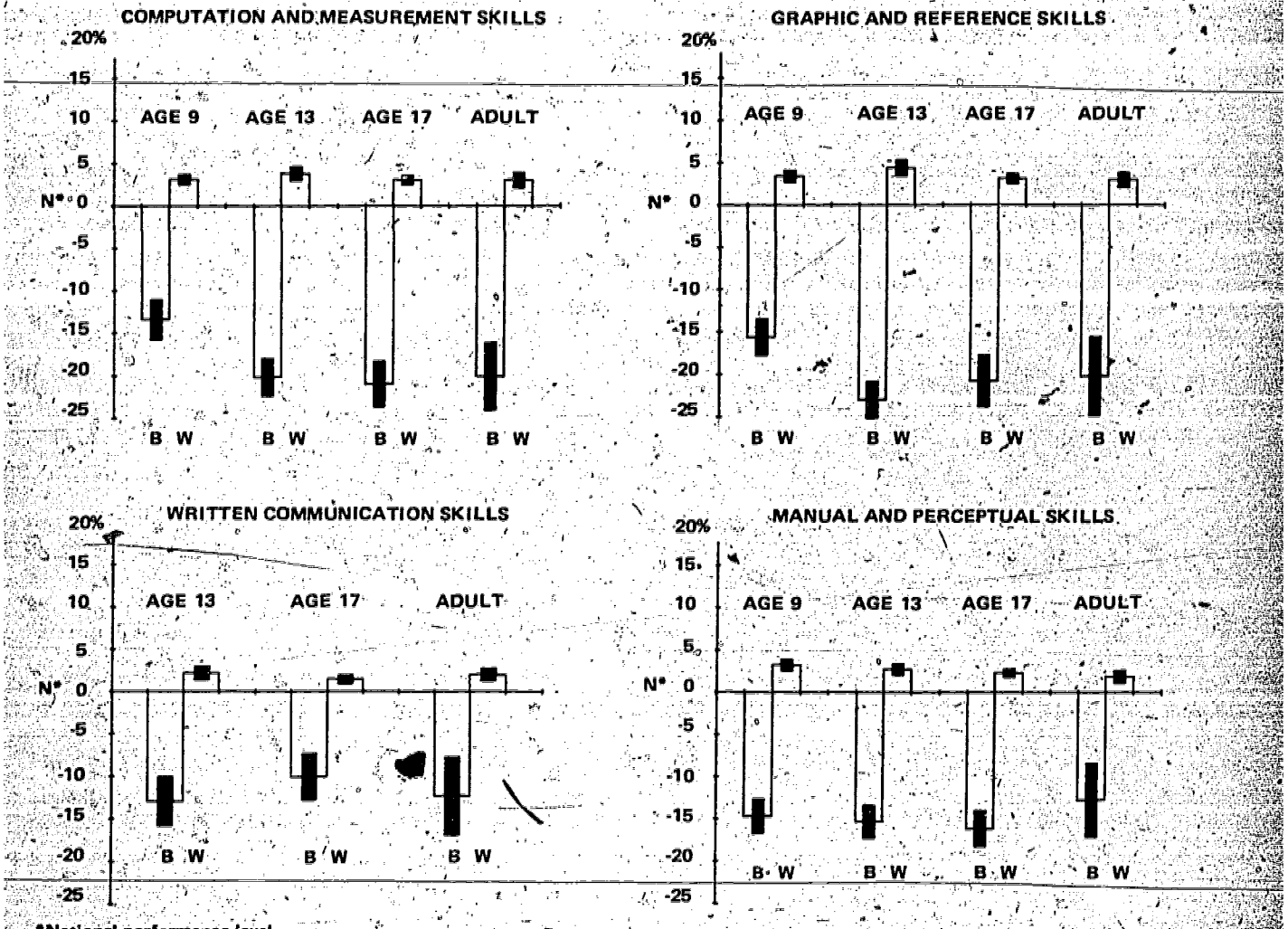
Race

Black achievement levels were below those of whites on all of the basic skills areas. Figure 12 presents differences from national performance levels for blacks and whites at each age level for each of the four skill sections.

The pattern of results for 13-year-olds, 17-year-olds and adults was remarkably similar. In all cases, the smallest difference occurred on written communication skills and the largest differences on computation/measurement and graphic/reference skills.

[3] Ina Mullis, *Educational Achievement and Sex Discrimination* (Denver, Colo.: National Assessment of Educational Progress, 1975).

