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Swimming Against the Tide: The Poor in American Higher Education

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and Elena M. Bernal

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Executive Summary

In 1998-99, the total amount of financial aid awarded to America's college students reached \$64.1 billion, an increase of about 85 percent in constant dollars over the past decade (about two-thirds of the growth is attributable to increased reliance on loans). Of that total, federal expenditures for college student aid programs reached \$46 billion, an increase of 43 percent over the past decade. Although states provided only about 6 percent of the total aid awarded in 1998-99, that investment rose 65 percent (in constant dollars) over the past decade (College Board, 1999). Despite such an enormous investment in equalizing educational opportunities for all Americans, substantial evidence indicates that significant inequities remain, particularly for low-socioeconomic-status (SES) students. *Swimming Against the Tide: The Poor in American Higher Education* pulls together in one place what we know about low-SES students and their encounters with America's colleges and universities. The report draws on an extensive review of the current research literature and contributes new analyses of national databases to fill some of the holes in the existing literature. Following are some of the more important findings:

The College Search, Choice, and Selection Process

- By the ninth grade (perhaps as early as the seventh grade), most students have developed occupational and educational expectations that are strongly related to SES. These SES-based differences subsequently manifest themselves in differences in college-going, persistence, and degree attainment rates, all of them unfavorable to low-SES students in comparison with their more affluent counterparts. Parental encouragement appears to be a powerful player in the development of students' expectations, as do high school preparation, parental occupation(s), and perceptions of access to financial aid.
- Parents' knowledge of financial aid, financial planning for college, and students' access to college and financial aid information are clearly associated with socioeconomic status. Lowest-SES-quartile students tend to rely largely on their high school guidance counselor for information, while highest-SES-quartile students (in addition to their guidance counselor) also draw on the informational and experiential resources of their parents, other students, college catalogues, college representatives, and private guidance counselors.
- Nearly one-half of the lowest-SES-quartile high school graduates do not enroll the following fall in any postsecondary institution, a nonenrollment rate

nearly five times higher than that of high-SES students (48 versus 11 percent).

- All but the highest-SES-quartile students' decisions to attend college are sensitive to tuition and financial aid levels, but low-SES-quartile students are particularly so, especially to grants (but not loans). The growing costs of attendance and other factors appear to be redistributing students by SES across the various types of institutions. That redistribution appears to be particularly disadvantageous to students in the lowest SES quartile.
- For all but high-SES-quartile students, the availability of financial aid is a significant factor in their choice of school. The availability of aid becomes increasingly important for low-SES students as their preferences shift from a two-year public to a four-year public to a four-year private college or university. The availability of the desired course of study, however, as well as the reputation of the institution, are also important considerations for all students.

A Profile of Low-Socioeconomic-Status Students

- Of the students entering postsecondary education in 1989-90, 15 percent came from families in the lowest SES quartile, compared with 40 percent from highest-quartile families. At four-year institutions, entering students from low-SES families were outnumbered more than 10 to 1 by their counterparts from families in the top SES quartile.
- Compared to their high-SES counterparts, low-SES students entering postsecondary education in 1992 were more likely to be a member of a historically underrepresented racial and/or ethnic group, have parents with a high school diploma or less (75 versus 9 percent), come from a single-mother home (27 versus 6 percent), make the decision to attend college without consulting a parent, and attend a public two-year institution (56 versus 23 percent).
- Lowest-SES-quartile students entering postsecondary education in 1992 (compared to their highest-quartile peers), were less likely to be academically prepared. They were consistently underrepresented in the upper two quartiles in all academic ability areas tested (NELS:92): reading (44 versus 78 percent), mathematics (44 versus 82 percent), science (39 versus 79 percent), and selected social science areas (45 versus 79 percent). Low-SES students were also significantly less likely to bring to college the same levels of an array of "academic resources" known to be related to degree completion. On the ACT composite and SAT mathematics and verbal tests, low-SES stu-

dents are consistently below their top-SES-quartile peers by a margin of 22 to 26 percentile points.

