

**America's
High School Sophomores:
A Ten Year Comparison**

1980
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High School Sophomores:
A Ten Year Comparison**

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SUMMARY OF MAJOR FINDINGS:

This study of high school sophomores in 1980 and 1990 compares the experiences of students in **the two cohorts**, identifying changes in in-school and out-of-school **activities**, **academic achievement**, self concept **and values**, plans and **aspirations**. Similarities and differences between the two groups of sophomores **are** documented using **data from two nationally** representative studies: High School and Beyond (**HS&B**), and the National Education Longitudinal Study of 1988 (**NELS:88**). (**Both HS&B and NELS:88 are part** of NCEs's national education longitudinal studies program, an overview of which is provided in Appendix C).

HS&B and **NELS:88** sophomores are marked by basic demographic **differences**, including the **lesser size** of the **NELS:88 1990** sophomore cohort (**around a fifth** smaller than the **HS&B 1980** sophomore cohort), which **reflects the "baby bust"** of the 1970s, and a higher proportion of racial minority **and poverty** status sophomores in 1990. The **NELS:88** sophomores also reflect a different experience of American **education**, insofar as the various initiatives of the school reform movement that rose to prominence in the **late 1970s** and **early 1980s** may have affected the nature and quality of their schooling in numerous ways. Highlights from the findings of this report are presented below. These highlights paint a picture that is in most respects encouraging in its portrayal of the high school academic orientation **and postsecondary** expectations of the 1990 sophomore class. The evidence for positive educational trends reported in this document does **not, of course, license complacency**. The positive changes reported here are typically small or moderate in **magnitude**, and this report provides no basis for ascertaining the mechanisms or processes by which they have **occurred**. **Moreover**, far greater improvements could be **achieved**, and are called for by the nation's current education goals.

SCHOOL EXPERIENCE

High school program. Student self-report data indicate that general and college preparatory program placement has **increased**, at the expense of vocational program placement.

- **Less than half as many 1990 sophomores (8%) identified their high school program type as vocational education as did so in HS&B ten years before (21%).**
- **Reported placement in college preparatory programs increased overall (from 33% in 1980 to 41% in 1990); significant increases were reflected in public high schools and for black and Hispanic sophomores.**
- **Comparison of HS&B and NELS:88 data suggests that for blacks (though not for Hispanics) minority-white disparities in reported academic program placement had shrunk to insignificance by 1990—27 percent of black sophomores reported themselves to be in college preparatory programs in 1980 (compared to 35 percent of white sophomores in 1980), but 41 percent in 1990, compared to 42 percent of white sophomores in 1990.**

School safety. Both in 1980 and 1990, most sophomores felt safe in school. However, between 1980 and 1990, there was a decline in the percentage of sophomores who reported feeling **unsafe in school**, from 12 percent in 1980 to 8 percent in 1990. While the proportion feeling unsafe has dropped among **males and females**, for **Hispanics**, blacks and whites and for sophomores in **all socioeconomic status (SES) groups**, disparities between groups remained high in 1990, just as they were in 1980. For example, low **SES 1990** sophomores were twice as likely as high **SES** sophomores

to feel unsafe at school (11% vs. 5%), and public school students were twice as likely as Catholic students to feel unsafe at school (9% vs. 4%).

Motivation to learn: preparedness for class. Both in 1980 and 1990, the vast majority of sophomores reported that they usually come to school with their books, paper and pen, and homework completed. However, the number of students who often or usually come to class unprepared declined between 1980 and 1990 on all measures. For example, those who reported that they come to school without paper or pen or pencil declined by a third (from 15.1 percent of sophomores in 1980 to 10.5 percent of sophomores in 1990). Data from 1990 sophomores also evidenced statistically significant increases in the numbers of students coming to school with their homework completed and with their books.

1980-1990 TRENDS IN TESTED SOPHOMORE MATHEMATICS ACHIEVEMENT

Because common items on the HS&B and NELS:88 math tests facilitate comparisons of the tested achievement of the two sophomore cohorts, mathematics results were compared for the two groups. Between 1980 and 1990, sophomores gained significantly in their levels of mathematical achievement. These gains were present for virtually all demographic groups. However, some groups gained more than others over the decade. Specifically:

- Although white and Asian math achievement levels continue to be higher, black and Hispanic students closed some of the gap by making proportionately greater gains in mathematics achievement than their white or Asian counterparts.
- Students reporting themselves to be in the general curriculum gained significantly more than did students in the vocational program.

The following groups of sophomores showed essentially equal growth rates:

- Males and Females
- Students attending Catholic and public schools

AFTER-SCHOOL ACTIVITIES

Extracurricular activities. Patterns of reported sophomore extracurricular participation changed between 1980 and 1990. Participation in academic clubs has increased, from 26 percent of the 1980 sophomore class, to around 31 percent of the nation's 1990 sophomore class. Less involvement, however, is reported in musical activities and hobby clubs (such as photography, crafts, chess). More specifically, some 21 percent of 1980 sophomores belonged to hobby clubs, compared to only 7 percent of the 1990 cohort. Participation in musical activities declined from 31 percent of 1980 sophomores, to 22 percent of 1990 sophomores.

Reading for pleasure. Fewer than half (41%) of 1980 sophomores indicated that they read for pleasure at least once or twice a week; the same low percentage (41%) of 1990 sophomores reported reading for pleasure at least once or twice a week.

SELF CONCEPT, SOCIAL IMAGE, AND VALUES

Self-esteem. While members of both the 1980 and 1990 cohorts were likely to endorse positive items that **affirmed their sense of self-esteem**, 1990 sophomores were even more inclined to endorse items indicative of **high self-esteem than sophomores from the earlier decade. In particular:**

- The proportion of sophomores who agreed strongly that they felt good about themselves increased from **30 percent to 35 percent;**
- The proportion agreeing strongly that they were a person of worth showed a similar increase (**from 29% to 35%**);
- The proportion agreeing strongly that they were satisfied with themselves rose from **20 percent to 28 percent.**

Personal life goals and social values. Percentages of sophomores **affirming** various life values were **similar** across the studies. For both cohorts, most sophomores **did not** rate the following as "very important": correcting social inequalities, making a lot of money, living close to parents, leaving the area they live in. Somewhat under half (41% of 1980 sophomores, 43% of 1990 sophomores) did not accord having children a rating of "very important". On the other hand, large majorities **affirmed** the following values, in both 1980 and 1990: success in work, marriage, friendship, steady work, giving one's children better opportunities, and having leisure time. Success in work and having steady work were rated very important by **84-85 percent** of each cohort.

Despite the overall similarity in the pattern of affirmations, there were a number of statistically significant shifts in the proportions of sophomores according high importance to particular life values. For example:

- Marriage and family was rated as very important by **83 percent** of sophomores in 1980 but **only 72 percent** of 1990 sophomores-behind work and friendship in importance
- Making money was rated as very important by **35 percent** of 1980 sophomores but by **44 percent** of 1990 sophomores;
- Having leisure time was rated as very important by **70 percent** of 1980 sophomores but by somewhat fewer (**65 percent**) 1990 sophomores; and
- Correcting inequalities was rated as very important **only by 14 percent** of 1980 sophomores, but **19 percent** of 1990 sophomores felt that correcting social inequalities was very important.

PLANS AND EXPECTATIONS

Occupational expectations. A possibly important trend to note in the occupational expectations of the nation's sophomores between 1980 and 1990 is **the small** but statistically significant increase in the number of females aspiring to traditionally male-dominated non-professional occupations (**15.6% of 1980 sophomores versus 18.2% in 1990**).

Educational expectations: how much education student expects to get. 1990 sophomores are significantly more likely to say they will go on to complete a bachelor's or advanced degree. For college graduation, the proportion increases from 23 percent in 1980 to 32 percent in 1990; for a postgraduate degree, the proportion increases from 18 percent in 1980 to 27 percent in 1990. These higher educational expectations hold across all SES groups and for Hispanics, blacks and whites; Asian educational expectations remain at the very high levels that were already reflected in the 1980 data. In addition, members of the 1990 cohort are more likely to say they will attend a postsecondary institution right after high school, with no delays, with 60 percent of 1990 sophomores planning immediate entry, as contrasted to 49 percent of their counterparts from a decade before.

Press toward postsecondary education. 1990 sophomores reported receiving significantly more adult advice urging them to attend college after high school than did 1980 sophomores. Fathers, mothers, guidance counselors and teachers in 1990 were all consistently more likely to recommend college attendance:

- 77 percent of 1990 sophomores reported that their fathers recommended they go to college; 59 percent of 1980 sophomores reported this recommendation;
- 83 percent of 1990 sophomores indicated that their mothers recommended they go to college; the comparable figure in 1980 was 65 percent;
- 65 percent of 1990 sophomores reported that their guidance counselor urged them to attend college after high school, as contrasted to 32 percent for 1980 sophomores; and
- 66 percent of 1990 sophomores reported that their teachers recommended attending college, compared to 32 percent for 1980 sophomores

Foreword

This report describes patterns of **continuity** and change between the spring **1990** sophomores studied in **the National Education Longitudinal Study of 1988 (NELS:88)** and sophomores studied a **decade earlier**. As **such**, it illustrates and fulfills a major purpose of the **NCES** national education longitudinal **studies**, which is to provide comparative data at different points in time that are germane to educational **policy** and **that permit** examination of trends relevant to **educational** and career development and **societal** roles.

High School and Beyond (**HS&B**) began with two **cohorts, 1980** sophomores and **1980** seniors.¹ As in the National Longitudinal Study of the High School **Class of 1972 (NLS-72)** before it and **NELS:88** eight years **later**, the **HS&B** baseline study employed a two-stage probability sample to select nationally representative students and **schools**. **HS&B** data have been widely **used**, and the database has grown as sample members have been resurveyed over **time**. **Indeed**, the **HS&B** sophomores were surveyed for a fifth time in the spring of **1992**. Much as the **HS&B** data about the processes and outcomes that are central to an understanding of secondary education in this country have informed **policymakers** and **researchers**, **NELS:88** data are expected to provide **similarly** rich information about factors that influence student academic performance and social development and the processes through which these factors **operate**.

Under the sponsorship of the National Center for Education Statistics (**NCES**), and with support from the National Science Foundation (**NSF**), the Office of Bilingual Education and Minority Languages Affairs (**OBEMLA**) and other **agencies**, the National Education Longitudinal Study of **1988 (NELS:88)** is being conducted in several waves. The first wave (**the 1988 base year**) recorded the experiences of a representative sample of eighth graders within a nationally representative sample of their **schools**; the second wave (**the 1990 first follow-up**) traced them to tenth **grade**; the third wave (**the 1992 second follow-up**) followed them to twelfth **grade**; and the fourth wave (**the 1994 third follow-up**) will follow them out of high **school**. The longitudinal design of **NELS:88** permits researchers to observe the **critical** transitions of students to and from high **school**, while surveys of **parents, teachers**, and principals provide contextual data that help identify **student**, school, and parental experiences that promote learning.

It is our hope that this report will be of interest to **policymakers** and educational **practitioners**, as well as to education **researchers**. **Policymakers** can use **HS&B** and **NELS:88** results to turn statistics into **practical**, workable programs to help solve the problems facing the American educational system and its **students**. Researchers may be inspired by this report to use **HS&B** and **NELS:88** data to explore their own interests and **concerns**, and to thereby further illuminate the condition and prospects of American secondary **education**.

Paul **Planchon**, Associate Commissioner of Education Statistics
Jeffrey **Owings**, Chief, Longitudinal and Household Studies Branch

¹Further information about the history, design, and research program of NLS-72, HS&B and NELS:88 is provided in the overview contained in Appendix C of this report.

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We would like to thank the many individuals (as well as organizations and institutions) who have contributed importantly to the success of the National Education Longitudinal Study of 1988 (NELS:88) first follow-up.

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The HS&B-NELS: 881980-1990 sophomore trend report was prepared by NORC and ETS staff under the supervision of NCES. The authors are Kenneth A. Rasinski and Steven J. Ingels of NORC, and Donald A. Rock and Judith M. Pollack of ETS. NORC authors prepared chapters 1-2 and 4-7; ETS authors prepared chapter 3. Amelia Solorio and Cassandra Britton of NORC formatted the document and helped prepare final copy.

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NOTE: **Appendix A** provides standard errors of measurement for the estimates presented in all tables in the text of this **report**. Table numbers and labels for Appendix A recapitulate the scheme above except that each table is preceded by the prefix "A". (**For example,** standard errors for text table **2.1** will be found in appendix table **A2.1**.) Preceding the standard errors tables is a table of total and analytic subgroup sample sizes (**unweighted Ns**), designated as Table A 1.

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ORGANIZATION AND BASIC APPROACH OF THIS REPORT

This report presents information on similarities and differences between American sophomores in 1980, as studied in High School and Beyond (**HS&B**), and sophomores in 1990, as studied in the National Education Longitudinal Study of 1988 (**NELS:88**). The comparisons between these two cohorts are presented in six chapters and summarized in an additional **chapter**.

To provide a context for **comparison**, **Chapter 1** describes changing practices and policies of the American educational **system**, and **sociodemographic** changes that took place in American society in the 1980s. **Chapter 2** compares the high school experiences of **HS&B** and **NELS:88 sophomores**, and in **particular**, differences in high school program **participation**.

Chapter 3 contrasts the mathematics achievement of 1980 and 1990 sophomores. **NELS:88** mathematics test scores have been **re-scaled** to permit cross-cohort comparisons for major population subgroups at the two time points. **Chapter 4** investigates **out-of-school experiences**, such as participation in the high school's **extracurriculum**, and leisure time **activities**.

Chapter 5 explores the **self-perceptions**, social image and values of 1980 and 1990 sophomores, while **Chapter 6**, examines education and career aspirations. **Chapter 7** summarizes major conclusions.

Appendices provide technical **notes**, full references for text **citations**, and tables of standard errors of measurement and **sample** sizes for all reported population **estimates**, as **well as** an overview of **HS&B** and **NELS:88**. More **specifically**:

The References section supplies a bibliography of sources cited in this **report**. **Appendix A** supplies **tables** of standard **errors**, **sample sizes**, and, for **Chapter 3**, effect **sizes**, and other **technical data**.

Appendix B comprises methodological and technical notes on **HS&B** and **NELS:88** sample **design**, precision of **estimates**, statistical **procedures**, analysis **procedures**, and variables employed in **analyses**.

Appendix C provides an outline of the **HS&B** and **NELS:88 research** design and a brief history of the two studies and their **place** in the National Center for Education Statistics national education longitudinal studies **program**.

All comparisons cited in the text of the report have been tested for statistical significance using **Bonferroni** adjustments and are significant at the **.05 level**. (See Appendix B for a discussion of procedures **used**).

Variables for this report were selected using the following **procedure**. **First**, the **NELS:88** First Follow-Up and **HS&B** Base Year **questionnaires** were examined for comparable **items**.¹ **Second**, items that were unequivocally known to be defective measures were **eliminated**.² **Next**, in order to keep this report to a reasonable length and concentrate its **focus**, the **items** were divided into those that were related

¹A list of 81 items comparable across the two **surveys** appears in **Appendix F** of the **NELS:88** First Follow-Up Student Component Data File User's **Manual** (Ingels et al., 1992, NCES 92-030).

²For example, although the **HS&B** siblings **question** could **have** been collapsed to produce a variable roughly equivalent to the **NELS:88** number of older and younger siblings **item**, this possibility was rejected **because nonresponse was** excessively high on the **HS&B** item (the constituent data elements had **nonresponse rates** of 23-44%).

to the mainstream high school **experience**, and those that were **not**. At this **stage**, items relating to remedial **education**, **special education**, **bilingualism**, English language **skills** of **bilinguals**, **religiosity**, family **composition**, and childbearing out of wedlock were **eliminated**. The remainder of the available comparable items were included in the report with one **exception**. **The** wording of the stem and **the** wording and order of response scales of the item assessing whether students thought they would graduate from high school were judged to be **insufficiently comparable**.³

Because the number of items that are comparable is so **limited**, both **HS&B** and **NELS:88** support much richer within-study analyses than cross-cohort comparisons with each **other**. **Many** of the questions asked in **NELS:88** reflect issues and concerns that have come to the forefront just in the last ten years. Other analysis reports are in preparation that make far greater use of the wealth of information gathered in the **NELS:88** first **follow-up**, particularly the many **non-HS&B** items that were developed for the **study**. Forthcoming **NCES** publications depict the changes experienced by the eighth grade cohort between **1988** and **1990**, and also provide a comprehensive statistical profile of the American high school sophomore in **1990**.

³ **The NELS:88** item asked "Do you expect to graduate from high school?" and offered "Yes", "Probably", "Probably not" and "No" as response options; **HS&B** asked "How sure are you that you will graduate from high school?" and offered "Very sure I'll won't graduate", "I probably won't graduate", "I'll probably graduate", and "Very sure I'll graduate".

CHAPTER 1: THE CHANGING CONTEXT: AMERICAN EDUCATION & SOCIETY, 1980-1990

This trend report addresses the following fundamental question: **How did American sophomores change between 1980 and 1990?** Implicit in this question is also the issue of continuity: **In what ways are American sophomores of 1990 like those of the earlier decade—in what ways have they not changed?** This broad question may be posed within a number of domains. Specifically, we may ask--how do the school **experiences**, tested **achievement**, out of school **experiences**, self concept and **values**, and aspirations of America's 1980 and 1990 sophomores **differ**? This broad question can also be **re-asked** in more **specific** terms--in areas where changes have occurred, do we see differences by subgroups of **students**, that is, did such changes vary for students of different race or **ethnicity**, **sex**, socioeconomic **status**, achievement level, school type or **region**?

Before inquiring **whether**, and **how**, sophomores might have changed over the past **decade**, it is desirable to ask in what ways **schools** and American **society** might have changed over the same **period**. Although the focus of this report is to **describe differences**, not to isolate their **causes**, a preliminary glimpse at changes in American education and society may provide a context for understanding some of the many possible reasons **why** today's sophomores may be **different**.

Changes in American Society: Demographic and Socioeconomic Forces

Significant **sociodemographic** changes occurred in America in the 1980s. Six **general** trends are particularly worthy of **note**:

1. The "**baby bust**" or decline in birthrates of the 1970s that led to declining school enrollments in the 1980s;
2. Geographic shifts in **population**, from the east and **midwest** to the west and **south**;
3. Changes in family composition and **structure**, such as **declining** numbers of two-parent **families**, and increased labor force participation of mothers;
4. Increased **racial**, **cultural**, linguistic and **economic** diversity in the school-age **population**.
5. Increasing numbers of children in **poverty**;
6. Structural changes in the American **economy**.

Declining birthrates. Birthrates overall were low in the 1970s. In 1964, when most members of the **HS&B** sophomore cohort were **born**, the birth rate per 1000 U.S. women 15-44 years old was 104.8. In 1974, when most members of the **NELS:88** sophomore cohort were **born**, the birthrate per 1000 U.S. women age 15-44 had dropped to 68.4 (Statistical Abstract of the United States; 1966, 1976). Birthrates declined for both whites and **nonwhites**, as illustrated **below**:

	<u>1964</u>	<u>1974</u>
Birthrate per 1000 white females 15-44	99.8	64.7
Birthrate per 1000 nonwhite females 15-44	141.5	91.0

Though somewhat offset by increased **immigration**, these low birthrates led to declining secondary school enrollments between 1980 and 1990. **Thus**, in sheer numbers, the 1990 sophomore cohort is substantially smaller than the 1980 sophomore cohort. Current Population Survey⁴ data show the number of high school students declining from 15.2 million in fall of 1979 to 12.9 million in fall of 1989 (CPS reports P-20 No. 360 and No. 452) while NCES Common Core of Data public school sophomore enrollment tallies show (Digest of Education Statistics 1991, Table 38) a decline from autumn 1979's 3.5 million to 2.9 million public school sophomores by fall of 1989--a decline of **nearly a fifth**.

Geographic shifts in population. Additionally, there have been regional shifts in America's population, with California, Florida and Texas accounting for about half the nation's population growth over the **decade**. The number of school-age children between the ages of five and seventeen has dropped markedly in both the Northeast (**a 15% decline**) and Midwest (**an 11% decline**), while the West experienced an increase (9%).⁵ The population of school-age children in southern states remained stable during this period.

Changes in family composition and structure, and the locus of child care. With declining birthrates, families grew **smaller**. Nevertheless, decennial census statistics show that for children under 18, the poverty rate increased over the decade from 16 percent to 18 percent. Also the **percentage** of female-headed households with children rose from around 17 percent to 20 percent, partly reflecting an increase in the proportion of children born to unmarried mothers. One-parent female-headed households increased from 10.8 percent in 1970, to 13.9 percent in 1980, to 16.5 percent in 1990 (U.S. Census, General Social and Economic Characteristics). There are racial differences in the proportion of families maintained by women--for **example**, 1989 figures show that 44 percent of black family households, 23 percent of **Hispanic**, and 13 percent of white family households were maintained by women (CPS report Series P-20 No. 441). Two-parent families constituted 86 percent of all families with children under 18 in 1970, 82.8 percent of **all** such families in 1980, and 79.1 percent of families in 1990. Female labor force participation and social autonomy also continued to **increase**, with more mothers in the work force, and in the 1970s the proportion of children attending prekindergarten education began a steep rise (The Condition of Education: 1991, v.1, 1: 1).

Racial and ethnic change. Minority populations grew as a proportion of total population in the 1980s, leading to greater linguistic and cultural heterogeneity in the **schools**. Asians and Hispanics have become a greater proportion of the **population**. Although the Asian proportion of the American population is comparatively **small**, owing to continued large-scale **immigration**, Asians (**particularly** school-aged **Asians**) are proportionately the fastest-growing **minority**, with Hispanics also rapidly increasing as a proportion of total **population**. Generalizing from 1990 Bureau of the Census **data**, De La

⁴Although the HS&B and NELS:88 datasets are sensitive to very large demographic changes, the questionnaires do not elicit data on all subjects of demographic interest, nor were the sample sizes designed to provide highly precise estimates of the full range of sociodemographic changes outside of schools. Thus numbers of individuals in the HS&B sample for comparatively rare policy-relevant subgroups are not sufficiently large to detect moderate changes in numbers with high statistical reliability. (For example, there are only 405 Pacific Basin Asians in the HS&B sophomore cohort, too small a number to support precise population trend estimates.) Nevertheless, such groups may contribute importantly to major long-term demographic trends. Because of *limitations on* questions asked and the imprecision of some estimates, we draw on other sources, such as data gathered by the Bureau of the Census, to obtain more refined measures with which to profile some of the changes in American society that occurred between 1980 and 1990.

⁵U.S. Department of Commerce, Bureau of the Census, State Populations and Household Estimates: July 1, 1989. Current Population Reports, Population Estimates and Projects. Series P-25, No. 1058. March 1990

Rosa and Maw (1990) note that "since 1980, the Hispanic population has grown approximately five times as fast as the non-Hispanic population and is the youngest major U.S. group... "

Data gathered by the U.S. Department of Education's Office for Civil Rights show that minority enrollment as a proportion of total enrollment in public schools rose from 24 percent in 1976 to around 30 percent in 1986 (The Condition of Education:1991, v.1, Chart 1:18). In the same period:

- Hispanic enrollment increased from 6.4 percent to around 10 percent of the total, as the number of Hispanic public school students increased by about 45 percent;
- The white proportion of public school enrollment declined from 76 percent to 70 percent;
- Enrollment of Asian students increased 116 percent (from 535,000 in 1976 to 1,158,000 in 1986) as the Asian proportion of total public school enrollment rose from 1.2 percent to 2.8 percent.

Children in poverty. As the decade progressed, the proportion of school children from poor families grew. In 1980, some 12.4 percent of children under the age of sixteen lived in poverty. In 1990, the percentage of children below the poverty level had grown to 20.1 percent (1980 U.S. Census of Population: Detailed Population Characteristics, Table 304; 1991 Statistical Abstract of the United States, Table 748).

Structural changes in the American economy. Jobs in manufacturing declined over the decade, although there was growth in comparatively lower paying service jobs. Despite growth in service industries, the market for unskilled and semi-skilled workers shrunk in the 1980s; American workers with limited skills were increasingly in competition with low wage workers in poorer countries. The 1980s were characterized by a growing gap in the economic rate of return of high school diplomas and college degrees. Over the decade, wages earned by college graduates rose by 11 percent, while wages of high school graduates declined between 20 and 28 percent, by various estimates.⁶

Given these national trends, it will be instructive to compare the situation of 1980 and 1990 sophomores along a number of dimensions. The cohorts can be compared in terms of racial composition (Table 1.1); racial composition by socioeconomic status quartile (Table 1.2); racial composition by school sector (Table 1.3); and finally, by the respective cohorts' enrollment in the various school sectors, by socioeconomic status (Table 1.4).

Racial composition. The racial composition of the 1980 and 1990 sophomore cohorts is depicted in Table 1.1 below. While 1980-90 subgroup differences are not significant, given small sample numbers for subgroups, Bureau of the Census data⁷ confirm the key trend--an increase in the percentage of students who are members of racial minority groups. The 1990 percent minority grew by 12.5 percent

⁶ Harvard Education Letter, IX(1) January 1993.

⁷Issues such as the extent to which HS&B and NELS:88 estimates may correspond to or differ from other sources, reasons for divergence of estimates, and the comparability of HS&B and NELS:88 estimates, are addressed in the methodological and technical appendix, Appendix B.

beyond the 1980 base, and 3 percentage points against the total population (from 24.7 to 27.7 percent). NELS:88 Asians and Hispanics show increases from their HS&B proportions, as portrayed in Table 1.1.

Table 1.1. Percentages of 1980 and 1990 sophomores in each racial/ethnic category

Race/Ethnicity	1980	1990
All Sophomores	100.0	100.0
Asian	1.3	3.9
Hispanic	8.3	10.1
Black	14.2	12.5
White	75.3	72.3
American Indian	1.0	1.2

Note: Percentages may not sum to 100 because of rounding.

Sources: High School and Beyond base year sophomore cohort and NELS:88 first follow-up, U.S. Department of Education, National Center for Education Statistics.

Racial composition across socioeconomic status levels. For both HS&B and NELS:88, a socioeconomic status (SES) quartile variable was built using information about parental education level, parental occupation, family income, and household items (see appendix B for details on construction). Students were placed in quartiles, based on their standardized composite score. For purposes of this analysis, the middle two quartiles were collapsed, creating a three-level SES scale with the values "high" (highest quartile), "middle" the (two middle quartiles), and low (the lowest quartile).⁸

A comparison of the distribution of racial/ethnic groups across levels of socioeconomic status is shown in Table 1.2. The results in Table 1.2 suggest a remarkable stability. Though there are percentage shifts in the table, none of the changes across cohort are significant.

⁸Use of SES quartiles provides a relative measure of the socioeconomic status of families, and is not keyed to an objective threshold of well-being. Thus one quarter of each cohort will, by definition, reside in the bottom SES quartile, even if education levels, income, the number of persons in higher prestige occupations all increase. The fact that the child poverty rate increased by 8 percent over the decade will not be registered in an SES measure derived from a child-based sample, though the measure can certainly detect changes in sociodemographic subgroups' relative status (for example, a higher proportion of blacks might move into the highest SES quartile, while the proportion of high SES whites might decrease), trends over time in access of different SES groups to public, Catholic and other private schools, and so on.

Table 1.2. Percentages of 1980 and 1990 sophomores in each socioeconomic category, by race/ethnicity

Race/Ethnicity	Low SES		Middle SES		High SES	
	1980	1990	1980	1990	1980	1990
All Sophomores	25.0	25.1	50.0	50.4	25.0	24.6
Asian	23.2	18.3	45.4	49.8	31.5	32.0
Hispanic	48.2	51.6	40.8	37.7	11.1	10.7
Black	45.7	42.2	43.5	48.5	10.9	9.4
White	18.8	18.7	52.2	52.4	29.0	28.9
American Indian	38.0	41.4	50.9	52.2	11.1	6.3

Note: Owing to rounding, percentages may not sum to 100.

Sources: High School and Beyond base year sophomore cohort and NELS:88 first follow-up, U.S. Department of Education, National Center for Education Statistics.

Race by school sector. Table 1.3 shows the overall proportion of students attending schools in the public, Catholic, and non-Catholic private sectors.⁹ The data indicate that these proportions have remained stable over the decade. In addition, there has been no appreciable sector shift within ethnic or racial group.

SES by school sector. The data in Table 1.4 indicate no significant change in sector by socioeconomic status.

Changes in America's Schools: The School Reform Movement

These sociodemographic trends are important to note. Equally, it is important to take note of trends within America's educational system, including some that may interact with these demographic tendencies in various ways. For example, because the percentage of students from poor homes has increased, it is necessary to take note of any increase in educational programs designed to compensate for the possible disadvantages of students from poverty backgrounds.

⁹For purposes of this report, the three broadest school type categories were utilized from the many available in the HS&B and N ELS:88 datasets—public, Catholic, and all other private. These broad categories meek many interesting differences between the further subdivisions of both private and public schools. There is, of course, enormous diversity in the kinds of schools in the Other Private category, which may be religious or secular, and which range from elite independent schools that draw their student body nationally to yeshivas and small Christian academies. There also are differences between Catholic schools, some of which are captured by NELS:88 (for example, differing sources of control, such as diocese, parish, or a religious order) or HS&B (for example, difference in racial composition—Catholic schools with high percentages of minority students were included in HS&B at a disproportionate rate). There is considerable diversity in public schools, which could be subdivided into comprehensive schools, magnet schools, alternative schools, schools of choice, and so on. Because of the somewhat different sampling schemes in HS&B and N ELS:88, the three broad school type categories of public, Catholic, and other private provide the best basis for drawing meaningful comparisons between the two studies. For analyses within either study, many more options are viable.

Table 1.3. Percentages of 1980 and 1990 sophomores in each sector, by race/ethnicity

Race/Ethnicity	Public		Catholic		Other Private	
	1980	1990	1980	1990	1980	1990
All Sophomores	90.6	90.3	6.1	6.1	3.3	3.6
Asian	91.1	84.6	5.9	8.1	2.9	7.3
Hispanic	92.3	92.8	5.8	5.5	1.9	1.7
Black	97.0	93.8	2.5	5.3	0.5	0.1
White	89.2	89.5	6.9	6.2	4.0	4.2
American Indian	97.1	98.3	1.1	1.7	1.8	0.0

Note: Owing to rounding, percentages may not sum to 100.

Sources: High School and Beyond base year sophomore cohort end NELS:88 first follow-up, U.S. Department of Education, National Center for Education Statistics.

Table 1.4. Percentages of 1980 and 1990 sophomores in each sector, by socioeconomic status

Socioeconomic status	Public		Catholic		Other Private	
	1980	1990	1980	1990	1980	1990
All Sophomores	90.6	90.3	6.1	6.1	3.3	3.6
Low SES	96.6	97.2	2.5	2.3	0.8	0.5
Middle SES	91.6	91.1	5.8	6.4	2.6	2.5
High SES	81.8	80.8	10.6	9.8	7.5	9.4

Note: Owing to rounding, percentages may not sum to 100.

Sources: High School and Beyond base year sophomore cohort and NELS:88 first follow-up, U.S. Department of Education, National Center for Education Statistics.

While the racial composition of the population will reflect various factors, the racial composition of individual schools and classrooms is manipulable (for example, the racial composition of a neighborhood school can be altered by busing in students from another area, or students and parents can be offered wide choices for attendance, beyond the neighborhood school). Indeed, the HS&B sophomores and seniors of 1980 represent the first generation of American students whose elementary and secondary school careers reflect the effects of court-ordered desegregation--a judicial policy that drew its social science rationale in large measure from the 1966 Congressionally-mandated NCEs report, Equality of Educational Opportunity (Coleman et al., 1966). For the NELS:88 sophomores, throughout the decade of the 1980s, magnet school programs have been used¹⁰ both to provide parents and students with greater choice, and to promote racially integrated learning environments.