FIGURE 12. Basic Skills: Black/White Differences



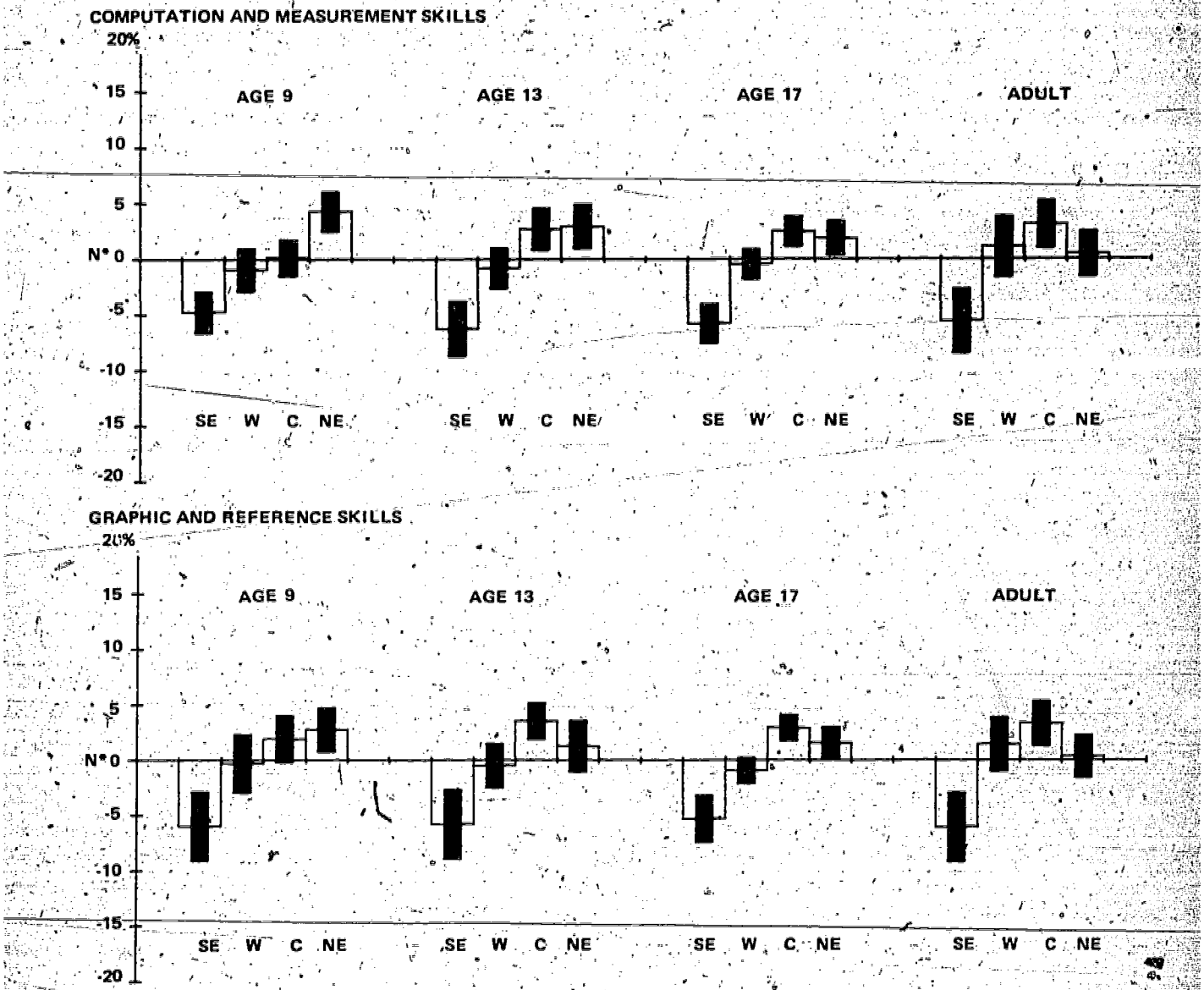
*National performance level.