Collegiate Experiences

- With one exception, students' levels of involvement in the academic-related areas and activities of their institutions varied little across SES categories. Highest-SES-quartile students (versus lowest-quartile students) were more actively engaged in their course work.
- The level of students' involvement in out-of-class experiences, however, differed significantly and consistently across SES groups. Compared to highest-SES-quartile students, lowest-quartile students reported lower levels of involvement with other students, clubs, and organizations, the student union's facilities and programs, and their institution's athletic and recreational facilities.
- Low-SES students tend to receive more B and C grades than their more affluent peers, but otherwise, the grade-performance differences are slight.
- Low-SES-quartile students (compared to high-SES students) are both more likely to work off campus (48 versus 19 percent, respectively) and to work longer hours (13 versus 3 percent work 30 hours or more per week off campus).

Outcomes: Persistence and Degree Completion

- Of those students who earned a baccalaureate degree in 1992-93, less than one-third (31 percent) had completed their programs within four years of high school graduation.
- High-SES students who entered college in 1989-90 and pursued a bachelor's degree at any time were more than twice as likely to have earned the degree five years later (51 versus 24 percent).
- While 60 percent of the high-SES 1980 high school graduates who started on the traditional track remained enrolled full-time in a four-year institution through the 1983-84 academic year, less than 42 percent of their low-SES counterparts accomplished the same feat. According to Carroll (1989), "When coupled with differences in rates of starting on track, the effect of low-SES was devastating—the rate of starting and persisting for high-SES students was 5 times the rate for low-SES students (32 versus 6 percent)" (p. 13).
- Financial aid, while a nontrivial consideration, must be seen as only one of several influences affecting persistence and degree attainment among low-SES stu-

dents. Other overlapping influences with which SES is linked include degree plans, ability, quality, and intensity of the high school curriculum, and students' academic and social integration in their institutions.

Outcomes: Learning

- After one year of college, high-SES-quartile students were more likely to report greater gains in getting a broad education and exposure to new ideas, developing an understanding and enjoyment of the arts, and in developing their critical thinking skills. The differences, however, were modest, and few other first-year differences in general education learning outcomes were apparent.
- After one year, highest- and lowest-SES students reported equivalent gains in career or occupational preparation or personal development (although high-SES students reported greater gains in learning about themselves, their abilities, interests, and personalities).

Other Education Outcomes

- Low-SES students report somewhat lower levels of enthusiasm for college, but the differences are modest (37 versus 47 percent for lowest and highest-quartile, respectively). When asked after one year (if they could start all over again) whether they would attend the same institution at which they were then enrolled, the groups were virtually identical in the percentages reporting that they would return to their current institution (range equals 79 to 82 percent).
- From 20 to 35 percent of the students who entered postsecondary education in 1989-90 reported that they intended to apply, or had applied, to a graduate or professional school. Five years later, however, far fewer reported having entered a postbaccalaureate program (4 to 6 percent of the students in the upper two SES quartiles versus less than 2 percent of the lower two quartiles).

Outcomes: Earnings, Occupational Status, and Job Satisfaction

- Students who complete a two-year degree (compared to those holding only a high school diploma) enjoy statistically significant and substantial income and occupational status advantages (e.g., \$7,000 per year in unadjusted earnings; \$2,000 per year when adjusted for gender, race and/or ethnicity, high school grades, parents' SES, and other selected variables). While conferring such benefits on individuals, however, the two-year degree has not reduced racial and/or ethnic or socioeconomic class inequities: The

advantages of the degree accrue at a higher rate to those groups (whites and high-SES-quartile individuals) already enjoying an advantage.