¹⁰Just how successful use of magnet schools has been as a desegregation strategy is an important question that has not been conclusively answered at this time.

Just as the **HS&B** cohorts were affected by changes in the nation's educational system in the late 1960s and the 1970s--most notably, compensatory programs to assist the disadvantaged such as Head Start (a program that provides comprehensive developmental services for low-income preschool children) and Chapter I funding for elementary and secondary compensatory education; Pell Grants and other provisions for postsecondary aid; and declining pupil-teacher ratios (Fetters, Brown, & Owings, 1984)--so too have **NELS:88** sophomores been affected by further changes in the manner and matter of schooling in the United States.

Despite the numerous 1970s programs designed to spur overall achievement and, in particular, to foster equity in achievement through compensatory measures, many of the educational results reported for the **HS&B** cohorts form an ominous backdrop for examining the changed educational environment of **NELS:88** sophomores. The **HS&B** senior cohort showed lower test performance and time spent on homework than had **NLS-72** seniors, and the percentage of students taking an academic curriculum declined (Fetters, Brown & Owings, 1984). **HS&B's** 1980 sophomores, when tested as seniors in 1982, also showed a decline in tested achievement compared to 1972 seniors. Ekstrom, Goertz and Rock (1988) reported test declines for almost all subgroups, though score declines were greatest for mid and low SES and for public school students.

This decline was registered in the results of other national studies and testing programs as well. SAT scores continued a decline that had started in the 1960s but that became most serious in the 1970s; meanwhile, American students performed poorly compared to students in other countries on the Second International Mathematics and Science studies (Ekstrom, Goertz & Rock, 1988). Data from the National Assessment of Educational Progress show general decline in most subjects at most grade levels throughout the 1970s, often with improvements to earlier levels--but not beyond--by the mid-1980s (Mullis, Owen & Phillips, 1990). By the time that the National Commission on Excellence in Education had issued its 1983 report, *A Nation At Risk: The Imperative For Educational Reform*, the call for fundamental change to arrest and reverse the declining levels of academic achievement in the United States had begun to be heard. During the decade preceding the entry of the **NELS:88** cohort into tenth grade, countless state and local initiatives attempted to reformulate educational objectives, revamp education's basic infrastructure, evaluate teacher training, and reallocate scarce resources to bring about systemic improvements. The reforms of the 1980s have changed (if not always transformed) many of the schools in which **NELS:88** sophomores have been educated. To better understand differences between 1980 and 1990 sophomores, then, we would do well to consider major reform initiatives and their impact on schooling.

During the period of time that **NELS:88** students advanced through the grades to their sophomore year, many currents, particularly efforts for improvement and change, were operative in the school environment. Among the more notable currents of reform are the following:

- Changes in school organization and management;
- Efforts toward greater professionalization of teachers;
- Modifications of curriculum requirements and content;
- Reform of instructional practices;
- Calls for increased parental participation in school affairs;

- Growth of alternative programs for students at risk of educational failure and of cooperative learning as an alternative to **tracking**;
- Increased prominence of drug and alcohol prevention **programs**;
- Programs regarding sexual risk **behaviors**;
- Increasing **availability** of computerized learning technologies in schools.

Other reform initiatives that were widely instituted only in the late 1980s--for example, greater emphasis on higher order thinking skills and **problem-solving**; greater school **choice**, both **intra-** and **inter-district**; and increased emphasis on setting national education goals--may have been in effect too short a time to have substantially affected this **cohort**.

Such reforms are not all of a piece--either conceptually (**for** there are tensions between the claims of equity and **excellence**, and between competing strategies for school **betterment**)--or temporally (**reform** evolved over the **decade**, changing in emphasis from placing first importance on raising standards for students and personnel and schools to finding means for restructuring programs and **schools**). Murphy (1990) describes the 1980s reform movements in terms of three distinct waves of objectives and initiatives. From 1982-85, efforts to improve schooling focused on components such as teacher preparation and **training**, curriculum **change**, and testing to ensure greater accountability in the meeting of measurable **standards**. The second wave of school **reform**, Murphy **maintains**, flourished from 1986 to 1989, and, more **radically**, advocated empowering parents and educators through decentralized school **management**. A third wave of **reform**, beginning in 1988, is **child-centered**, and seeks to empower the **student**. A **further** recent current in the reform movement urges a more systemic approach to the transformation of learning **goals**, instructional **methods**, and school **governance**, to replace the **largely** piecemeal and uncoordinated initiatives of the 1980s. As Cuban (1990) reminds **us**, reform is a recurring motif in American **education**, but may emphasize either teacher-centered subject-based instruction or more child-centered traditions of active **discovery**.

Proposals for reform do **not**, of **course**, automatically translate into initiatives that have affected the lives of **NELS:88** sample **members**. America's school system is highly **decentralized**, and there have been many very different experiments in reform in different **locales**. **Moreover**, **all** attempts at reform must face the fact that organizational features of schools are more open to manipulation than what happens in the **classroom**. **Thus**, there is some evidence that instructional practices have generally shown little change (**Mullis, Owen & Phillips, 1990**). On the other **hand**, academic requirements **have**, in the **main**, been **stiffened**, and teacher testing has become **widespread**. Since the 1983 publication of **A Nation at Risk**, 42 of the fifty states have raised their high school graduation **requirements**, and 47 states have mandated student testing standards (**Coley & Goertz, 1990; Medrich, Brown & Henke, 1992**).¹¹ And

¹¹It is difficult to assess the impact of more stringent state **standards**, **however**, because it is difficult to know the proportion of cases in which increased **state requirements** exceed existing local **requirements**. Comparing the 1992 **NELS:88** transcripts results with the 1982 **HS&B** transcripts results **will** permit more precise measurement of the extent to which students **are** completing more academic **coursework**, whether motivated by **local, state, parental** or personal goals or **requirements**.

despite **stiffened** graduation requirements, the available evidence suggests that during the 1980s, dropout rates did not **increase**, but on the **contrary**, substantially **declined**.¹²

To some modest **extent**, this report can provide data that may help to answer the fundamental question that **school** reform poses--to **what**, in the aftermath of reform **efforts**, are American students in general being better **educated**, better prepared for employment and **postsecondary schooling**, and better prepared to take on adult roles than they were in 1980 when **HS&B** sophomores were **surveyed**? The various comparisons and findings of this report on trends concerning program **choice**, use of leisure time and **postsecondary** aspirations and **values**, should be understood within the wider context of recent changes--and **the** aspiration for yet greater changes--in American **education**.

¹²Between 1980 and 1991, the status dropout rate (**that is**, the proportion of the population who, at a given **time**, had not completed **high school** and were not enrolled **in school**, regardless of when they dropped out) declined 11 percent, i.e., from 14.1 percent to 12.5 percent. The event dropout rate (**that is**, the proportion of students dropping out in a single **year**) declined 34 percent--from 6.1 percent in 1980 to 4.0 percent in 1991 (McMillen, Kaufman, Hausken & Bradby, 1992, p.50). There are many factors that must be counted in the social and educational context in which these declining dropout rates **occurred**. For **example**, the fact that real wages for those with high school and less than high school education dropped during the 1980s could have provided an impetus for many students to remain **in school longer**, or dropout prevention programs may have contributed to this result--this report provides no basis for attributing causes or weighing the influence of possible contributing **factors**.

CHAPTER 2: SCHOOL EXPERIENCES

High school provides a wide range of experiences and opportunities to young people. Three aspects of school experience will be examined in this chapter:

1. High school program
2. Motivation to learn
3. School safety

A related area--achievement in school--will be examined in a separate chapter (chapter 3), which compares the test performance in mathematics of the two sophomore cohorts.

One of the most important determinants of a sophomore's academic experience is his or her **high school program**. Whether students are in an **academic, general**, or vocational program may strongly define the course content they are exposed to **and** the kinds of classroom experiences they **will have**.

A student's high school experience is affected not **only** by external factors. Internal **factors**, such as the student's **motivation** and initiative to **learn**, also help determine the kind of educational experience the student **will have**. **HS&B** and **NELS:88** have in common several items that measure tenth graders' academic **motivation**, and that allow us to compare **HS&B** and **NELS:88** sophomores' willingness to meet the most basic requirements of **learning**, such as coming to school with **books**, paper and **pencil**, and completed homework

In **addition**, school safety--whether one feels physically **safe**, or threatened by violence in school--is **surely** a critical **aspect** of the high school **experience**.

High school program. Placement in academic programs declined over the course of the 1970s, as is demonstrated by comparisons of **NLS-72** and **HS&B** seniors (**Fetters, Brown & Owings, 1984**). Was any of this ground regained--that is, did a larger proportion of students opt for academic programs--in the aftermath of 1980s reform **initiatives**? This question may be answered by comparing **HS&B** and **NELS:88** sophomores.

One of the most consistent influences on high school students is the program in which they are **placed** or enroll. **Moreover**, program **placement**¹ **strongly** influences later occupational opportunities and prospects for entry into and success in **postsecondary education**. The differentiation of the high school curriculum into **academic**, general, and vocational programs is intended to meet the diverse needs of different groups of **students**. For **example**, the academic track is designed to prepare the college bound for higher **education**, while vocational courses are designed to enhance the marketable occupational skills of those going directly from high school into the labor **market**.

However, differentiation of the high school curriculum into distinct program types has had its critics (on both efficiency and equity **grounds**) as **well** as **proponents**. For **example**, the effectiveness of

¹Although programs may be chosen as well as assigned, the term program placement is used here in distinction to program participation or enrollment. Students in a general or academic program may enroll in one *or* more sequences of courses in vocational education, and indeed Hoachlander, Kaufman & Levesque (1992) point out that "In the high school senior class of 1987, 98 percent of all public high school graduates completed at least one course in vocational education during their high school careers... For most students this one course was not simply a typing course; in fact, almost 90 percent of all graduates completed at least one course in specific labor market preparation."

vocational programs historically in increasing students' employment opportunities has sometimes been questioned (Grubb & Lazerson, 1982), while others have maintained that, as with ability grouping, "the division of secondary schooling into vocational and academic programs throughout the twentieth century has reinforced the social, racial and economic stratification of American society" (Oakes, 1985, p.153).²

Increasingly, however, technologically advanced jobs in the marketplace require high levels of both academic and vocational skills, and the need to integrate academic and vocational curricula has increasingly been felt. Hence the 1990 Amendments to the Carl Perkins Act require programs receiving federal vocational education funds to "integrate academic and vocational education in such programs through coherent sequences of courses so that students achieve both academic and occupational competencies" (Section 235). Given the recency of vocational reform efforts, it is the conditions such initiatives have been designed to address--such as the need for better articulation of the school-to-work transition, and the need to impart technological skills without shortchanging academic goals--and not reforms themselves, that are most likely to have had a major impact on NELS:88 sophomores.

In examining program differences between 1980 and 1990 sophomores, two past trends should be noted. First, across program types, the proportion of students in each kind of program has varied over time. Second, within vocational programs, traditionally, some forms of occupational preparation have been male-dominated, others female-dominated; over time, changes have been observed in this pattern. It may be useful to expand on each of these two points.

In terms of college preparatory programs, the school reform agenda of the 1980s reacted against the dominant program placement trends of the 1970s. In the 1970s, placement in the academic curriculum declined, with concomitant increases in general program and (for males) vocational program placement (Fetters, Brown, & Owings 1984). The school reform movement of the 1980s placed renewed emphasis on the academic curriculum, and, more recently, on revitalization of the vocational education curriculum. The general curriculum has evoked little enthusiasm among reformers, in that it arguably is not well suited to facilitating either academic or employment transitions after high school.

While sorting of students between academic, general and vocational programs has traditionally reflected socioeconomic stratification, an additional kind of sorting within vocational programs is associated with gender. For example, enrollees in agricultural and industrial studies have been disproportionately male, while health and business or office courses, and home economics, have had greater female enrollment. Gender differences in placement across different types of vocational emphases diminished substantially during the 1970s (Fetters, Brown, & Owings 1984; Hoachlander, Kaufman & Levesque 1992).

These trends suggest two ways in which HS&B and NELS:88 sophomores may meaningfully be compared. First, given criticisms of vocational programs for their low rate of economic return to participants, and given criticisms of the general and vocational tracks as being less rigorous in imparting the most socially valued forms of knowledge, have program placement patterns across the various program types changed in recent years? In particular, has the 1980s "back to basics" emphasis on

²It is not clear that at present minorities are more likely to take concentrated coursework in vocational education. Data from the 1987 High School Transcripts Study show that white students were more likely to earn 8.00 or more Carnegie units (one unit = completion of a course that meets 1 period per day for 1 year) in vocational education than were black or Hispanic students (Hoachlander, Kaufman, and Levesque, 1992). However, racial stratification may occur more in the kinds of vocational courses students take than in enrollment in vocational courses per se, with blacks and Hispanics less likely to be enrolled in vocational courses that impart general skills or that impart a high level of academic content and more likely to be enrolled in occupationally-specific preparation for health, construction, or service-related jobs (Oakes, Selvin, Karoly, and Guiton, 1992).

academic subjects arrested or reversed the shift from academic to non-academic programs that typified the 1970s?

Second, has the earlier trend toward diminished gender sorting in vocational occupational areas **continued**? These questions are addressed in the analyses presented **below**. First let us examine changes in placement patterns across program **types**.

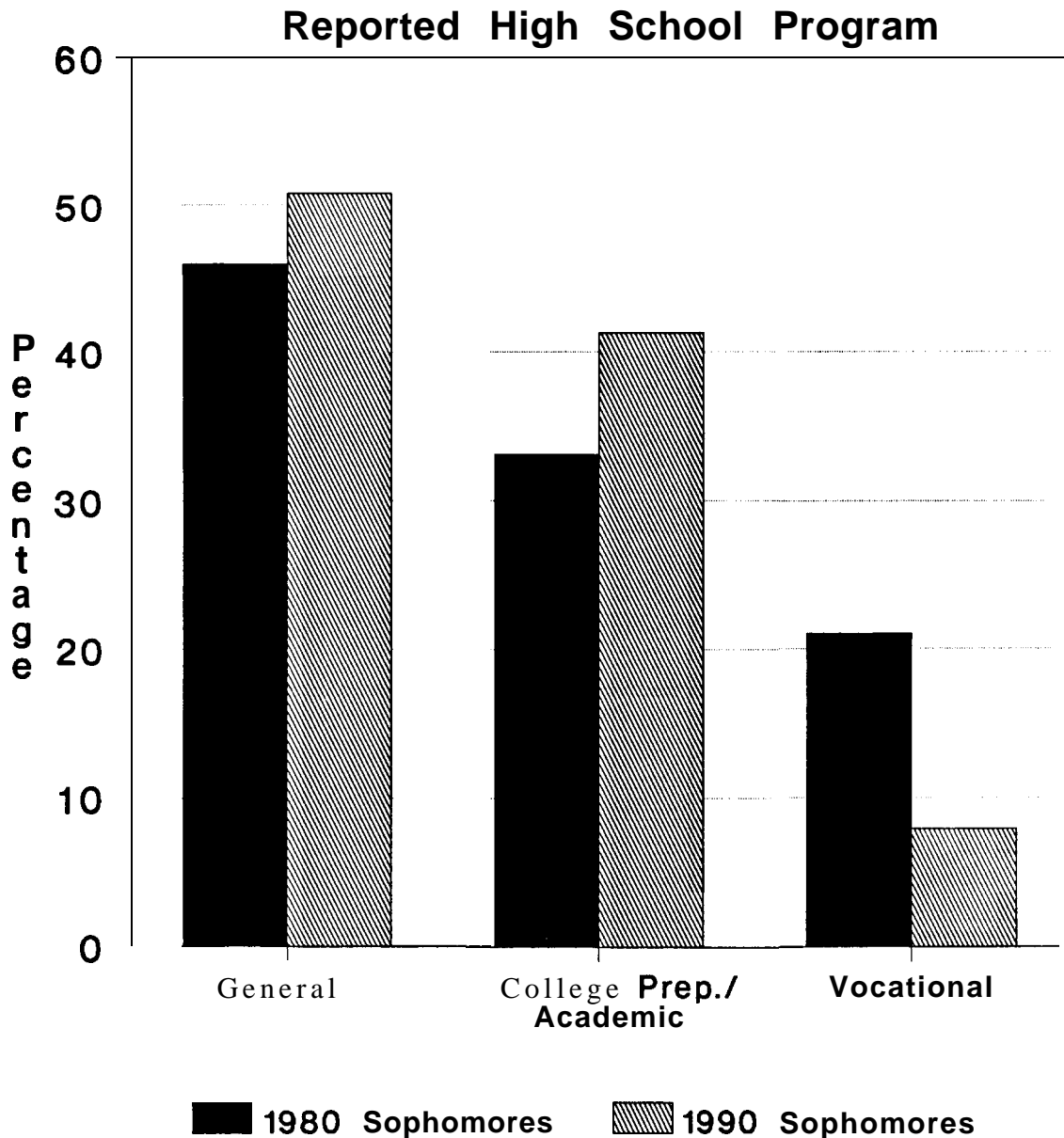
Figure 2.1 provides a comparison of **1980** and **1990** sophomores in **general**, college **preparatory**, and **vocational programs**. A limitation of this analysis of program placement is that it is based on student **self-report**. The major **difficulty** with using self-reported program participation data is that students may not know what program they are **in**, and may report **erroneously**. This may be especially true for sophomores because they are still relatively new to the high school and may not have as clear an idea of the curricular organization as would juniors and **seniors**. The preferred analysis of program participation would use student transcripts. **However**, while **HS&B** transcript data are **available**, transcripts for the **NELS:88** sample will not be available until mid to late **1993**.

Despite the **limitations**, at least the method of obtaining program participation is consistent across the two **samples**; self-report is used in both **HS&B** and **NELS**. While differences may not entirely reflect actual changes in program **participation**, they do at least indicate changes in **students'** perceptions of their **programs**. Other analyses of transcripts across roughly the **same** time period offer a modicum of support for the trends reported **here**. The proportion of **coursework** attributed to academic courses increased from **66** percent in **1982** to **69** percent in **1987** while the proportion of **coursework** made up by vocational courses has decreased slightly from **23** percent in **1982** to **20** percent in **1987** (**Medrich, Brown, & Henke, 1992, p. 44**; see also **Tuma, Gifford, Horn, & Hoachlander, 1989**; and **Hoachlander, Kaufman, & Levesque, 1992**).

When compared to their **1980 counterparts**, fewer **1990** sophomores report that they are in **vocational programs**. **Overall**, the decline in **vocational** placement is by more than **half**. Table 2.1 shows that the drop in vocational program placement is consistent for sophomores of both **sexes**. At the same time that vocational program placement **declined**, placement in college preparatory programs increased for **sophomores**, from **33** percent in **1980** to **41** percent in **1990**. Far from dramatically **decreasing**, as reformers might have **hoped**, program placement in the general curriculum very slightly **increased**.

*General and college preparatory placement has **increased**, at the expense of vocational **program placement**. **Less than half as many 1990 sophomores (8%) identified their high school program type as vocational education as did so in HS&B ten years before (21%)**.*

Figure 2.1-1980 and 1990 sophomores
in general, college prep. or academic
and vocational high school program



SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table 2.1. Percentages of 1980 and 1990 sophomores in each high school program, by gender

High School Program	All Students		Males		Females	
	1980	1990	1980	1990	1980	1990
General	46.0	50.8	46.4	50.9	45.2	50.7
College Prep.	33.1	41.3	32.5	40.6	35.8	42.0
Vocational	(21.0)	(7.9)	(21.1)	(8.4)	(19.0)	(7.4)
Agricultural	2.9	0.9	4.2	1.6	1.5	0.4
Business or office	7.1	3.4	3.1	2.3	10.3	4.4
Distributive	1.7	0.4	1.6	0.5	1.6	0.4
Health	1.3	0.9	0.9	0.5	1.5	1.3
Home economics	1.7	0.4	0.6	0.3	2.5	0.5
Technical occupations	1.8	0.9	3.0	1.7	0.6	0.2
Trade or industrial	4.5	0.9	7.8	1.6	1.1	0.2

Note: Vocational programs may not sum to vocational totals because of rounding. In addition, columns may not sum to 100 percent owing to rounding.

Sources: HS&B base year student survey (1980) and NELS:88 first follow-up student survey (1990), National Center for Education Statistics, US Department of Education

Table 2.2 shows program shifts by various background characteristics. A remarkable consistency in the drop in placement into vocational programs is seen across groups. In absolute terms, the decline in vocational program placement is particularly large in the public sector, which traditionally has served as the primary delivery system for high school vocational education courses. Though comparatively few Catholic students are in vocational programs at either point in time, the Catholic sector too registered a statistically significant decline in vocational program placement between 1980 and 1990.

Table 2.2. Percentages of 1980 and 1990 sophomores in **General**, College Prep., and vocational high school programs, by **sector, race, SES**, and test quartile

Student Characteristics	General		College Prep. or Academic		Vocational	
	1980	1990	1980	1990	1980	1990
All Sophomores	46.0	50.8	33.1	41.3	21.0	7.9
Asian	37.1	42.3	48.8	49.2	14.1	8.5
Hispanic	46.1	55.0	24.6	35.1	29.2	9.9
Black	39.0	42.9	26.9	40.9	34.1	6.2
White	47.4	51.7	35.0	42.0	17.6	6.3
American Indian	51.6	58.5	19.8	22.9	28.7	8.6
Low SES	51.5	57.2	19.0	27.7	29.5	15.2
Middle SES	47.8	51.7	31.0	40.9	22.2	7.5
High SES	36.8	43.1	53.8	54.9	9.4	2.0
Northeast	33.2	41.2	44.7	50.6	22.1	8.2
North Central	44.8	56.7	31.8	36.9	23.4	6.4
south	51.5	48.6	27.1	41.6	21.4	9.8
West	52.2	56.1	32.3	37.6	15.5	6.3
Public	47.3	52.2	30.2	39.1	22.6	8.7
Catholic	32.3	35.9	61.9	62.7	5.8	1.6
Other Private	36.9	43.9	57.6	55.6	5.5	0.5
Lowest Test Quartile	50.1	61.0	12.8	19.6	37.0	9.4
Second Test Quartile	54.1	61.1	22.4	29.2	23.5	9.7
Third Test Quartile	48.1	50.2	37.0	44.4	14.9	5.4
Highest Test Quartile	32.4	35.4	60.9	62.7	6.7	1.9

Note: Owing to rounding, percentages may not sum to 100.

Sources: HS&B base year student survey (1980) and NELS:88 first follow-up student survey (1990), National Center for Education Statistics, US Department of Education

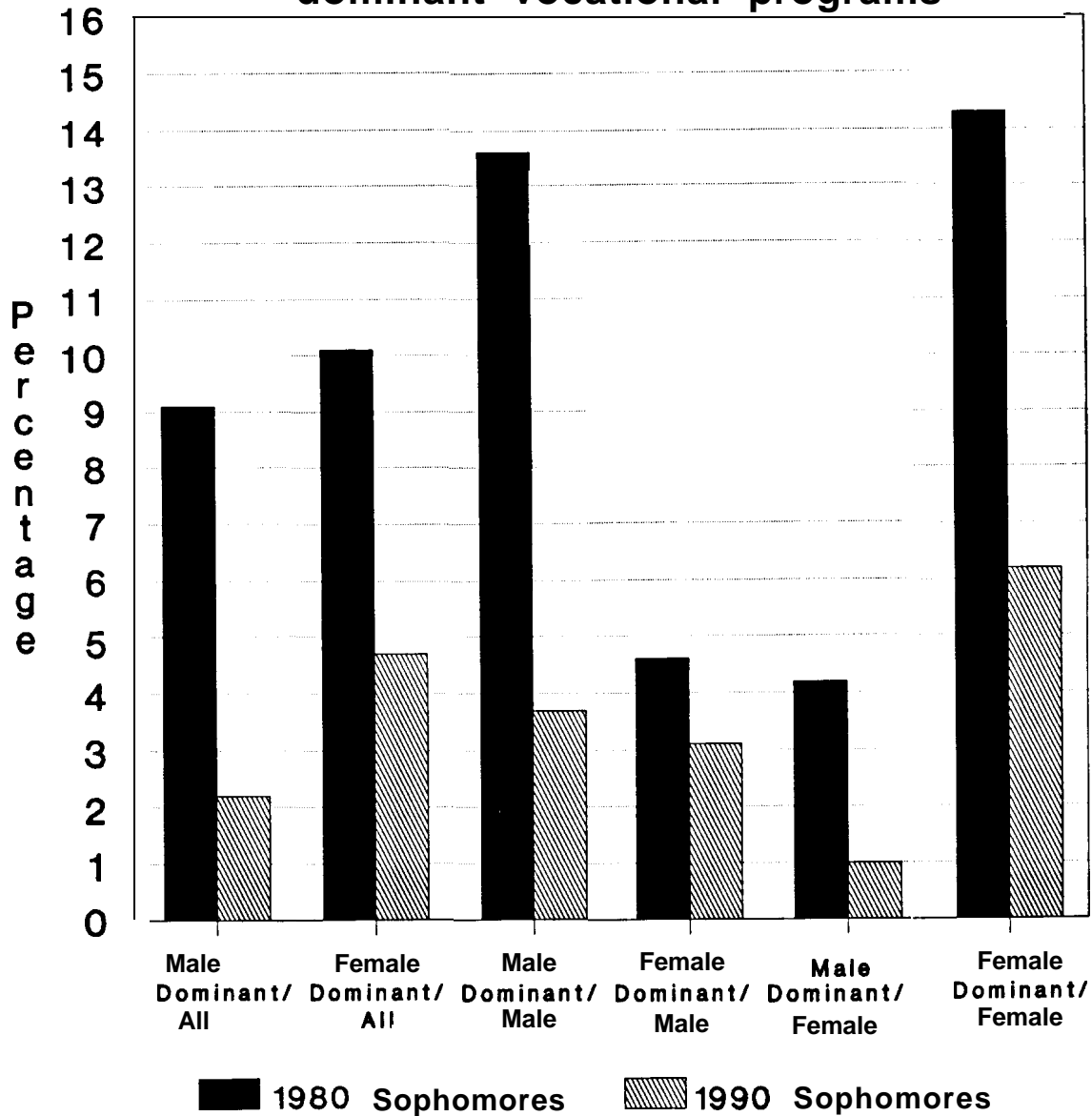
Accompanying the drop in vocational program placement is an increase in placement in general and college preparatory or academic **programs**. Significant increases in placement into college preparatory high school **programs** may be seen for students in the public high schools, as well as those in the lower test quartile and socioeconomic status groups. It is particularly interesting to observe more 1990 black and Hispanic sophomores in college preparatory **programs**. For **blacks**, at least, the gap with white sophomores has been **eliminated**. Though 1990 Hispanics increased proportionately in college preparatory **programs**, Hispanic sophomores still lag behind white sophomores in placement in college preparatory **programs**.

Vocational programs were categorized as **male- or female-** dominant based on the number of male and female high school students in those programs in 1972. This scheme was adopted to **allow** comparability with a previous report by **Fetters, Brown, & Owings (1984)** in which 1972 and 1980 seniors were **compared**. Following **Fetters, Brown, & Owings (1984, p.12)**, the three occupational areas within vocational programs which in 1972 contained a greater percentage of males than females (**agricultural, distributive, and trade or industrial**) were classified as **male-dominant**. The three occupational **programs** which in 1972 contained a greater percentage of females than males (**business or office, health, and home economics**) were classified as **female-dominant**. It should be noted that in this report and in the report by Fetters and his associates transcript data were not used to classify students into either programs or occupation **areas**. Both reports rely solely on student self-report of program and **area**.

For students enrolled in vocational **programs**, the percentages enrolled in **male-** and **female-** dominant vocational **programs** are shown in Figure 2.2. The figures show the exodus of both male and female vocational high school sophomores from vocational **programs**. While in 1980, gender sorting in vocational program participation is quite **dramatic**, this seems to be less the case in 1990. In 1990, boys are in **male-** and female-dominant programs with equal **frequency**. **However**, girls are still disproportionately represented in 1972 female-dominant vocational **programs**.

Figure 2.2-Percentage of 1980 & 1990 sophomores in male- & female-dominant vocational programs, by gender

Participation in male- and female-dominant vocational programs



SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-Up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Student motivation. One way of gauging motivation to participate in school is to assess the degree to which students come **prepared**. Questions assessing whether students came to school without their **books, pens, pencils**, paper and homework were asked of both the **1980** and **1990** sophomore cohorts. Results are shown in Table 2.3. **Overall, 1990** sophomores were less likely to report coming to school without **books**, writing **implements**, or homework than sophomores in **1980**. These differences are particularly noticeable in the public **sector**.

Table 2.3. Percentages of **1980** and **1990** sophomores saying they usually or often come to school **without paper and pencil, books, and/or homework**, by student characteristics

Student Characteristics	Come to school without books		Come to school without paper, pen or pencil		Come to school without homework	
	1980	1990	1980	1990	1980	1990
All Sophomores	8.5	6.3	15.1	10.5	22.1	18.1
Male	10.4	7.6	19.6	15.2	27.0	22.4
Female	6.0	5.0	10.2	5.8	16.8	13.8
Asian	13.0	9.5	14.6	11.0	17.1	17.6
Hispanic	13.8	10.9	20.1	13.5	27.7	20.6
Black	13.7	8.1	17.6	9.6	22.9	16.0
White	6.7	5.1	13.9	10.2	21.2	18.1
American Indian	17.5	11.1	25.9	11.8	30.9	21.9
Low SES	11.3	8.4	16.8	10.7	25.1	19.6
Middle SES	7.7	6.4	14.2	9.9	21.5	18.4
High SES	5.5	3.5	13.6	10.8	18.4	15.3
Public	8.9	6.6	15.2	10.2	22.6	18.5
Catholic	4.5	3.4	14.7	10.5	17.2	12.6
Other Private	5.4	4.6	13.6	18.9	17.7	19.8
Lowest Test Quartile	17.1	12.8	21.9	15.1	28.5	23.8
Second Test Quartile	8.1	6.4	14.3	10.0	22.8	19.3
Third Test Quartile	4.8	3.8	12.1	7.8	19.8	16.2
Highest Test Quartile	3.0	2.5	10.8	8.2	16.2	14.3

Sources: **HS&B** base year student survey (1980) and **NELS:88** first follow-up student survey (1990), National Center for Education **Statistics**, US Department of Education

School **safety. Whether** schools can provide a safe environment for student learning has been an issue of great concern over the last two decades. One of six recently promulgated national education goals avers that "**by the year 2000**, every school in America will be free of drugs and violence and offer a disciplined environment conducive to learning." Both **HS&B** and **NELS:88** asked their student samples whether they felt safe at their school. Responses are shown in **Table 2.4**. Although the overwhelming

Between 1980 and 1990, the percentage of sophomores who reported feeling unsafe in school, declined by a third, from 12 percent of all sophomores in 1980 to 8 percent in 1990.

majority of sophomores at both time points reported that they felt safe in school, some group and cross-time differences are noteworthy. Overall, 1990 sophomores were somewhat more likely to report feeling safe in their schools than were 1980 sophomores. In all sectors, sophomores in 1990 report feeling safer than their respective 1980 counterparts. Higher safety ratings occur in 1990 regardless of student gender, socioeconomic status, and test quartile. When student racial/ethnic classification is considered, 1990 Hispanics, blacks and whites are less likely than their 1980 counterparts to report feeling unsafe in their schools. However, when compared to 1990 whites, 1990 blacks and Hispanics report feeling less safe in their school.

Table 2.4. Percent of 1980 and 1990 sophomores who report that they do not feel safe at their school by student characteristics.