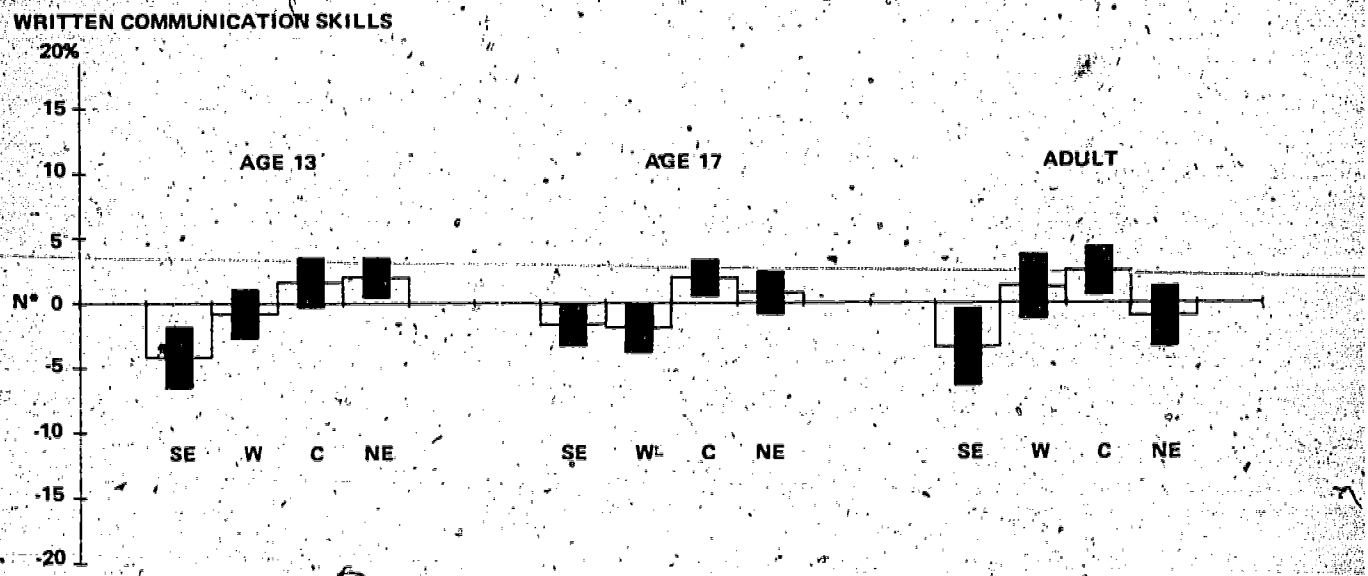
Region

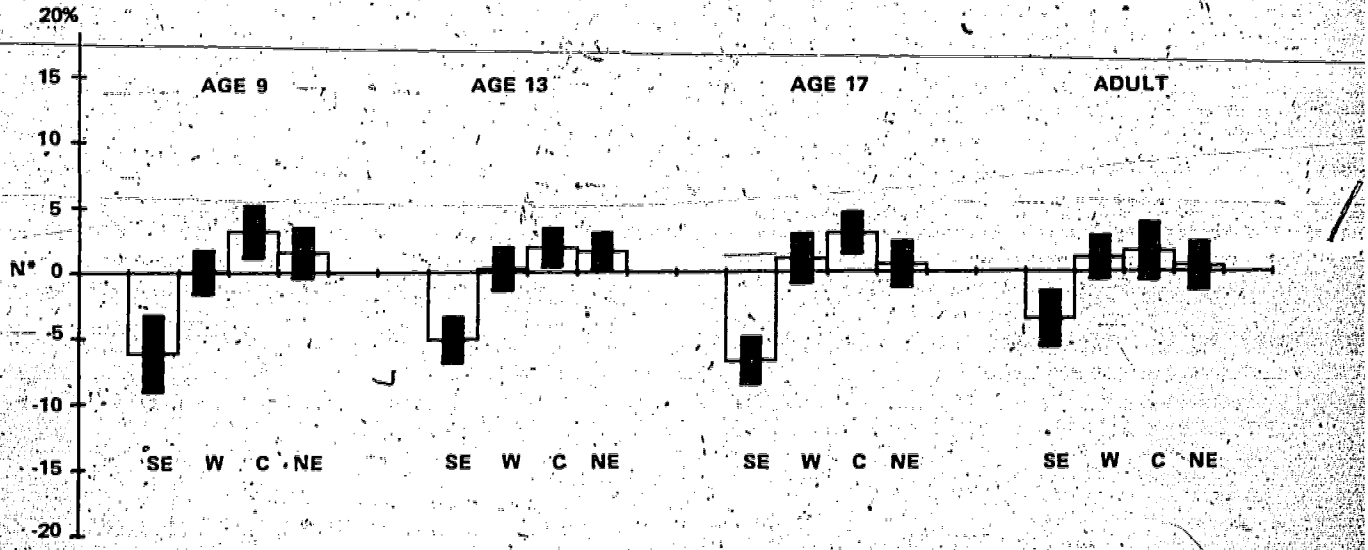
Certain overall tendencies were evident in the regional results. The Southeastern percentage was always significantly below that of the nation, and the Central percentage was nearly always significantly above. The West, in the great majority of cases, displayed results that were not significantly different from those of the nation as a whole. Figure 13 shows regional differences for each of the four basic skills areas at each age level.

Two rather unusual results should be noted. First, the relative position of the Northeastern region changes at the adult level. Northeastern percentages for adults are at or close to national levels, while for the other three age groups the Northeast was usually above the nation. But the Northeast does seem to show a steady decline, relative to the nation, from age 9 to 13 to 17. Second, at age 17, the performances of the Southeast and the West were very similar on written communication skills.

FIGURE 13. Basic Skills: Regional Differences







*National performance level.

Parental Education

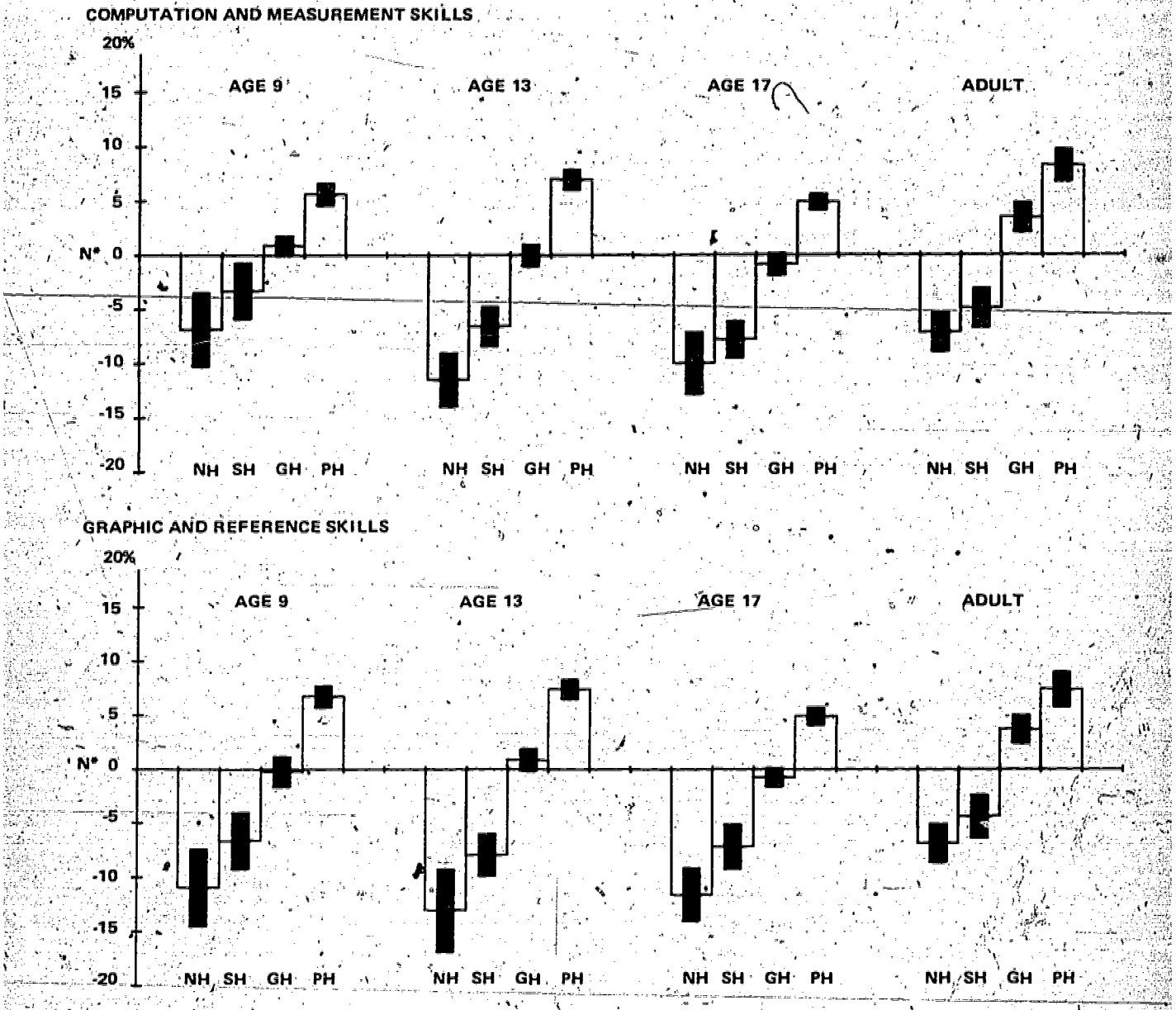
Results for the four parental-education groups followed a generally consistent pattern, with people whose parents had no high school education performing farthest below the nation and people with at least one parent having some post-high school education performing farthest above. The only exception to this pattern was on the written communication items at age 17. On these items, performance of the no-high-school and some-high-school group was not as far below the nation as for the other three skill areas.

