

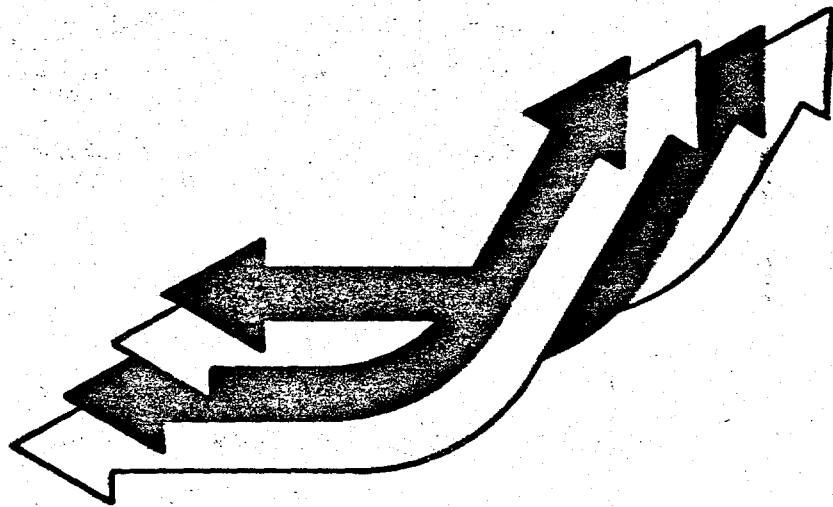
Carroll

High School and Beyond

a national longitudinal study for the 1980's

Two Years in High School:

The Status of 1980 Sophomores in 1982



National
Center for
Education
Statistics

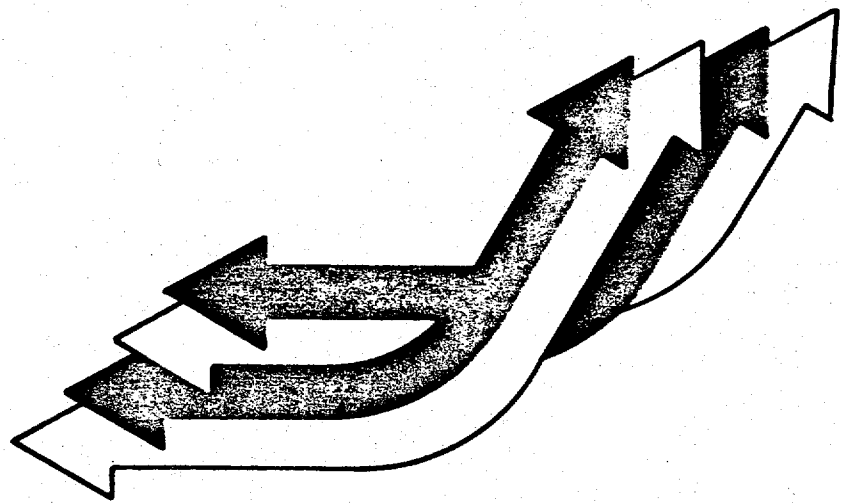
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The Status of 1980
Sophomores in 1982



U.S. Department of Education

T. H. Bell

Secretary

Office of Educational Research and Improvement

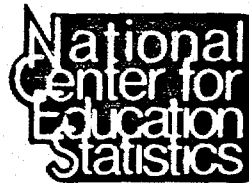
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National Center for Education Statistics

"The purpose of the Center shall be to collect and disseminate statistics and other data related to education in the United States and in other nations. The Center shall . . . collect, collate, and, from time to time, report full and complete statistics on the conditions of education in the United States; conduct and publish reports on specialized analyses of the meaning and significance of such statistics; . . . and review and report on education activities in foreign countries."--Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e-1).

Foreword

In 1980, the National Center for Education Statistics initiated High School and Beyond (HS&B), a national longitudinal study of high school sophomores and seniors. Its primary purpose is to observe the educational and occupational plans and activities of young people as they pass through the American educational system and take on their adult roles.

The first HS&B follow-up survey was conducted in spring 1982. This report presents a summary of descriptive

information about the sophomore cohort members as of 1982, a time when most were approaching graduation. Among the topics addressed are: courses taken, grades earned, discipline problems, dropouts, and college plans.

Information on the status of future HS&B surveys and analytic studies may be obtained from the Longitudinal Studies Branch, National Center for Education Statistics, 600 Brown Building, 400 Maryland Avenue, SW., Washington, D.C. 20202.

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Acknowledgments

Numerous people have contributed to High School and Beyond (HS&B). William B. Feters of NCES developed the overall research design, with the assistance of many others. The National Opinion Research Center (NORC) conducted the base-year and first follow-up surveys under contract with NCES.

This report was produced through the collaborative efforts of various members of the Longitudinal Studies Branch (LSB) of NCES. Data analyses were accomplished by C. Dennis Carroll, Chief, LSB, and by William B. Feters, Jeffrey A. Owings, Samuel S. Peng, Ricky Takai, and Andrew A. Kolstad. Report writing was done principally by George H. Brown and William B. Feters. Cindy S. McDowell typed both text and tables.

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Chapter I

Introduction

Objectives and Organization of this Report

This report presents a summary of descriptive information about the 1980 sophomore cohort members as of spring 1982. It illustrates the breadth and depth of the data and presents illustrative findings from our preliminary analyses. (A similar report concerning the senior cohort is in preparation.)

The remainder of this report, chapters II through VI, is divided into five topical areas. Chapter II, entitled "Progress Through High School," discusses dropouts, transfers, early graduates, and changes in life values. Chapter III describes changes in cognitive test scores between 1980 and 1982. Chapter IV, entitled "High School Experiences," concerns courses taken, grades, homework, participation in Federal programs, and disciplinary problems. Chapter V describes nonscholastic activities, primarily employment and leisure time activities. Finally, chapter VI describes plans for attending and financing college.

Appendix A presents a description of HS&B data files available for public use; appendix B defines the variables that were used to divide the total population into subgroups; and appendix C discusses the HS&B sample design and the quality of the data.

Background and Purpose

The High School and Beyond (HS&B) study is a nationally representative sample survey of 1980 high school sophomores and seniors in the United States. As a large-scale, longitudinal survey, its primary purpose is to observe the educational and occupational plans and activities of young people as they pass through the American educational system and take on their adult roles. The study contributes to understanding the development of young adults and the factors that determine individual education and career outcomes. This information is useful as a basis for review and reformulation of Federal, State, and local policies affecting the transition of youth from school to adult life.

The availability of this longitudinal data base encourages indepth research for meeting the educational policy needs of the 1980's at local, State, and Federal levels. HS&B data contribute to evaluating: the strength of secondary school curricula; the quality and effectiveness of secondary and postsecondary schooling; the demand for postsecondary education; problems of financing postsecondary education; the adequacy of postsecondary alternatives open to high school students; the need for new types of educational programs and facilities to develop the talents of our youth; and the

educational, vocational, and personal development of young people and the institutional, familial, social, and cultural factors that affect the development.

HS&B is the second in a program of longitudinal studies sponsored by the National Center for Education Statistics (NCES). This study is similar to the earlier NCES National Longitudinal Study of the High School Class of 1972 (NLS-72) which began in 1972, and completed its fourth follow-up survey in 1979.

The NCES longitudinal studies program is based on the assumption that Federal, State, and local policies affecting the transition from school to work should reflect an understanding of the intervening processes of the American educational system, as well as the inputs (such as student characteristics) and the outputs (such as degrees and diplomas awarded). The longitudinal studies program provides statistics on the education, work, and family experiences of young adults for the pivotal years during and immediately following high school. The fourth follow-up of the NLS-72 provides information on the outcomes of schooling 7 years after high school, while the base-year and first follow-up HS&B surveys provide current information on high school experiences, student cognitive growth, and the transition to early adult life.

The HS&B study gathered data similar to that collected in the earlier NLS-72 study, making it possible to assess the impact of numerous economic and social changes since 1972 on American youth. However, the second study differs from the first in several major ways. First, HS&B included the systematic collection of information from parents regarding their educational aspirations for their children, and their ability and willingness to finance the fulfillment of those aspirations. Second, HS&B surveyed teachers concerning their assessments of their students' futures. Third, HS&B extended the scope of the population studied to include the sophomores of 1980 as well as the seniors, which made possible a close study of the dimensions of secondary school experience and of the factors contributing to students' dropping out of school. Finally, HS&B also collected detailed information on courses taken and grades achieved (from complete high school transcripts) and examines the relationships between student and school characteristics, on the one hand, and patterns of course taking and student achievement on the other.

HS&B Base-Year Survey

The base-year survey was conducted in spring 1980. The study design provided for a highly stratified national probability sample of over 1,100 high schools with a sample of 36 seniors and 36 sophomores per school. (In those schools with fewer than 36 seniors or sophomores, all eligible students were included in the sample.) Cooperation from both schools and students was excellent. Over 30,000 sophomores and 28,000 seniors enrolled in 1,015 public and private high schools across the nation participated in the

base-year survey. The response rate for schools was 70 percent (91 percent after replacement of nonresponding schools with similar schools) and for students within participating schools the response rate was 84 percent.

Questionnaires and cognitive tests were administered to each student in the HS&B sample. The student questionnaire covered school experiences, activities, attitudes, plans, selected background characteristics, and language proficiency. Other groups of respondents provided other types of information. The administrator in each selected school filled out a questionnaire about the school; teachers in each school were asked to comment on students in the sample; twins in the sample were identified and their counterpart twins were also surveyed; and a sample of parents of sophomores and seniors (about 3,600 for each cohort) was surveyed primarily for information on their plans for financing their child's higher education. The total survey effort thus provided a comprehensive data base for analyses in education and other areas of behavioral and social science.

Base-year survey data for both cohorts are summarized in *A Capsule Description of High School Students*, NCES 81-244, April 1981.

HS&B First Follow-Up Survey

The first follow-up survey took place in spring 1982. All students who had been elected for the base-year survey, whether they actually participated or not, had a chance to be included in the follow-up.

The design of the sophomore sample for the first follow-up survey called for including with certainty all base-year sample members who were still attending the same school in spring 1982. This procedure takes advantage of the economies of group administration to maximize sample size. Among those base-year sample members who, for whatever reasons, were no longer enrolled in the school they had previously attended, certain categories, such as dropouts and American Indians, were selected with certainty so that these population subgroups would be of sufficient size to permit reliable studies and analyses. The resulting sample size was 29,737. Of these, a subsample of 18,000 was selected for a detailed study of high school transcripts.

Cognitive tests—the same ones employed in the base-year survey—and questionnaires were administered to all sample members: those out of school (dropouts and early graduates) as well as those still in school, including those who had transferred to other schools. Questionnaires were completed by 28,119 (94.6 percent) of the 29,737 sample members and the test battery by 26,216 (88.2 percent). School administrators were asked to complete a school questionnaire to update information about their schools, to provide a list of all courses offered in their school in the 1981-82 school year, and to state the total enrollment in each.

One of the goals in designing the senior cohort first follow-up survey was to reduce the size of the retained sample to about 12,000 while keeping sufficient numbers of certain subgroups (e.g., Hispanics, blacks, and other minority groups) to allow important policy analyses. A total of 11,227 (93.6 percent of the 11,995 persons subsampled) completed the first follow-up questionnaire—8,990 by mail, 956 by telephone, and 1,281 by in-person interview. Information was obtained about each respondent's school and employment experiences, family status, and attitudes and plans. Tests were not administered.

The first follow-up survey data, along with the base-year survey data, are available for public use. Several NCES-sponsored analytic studies using these data have been planned. Among the topics to be investigated in special indepth analyses are: excellence in secondary education, transition to postsecondary education, high school dropouts, transition of Hispanic students from high school to postsecondary education and from school to work, and the high school diploma as a terminal degree. Researchers are being encouraged to conduct additional analytic studies using this data base.

HS&B Second Follow-Up Survey

The second follow-up survey is scheduled for spring, 1984. At that time, samples of 15,000 members of the 1980 sophomore cohort, and 12,000 members of the 1980 senior cohort will be contacted for further information about developments in their lives.