Student Characteristics	1980	1990
All Sophomores	12.2	8.1
Male	13.4	8.8
Female	10.8	5.9
Asian	13.9	9.9
Hispanic	16.2	10.8
Black	17.7	12.9
White	10.7	6.7
American Indian	13.3	10.1
Low SES	15.2	10.8
Middle SES	11.5	8.2
High SES	8.7	5.4
Public	12.6	8.5
Catholic	8.2	4.4
Other Private	8.8	2.8
Test Quartile		
Lowest	19.5	5.8
Second	12.8	9.1
Third	10.0	6.3
Highest	6.1	4.4

Sources: HS&B base Year student survey (1980) and NELS:88 first follow-up student survey (1990), National Center for Education Statistics, US Department of Education

CHAPTER 3: MATHEMATICS ACHIEVEMENT

Mathematics has become increasingly important in the **information-oriented** post-industrial society in which we **live**. Graphical **representations**, and mathematical tools such as calculators and **computers**, have become **commonplace**. The societal role of science and technology has **grown**. The importance of quantitative analysis and **reasoning** to the social sciences--and the economic importance of mathematics in the workplace of an increasingly competitive global economy--are widely **recognized**.

At the **same time**, the quality and effectiveness of mathematics education in the United States has continued to be a critical national **issue**. A number of international **assessments**¹ have demonstrated that American **students**, compared to those of other **nations**, lag considerably in their achievement in **mathematics, especially** in their higher order problem solving **abilities**. Such comparisons imply that **American** schools can be more successful than they have been in producing numerate citizens who have realized their **full** potential to benefit from thorough mastery of mathematical concepts and modes of **reasoning**. Efforts at school improvement--in **particular**, such reforms as increasing the amount of **coursetaking** in key areas such as **mathematics**, making the content of such courses more **rigorous, and** improving the methods by which such courses are taught--have been a prominent feature of the years in which **NELS:88** sample members passed through middle and junior high schools and on into high school. While recent **NELS:88** and **NAEP** data suggest that new instructional practices in math are still not **widespread**, comparisons of **HS&B** and **NAEP** transcripts data reveal significant increases in high school enrollment in non-remedial math courses as the 1980s progressed (The Condition of Education 1991, Chart 1.14).

The large-scale national studies initiated by the National Center for Education Statistics provide indicators of how student mathematics performance has changed over **time**. **The** National Assessment of Educational Progress (**NAEP**) and the two longitudinal cohort studies--**High School and Beyond (HS&B)** and the National Education Longitudinal Study of 1988 (**NELS:88**)--**enable** us to measure how **students'** math performance changed during the decade of the 1980s.

In this chapter we compare mathematics achievement of the 1980 and 1990 sophomore **cohorts**. The mathematics test was the only cognitive test in the **NELS:88** battery that was designed to be linked to the **HS&B** scores. The linkage was effected by including **16 HS&B** mathematics items in the **NELS** test. In order to **compare** mathematics performance of the two sophomore **cohorts**, the mathematics scores from each sample had to **be** put on the same scale. An explanation of the equating process can be found in Appendix B.

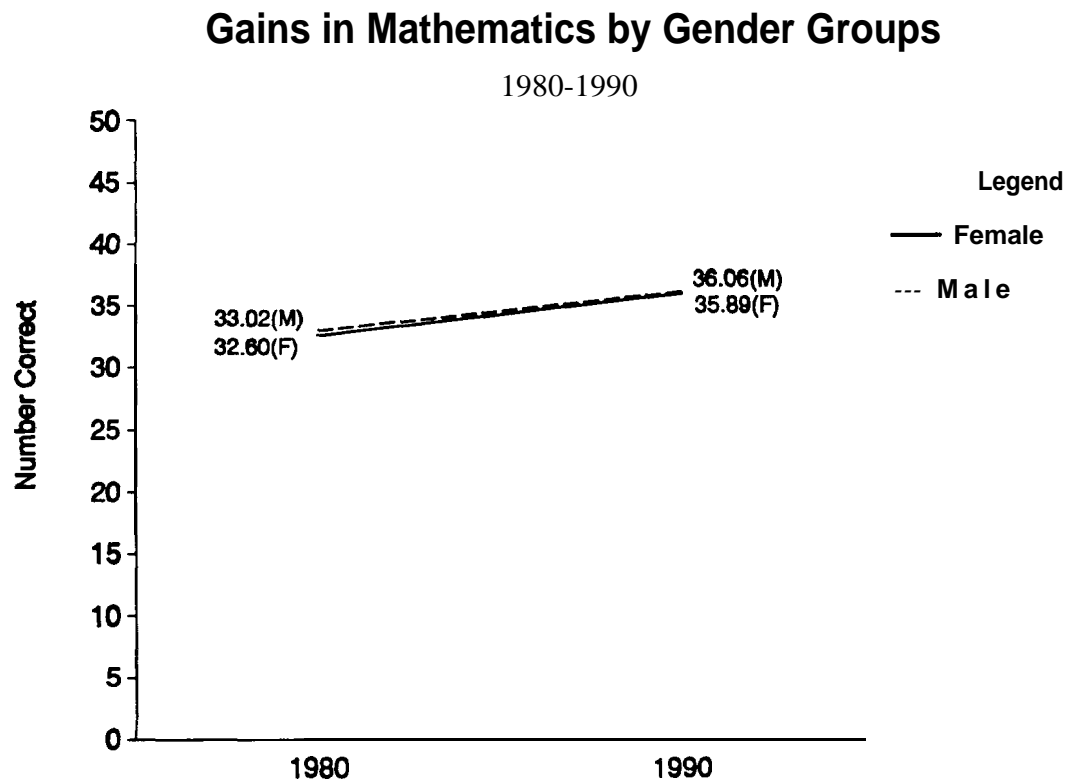
The following figures show gains and losses in mathematics achievement for a number of **subgroups**. What is of interest is not only whether sophomores showed significant overall change in mathematics proficiency over the ten year **period**, but whether subgroups which have **traditionally** lagged in **academic** achievement have reduced their respective gaps when **compared** to other **subgroups**. To put the gains and losses into perspective they are reported in the text in terms of effect **sizes**. Effect **sizes, unlike** the standard statistical **tests**, provide a scale-free measure of relative gain that is independent of

¹For a summary of findings from international mathematics and science assessments in recent years, and an examination of the statistical limitations and uses of such findings, see the recent NCES report International Mathematics and Science Assessments: What Have We Learned? (1992, Superintendent of Documents, 065-00487-7).

sample size. The use of effect sizes in conjunction with statistical tests helps to keep to a minimum the potential for interpreting trivial but statistically significant effects in the presence of very large **samples.** A more detailed **explanation** of **effect sizes,** including guidelines for their **interpretation,** is provided in Appendix B.

Figure 3.1 shows 1980 and 1990 mean achievement in mathematics for male and female students.

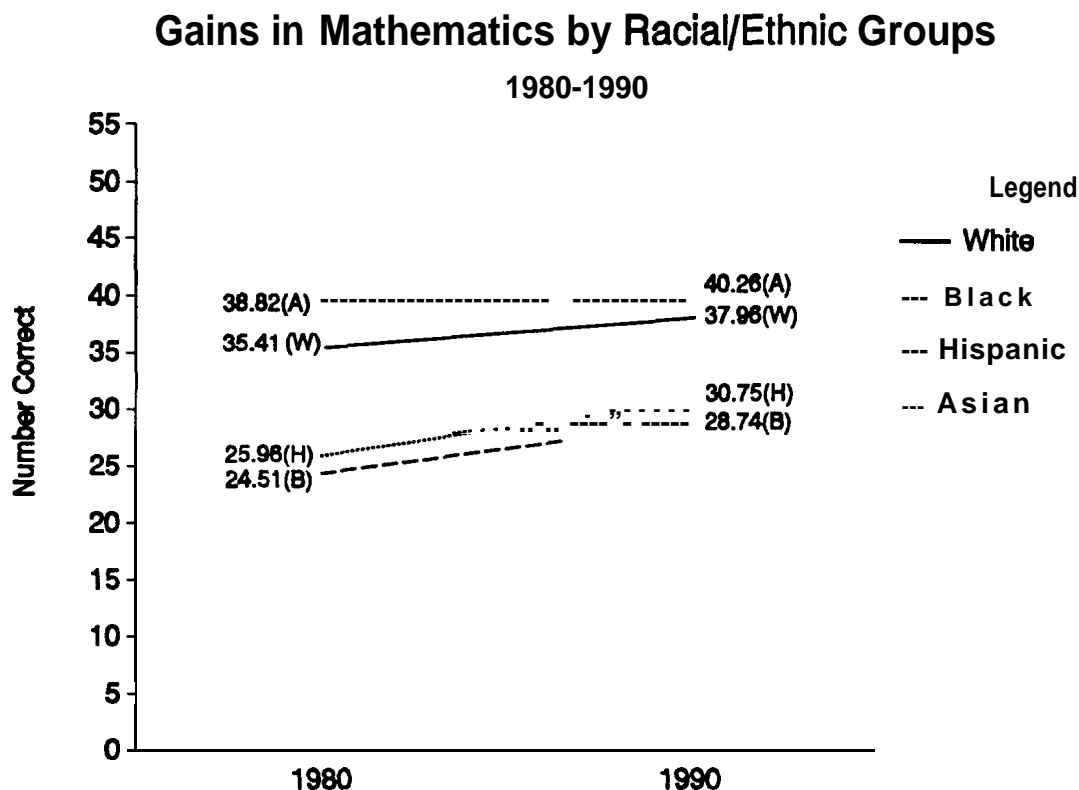
FIGURE 3.1



As a benchmark here, it may be useful to note that for the total population, the HS&B mean was 32.81, the NELS:88 mean was 35.97, and the effect size .26. The effect size of .26 is the simple gain ($35.97 - 32.81 = 3.16$) divided by the total standard deviation from 1980. The interpretation of the .26 effect size is that on average, sophomore students in 1990 are performing 26% of a standard deviation higher than their comparable cohorts from 1980. Figure 3.1 indicates that both gender groups showed significant gains in mathematics achievement during the 1980s. (The effect size for differences between HS&B and NELS:88 males is .25; for females, .27.) The difference between the two gender groups in the relative amount of gain achieved is not significant. That is, the parallel lines suggest what the statistical test confirms -- the amount of gain was the same for male and female members of the 1990 cohort.

Mean achievement levels for 1980 and 1990 sophomores in the four racial/ethnic groups are presented in Figure 3.2.

FIGURE 3.2

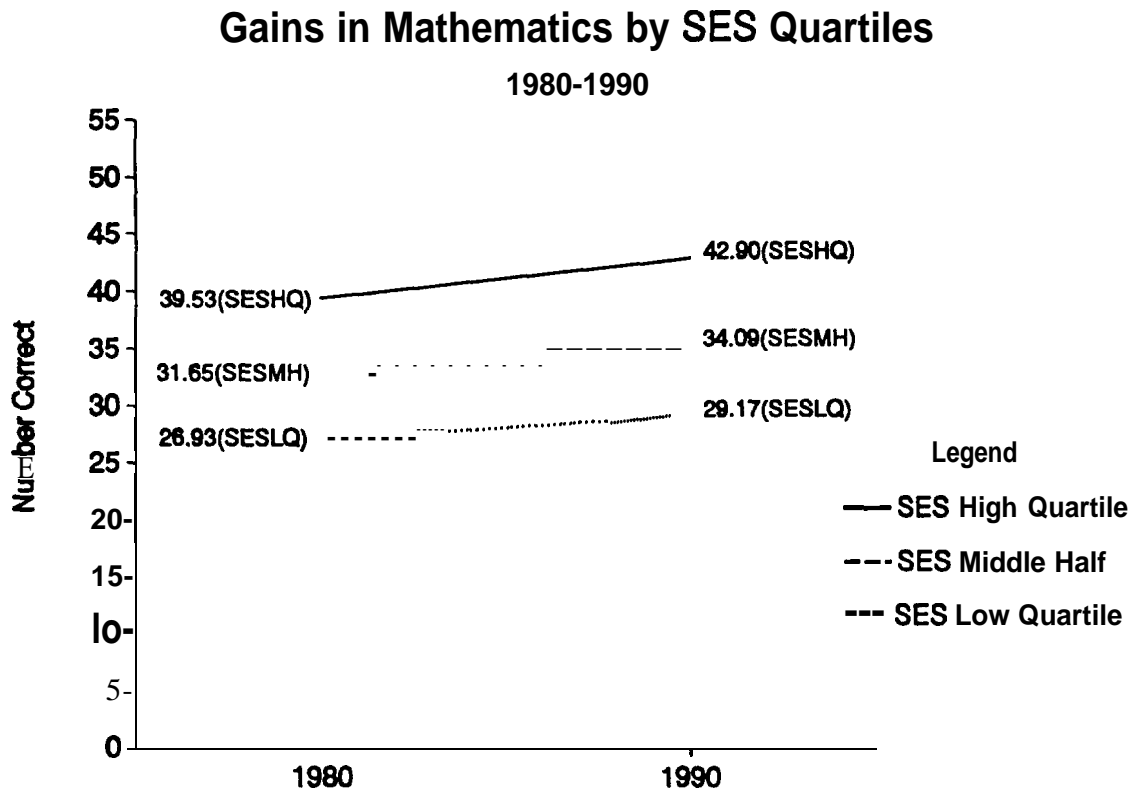


All groups with the exception of the Asian students made statistically significant gains in mathematics achievement. Both Hispanic and black students gained more than white and Asian students. In terms of effect sizes the gains were .39, .12, .35, .21 for the Hispanic, Asian, black, and white students respectively. Clearly the gap between black and white students and Hispanic and white students was reduced during the 1980s.² It should be kept in mind that the minority-majority gap narrowed not because the whites did not gain, but because the Hispanics and blacks gained proportionately more during the 1980s.

²More precisely, the gap between Hispanic and white students in 1980 was .77 of the 1980 total standard deviation while the corresponding difference in 1990 was .59 of the 1990 total standard deviation. Similar figures for the black and white student comparison showed that the achievement gap went from .89 of a standard deviation in 1980 to .75 of a standard deviation in 1990.

Three socioeconomic groups were formed by dividing the socioeconomic status composite into quartiles and collapsing the middle two quartiles. The combining of the two middle quartiles was done to simplify the graphics. Figure 3.3 shows the mean achievement levels for 1980 and 1990 sophomores in the three SES groups.

FIGURE 3.3

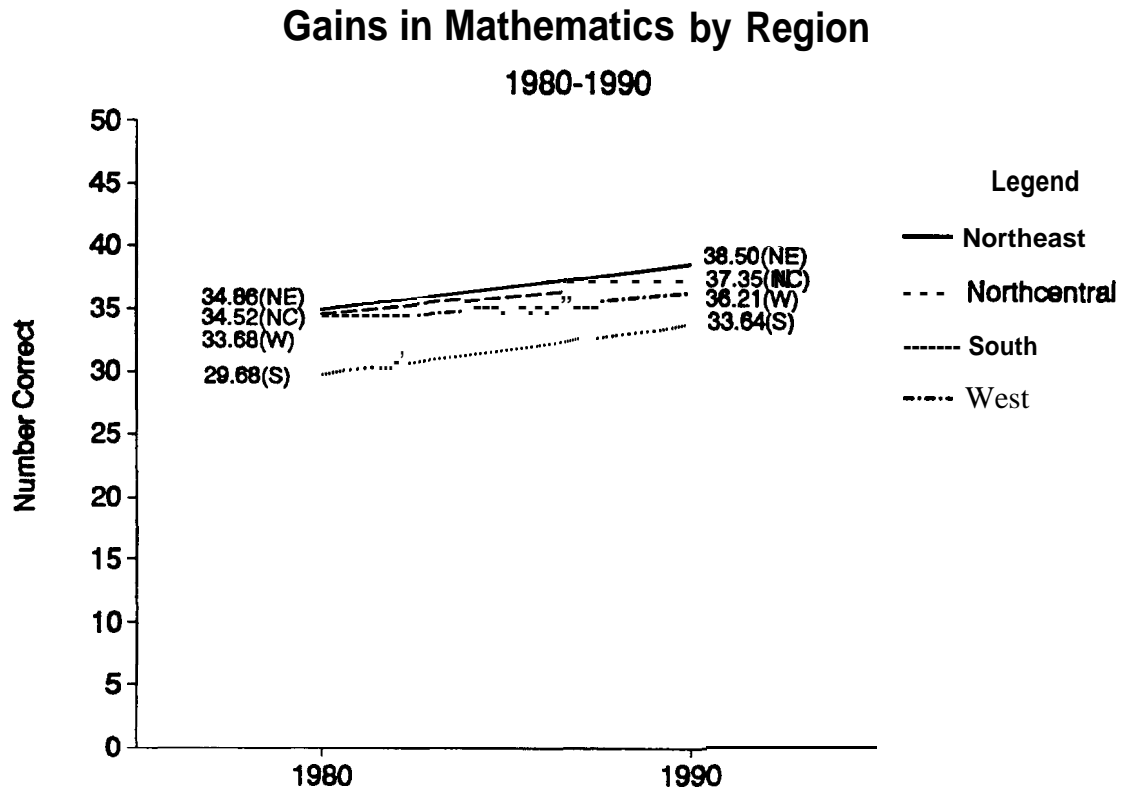


Students in the 1990 cohort from each of the three socioeconomic status groups made significant gains in their mathematics achievement compared to their 1980 counterparts.³

³There was a statistically significant interaction between year and SES quartile suggesting that there was some differential gain. In terms of standard deviation units the gains were .18, .21, and .27 for quartile 1 (lowest quartile) through quartile 4 respectively. On the surface it would appear that the highest quartile gained more than the lowest quartile, but about 12 percent of the lowest quartile in 1990 were missing mathematics scores while virtually all the 1980 lower quartile had mathematics scores. Given the discrepancy between the effect sizes of the quartiles versus the overall effect size it would appear that the estimate of the lower quartile's gain may be biased downward due to the missing mathematics scores in 1990. Thus any interpretation of differential gain would be inappropriate. See Appendix A, Table 3.1, for further documentation.

Figure 3.4 presents mean achievement levels for the 1980 and 1990 cohorts in different regions of the country.

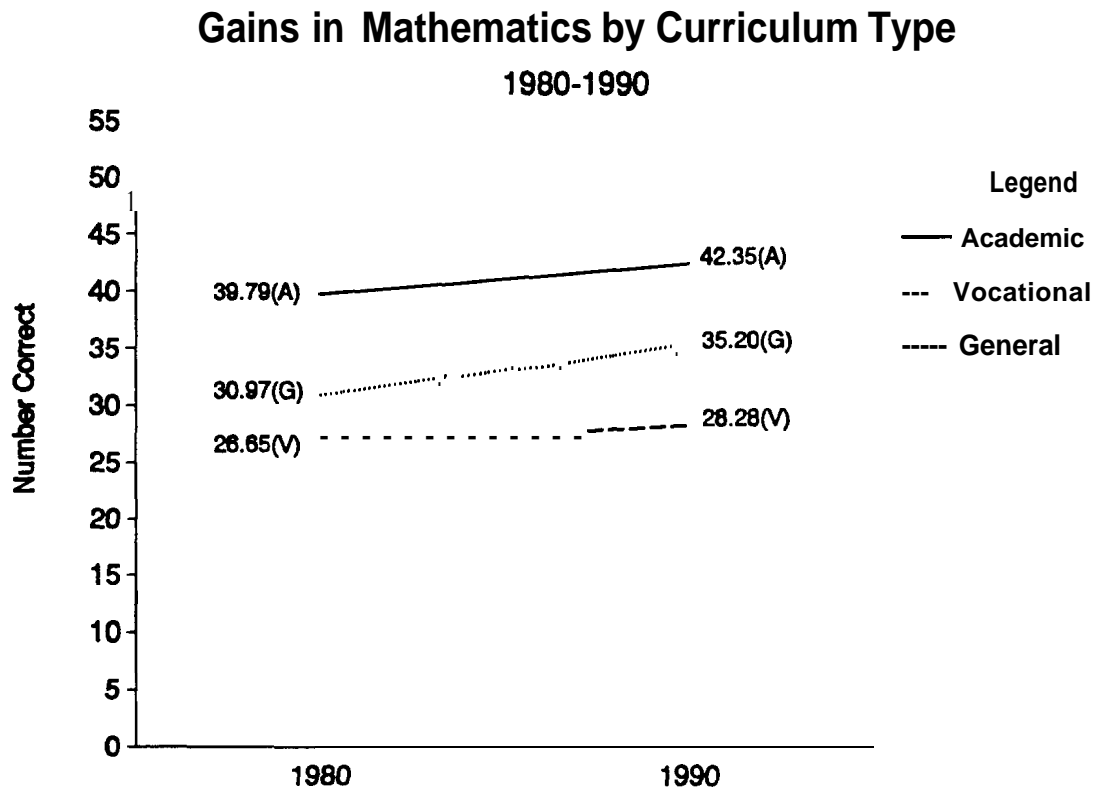
FIGURE 3.4



Students in all four regions made statistically significant gains in mathematics achievement. The effects sizes of the gains were .30, .23, .32, and .21 for the Northeast, North Central, South and West respectively. Students in the South showed a slightly greater increase from cohort to cohort than students in the West. It should be noted here that there has been some shift in population to the South and to a lesser extent to the West during the 1980s and at the same time a shift away from the Northeast and Northcentral regions. It is possible that any differential gains may at least in part be due to selective population shifts rather than the result of any change in educational process that might be identified with any given region.

Figure 3.5 presents mean achievement levels for the 1980 and 1990 cohorts in different high school programs.

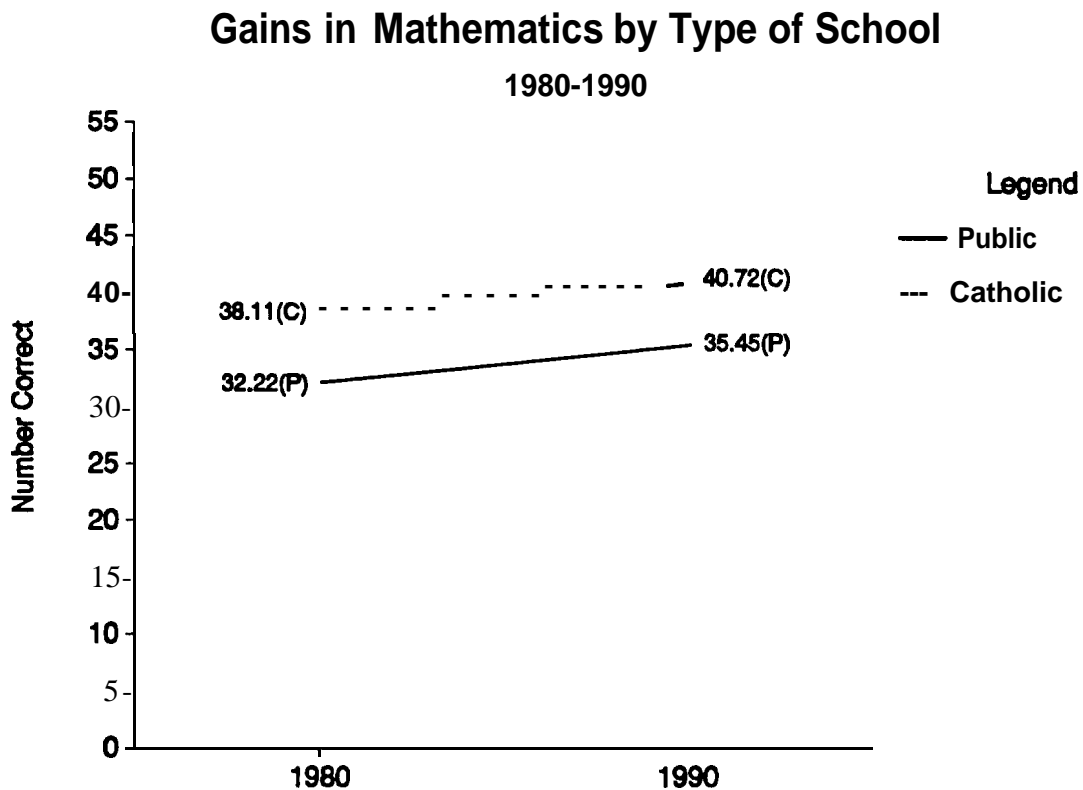
FIGURE 3.5



Students in all three curriculum programs showed significant gains. (The effect sizes were .35, .21, and .13 for general, academic, and vocational students respectively.) There were differential positive shifts from cohort to cohort. Inspection of the effect sizes indicate that the students in the general curriculum gained more than did the students in the vocational technology program. It should be noted here that there was a considerable shift of students from vocational education to general and academic programs during the 1980s. As in the case of regions at least part of the differential gain may be due to selective population shift from the vocational to the general program.

Figure 3.6 presents mean achievement levels for the 1980 and 1990 sophomores in public and Catholic schools.

FIGURE 3.6



While both groups of students showed statistically significant **gains**, there was no statistical evidence for **differential** change during the 1980s. The effect sizes were .26 and .21 for public and Catholic school students **respectively**.

Summary. The 1980s found America's sophomores gaining in their mathematical **achievement**. **Virtually all** demographic groups shared in these **gains**. On average sophomores gained about a quarter of a standard deviation **unit**. Some groups gained proportionately more than **others**. Black and Hispanic students showed **proportionately** greater gains in mathematics **achievement** than did white or Asian **students**. **While** the achievement gap was significantly reduced between minority and majority groups due **to the differential gains**, Hispanic and black students in 1990 were **still** performing at 60 and 75 percent of a standard deviation unit below white **students, respectively**.

Sophomores in the general curriculum gained significantly more than did students in the vocational **program**. **Contrasting** groups showing essentially equal growth rates were males and **females**, and students attending **Catholic** and public schools

While on average students did demonstrate significant growth in their mathematics achievement **during the decade of the 1980s**, the data can not by **itself** pinpoint where in the decade the growth took **place**. Trend results from the National Assessment of Educational Progress (**Mullis, Dossey, Foerstch, Jones & Gentile, 1991**) provide additional data points to help pinpoint when the gains were **actually occurring**.

CHAPTER 4: AFTER-SCHOOL ACTIVITIES

In this chapter we compare participation in a number of after-school activities that may have an impact on sophomores' education. Data are available for **only** a limited number of **these activities**. Unfortunately comparable data (for 1980 and 1990) are not available for two important after-school activities, jobs and **homework**. **However**, data are available for extracurricular school-sponsored activities and for recreational activities outside of **school**.

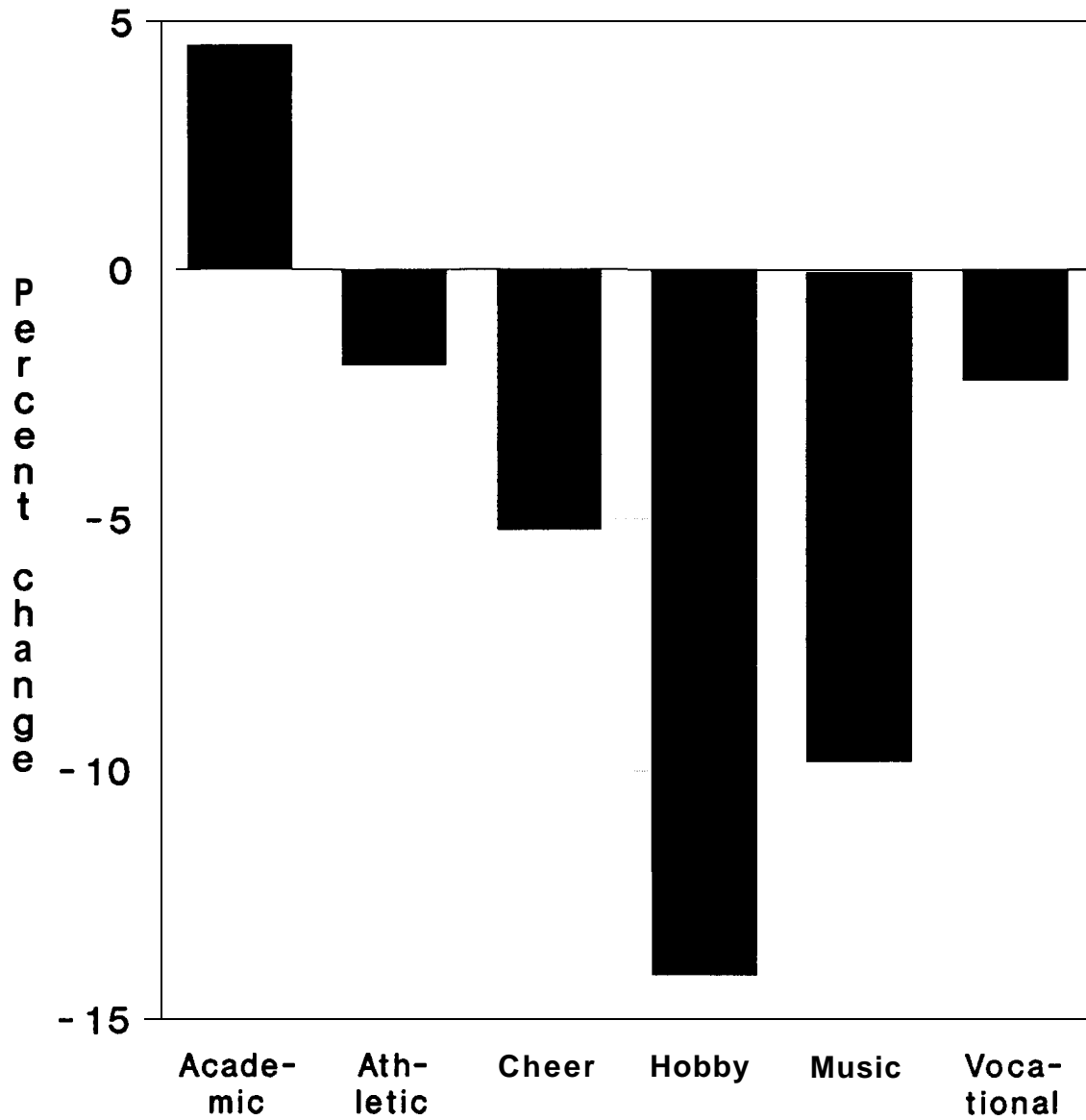
Extracurricular activities. High schools offer a number of opportunities for extracurricular education **experiences**. **Typically**, these are in the form of clubs organized around some topic or **activity**. Educators have **long** been interested in the ways that extracurricular activities can affect academic performance and social **development**.

Traditionally, participation in school-sponsored extracurricular activities has been considered an indicator of greater interest in school and subsequent higher **achievement**. **However**, it is possible that extracurricular influences may be negative (**for example**, athletic activities may be a significant distraction from the academic purposes of **school**) or positive (**for example**, athletic activities may foster school spirit and personal **development**, may contribute to athletes persisting in their schooling and performing **well academically**, and may improve race relations). Past studies have therefore investigated the effects of **athletic**, aesthetic or **expressive**, and academic extracurricular engagement on adolescent self-esteem and feelings of control over one's **life**, on race **relations**, political **socialization**, academic **achievement**, educational **aspirations**, and on delinquency rates (**Holland & Andre, 1987**). Data from **NLS-72** and **HS&B** have been used both to measure the effects of extracurricular **participation**, and to better understand the processes through which extra-academic participation may lead to positive educational and developmental **outcomes**. **NELS:88** data will further contribute to our knowledge of this important topic of **investigation**. Our **focus, below**, will be to depict patterns of **continuity** and change in American **sophomores'** extracurricular participation between **1980** and **1990**.

Figure 4.1 shows the percent change in reported participation in a number of extracurricular activities from 1980 to 1990. **Overall**, participation in academic clubs has **increased**, while participation in many other types of activities has **decreased**. A detailed examination of participation is shown in Table 4.1. As shown in Table 4.1, increased participation in academic clubs is predominant among white students and students in the middle and upper socioeconomic status groups.

Reported participation in academic clubs has increased, from 26 percent of the 1980 sophomore class, to around 31 percent of the nation's 1990 sophomore class. However, some other forms of extracurricular involvement have declined—some 21 percent of 1980 sophomores belonged to hobby clubs, but only 7 percent of the 1990 cohort. Participation in musical activities declined from 31 percent of 1980 sophomores, to 22 percent of 1990 sophomores.