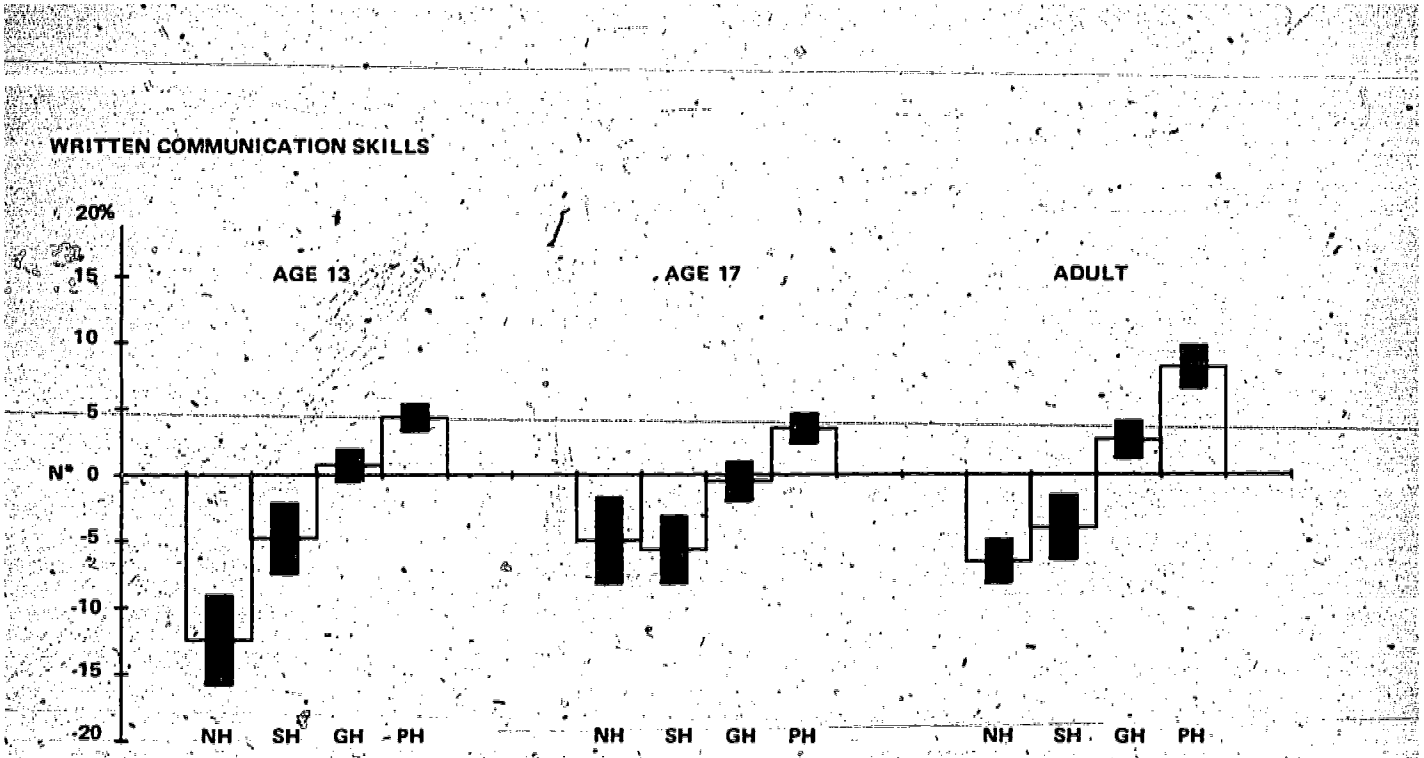
This is consistent with findings for other variables. Seventeen-year-old blacks and 17-year-old residents of the Southeast, groups