- While students who begin their pursuit of a bachelor's degree at a community college are less likely to complete the baccalaureate, for those who do earn the degree, there appear to be few differences in employment stability, job satisfaction, job prestige, and earnings when compared with bachelor's degree recipients who began at a four-year college.
- While some evidence indicates that earnings advantages accrue to individuals who complete community college credits without earning a degree, the weight of evidence also suggests that earning the degree has an additional benefit above and beyond just accumulating credits.
- The need to reach the parents of low-SES students when children are in the fifth and sixth grades with better information on financial planning, the college search and selection process, and degree completion strategies.
- The need for closer and better-integrated working arrangements among state agencies, colleges and universities, schoolteachers and administrators, parents, and students across the K-16 spectrum on a sustained basis from elementary school through degree completion.
- The need to supplement current state and federal financial aid policies to attack the barriers to college going and degree completion on a broader front.

Policy Issues Raised

- The persistence of SES-related inequities in enrollment and degree completion rates.

I. Introduction

Background and Purpose

Over almost four decades, federal and state governments have invested considerable human and financial resources in achieving equality of access to, and persistence in, college for all qualified individuals who want to pursue a college degree. In the 1963-64 academic period, public assistance was \$546 million (Lewis, 1989). By the 1988-89 academic year, the total financial aid from federal, state, and institutional sources reached \$25.5 billion. Ten years later, \$64 billion was made available. During the last decade alone (and after adjusting for inflation), financial aid from all sources grew by 85 percent (College Board, 1999).

At the core of these spending increases and the programs they support lies the assumption that one's attainment of a college degree is greatly influenced by one's parental income, occupation, and education along with one's ability to pay for college. To remedy social and economic disadvantages in some segments of society, public programs have evolved to address three critical stages in the college-going process: preparation for college, college choice, and degree completion. The Talent Search Program, a federally funded program created by the Higher Education Act of 1965, addresses the first stage by identifying talented youth from underprivileged backgrounds and providing them and their families with information and various forms of assistance. The second and third stages are targeted by a variety of federal, state, and institutional aid programs seeking to overcome inability to pay as a deterrent in choosing an institution in which to enroll and persist to graduation (College Board, 1999).

Despite the multi-billion-dollar investment, however, a clear understanding of how Americans of underprivileged socioeconomic backgrounds develop aspirations to attend college, ready themselves for college work, choose among institutions, and enroll and persist to graduation has eluded researchers and policymakers alike. Much of the available research is largely atomistic. One body of evidence examines the process high school students and their families undergo while making decisions to attend college. The main thrust of this literature is conceptual in nature with few connections to policy analysis. A second body of research lies opposite the first, consisting of policy studies that provide informative, but rather

disjointed, empirical findings with little or no reference to the literature on college choice. As far as the collegiate experiences of underprivileged students are concerned, most of what we know is concentrated almost exclusively on the role of financial factors. The assumption is not without merit: Financial considerations are important factors in students' ability to attend and complete college, particularly for those students from low parental income and educational backgrounds (e.g., St. John, 1990b). On the other hand, a growing body of research suggests that financial aid, by itself, is not enough to explain fully why underprivileged Americans enroll in college or even why they persist. What happens to students after they enroll in college seems to play an even more vital role in their persistence, performance, and degree completion than their ability to pay (e.g., Cabrera, Nora, and Castañeda, 1992; Gladieux and Swail, 1998; Pascarella and Terenzini, 1991; Swail, 1995).

This report examines how Americans of economically and sociologically underprivileged backgrounds develop plans and aspirations to attend college, what drives them to ready themselves for college, and what prompts them to select one institution of higher education over another, as well as the nature of their collegiate experiences and their college-related outcomes. In short, it seeks to paint a portrait of low-socioeconomic-status students by summarizing and interpreting existing evidence under relevant theories while filling gaps with new analyses of national longitudinal databases.