**Figure 4.1-Percentage of change (1980 to 1990)
in participation in school-sponsored
extracurricular activities**



Extracurricular club or activity

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics

*America's High School Sophomores:
A Ten Year Comparison 1980-1990*

Table 4.1. Percent of 1980 and 1990 sophomores who participate in a variety of school-sponsored extracurricular activities, by student characteristics.

Student Characteristics	Academic Clubs		Athletics		Cheer leading		Hobby Clubs		Music		Vocational Clubs	
	1980	1990	1980	1990	1980	1990	1980	1990	1980	1990	1980	1990
All Sophomores	26.2	30.7	54.1	52.2	14.3	9.1	21.4	7.3	31.3	21.5	13.9	11.7
Male	22.7	27.4	63.4	63.0	3.3	2.1	25.5	7.9	21.5	15.6	11.5	11.0
Female	29.1	34.0	45.9	41.4	24.7	15.8	17.6	6.7	41.0	27.3	15.7	12.3
Asian	31.8	36.7	46.3	54.9	7.0	5.2	25.5	11.8	28.4	20.6	5.3	5.1
Hispanic	27.6	27.2	48.3	43.9	13.2	8.3	22.7	6.7	28.4	14.8	13.2	7.4
Black	28.9	26.2	57.1	51.4	17.1	15.7	21.7	5.2	37.9	23.0	17.5	13.7
white	25.3	31.7	54.4	53.5	14.1	8.3	21.0	7.5	30.5	22.3	13.5	12.2
American Indian	29.5	31.9	56.8	44.2	12.9	11.3	26.5	8.4	33.7	17.3	20.0	16.9
Low SES	25.2	26.3	43.7	42.0	13.2	8.2	19.6	5.8	27.6	18.3	18.0	17.1
Middle SES	26.3	31.5	55.1	52.7	15.1	9.6	22.3	7.1	31.5	22.1	14.8	11.4
High SES	26.9	34.9	64.4	63.2	14.4	9.3	21.4	9.4	35.2	24.4	7.9	6.5
Northeast	21.4	26.9	54.5	55.7	11.8	8.0	20.5	11.0	29.4	22.7	7.4	3.5
North Central	28.5	33.4	51.5	58.3	15.5	8.6	21.7	5.4	30.9	26.6	19.2	11.7
south	27.6	32.6	55.2	46.3	15.7	11.3	20.3	5.9	33.8	18.8	16.9	18.6
West	26.4	27.5	54.9	51.6	13.0	6.8	24.5	8.7	28.9	18.2	9.5	7.2
Public	26.0	31.0	53.1	50.8	14.2	9.2	21.3	6.7	31.3	22.1	14.9	12.6
catholic	27.7	28.6	61.8	66.5	15.9	7.1	21.2	12.3	28.4	12.6	3.6	2.8
Other Private	27.3	29.1	68.8	68.0	13.1	9.9	24.4	13.1	35.9	25.7	6.5	5.5
Test Quartile												
Lowest	27.5	22.5	47.0	47.4	15.0	9.5	22.9	6.5	29.6	16.0	20.6	17.3
Second	25.7	29.9	53.3	50.8	14.8	8.6	22.7	6.1	29.7	20.5	16.2	13.2
Third	24.4	30.3	56.4	51.8	15.1	9.2	21.1	7.6	31.2	22.1	12.6	11.4
Highest	27.9	40.0	60.5	59.0	13.4	9.0	18.6	8.7	35.8	26.9	7.7	6.7

Sources: HS&B base year student survey (1980) and NELS:88 first follow-up student survey (1990), National Center for Education Statistics, US Department of Education

The decrease in reported participation in activities may be due to program cuts. There is no reason to believe that, in general, high schools were financial y better off in 1990 than in 1980, and extracurricular programs are often the first to be cut for budgetary reasons. Unfortunately, there is no unambiguous way of separating student-initiated nonparticipation from program unavailability, because program unavailability, while assessed in NELS, was not asked in HS&B. The percentage of students in the entire NELS:88 First Follow-Up sample (a sample slightly different from the one used in this report) indicating that various programs were unavailable at their schools was as follows: Academic, 4.5 percent; Athletic, 1.6 percent; Cheerleading, 5.0 percent; Hobby Clubs, 16.4 percent; Music/Theater/Dance Programs, 3.5 percent; and Vocational Clubs, 11.5 percent. While the unavailability of programs in 1990 could account for declining participation, the fact that there is no comparable program unavailability data from HS&B to use as a basis for comparison makes it impossible to draw such a conclusion from these data.

Television **viewing**. Television **has been both** praised and criticized for its influence on American youth. Proponents of educational television have trumpeted the ability of the media to reach into homes and provide **educational** materials in **an** engaging **format**. Critics of television have expressed fears that programs promote antisocial **values**, **highlight** gratuitous **violence**, and offer fare that is predominantly devoid of serious **intellectual content**. **Apart** from **the** issue of program content and its **effects** on **youth**, many parents and educators **fear that the** average teenager **simply** watches too much **television**, keeping him or her from **reading**, **studying**, doing **homework**, or engaging in constructive **socialization**. The recent introduction of videotape machines **has** broadened **the** range of viewing **possibilities**, and may have increased the appeal of televised media to **youth**.

Both the **HS&B** and **NELS:88** surveys asked respondents to report on how much television they view, on **average**, during school **nights**. A comparison of viewing time for **1980** and **1990** sophomores is shown in Figure 4.2. **Overall**, nine percent of **1990** sophomores report viewing more than five hours of television (**including videotapes**) on **an** average school **night**. This is a substantial reduction from the more than **27** percent of **1980** sophomores who reported that level of **viewing**. Table 4.2 provides a more detailed **examination** of television **viewing**. The reduction is apparent in each of the categories. The reduction is significant for each group in the table with the exception of the American **Indian/Alaskan** Native **subsample**, for which sample sizes are very **small**. **However**, it is possible that this trend is an artifact of the wording of the **1980** item.¹ This **finding** should therefore be viewed **with caution**.

If television viewing displaces **other**, more cognitively beneficial **activities**, it is to be feared that television may have a negative effect on **achievement**. In their analyses of **NELS:88** first follow-up **data**, for **example**, Rock and **Pollack** (1992) report that those who did not spend large amounts of time watching TV on weekdays demonstrated the highest levels of cognitive **skills**.² A negative relationship between time viewing television and some aspects of **tested** achievement (**particularly** mathematics **proficiency**) also was observed in analyses of **NELS:88** base year data (**Rock, Pollack & Hafner, 1991**). These analyses are **bivariate**, **however**, and like the descriptive **analyses** in this **report**, not **multivariate analyses** that may help to elucidate a causal model. **Bivariate** analyses can show us that television viewing and achievement are negatively correlated for individuals within a particular age and grade **range**, but only by including other variables related to television viewing and achievement in the analytic model can one confirm that television viewing as such has negative effects on **attainment**.

Though simple correlations do point to a negative impact of TV-viewing on **achievement**, when other variables are taken into **account**, neither a negative nor a positive association is **sustained**. For **example**, **multivariate** longitudinal analysis of **HS&B** data (**Gaddy, 1986**) showed neither a positive nor a negative effect of television-viewing on high school **achievement**, though TV was found to be relatively

¹See Appendix B for a discussion of possible problems with the **HS&B** item assessing television viewing. Readers are strongly urged to review the reasons for suspecting that these items may not be **truly** comparable before giving weight to the conclusions based on **this comparison**.

²While the analyses of Rock and Pollack indicate that moderate TV-watching was not negatively associated with school **achievement**—**NELS:88** first follow-up data show that students who watched TV for one to two hours on weekdays had average scores almost identical to those who watched for less than one hour or not at all—higher amounts of time spent **watching** TV were associated with significantly lower test scores at tenth grade in **all** subject **areas**, particularly for the 17 percent of **students** who watched TV for four or more hours each **day**. (Differences in gains in achievement since eighth **grade**, **however**, were not large enough to be statistically **significant**.) For students who reported watching no TV or less than one hour on **weekdays**, the relatively high test score standard deviation hints at the possibility of a **bimodal distribution**. This category may include a mixture of high-achieving students who are using their time for education-related **activities**, and also some low achievers who do not have access to television on a regular **basis**. As noted **above**, the **statistically significant** results reported by Rock and **Pollack** do not reflect the imposition of longitudinal controls or consideration of intervening **variables**.

less beneficial than reading for **pleasure**. Subsequent studies of other nationally representative longitudinal data support Gaddy's HS&B findings (**most notably**, the conclusions of Gortmaker, Salter, Waker and Dietz [1990] of no causal relationship between the amount of television viewed and the mental aptitude and achievement test scores of adolescents). **Thus**, a change in viewing patterns over time such as the one reported **here**, or a correlation between viewing and achievement such as the one reported in the cited **bivariate analyses** of NELS:88 data might be better explained by who watches great **amounts** of television than by how much television is **viewed**. Other **variables**, such as **family socioeconomic characteristics**, should be taken into account before policy conclusions are **drawn**.

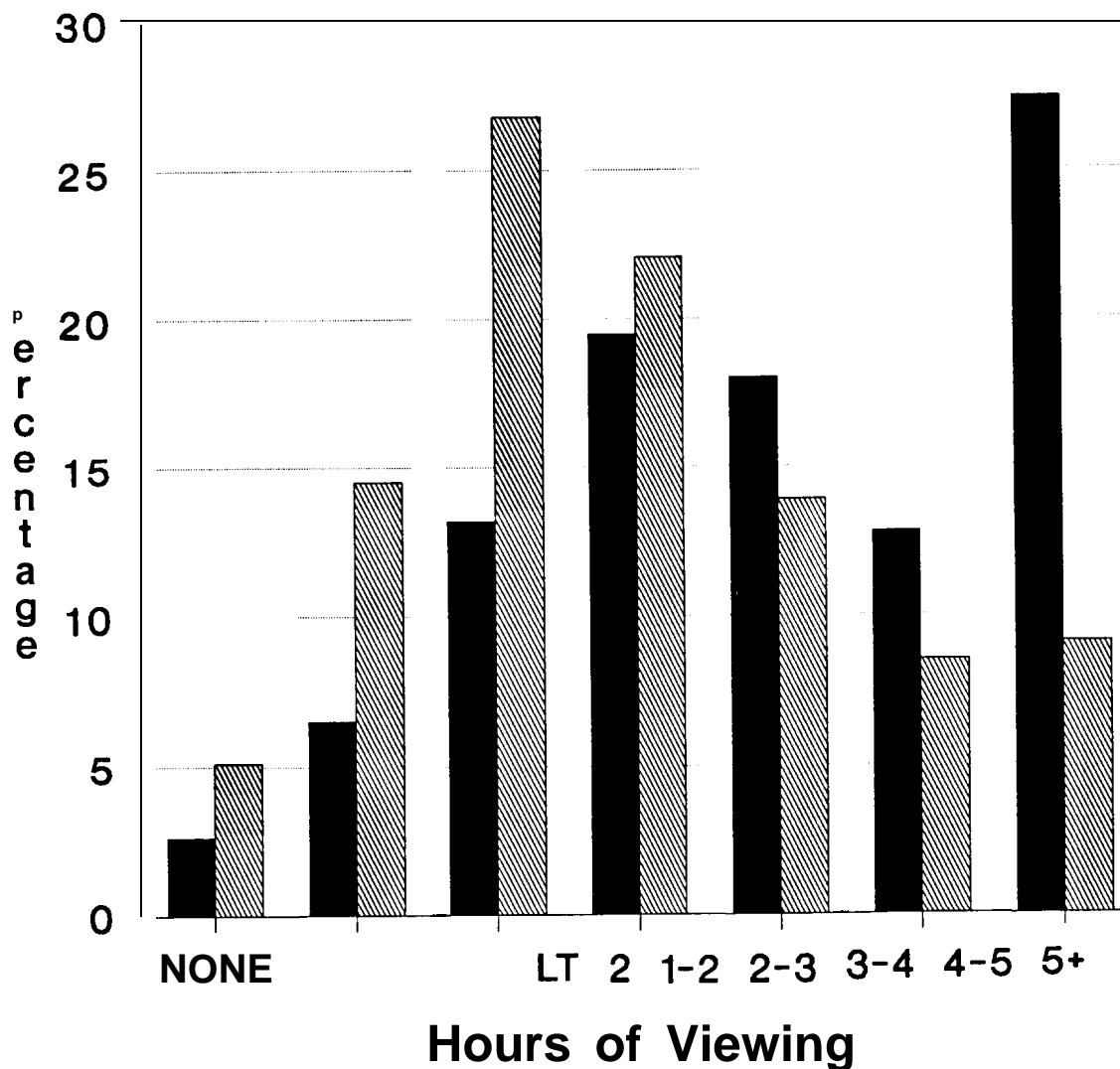
Reading for **pleasure**. Adolescents' leisure media use is an important topic since behaviors such as television viewing and reading newspapers or books are (**unlike** many other potential determinants of **achievement**) **malleable**. Much more needs to be understood about the mechanisms and processes through which television may affect **achievement**, a task that rich longitudinal **datasets** such as **HS&B** and **NELS:88** may contribute to **importantly**. Reading for pleasure is an important leisure time activity **that**, unlike television **viewing**, is consistently positively correlated with educational achievement (**Gaddy, 1986**). Regardless of whether television viewing has **declined, increased**, or remained **steady**, it would be enormously encouraging to learn that **sophomores'** time spent in reading for pleasure has **increased**. **Unfortunately**, comparison of **HS&B** and **NELS:88** data suggests that it has **not**. For both **cohorts**, fewer than half of sophomores reported reading for pleasure even as **little** as once or twice per **week**.

Fewer than half (**41%**) of **1980** sophomores indicated that they read for pleasure at least once or twice a **week**; the same low percentage (**41%**) of **1990** sophomores reported reading for pleasure at least once or twice a **week**.

Other after-school **activities**. A number of questions asked sophomores to report what they do with their time out of school. While it would be interesting to focus on whether sophomores are doing more homework **now**, than their 1980 counterparts **did**, or whether they are more likely to be working at jobs after school, **unfortunately** there are no comparable data on these two activities. **However**, there are comparable data on other activities. Both **1980** and **1990** sophomores were asked how much time they spend driving or riding **around**, visiting with friends at a local **hangout**, talking with friends on the **telephone**, and reading for **pleasure**. Results are shown in Table 4.3. **Overall**, only driving or riding around and talking **with** friends on the telephone has increased. For driving **around**, significant increases are seen **among** whites and **blacks**, but not among the other racial/ethnic groups. Increases are also seen **among** the low and middle **SES groups**, and among public and Catholic school **sophomores**. Though the differences are significant for sophomores in each of the four test **quartiles**, the differences are greatest for sophomores in the lowest three **quartiles**. Differences are greatest in the northeast and north central states.

For talking on the telephone with their friends at least once or twice a **week**, significant differences were found for male respondents who seem to be catching up to the consistently higher **level** of such activity shown by female sophomores of both **cohorts**. There was no significant change in reports of visiting with friends at a local **hangout**, either overall or for any of the subgroups listed in Table 4.3.

Figure 4.2--Hours of television viewing
on week days for 1980 and 1990
sophomores



■ 1980 Sophomores ▨ 1990 Sophomores

SOURCES: High School and Beyond Base Year Survey, 1980
Sophomore Cohort and National Education Longitudinal Study
of 1988, First Follow-up Student Survey, U.S. Department
of Education, National Center for Education Statistics.

Table 4.2. Percent of 1980 and 1990 sophomores who say they watch five hours or more of television on school nights, by student characteristics.

Student Characteristics	Watch 5 or more hours	Watch more than 5 hours
	1980	1990
All Sophomores	27.3	9.1
Male	29.1	10.2
Female	24.9	8.0
Asian	23.5	6.9
Hispanic	27.3	10.2
Black	39.8	23.0
White	25.1	6.7
American Indian	26.5	15.8
Low SES	34.4	13.5
Middle SES	27.4	9.5
High SES	19.1	3.4
Northeast	26.5	8.0
North Central	33.2	8.1
south	27.0	11.3
West	22.0	7.7
Public	28.1	9.6
Catholic	21.2	5.8
Other Private	18.7	1.8
Test Quartile		
Lowest	35.3	17.9
Second	31.7	11.8
Third	25.6	5.9
Highest	18.1	3.2

Sources: HS&B base year student survey (1980) and NELS:88 first follow-up student survey (1990), National Center for Education Statistics, US Department of Education

Table 4.3. Percent of 1980 and 1990 sophomores who say they engage in various activities at least once or twice a **week**, by student characteristics.

Student Characteristics	Just driving or riding around		Visiting with friends at a local hangout		Talking with friends on the telephone		Reading for pleasure	
	1980	1990	1980	1990	1980	1990	1980	1990
All Sophomores	47.1	56.1	67.2	66.3	76.6	80.1	41.1	41.0
Male	51.0	57.9	69.4	69.5	66.5	72.5	34.3	33.8
Female	43.3	54.3	65.2	63.1	86.2	87.7	47.9	48.2
Asian	31.5	44.0	55.3	57.1	67.7	78.3	50.4	40.2
Hispanic	46.6	47.6	60.2	59.3	68.6	72.4	36.3	38.2
Black	38.0	50.1	64.8	59.1	73.3	79.6	46.6	41.2
White	49.0	58.9	68.7	68.7	78.4	81.7	40.4	41.5
American Indian	51.6	53.3	62.2	70.4	59.4	65.1	41.8	39.5
Low SES	43.1	55.1	61.2	62.6	68.6	72.2	37.0	37.4
Middle SES	49.5	58.3	68.7	68.0	78.2	81.9	40.7	40.4
High SES	47.2	52.0	70.8	66.2	83.0	83.5	46.7	46.1
Northeast	37.8	45.3	69.6	69.2	76.7	82.9	42.6	46.0
North Central	49.9	60.3	65.7	67.8	77.1	80.9	40.3	41.6
south	50.3	60.9	67.3	64.9	76.5	79.6	39.8	37.9
West	48.8	52.5	65.6	63.7	75.7	77.6	42.8	41.3
Public	47.7	57.1	66.9	65.9	76.1	79.9	40.9	40.9
Catholic	40.3	51.6	71.4	75.8	81.7	86.8	41.4	41.0
Other Private	43.9	39.6	65.3	58.7	79.2	77.6	43.8	45.6
Test Quartile								
Lowest	48.9	59.6	65.0	66.1	72.3	74.8	30.7	27.7
Second	51.1	62.0	69.1	69.0	77.3	80.9	34.3	36.3
Third	47.9	57.8	69.7	68.5	78.9	83.9	40.3	42.4
Highest	39.7	45.8	64.8	61.1	78.2	80.4	57.8	55.8

Sources: HS&B base year student survey (1980) and NELS:88 first follow-up student survey (1990), National Center for Education Statistics, US Department of Education

CHAPTER 5: SELF-PERCEPTIONS, SOCIAL IMAGE, AND VALUES

High school is also a time for social and personal **development**, perhaps especially in the sophomore year. At this midway point through **adolescence**, sophomores are forming important values relating to **themselves**, their social **group**, and the larger world in which they will soon occupy positions of increasing **responsibility** and **authority**. Because these values may have an impact on **sophomores'** future **behaviors**, which in turn may have a profound impact on the shape of future **society**, they are well worth **examining**. A number of questions contained in both **HS&B** and **NELS: 88** allow us to **examine** values of the 1990 sophomore cohort and to contrast them to their 1980 counterparts.

The value questions are divided into four thematic **groups**: (1) how sophomores view **themselves**, (**self-esteem**), (2) how effective sophomores feel as agents or actors in their worlds (**locus of control**), (3) how they think others view them (**social image**), and (4) their aspirations for themselves and society (**life values**). An abbreviated version of the value **statements**, and the percent of each cohort who agreed with the **statement**, is shown in Table 5.1

Five statements measuring self-esteem were included in both **HS&B** and **NELS**. Three of these statements projected a positive **self-image**, while two projected a negative self **image**. Sophomores in 1990 are consistently more likely to make positive **statements**, and less likely to make negative statements about **themselves**, when compared to sophomores in 1980. A greater percentage of the 1990 group reports feeling good about **themselves**, being satisfied with **themselves**, and judging themselves favorably in relation to others. **Conversely**, fewer 1990 sophomores report feeling they are no **good**, or that they have **little** of which to be **proud**. Although the proportions changed somewhat between 1980 and 1990, **overall**, both **HS&B** and **NELS: 88** sophomores tended to agree with positive self-esteem **items** and disagree with negative **items**, with only a small minority choosing items indicative of low **self-esteem**. **However**, some variation may be seen across **cohorts**. The proportion agreeing strongly with items indicative of a positive self-concept increased **significantly** between 1980 and 1990.

1990 sophomores were even more inclined to endorse items indicative of high self-esteem than were sophomores from the earlier decade. In particular:

- *The proportion of sophomores who agreed strongly that they felt good about themselves increased from 30 percent to 35 percent;*
 - *the proportion agreeing strongly that they were a person of worth showed the same increase (from 30% to 35%);*
 - *the proportion agreeing strongly that they were satisfied with themselves rose from 20 percent to 28 percent.*
-

Both groups of sophomores were given items measuring what psychologists have called "locus of control". According to psychological **theory**, individuals who are high on this **dimension**, or have an internal locus of **control**, feel that they are in control of events that have an impact on their lives.

Individuals who are low on this **dimension**, or have an external locus of **control**, **feel** that events and others control **them**.

Just as **1990** sophomores report feeling more positive about **themselves**, they also report feeling **more** in control of **their lives**, compared to sophomores in **1980**, **although** the difference is not as large as for **self-esteem**. This is apparent for two of the four locus of control **items**, the one asking about the role of **chance and luck** in **success**, and **the other** asking about the likelihood that obstacles stand in the way of their success. A recent study of the **locus** of control scale used in the **NELS:88** and **HS&B** surveys (**Kaufman, Rasinski, Lee, & West, 1991**), indicates that the locus of control questions measure two somewhat independent **dimensions**, one indicating the role of chance and luck in one's **life**, and the other concerning one's own personal **efficacy** and the obstacles others put in their **way**. The items in this comparative study include one from the first dimension and three from the **second**. Taking into account this more complicated view of the **locus** of control **concept**, **1990** sophomores appear more likely to believe **they can** best fate through hard **work**. They are also less likely than the **1980** cohort to believe that other **people will** act as obstacles to their **success**. **However**, they are just as **likely** as the **1980** cohort to be pessimistic about their own powers of **efficacy**.

A number of questions asking students to report how they think others see them were included in both **surveys**. **Together**, the questions make up the **sophomores'** social image. Sophomores in **1990** were as **likely** as those in the **1980** group to think they were seen as **popular**, good **students**, part of the leading **crowd**, and trouble makers. **Happily**, the proportion indicating they were seen as trouble makers was quite low in both **cohorts**. Sophomores in **1990** were **more likely** than the **1980** sophomores to think others saw them as **athletic**, socially **active**, and **important**.

Finally, sophomores from both cohorts were asked about personal and social **values**. Among other **things**, they were asked to indicate how important it was to them to have **money**, **friendship**, **children**, be able to correct social **inequalities**, and to give their children a better **life**. The complete list of **life** values is presented in Table 5.1.

Fewer **1990** than **1980** sophomores indicated that marriage and family were **important**. In **1990**, more students reported "friendship" as very important than reported marriage and **family** as very important--a marked change from **1980**. More **1990** sophomores indicated that money was **important**. The **1990** sophomores are apparently more willing to forgo leisure in deference to doing whatever it takes to make the money they seem to **value**. The **1990** group is more likely than the **1980** group to value having children and being able to give children a better **life**, though marginally less inclined to endorse marriage and **family** as a very important **life value**. Despite the increased importance accorded **money**, and the decreased importance accorded marriage and **family**, **1990** sophomores, though to a lesser degree than their counterparts ten years **before**, rated marriage and **family** above money in **importance**. In what appears to be a paradoxical **result**, the **1990** group is both more likely to want to live close to their families and to leave the area of the country in which they resided as **sophomores**. (This paradox may be laid to **rest**, **however**, by considering the extremely small proportion of sophomores--at **best**, less than a quarter--who **affirm** either **value**.) **Finally**, compared to the **1980** group, the **1990** sophomores are more likely to endorse the importance of correcting social **inequalities**, though **even** for the **1990** cohort, **only 19** percent rated this value as very important.

Despite the overall similarity in the pattern of affirmations, there were a number of statistically significant shifts in the proportions of sophomores according high importance to particular life values. For example:

- *Marriage and family was rated as very important by 83 percent of sophomores in 1980 but only 72 percent of 1990 sophomores—behind work and friendship in importance.*
 - *Making money was rated as very important by 35 percent of 1980 sophomores but by 44 percent of 1990 sophomores.*
 - *Having leisure time was rated as very important by 70 percent of 1980 sophomores but by somewhat fewer (65 percent) 1990 sophomores.*
 - *Correcting inequalities was felt to be very important only by 14 percent of 1980 sophomores; 19 percent of 1990 sophomores felt that correcting social inequalities was very important.*
-

Table 5.1. **Summary** of changes in perceptions and values of high school sophomores: 1980 and 1990

Variable	1980	1990
A. Self-esteem (percentage agree strongly)		
Feel good about myself	29.9	35.0
Person of worth , equal of others	29.4	35.1
Satisfied with self	20.3	27.6
I'm no good at all	8.4	5.2
Not much to be proud of	4.0	3.2
B. Locus of control (percentage agree strongly or agree)		
Good luck more important than hard work	15.5	11.9
Every time I try to get ahead , something stops me	29.8	26.1
My plans hardly ever work out	22.1	21.1
When I make plans , I can make them work	80.1	79.6
C. Social image (percentage responding "others see me as [very]...")		
Popular	12.4	13.2
Athletic	18.0	20.4
Socially active	19.7	24.9
A good student	28.6	29.3
Important	14.6	20.3
A trouble-maker	3.6	4.4
Part of the leading crowd	14.6	15.9
D. Life values (percentage believe very important)		
Work success	85.3	84.8
Marriage/family	82.9	76.7
Money	34.6	43.6
Friendship	81.5	80.2
Steady work	84.4	84.8
Giving my children better opportunities	72.5	75.3
Living close to parents/relatives	20.8	24.4
Leaving this area	14.4	18.3
Correcting inequalities	14.4	18.8
Having children	40.8	43.4
Leisure time	70.0	65.2

Sources: **HS&B** base year student survey (1980) and **NELS:88** first follow-up student survey (1990), National Center for Education Statistics, US Department of Education.

CHAPTER 6: PLANS AND EXPECTATIONS

Despite many **similarities**, the **1990** sophomores do differ somewhat from their counterparts from a decade earlier in their educational experience and their concerns and values. We have seen that the **1990** group is slightly more monetarily ambitious and more interested in correcting social **inequalities**. **NELS:88** sophomores also are more likely to describe themselves as enrolled in an academic **program**. The number of students indicating an extremely low level of engagement with school has **diminished**. It seems reasonable to ask whether these differences carry over into their plans for future education and employment. Are the **1990** sophomores more **likely** to be **college-bound**? Do they foresee **immediate** or delayed entry into the **postsecondary** education **system**? What sorts of occupations have they set their sights on?

In this chapter we examine the educational and occupational expectations of the **1990** sophomore **cohort**, again by contrast with the **1980** group. First we **examine** the data to determine whether plans for **postsecondary** education are different. Next we compare plans for timing their **postsecondary** education. A series of items asked of both cohorts allows us to determine whether the career advice of the **1990** group is different from that received by the **1980** group. Finally we compare the occupation goals of the two groups by looking at what sorts of occupations they think they will be engaged in at age **30**.

Table **6.1** shows the **postsecondary** education plans of **1980** and **1990** sophomores. Compared to the **1980** group, the **1990** sophomores are substantially less likely to say they will end their education by dropping out of high school or with their high school **degree**. The **1990** sophomores are more likely to say they **will** go on to complete a bachelor's or advanced degree (**59%** for **NELS:88** tenth graders, **41%** for **HS&B**). This pattern is consistent across demographic and background characteristics except for the following **groups**: **Asians**, American **Indians**, and sophomores in non-Catholic private **schools**. **Asians** had high expectations in the **1980** cohort. The lack of difference between the **1980** and **1990** groups simply indicates that their expectations are **still high**. **Indeed**, it is as if the other groups are simply catching up to these traditionally high achievers. The data for American Indians and for sophomores in non-Catholic private schools also show an increase in expectations across the **decade**. **However**, the sample sizes are too small for these two **groups**, and the standard errors too **large**, for these differences to show significance on the statistical **test**.

***1990** sophomores are significantly more likely to say they will go on to complete a bachelor's or advanced degree. For college graduation, the proportion increases from 23 percent in 1980 to 32 percent in 1990; for a postgraduate degree, the proportion increases from 18 percent in 1980 to 27 percent in 1990.*

Table **6.2** shows comparative data for the two cohorts in terms of their plans for **beginning** postsecondary **education**. Compared to the **1980** cohort, the **1990** sophomores are more likely to say they **will** attend college right **after** high school. If entry is to be **delayed**, it is **only** for a **year**. Far fewer **1990** sophomores state that they will wait more than a year before entering **college**. The desire to attend college right after high school is stronger for each **subgroup**, with the exception of **Asians**, American **Indians**, and sophomores in non-Catholic private **schools**. As with **postsecondary** education **plans**, Asian sophomores in **1980** had shown the tendency to set their sights on college immediately after high school. This same tendency is seen in the **1990** cohort. While the increase in the desire to attend college right away is greater among students in Catholic **schools**. **1990** Sophomores in the two highest **test** quartiles

were less likely to say they would not attend college, or that they were not sure about attending college, than their counterparts in 1980.

Members of the 1990 cohort are more likely to say they will attend a postsecondary institution right after high school, with no delays, with 60 percent of 1990 sophomores planning immediate entry, as contrasted to 49 percent of their counterparts from a decade before.

Of course, expectations do not automatically translate into reality. However, in tandem with the increase in expectations, other data show a trend toward increased direct entry into college, despite costs that have risen faster than the general inflation rate. For 1990 high school graduates "3 out of 5 were enrolled in college in October 1990--one in a 2-year college and two in a 4-year college" while for 1980 graduates, 49.3 percent were enrolled in college in October following graduation (The Condition of Education, 1992, p. 28.).

While school reform and economic factors such as growth of the wage gap between high school and college graduates provide a context for such trends, we cannot investigate all of the possible determinants of this apparent zeal on the part of the 1990 sophomore cohort for attending college, nor the way in which these factors may interact. However, we do have the ability to investigate whether the advice given to 1990 sophomores by their parents and teachers regarding college is different from that given to the 1980 cohort. The data in Table 6.3 show the extent to which sophomores are advised to attend college by their fathers, mothers, counselors, and teachers. The picture that emerges is that these four important sources of influence were more likely to recommend college to the 1990 sophomores than was the case in 1980. Though this pattern emerges in the American Indian data, the differences do not reach statistical significance, with the exception of the postsecondary recommendations of teachers. The remarkable thing about this pattern is that it is consistent for nearly every other category reported in Table 6.3. The two exceptions concern parental press toward college for Asian students and students in non-Catholic private institutions. For these students, the shift is in the direction of being more likely to recommend college; however, the difference is not significant. In addition to the fact that these groups are small in number in the sample, they also exhibit the highest levels of press toward college in the 1980 cohort.

*America's High School Sophomores:
A Ten Year Comparison 1980-1990*

Table 6.1. Percentages of 1980 and 1990 sophomores aspiring to various levels of post-secondary education, by student characteristics.