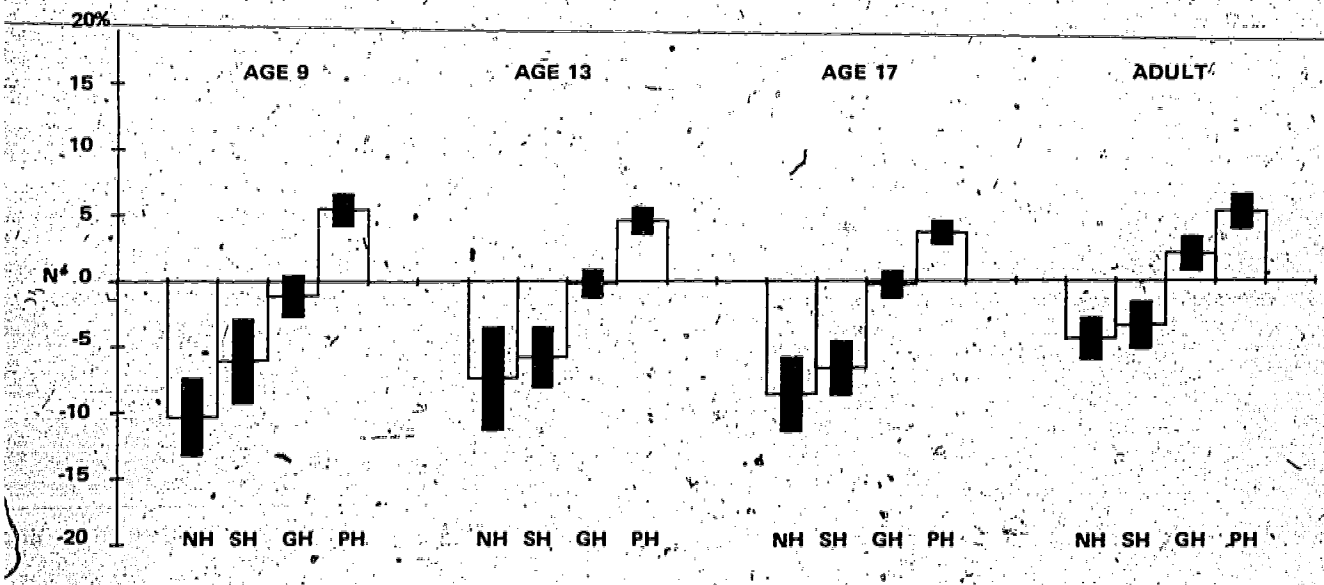
that contain higher percentages of people with parents having lower levels of education, were not as far below the nation on written communication items as on other skills.

The performance level of those with at least one parent in the graduated-high-school group differed for the school-aged and the adult respondents. For the three groups of school-aged respondents, the graduated-high-school group was at the national level of performance. However, for the adults, in all cases, the graduated-high-school parental-education group was significantly above the nation (Figure 14).

FIGURE 14. Basic Skills: Parental-Education Differences







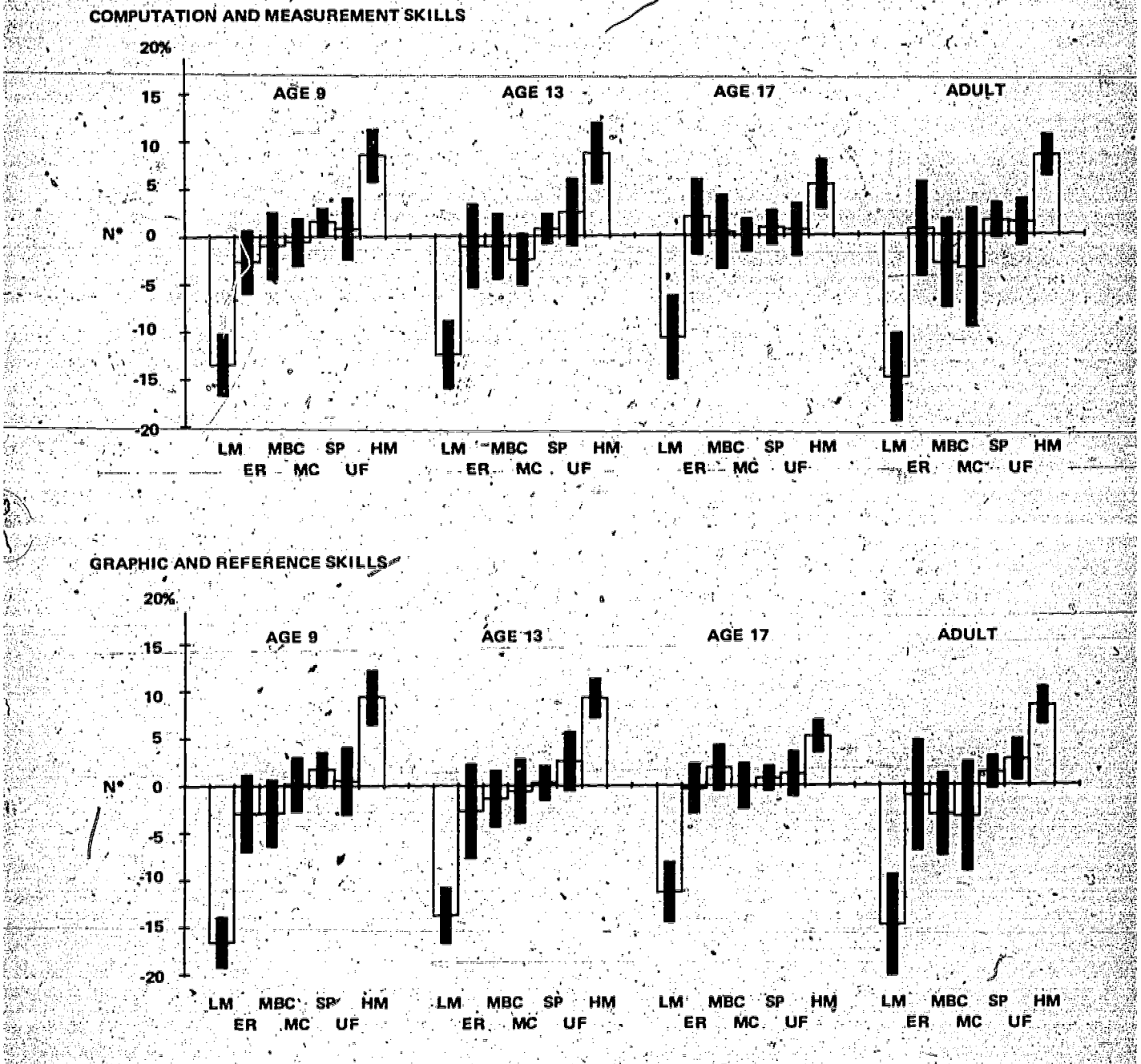
*National performance level.