Chapter II

Progress Through High School

At the time of the base-year survey in spring 1980, all members of the population under study were sophomores in high school and, as such, faced the prospect of at least 2 more years in school. As would be expected, the vast majority (86 percent) did complete high school within 2 years. Fourteen percent dropped out.

Since the consequences of dropping out may be quite important and of lifetime duration, this phenomenon is of particular interest to educational policymakers. This chapter therefore devotes major attention to examining the personal and demographic factors which appear to be associated with dropping out and the principal activities of dropouts from spring 1980 to spring 1982. This chapter also briefly examines the following topics: (a) transferring to another school, (b) graduating ahead of schedule, and (c) changes in life values.

Factors Associated with Dropping Out

The fact that 14 percent of 1980 sophomores dropped out of school between spring 1980 and spring 1982 means that the actual number of dropouts was over one-half million. This estimate is actually a conservative one since undoubtedly some students had already dropped out before the spring 1980 data collection, and still others dropped out after the spring 1982 data collection—in the latter half of their senior year.

As shown in table 1, dropping out was slightly (but significantly) more common among males than among females (15 vs. 13 percent, respectively). This is consistent with the traditional notion at the elementary and secondary levels that females tend to feel more comfortable than males in the school environment.

Dropping out was also related to racial/ethnic status. Asian Americans had the lowest dropout rate (3 percent) and American Indians the highest (29 percent). Although these two groups represent very small segments of the total population and our samples are correspondingly small, the difference between the two is statistically significant. Both Asian Americans and whites had lower dropout rates than did blacks or Hispanics.

The socioeconomic status (SES)¹ of the students was strongly but negatively related to the tendency to drop out. The rate for low SES students was 17 percent as compared with 5 percent for the high SES students. For middle SES students, the rate was intermediate (9 percent) which was

¹The SES measure used in this analysis was a composite of the following variables: father's education, mother's education, father's occupation, family income, and nature and number of household possessions.

significantly higher than the 5 percent rate for the high SES students.

Table 1. Percentages of 1980 sophomores who had dropped out of school by spring 1982, by selected background characteristics.

Background characteristics ^a	Percent dropping out
All students	14
Sex:	
Male	15
Female	13
Race/ethnicity:	
Hispanic	18
Black	17
White	12
Asian or Pacific Islander	3
American Indian or Alaskan Native	29
Socioeconomic status (SES):	
Highest quartile	5
Middle two quartiles	9
Lowest quartile	17
Cognitive test performance:	
Highest quartile	3
Middle two quartiles	9
Lowest quartile	19
High school program:	
Academic	4
General	13
Vocational	15
Type of school:	
Public	15
Catholic	2
Other private ^b	10
High school community:	
Urban	19
Suburban	12
Rural	13
Geographic region:	
Northeast	11
South	15
North Central	12
West	17
Handicap status:	
Handicapped	
In program	18
Not in program	14
Non-handicapped	14
Parent kept close track of school work:	
Yes	- 9
No	27

^aBackground characteristics from base-year data are defined in appendix B.
^bEstimates for "other private schools" may be less accurate than others because of small sample size and a low response rate.

Consistent with findings in many other studies, students with low cognitive test scores (on the spring 1980 testing) were far more likely to drop out than were students with higher scores. Based on composite scores on reading, vocabulary, and mathematics tests taken in their sophomore year, students were classified into three groups: the low group consisted of all who scored in the lowest quartile; the middle group, of all who scored in the two middle quartiles; and the high group, of all who scored in the top quartile. It was found that the low group had a dropout rate of 19 percent as compared with 3 percent for the high group. It is of course consistent with common sense expectations that students who are relatively weak in cognitive abilities would have difficulty in school work, and would be more inclined than others to remove themselves from a stressful situation by dropping out.

Based on the students' self-classifications, about one-third of the 1980 sophomores considered themselves to be in an academic or college preparatory high school program, 46 percent in a general program, and 21 percent in a vocational program (table B-1 in appendix B).² Academic program students had a much lower dropout rate than did the general and the vocational program students (4, 13, and 15 percent, respectively) (table 1). This is not surprising in view of the self-selection of students into programs. Those with higher academic ability and strong motivation would be more likely to select the college preparatory program.

About 2 percent of Catholic school students dropped out after their sophomore year as compared with 15 percent of public school students and 10 percent of other private (i.e. private but non-Catholic) school students. This finding may result in part from the fact that private schools have much higher proportions of academic program students than do public schools, and have far fewer disciplinary problems (table 17).

The type of community in which schools are located may also influence dropout rates. Students attending urban

schools were more likely to drop out than those attending suburban or rural schools (19 vs. 12 and 13 percent, respectively). This finding may be partially due to the fact that suburban schools have more students from high SES levels and more students in academic programs.

By geographic region, students in the South and the West had slightly higher dropout rates than did students in the Northeast and North Central regions.

Students were classified as handicapped or non-handicapped based on their responses to various items in the student questionnaire. It seems safe to assume that few if any of the HS&B students were profoundly handicapped since such persons would probably not be attending regular schools. Those handicapped students who were participating in special programs for the handicapped appeared to have a higher dropout rate than those not participating (18 vs. 14 percent), but this difference was not statistically significant.

Finally, it was found that students whose parents kept close track of their school work had a much lower dropout rate than students whose parents did not (9 vs. 27 percent).

Activities of Dropouts

A student who drops out of high school has taken an action that may well have lifelong consequences. Lifetime earnings are likely to be influenced by this action, as well as job satisfaction, the quality of family life, and numerous others aspects of life.

However, dropping out is not an irrevocable decision. A dropout can return to school, or can obtain a General Educational Development (GED) certificate and perhaps avoid the consequences that dropping out might otherwise entail.

In this section we examine the extent to which dropouts among the sophomore cohort participated in various specified activities (table 2).

Table 2. Percentage of dropouts from the 1980 sophomore cohort who had participated in specified activities by spring 1982, by sex and by cognitive test performance.

Activity	Total	Sex		Cognitive test performance		
		Male	Female	Low	Middle	High
Participated in training for G.E.D.	9.1	11.2	6.7	8.4	8.3	12.1
Participated in job training for at least 1 month	15.1	19.2	10.5	12.2	14.3	17.7
Enrolled in vocational, trade, or business school	8.2	8.6	7.7	11.2	6.7	13.0
Enrolled in junior or community college	4.8	3.5	6.2	2.6	5.7	17.1
Employed (as of spring 1982)	73.1	77.7	66.4	69.4	76.6	82.5
Received public assistance in 1980 or 1981	9.2	7.1	11.8	11.2	9.4	6.7
Sample size	2,289	1,188	1,101	953	748	106

Perhaps as many as one-third of the dropouts had participated in some kind of additional schooling or training after dropping out. A little more than 9 percent had participated in GED training; 15 percent in some kind of job training; 8 percent had enrolled in some kind of vocational training; and about 5 percent had enrolled in a junior or community college. These percentages may well involve duplication since an individual might have engaged in more than one of the activities listed in table 2. In fact, it seems likely that many of those who enrolled in a 2-year college had previously completed GED training.

Almost three-fourths (73 percent) of the dropouts were employed at the time of the first follow-up data collection. However, it should be noted that about 9 percent had received some kind of public assistance either in 1980 or 1981.

A few differences by sex are perhaps worth noting. Relatively more men than women had received job training and were currently employed. Women exceeded men (but not to a statistically significant degree) in enrollment in a 2-year college and receipt of public assistance.

Cognitive test performance level was associated with the likelihood of being currently employed. The percentage of dropouts who were employed was 69 for those in the lowest quartile of test scores, 77 for those in the middle two quartiles, and 82 for those in the top quartile. Evidently, the more able dropouts were more successful in finding a job.

Cognitive test performance level among dropouts was also strongly correlated with likelihood of entering a junior or community college. College entrance rate was far higher for the top quartile students than for the lowest quartile (17 vs. 3 percent, respectively).

Transferring to Another School

Eight percent of the 1980 sophomores had transferred to another secondary school, either in the same or in a different school district, by the time of the first follow-up data collection in spring 1982. The incidence of transferring is of concern to school administrators for it may have an adverse effect both on school administration and on student progress. Students who transfer may well encounter some problems in adjusting to their new school because of variations in curriculum content, for example. The paperwork burden upon administrators is obviously greater when transfers are numerous.

Students may transfer for a variety of reasons such as change of residence, the closing of their original school or its merging with another, or a desire for a different type of school (such as moving from public to private). As shown in table 3, students attending other private schools (i.e., non-Catholic private schools) showed a higher rate of transferring than those attending public schools (22 percent vs. 8 percent). A further examination of the data indicated that among those who transferred out of private schools, about three-fourths went to a public school; by comparison, 9 out

of 10 who transferred out of a public school went to another public school (not shown in table 3).

Table 3. Percentages of 1980 sophomores who had transferred to another school by spring 1982, by selected background characteristics.

Background characteristics ^a	Transferred
All students	8
Sex:	
Male	8
Female	8
Race/ethnicity:	
Hispanic	9
Black	9
White	8
Asian or Pacific Islander	12
American Indian or Alaskan Native	14
Socioeconomic status (SES):	
Highest quartile	10
Middle two quartiles	7
Lowest quartile	8
Cognitive test performance:	
Highest quartile	7
Middle two quartiles	8
Lowest quartile	7
High school program:	
Academic	7
General	8
Vocational	7
Type of school:	
Public	8
Catholic	10
Other private ^b	22
High school community:	
Urban	9
Suburban	9
Rural	7
Geographic region:	
Northeast	7
South	9
North Central	7
West	11
Handicap status:	
Handicapped	
In program	9
Not in program	8
Non-handicapped	8
Parent kept close track of school work:	
Yes	8
No	10

^aBackground characteristics from base-year data are defined in appendix B.

^bEstimates for "other private schools" may be less accurate than others because of small sample size and a low response rate.

A number of other background characteristics, listed in table 3, show some relationships with transfer rates but most of these are not readily explainable. For example, transfer rates were relatively high for Asian Americans and American Indians, for high SES students, and for students in the West.

Early Graduation

The last subgroup of students to be discussed in this chapter is the early graduates: those sophomores of 1980 who graduated prior to the first follow-up data collection in spring 1982. This subgroup accounted for 5 percent of the total sample. On *a priori* grounds one might expect these early graduates to be an elite group of highly motivated or very able students who were able to complete a standard high school program in less than the 4 years normally required. The data in table 4, however, provided little or no evidence to support this expectation. Rates of early graduation appear to be unrelated to most of the variables often found to be associated with academic achievement. For example, students whose parents kept close track of their school work had a lower rate of early graduation than did the other students.

In search of a better understanding of early graduates and the factors which might differentiate them from others, special analyses were performed on responses to certain "write-in questions" in HS&B's Early Graduate Supplement. One question asked the respondent why he or she had decided to graduate early, and another inquired about the requirements which had to be fulfilled for early graduation.

Analysis of responses to these two questions (not shown in tables) suggested that the early graduate group is made up of two disparate subgroups who might be designated as "the very ambitious" and "the very nonambitious." Illustrative of the ambitious student responses are the following: "Had civilian (or military) job plans" (25 percent); "Had school plans" (23 percent); and "Already had the credits" (4 percent). Fifty percent of the early graduates made responses of this sort. Illustrative of the nonambitious student responses are the following: "Tired of high school/didn't like the school" (8 percent); "No plans, just found out it was possible" (10 percent); and "To get married" (3 percent). Twenty-seven percent of the early graduates made responses of this sort.

In response to the question about the requirements that had been imposed for early graduation, the answers suggested that 65 percent had been required to exert special effort, such as attending summer school or extra courses (51 percent) or passing an equivalency examination (5 percent). Twenty-one percent replied, "Nothing special completed or required."

In short, it appears that the early graduate group is composed of both highly motivated, ambitious students and their opposites who found early graduation to be the easiest way of getting out of school.