Student Characteristics	High school diploma or less		Two years or less of college or vocational school		College graduate		Postgraduate degree	
	1980	1990	1980	1990	1980	1990	1980	1990
All Sophomores	26.5	10.2	32.9	30.3	22.7	32.1	17.9	27.4
Male	28.0	11.0	31.7	32.3	22.4	32.9	18.0	23.8
Female	23.4	9.4	34.2	28.3	23.8	31.4	18.7	30.9
Asian	11.7	8.2	21.5	21.7	32.4	31.4	34.3	38.7
Hispanic	33.7	14.3	33.7	38.5	17.0	25.5	15.6	21.7
Black	26.3	11.1	32.7	30.2	21.8	28.2	19.2	30.5
White	25.9	9.4	33.1	29.5	23.4	33.9	17.7	27.3
American Indian	35.7	18.8	32.9	43.0	17.2	21.8	14.2	16.5
Low SES	45.1	21.4	32.8	42.1	12.9	21.6	9.1	15.0
Middle SES	25.5	8.4	38.0	32.7	22.1	34.1	14.5	24.7
High SES	7.4	1.5	23.3	11.9	34.6	39.1	35.7	47.5
Northeast	25.0	9.3	30.3	24.9	24.1	35.5	20.6	30.3
North Central	28.6	10.4	32.4	31.3	22.4	32.3	16.6	25.9
south	28.3	10.6	33.9	30.2	21.7	32.1	16.0	27.1
west	21.8	9.9	34.8	33.8	23.3	29.1	20.1	27.2
Public	28.1	10.9	33.5	32.1	21.6	31.4	16.7	25.6
Catholic	9.8	3.2	27.1	12.2	33.2	42.1	29.9	42.5
Other Private	12.3	4.1	27.1	13.1	32.3	35.1	28.4	47.6
Test Quartile								
Lowest	47.5	21.4	33.1	46.3	11.8	19.8	7.6	12.5
Second	32.3	11.8	40.5	40.7	16.7	30.5	10.5	17.0
Third	18.5	5.4	37.8	26.3	26.5	38.6	17.2	29.7
Highest	7.0	1.7	21.2	10.6	35.6	38.6	36.2	49.1

Note: Owing to rounding, percentages may not sum to 100.

Sources: HS&B base year student survey (1980) and NELS:88 first follow-up student survey (1990). National Center for Education Statistics, US Department of Education

Table 6.2. Percentages of 1980 and 1990 sophomores who plan to go to college after graduating from high school, by student characteristics.

Student Characteristics	Right after High School		After a year		After more than a year		No/don't know	
	1980	1990	1980	1990	1980	1990	1980	1990
All Sophomores	48.5	60.3	15.8	17.1	21.2	9.3	14.3	13.2
Male	45.1	55.8	16.4	18.4	21.3	9.8	17.3	16.0
Female	51.7	64.6	15.4	15.9	20.9	9.1	11.9	10.4
Asian	73.2	78.2	13.3	10.1	11.5	4.6	2.0	7.1
Hispanic	43.8	52.7	18.3	22.9	25.1	12.9	12.8	11.5
Black	51.5	62.2	17.9	15.5	21.0	10.0	9.6	12.3
White	48.4	60.3	15.2	17.0	20.8	9.1	15.6	13.7
American Indian	33.0	45.4	22.5	17.5	30.1	15.3	14.5	21.7
Low SES	31.1	40.3	15.1	20.1	29.3	14.1	24.5	25.6
Middle SES	45.8	60.2	17.1	18.2	22.5	9.4	14.6	12.2
High SES	71.9	82.0	14.1	11.1	9.7	4.8	4.4	2.2
Northeast	52.2	66.9	13.9	13.6	18.7	8.3	15.2	11.2
North Central	47.4	59.6	16.0	16.1	21.4	9.8	15.2	14.6
south	46.2	59.7	14.7	17.0	23.0	9.6	16.1	13.8
west	50.0	56.6	20.3	21.6	20.3	10.0	9.3	11.9
Public	46.3	58.2	16.3	17.8	22.0	9.8	15.4	14.2
Catholic	71.1	83.0	10.8	9.2	13.0	4.7	5.1	3.1
Other Private	65.1	75.1	13.6	13.4	14.0	6.6	7.3	4.9
Test Quartile								
Lowest	29.9	39.4	16.8	20.2	28.7	13.4	24.6	27.0
Second	36.2	51.6	17.7	20.8	26.7	11.5	19.3	16.1
Third	51.6	66.8	16.5	15.8	19.9	9.1	12.0	8.2
Highest	73.1	82.0	12.4	11.2	10.2	4.5	4.3	2.3

Note: Owing to rounding, percentages may not sum to 100.

Sources: HS&B base year student survey (1980) and NELS:88 first follow-up student survey (1990), National Center for Education Statistics, US Department of Education

1990 sophomores reported receiving significantly more adult advice that urged them to attend college after high school than did 1980 sophomores:

- **77 percent of 1990 sophomores reported that their fathers recommended they go to college; 59 percent of 1980 sophomores reported this recommendation**
 - **83 percent of 1990 sophomores indicated that their mothers recommended they go to college; the figure in 1980 was 65 percent**
 - **65 percent of 1990 sophomores reported that their guidance counselor urged them to attend college after high school, as contrasted to 32 percent for 1980 sophomores**
 - **66 percent of 1990 sophomores reported that their teachers recommended they attend college, compared to 32 percent for 1980 sophomores**
-

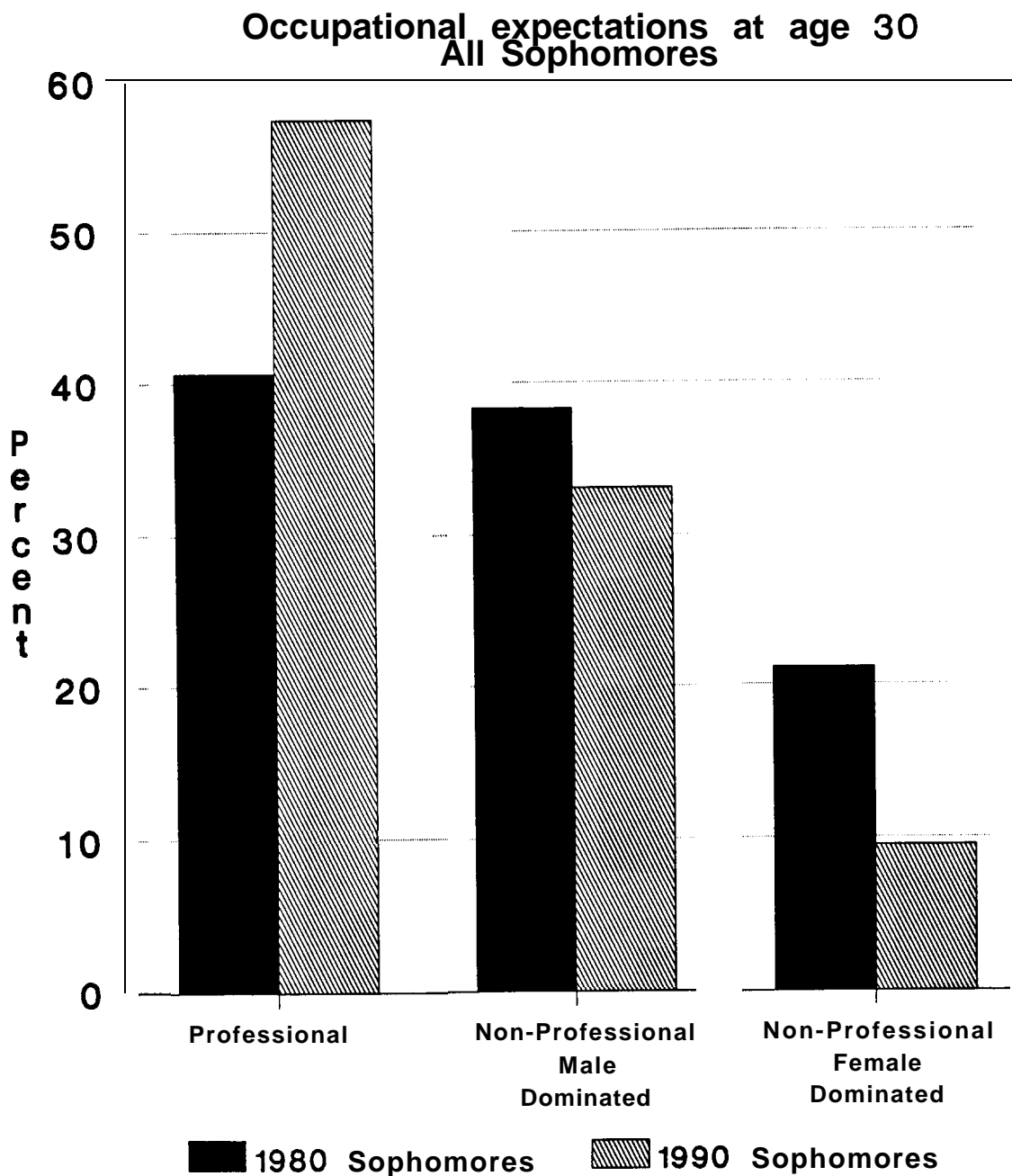
Next we compare occupational expectations across cohorts. Figures 6.1, 6.2, and 6.3 show changes in sophomore responses to occupational expectations at age 30. Both male and female sophomores in the 1990 cohort are more likely to expect to be in professional occupations at age 30. Preferences of male and female sophomores for traditionally male and female dominated non-professional occupations indicates some blurring of traditional gender-based choices similar to the pattern seen for vocational program participation. Male 1990 sophomores are less likely to expect to be in male-dominated occupations and female 1990 sophomores are less likely to expect to be in female-dominated occupations. There is a small but statistically significant tendency for 1990 female sophomores to express preference for male-dominated non-professional occupations when compared to their 1980 peers. Table 6.4 shows occupational expectations for the gender groups in detail. Of the traditionally male-dominated non-professional occupations female 1990 sophomores are more likely to aspire toward being managers and proprietors and less likely to aspire to technical careers than female 1980 sophomores.

Table 6.3. 1980 and 1990 sophomores' reports of percentages of fathers, mothers, guidance counselors, and teachers who recommend attending college after high school, by student characteristics.

Student Characteristics	Father		Mother		Guidance Counselor		Teachers	
	1980	1990	1980	1990	1980	1990	1980	1990
All Sophomores	59.1	77.0	64.8	82.9	32.3	65.2	32.3	65.5
Male	55.6	74.0	61.6	80.7	32.2	64.0	32.1	64.2
Female	63.5	80.0	68.6	85.2	32.7	66.3	32.5	66.8
Asian	78.7	87.9	81.1	88.8	32.9	68.6	34.6	72.0
Hispanic	56.3	75.3	63.2	81.1	32.2	64.8	34.5	65.2
Black	56.6	69.4	67.2	76.6	37.1	66.1	42.0	70.0
White	59.7	78.2	64.5	84.3	31.4	65.1	30.4	64.6
American Indian	46.8	62.4	51.9	70.3	31.7	52.4	29.6	59.9
Low SES	36.7	58.0	47.0	66.5	24.9	56.1	26.3	59.0
Middle SES	57.4	76.6	63.9	84.2	30.1	63.6	30.1	63.8
High SES	84.5	94.5	86.2	96.7	44.5	77.7	42.7	76.1
Northeast	62.4	82.6	67.0	88.0	37.5	72.9	32.4	68.2
North Central	55.9	74.9	63.3	82.3	29.9	64.4	35.2	62.3
south	56.2	75.9	62.4	81.3	30.0	64.1	30.1	67.4
West	65.3	76.3	69.0	82.0	32.9	61.6	33.4	63.4
Public	57.1	75.2	63.1	81.5	31.3	63.5	31.5	64.0
Catholic	78.1	92.9	82.5	95.4	40.6	80.8	37.1	77.6
Other private	77.1	91.2	78.8	94.4	45.5	80.5	45.1	79.3
Test Quartile								
Lowest	40.4	59.9	47.6	64.7	26.1	56.4	28.2	57.2
Second	49.7	71.7	55.6	79.3	26.1	61.1	26.5	60.7
Third	63.9	83.1	69.2	89.7	31.3	66.4	30.1	65.5
Highest	79.8	90.6	85.1	95.9	43.1	74.3	41.7	75.3

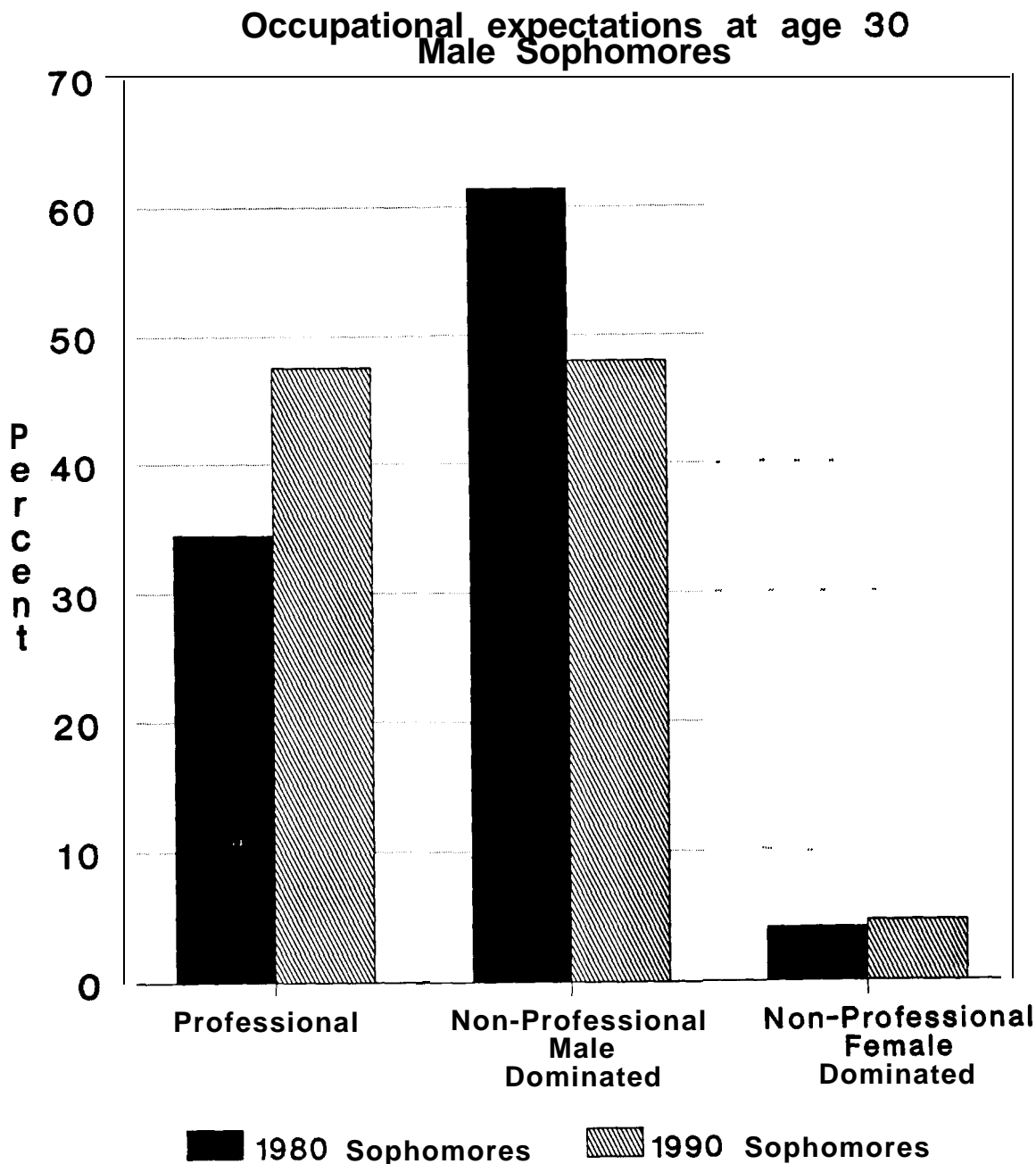
Sources: HS&B base year student survey (1980) and NELS:88 first follow-up student survey (1990), National Center for Education Statistics, US Department of Education

Figure 6.1. Comparison of occupational expectations, all sophomores



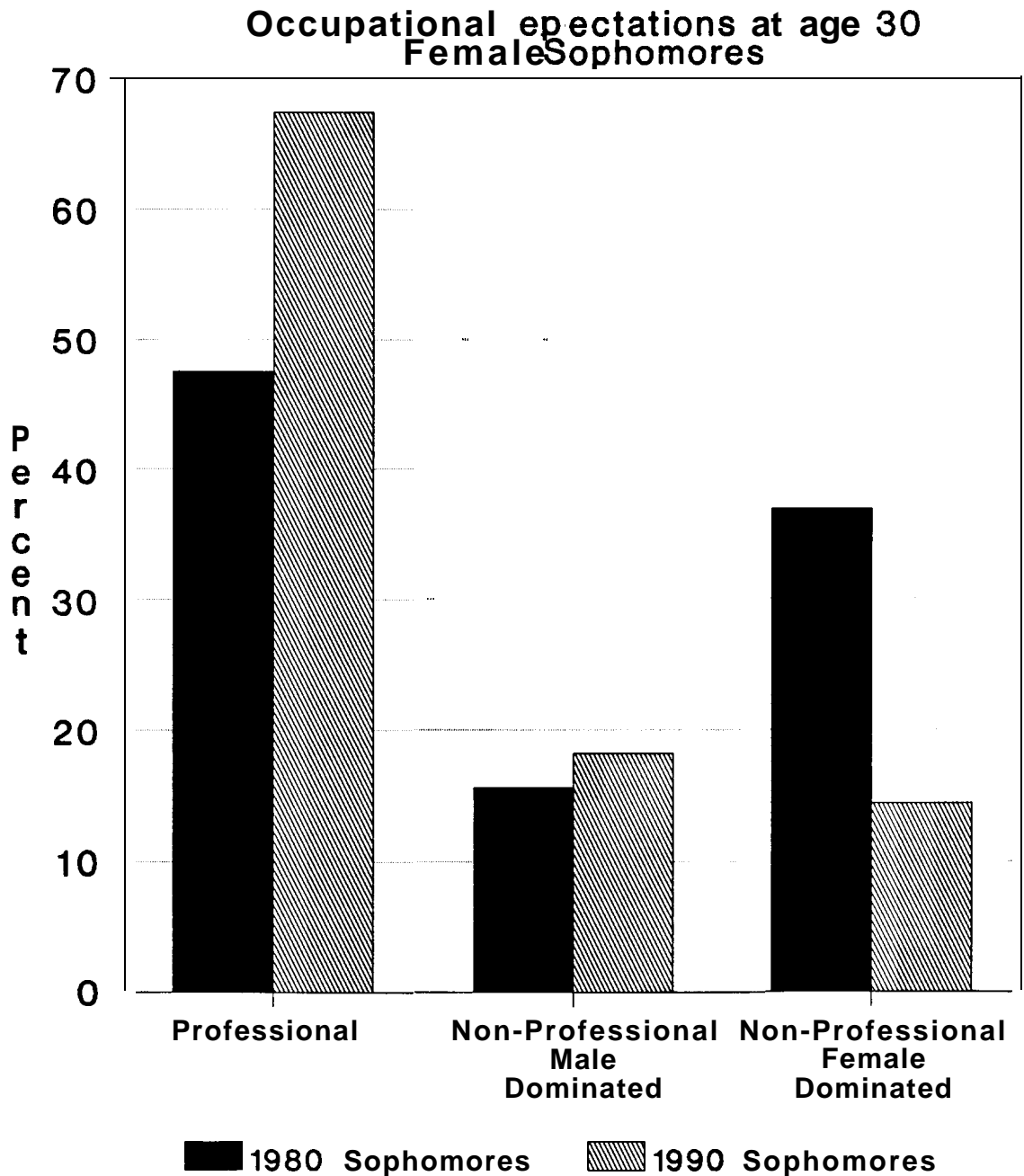
SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Figure 6.2. Comparison of occupational expectations, male sophomores



SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Figure 6.3-Comparison of occupational expectations, female sophomores



SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table 6.4. **Percentages of 1980 and 1990** sophomores expecting to be in various occupation categories at age 30, by gender.

Occupational category	All Students		Males		Females	
	1980	1990	1980	1990	1980	1990
Total Professional	40.6	57.4	34.5	47.5	47.5	67.4
MALE-DOMINATED NON-PROFESSIONAL OCCUPATIONS						
Craftsman	9.7	4.3	18.3	7.9	1.0	0.7
Farmer	2.7	1.1	4.4	1.9	1.0	0.3
Laborer	2.3	0.7	4.1	1.2	0.4	0.3
Manager	4.1	6.3	4.9	6.7	3.3	5.9
Military	3.7	3.3	5.8	5.1	1.5	1.5
Operative	3.1	1.5	5.2	2.3	0.9	0.6
Proprietor	3.7	6.6	5.6	8.4	1.9	4.9
Protective Service	1.7	3.4	2.6	5.5	0.8	1.3
Technical	7.5	5.9	10.6	8.9	4.8	2.9
Subtotal	38.3	33.1	61.4	48.0	15.6	18.2
FEMALE-DOMINATED NON-PROFESSIONAL OCCUPATIONS						
Clerical	9.9	3.3	1.5	1.5	17.7	5.1
Homemaker	5.0	2.3	0.2	0.2	9.6	4.4
Sales	1.9	2.2	1.7	2.3	2.1	2.1
Service	4.2	1.7	0.6	0.5	7.5	2.8
Subtotal	21.1	9.5	4.1	4.6	36.9	14.4

Sources: **HS&B** base year student survey (1980) and **NELS:88** first follow-up student survey (1990), National Center for Education Statistics, US Department of Education

CHAPTER 7: CONCLUSIONS

A Decade's Trends in the Light of the **Goals** of Educational Excellence and **Equity**

As a coda to this **report**, it **may be** fitting to briefly review findings that exemplify broader themes suggested by our analytic **results**. When educational outcomes for the **NLS-72** cohort--the senior class of **1972--were** compared to **1980** and **1982** results for the two **HS&B cohorts**, they provided one more item of evidence of a serious decline in educational performance in American secondary schools. It is therefore appropriate to ask whether there is any evidence that American sophomores were being better educated in **1990** than in **1980**, and to ask as well whether there is any evidence that learning opportunities were more equally and equitably distributed by the decade's **end**. **Only** the mathematics tests for **NELS:88** and **HS&B** permit us to directly address the question of whether any of the performance declines of the **1970s** were halted or reversed in the **1980s**. **Nevertheless**, **questionnaire** data from the two studies permit us to contrast important differences in the educational context of the two cohorts--for **example**, differences in students' reports of their high school programs--as **well** as to discern differences in student **expectations**, and the urgings conveyed to sophomores by their **families** and schools about the desirability of pursuing higher **education**. When these comparisons are supplemented by what is known from other data **sources**, an overall picture of some of the decade's important educational trends emerges.

We saw that between **1980** and **1990**, there were changes in student **demographics**, with a decline in the number of sophomores and an increase in their cultural and racial **diversity**. There were changes in **family** composition and **structure**, with declining numbers of two-parent families, and a continuation of the trend toward increased labor force participation of mothers of **infants**, children and adolescents. Many of the most pronounced **sociodemographic** trends--for **example**, increasing numbers of children living in **poverty**, increasing numbers of students coming to school from non-English language backgrounds--might be thought to make the job of schools yet more **difficult**. On the other **hand**, America embarked on major school reforms in the **1980s** with the intent of realizing more effective education for **all**. In the **marketplace**, the monetary worth of a high school education or less **declined**, while the return on a college education **increased**, thus widening **an** already considerable gap. Against this background of social changes and programmatic policy **initiatives**, differences between America's sophomores in **1980** and **1990--in** expectations and **values**, in **behaviors**, and in achievement--may be analyzed.

Changes in schooling in the **1980s** supply a dramatic backdrop for examining cross-time change in **sophomores**. In the first half of the **decade**, most states raised graduation **requirements**, most schools set stricter attendance **standards**, and increased standardized testing of students--and of teachers--answered calls for precise measurement of results and stricter **accountability**. Later in the **1980s** reform took a different **turn**, stressing changes in instructional emphases and **techniques**, while acknowledging the movement toward grassroots empowerment--initiatives aimed at increasing the influence and active roles of parents and **teachers**. Reforms were diverse in intent and **content**; not **all** students were exposed to the same reform **measures**, nor exposed in equal **measure**. While it is **difficult** to say how pervasively the impetus for change was felt by the **NELS:88** cohort--and while this report gives no basis for inferring the causes of the changes that it reports--the fact of the reform movement is a background factor that must be noted in any systematic comparison of the two sophomore **cohorts**. By and **large**, the **HS&B 1980** sophomores were products of an era in American education when achievement levels were **falling**, while the **1990** sophomores are the first cohort potentially to have been stamped by the efforts toward educational improvement that arose in the aftermath of the **1970s** declines in SAT scores and **NAEP results**, and the disappointing showing of American students on international math and science **assessments**.

Reformers of all persuasions have **affirmed** both excellence and **equity**, though they have differed in which **they** have **emphasized**, while hoping that the two goals could be **harmonized**. It is therefore fitting that **these dual** considerations--educational **production**, in its aspect of high **achievement**, and educational **distribution**, in its aspect of equalizing opportunity or educational access (**certified** by equality of outcomes for **all relevant** population **subgroups**)--**be** used to assess the importance of the differences we have **observed between** America's 1980 and 1990 sophomores. Below, **therefore**, we will take four examples of findings of this report and view them in the light of two **questions**: what **changed?**; and for whom did it **change?** More **specifically**, is there any evidence that sophomores in 1990 had a more positive orientation toward learning than did 1980 sophomores, and is there any evidence that they are learning **more?** And if there are gains in **learning**, are traditionally disadvantaged subgroups gaining **too**, and **gaining** at a rate that reduces historical **disparities?** The four **examples** that we shall review are program **placement**, mathematics **achievement**, student expectations to go on to **college**, and parental and school press for **college-going**.

The topic of program placement--the percentage of sophomores in a **general**, college preparatory, or vocational curriculum--exemplifies one important aspect of the in-school experience of **sophomores**. Program enrollment is of interest because the 1970s saw a shift away from enrollment in the academic **curriculum**, and toward general and vocational **programs**; this shift is one of the factors sometimes associated with declines on key achievement **indicators**. NELS:88 data (**based on sophomores' self-reports**) show a move away from the vocational curriculum and increased enrollment in the academic curriculum in the 1980s. As depicted in Table 2.2 of Chapter Two, substantially increased college preparatory program enrollments (**and a decline in vocational enrollment**) were registered for all socioeconomic status groups. By 1990, black sophomores were nearly as likely as white sophomores to be **enrolled in college** preparatory programs (41% versus 42%), and Hispanic enrollment in this program type had gone from 25 percent in 1980 to 35 percent in 1990.

Mathematics **achievement**. Achievement test scores declined over the course of the 1970s; a major goal of the reform movement was to reverse this **trend**. Comparison of HS&B and NELS:88 data demonstrates that America's sophomores gained in mathematics achievement between 1980 and 1990. **Moreover**, all socioeconomic status groups made significant **gains**. In terms of racial or ethnic **groups**, while white and Asian students continued to show higher levels of math **achievement**, black and Hispanic students showed proportionately greater **gains**, thus reducing some part of this long-standing **gap**. Traditionally gender has marked--starting late in high school--another gap in math **achievement**, as males forge ahead of females (**Mullis, Owen, & Phillips, 1990, p.49**). **However, 1990 male** and female sophomores were not significantly different in their math **achievement**, nor were differential gains observed by gender group when 1990 results were compared to 1980 data from HS&B. (**Comparison of forthcoming results from NELS:88 1992 seniors, with the HS&B and NLS-72 seniors, will provide a fuller picture of whether a substantial gender gap in math achievement still exists.**)

Changes in Student Postsecondary Expectations. While expectations and aspirations may not always be realized, they serve as good indicators of the academic ambitions of high school **sophomores**, pointing to educational goals that they apparently value and feel they have a **realistic** possibility of **achieving**. **Postsecondary** expectations increased over the **decade**: 1990 sophomores were significantly more likely to say they will go on to complete a bachelor's or advanced degree than were 1980 sophomores (59% versus 41%). **Postsecondary** expectations of **blacks**, Hispanics and **individuals** in the lowest socioeconomic status group show large **increases**. **Moreover**, increasing expectations are matched by increasing college **enrollment**. Current Population Survey data show that the percentage of high school graduates who enrolled in college in October following graduation increased from 49 percent to 60 percent between 1980 and 1990.

Home **and School Press for Postsecondary Entry. The** expectations of **adults**, especially of **parents**, but also of teachers and other school **personnel**, are widely thought to be critical determinants of students' motivation to **learn**, to persist in **schooling**, and to go on to **postsecondary education**. Sophomores in **1990** reported receiving significantly more adult encouragement to attend college after high school than did **1980 sophomores**. The four sources of adult influence were **fathers, mothers**, counselors and **teachers**, and consistently **all** four groups were more likely to urge college **attendance**. This pattern holds for **all** socioeconomic status **groups**, and for blacks and Hispanics as well as for **whites**.

Other examples could have been chosen from this **report**, but the general conclusion would be **unchanged**. That **general** conclusion is that there are signs that some academic progress was achieved in the **1980s**, and that the movement toward increased excellence was accompanied by some gains in equity as **well**. The achievement indicators provided by assessments such as **NAEP**; the dropout and school return and completion rates registered by **HS&B**, the Current Population **Survey**, and the **1980** and **1990** decennial **censuses**; the indications of higher academic course enrollment late in the **1980s** that can be seen in comparison of the high school transcripts collected by **HS&B** and **NAEP**; and the comparisons of **HS&B** and **NELS:88** sophomores reported **here**, provide convergent data supporting the conclusion that there were modest but significant gains in overall student achievement and other positive educational outcomes--and that gains were posted in educational equity as well.

These positive educational trends do **not**, of **course**, license **complacency**. Yet better--far better--results could be **achieved**, and should **be**. Modest gains may not be enough to prepare American students for increasingly demanding roles in the labor **force**, nor enough to maintain America's competitive edge in the global **economy**. As commentary on **NAEP** results has often pointed **out**, test gains in areas such as mathematics have tended to show improvements in basic computational skills but rather less progress in achieving problem solving **skills**. And while black and Hispanic results show a narrowing of the achievement gap between these minorities and the white **majority**, large disparities **persist**. Despite overall improvements, and gains in **equity**, **NAEP** and **NELS:88** test data suggest that overall performance is **low**, measured both in historical terms and by the criterion of emerging **standards**.

While comparisons of questionnaire and test data of **1980** sophomores with those of **1990** supply no basis for **complacency**, such comparisons do supply the hope that continued vigorous efforts to achieve school improvement **can succeed**. Investigation of the dynamics and effects of educational processes--of the reasons why changes have occurred or failed to occur--is beyond the scope of this descriptive **report**. **Nonetheless**, longitudinal studies such as **HS&B** and **NELS:88** provide critical data for such deeper investigations--investigations that may increase our understanding of how better to achieve school **improvement**, and to make higher quality and more effective learning available to **all**.

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A Ten Year Comparison 1980 - 1990*

U.S. Bureau of the Census, Current Population Survey. Series P-20, Reports No. 360, 441, and 452.
Washington, D.C.: U.S.G.P.O.

APPENDIX A: Unweighted Sample Sizes, Standard Errors and Chapter 3 Supplementary Statistics

Table A 1. **Unweighted** sample sizes for subgroups formed by classification **variables**.