Size and Type of Community

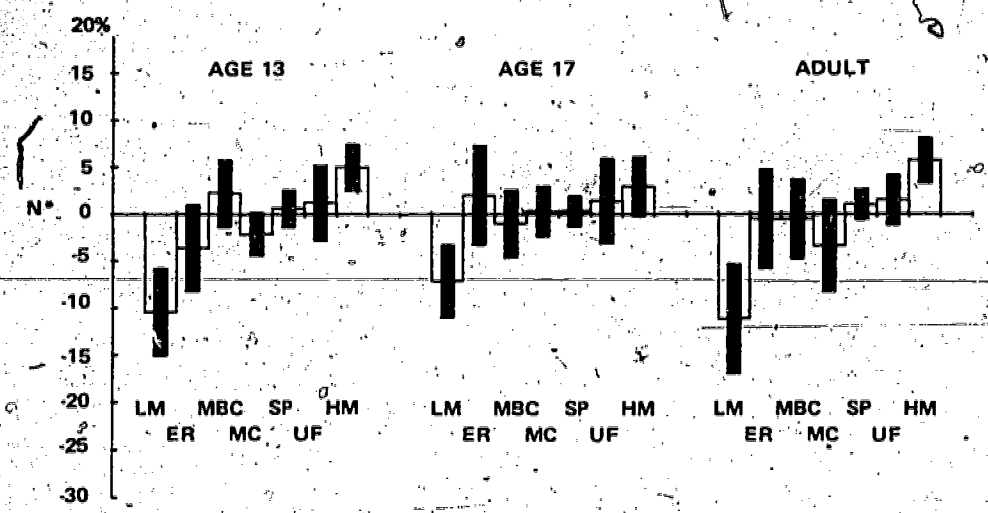
Although seven different community types were used as variables, results for only two of the community groups — high and low metropolitan — proved to be significantly different from national percentages. The two metropolitan groups are defined by an economic factor (occupation of the majority of people in the community) as well as by a

population size factor. Figure 15 shows differences from the nation for all size-and-type-of-community groups at each age level.

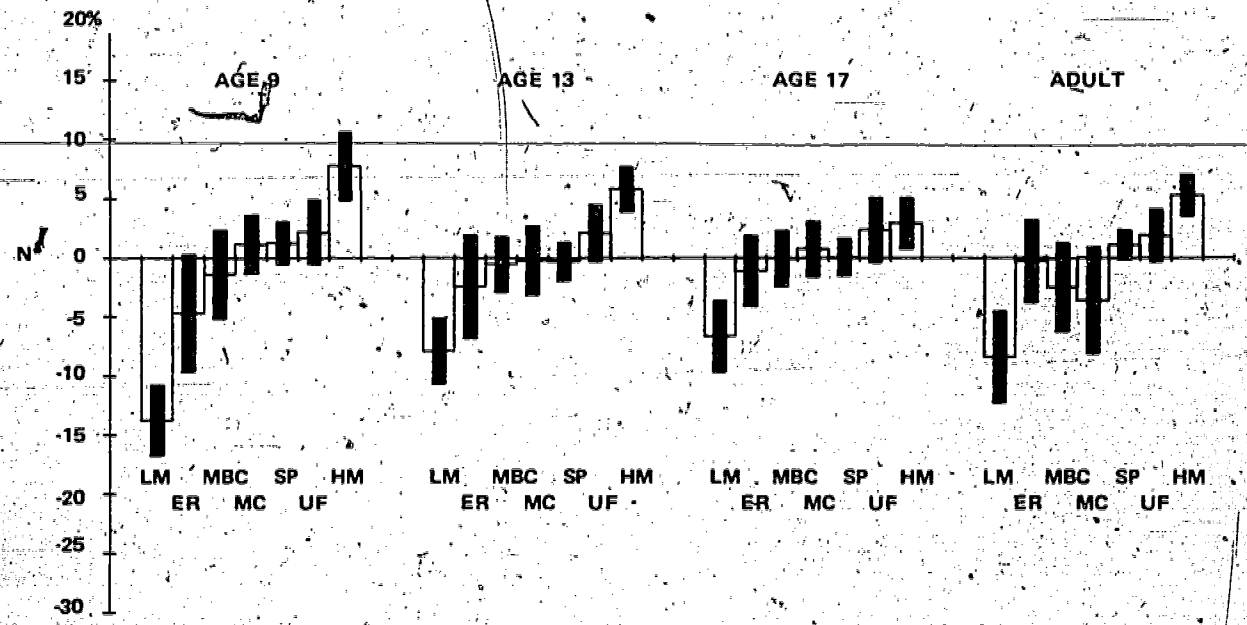
FIGURE 15. Basic Skills: Size-and-Type-of-Community Differences