Table 4. Percentages of 1980 sophomores who graduated early, by selected background characteristics.

Background characteristics ^a	Graduated before spring 1982
All students	5
Sex:	
Male	3
Female	6
Race/ethnicity:	
Hispanic	5
Black	5
White	5
Asian or Pacific Islander	10
American Indian or Alaskan Native	9
Socioeconomic status (SES):	
Highest quartile	4
Middle two quartiles	5
Lowest quartile	4
Cognitive test performance:	
Highest quartile	4
Middle two quartiles	5
Lowest quartile	4
High school program:	
Academic	4
General	5
Vocational	4
Type of school:	
Public	5
Catholic	2
Other private ^b	4
High school community:	
Urban	6
Suburban	4
Rural	5
Geographic region:	
Northeast	5
South	5
North Central	6
West	4
Handicap status:	
Handicapped	
In program	4
Not in program	5
Non-handicapped	5
Parent kept close track of school work:	
Yes	4
No	6

^aBackground characteristics from base-year data are defined in appendix B.

^bEstimates for "other private schools" may be less accurate than others because of small sample size and a low response rate.

Changes in Life Values

Both in the base-year and the first follow-up survey, respondents were asked to indicate the importance they placed on each of a list of 12 "life goals," e.g., "having lots of money," "having children." The response options were: "Not important," "somewhat important," and "very important." As an index of the relative importance placed on each of the life goals, the percentages of respondents who marked "very important" were calculated. Separate calculations were made for students still in school (persisters) and dropouts. Results are shown in table 5.

For those students who were still in school in 1982, declines are evident in such family-related values as giving children better opportunities and living close to parents and relatives (down 3 and 6 percentage points). There were also small but statistically significant declines in the importance

placed on strong friendships and in correcting social and economic inequalities (down 3 and 2 points). None of these changes is very large in absolute terms and the overall impression one gets from the table is that little change occurred.

When we examine the data for the dropouts we again get an impression of minimal change (except for the conspicuous 9-point decline in the importance placed on getting away from this area of the country). It is perhaps worth noting that the dropouts, in contrast with the persisters, showed an increase in the importance placed on marriage and family life, giving children better opportunities, and having children. Dropouts also showed a decrease in concern for having lots of money (but were still more concerned than persisters). Perhaps their experiences in marriage, and/or in employment, inclined them to take a more realistic position on those matters.

Table 5. Percentage of 1980 sophomores who rated various life values as "very important" in spring 1980 and in spring 1982, for persisters and for dropouts.

Life value	Persisters			Dropouts		
	1980	1982	Change	1980	1982	Change
Being successful in my line of work	86.6	87.1	+0.5	79.0	81.8	+2.8
Being able to find steady work	85.9	86.8	+0.9	83.0	80.9	-2.61
Finding the right person to marry and having a happy family life	84.3	84.9	+0.6	80.5	86.7	+6.3
Having strong friendships	83.3	80.8	-2.5	78.3	74.5	-3.8
Being able to give my children better opportunities than I've had	72.0	69.2	-2.8	76.4	81.2	+4.8
Having leisure time to enjoy my own interests	71.1	70.1	-1.0	66.8	63.8	-3.0
Having children	41.3	42.3	+1.0	41.0	44.1	+3.1
Having lots of money	32.2	31.0	-1.2	40.0	34.5	-5.4
Living close to parents and relatives	20.4	14.6	-5.8	18.9	18.7	-0.2
Getting away from this area of the country	13.4	13.2	-0.2	20.6	11.3	-9.2
Working to correct social and economic inequalities	13.4	11.2	-2.3	14.7	12.4	-2.3
Being a leader in my community	9.6	8.3	-1.4	9.6	6.6	-3.0

Cognitive Test Performance

Introduction

A major purpose of the entire High School and Beyond Study is to chart the progress of students through the last 2 years of high school and on into later stages of life. One major area in which they are expected to progress in high school is cognitive growth—a central purpose of formal education.

In designing HS&B, great care was taken to develop tests which, by periodic administration, would be able to detect cognitive growth, particularly in those areas where schooling is expected to make an impact (e.g., mathematics and science), but also in areas (such as verbal skills) which are influenced both by scholastic activities and by general maturation and life experiences. A battery of tests¹ was developed according to these guidelines, and was administered to the 1980 sophomores in 1980 and again in 1982 when most of them were in their senior year. Also included in the 1982 testing were subsamples of those sophomores who had dropped out of school, had graduated early, or had transferred to another school.

The problem of measuring cognitive growth is complex and has been of concern to educational researchers and others for many decades.² Numerous indices of such growth have been developed and employed such as: simple change scores (post-test minus pretest), total score on the post-test, percent of initially incorrect items that were answered correctly on the post-test, percent of students with score increases, etc. Each of these indices has its proponents and critics. None of these indices has been universally accepted as a valid measure of growth, nor do all of them lead to the same conclusions when applied to the same set of data.

For purposes of the present analysis, two measures of growth are employed and will be discussed in the remainder of this chapter: (a) mean scores obtained on the 1982 (post-test) administration, and (b) the percentage of students who earned higher scores on the post-test than on the pretest. Results obtained with each of these measures will be related to school and student characteristics.

¹The tests were developed by Educational Testing Service under contract with the National Center for Education Statistics (NCES). For purposes of this analysis, certain tests were combined to yield measures of: (a) verbal skills, (b) mathematics, and (c) science. For convenience in exposition, each of these measures will be referred to simply as a "test."

²This problem will be a major focus of interest in a study of Excellence in Education, being conducted by the Education Testing Service under contract with NCES.

The 1982 test scores are measures of final (high school) attainment, although it is not possible to determine the portion of attainment that is attributable to the students' high school experience.

On the basis of psychometric considerations, mean performance on these tests was expected to grow from sophomore to senior years to reach 70–80 percent correct.

Actual performance was found to be somewhat less than expected: 28 out of 57 (49 percent) on verbal skills, 14 out of 38 (37 percent) on mathematics, and 10 out of 20 (50 percent) on science.³ Mean scores on these tests are shown in table 6.

Table 6. Mean scores^a on verbal skills, mathematics, and science tests, of 1980 sophomores in 1982, by student status.

Characteristic	Verbal skills ^b	Mathematics ^c	Science
Total	28.3	14.1	9.7
Student status:			
In-school	30.1	15.5	10.2
Dropout	18.6	6.7	7.0
Transfer	28.1	13.8	9.6
Early graduate ^d	27.8	13.3	9.5

^aFormula scores (corrected for guessing).

^bVocabulary, reading, and writing tests.

^cBoth computational and curriculum specific (e.g., geometry) tests.

^dA sophomore cohort member who graduated prior to the spring 1982 data collection.

Not surprisingly, the in-school students (those who were still in the same school in 1982 as in 1980) scored significantly higher on each of the three tests than did the dropouts, the transfers, or the early graduates. The transfers and the early graduates did not differ significantly from each other on any of the three tests.

As is often found, females scored higher than males on the verbal skills measure (31.0 vs. 29.0, respectively), while males surpassed females in mathematics (16.2 vs. 14.5, respectively), and in science (10.8 vs. 9.5, respectively). All of these differences are statistically significant. Mean scores in 1982, as related to various other student characteristics are also shown in table 7.

³The reader should keep in mind that percent correct scores are a function of item difficulty and other psychometric properties of the tests. A mean percent correct score of 50 signifies that the average student got half of the items correct, not that he learned half of what he should have.

Table 7. Mean scores^a on verbal skills, mathematics, and science tests of 1980 sophomores^b in 1982, by selected student characteristics.

Characteristic	Verbal skills ^c	Mathematics ^d	Science
Total	30.0	15.3	10.2
Sex:			
Male	29.0	16.2	10.8
Female	31.0	14.5	9.5
Race/ethnicity:			
Hispanic	20.4	8.9	7.3
American Indian or Alaskan Native	23.0	10.5	8.8
Asian or Pacific Islander	31.6	20.2	11.0
Black	19.8	8.5	6.4
White	33.1	17.4	11.2
Socioeconomic status (SES):			
Highest quartile	37.2	20.9	12.1
Middle two quartiles	30.0	15.1	10.3
Lowest quartile	22.6	9.9	7.9
Handicap status:			
Handicapped			
In program	21.8	10.8	8.1
Not in program	30.1	15.5	10.2
Non-handicapped	30.2	15.5	10.2
Geographic region:			
Northeast	32.2	17.4	10.7
South	26.4	12.4	8.9
North central	31.4	16.6	10.9
West	31.8	16.1	10.8
High school community:			
Urban	27.2	13.4	9.0
Suburban	31.6	16.7	10.6
Rural	29.1	14.4	10.1

^aFormula scores (corrected for guessing).

^bExcludes those who had dropped out of school or graduated before spring 1982.

^cVocabulary, reading, and writing tests.

^dBoth computational and curriculum specific (e.g. geometry) tests.

White and Asian students scored similarly on verbal skills and science. On mathematics, Asian students scored significantly higher than whites (20.2 vs. 17.4, respectively). Both black and Hispanic students scored low in verbal skills and mathematics.

On all three tests, mean scores were positively correlated with socioeconomic status (SES). For example, on the verbal skills test, mean scores for high, middle, and low SES students were 37.2, 30.0, and 22.6, respectively. Students in programs for the handicapped scored lower on each of the three tests.

Demographic differences were also apparent. By region, southern students scored lowest on all three tests. Students attending suburban high schools had the highest mean scores on all three tests while those attending urban schools scored the lowest.

The relationships between test scores in 1982 and type of high school and type of program are shown in table 8. As is usually found, academic program students outperformed the general program students, who in turn outperformed the vocational program students.

Students attending private schools, either Catholic or other private, outperformed public school students—especially on verbal skills and mathematics. Since private schools are known to have a higher proportion of students in academic programs than do public schools, and since academic students tend to score higher on most cognitive tests, it might be supposed that the public-private score differences found here result chiefly from those facts. However, when comparisons were made based only on academic students in the two categories of schools, the private school students still were significantly superior on verbal skills and mathematics, but not on science. The differences between Catholic and other private school students were not significant on any of the three tests.

Test Score Increases: 1980–82

Although the tests used in this study were non criterion-referenced tests in the strict sense of that term, they were designed to measure verbal skills, mathematics, and science taught in high school curricula. It is therefore reasonable to consider as a measure of growth the percentage of sophomore cohort members who earned a higher score on the 1982 testing than on the 1980 testing. It seems reasonable to conclude that the higher this percentage, the greater the likelihood that cognitive growth had occurred—although the magnitude of such growth cannot be assessed by means of this simple statistic.

In examining each of the tables to follow, the reader should keep in mind that even if no growth actually took place between pre- and post-test, the expected value for percentage showing an increase is about 50—that is, without learning, 50 percent of the students would be expected to increase their score by chance, and 50 percent would obtain poorer scores, also by chance. Whenever the percentage of students with score increases is appreciably greater than 50, it can be concluded that some cognitive growth occurred.

Table 8. Mean scores^a on verbal skills, mathematics, and science tests of 1980 sophomores^b in 1982, by high school type and program.

High school type	High school program	Verbal skills ^c	Mathematics ^d	Science
All	All	30.1	15.5	10.2
Public	All	29.4	14.9	10.1
Catholic	All	36.7	20.1	11.3
Other private ^e	All	37.4	20.8	11.8
All	Academic	36.3	20.5	11.7
All	General	26.4	12.0	9.4
All	Vocational	22.1	9.2	8.1
Public	Academic	35.7	20.1	11.7
Catholic	Academic	38.6	21.7	11.8
Other private ^e	Academic	41.6	24.3	12.7

^aFormula score (corrected for guessing).

^bExcludes those who had dropped out of school, transferred to another school, or graduated before spring 1982.

^cVocabulary, reading, and writing tests.

^dBoth computational and curriculum specific (e.g. geometry) tests.

^eEstimates for "other private schools" may be less accurate than others because of small sample size and a low response rate.