Student Characteristics	Unweighted Sample Sizes	
	1980	1990
Male	13382	8745
Female	14511	8799
Asian	405	1162
Hispanic	3788	2138
Black	4194	1718
White	21071	12243
American Indian	297	193
Low SES	7540	4229
Middle SES	14007	7995
High SES	7090	4786
Northeast	6248	3313
North Central	6253	4605
south	12001	6040
West	5528	3541
Public	26241	15059
Catholic	2808	982
Other Private	981	1461
Test Quartile		
Lowest	7048	3474
Second	6875	4067
Third	6641	4228
Highest	6971	4878

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

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Table A1.1 Standard errors for percentages of 1980 and 1990 sophomores in each racial/ethnic category

Race/Ethnicity	1980	1990
Asian	0.13	0.29
Hispanic	0.38	0.79
Black	0.82	0.81
White	0.95	1.16
American Indian	0.15	0.22

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A1.2 Standard errors for percentages of 1980 and 1990 sophomores in each socioeconomic category, by race/ethnicity

Race/Ethnicity	Low SES		Middle SES		High SES	
	1980	1990	1980	1990	1980	1990
Asian	2.99	1.78	2.93	2.55	3.12	2.44
Hispanic	1.49	2.07	1.20	1.79	0.85	1.08
Black	1.42	2.37	1.24	2.16	0.79	1.15
White	0.53	0.69	0.59	0.81	0.80	0.99
American Indian	3.56	5.68	3.45	5.29	2.18	2.47

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A1.3 Standard errors for percentages of 1980 and 1990 sophomores in each sector, by race/ethnicity

Race/Ethnicity	Public		Catholic		Other Private	
	1980	1990	1980	1990	1980	1990
Asian	1.95	3.26	1.54	1.83	1.14	2.98
Hispanic	1.46	1.54	1.02	1.17	1.09	0.77
Black	0.57	1.46	0.53	1.44	0.02	0.37
White	1.31	0.80	0.97	0.59	0.95	0.48
American Indian	1.25	1.01	0.54	1.01	1.09	0.05

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A1.4 Standard errors for percentages of 1980 and 1990 sophomores in each sector, by SES

Socioeconomic Status	Public		Catholic		Other Private	
	1980	1990	1980	1990	1980	1990
Low SES	0.53	0.42	0.48	0.37	0.21	0.19
Middle SES	1.12	0.71	0.84	0.58	0.78	0.42
High SES	2.20	1.65	1.61	1.11	1.78	1.17

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A2.1 Standard errors for percentages of 1980 and 1990 sophomores in each high school program, by gender

High School Program	All Students		Males		Females	
	1980	1990	1980	1990	1980	1990
General	0.71	0.95	0.82	1.20	0.91	1.14
College Prep.	0.74	0.96	0.87	1.25	0.90	1.13
Vocational						
Agricultural	0.15	0.11	0.27	0.20	0.13	0.07
Business or office	0.26	0.26	0.20	0.30	0.43	0.38
Distributive	0.10	0.08	0.13	0.15	0.13	0.09
Health	0.09	0.10	0.10	0.09	0.13	0.18
Home economics	0.12	0.09	0.08	0.14	0.20	0.10
Technical occupations	0.13	0.13	0.21	0.25	0.10	0.05
Trade or industrial	0.31	0.10	0.54	0.19	0.15	0.08

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

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Table A2.2 Standard errors for percentages of 1980 and 1990 sophomores in **General**, College Prep., and vocational high school **programs**, by **sector**, **race**, **SES**, and test quartile

Student Characteristics	General		College Prep.		Vocational	
	1980	1990	1980	1990	1980	1990
All Sophomores	0.71	0.95	0.74	0.96	0.61	0.37
Asian	2.98	2.62	3.19	2.93	2.18	1.63
Hispanic	1.41	2.10	1.27	1.97	1.34	1.14
Black	1.48	2.67	1.59	2.78	1.48	1.54
White	0.79	1.13	0.82	1.14	0.59	0.38
American Indian	3.78	5.27	2.89	4.65	4.17	4.18
Low SES	1.02	1.52	0.74	1.38	0.90	1.00
Middle SES	0.81	1.15	0.73	1.17	0.68	0.49
High SES	1.07	1.77	1.19	1.78	0.47	0.26
Northeast	1.41	2.32	1.69	2.47	1.56	0.96
Northcentral	1.56	1.66	1.65	1.68	1.32	0.53
south	1.05	1.49	1.02	1.49	0.91	0.71
west	1.47	2.21	1.58	2.16	0.93	0.79
Public	0.70	0.96	0.64	0.96	0.64	0.42
Catholic	3.30	3.97	3.49	3.98	0.84	0.61
Other Private	5.98	5.11	7.51	5.15	2.69	0.27
Test Quartile						
Lowest	1.09	1.96	0.58	1.98	0.97	1.31
Second	1.02	1.44	0.81	1.37	0.91	0.75
Third	1.03	1.52	1.01	1.57	0.65	0.55
Highest	1.01	1.42	1.10	1.43	0.45	0.32

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A2.3 Standard errors for percentages of 1980 and 1990 sophomores saying they usually or often come to school without paper and pencil, books, and/or homework, by student characteristics

Student Characteristics	Come to school without books		Come to school without paper, pen or pencil		Come to school without homework	
	1980	1990	1980	1990	1980	1990
All Sophomores	0.24	0.30	0.28	0.38	0.32	0.33
Male	0.38	0.41	0.43	0.65	0.50	0.45
Female	0.26	0.38	0.32	0.34	0.39	0.45
Asian	2.69	1.48	2.09	1.40	2.42	1.44
Hispanic	0.84	1.08	0.91	1.10	0.97	1.05
Black	0.78	0.87	0.81	0.96	0.87	1.30
White	0.23	0.32	0.30	0.47	0.34	0.34
American Indian	2.60	3.25	2.70	2.64	2.64	2.36
Low SES	0.45	0.69	0.55	0.63	0.62	0.90
Middle SES	0.30	0.42	0.36	0.47	0.41	0.69
High SES	0.33	0.34	0.48	1.02	0.55	1.05
Public	0.25	0.32	0.30	0.35	0.33	0.48
Catholic	0.56	0.82	1.05	1.60	1.06	1.61
Other Private	1.09	1.40	1.25	5.13	2.35	4.52
Test Quartile						
Lowest	0.55	0.80	0.64	0.82	0.68	0.80
Second	0.40	0.55	0.52	0.65	0.59	0.73
Third	0.32	0.42	0.48	0.59	0.57	0.52
Highest	0.25	0.30	0.44	0.86	0.50	0.39

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

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Table A2.4. Standard errors for percentages of 1980 and 1990 sophomores who report that they do not feel safe at their school by student characteristics.

Student Characteristics	1980	1990
All Sophomores	0.30	0.33
Male	0.41	0.45
Female	0.38	0.45
Asian	2.21	1.44
Hispanic	0.85	1.05
Black	0.95	1.30
White	0.29	0.34
American Indian	1.98	2.36
Low SES	0.56	0.81
Middle SES	0.38	0.41
High SES	0.41	0.56
Public	0.32	0.37
Catholic	0.68	0.89
Other private	1.71	0.66
Test Quartile		
Lowest	0.63	0.80
Second	0.52	0.73
Third	0.45	0.52
Highest	0.35	0.39

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A2.5. Percentages of 1980 and 1990 sophomores in different test quartiles by racial/ethnic group

Race/Ethnicity	Lowest test quartile		Second test quartile		Third test quartile		Highest test quartile	
	1980	1990	1980	1990	1980	1990	1980	1990
Asian	2.43	2.10	3.17	1.98	2.80	2.35	3.24	2.72
Hispanic	1.50	1.69	1.08	1.73	0.90	1.38	0.77	1.10
Black	1.56	2.40	0.93	1.97	0.83	2.15	0.67	1.07
White	0.43	0.62	0.41	0.61	0.36	0.58	0.59	0.77
American Indian	5.16	6.57	3.47	5.10	2.65	3.42	1.97	2.91

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A3.1 R-squares from combinations of predictors

	YEAR	GROUP	YR+GRP	YR+GRP+1	RSQ GAIN (Interaction)	F (Interaction)	PROB
Sex	0.0160	0.0002	0.0162	0.0162	0.0000	1.0915	0.2958
Race	0.0168	0.1129	0.1271	0.1283	0.0012	18.8712	0.0000
SES Q	0.0142	0.1503	0.1618	0.1621	0.0003	4.8781	0.0022
Region	0.0164	0.0278	0.0456	0.0461	0.0005	8.0174	0.0000
Curric	0.0282	0.1676	0.1838	0.1854	0.0016	37.3374	0.0000
Sector	0.0162	0.0120	0.0284	0.0284	0.0000	1.4368	0.2306

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

NOTE: Table A3.1 presents a summary of the statistical tests used to determine if certain subpopulations gained significantly more than others. Four equations are tested in each row of the table. The statistics in each of the first four columns are R-squares from each of the equations. In the first column, the coefficients are R-squares from an equation with an intercept term and a dummy variable representing YEAR (1980 vs 1990). In the second column, the coefficients are R-squares from an equation with an intercept term and a dummy variable or variables representing GROUP membership (e.g., males vs females, Hispanics vs whites, etc.). The third column has R-squares for equations with YEAR and GROUP both included. The fourth column gives R-squares for equations with YEAR, GROUP, and the YEAR by GROUP interaction (I). Column 5 presents the improvement in R-squared when the YEAR by GROUP interaction is included in the equation as opposed to when YEAR and GROUP are included only as main effects. Columns 6 and 7 give statistical tests of the improvement in R-Squared. Entries in the "RSQ GAIN", "F", and "PROB" columns provide evidence for or against differential subpopulation gains. Given the sample design effect, the only gains across years are for race and curriculum groups.

Table A3.2 Statistical tests of group means (including effect sizes)

	HSB 80			NELS 90					EFFECT
	N	MEAN	SD	N	MEAN	SD	t	p	SIZE
Total	24,685	32.81	12.29	17,281	35.97	12.22	-26.00	0.00	0.26
Male	12,031	33.02	12.79	8,655	36.06	12.50	-16.99	0.00	0.25
Female	12,654	32.60	11.77	8,626	35.89	11.92	-19.89	0.00	0.27
Hispanic	4,180	25.96	10.28	2,076	30.75	11.13	-16.89	0.00	0.34
Asian	351	38.82	12.50	1,103	40.26	12.27	-1.90	0.00	0.12
Black	3,048	24.51	9.56	1,765	28.74	10.60	-14.21	0.00	0.35
White	16,754	35.41	11.91	12,047	37.96	11.84	-17.95	0.00	0.21
SES low	5,912	26.93	10.45	3,687	39.17	10.70	-10.10	0.00	0.18
SES 2	5,889	31.65	11.47	4,040	34.10	11.49	-10.42	0.00	0.20
SES 3	5,760	34.58	11.76	4,088	37.15	11.47	-10.83	0.00	0.21
SES high	6,115	39.53	11.66	4,987	42.90	10.74	-15.69	0.00	0.27
Northeast	5,242	34.86	12.53	3,213	38.51	11.81	-13.28	0.00	0.30
Northcent	7,269	34.52	12.20	4,576	37.35	11.97	-12.39	0.00	0.23
south	7,854	29.68	11.59	6,176	33.64	12.09	-19.72	0.00	0.32
West	4,320	33.69	12.27	3,285	36.21	12.34	-8.87	0.00	0.21
General	10,899	30.97	11.39	6,916	35.20	11.55	-24.06	0.00	0.35
Academ	8,556	39.80	11.25	6,068	42.35	10.39	-13.99	0.00	0.21
Voc Tec	4,744	26.65	10.68	1,594	28.28	10.84	-5.25	0.00	0.13
Public	21,490	32.22	12.26	14,926	35.45	12.24	-24.74	0.00	0.26
Catholic	2,479	38.11	10.66	954	40.72	10.14	-6.53	0.00	0.21

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

NOTE: t-test based on design effect-corrected standard errors.

Table A4.1. Standard errors for percentages of 1980 and 1990 sophomores who participate in a variety of school-sponsored extra-curricular activities, by student characteristics.

Student Characteristics	Academic Clubs		Athletics		Cheerleading		Hobby Clubs		Music		Vocational Clubs	
	1980	1990	1980	1990	1980	1990	1980	1990	1980	1990	1980	1990
All Sophomores	0.42	0.62	0.45	0.69	0.35	0.43	0.34	0.37	0.43	0.59	0.54	0.54
Male	0.50	0.83	0.56	0.89	0.25	0.45	0.49	0.52	0.46	0.63	0.57	0.65
Female	0.55	0.87	0.59	0.89	0.59	0.68	0.42	0.50	0.63	0.85	0.66	0.69
Asian	2.87	2.24	2.72	2.86	1.64	0.98	2.67	1.47	2.79	2.76	1.33	0.81
Hispanic	1.11	1.57	1.29	1.82	0.76	0.86	1.01	0.67	1.04	1.19	0.85	0.87
Black	1.04	1.91	0.96	2.22	0.79	2.34	0.93	0.78	1.04	1.77	1.17	1.84
White	0.47	0.72	0.53	0.78	0.41	0.38	0.38	0.46	0.50	0.68	0.60	0.64
Am. Indian	2.90	4.66	3.11	5.05	1.99	3.06	2.66	2.83	3.23	3.66	2.94	3.30
Low SES	0.71	1.05	0.73	1.19	0.58	0.82	0.62	0.56	0.68	0.93	0.83	1.15
Middle SES	0.55	0.89	0.55	0.92	0.44	0.65	0.44	0.55	0.57	0.77	0.63	0.67
High SES	0.75	1.16	0.77	1.21	0.59	0.65	0.62	0.68	0.78	1.09	0.50	0.54
Northeast	0.78	1.35	1.10	1.49	0.61	0.66	0.76	1.21	0.90	1.33	0.58	0.46
Northcentral	0.79	1.27	0.96	1.27	0.80	0.63	0.68	0.53	0.92	1.22	1.14	1.17
south	0.73	1.06	0.66	1.16	0.58	0.96	0.49	0.53	0.68	0.93	1.07	1.10
west	0.93	1.32	1.03	1.59	0.80	0.71	0.89	0.78	1.00	1.30	0.87	0.86
Public	0.44	0.65	0.44	0.70	0.35	0.46	0.35	0.38	0.44	0.61	0.58	0.60
Catholic	1.63	2.40	1.91	2.76	1.55	1.18	1.27	1.53	1.62	1.60	0.50	0.64
Other Private	2.63	4.60	4.15	4.46	3.09	2.47	2.27	3.50	3.80	5.01	1.76	2.32
Test Quartile												
Lowest	0.73	1.21	0.76	1.42	0.56	0.95	0.64	0.59	0.73	0.87	0.86	1.19
Second	0.69	1.18	0.72	1.22	0.59	0.94	0.60	0.58	0.73	1.08	0.79	0.86
Third	0.66	1.15	0.76	1.22	0.55	0.82	0.62	0.65	0.74	1.05	0.67	0.90
Highest	0.79	1.17	0.79	1.25	0.56	0.72	0.59	0.75	0.78	1.05	0.53	0.60

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A4.2. Standard errors for percent of 1980 and 1990 sophomores who say they watch five hours or more of television on school nights, by student characteristics.

Student Characteristics	Watch 5 or more hours	Watch more than 5 hours
	1980	1990
All Sophomores	0.39	0.44
Male	0.55	0.72
Female	0.50	0.50
Asian	2.86	1.11
Hispanic	1.08	1.32
Black	0.94	2.30
White	0.43	0.35
Am. Indian	2.73	4.26
Low SES	0.72	0.82
Middle SES	0.50	0.70
High SES	0.61	0.35
Northeast	0.83	0.95
Northcentral	0.84	0.80
south	0.57	0.85
west	0.89	0.84
Public	0.41	0.48
Catholic	1.06	1.09
Other Private	3.01	0.80
Test quartile		
Lowest	0.74	1.21
Second	0.67	1.13
Third	0.62	0.49
Highest	0.58	0.38

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A4.3. Standard errors for percentages of 1980 and 1990 sophomores who say they engage in various activities at least once or twice a week, by student characteristics.

Student Characteristics	Just driving or riding around		Visiting with friends at a local hangout		Talking with friends on the telephone		Reading for pleasure	
	1980	1990	1980	1990	1980	1990	1980	1990
All Sophomores	0.49	0.66	0.38	0.65	0.40	0.55	0.42	0.64
Male	0.62	0.93	0.50	0.84	0.57	0.86	0.58	0.86
Female	0.58	0.88	0.54	0.90	0.43	0.63	0.55	0.89
Asian	3.02	2.74	3.10	2.31	2.74	1.85	2.93	2.35
Hispanic	1.23	1.69	1.05	2.26	1.20	1.54	1.27	1.80
Black	1.19	2.49	0.94	2.34	1.04	2.05	1.06	2.15
White	0.53	0.72	0.44	0.71	0.41	0.60	0.46	0.71
American Indian	3.07	5.46	2.76	3.41	5.25	8.48	3.39	6.39
Low SES	0.74	1.21	0.71	1.32	0.77	1.02	0.77	1.10
Middle SES	0.59	0.90	0.50	0.88	0.48	0.73	0.55	0.88
High SES	0.93	1.36	0.64	1.15	0.56	1.12	0.80	1.24
Northeast	1.07	1.31	0.87	1.37	0.92	1.22	1.03	1.24
Northcentral	0.96	1.23	0.80	1.25	0.76	0.90	0.80	1.24
south	0.71	1.17	0.63	1.06	0.61	1.04	0.63	1.15
West	0.98	1.46	0.82	1.67	1.00	1.21	1.05	1.34
Public	0.50	0.68	0.40	0.68	0.41	0.57	0.44	0.66
Catholic	1.81	2.73	1.73	2.03	1.48	2.15	1.55	2.80
Other Private	3.77	4.39	1.80	3.92	2.28	3.15	3.22	4.19
Test Quartile								
Lowest	0.82	1.37	0.70	1.41	0.74	1.33	0.83	1.17
Second	0.79	1.19	0.65	1.26	0.69	1.06	0.74	1.25
Third		0.81	1.25	0.67	1.15	0.65	0.85	0.761.17
Highest	0.82	1.18	0.72	1.16	0.61	1.05	0.77	1.15

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A5.1. Standard errors in perceptions and values of high school sophomores: 1980 and 1990

Variable	1980	1990
A. Self-esteem (percentage agree strongly)		
Feel good about myself	0.38	0.70
Person of worth, equal of others	0.33	0.60
Satisfied with self	0.20	0.27
I'm no good at all	0.14	0.20
Not much to be proud of	0.34	0.45
B. Locus of control (percentage agree strongly or agree)		
Good luck more important than hard work	0.42	0.62
Every time I try to get ahead, something stops me	0.38	0.53
My plans hardly ever work out	0.31	0.49
When I make plans, I can make them work	0.44	0.70
C. Social image (percentage responding "others see me as [very] ...")		
Popular	0.30	0.43
Athletic	0.26	0.50
Socially active	0.32	0.53
A good student	0.38	0.60
Important	0.28	0.49
A trouble-maker	0.15	0.28
Part of the leading crowd	0.26	0.47
D. Life values (percentage believe very important)		
Work success	0.27	0.47
Marriage/family	0.28	0.56
Money	0.41	0.65
Friendship	0.35	0.55
Steady work	0.28	0.40
Giving my children better opportunities	0.42	0.56
Living close to parents/relatives	0.31	0.54
Leaving this area	0.31	0.51
Correcting inequalities	0.29	0.50
Having children	0.42	0.65
Leisure time	0.35	0.63

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A6.1. Standard errors for percentages of 1980 and 1990 sophomores expecting to achieve various levels of post secondary education by student characteristics.

Student Characteristics	High school diploma or less		Two years or less of college or vocational school		College graduate		Postgraduate degree	
	1980	1990	1980	1990	1980	1990	1980	1990
All sophomores	0.50	0.42	0.39	0.65	0.38	0.59	0.40	0.64
Male	0.66	0.52	0.54	0.88	0.52	0.84	0.54	0.87
Female	0.58	0.62	0.52	0.84	0.47	0.81	0.50	0.84
Asian	2.08	1.86	2.66	2.51	2.99	2.00	3.36	2.87
Hispanic	1.18	1.19	1.07	1.95	0.83	1.40	0.84	1.52
Black	1.06	1.13	0.89	2.02	0.83	1.87	0.91	2.05
White	0.57	0.48	0.45	0.72	0.44	0.67	0.46	0.73
Am. Indian	4.12	6.26	3.01	4.51	3.63	3.96	2.08	3.29
Low SES	0.82	1.17	0.67	1.21	0.50	0.95	0.43	0.98
Middle SES	0.52	0.46	0.52	0.91	0.45	0.81	0.39	0.75
High SES	0.40	0.23	0.68	0.75	0.68	1.20	0.80	1.30
Northeast	1.19	0.90	0.87	1.43	0.94	1.35	1.05	1.77
North Central	1.10	0.73	0.81	1.16	0.88	1.02	0.85	1.15
south	0.75	0.60	0.58	1.13	0.53	1.20	0.54	0.99
West	1.06	1.29	0.91	1.53	0.86	1.11	0.94	1.36
Public	0.50	0.46	0.38	0.67	0.37	0.62	0.37	0.62
Catholic	1.21	0.88	1.72	1.81	1.52	2.24	1.94	2.74
Other Private	2.63	1.41	3.77	2.73	3.06	3.50	4.29	4.48
Test Quartile								
Lowest	0.87	1.02	0.71	1.39	0.53	1.22	0.41	1.29
Second	0.76	0.68	0.70	1.23	0.56	1.00	0.49	0.90
Third	0.64	0.51	0.72	1.10	0.67	1.13	0.58	1.05
Highest	0.39	0.27	0.68	0.70	0.67	1.17	0.89	1.24

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

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Table A6.2. Standard errors for percentages of 1980 and 1990 sophomores who plan to go to college after graduating from high school, by student characteristics.

Student Characteristics	Right after High School		After a year		After more than a year		No/don't know	
	1980	1990	1980	1990	1980	1990	1980	1990
AU Sophomores	0.62	0.70	0.32	0.47	0.35	0.35	0.39	0.50
Male	0.77	0.97	0.43	0.65	0.48	0.46	0.55	0.72
Female	0.72	0.91	0.41	0.63	0.44	0.52	0.41	0.63
Asian	3.22	2.36	2.26	1.40	1.99	0.79	0.73	1.92
Hispanic	1.34	1.82	0.95	1.53	1.11	1.17	0.86	1.02
Black	1.30	1.99	0.91	1.37	0.96	1.34	0.66	1.18
White	0.70	0.81	0.37	0.54	0.39	0.40	0.47	0.62
American Indian	3.33	5.82	3.45	3.72	3.22	2.96	2.72	7.41
Low SES	0.79	1.19	0.54	0.91	0.70	0.80	0.78	1.25
Middle SES	0.64	0.91	0.44	0.65	0.42	0.56	0.45	0.59
High SES	0.81	1.04	0.56	0.92	0.46	0.44	0.31	0.29
Northeast	1.63	1.63	0.66	0.92	0.83	0.70	1.04	1.15
Northcentral	1.25	1.27	0.64	0.76	0.70	0.57	0.81	0.89
South	0.87	1.18	0.49	0.78	0.53	0.68	0.55	0.82
west	1.32	1.60	0.74	1.17	0.83	0.87	0.69	1.32
Public	0.58	0.72	0.33	0.47	0.36	0.38	0.40	0.54
Catholic	1.91	1.91	1.04	1.35	1.28	1.02	0.80	0.83
Other Private	4.75	4.50	2.18	4.09	2.53	1.84	2.43	1.62
Test Quartile								
Lowest	0.87	1.54	0.62	1.09	0.70	0.84	0.81	1.20
Second	0.83	1.26	0.60	0.88	0.67	0.74	0.67	0.93
Third	0.85	1.17	0.60	0.82	0.62	0.83	0.54	0.68
Highest	0.76	0.82	0.53	0.68	0.45	0.43	0.33	0.29

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A6.3. Standard errors for 1980 and 1990 sophomores' reports of percentages of fathers, mothers, guidance counselors, and teachers of 1980 and 1990 sophomores who recommend attending college after high school, by student characteristics.

Student Characteristics	Father		Mother		Guidance Counselor		Teachers	
	1980	1990	1980	1990	1980	1990	1980	1990
All Sophomores	0.62	0.70	0.58	0.63	0.57	0.74	0.49	0.71
Male	0.80	0.97	0.76	0.86	0.69	0.99	0.64	1.00
Female	0.69	0.91	0.64	0.87	0.70	0.96	0.59	0.90
Asian	2.83	1.75	2.98	1.59	3.39	2.44	3.28	2.33
Hispanic	1.32	1.72	1.28	1.47	1.25	1.93	1.25	1.87
Black	1.31	2.37	1.29	2.42	1.05	2.43	1.17	2.49
White	0.70	0.79	0.66	0.67	0.65	0.84	0.53	0.78
American Indian	3.23	7.11	3.33	7.35	5.55	8.98	4.23	7.75
Low SES	0.85	1.58	0.90	1.61	0.75	1.46	0.81	1.47
Middle SES	0.64	0.88	0.65	0.80	0.63	0.99	0.55	0.98
High SES	0.59	0.54	0.53	0.36	0.97	1.07	0.83	1.05
Northeast	1.53	1.36	1.48	1.06	1.33	1.63	1.11	1.59
Northcentral	1.28	1.17	1.26	1.01	1.19	1.32	1.06	1.25
South	0.94	1.23	0.86	1.18	0.82	1.24	0.73	1.27
West	1.33	1.80	1.19	1.66	1.33	1.82	1.10	1.65
Public	0.62	0.74	0.57	0.68	0.56	0.77	0.49	0.73
Catholic	1.66	1.12	1.54	0.98	2.38	2.27	1.85	2.40
Other Private	4.65	2.05	5.23	1.63	6.12	2.94	4.39	3.00
Test Quartile								
Lowest	0.87	1.54	0.93	1.57	0.87	1.55	0.92	1.49
Second	0.85	1.40	0.87	1.32	0.72	1.42	0.74	1.46
Third	0.87	0.97	0.82	0.75	0.81	1.21	0.76	1.26
Highest	0.68	0.72	0.56	0.43	1.01	1.13	0.80	1.03

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

Table A6.4. Standard errors for percentages of 1980 and 1990 sophomores expecting to be in various occupation categories at age 30, by gender.

Occupational category	All Students		Males		Females	
	1980	1990	1980	1990	1980	1990
TOTAL PROFESSIONAL	0.51	0.75	0.63	1.13	0.64	0.83
MALE DOMINATED OCCUPATIONS						
Craftsman	0.24	0.24	0.45	0.44	0.10	0.16
Farmer	0.15	0.11	0.29	0.21	0.10	0.07
Laborer	0.10	0.09	0.20	0.17	0.07	0.05
Manager	0.15	0.32	0.23	0.47	0.18	0.40
Military	0.15	0.23	0.27	0.41	0.13	0.19
Operative	0.13	0.29	0.24	0.55	0.09	0.17
Proprietor	0.14	0.43	0.24	0.60	0.15	0.53
Protective Semite	0.09	0.24	0.17	0.43	0.09	0.19
Technical	0.19	0.30	0.33	0.54	0.22	0.27
FEMALE DOMINATED OCCUPATIONS						
Clerical	0.25	0.22	0.14	0.24	0.42	0.37
Homemaker	0.18	0.20	0.05	0.09	0.34	0.38
sales	0.10	0.17	0.14	0.26	0.15	0.23
Service	0.15	0.13	0.09	0.10	0.28	0.23

SOURCES: High School and Beyond Base Year Survey, 1980 Sophomore Cohort and National Education Longitudinal Study of 1988, First Follow-up Student Survey, U.S. Department of Education, National Center for Education Statistics.

APPENDIX B: Methodological and Technical Notes

This appendix documents the **HS&B** and **NELS:88** sample designs; assesses comparability of **NELS:88** and **HS&B** estimates and the comparability of each to other data sources; and provides information about precision of estimates, statistical and analytical procedures, and the variables used in this report.

Additional information--about the aims and design of **HS&B** and **NELS:88**, data collection results, structure of the data files, specifications used in creating composite variables, universe coverage, sample selection procedures, weighting methodology, selected standard error estimates, estimates of design effects for broad categories of students, and results of nonresponse analyses--is provided in the various user's manuals and technical reports.¹ For detailed reliability and validity information concerning the **HS&B** and **NELS:88** cognitive tests, the various psychometric and technical reports should be consulted.²

Sample Design

The HS&B Sample Design. The **NCES** national education longitudinal survey High School and Beyond was initiated in 1980. **HS&B** was intended to be a general, multipurpose study, serving diverse users and needs. Thus, while attempting to collect data comparable to the 1972 study, **HS&B** sought to increase the data's usefulness, accuracy and scope. While allowing for analyses of schools and students on a national level, the study also permitted separate analyses of specific types of schools and subclasses of students.

The sample design reflected these survey objectives. On one level, the design yielded a probability sample of approximately 36,000 sophomores and 36,000 seniors, and was keyed to providing national estimates. On another level, the sample was one in which certain policy-relevant subgroups (for

¹For **HS&B**, the relevant sources are:

Frankel, M. R., Kohnke, L., Buonanno, D., and Tourangeau, R. 1981. HS&B Base Year Sample Design Report. Chicago: NORC.

NORC. High School and Beyond Information for Users: Base Year (1980) Data. 1980. Chicago: Author.

For **NELS:88**, see:

Spencer, B. D., Frankel, M. R., Ingels, S.J., Rasinski, K. A., and Tourangeau, R. 1990. NELS:88 Base Year Sample Design Report, Washington, D. C.: National Center for Education Statistics (NCES 90-463).

Ingels, S.J., Scott, L. A., Lindmark, J. T., Frankel, M. R., and Myers, S.L. 1992. NELS:88 First Follow-Up: Student Component Data File User's Manual. Washington, D.C.: National Center for Education Statistics. (NCES 92-030).

²In particular, see:

Rock, D. A., Hilton, T. L., Pollack, J. M., Ekstrom, R. B., Goertz, M.E. 1985. Psychometric Analysis of the NLS and the High School and Beyond Test Batteries. Washington, D. C.: National Center for Education Statistics (NCES 85-218).

Rock, D. A., and Pollack, J.M. Report for the NELS:88 Base Year Test Battery. 1991. Washington, D. C.: National Center for Education Statistics. (NCES 91-468).

Ingels, S.J., Scott, L. A., Rock, D. A., Pollack, J. M., Rasinski, K.A. 1993. NELS:88 First Follow-Up Final Technical Report. Chicago: NORC.

example, Hispanics) and certain types of schools (for example, Catholic schools and alternative schools) were sufficiently **overrepresented** to allow for separate **analyses**.

The **HS&B sample** was a two-stage stratified cluster **sample**. In the **first stage**, an updated sample frame of **public** and private high schools in the United States was stratified (**that is**, grouped and **ordered**) according to several key variables. These **variables**, while increasing the precision of the sample estimates **by** creating **relatively** homogeneous groups of **schools**, were also similar to the stratification variables used in **NLS-72**. The clusters (**in this case, schools**) were then selected independently **within** each stratum of schools with probabilities proportional to the size of their **enrollment**. This permitted **oversampling** of certain types of schools to ensure a sufficient **sample** size for independent **analyses**. Schools that refused to cooperate or that were ineligible for selection were replaced by other **schools**, so that the overall target **sample** size could be **achieved**.

In the second stage of **HS&B sampling**, **NORC** selected **36** students from both the sophomore and senior classes of each selected **school**. Provisions were incorporated that accounted for changes in the student sample **frame** (for example, transfers in and out of the school between initial sampling and data **collection**) and for small class sizes (for example, in schools with fewer than **36** sophomores [**or seniors**], all sophomores [**or seniors**] in the school were added to the **HS&B sample**). Weighting adjustments were made to the **final** sample to account for school and student **nonresponse**. A detailed description of the sample **design**, sample selection and sample results may be found in **Frankel, Kohnke, Buonanno, and Tourangeau, 1981**. An assessment of **HS&B** base year school **nonresponse** bias may be found in **Tourangeau, McWilliams, Jones, Frankel & O'Brien, 1983**.

The **NELS:88 Sample Design**. The sample design for **NELS:88** was similar in essential respects to the designs used in the **NLS-72** and **HS&B**. A principal difference between **NELS:88** and the earlier studies **series, however**, is that in its base year **NELS:88** sampled a cohort of eighth graders rather than high school **students**. In the **1987-88 school year**, students were sampled through a two-stage **process**. **First**, stratified random sampling and school contacting resulted in a **final** school sample of **1,052 schools**.³ The second stage of **sampling** involved selection of about **26** students per **school--24** core students **and, on average, 2 oversampled** Asian and Hispanic **students**. (**Asian-Hispanic oversampling** was conducted within each **NELS:88 school**, with the number of Asian and Hispanic students added per school varying considerable **y**, depending on the within-school representation of these populations). The number of students sampled in each school ranged from **1** to **73**. As in the **HS&B base year**, transfers into the school between sampling and data collection were given a chance of selection into the **sample**, while transfers out of the schools were deleted from the **sample**.