WRITTEN COMMUNICATION SKILLS



MANUAL AND PERCEPTUAL SKILLS

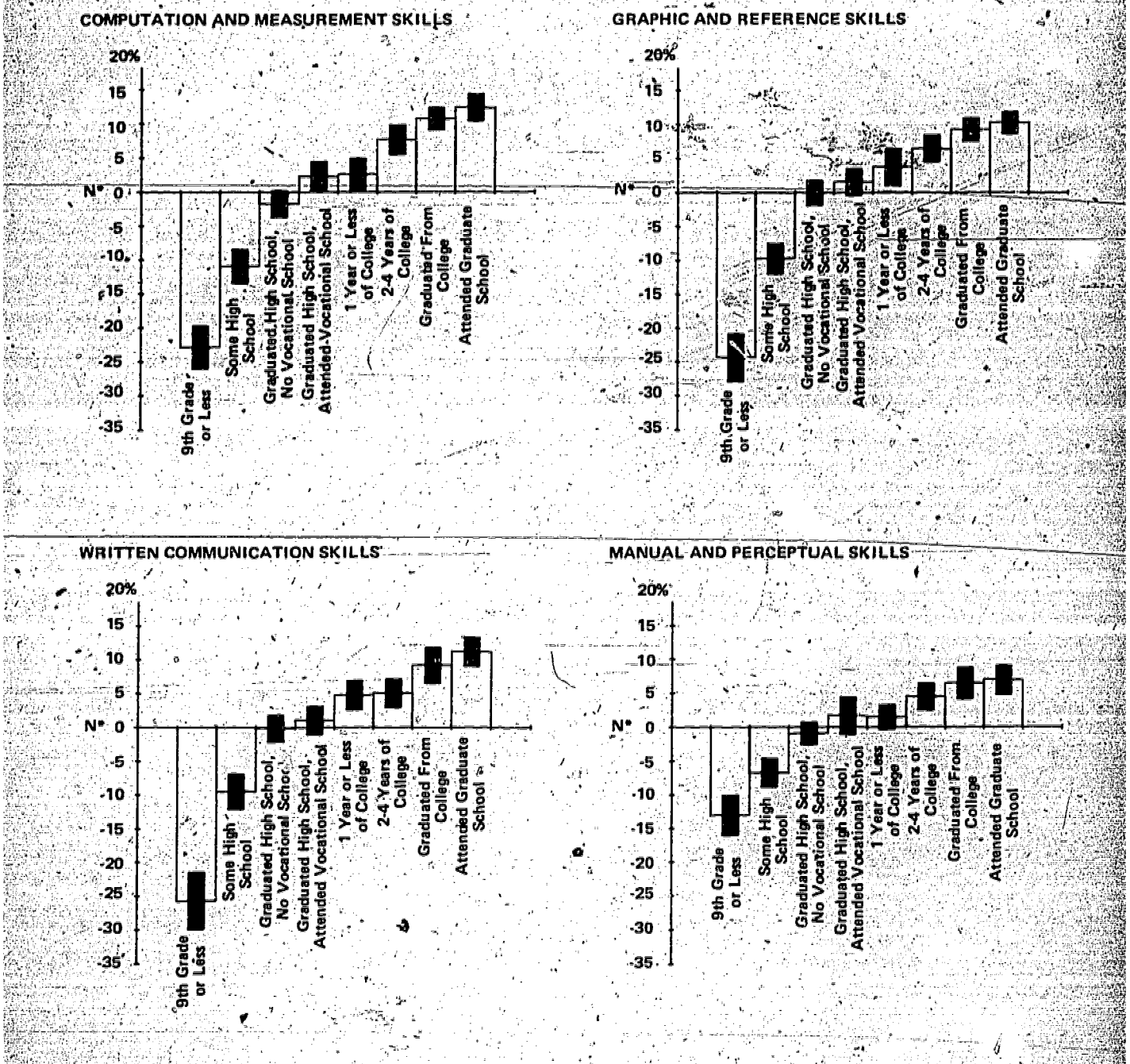


*National performance level.

Adult Variables – Personal Education and Family Income

Several variables were used only for adults, since at the younger age levels they either were not meaningful or data could not be obtained. These adult variables included family income and level of personal education. Results for the eight personal-education groups analyzed appear in Figure 16. For this particular set of variables, differences observed between highest and lowest performing groups were smallest on manual and perceptual skills and were largest on written communication. These differences on computation/measurement and graphic/reference skills were very close to the same.