The percentage of sophomores who had higher scores on the second testing are shown in table 9. The overall impression conveyed by this table is that the evidence for growth is surprisingly weak. Only 56 percent of the students increased their science score. For verbal skills and mathematics, the corresponding values were 78 and 62. These data suggest that a surprising number of students learned very little in these areas subsequent to their sophomore year. Of course, performance on these tests is to some extent a function of how much additional coursework in these areas students had taken subsequent to their sophomore year. It is assumed that growth is actively promoted by coursework in these areas, and that if no further courses are taken some loss in retention is to be expected. This explanation is less applicable in the verbal skills area, however, since continual reading, speaking, and writing almost certainly take place regardless of what courses one takes, or whether any courses are taken. This is consistent with the fact that the percentage of students with increased scores in 1982 was highest for verbal skills (78). This value was significantly higher than the value for mathematics (62) which in turn was significantly higher than the value for science (56).

If we look at the various subgroups of students (table 9) we see that the in-school students (those who were still in the same school in 1982 as in 1980) showed the strongest evidence of growth. They ranked higher than the dropouts (in terms of percentage with score increases) on all three tests.

Transfer students ranked significantly lower than in-school students on verbal skills, but not on mathematics or

science. Surprisingly, the early graduates ranked lower than in-school students on verbal skills and mathematics (but not significantly lower on science). The pattern of percentages for early graduates was actually very similar to that for dropouts. This is consistent with the thesis that early graduates are, in many instances, relatively weak or unmotivated students (chapter II).

Table 9. Percentages of 1980 sophomores with a higher score^a in 1982 than in 1980 on the verbal skills, mathematics, and science tests, by student status.

Characteristic	Verbal skills ^b	Mathematics ^c	Science
Total	77.7	62.3	56.3
Student status:			
In-school	79.8	64.4	57.1
Dropout	70.3	53.7	52.4
Transfer	72.9	60.7	56.8
Early graduate	70.7	53.6	53.2

^aFormula score (corrected for guessing).

^bVocabulary, reading, and writing tests.

^cBoth computational and curriculum specific (e.g., geometry) tests.

On the verbal skills test, females outperformed males, in terms of percentage with score increases (table 10). On the

Table 10. Percentage of 1980 sophomores* with a higher score^b in 1982 than in 1980 on verbal skills, mathematics, and science tests, by selected student characteristics.

Characteristic	Verbal skills ^c	Mathematics ^d	Science
Total	79.2	64.1	57.1
Sex:			
Male	79.9	66.0	58.0
Female	80.6	62.2	56.2
Race/ethnicity:			
Hispanic	74.1	57.2	56.7
American Indian or Alaskan Native	72.3	62.8	56.8
Asian or Pacific Islander	78.5	71.4	68.0
Black	76.8	62.6	56.4
White	80.5	65.3	57.1
Socioeconomic status (SES):			
Highest quartile	82.6	70.7	57.1
Middle two quartiles	79.4	63.3	57.4
Lowest quartile	76.0	58.7	56.7
Handicap status:			
Handicapped			
In program	74.4	61.4	58.5
Not in program	77.6	63.4	56.7
Non-handicapped	80.0	64.4	57.1
Geographic region:			
Northeast	80.2	67.6	58.6
South	77.6	62.7	56.1
North central	79.4	62.8	56.2
West	81.0	64.4	58.8
High school community:			
Urban	77.3	63.8	58.0
Suburban	80.7	65.8	57.2
Rural	78.2	61.7	56.4

*Excludes those who had dropped out of school or graduated before spring 1982.

^bFormula score (corrected for guessing).

^cVocabulary, reading, and writing tests.

^dBoth computational and curriculum specific (e.g. geometry) tests.

mathematics and the science tests, however, males were superior. These findings are consistent with those reported earlier in this chapter.

The same index (percentage with score increases) showed the usual strong positive relationship with SES level for verbal skills and mathematics, but not significantly so for science. This index of growth was not related to handicap status for mathematics or science. In other words, for these two tests, the index was nearly the same for the handicapped as for the non-handicapped students. However, both handicapped groups had lower indices than non-handicapped students on verbal skills.

The relationships between percent with increased scores and type of high school and type of program are shown in table 11. Students attending Catholic schools outperformed public school students on verbal skills and mathematics but not significantly so on science.

Table 11 also shows that on all three tests academic program students outperformed general program students. If attention is restricted to academic program students, those attending other private schools scored significantly higher on the verbal skills test than those attending Catholic schools. The Catholic school students, in turn, outperformed the public school students on this test. Academic students in Catholic schools scored higher on mathematics tests than those in public schools. Differences on the science tests were not significant.

Table 11. Percentage of 1980 sophomores^a with a higher score^b in 1982 than in 1980 on verbal skills, mathematics, and science tests, by high school type and program.

High school type	High school program	Verbal skills ^c	Mathematics ^d	Science
All	All	79.8	64.4	57.1
Public	All	79.1	63.7	56.9
Catholic	All	85.3	71.2	59.2
Other private	All	87.2	68.2	57.9
All	Academic	83.2	71.0	58.7
All	General	77.7	59.0	56.0
All	Vocational	75.5	55.9	55.1
Public	Academic	82.4	70.5	58.6
Catholic	Academic	86.1	74.1	59.7
Other private	Academic	89.4	72.8	59.6

^aExcludes those who had dropped out of school, transferred to another school, or graduated, before spring 1982.

^bFormula score (corrected for guessing).

^cVocabulary, reading, and writing tests.

^dBoth computational and curriculum specific (e.g., geometry) tests.

Summary

In this chapter we have examined the evidence for cognitive growth during the last 2 years of high school, using two measures which were based on tests specifically designed to reveal growth at that level of education. Based on the evidence presented, we must conclude that

relatively little growth occurred. This conclusion is consistent with other indications⁴ that the quality of education in American high schools has been declining for a number of years.

⁴See, for example, *A Nation at Risk: The Imperative for Educational Reform*. U.S. Department of Education, National Commission on Excellence in Education (NCEE), April 1983.

Chapter IV

High School Experiences

When the 1980 sophomores filled out the first follow-up questionnaires in spring 1982, most of them were approaching the end of 4 years of high school. This chapter examines various aspects of that high school experience and is based on only those students who were still in school. In other words, those who had graduated early or had dropped out were excluded from this analysis. Those who had transferred to another school and were still in attendance were included.

Topics covered in this chapter include: credits earned, grades, homework, participation in Federal aid programs, participation in certain other educational programs, and disciplinary problems. The sections concerned with credits and grades are based on analyses of high school transcripts which were supplied by the schools after the 1981-82 academic year concluded. The other sections in this chapter are based on student questionnaire responses in the first follow-up survey in spring 1982.

Credits Earned

The average 1980 sophomore who completed high school in 1982, earned a total of 21.0 credits (table 12). Females earned more than males (21.4 vs. 20.6, respectively) and academic program students earned more (22.1) than general or vocational program students (20.5 and 20.7, respectively). It is not surprising that the academic program students, most of whom were presumably preparing themselves for college work, took more courses than others.

More credits were earned in English (mean = 3.6) than in any other area. "Personal and social development" (mean = 2.8) ranked second. This field includes such courses as physical education, individual sports, personal adjustment, driver education, and health science. The fact that such a large number of credits were earned in personal and social development is consistent with the recent finding by Adelman¹ of a substantial shift, over the past 15 years, in the distribution of high school credits—with academic courses showing a marked decline and personal development courses a marked increase.

The third ranking field of study was social sciences, (2.6) followed by mathematics (2.5) and physical and life sciences (total of 1.8). Foreign languages accounted for 1.0 credit while computer and information sciences accounted for only .1 credit. Fairly substantial amounts of credit were earned in various applied or vocational areas such as: business (1.7), trade and industry (.9), and home economics

¹*Devaluation, Diffusion and the College Connection: A Study of High School Transcripts, 1966-1981*, by Clifford Adelman, National Institute of Education (NIE), 1983.

(.7). Visual and performing arts accounted for an average of 1.4 credits.

The differences in average credits earned, by sex, are small. The traditional dominance of males in mathematics and science is not evident here—the mean number of credits earned in these fields is almost identical for both sexes. Females did exceed males, however, in English (3.7 vs. 3.5, respectively) and took about 50 percent more foreign language courses (1.2 vs. .8, respectively).

The largest differences were in the vocational areas. Females took more business courses than males (2.4 vs. 1.0, respectively), due primarily to their high representation in typing and secretarial courses. Females also took more home economics (1.1 vs. .3, respectively) but less trade and industry (.2 vs. 1.6, respectively), industrial arts (less than .05 vs. .5, respectively) and agriculture (.1 vs. .3, respectively). Finally, females took more coursework in the visual and performing arts (1.6 vs. 1.2, respectively), but less in personal and social development (2.6 vs. 2.9, respectively).

The patterns of coursetaking for general and vocational program students were rather similar, but both differed considerably from the pattern of academic program students (table 12). The academic students earned more credits in mathematics (3.2 vs. 2.2 and 2.0, respectively); philosophy, religion, and theology (.4 vs. .1 and .1, respectively); physical and life sciences (total of 2.6 vs. 1.5 and 1.2, respectively); and foreign languages (1.8 vs. .6 and .4, respectively). Most of these areas fall into the category the National Commission on Excellence in Education called "New Basics." The Commission² recommended that the curriculum requirements for high school graduation be strengthened to include the following: 4 years of English, 3 years of mathematics, 3 years of science, 3 years of social studies, and .5 years of computer science. For the "college bound," the Commission recommended, in addition, 2 years of foreign language.

Homework

It is generally believed that excellence in educational achievement requires study outside of the regular school day. In recent decades it has been suspected that homework has become less common than in the past. The 1982 HS&B data support this suspicion. Based on the student self-reports, only 29 percent of the sophomores spent at least 5 hours per week on homework, in 1982 (table 13). This percentage was higher for females than for males (38 vs. 23, respectively), and was much higher for academic program students (46) than for general and vocational students (18 and 19, respectively).

As would be expected, this index of time spent on homework was positively correlated with cognitive test performance. This relationship is evident for both males and

²*A Nation at Risk: The Imperative for Educational Reform*, U.S. Department of Education, National Commission on Excellence in Education (NCEE), National Institute of Education (NIE), April 1983.

Table 12. Mean number of credits earned in various fields of study by 1980 sophomores during 4 years of high school (1978-79 through 1981-82), by sex of student and high school program.^{a,b}

Field of study ^c	All students	Sex		High school program		
		Male	Female	Academic	General	Vocational
Total ^d	21.0	20.6	21.4	22.1	20.5	20.7
English	3.6	3.5	3.7	3.9	3.6	3.4
Mathematics	2.5	2.6	2.5	3.2	2.2	2.0
Social sciences	2.6	2.6	2.5	2.6	2.6	2.4
Philosophy, religion, theology	.2	.2	.3	.4	.1	.1
Psychology	.1	.1	.2	.2	.1	.1
Area and ethnic studies	.3	.3	.3	.3	.2	.3
Physical sciences	.9	1.0	.9	1.4	.7	.5
Life sciences	.9	.9	1.0	1.2	.8	.7
Foreign languages	1.0	.8	1.2	1.8	.6	.4
Computer and information sciences	.1	.1	.1	.1	.1	.1
Business	1.7	1.0	2.4	1.2	1.6	2.7
Trade and industry	.9	1.6	.2	.5	1.0	1.3
Home economics	.7	.3	1.1	.4	.9	.9
Industrial arts	.3	.5	*	.2	.3	.4
Communications	.2	.1	.2	.2	.2	.1
Agriculture	.2	.3	.1	.1	.2	.4
Multi-interdisciplinary studies	.3	.4	.3	.3	.4	.4
Visual and performing arts	1.4	1.2	1.6	1.5	1.6	1.1
Personal and social development	2.8	2.9	2.6	2.4	3.0	2.9
All other categories ^e	.3	.3	.4	.2	.3	.5

^aLess than .05 percent.

^bExcludes those who had dropped out of school or graduated before spring 1982.