As in **HS&B**, certain kinds of schools were excluded from the **NELS:88 sample**, such as Bureau of Indian Affairs **Schools**, special education **schools**, and schools for dependents of U.S. personnel **overseas**.⁴ Excluded from the student sample were individuals with severe **mental handicaps**, students whose command of the English language was not **sufficient** for understanding the survey materials and completing them without assistance in a timed **session**, and students with physical or emotional problems that would make it unduly **difficult** for them to participate in a group survey administration **session**. As in **HS&B**, approximately **70** percent of initially-targeted base year school selections agreed to participate

³Some **1,057** schools participated but owing to loss of data in **transit**, usable student data were received **only from 1,052 schools**.

⁴**Department of Defense Dependents Schools** students overseas were surveyed in **HS&B**, but were not counted as part of the national probability **sample and were not weighted**, nor was this group **included on the regular HS&B data release**.

in the study. Of the 26,432 students selected, 24,599 participated, for an unweighted completion rate of 93.1 percent and a weighted completion rate of 93.4 percent.

In the next wave of the study, 1987-88 eighth graders were followed to their new schools (the vast majority of sample members changed schools between 1988 and 1990), or out of school, if they were dropouts. A subsample of base year sample members (both participants and nonparticipants) was selected from those who were still enrolled in school; dropouts, however, were retained with certainty. A 20 percent subsample was retained of students who transferred out of the final school sample to a new (non-NELS:88) school. Additional sample members were selected from individuals who were 1989-90 sophomores but had no chance of selection into the base year sample either because they were not in the United States or not in the eighth grade at that time. This process of sample "freshening" provided the NELS:88 first follow-up with a nationally representative sample of sophomores, comparable to the HS&B 1980 sophomore cohort. Of the 19,363 students selected for the 1990 round, 18,221 completed a student questionnaire, for an unweighted completion rate of 94.1 percent and a weighted completion rate of 91.1 percent. Of 1,161 identified dropouts, 1,043 completed a dropout questionnaire, for an 89.8 percent unweighted and 91.0 percent weighted completion rate. Some 99 percent of first follow-up schools cooperated with the study. The first follow-up sample was student-driven. Unlike the NELS:88 or HS&B base years, the schools attended by NELS:88 sophomores did not constitute a national probability sample of schools.

(For a detailed description of the NELS:88 base year sample design, sample selection and sample results, please see Spencer, Frankel, Ingels, Rasinski, and Tourangeau, 1990; for details of the first follow-up sample design and its implementation, see Ingels, Scott, Frankel, Lindmark and Myers, 1992.)

Differences of Frame Definition, Eligibility, and Other Factors that May Affect the Comparability of HS&B and NELS:88 Estimates to Other Sources and To Each Other. Several factors may explain why the estimates derived from these two surveys differ slightly from other national estimates; some of these factors may tend also to exaggerate differences in sophomore population coverage (hence also in estimates) between the two surveys and hence reduce the degree of strict trend comparability.

Differences in estimates can be observed across some enrollment variables when different sources are compared.

Total tenth grade enrollment. For the HS&B base year, NCES fall public school enrollment statistics showed 3.6 million sophomores (the NCES estimate of 3.638 million autumn 1979 sophomores, employed by NORC in considering the possible utility of HS&B post-stratification weighting, was later revised downward to 3.527 million, as currently reported--see Digest of Education Statistics 1991, Table 38), while HS&B spring 1980 projections showed 3.4 million. For seniors, NCES fall enrollment for 1979 was given as 3.1 million, with an HS&B spring 1980 estimate of 2.75 million.

For the NELS:88 first follow-up, Current Population Survey October 1989 estimates show 3.2 million students enrolled in the second year of high school while NELS:88 gives a spring term 1990 estimate of 2.8 million. If CPS projected counts are adjusted downward for dropouts between October and spring, and NELS:88 estimates revised upwards to include excluded students and schools, this difference is substantially reduced (3.1 million versus 3 million).

The Common Core of Data shows that sophomore public school enrollment declined substantially (around 19 percent) over the decade, with 3.527 million sophomores in fall of 1979, and 2.867 in fall of 1989 (see Table 38 in Digest of Education Statistics 1991).

Based on comparison of spring term 1980 and spring term 1990, **HS&B** shows 3.760 million public and private school enrolled **sophomores**, while **NELS:88** first follow-up shows 2.823 million, suggesting around a 25 percent decline in the number of sophomores over the **decade**. However, when **NELS:88** projected counts of sophomores are adjusted upward to reflect school and student **exclusions**, the comparison to **HS&B** implies an enrollment decline of around 20 percent, an estimate that is quite close to the **CCD** estimate.

Because of differences in eligibility rates between **HS&B** and **NELS:88** and other factors that may exaggerate differences between 1980 and 1990 population **projections**, and because both studies are based on school frames that are less comprehensive than those of **CCD**, we have drawn enrollment trend comparisons for this report from sources such as **CCD** rather than contrasting the sum of the weights across **HS&B** and **NELS:88**. Issues of comparability across sources are elaborated in the paragraphs that follow.

Potential sources of differences include **sampling error**, **school and student eligibility criteria**, and **different reference points for measuring enrollment (e.g., fall versus spring)**. Each of these potential sources of difference may be addressed in greater detail.

Sampling error. The **sample** design yields a **sample** that mirrors the population only within **sampling error**; moreover, **nonresponse** and other forms of measurement error can introduce further **distortions**. Estimates of the tenth grade population admit of degrees of precision that account for a proportion of the differences between data sources.

Excluded schools. There are some differences between the school universe frames used in **HS&B** and **NELS:88**, and those used by **NCES** to derive enrollment figures--in **particular**, **HS&B** and **NELS:88**, by **design**, excluded certain types of schools from the **sample**. (The Census Bureau's Current Population Survey, because it collects school enrollment status information from households and not from schools, circumvents problems of school **frame** definition and completeness.) While the impact of school exclusion on estimates is small, it is nonetheless one of a number of factors that must be taken into account when **HS&B** and **NELS:88** data are compared to other statistical sources. Of course, some additional schools are excluded from such a study as well, not by **design**, but **inadvertently**, owing to incompleteness of **sample frame information**. No national **listing** of schools is **completely** comprehensive and **accurate**, and small private schools in particular may form and dissolve at a rapid **rate**.

Excluded students. Exclusion of certain categories of students also affects overall enrollment and subgroup **estimates**; this too constitutes a difference between student-based studies such as **NAEP**, **HS&B**, and **NELS:88**, which exclude some **students**, and other sources that are more inclusive (for example, such household surveys of adults as the Current Population Survey, or administrative records surveys of state education agencies such as the **NCES Common Core of Data**). Enrollment totals projected to by weighting reflect **undercoverage** in the **frame**. **Racial/ethnic (and other)** proportions are influenced too by the composition of the excluded student **group**. Groups that are disproportionately represented among the ineligible students (for example, **blacks**) will appear as a correspondingly lower proportion of the included **students**, to which the **NELS:88 sample** weights project. Inaccurate school records also may have the effect in rare instances of excluding **students**, some of whom may have been left off sampling rosters.

Differences in rates of student ineligibility can produce differences in completeness of coverage between **HS&B** and **NELS:88**. Even though essentially the **same** eligibility criteria were applied in both studies, lower proportions of students tend to be excluded in high school settings than in earlier **grades**,

and the growing proportion of the school-age population that is limited in its English proficiency affects ineligibility rates as well (for a parallel, see exclusion rates in the National Assessment of Educational Progress by grade and by year, as reported in the various NAEP technical reports). Of course, some students excluded in the base year (for example, for lack of proficiency in English) would have been included in a study drawn from tenth graders, because they could have become proficient in English over the two ensuing years. In the NELS:88 base year, 5.34 percent of the potential sample was classified as ineligible and excluded from the study.⁵

However, in the NELS:88 first follow-up, a subsample of these base year ineligible eighth graders was followed, and many members of this group were reclassified for various reasons (for example, their eligibility status may have changed over time) so that they became eligible for NELS:88 in the first follow-up and were administered a 1990 student questionnaire. At this time, the newly eligible 1988 ineligibles who were surveyed in the 1990 round have not yet been integrated into the first follow-up dataset. After these cases are added, the sophomore population projected to by the weights will increase by several percentage points and the comparability of the HS&B 1980 and NELS:88 1990 datasets will be increased. While the exclusion of the 1990-eligible base year ineligibles from these analyses involves small numbers of students and is unlikely to alter any of the conclusions of this report, more precise estimates of 1980-1990 sophomore cohort differences can be drawn after this population is integrated into the sample in the second follow-up (1992) re-release of the 1990 data.

Fall versus spring enrollment totals. In addition, benchmark sources such as the Current Population Survey and Common Core of Data draw on fall enrollment figures, which tend to be inflated compared to spring enrollment, the focal point for HS&B and NELS:88 estimates. Fall enrollment figures (particularly for public schools) tend to be inflated because some students will drop out in the course of the school year. Spring term counts of students will therefore be lower than fall. (Also, there is often ambiguity about enrollment in the autumn; a student who is expected to enroll but is in fact a summer transfer may be double-counted. Such cases, however, are typically accounted for in the revised estimates states submit to CCD). Finally, to the degree that there are racial or ethnic differences in tenth grade dropout rates, the racial proportions of sophomores will differ somewhat depending on whether an autumn or spring reference point is used.

Other sampling differences that may affect analysis and comparison. Comparisons of public and private schools are complicated by the variety of both public and private schools--a variousness of source of control, organization, practices, and general circumstances.⁶ There are some important differences

⁵An overall exclusion rate is not explicitly reported in the HS&B documentation. Hoachlander (1992, NCES 91-667) notes that "according to Harnisch, Liechtenstein, and Langford [Delwyn L. Harnisch, Stephen Liechtenstein, James B. Langford, *Digest on Youth in Transition*, Champaign, Illinois, 1986], 94 percent of the students who can be positively identified as handicapped in HS&B were physically handicapped; the national rate of physical disabilities among school age children with special needs is 4 percent. Only 6 percent of the students identified as handicapped in the HS&B sample were learning disabled, and none were emotionally disabled or retarded. The vast majority of all handicapped students is generally comprised of these three disability groups, so the sample of handicapped students in HS&B...is in no way representative of the national population of handicapped students." Language barriers constitute an additional basis for exclusion in HS&B and NELS:88. For a systematic discussion of exclusion issues see McGrew, Thurlow, Shriner, & Spiegel, 1992.

⁶Additionally, these diverse kinds of schools have diverse goals, and emphasize to different degrees such aims of education as fostering cognitive achievement, aesthetic appreciation and expression, socioemotional development, the building of character, and religiosity. Neither the HS&B nor the NELS:88 instruments measured all facets of this range of outcomes in depth, although differences in cognitive outcomes, ethos, and schooling processes are more systematically captured.

in the way that public and private schools were categorized and sampled that place limitations on **HS&B** and **NELS:88** comparisons.

The **HS&B** school sample was designed to facilitate analysis of the following school **types**, each of which was subject to further **substratification**:

Public Schools: (1) Non-alternative non-Hispanic schools; (2) Non-alternative Hispanic schools; (3) Alternative schools;

Non-Catholic Private Schools: (1) Non-elite, non-Catholic; (2) Elite, non-Catholic;

Catholic Schools: (1) Non-black, non-Hispanic Catholic; (2) non-Cuban, Black/Hispanic Catholic; (3) Cuban Catholic.

NELS:88, on the other hand, was designed to provide a substantially larger **sample** of non-Catholic private schools than did **HS&B**, and was designed to support analyses of four explicit school control **types**: public schools, Catholic schools, independent schools (**members** of the National Association of Independent Schools), and other private schools.⁷ A comparison of the **HS&B** and **NELS:88** base year **samples** shows the different distribution of schools across the three broad school types employed in this report--public, Catholic, and other private:

	HS&B	NELS:88
Public	893	815
Catholic	84	104
Private, Non-Catholic	38	133
Total	1,015	1,052

However, sophomores in **NELS:88** were studied two years after the base year, at the schools to which eighth graders had dispersed, within a school sample that was no longer nationally representative--hence school sector differences can be examined **only** at the student level, not at the school level, when **NELS:88** and **HS&B** are compared. While large numbers of **NELS:88** students remained within the private non-Catholic sector, further school control type comparisons with **HS&B** are difficult to make. In many ways the elite private category in **HS&B** is comparable to the independent school category in **NELS:88**, though these strata were somewhat differently defined. In **HS&B**, elite private schools were defined as the twelve private schools with the highest percentage of graduating seniors who were National Merit Scholarship semifinalists. In **NELS:88**, the membership list of **NAIS** was the frame for drawing the independent school sample. About half of the 133 non-Catholic private schools on the **NELS:88** base year files were independent schools, but **only** eleven elite private schools participated in **HS&B**. Thus, much richer school sector analyses are possible within each study than between the two studies.

⁷The **NELS:88** dataset also permits schools to be categorized as public, Catholic, private school-other religious affiliation, and private school-no religious affiliation. Indeed, this is the **only** school control variable to appear on the public use files, though both school control variables appear on the privileged use files.

Precision of Estimates

The accuracy of reported statistics is determined by the joint effects of sampling and nonsampling errors. Surveys such as HS&B and NELS:88 are also subject to nonsampling errors. Nonsampling error may arise from a number of sources, such as the inability to obtain cooperation from a sample member, or the unwillingness or inability of a respondent to answer a given item asked in a survey. In addition, exclusion of persons who should be included in the universe, variability in providing estimates, differences in interpreting the meaning or intent of questions, errors in data capture, editing or coding may also result in nonsampling error. The quality of HS&B data is assessed in Fetters, Stowe and Owings.⁸ Nonsampling errors in NELS:88 are discussed in the base year and first follow-up user's manuals and technical reports. The overall quality of the base year student questionnaire data is assessed in Kaufman, Rasinski, Lee and West.⁹ No comparable assessment of the quality of NELS:88 tenth grade data has been undertaken at this date, although more restricted assessments of data quality are reported in the user's manual and final technical report.

Estimates of sampling variability--expressed as the standard error of measurement--appear in Appendix A. Sampling errors occur because the data are collected from a sample of the population rather than the entire population. The standard error is a measure of the variability due to sampling for a particular parameter estimate. It indicates how much variance there is in the population of possible estimates of a parameter for a given sample size of a particular sample design. Standard errors can be used as a measure of the precision expected from a particular sample.

Statistical Procedures

Significance Testing. Comparisons that have been drawn in the text of this paper have been tested for statistical significance to ensure that the differences are larger than those that might be expected due to sampling variation. The statistical comparisons in this report were based on the **t statistic**. Generally, whether the statistical test is considered significant or not is determined by calculating a **t** value for the difference between a pair of means or proportions and comparing this value to published tables of values at certain critical levels, called alpha levels. The alpha level is an a priori statement of the probability that a difference exists in fact rather than by chance.

In order to make proper inferences and interpretations from statistics, a number of issues must be kept in mind. First, comparisons resulting in large **t** statistics may appear to merit special attention. This is somewhat misleading since the size of the **t** statistic depends not only on the observed differences in means or percentage being compared but also on the number of respondents in the categories used for comparison, and on the degree of variability among respondents within categories. A small difference compared across a large number of respondents could result in a large **t** statistic. Second, when multiple statistical comparisons are made on the same data, it becomes increasingly likely that an indication of a population difference will be erroneously given. Even when there is no difference in the population, at an alpha-level of .05 there is still a 5 percent chance of declaring that an observed **t** value representing

⁸Fetters, W. B., Stowe, P. S., and Owings, J.A. 1984. Quality of Responses of High School Students to HS&B Questionnaire Items. Washington, D. C.: National Center for Education Statistics.

⁹Kaufman, P., Rasinski, K. A., Lee, R., and West, J. 1991. Quality of the Responses of Eighth-Grade Students in NELS:88. Washington, D. C.: National Center for Education Statistics (NCES 91-487).

one comparison in the sample is large enough to be statistically **significant**. As the number of comparisons increases, the risk of making such an error in inference also increases.

To guard against errors of inference based upon multiple **comparisons**, the **Bonferroni procedure**¹⁰ to adjust significance tests for multiple contrasts was **used**. This method corrects the significance (**or alpha**) level for the total number of contrasts made **with** a particular classification **variable**. Because the comparisons of interest were across **cohorts**, for each column or dependent variable in each table the number of comparisons was the total number of row categories for all of the classification variables in the **table**. For **example**, for Table 2.2, General High School Program, the number of comparisons was 19. The **Bonferroni** procedure divides the alpha-level for a single t-test (for **example**, .05) by the number of **pairwise** comparisons to derive a new alpha corrected for the fact that multiple contrasts are being **made**.

Interested readers can compute the **t** statistic between estimates from various subgroups presented in the tables using the following **formula**:

$$t = \frac{P_1 - P_2}{\sqrt{(se_1^2 + se_2^2)}}$$

where **P1** and **P2** are the estimates to be compared and **se1** and **se2** are their corresponding standard errors.

For **example**, suppose one wanted to compute the **t** statistic to compare the difference between 1980 and 1990 sophomores expecting to be in professional occupations at age 30. The estimates are in Table 6.4 in the text (p. 51) and the standard errors of the estimates are in Table 6.4 in Appendix A (p. 16, Appendix A). First subtract one estimate from the other (**the order** in which this is done determines the sign of the value but has nothing to do with the value's statistical **significance**). In this **case**, subtract 40.6 (**the percentage** of 1980 sophomores aspiring to one of the **professions**) from 57.4 (**the percentage** of 1990 sophomores aspiring to one of the **professions**). This gives 16.8. Next square the corresponding values from Table 6.4 in Appendix A (.51 and .75), add the squared values (1.58), then take the square root of the sum (1.25). To obtain the **t** statistic, divide the difference between the estimates (16.8) by the square root of the sum of the squared standard errors (1.25). The final result is a **t** statistic of 13.4. For information on how to interpret this **statistic**, especially taking into account the fact that a number of different comparisons are possible for these **data**, the reader is referred to the materials cited in footnote 9 in this **appendix**.

Standard errors reported in this document (**except** for Chapter 3) are Taylor series approximations calculated with the C-Tab program developed by C. Dennis Carroll and available from NCES. Chapter 3 employed a design effect correction for standard errors (**see the** first follow-up student component user's manual--pp. 56-58--for further information on computing design-corrected standard errors for NELS:88).

Effect Sizes. Sophomore mathematics results for 1980 and 1990, as reported in Chapter 3, were also examined in terms of their effect **sizes**. The effect size is a measure of change represented in standard deviation units. For the analyses presented in Chapter 3, effect sizes are calculated as the

¹⁰For detailed discussion, see, for example, Hays, W. L. 1988. *Statistics*. (4th ed.) New York: Holt, Rinehart, Winston; Myers, J. L. 1979. *Fundamentals of Experimental Design*. (3rd ed.) Boston: Allyn and Bacon; and Klockars, A. J. and Sax, G. 1986. *Multiple Comparisons*. Beverly Hills: Sage.

change in average test scores from 1980 (1990 mean minus 1980 mean) divided by the pooled 1980/1990 standard deviation. Thus, the effect sizes measure change in test scores from 1980 to 1990 relative to the score's total variability, calculated as the score's standard deviation pooled across the two years. This is why effect sizes are often described in terms of standard deviation units. For example, an effect size of .25 for male sophomores gain in mathematics achievement is reported in Chapter 3. This can be calculated using values in Appendix A, Table A.3.2.

The effect size is not a test of statistical significance, but a measure of practical significance of subgroup differences. While large sample sizes may result in small differences being statistically significant, differences of less than an effect size of ten percent (.10 standard deviation units) are unlikely to be meaningful. To give an example from the Chapter 3 data, Figure 1 compares raw mathematics score means for 1980 and 1990 males and females. When effect sizes are examined, male sophomores gained .25 of a standard deviation unit between 1980 and 1990, while their female counterparts gained .27 of a standard deviation unit (see Appendix A, Table 3.2). The social science literature refers to effect sizes of this magnitude as substantively significant and in the small to medium range of effect sizes (Cohen, 1988). Effect sizes in the range of .10 to .20 that are accompanied by a statistically significant finding are considered to be small and of "borderline" practical significance.

For the purposes of Chapter 3 of this report, if there was a statistically significant interaction between cohort year and the demographic classification variable, for example, between year and gender and there was a difference of .10 or greater between their effect sizes, then the resulting interpretation will be that there is some evidence (albeit small) of a differential growth rate in favor of one group or another. For example, if there were a statistically significant interaction between year (1980, 1990) and gender groups (male, female) and males had an effect size associated with their gain of .20 and females had an effect size associated with their gain of .30 then the interpretation would be that females showed a somewhat greater growth rate than male students. (For detailed documentation, see Appendix A, Table 3.1 [R-Squares From Combinations of Predictors] and Table 3.2 [Statistical Test of Group Means Including Effect Sizes].)

Analysis Procedures

The analysis populations compared in this report comprise the HS&B sophomore cohort in 1980, and NELS:88 spring term 1990 sophomores. (Total and subgroup sample sizes [unweighted Ns] are reported in Appendix A, Table 1.)

While the HS&B sophomore cohort was later subsampled by eliminating most base year nonrespondents in 1982 and by dropping further sample members (including some base year respondents) in 1984, cases utilized for analysis in this report embrace the full 1980 sample.

Because of its eighth grade starting point, the NELS:88 combined base year-first follow-up student data files contain several distinct analysis populations. These include:

- Population 1: The eighth grade cohort in 1988;
- Population 2: A subsample of the 1988 eighth grade cohort in 1990;
- Population 3: The sophomore cohort in 1990, comprising all members of population 2 who are enrolled in tenth grade, and a sample of freshmen students who were not in eighth

grade in the spring term of 1988 but were in tenth grade in the spring term of 1990.

Population 3 was utilized for trend analyses reported here. (For details on proper use of weights and flags to define analysis populations in NELS:88, see the NELS:88 First Follow-up Student component Data File User's Manual.)

Trend Comparisons

Although the NELS:88 student questionnaire was designed to maintain comparability to the HS&B baseline instruments, caution must nevertheless be exercised in comparing data for the HS&B and NELS:88 sophomore cohorts. For example, NELS:88 oversampled Asians to obtain ample numbers for analysis; HS&B did not. NELS:88 also oversampled students from non-Catholic private schools at a much higher rate. While, despite such differences, weighting ensures general inability of the samples to national populations, finer-grained analyses may be constrained where a subgroup within one of the cohorts is represented by a paucity of cases.

Both HS&B and NELS:88 are based on grade cohorts, not age cohorts. However, if there are substantial differences over time in factors such as dropout rates, then the degree to which the in-school population differs from the total population for the relevant age group may differ, leading to different SES, race, or gender compositions for the in-school cohorts over time, quite apart from any wider national changes in sociodemographic distributions. Moreover, factors such as the declining dropout rate of the 1980s may affect other in-school comparisons as well, such as analyses of achievement and attitudinal trends. For example, if a substantial proportion of students who would have been dropouts a decade ago now remain in school, given that such individuals will tend to score lower than the population of sophomores as a whole, 1990 tested achievement will be depressed, and the degree of improvement in the educational system understated.

Student participation rates were substantially lower in HS&B base year than in NELS:88 first follow-up. For the HS&B sophomores in 1980, 84 percent of the sample completed the student questionnaire and 77 percent completed the cognitive tests. (The HS&B response rate includes participating substitutes; under certain circumstances in HS&B--but not in NELS:88--original selections were replaced.)¹¹ For the NELS:88 sophomores in 1990, 94 percent completed the student questionnaire and 90 percent completed the cognitive tests. Moreover, the characteristics of the nonrespondents may also differ somewhat across the two studies. Again, while nonresponse adjustments in sample weighting partly compensate for such differences, they do so only imperfectly.

At the school level, 70 percent of the initial HS&B selections agreed to participate in the study. In the NELS:88 first follow-up, participation rates approached 99 percent, and students from refusing schools were surveyed outside the school setting. Nevertheless, any school-level sample bias carries over to the NELS:88 first follow-up from the baseline survey in 1988. School participation rates for the

¹¹In the HS&B base year, replacement of a student occurred when a selected student died, was discovered to be a listing error (should not have appeared on the roster), when a student dropped out of school or through some extreme situation became unavailable for the entire school year, or when a student was physically or mentally unable to participate in the survey. There was no effort to replace students who refused to participate. In NELS:88, there was no replacement or substitution procedure for any of the above situations. In both HS&B and NELS:88 base years, transfers out of the school were deleted from the sample without being replaced, though students who transferred into the school between survey day and the time the original roster was drawn became eligible for sample selection. For details, see Frankel et al. 1981 and Spencer et al. 1990.

NELS:88 base year were quite similar to those in HS&B, with 70 percent of the initial selections participating, and the remaining 30 percent of the participating school sample made up of substitute schools. For both HS&B and NELS:88, information about nonresponding schools was used to analyze the probable extent of bias in estimates concerning characteristics of the student population. These analyses (see Tourangeau et al. 1983 and Spencer et al. 1990 for details) suggest a relatively low school nonresponse bias to each study's estimates (for example, for NELS:88 base year, only four of the fourteen bias estimates differ significantly from zero).

Item response rates for questions that appear in both surveys differ, although item response in general tends to be quite high except for some HS&B items that appear late in the questionnaire. In addition, while the HS&B and NELS:88 science and math tests are similar to each other, and there are common quantitative comparison items in the cognitive test batteries that facilitate HS&B-NELS:88 equating of the mathematics tests, the social studies and reading tests are quite different and therefore do not provide a suitable basis for intercohort change measurement.

Other differences between the 1980 and 1990 studies--the typically smaller group administration sizes for NELS:88, the fact that most NELS:88 sample members had also been surveyed as eighth graders (hence, the possibility in the NELS:88 case--but not HS&B--of "panel effects"), differences in context and question order for trend items in the two student questionnaires, and other factors as well, may also influence the accuracy of comparisons between the NELS:88 and HS&B sophomore cohorts.

A detailed discussion of the implications of HS&B-NELS:88 design differences for conducting trend analyses is contained in Appendix D of Ingels et al. 1992, NELS:88 First Follow-Up Student Component Data File User's Manual (NCES 92-030). A useful discussion of parallel intercohort time lag comparison issues drawn from NLS-72 and HS&B appears in Hilton et al. 1992, chapters 9, 10 and 13.

Other Trend Data for HS&B Sophomores: Transcripts Sources. Trends in program placement and course enrollment patterns can also be analyzed using the 1987 NAEP High School Transcripts Study and the 1982 HS&B Secondary Transcripts Study (a probability subsample of the school records of the HS&B sophomore cohort). The NAEP transcripts are a particularly rich comparative source. However, unlike the senior cohort two years before, HS&B sophomore cohort seniors in 1982 did not constitute a nationally representative sample of high school seniors and results for this group are not fully generalizable to the graduating class of 1982 because seniors who were not sophomores two years before are unrepresented. The 1982 transcripts study is effectively a study of 1980 sophomores two years later, when most had completed high school, while the 1987 study examines the school records of 1986 juniors in 1987, after most had completed their secondary schooling. Results of the two studies are therefore roughly rather than precisely comparable. In addition, the 1987 transcripts effort fully represents handicapped students. In HS&B, however, only some handicapped students are included--students with more severe mental and physical impairments were ineligible to take part in HS&B, and, unlike the procedure for the 1987 study, the HS&B transcripts study sought records only for students who had been deemed eligible for the main survey.

Data files for two additional nationally-representative transcripts studies are currently being prepared by NCES contractors--the NAEP 1990 High School Transcripts Study, which collected transcripts in spring of 1991, and the NELS:88 Academic Transcripts Study, data collection for which took place in the autumn of 1992. The sample for the 1990 High School Transcript Study is nationally representative of U.S. schools teaching grade 12 or having 17 year old students, and the sample of students is a representative sample of graduating seniors from each school. In the NELS:88 transcripts study, only the student sample is nationally representative--of 1992 seniors, of 1990 sophomores two

years later and of 1988 eighth graders four years later (including dropouts, early graduates, and students who did not graduate on time).

Variables Used

This section provides definitions for the variables used in tables for each of the chapters.

Classification Variables: The following classification variables were used throughout the chapters to compare subgroups across cohorts.

Students were classified into **gender** groups by using the variable **BB083** in the **HS&B** data and **F1SEX** in the **NELS:88** data. **Socioeconomic status (SES)** was ascertained by recomputing quartiles from **BBSESRAW** in **HS&B** and **F1SES** in **NELS:88**.¹² In each **case**, the two middle categories were collapsed yielding a three category variable (**lowest quartile**, middle two **quartiles**, and highest **quartile**).

The socioeconomic status variable (**F 1SES**) in **NELS:88** was constructed from parent reports (**when available**), with substitution of student reports when parent data were **missing**. The following parent questionnaire variables were **utilized**: father's educational level, mother's educational level, father's occupation, mother's occupation, and family income. Occupational data were recoded using the Duncan **SEI** scale as used in **NLS-72** and **HS&B** (for details, see the first follow-up student component user's manual, appendix I, pp .5-6). When parent data were **missing**, student reports of parental occupation and education were employed and household items data were used instead of the **family income variable**.

The socioeconomic status variable in **HS&B** (**BBSESRAW** or **BYSES**) was constructed using procedures highly similar (**but not identical**) to those employed in **NELS:88**. The principal differences are as follows. In **HS&B**, student data were used instead of parent data, mother's occupation was not included in the **HS&B index**, **NELS:88** employed **family income** or the household items index while **HS&B** used **both**, and for most **NELS:88** first follow-up sample members (**that is**, base year participants), **SES** is based on 1988 questionnaire responses not 1990 responses (for **HS&B** sophomores **SES** was constructed from 1980 responses).

School control type (public, Catholic, and other private sector) was ascertained by using the **HS&B** variable **SCHLTYPE**; a **NELS:88** school sector composite was modified to provide comparability. More specifically, the **G10CTRL2** variable from the **NELS:88** privileged use file (this variable does not appear on the **public** use data base) was **recoded**. In its original form, this variable contains four school sector categories: **01**=public school; **02**=Catholic school; **03**=independent (**NAIS**) private school; **04**=all other private schools. School control categories **03** and **04** were combined to create a three-category school sector variable comparable to **HS&B**.

The tenth grade school **region** variables are **CENRGN** for **HS&B** and **G10REGON** for **NELS:88**. In 1980 and 1990, the four regions contain the following nine Census divisions:

Northeast: New England and Middle Atlantic

¹² The **HS&B** base year SES quartile variable, **BBSES**, was computed (as in **NLS-72**) from the assumption of a normal distribution, rather than from the data. Hence for the **HS&B** first follow-up release, base year SES quartiles were recalculated to provide four categories with equal (weighted) frequencies. **NELS:88F1SES**, on the other hand, was standardized on a different sample from the sophomore cohort analyzed here-it included members of the eighth-grade cohort who had dropped out or who were not in tenth grade in the spring term of 1990.

North Central (Midwest): East North Central and West North Central

South: South Atlantic, East South Central, West South Central

West: Mountain and Pacific

States are distributed across the four regions as follows:

Northeast: Maine, New Hampshire, Vermont, Massachusetts, Connecticut,
Rhode Island, New York, New Jersey, Pennsylvania

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

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

West: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington,
Oregon, California, Alaska, Hawaii

Note: the new Census naming convention for the North Central region is "Midwest".

The race/ethnicity variable for NELS:88 was F1RACE. For HS&B a race/ethnicity variable was created from BB089 and BB090 from the base year and RACE from the HS&B first follow-up. Respondents were assigned a race value using responses to BB089 unless their responses to BB090 indicated they were **Hispanic**. If that was the **case**, responses to BB090 were used. Missing responses were filled in to the extent possible by using information from the first follow-up RACE variable.