FIGURE 16. Basic Skills: Personal-Education Differences

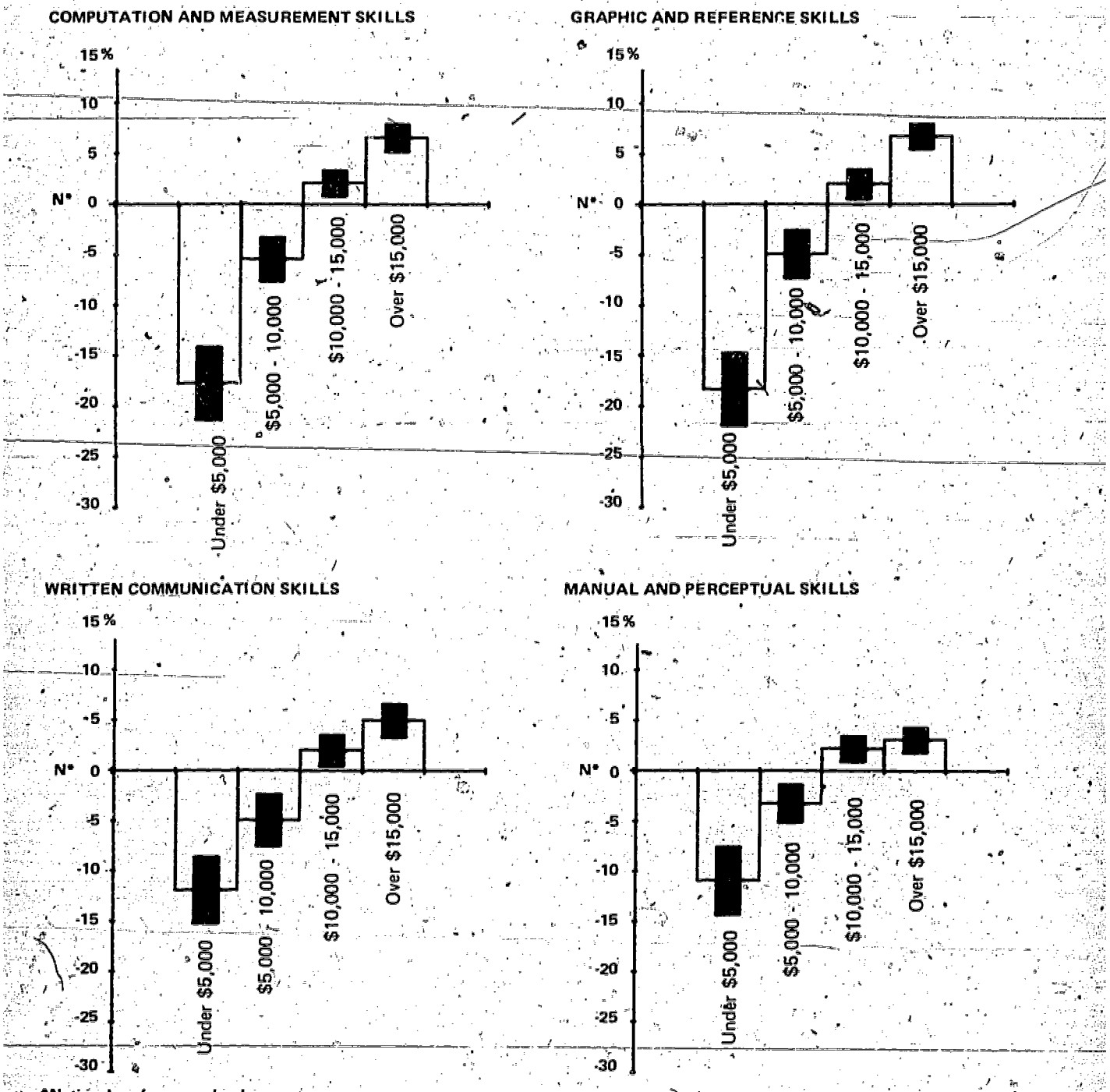


*National performance level.

Figure 17 presents results for the four family-income groups analyzed by National Assessment. Similar to results for the variables race and size and type of community, differences observed between the highest and lowest performing family-income groups were

larger on computation/measurement and graphic/reference skills than on written communication and manual/perceptual exercises. Percentages of success relative to the nation increased for each of the four basic skills areas.

FIGURE 17. Basic Skills: Family-Income Differences



*National performance level.

CHAPTER 5

CONCLUSIONS

Career and occupational development requires many skills and knowledges — knowledge about oneself, knowledge about jobs, skills in the "basics" of mathematics and written communication. It is difficult to point to an average percentage in any of these areas and say that it does or does not represent adequate performance for job entry or job advancement. However, these data do offer a point of view for speculating about the population's probable success in varied career endeavors. When, for instance, one is presented with the fact that 17-year-olds demonstrated an average proficiency of 63% in the area of written communications, it is difficult not to wonder how the other 37% of these young people will fare when faced with the communications demands of the world beyond the classroom. One is also tempted to speculate about the choices that will be made by the 30% at age 17 who had not consulted anyone who was older than themselves and aware of their interests and abilities about their future plans. And one wonders why, in an age that has seen the growth of the counseling profession, only 35% of the 17-year-olds said they had spoken with a counselor about their future plans.

In reviewing the results of the career and occupational development assessment, it becomes clear that there is room for improvement. There were substantial differences in performance between different groups in the population. Blacks, residents of "low-metropolitan" communities, residents of the Southeast and people whose parents had low levels of education performed below the national level on all areas of the COD assessment. These groups were lacking in ability in basic skills and thus began with a disadvantage in the job marketplace, a disadvantage that was intensified by the fact that they were less likely to have job application skills, less likely to know where to go for information and less likely to know the requirements for various jobs. The assessment data, collected before career education programs were widely implemented in the schools, provide an important beginning point or "benchmark" against which to measure future changes in ability. Hopefully, future assessments will show an improvement in national performance as well as a lessening of the gaps in achievement that presently separate different population groups.

Education should not merely prepare one to get a job. However, a satisfying occupation is helpful to one's function in other life roles. The data collected by the National Assessment of Educational Progress indicate that we have made a start in educating people about the world of work, but that more progress can be made in making knowledge about jobs, information on career decision making and preparation in basic skills a part of everyone's equipment for entering the labor force.

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NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS
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Jerry Apodaca, Governor of New Mexico, Chairman, Education Commission of the States
Warren G. Hill, Executive Director, Education Commission of the States
Roy H. Forbes, Director, National Assessment

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A Project of the Education Commission of the States
Suite 700, 1860 Lincoln Street
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