^cEstimates in this table were derived from transcripts. Only courses for which the student received at least a D minus or pass grade (pass-fail grading system) were included.

^dThese fields correspond to those presented in *A Classification of Secondary School Courses*, by M. J. Ludwig *et al.*, Evaluation Technologies Inc., NCES 82-242, July 1982.

^eDetails may not equal totals because of rounding.

^fResidual is composed of architecture and environmental design; consumer, personal and miscellaneous services; education; health; law; liberal/general studies; library and archival studies; military sciences; parks and recreation; and public affairs and protective services.

females, and within each type of high school program. Since these cognitive tests were designed to measure scholastic achievement, it is reassuring to observe these positive correlations.

Students who worked for pay were less likely to spend time on homework than those who did not work; and the more hours worked, the less time on homework. This relationship was fairly strong for males and for academic program students, but was rather weak for females and for students in a nonacademic program. Actually, few nonacademic students spent as much as 5 hours per week on homework whether or not they worked.

Time spent watching TV, as might be expected, was on

the whole negatively correlated with time spent on homework. The relationship was rather strong for academic program students, but nonexistent for nonacademic students. It would appear that so few nonacademic students spent time on homework that the chances of that variable correlating with anything are rather slim.

Finally, students attending private schools, either Catholic or other private, were more likely than others to spend time on homework. This held true within each of the high school programs. However, as noted earlier, academic program students are more likely than others to spend time on homework, and there are relatively more academic program students in private than in public schools.

Table 13. Percentage of 1980 sophomores who spent at least 5 hours per week on homework in spring 1982, by cognitive test performance, hours worked for pay, time spent watching TV, and school type, by student sex and high school program.*

Subgroups	All students	Sex		High school program		
		Male	Female	Academic	General	Vocational
All students	29	23	38	46	18	19
Cognitive test performance:						
High	44	35	52	52	23	24
Medium	26	19	33	41	18	19
Low	18	14	22	31	16	16
Hours worked for pay last week:						
None	33	29	36	51	21	21
1-29 hours	30	22	35	46	17	19
30 or more hours	23	17	34	40	18	16
Time spent watching TV on weekdays:						
None	37	27	47	58	15	19
Some, but less than 3 hours per day	31	24	37	48	18	18
3 or more hours per day	26	21	31	41	19	19
Type of school: ^b						
Public	27	21	33	44	17	18
Catholic	46	38	52	52	29	32
Other private ^c	55	47	62	64	25	43

*Excludes those who had dropped out of school or graduated before spring 1982.

^bExcludes students who transferred from one school type to another between spring 1980 and spring 1982.

^cEstimates for "other private schools" may be less accurate than others because of small sample size and a low response rate.

Grades

Grades are the time-honored indicator of academic achievement, although in recent decades the phenomenon of grade inflation has probably somewhat attenuated the importance of this indicator. Nevertheless, no other simple quantitative index of scholastic attainment is generally available. This section examines the grades earned by the sophomore cohort members throughout their 4 years of high school.

Using course grades reported on high school transcripts, a grade point average (GPA) was calculated for each student, using a procedure which compensated for variations among schools in grading systems although not for variations in grading standards. A GPA of 4 signifies A work, 3 signifies B work, 2 signifies C work, and 1 signifies D work.

The overall GPA for the sophomore cohort was 2.6 (table 14) which signifies work at a B minus level. The GPA for females was about one-fifth of a grade higher than that for males. This superiority of females held true regardless of

cognitive test performance level and regardless of time spent on homework. This finding is consistent with the traditional finding that, at the pre-college level, females generally receive higher grades than males.

Academic program students earned higher grades, in spite of the fact that many of the courses they took were generally regarded as more difficult than nonacademic courses. Even when controlling for cognitive test performance, academics made significantly higher grades.

GPA was also highly correlated with cognitive test performance. The upper quartile on this variable had a GPA almost a full grade higher than the lowest quartile. GPA was also positively correlated with homework effort but was not related to amount of time spent working for pay, or to type of school attended (public vs. private).

Participation in Federal Programs

For the past several decades, the Federal Government has funded a number of special programs, to help make it

Table 14. Mean 4-year grade point average of 1980 sophomores at end of 1981-82 school year, by selected student characteristics

Subgroups	All students	Sex		High school program		
		Male	Female	Academic	General	Vocational
Total	2.6	2.5	2.7	2.9	2.4	2.4
Cognitive test performance:						
Highest quartile	3.1	2.9	3.2	3.2	2.9	2.9
Middle two quartiles	2.6	2.4	2.7	2.7	2.5	2.5
Lowest quartile	2.2	2.1	2.3	2.3	2.2	2.2
Time spent on homework:						
Less than 1 hour	2.4	2.3	2.5	2.6	2.3	2.3
1 to 5 hours	2.6	2.5	2.7	2.8	2.4	2.4
More than 5 hours	2.9	2.8	2.9	3.0	2.6	2.6
Hours worked for pay last week:						
None	2.6	2.5	2.7	2.9	2.4	2.4
1-29 hours	2.7	2.6	2.8	2.9	2.5	2.5
30 or more hours	2.5	2.4	2.7	2.8	2.4	2.4
Time spent watching TV on weekdays:						
None	2.7	2.6	2.9	3.0	2.4	2.4
Some, but less than 3 hours per day	2.7	2.6	2.8	3.0	2.5	2.5
3 or more hours per day	2.5	2.4	2.6	2.8	2.4	2.4
Type of school:						
Public	2.6	2.5	2.7	2.9	2.5	2.4
Catholic	2.7	2.6	2.8	2.8	2.4	2.4
Other private ^a	2.7	2.6	2.8	2.9	2.5	2.0

^aEstimates for "other private schools" may be less accurate than others because of small sample size and a low response rate.

possible for disadvantaged students to finish high school. The first follow-up questionnaire asked the respondents whether they had participated in their junior or senior years in any of the following such programs: Cooperative Vocational Education Program (Co-op Program), Vocational Education Work-Study Program, Talent Search, Upward Bound, and Comprehensive Employment Training Act (CETA).

Over one quarter of the 1980 sophomores had participated in at least one of the five programs by spring 1982 (table 15). Nineteen percent had participated in one of the vocational education programs, 9 percent in CETA, and 5 percent in either Talent Search or Upward Bound. This table also indicates that students' self-identification of their high school program as academic, general or vocational does not fully reflect what actually occurred since 8 percent of the academic and 19 percent of the general also indicated they

were participating in vocational cooperative or vocational work-study activities.

Since these programs were designed to assist needy students, it is not surprising that overall participation rates were related (negatively) to SES level. Minority group members (except Asians) also had higher participation rates than whites. Both statements apply strongly to participation rates in the vocational education programs and CETA, but Talent Search and Upward Bound were related only to race/ethnicity.

Participation in Remedial, Honors, or Bilingual Programs

In recent years, remedial programs, particularly in English and mathematics, have been relatively common although they were virtually unheard of 20 years ago. Twenty-

Table 15. Percentage of 1980 sophomores* who had participated in various Federally funded high school level programs as of spring 1982, by SES, student race/ethnicity, high school program, and school type.

Subgroups	Any of five programs	Either Cooperative Vocational Education or Vocational Education Work-study	Either Talent Search or Upward Bound	CETA work program
All students	28	19	5	9
Socioeconomic status (SES) (1980):				
Highest quartile	16	11	4	3
Middle two quartiles	27	19	4	7
Lowest quartile	39	24	5	18
Race/ethnicity:				
White	23	18	3	5
Hispanic	36	23	6	16
Black	45	23	10	26
Asian or Pacific Islander	17	9	4	8
American Indian or Alaskan Native	47	26	15	33
High school program:				
Academic	16	8	5	5
General	28	19	4	11
Vocational	43	35	4	11
Type of school: ^b				
Public	30	20	5	10
Catholic	10	5	3	3
Other private ^c	10	6	3	2

*Excludes those who had dropped out of school or graduated before spring 1982.

^bExcludes students who transferred from one school type to another between spring 1980 and spring 1982.

^cEstimates for "other private schools" may be less accurate than others because of small sample size and a low response rate.

nine percent of the sophomore cohort members had taken remedial English, 21 percent had taken remedial mathematics, and 17 percent had taken both (table 16). As expected, fewer academic program students than nonacademic program students had taken remedial courses. The percentage who had taken an advanced or honors program, however, was about three times as high for academic as for nonacademic students.

Surprisingly, nine percent of the respondents reported having been in a "bilingual or bicultural program." Even more surprising is the fact that the percentage of students taking such programs was significantly higher for academic than for nonacademic students. One would expect very few academic program students to be in bilingual programs if the programs were exclusively for students lacking in English proficiency. It seems most

likely that many students who made this response were referring not only to programs that are solely bilingual, but also to courses that are strongly bicultural in which the art, history, and culture of different countries are compared.

Involvement in Discipline Problems

Three different questionnaire items dealt with respondent involvement in disciplinary problems (table 17). Overall, 14 percent of the students reported that they had "disciplinary problems in school during the past year." Also, 14 percent reported having been "suspended or put on probation for disciplinary reasons." Finally, 41 percent reported that they cut a class "every once in a while."

Table 16. Percentage of 1980 sophomores* who took a remedial, honors, or bilingual program in their junior or senior years, by high school program.

Course or program	All students	High school program		
		Academic	General	Vocational
Remedial:				
English	29	15	38	37
Mathematics	21	11	28	27
Both English and mathematics	17	8	22	21
Advanced/honors program:				
English	26	43	16	15
Mathematics	21	37	12	11
Both English and mathematics	14	26	7	6
Bilingual or bicultural:				
	9	13	8	6

*Excludes those who had dropped out of school or graduated before spring 1982.

The percentage of students who had been suspended or put on probation was almost twice as high among non-academic as among academic students (16 and 17 vs. 8 percent, respectively). The other two indicators of disciplinary problems also show poorer behavior on the part of the nonacademics. Cutting class, but neither of the other indicators, varied significantly by school size, increasing from 33 percent in small schools to 50 percent in large ones. Cutting class was only about half as prevalent among Catholic school students (22 percent) as among public and other private school students (43 and 44 percent, respectively). Finally, cutting class was most prevalent among general program students (48 percent) and least prevalent among academic program students (35 percent). It should be noted that cutting class does not always signify a discipline problem since many schools allow a modest number of cuts.

Summary

The contents of this chapter are too diverse to be properly summarized. It may be useful, however, to restate a few highlights from the findings:

- Students in an academic high school program surpassed other students in most areas examined, including (a) total number of credits earned, (b) number of credits earned in mathematics and science, (c) hours spent on homework, (d) grade point average, and (e) participation in honors programs. Academic students participated less often than others in remedial programs and in Federal aid programs.
- Most of the sex differences observed were consistent with those traditionally found or hypothesized. An exception was that mathematics was taken by approximately equal percentages of men and women.
- Participation rates in Federal student aid programs were negatively related to SES levels, as expected.

Table 17. Percentage of 1980 sophomores* involved in selected disciplinary problems, by school size, school type, and high school program.

Characteristic	Had disciplinary problems ^b	Suspended or put on probation	Sometimes cuts class
All students	14	14	41
School size:^c			
Less than 200	13	13	33
201 to 600	14	14	42
More than 600	15	13	50
Type of school:^d			
Public	14	14	43
Catholic	10	12	22
Other private ^e	12	12	44
High school program (1982):			
Academic	9	8	35
General	18	17	48
Vocational	16	16	41

*Excludes those who had dropped out of school or graduated before spring 1982.

^bDuring the last year.

^cSize of 1980 sophomore class.

^dExcludes students who transferred from one type to another between spring 1980 and spring 1982.

^eEstimates for "other private schools" may be less accurate than others because of small sample size and a low response rate.

Chapter V

Activities Outside Of School

As mentioned in chapter II, 86 percent of the 1980 sophomores were still in high school in spring 1982. The vast majority of these were not only going to school but were also participating in a variety of extra curricular activities in or out of school, and many were working for pay outside the home. In this chapter, these non-school activities are described.