For NELS:88 the composite **test quartile** variable was ascertained from F1TESTQ. For HS&B a base year test quartile variable was created by using the **same** procedure used to create the NELS:88 variable. **Nonmissing** responses to standardized test scores for **reading, vocabulary, and math** (YBREADSD YBVOCBSD YBMTH1SD) were averaged and quartiles were created based on weighted responses to this summary variable. Composite test quartile is a plausible general ability **measure**, but because of differences between the 1980 and 1990 tests, should not be used to measure changes in achievement between the two time points.

The following additional variables were used in specific chapters.

CHAPTER 1: THE CHANGING CONTEXT: AMERICAN EDUCATION AND SOCIETY, 1980-1990

Chapter 1 employed only standard classification variables, as described above.

CHAPTER 2: SCHOOL EXPERIENCES

High school program was determined by examining responses to BB002 in HS&B and F1S20 in NELS:88. Categories for F1S20 were recoded to match those in BB002. (However, NELS:88 offered a Don't Know category, which was utilized by around 7 percent of the 1990 total sample; HS&B

provided no Don't Know option.) High school transcripts are generally recognized to provide a more objective and reliable indicator of program **placement**, enrollment **patterns**, and grades than student **self-reports**. Transcripts also provide a basis for identifying students who have met the requirements for more than one program **type**. (In both **HS&B** and **NELS:88**, students who indicated more than one program were assigned the **nonresponse** code "6" [or "96"].) At the time of the writing of this **report**, only student self-reports were available for 1990 sophomores. Transcripts data **will** be available in the fall of 1993.

The motivational variable level of **preparation**¹³ (coming to school without writing **implements**, **books**, and **homework**) was assessed by **examining** responses to YB016A,B,C in **HS&B** and F1S40A,B,C in **NELS**. Categories in **HS&B** were (in order, 1 to 4) **USUALLY**, **FAIRLY OFTEN**, **SELDOM**, and **NEVER**. **NELS:88** categories were **NEVER**, **SELDOM**, **OFTEN**, and **USUALLY**. **NELS:88** items were reverse-scored to match **HS&B** items. **Feeling safe in school was** measured by BB059 in **HS&B** and F1S7M in **NELS**. In **HS&B** the categories were **TRUE/FALSE**, while **NELS:88** used four categories (**STRONGLY AGREE**, **AGREE**, **DISAGREE**, **STRONGLY DISAGREE**). The **AGREE** and **DISAGREE** categories were collapsed in the **NELS:88** item. Important differences in the perception of safety may exist at different grade levels within the same sample of schools. (In the **HS&B** base year, only 8 percent of seniors felt unsafe at **school**, compared to 12 percent of **sophomores**.)

CHAPTER 3: MATHEMATICS ACHIEVEMENT

HS&B and NELS:88 Mathematics Tests: HS&B. The **HS&B** sophomore cohort mathematics test administered in 1980 (and repeated in 1982) comprised 38 items, with 21 minutes allowed for completion. The items consisted of quantitative comparisons in which the student indicates which of two quantities is **greater**, or asserts their equality or the lack of sufficient data to determine which quantity is greater.

NELS:88. The **NELS:88** first follow-up mathematics test contained 40 items, to be completed in 30 minutes. The **NELS:88** mathematics battery assessed both simple mathematical application skills and more advanced skills of comprehension and problem **solving**. As in **HS&B**, only multiple choice **tests** were **administered**. However, test items included word **problems**, **graphs**, quantitative comparisons (as in **NLS-72** and **HS&B**), and geometric figures. Three versions of the mathematics test were developed for the first follow-up, varying in the level of **difficulty**. Assignment to a **first** follow-up mathematics test form was based on the respondent's base year math test results.

HS&B-NELS:88 Test Equating. In order to compare mathematics performance of the 1980 **HS&B** sophomore cohort with that of the 1990 **NELS:88** sophomores, the two sets of mathematics scores

¹³It may be of interest to take note of the relationship of these motivational measures to key educational outcomes; this may be done with reference to recent analyses of **NELS:88** data. P. Kaufman and D. Bradby report (Characteristics of At-Risk Students in NELS:88, NCES 92-042, p.32) that compared to students who always brought the necessary materials and homework to class, students who usually came without pencil or paper or without their homework were more than two and a half times more likely to perform below the basic mathematics proficiency level, and approximately two and a third times more likely to perform below the basic reading level. Kaufman and Bradby observe that "students who usually come to class without books were four times more likely to perform below the basic math level, and three and one-half times more likely to perform below the basic reading level than students who never came without their books. Students who usually came to class without these sets of materials (pencil and paper, books, or homework) were about four times more likely to drop out of school [between eighth and tenth grade] than students who never came without these materials." While these indirect measures of motivation seem powerful when used to pick up the low end (that is, lack of engagement) of the motivational continuum, it is unfortunate that other (and broader) measures of engagement used in the two studies were not sufficiently comparable to support trend analyses.

had to be put on the same **scale**. The **NELS:88** mathematics test was originally designed to be linked to the **HS&B scores**. This was accomplished by including **16** quantitative comparison items from **HS&B** in the **NELS:88** mathematics test. Mathematics was the **only** cognitive test in the **NELS:88** battery that shared **sufficient** items with its counterpart measure in **HS&B** to enable a reliable cross-walk between the two **scales**.

The linking was carried out by estimating the item response theory (**IRT**) **parameters** for the **common** items using the **NELS:88** sophomore sample and then putting the remaining non-overlapping **HS&B** items on that **scale**. Before the final linking was carried out the item traces for the common items were estimated **separately** for the two populations and compared to insure that they were "**behaving**" **similarly** in the two **populations**. A final check on the validity of the equating was carried out by inspecting **subpopulation** differences **among** the **HS&B** students after they were put on the same scale as the **NELS:88** cohort. If the linking worked as **desired**, then the relative differences that were found **among** the **HS&B** subpopulations on their original scales should not change when they are put on the new **scaling**. All **subpopulation** differences remained relatively invariant indicating that the linking was successful. Further details of **HS&B-NELS:88** test equating procedures can be found in the **NELS:88 First Follow-Up Final Technical Report**.

CHAPTER 4: AFTER-SCHOOL ACTIVITIES

Participation in school activities was measured in considerably different ways in both surveys. Participation items for **HS&B** were drawn from the series beginning with **BB032B** and ending with **BB032N**. Participation items for **NELS:88** were drawn from **F1S41AA** to **F1S41AI** and **F1S41BA** to **F1S41BI**. The following table lists the items in each survey used to construct each activity **item**.

Athletic Teams	BB032A	F1S41AA-AG
Cheerleading	BB032B	F1S41AH, AI
Music	BB032D, E	F1S41BA
Academic Clubs	BB032G	F1S41BG
Hobby Clubs	BB032F	F1S41BH
Vocational Clubs	BB032H	F1S41BI

In the **HS&B** survey respondents could **only** indicate whether they participated actively or did not participate in the **activity**. In **NELS**, respondents were given a much wider range of **choices**, including participating on a freshman **team**, an intramural or a varsity **team**, and participating as a team **captain**. All of these responses were collapsed into one indicator of participation for the **activity**. In addition **NELS:88** allowed respondents to indicate whether a school did not have one of the **activities**. Because **HS&B** did not allow such a **designation**, these responses were counted as **nonparticipation**.

Television viewing was assessed by examining **BB048** in **HS&B** and **F1S45A** in **NELS**. Comparison of **HS&B1980** and **NELS:881990** data suggests that television watching declined at the high **end**, that is, for those watching **5** or more hours per **week**. Trend data from **NAEP** are not strictly comparable since sophomores are not assessed in **NAEP** and the **NAEP** and **HS&B** television viewing items are very **different**, but **NAEP** data do not support the notion of a general trend toward decreased television **viewing**. The **NAEP** item and trend data are given below:

How much television do you usually watch each day?

None...

- 1 hour or less...
- 2 hours
- 3 hours
- 4 hours
- 5 hours
- 6 hours or more

NAEP trend results are taken from Table 6.7 in Mullis et al., Trends in Academic Progress, 1991:

	0-2 hours	3-5 hours	6 or more hours
Age 13			
1990	31	53	17
1982	45	39	16*
Age 17			
1990	51	41	9
1978	69	26	5

(*Not statistically significant at .05; all other contrasts are significant.)

The **HS&B question--BB048--** was asked of both the sophomore and senior cohorts in 1980 and was worded as follows:

During week days about how many hours per day do you watch TV?

- Don't watch TV during week
- Less than 1 hour
- 1 hour or more, less than 2
- 2 hours or more, less than 2...
- 3 hours or more, less than 4...
- 4 hours or more, less than 5...
- 5 or more.....

It is possible that some respondents misinterpreted this **question**, and supposed that it asked them to report the number of hours they spend viewing television on a **weekly**, rather than a **daily basis**. If **so**, reports at the high end of viewing in particular may be **inflated**. Response frequencies for this item were as follows:

	Soph.	Senior
	BB048 in 1980	
0	2.5	3.6
0-<1	6.4	11.6
1-<2	13.0	18.2
2-<3	19.2	21.3
3-<4	18.1	18.0
4-<5	13.0	11.1
5,5+	27.8	16.3

However, this item was re-asked of sophomore cohort members two years later, in a modified form that admitted of less ambiguity:

1980:

During week days about how many hours per day do you watch TV?

Don't watch TV during week

1982:

During weekdays about how many hours per day do you watch TV?

Don't watch TV during weekdays ...

If we assume that national television watching behaviors would have changed little over a 24-month period, and if we assume that sophomores and seniors randomly selected from the very same schools are essentially similar, we might compare the 1980 senior results, using the original question wording, with the 1982 results, using the revised wording. If our hypothesis that some students in 1980 over-reported by giving data on a per week rather than per day basis is correct, then we might expect a comparison of twelfth grade results for 1980 and 1982 to reflect this, with higher reports of TV viewing for 1980 seniors, reflected in higher utilization of the high-end categories. This comparison appears below and lends at least some support to such an hypothesis:

	1980 BB048	1982 FY61
0	3.6	6.0
0-<1	11.6	15.2
1-<2	18.2	21.6
2-<3	21.3	20.2
3-<4	18.0	14.7
4-<5	11.1	9.2
5,5+	16.3	13.0

The form of the television viewing item developed in the NELS:88 base year (and retained in the NELS:88 first follow-up with the addition of the phrase "or videotapes") constitutes, we think, a very strong measure of TV viewing. Note, however, that the upper response category on the NELS:88 item is labelled "over 5 hours a day" while the upper HS&B response option is "5 or more". The NELS:88 item (1990 variable F 1S45) appears below:

During the school year, how many hours a day do USUALLY watch TV or videotapes? ANSWER BOTH A AND B BELOW.

On Weekdays On Weekends

- Don't watch TV..
- Less than 1 hour a day
- 1-2 hours ...
- 2-3 hours ...
- 3-4 hours ...
- 4-5 hours ...
- Over 5 hours a day

Since there are large quantitative differences between weekday and weekend viewing (as is confirmed by the NELS:88 base year and first follow-up responses to this question), it seems most appropriate to ask about **weekdays**, or **separately**, about both weekdays and **weekends**, rather than asking respondents to provide an estimate for an entire **week**. **Otherwise**, the amount of cognitive processing demanded of respondents admits of too much error or **variability**. To derive a total for the **week**, one must separately process weekday and weekend viewing and mathematically derive a third estimate for the week as a **whole**. It also seems appropriate to tie such an item to the school **year**, since summer and school holiday viewing patterns may differ from media usage when school is in **session**. **Finally**, the addition of videotape viewing ties a **post-HS&B** media use to the question--a use which may have displaced some traditional TV viewing but is **functionally**, for purposes of this **question**, equivalent to it. It should also be noticed that the highest category in the response **scale** for the **HS&B** item is **5** or more hours.

We recommend that caution be exercised in interpreting the 1980-1990 television viewing **data**. While the **HS&B** and **NELS:88** sophomore comparisons clearly show a downward trend in high levels of weekday television **watching**, the base year **HS&B** item may have been flawed in its **construction**, and other sources do not corroborate such a **trend**. A much truer test of television viewing trends will be offered by the **NELS:88 1992 data**, given that the **1982 HS&B** question was less ambiguous and presumably a truer **measure**.

Participation in out-of-school activities (visiting with friends, reading for pleasure, driving around, talking with friends on the **telephone**) was assessed by using items **BB047A, B, D**, and **E** in **HS&B** and items **F1S44A, D, I**, and **J** in **NELS**.

CHAPTER 5: SELF-PERCEPTIONS, SOCIAL IMAGE, AND VALUES

The **Locus of Control** items were **BB058B BB058E BB058F BB058K** in **HS&B** and **F1S62C F1S62F F1S62G F1S62K** in **NELS**. The **Self-Esteem** items were **BB058A BB058C BB058H BB058J BB058L** in **HS&B** and **F1S62A F1S62D F1S62H F1S62J F1S62L** in **NELS:88**. The response categories for the **NELS:88** items were reverse coded to match those used in **HS&B**. In **HS&B** a **NO OPINION** category was **present**. Respondents selecting this category were assigned a missing **value**.

The **Social Image** items were **YB053A YB053B YB053C YB053D YB053E YB053F YB053G** for **HS&B** and **F1S67A F1S67B F1S67C F1S67D F1S67E F1S67F F1S67G** for **NELS**. **NELS:88** response categories were reverse coded to match the **HS&B coding**. **Life values** were measured by **BB057A BB057B BB057C BB057D BB057E BB057G BB057H BB057I BB057J BB057K BB057L** in **HS&B** and **F1S46A F1S46B F1S46C F1S46D F1S46E F1S46G F1S46H F1S46I F1S46J F1S46K F1S46L** in **NELS:88**.

CHAPTER 6: PLANS AND EXPECTATIONS

Plans for timing of college entry were determined from **responses to BB115** in **HS&B** and **F1S51** in **NELS**. The **NELS:88** item was recoded to conform to the coding used in **HS&B**. College

expectations were determined from **HS&B** item **BB065** and **NELS:88** item **F 1S49**. The **HS&B** item was a reasonably good predictor of who in fact went on to college.¹⁴ Kinds of career advice received by the respondent were measured by responses to items **BB050A,B,C** and **D** in **HS&B** and **F1S47A,B,E** and **F** in **NELS:88**. For each of the four sources of advice (**father, mother, counselor, teacher**) the response "go to college" was coded "1" and other advice was coded "0". "Does not apply" responses were coded as missing. Occupational expectations were assessed from **BB062** in **HS&B** and **F 1S53** in **NELS:88**.

¹⁴In their analysis of **HS&B** data, Pelavin and Kane (1990) report that "more than 85 percent of the students who indicated that they expected to continue their education at least through a bachelor's degree attended college within four years of high school graduation" while "only 40 percent of students who did not declare their intention to complete a college degree during the sophomore year went to college within four years of high school". Questionnaire and transcript data from the 1992 **HS&B** fourth follow-up will help to provide a better picture of how many of these individuals who went onto college have actually completed their college programs and been awarded degrees.

APPENDIX C: HS&B and NELS:88 - An Overview

The longitudinal studies program of the U.S. Department of Education's National Center for Education Statistics (NCES) reflects the agency's **commitment** to collect and analyze data on the factors affecting the transitions of students from elementary school to high school and eventually to productive roles in American **society**. Consistent with its **commitment--and** in response to the need for **policy-relevant**, time-series data on nationally representative **samples** of elementary and secondary **students--** NCES instituted the National Education Longitudinal Studies (NELS) **program**, a continuing long-term **project**. The general aim of the NELS program is to study the **educational, vocational, and personal** development of students at various grade **levels**, and the **personal, familial, social, institutional, and cultural** factors that may affect that **development**. The NELS program currently consists of three major **studies**: the National Longitudinal Study of the High School Class of 1972 (NLS-72); High School and Beyond (HS&B); and the National Education Longitudinal Study of 1988 (NELS:88). Taken **together**, these studies represent the educational experience of youth from three **decades--** the 1970s, 1980s, and 1990s. The research design for these three studies is depicted in Figure C.1, **below**.

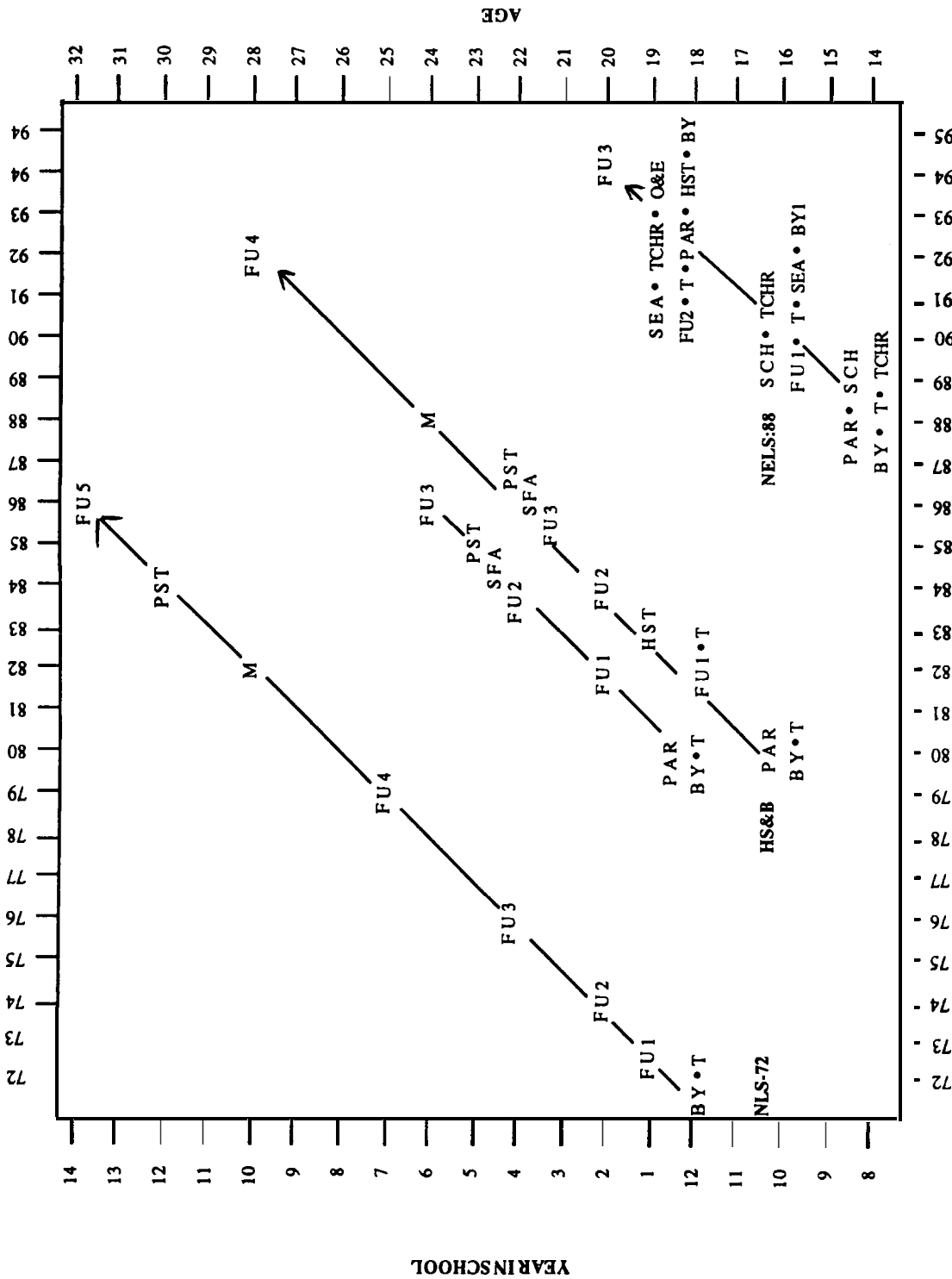
High School and Beyond. This report analyzes data from two of the three **studies, HS&B and NELS:88. HS&B** was designed to build on the NLS-72 in three **ways**. **First**, the introduction of a sophomore cohort provided data on the many critical educational and vocational choices made between the sophomore and senior years in high **school**, permitting a fuller understanding of the secondary school experience and its impact on **students**, as well as providing a basis for comparing dropouts and school **persisters**. **Second**, the base year survey of HS&B included a 1980 cohort of high school seniors that was directly comparable with the 1972 cohort. Replication of selected 1972 student questionnaire **items** and test items made it possible to analyze changes that occurred subsequent to 1972 and their relationship to recent Federal policies and programs in **education**. (**Some** of these changes are analyzed and reported in **Fetters, Brown & Owings, 1984**, who compare 1972 NLS-72 seniors with HS&B 1980--senior cohort--seniors). **Finally, HS&B** expanded the NLS-72 focus **by** collecting data on a range of **lifecycle** factors, such as **family-formation behavior**, intellectual development, and social **participation**.

The HS&B Base Year Survey. This report utilizes data collected in the HS&B base year from the sophomore **cohort**. The base year survey was conducted in the spring term of 1980. The study design provided for a highly stratified national probability sample of 1,015 secondary schools as the first stage units of **selection**. In the second **stage, 36** seniors and 36 sophomores were selected in each school (**in schools with fewer than 36 students in either of these groups, all eligible students were included**). Certain types of schools were **oversampled** to increase the usefulness of HS&B data for policy **analysis**. These included public schools with high percentages of Hispanic **students**, Catholic schools with high percentages of minority **students**, alternative public high **schools**, and private schools with high-achieving students.

The HS&B base year student questionnaires focused on individual and family **background**, high school **experiences**, work **experiences**, and **plans** for the **future**. **The** cognitive tests measured verbal and quantitative **abilities**, and included achievement measures in **science, writing, and civics**. School **questionnaires** provided information about **enrollment, staff, educational programs, facilities and services**,

¹Rock, Ekstrom, Goertz, Hilton and Pollack (1985) also report intercohort comparisons based on the 1972 and 1980 (HS&B senior cohort) seniors, while Ekstrom, Goertz and Rock (1988) invoke a ten year perspective to compare NLS-72 seniors in 1972 with HS&B 1982 (1980 sophomore cohort) seniors.

Figure C-1 Research design the NCES National Education Longitudinal Studies program



- YEAR OF DATA COLLECTION**
- NLS-72 = National Longitudinal Study of the High School Class of 1972
 - BY = Base year data collection
 - FU1 = Second follow-up data collection
 - FU2 = Third follow-up data collection
 - FU3 = Fourth follow-up data collection
 - FU4 = Fifth follow-up data collection
 - FU5 = Maintenance of address date
 - M = Postsecondary education transcripts
 - PAR = Postsecondary education transcripts
 - PST = Student financial aid records
 - SFA = Cognitive test administration
 - T = Cognitive test administration
- HS&B**
- BY = High School & Beyond: 1980
 - FU1 = Base year data collection
 - FU2 = First follow-up data collection
 - FU3 = Second follow-up data collection
 - FU4 = Third follow-up data collection
 - FU5 = Fourth follow-up data collection
 - HST = High school transcripts
 - M = Maintenance of address date
 - PAR = Survey of parents
 - PST = Postsecondary education transcripts
 - SFA = Student financial aid records
 - T = Cognitive test administration
- NELS:88**
- BY = National Education Longitudinal Study of 1988
 - BY1 = Base year data collection
 - FU1 = Base Year Ineligible Study
 - FU2 = First follow-up data collection
 - FU3 = Second follow-up data collection
 - FU4 = Third follow-up data collection
 - FU5 = Fourth follow-up data collection
 - HST = High school transcripts
 - O&E = Course offerings and enrollment data
 - PAR = Survey of parents
 - SCH = School administrator survey
 - SEA = School Effects Augmentation
 - T = Cognitive test administration
 - TCHR = Survey of teachers

and special **programs**. A teacher comment checklist provided teacher observations on **students**, while the parent questionnaire (**administered** to a **subsample** of **parents**) elicited information about how family attitudes and financial planning affected **postsecondary** educational **goals**.

The HS&B Follow-Ups. A **subsample** of the 1980 **HS&B** senior cohort was followed out of school, and resurveyed in 1982, 1984, and 1986. The sophomore cohort was resurveyed in 1982, when most **sample** members were high school **seniors**, although a substantial proportion of the cohort was surveyed out of school, either as dropouts (14%)² or early graduates (5%). The sophomore cohort was again resurveyed in 1984, 1986, and in 1992. **Postsecondary** transcripts information has **also** been collected for both **cohorts**, with the most recent update of sophomore cohort **postsecondary** transcripts data taking place in the fall of 1992.

In addition to the various follow-ups of the **HS&B** student **sample**, there have been two follow-ups of the **HS&B** school **sample**. The Administrator and Teacher Survey (**ATS**) was conducted in 1984 in a probability **subsample** of 479 participating **HS&B** schools. In order to better describe the impact of the school **environment** on the educational **process**, **ATS** gathered information on school **climate**, **process**, and functioning from **principals**; heads of **guidance**; vocational and **community** service program **coordinators**; and up to thirty teachers in each school. The Longitudinal Study of Schools (**LSS**) is an **OERI-sponsored** follow-up of the **HS&B** 1980-82 schools (**the** sample was freshened to make it representative of American high schools in 1992). In 1992 data were collected from high school principals about the organization of their school and changes in the school that had occurred since 1982. In **addition**, detailed information about mathematics instruction and assessment was collected from a **sample** of mathematics **teachers**.

NELS:88. **NELS:88** differs from both **NLS-72** and **HS&B** in that the first data collection phase began in the eighth grade rather than high school. The base year of **NELS:88** represents the first stage of a major longitudinal effort designed to provide data about critical transitions experienced by students as they leave elementary school and progress through high school and into **postsecondary** institutions or the work force. The 1988 eighth grade cohort is being followed at two-year intervals in order to obtain policy-relevant data about educational processes and outcomes--particularly those pertaining to student **learning**, early and late predictors of dropping out, and school effects on **students'** access to programs and equal opportunity to **learn**.

NELS:88's major features include the integration of **student**, **dropout**, **parent**, **teacher**, and school administrator and school records **studies**; initial concentration on an eighth grade cohort with follow-ups at two year **intervals**; inclusion of supplementary components to support **analyses** of **geographically** or demographically distinct **subgroups**; and design linkages to previous longitudinal studies and other current **studies**. **Private** schools, and both Hispanic and Asian **students**, were **oversampled** in **NELS:88** to ensure sufficient numbers of language minority and private school students for separate **analyses**. Multiple research and policy objectives are addressed through the **NELS:88** design. The **study** is intended to produce a general purpose **dataset** for the development and evaluation of educational policy at all government levels. **NELS:88** focuses on a number of interrelated policy **issues**, including:

²While 13.6 percent of the sophomore cohort was surveyed as dropouts in 1982, some sample members surveyed as students dropped out after survey day or otherwise left school before **graduating**. Thus, based on transcripts data and information from the follow-up surveys, the **HS&B** 1980-82 dropout rate was in fact 17.3 percent. (By the time of the **HS&B** third follow-up in 1986, almost half (46.5%) of the **HS&B** dropouts had completed high school or received a **GED**.)

students' academic growth over **time**, and the **family, community, school**, and classroom factors that promote or inhibit student **learning**;

the transition of different types of students from eighth grade to secondary school (**and later**, from secondary school to **postsecondary** education or the labor force);

the influence of ability grouping and differential course-taking opportunities on future educational experiences and **outcomes**;

determinants and consequences of dropping out of (**and of returning to**) the educational **system**;

changes in educational practices over **time**;

the role of the school in helping the disadvantaged and the school experiences and academic performance of language minority **students**;

NELS:88 Base Year. The base year survey was conducted in the spring term of the 1987-1988 school year. A **clustered**, stratified national probability **sample** of 1,052 public and private eighth grade schools **participated**. Almost 25,000 students across the United States participated in the base year **study**. The sample represents the Nation's eighth grade **population, totalling** over 3 million eighth graders in more than 38,000 schools in spring 1988. Questionnaires and cognitive tests were administered to each student in the **NELS:88**. The student questionnaire covered school **experiences, activities, attitudes, plans**, selected background **characteristics**, and language **proficiency**. The **school** principal completed a questionnaire about the **school**; two teachers of each student were asked to answer questions about the **student**, about **themselves**, and about their **school**; and one parent of each student was surveyed regarding **family** characteristics and student **activities**.

The first follow-up, which took place in 1990, provides the first opportunity for longitudinal measurement of the 1988 baseline **sample**. It also provides a comparison point to high school sophomores ten years **before**, as studied in **HS&B**. The study captures the population of early dropouts (**those who leave school prior to the end of tenth grade**), while monitoring the transition of the student population into secondary **schooling**. The first follow-up survey was primarily conducted in the spring term of the 1989-90 school year. As in the base year, students were asked to complete a **questionnaire** and cognitive **test**. The cognitive test was designed to measure tenth grade achievement and cognitive growth between 1988 and 1990 in the subject areas of **mathematics, science, reading**, and social studies (**history/geography/civics**).

The first follow-up of **NELS:88** comprised the same components as the base year **study**, with the exception of the parent **survey**, and a freshened **sample** was added to the student component to achieve a representative sample of the nation's **sophomores**. Some 18,221 students participated (**of 19,363 selected**), with 1,043 dropouts taking part (**of 1,161 identified**), for a total of 19,264 participating students and dropouts. In **addition**, 1,291 principals took part in the **study**, as did **nearly 10,000 teachers**.

The NELS:88 first follow-up sample was designed to support several different levels of **analysis**. One such level is longitudinal **analysis**, in which changes from the 1988 baseline are measured two years **later**, in the spring term of 1990. A second level of analysis is **cross-sectional**. Because the longitudinal sample has been "**freshened**" with 1990 sophomores who were **not** in eighth grade in the United States in the 1987-88 school year, it is a representative sample of the nation's spring term 1990 sophomores,

Finally, by maintaining a degree of comparability in questionnaire and test measures employed, NELS:88 first follow-up results will support comparisons with HS&B sophomores of 1980.

The second follow-up took place early in 1992, when most sample members were second term seniors. The second follow-up provides a culminating measurement of learning in the course of secondary school. In addition, the NELS:88 second follow-up resurveyed students who were identified as dropouts in 1990, and identified and surveyed those additional students who had left school since the prior wave. The NELS:88 second follow-up questionnaires and cognitive tests were designed to meet four general requirements for information about American education. These can be characterized as looking **backward** within the cohort to understand the impact of prior experiences (particularly at eighth grade and tenth grade) on current circumstances; looking **ahead** to provide a basis for understanding cohort members' future experiences (for example, the transition to the labor market or postsecondary education, to be studied in the third and fourth follow-ups); looking **within the** cohort at a single point in time to compare the outcomes and experiences of different social groups; and looking **across** cohorts by comparing the experiences of the NELS:88 1992 senior cohort to those of seniors studied in 1980 in HS&B and in 1972 in NLS-72, and by comparing the experiences of HS&B and NELS:88 dropouts.³ Second follow-up data will be released early in 1993.

The NELS:88 **third follow-up** will take place in 1994, when most sample members will have left high school. The primary goals of the 1994 round will be to provide for trend comparisons with NLS-72 and HS&B, and to address issues of employment and postsecondary access and choice. Additionally, the third follow-up will provide a basis for assessing how many dropouts have returned to school and by what route, and for measuring the access of dropouts to vocational training programs and to other educational opportunities. A **fourth follow-up** is scheduled for 1997.

³Because the NELS:88 longitudinal sample was freshened to represent the twelfth grade class of 1992, trend comparisons can be made to the senior cohorts of 1972 and 1980 that were studied in NLS-72 and HS&B. (In addition, although the HS&B 1980 sophomore cohort was not freshened in 1982 so that it would constitute a fully representative sample of the nation's seniors, the HS&B and NELS:88 sophomore cohorts can be compared on a "two years later" [1982-1992] basis by excluding the 1992 freshened seniors from the analysis.) Because the NELS:88 sample was freshened in 1990 to fully represent the nation's sophomores, comparisons can also be made to the HS&B sample of sophomores who dropped out of high school between spring term 1980 and spring term 1982.