Employment

In spring 1982, 70 percent of the sophomore cohort members who were still in school were also employed,

typically part-time (table 18). Thirteen percent reported that they were "unemployed" (which means that they were seriously interested in working but had been unable to find employment). Thus, a total of 83 percent of the respondents were in the labor force.¹ This figure is considerably higher than the corresponding figure (76 percent) for the 1980 senior cohort members 2 years earlier (not shown in table). Evidently the tendency to seek gainful employment while still in high school is increasing.

The typical employed student was working 18 hours per week, which was considerably less than the 20.7 hours per week reported by the 1980 seniors at the time of the base-year survey. It is interesting to note that a greater number of these respondents were working than was true of seniors in 1980, but they typically devoted less time to work. The

¹Labor force is defined as the sum of all persons who are employed and all who are unemployed but are actively seeking employment.

Table 18. Percentage of 1980 sophomores* who in 1982 were employed or unemployed and the percent of the employed students who had received on-the-job training, by sex, race/ethnicity, high school program, and community type.

Characteristic	All Sophomores		Employed Sophomores			
	Percent unemployed	Percent employed	Average hours worked per week	Average earnings per week	Average earnings per hour	Percent receiving on-the-job training
All Students	13	70	18.16	\$66.08	\$3.48	38
Sex:						
Male	13	72	19.39	72.79	3.62	38
Female	13	68	16.87	59.73	3.35	38
Race/ethnicity:						
Hispanic	15	66	18.73	69.27	3.53	41
Black	22	56	17.92	66.41	3.48	45
White	11	73	18.09	65.61	3.48	37
Asian or Pacific Islander	15	54	17.79	65.67	3.60	34
American Indian or Alaskan Native	20	52	19.74	67.85	3.34	42
High school program:						
Academic	12	69	16.43	60.27	3.48	35
General	14	68	18.75	68.15	3.47	37
Vocational	13	74	19.83	71.59	3.50	43
High school community:						
Urban	15	67	18.62	69.16	3.53	41
Suburban	13	72	18.22	66.74	3.54	38
Rural	12	69	17.76	63.14	3.37	36

*Excludes those who had dropped out of school or graduated before spring 1982.

typical 1980 sophomore who was employed in 1982 was earning \$3.48 per hour, which was slightly more than the minimum legal hourly wage of \$3.35. Thirty-eight percent were receiving on-the-job training.

Although males were just as likely as females to be unemployed, they were *more* likely to be employed, to work more hours per week, and to earn higher hourly wages.

In some respects, the employment picture was better for whites than for the other racial/ethnic groups. Whites had a significantly higher employment rate and a lower unemployment rate than did blacks or Hispanics. On the other hand, average earnings per week were slightly (but not significantly) lower for whites than for blacks. Hispanics actually had higher average earnings per week than did whites. Blacks and Hispanics more often than whites received some training while on the job.

As might be expected, students in a vocational high school program were more likely to be employed than were those in an academic or general program. It seems likely that many of these were participating in some kind of cooperative work experience program. Consistent with this notion is the fact that vocational students also worked more hours per week and received more job training. Their hourly wage, however, was not significantly higher than that of the other employed students.

Unemployment was significantly higher among urban students than among suburban or rural (15 percent vs. 13 and 12 percent, respectively). Rural youth earned less per hour than other employed students.

Types of Job Held

As would be expected, most of the jobs held by these students were relatively low-skilled such as lawnwork, baby-sitting, waiting on tables, store clerk/cashier, etc. (table 19).

Differences in jobs held by sex were quite pronounced. Male students far outnumbered females in the following kinds of jobs: lawn, farm, gas station, skilled trades, manual labor, and delivery. Females outnumbered males in baby-sitting, office clerk, store clerk, and hospital work. Differences were minimal in waiter or waitress work.

Miscellaneous Non-scholastic Activities

Many students engaged in a variety of non-scholastic activities other than employment. Slightly more than half (52 percent) of the 1980 sophomores were participating in some kind of team sport activity, either in or out of the school setting in 1982 (table 20). Not surprisingly, team sports activities were more common among males than

Table 19. Percentage of employed 1980 sophomores* holding various types of jobs in spring 1982, by sex.

Type of job	Males	Females
Total	100	100
Lawn work or odd jobs	8	1
Waiter, waitress, bus boy or cook	19	20
Baby-sitting or child care	1	14
Farm or agricultural work	8	1
Factory work (unskilled or semi-skilled)	4	1
Gas station, car wash, or auto repair work	8	*
Skilled trade	8	1
Other manual labor	13	4
Store clerk, salesperson or cashier	14	27
Office or clerical work	1	16
Hospital or health	1	5
Delivery jobs	4	*
Other	13	9

*Less than .5

*Excludes those who had dropped out of school or graduated before spring 1982.

percent vs. 50 and 41 percent, respectively). It seems likely females (62 vs. 42 percent, respectively). It is somewhat surprising to find that academic program students were more often involved in sports than were the nonacademics (62 that the vocational students, because of their higher rate of employment, had less free time to devote to sports.

The most common activity listed in table 20 is "reading the front page of the newspaper at least once or twice per week" which was reported by 69 percent of all students. This activity was also more common among males than females, and among academic program students than among others. Going out on dates was also common (61 percent of all students).

Summarizing, males were more likely than females to participate in sports and reading the front page of the newspaper. Females were more likely than males to participate in "intellectual activities" (subject matter clubs or school newspaper work), performing arts, reading for pleasure, and community service. Academic students were more likely than others to participate in sports, intellectual activities, performing arts, community service, reading for pleasure, and reading the front page of the newspaper. It is interesting that the only activity in which academic students were not more heavily involved was "going out on dates."

Table 20. Percentage of 1980 sophomores^a who in spring 1982 were participating in various types of activities either in or out of school, by sex and high school program.

Type of activity	All students	Sex		High school program		
		Males	Females	Academic	General	Vocational
Team sports	52	62	42	62	50	41
Intellectual ^b	44	35	53	61	34	34
Performing arts ^c	34	26	43	41	33	26
Community service ^d	39	34	43	44	35	35
At least once or twice per week						
Reading for pleasure	51	44	57	59	46	44
Going out on dates	61	60	61	58	62	63
Reading the front page of newspaper	69	70	67	76	64	64

^aExcludes those who had dropped out of school or graduated before spring 1982.

^bIncludes participation in honorary or subject matter clubs, student government activities, or work on school newspaper, yearbook, etc.

^cIncludes band or orchestra, chorus or dance, and debating or drama.

^dIncludes church, youth group, or service club, and other types of community service activities.

Chapter VI

Plans For College

When the 1980 sophomores who were still in school in spring 1982 completed the follow-up questionnaire, they were facing an important transition point in their lives. From 12 years of rather highly organized schooling, they faced probable graduation from high school and, with that event, the need to plan what they would do with their lives. Should they go on to college, or vocational school? Should they forget about school and seek full-time employment? Should they try to get married and perhaps start a family?

About half of these respondents expected to enroll in some kind of college work in the year ahead—either academic or vocational or technical. This chapter describes their plans for college, how they expected to finance such schooling, and the fields of study they expected to pursue.

Who Planned to Enter College

Although overall about 50 percent of the students expected to enter college in the following year, the percentage varied greatly as a function of student characteristics (table 21). As would be expected, the rate was strongly related to socioeconomic status (SES). The percentages for high, middle, and low SES students were 74, 47, and 28, respectively. In part, this may be because high SES families have a tradition of sending their children to college and because they find it financially far easier to do than do middle or low SES groups.

Cognitive test performance is also related to going to college—76 percent of those in the top quartile expected to enter college compared with 25 percent of those in the lowest quartile. One would expect the more able students to be more likely to aspire to college. Among racial/ethnic groups, Asians had the highest rate (74 percent) as compared with only 52 percent for whites. Blacks, American Indians, and Hispanics had rates of 46, 39 and 35 percent, respectively. The difference between the rates for Indians and Hispanics was not statistically significant.

Consistent with data reported earlier, females showed a greater tendency than males to aspire to college (54 vs. 45 percent, respectively).

Students who were in an academic high school program (based on self-reports in 1980) were far more likely than others to aspire to college. This is not surprising, of course, since an academic program is essentially college preparatory. The percentages of academic, general, and vocational program students who aspired to college were 72, 41, and 28, respectively.

Students attending Catholic or other private schools were more likely than public school students to plan to enroll in college. This is to be expected since the private schools

generally have proportionately far more students in academic programs than do public schools.

Table 21. Percentage of 1980 sophomores^a who, in spring 1982, planned to enter college in the year after high school, by selected student characteristics.

Student characteristic	Percentage planning to enter college in year after high school
All students:	49.7
Socioeconomic status (SES):	
Highest quartile	73.9
Middle two quartiles	46.7
Lowest quartile	28.4
Race/ethnicity:	
Hispanic	35.1
Black	46.0
White	52.3
Asian or Pacific Islander	74.5
American Indian or Alaskan Native	39.2
Cognitive test performance:	
Highest quartile	76.2
Middle two quartiles	44.8
Lowest quartile	24.6
Sex:	
Male	44.8
Female	54.5
High school program (1980):	
Academic	72.0
General	41.4
Vocational	27.9
Type of school:	
Public	47.3
Catholic	70.0
Other Private	68.2

^aExcluding those who had dropped out of school or graduated, before spring 1982.

Plans for Financing College Costs

Almost three-fourths (71 percent) of the college-bound sophomores expected, in 1982, to utilize one or more kinds of financial aid programs to meet the costs of college attendance (table 22). This expectation was strongly related to SES; 85 percent of the low SES students expected to use an

Table 22. Percentages of 1980 sophomores who, in spring 1982, planned to use any of various types of financial aid programs to finance their college costs, by socioeconomic status (SES).

Type of financial aid program	All students	Socioeconomic status		
		Low	Middle	High
Scholarship, grant, loan, or work program	70.7	84.6	74.4	63.3
Federal	54.6	75.9	60.0	43.0
Non-Federal	57.6	63.6	60.9	53.7
Scholarship or grant	53.9	72.0	57.1	45.7
Federal	34.7	60.9	39.6	21.1
Non-Federal	41.4	48.2	43.2	39.1
Loan	46.0	53.8	50.0	40.4
Federal	26.6	35.6	30.2	20.9
Non-Federal	39.1	42.6	42.7	35.1
Work program (e.g., CETA)	32.6	49.1	36.1	25.2

aid program as compared with 74 and 63 percent of the middle and high SES students.

Overall, slightly but significantly more students expected to use non-Federal as compared with Federal programs. Low SES students were much more likely than high SES students to look toward Federal programs for such aid (76 vs. 43 percent, respectively). A similar, but less marked, relationship with SES level was also evident with respect to non-Federal programs.

Evidently, scholarships and grants were more popular than other types of aid programs. This is not surprising since they involve neither expenditure of time nor commitment for future repayment. Overall, 54 percent of the respondents expected to use this type of aid as compared with 46 percent for loans and 33 percent for work programs.

Respondents were also asked in the spring 1982 follow-up questionnaire, whether they planned to use any of various specific Federal student aid programs for their planned college work. Provision was made for students to indicate whether they know too little about the program to answer. Table 23 shows the percentage of students who were knowledgeable about each program and the percentage who planned to make use of each.

Each of the programs listed in table 23 was known to at least two-thirds of the respondents. The best known programs were College Work-Study (83 percent) and CETA (80 percent), followed by Cooperative Education (78 percent), Pell grants (77 percent) and Guaranteed Student Loans (73 percent).

The College Work-Study program was the most popular, judging from the number of respondents who expected to use it (30 percent). Least popular programs were the CETA-Sponsored Youth Development Program at 4 percent, and Cooperative Education at 8 percent.

When the data are examined by SES group, the Pell grant program for low SES students stands out from all the others—with 51 percent expecting to use it. This is significantly higher than the 45 percent of low SES students who expected to use the College Work-Study program. In general, table 23 shows that the percentage of students planning to use each type of program is inversely related to SES level.

Intended Field of Study in College

Respondents were asked which field of study, from a list of 24, came closest to what they would most like to study in college. The most popular choice by far was business, which was selected by one out of five of the respondents (table 24). The next most popular field was engineering at 11 percent. Other relatively popular fields were health services, humanities/fine arts, and pre-professional (at about 9 percent each). Of the fields listed here, education was one of the least popular, chosen by 5 percent. Mathematics ranked even lower, however, at 1 percent.

There were differences in choice of field of study by sex. More men than women chose engineering, and computer and information science. More women than men chose

health services, humanities/fine arts, and education. For a number of years sex differences have been diminishing in the fields of mathematics, business, and pre-professional. Men and women chose mathematics (both at 1 percent) and business, and pre-professional about equally.

Some interesting relationships are observed when we examine intended field of study in relationship to cognitive test performance. Business, the most popular field overall, was less popular among the highly able students (top quar-

tile on test scores) than among those less able. Engineering was more popular among the highly able than among those less able.

With respect to the field of education, the differences among the high, middle, and low test scorers were small and nonsignificant. For the low and middle ability level students, health services ranked second only to business, but for the high ability level students, health services was much less popular.

Table 23. Percentage of college-bound 1980 sophomores who, in spring 1982, knew about specific Federal financial aid programs, and the percentage who planned to use each, by socioeconomic status (SES).

Federal aid program	Knew about the program	Planned to use			
		SES			
		All	Low	Middle	High
Basic Educational Opportunity Grant (Pell)	76.7	26.6	50.7	31.4	14.7
Supplemental Educational Opportunity Grant	68.3	11.3	24.6	13.2	5.6
National Direct Student Loan	67.3	13.6	16.6	16.2	10.4
Federal Guaranteed Student Loan	72.5	21.7	28.6	24.4	17.1
CETA-Sponsored Youth Development	80.3	4.1	13.6	4.1	1.2
College Work-Study	82.9	30.1	44.7	33.7	23.3
Cooperative Education	77.7	7.8	12.9	8.2	5.4

Table 24. Percentage of college-bound 1980 sophomores who, in spring 1982, indicated each of various fields of study as the one they would most like to pursue in college, by sex and cognitive test performance.

Field of Study	All students	Sex		Cognitive test performance		
		Males	Females	Low	Middle	High
Total	100.0	100.0	100.0	100.0	100.0	100.0
Business	21.0	20.1	21.8	22.8	24.9	17.2
Engineering	10.6	20.5	2.8	4.7	7.1	14.9
Health services	9.4	2.8	14.5	14.9	11.1	7.3
Humanities/fine arts	8.8	7.4	10.0	7.9	7.8	8.6
Pre-professional	8.5	8.7	8.3	5.4	6.2	11.3
Computer and information sciences	8.3	10.3	6.7	9.2	8.5	7.9
Social sciences	6.6	4.9	8.0	6.5	6.2	7.3
Education	4.9	2.4	6.8	5.9	6.4	4.2
Biological or physical sciences	4.6	5.6	3.8	2.6	2.5	6.3
Mathematics	1.0	1.0	1.0	0.5	0.5	1.6
Other (e.g., architecture, agriculture, communications, home economics, and vocational/technical)	16.4	16.4	16.4	19.6	18.8	13.4

Summary

About half the respondents expected to undertake some kind of college work in the year following graduation. This expectation was related to various factors including SES, racial/ethnic group, and high school program.

Among the college bound, almost three-fourths expected

to utilize a financial aid program of some kind. Scholarships and grants were more popular than loan programs. The most popular program was College Work Study.

The most popular intended field of study was business. Sex differences in intended field of study were generally consistent with traditional sex roles, although in the fields of mathematics, business, and pre-professional, sex differences were minimal.

Appendix A

Appendix A

High School and Beyond Data Files Available for Public Use

The data collected in the base-year and first follow-up surveys have been processed and are available on the computer files described below. These files, along with appropriate documentation, may be obtained at a modest cost from the Data Systems Branch of National Center for Education Statistics (NCES).

Table A-1 summarizes the content areas covered by each file.

Base-Year Survey Files

School File

The School File contains school questionnaire responses that were provided by administrators in 988 public, Catholic, and other private schools. Each record has a total of 237 variables. The questionnaire focused on a number of school characteristics including: type and organization, enrollment, faculty composition, instructional programs, course offerings, specialized programs, participation in Federal programs, faculty characteristics, funding sources, discipline problems, teacher organizations (e.g. unions), and grading systems.

Language File

The Language File contains information on each student who reported some non-English language experience either during childhood or at the time of the survey. This file contains 11,303 records (sophomores and seniors combined), 42 variables for each student.

Parent File

The Parent File contains questionnaire responses from the parents of about 3,600 sophomores and 3,600 seniors who are on the Student File. Each record on the Parent File contains a total of 307 variables. Data on this file include parents' aspirations and plans for their children's postsecondary education.

Twin and Sibling File

The Twin and Sibling file contains responses from sampled twins and triplets; data on twins and triplets of sample members; and from siblings in the sample. This file (2,718 records) includes all of the variables that are on the HS&B student file.

Teachers' Comments File

The Sophomore Teacher File contains responses from 14,103 teachers on 18,291 students from 616 schools. The Senior Teacher File contains responses from 13,683 teachers on 17,056 students from 611 schools. At each grade level, teachers had the opportunity to answer questions about HS&B-sampled students who had been in their classes. The typical student in the sample was rated by an average of four different teachers. The files contain approximately 76,000 teacher observations of sophomores and about 67,000 teacher observations of seniors.

Friends' File

The Friend's File contains identification numbers of students in the HS&B sample who were named as being friends of other HS&B sampled students. Each record contains the ID of sampled students and ID's of up to three friends. Linkages among friends can be used to investigate the sociometry of friendship structures, including reciprocity of choices among students in the sample, and for tracing friendship networks.

First Follow-Up Survey Files

1980 Senior Cohort File

This file contains base-year as well as first follow-up survey data for a subsample of 11,995 1980 seniors. The tape also includes data on selected school variables, various composite scores, and a set of weights for use in making population estimates. Also included are data about the students' work and education experiences after leaving high school. The file can be merged with any of the base-year survey files.

1980 Sophomore Cohort File

This file contains both base-year and first follow-up survey data for a subsample of 29,737 persons who were sophomores in 1980. Persons who were no longer in the same high school (dropouts, early graduates, and transfer students) are represented in the subsample. The tape also includes data on selected school variables, various composite scores, and a set of weights for use in making population estimates. The file can be merged with any of the base-year survey files.

Transcript File

The transcript file contains high school course taking behavior information for 15,941 1980 high school sophomores. Data include a 6-digit course number for each course taken along with course credit, course grade, year taken, and other pertinent information. Appropriate weights also are contained on the file.

Offerings and Enrollments File

This file contains school information and course offerings and enrollment data for 957 schools. Each course offered is identified by a 6-digit course number. Other information, such as credit offered for course, enrollment in course, and when course was offered by school, also is contained on each record.

Updated School File

This file contains base-year as well as first follow-up survey data on the 1,015 schools that participated in HS&B. Sampling stratum codes and school weights also were included on the file.

Table A-1 Selected Subject Areas Addressed by HS&B Data Files and Questionnaires

CONTENT AREAS	Base-Year sophomore questionnaire	Base-Year senior questionnaire	School questionnaire	Language file	Parent questionnaire	Twin file	Teacher questionnaire	Friends file	First Follow-up sophomore	First Follow-up senior	Offerings and enrollments	Transcript file
Students												
Achievement	X	X	X	—	—	—	—	—	X	X	—	X
Activity status	X	X	—	—	—	—	—	—	X	X	—	—
Aspirations	X	X	—	—	X	—	—	—	X	X	—	—
Curriculum	X	X	—	—	X	—	X 1	—	X	X	X	X
Discipline	X	—	X	—	—	—	—	—	—	—	—	X
Family background	X	X	X	—	X	—	—	—	X	X	—	—
Financial aid	X	X	—	—	X	—	—	—	X	X	—	—
Friends	X	X	—	—	—	—	—	X	X	X	—	—
Handicapped	X	X	X	—	—	—	X	—	X	X	—	—
Health	X	X	X	—	—	—	—	—	X	X	—	—
H. S. dropouts	—	—	X	—	—	—	—	—	X	—	—	—
H. S. experiences	X	X	—	—	—	—	—	—	X	X	—	—
H. S. performance	X	X	—	—	—	—	—	—	X	X	—	X
Homework	X	X	—	—	—	—	—	—	X	X	—	—
Labor force participation	X	X	—	—	X	—	—	—	X	X	—	—
Languages spoken	X	X	—	X	—	—	—	—	X	X	—	—
Marriage and family	X	X	—	—	X	X	X	—	X	X	—	—
Military	X	X	—	—	—	—	—	—	X	X	—	—
Minorities	X	X	X	X	X	—	X 1	—	X	X	—	—
P. S. dropouts	—	—	—	—	—	—	—	—	X 2	X	—	—
P. S. experiences	—	—	—	—	—	—	—	—	X 3	X	—	—
P. S. history	—	—	—	—	—	—	—	—	X 3	X	—	—
Siblings	X	X	—	—	X	X	—	—	X	X	—	—
Tests	X	X	—	—	—	—	—	—	X	—	—	X
Twins	X	X	—	—	—	X	—	—	—	—	—	—
Work history	—	—	—	—	—	—	—	—	X 2	X	—	—

Table A-1 Selected Subject Areas Addressed by HS&B Data Files and Questionnaires (Continued)

CONTENT AREAS	Base-Year sophomore questionnaire	Base-Year senior questionnaire	School questionnaire	Language file	Parent questionnaire	Twin file	Teacher questionnaire	Friends file	First Follow-up sophomore	First Follow-up senior	Offerings and enrollments	Transcript file
High Schools -												
Course offerings	X	X	X	—	—	—	—	—	X	—	X	—
Discipline problems	X	X	X	—	—	—	—	—	X	X	—	—
Faculty characteristics	—	—	X	—	—	—	X 1	—	—	X	—	—
Instructional programs	—	—	X	—	—	—	—	—	—	—	—	—
Participation in Federal program	—	—	X	—	—	—	—	—	—	—	—	—
Special programs	X	X	X	—	—	—	—	—	X	—	—	—
Teacher characteristics	—	—	X	—	—	—	X 1	—	—	—	—	—
Teacher expectations	X	X	—	—	—	—	X	—	X	—	—	—
Type of organization	—	—	X	—	—	—	—	—	—	—	—	—
Parents												
Aspirations	X	X	—	—	X	—	—	—	X	—	—	—
Attitudes	—	—	—	—	X	—	—	—	—	—	—	—
Education	X	X	—	—	X	—	—	—	X	X	—	—
Financial Aid (knowledge of)	—	—	—	—	X	—	—	—	—	—	—	—
Income	X	X	—	—	X	—	—	—	X	—	—	—
Occupation	X	X	—	—	X	—	—	—	X	X	—	—

1 Sophomore Cohort Teachers

2 Sophomore Cohort Dropout Supplement

3 Sophomore Cohort Dropout or Early Graduate Supplement

Appendix B

Appendix B

Definition of Classification Variables

Seven major classification variables were used in this report to define subgroups for analysis: sex, race/ethnicity, socioeconomic status (SES), cognitive test score composite, high school program, geographical region, and community type. Table B-1 shows the composition of the sophomore cohort first follow-up survey sample by these classification variables. Except when the text indicates otherwise, the values of these variables used in this report are those obtained in the base-year survey in 1980. The following sections define these variables.

Sex

Respondent's sex was available in three survey documents. If one of the sources contained a valid sex code and none of the other sources contained conflicting information, that sex code was used.

Race/ethnicity

Race and ethnic origin codes were available from both base-year and first follow-up questionnaires. Respondents were classified into mutually exclusive racial/ethnic groups based on the following hierarchical sequence: (1) if an Hispanic ethnic origin was indicated either year, the person was classified as Hispanic; otherwise (2) if the race code American Indian or Alaskan Native was indicated either year, the person was classified as American Indian; otherwise (3) if the Asian or Pacific Islander race code was present either year, the person was classified as Asian, otherwise, (4) if the race code for black was present either year, the person was classified as black; otherwise (5) if the race code for white was present either year, the person was classified as white. The 538 remaining students either identified their race as "other" or did not indicate race or ethnicity in either year.

Socioeconomic status (SES)

The SES index is a composite of five equally-weighted measures: father's education, mother's education, family income, father's occupation, and presence of certain items in the respondent's household. The index values are based

Table B-1. Composition of 1980 sophomore cohort first follow-up survey sample, by selected classification variables.

Classification variable and subgroups	Number	Percent ¹
Total sample	29,737	100.0
Sex:		
Male	14,825	49.8
Female	14,912	50.1
Race/ethnicity:		
Hispanic	5,220	17.5
Non-Hispanic:		
American Indian or Alaskan Native	322	1.1
Asian or Pacific Islander	448	1.5
Black	3,914	13.2
White	19,295	64.9
Other or unclassified	538	1.8
Socioeconomic status (SES):		
Highest quartile	6,608	22.2
Middle two quartiles	12,647	42.5
Lowest quartile	6,659	22.4
Unclassified	3,823	12.9
Cognitive test performance:		
Highest quartile	6,516	22.0
Middle two quartiles	12,254	41.2
Lowest quartile	6,173	20.8
Unclassified	4,794	16.1
High school program:		
Academic	9,169	34.6
General	11,950	45.1
Vocational	5,397	20.3
Unclassified	3,221	12.1
Geographical region:		
Northeast	6,617	22.2
North Central	8,383	28.2
South	9,283	31.2
West	5,454	18.3
High school community:		
Urban	6,878	23.1
Suburban	14,592	49.1
Rural	8,267	27.8

¹Total of subgroup percentages may not equal 100.0 due to rounding.

on information provided in the base-year survey. Respondents were classified into one of three subgroups (lowest quartile, middle two quartiles and highest quartile) based on the *weighted* SES distribution.

Cognitive test performance

When cognitive test performance was used as a classification variable, a test score composite was computed by averaging the standardized 1980 scores of the HS&B sophomores on the reading, mathematics, and vocabulary tests. Respondents were classified into one of three subgroups (lowest quartile, middle two quartiles, and highest quartile) based on the *weighted* distribution of the composite scores. In chapter III, however, which is concerned with cognitive growth, both the 1980 and the 1982 scores were used.

High school program

High school program was identified from the answers of sophomores in 1980 to the question "Which of the following best describes your present high school program?" The student could mark "general," "academic or college preparatory," or any of seven "vocational (occupational preparation)" areas.

Type of school

In developing the sampling frame for High School and Beyond, schools were classified as public, Catholic, or other private. For many of the analyses in this report, the schools in the sample were similarly classified.

High School Community

Respondents were assigned to one of three categories based on the type of community in which the school they attended in the base year was located: urban, if located in the central city of a Standard Metropolitan Statistical Area (SMSA); suburban, if located within an SMSA but not in the central city; and rural, if located outside an SMSA.

Geographical region

HS&B was designed to provide estimates for each of nine Census Bureau sections. For this report, however, these sections were collapsed into the following four regions:

Northeast (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania).

North Central (Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas).

South (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, and Texas).

West (Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, and Hawaii).

Appendix C

Appendix C

Technical Notes

Sample Design¹

Base-year Survey. HS&B employed a 2-stage, highly stratified sample design. In the first stage, 1,122 schools that had either 10th or 12th grade students (or both) were drawn. To make the sample more useful for policy analysis, the following types of schools were oversampled: alternative public schools, public schools with high percentages of Hispanic students, Catholic schools with high percentages of minority-group students, and high-performance private schools. In the second stage, 36 sophomores and 36 seniors were randomly selected, school size permitting. The sample was augmented by the addition of the co-twins of twins selected in the probability sample.

First Follow-Up Survey. A subsample of 11,995 of the 1980 seniors selected for the base-year survey was chosen to continue in follow-up surveys. To enhance the usefulness of the subsample for policy analysis, the following subgroups were oversampled: Hispanics and Blacks, especially those with high cognitive test scores; Asians; American Indians; whites from low SES backgrounds with high cognitive test scores; and persons whose parents had participated in a survey that collected data for addressing student financial aid policy questions. The probability subsample included 495 persons who, although selected, had not participated in the base-year survey. Questionnaires also were sent to all 204 co-twins of twins included in the probability subsample.

Accuracy of Estimates

The statistics in this report are estimates derived from a sample. Two broad categories of error occur in such estimates: sampling and nonsampling errors. Sampling errors occur because observations are made only on samples of students, not on entire populations. Nonsampling errors occur not only in sample surveys but also in complete censuses of entire populations.

Nonsampling errors can be attributed to many sources: inability to obtain complete information about all students in all schools in the sample (e.g., some students are absent on survey day, schools or students refuse to participate, students participate but answer only certain items, etc.); ambiguities in definitions; differences in interpretation of questions; inability or unwillingness to provide correct information; mistakes in recording or coding data; and other errors of collection, response, processing, sample coverage, and estimation of missing data.

The accuracy of a survey result is determined by the joint effects of sampling and nonsampling errors. In surveys with sample sizes as large as those employed in HS&B, nonsampling errors generally are the primary concern, except where separate estimates are made for relatively small subpopulations.

The three major ways in which survey data such as those obtained in HS&B may fall short of full accuracy are discussed below.

Nonresponse bias. One of the most serious threats to the accuracy of survey estimates is bias resulting from failure to obtain data from all sampled units. A total of 811 (72 percent) of the 1,122 eligible schools chosen in the sample participated in the base-year survey. Of the 311 schools that were unable or unwilling to participate, 204 were replaced with schools which matched them with regard to geographical area, enrollment size, community type, and other characteristics. This brought the total number of participating schools to 1,015 or 90 percent of the 1,122 target. A total of 1,445 eligible schools were contacted to obtain 1,015 participants.

The student-level response rate within participating schools in the base-year survey was 84 percent for sophomores. In the first follow-up survey, this rate was 95 percent.

Base-year survey design weights were adjusted for school-level nonresponse by appropriately distributing the design weights of nonparticipating schools to participating schools within each of 27 strata; then they were adjusted for student nonresponse by appropriately increasing the weights of participating students to compensate for students within the same school who did not participate. First follow-up survey nonresponse weight adjustments were made based on school type for base-year survey nonparticipants.

The nonresponse bias for an estimated mean (or proportion) is a product of the nonresponse rate and the magnitude of the difference in the means (or proportions) between respondents and nonrespondents. The results of three types of analysis of the effects of nonresponse are examined in a report in preparation². The first analysis employs first follow-up survey School Questionnaire data, which were obtained from over 400 of the 430 eligible nonparticipating schools, to estimate school nonresponse bias. For most variables, the differences between the means for all eligible schools and cooperating schools were found to be less than one percent.

¹Detailed descriptions of the base-year and first follow-up survey sample designs may be found in *Sample Design Report* by M. Frankel, L. Kohnke, D. Buonanno, and R. Tourangeau, National Opinion Research Center (NORC) (December 1981), and *First Follow-up (1982) Sample Design Report* by R. Tourangeau, H. McWilliams, C. Jones, M. Frankel, and F. O'Brien, NORC (in preparation).

²*First Follow-Up (1982) Sample Design Report*, by R. Tourangeau, H. McWilliams, C. Jones, M. Frankel, and F. O'Brien, NORC.

The second analysis employed first follow-up survey student data to examine base-year survey student nonresponse bias. The analysis found that the magnitudes of biases generally were small and in predictable directions. The median value of the bias estimates were less than 0.4 percentage points.

The third analysis examined first follow-up survey nonresponse patterns. Since the first follow-up survey nonresponse rate was less than one-half that for the initial survey, nonresponse biases should be correspondingly lower, averaging no more than 0.2 percentage points.

Reliability and validity of data. HS&B provides a rare opportunity to examine the validity and reliability of student responses to questionnaire items. The opportunity arises from three unusual aspects of the study. First, data were collected from a subsample of about 6,500 parents. These data allow assessment of the validity of student responses to many of the questionnaire items that dealt with home and family background matters. Second, HS&B included about 500 sets of twins. Comparison of the answers of twins permits evaluation of the reliability of questionnaire responses dealing with commonly shared factual information. Third, high school transcripts were obtained in fall 1982 for about 16,000 of the 1980 sophomore cohort HS&B participants. The transcript data provide a check on the accuracy of student questionnaire data on grades and coursework.

Analysis of parent, twin, and transcript data yielded results consistent with those found by other researchers regarding similar kinds of information obtained in a similar manner from high school students and young adults. The reliability and validity of response vary considerably depending on the nature of the item and the characteristics of the respondent. Contemporaneous, objective, and factually oriented items are more reliable and valid than subjective, temporally remote, and ambiguous items; and older, white, and high-achieving students provide more reliable and valid responses than do younger, minority group, and low-achieving students. The results of this analysis will be presented in an NCES report now being prepared. The results of an NLS-72 second follow-up survey test-retest reliability study and a review of the literature on the quality of responses to NLS-72 (and HS&B) type questions, may be found in *Reliability and Validity of National Longitudinal Study Measures* by A. Conger, J. Conger, and J. Riccobono, 1976, a report prepared for NCES by the Research Triangle Institute.

In the future, if present plans succeed, much more accurate information about student financial aid and postsecondary education matters will be available from data obtained from official Federal grant and loan files, institution student financial aid office files, and from student transcripts.

Sampling error. All statistics presented in this report are weighted estimates of population parameters. The esti-

mates are based on a probability sample of about 30,000 individuals selected from a population of about 3.8 million. Thus, in addition to nonresponse and other sources of non-sampling error, the estimates are subject to sampling error as well.

The standard error of an estimate reflects the degree of uncertainty in the estimate which is primarily due to sampling variation. Like many national samples, the HS&B sample, as described earlier, departs from a simple random sample in three respects: it is stratified, the selection of students were clustered by school, and certain kinds of schools and students deliberately were oversampled.

Each of these departures from simple random sampling has a predictable impact on the standard errors of sample estimates. The "root design effect" (deft) reflects the net impact of these departures on standard errors. The actual standard error is the product of deft times the corresponding estimate from a simple random sample. The average deft value for both the base-year and first follow-up surveys is 1.6 for estimates pertaining to the full population and generally somewhat less for subgroups. The average deft value for estimates of change between 1980 and 1982 is 1.4 for the total population, and less for most subgroups.

The standard errors of many of the estimated percentages presented in this report may be approximated, generally conservatively, by

$$s.e.(p) = 1.6 [p(100 - p)/n]^{1/2},$$

where n is the sample size (see table B-1). For example, it is estimated in table 1 (of chapter II) that 14 percent of 1980 sophomores had dropped out of school by spring 1982.

The standard error of this estimate is approximately

$$1.6 [14(100 - 14)/29,737]^{1/2} = 0.3 \text{ percentage points}$$

NCES, however, has calculated more precise estimates of standard errors than those approximated by the above procedure. These estimates, obtained by a procedure called "balanced repeated replication," are available from NCES upon request for every estimate presented in report tables.

In comparing estimated means (or percentages) for two subgroups, the standard error of the difference was estimated by taking the square root of the sum of the two squared standard errors. These estimates of standard errors of differences are somewhat conservative for subgroups involving different students from the same schools since they assume that the covariance of the two estimates is 0. Actually, the positive correlation between cluster (school) influences on the two means (or proportions) tends to reduce the standard error of the difference.

All differences cited in the test of the report differ from 0 by at least 2 estimated standard errors, unless otherwise indicated. (Sometimes, differences which do not meet this criterion are cited because of their congruity with theoretical expectations. In each such case the lack of statistical significance is explicitly noted).