Indices of Wealth: Income versus Socioeconomic Status

The sociological and educational research literature has defined the concepts of "wealth" (broadly conceived) in several ways (see Appendix A, Wealth Matrix). One common method relies on family income. These data are typically self-reported, although on rare occasions, financial aid records are used for verification. Income is then divided into intervals, often arbitrarily defined. For example, one might choose an income figure that appears low and is likely to be accepted by casual observers or readers. Or one can adopt the low-income definitions employed by the U.S. Census Bureau, for example, using poverty thresholds. A third method combines multiple measures to create an index of wealth, typically referred to as *socioeconomic status* (SES).

In this report, we use SES instead of raw income data for analysis. Socioeconomic status,¹ as reflected in most

¹ Though Duncan (1961) developed the widely used socioeconomic index (SEI) to predict occupational prestige, socioeconomic status (SES) has become the preferred yardstick to reflect potential for social and economic mobility bestowed by one's family background. This practice is particularly evident in the college choice and persistence literature. Thirty-five percent of the studies we reviewed relied on some variation of SES (see Appendix A).

of the data sets developed by the National Center for Education Statistics (NCES), is based on the following measures: parental education, parental occupation, items in the home such as books, magazines, or dishwasher that reflect either wealth or educational resources (not including, however, home ownership), and family income. Three key theoretical, policy, and statistical arguments support the use of SES, as follows.

Income versus wealth. *Income* and *wealth* have different meanings (Oliver and Shapiro, 1995). Income is the actual flow of dollars that pay for goods and services. Wealth reflects the history of acquisition of tangible income dollars, as well as “a kind of ‘surplus’ resource available for improving life chances, providing further opportunities, securing prestige, passing status along to one’s family, and influencing the political process” (Oliver and Shapiro, 1995, p. 32). Wealth recognizes not only the income that is spent but also the accumulation of assets and access. Oliver and Shapiro (1995) suggest three reasons for using wealth measures instead of income: the weak overlap between the distribution of income and wealth, inequalities in life chances that vary by subgroup access to wealth and its development, and the present availability of reliable wealth data. Using socioeconomic status allows us to account for a family’s wealth. Therefore, when one examines two families with an equal amount of income, adding to the equation the assets and resources available to each allows one to make finer, more reliable distinctions in each family’s experiences and access to social, economic, political, and educational opportunities.

Social and cultural capital. In addition to the differing assets and resources available to families with the same income, educational and occupational attainment, as well as neighborhood and social and occupational networks, add to the range of choices available to the potential college student. For example, one might compare the income of a college professor to that of a skilled factory worker and find similar incomes but very different social and cultural capital within their two families. The networks, neighborhoods, and resources available to a student aspiring to a college education are radically different for the professor’s child than for the factory worker’s child (e.g., Duncan, 1994). Coleman (1988) defines *social capital* as the resources obtainable within the social structure of a person’s community—norms, social networks, and interpersonal relationships—that contribute to personal development and attainment. Bourdieu (1977) adds that attitudes, inclinations, competencies, and behaviors

attached to a particular location on the socioeconomic ladder contribute to reproduce and augment one’s cultural and social capital. Socioeconomic status indices, unlike income level, include social and cultural capital measures, such as parental educational background, along with income allowing analyses and interpretations that account for the different “social locations” from which students come to their collegiate experiences.

Reliability and validity of the measures. Adelman (1998a) also points to the problematic nature of using income as the sole indicator of family wealth, especially when the data are self-reported. Research contrasting students’ self-reported income data against parent-reported income supports this observation. Fetters, Stowe, and Owins (1984), for example, examined the quality of responses from high school students to questionnaire items and found low levels of agreement between students’ and parents’ reports of family income and parental occupation. Fetters and his colleagues, however, reported high validity coefficients when income, parental education, and parental occupation were combined into a single indicator: socioeconomic status. Likewise, Adelman (1998a) found that a single SES composite variable “washes out some (but not all) of the potential distorting effects of contradictions, anomalies, and outliers in its component parts” (p. 23). Fetters and associates’ results, combined with Adelman’s analyses, support using single composites that merge measures of family educational and occupational attainment and other measures of status and relative advantage. In addition to its reliability properties, Stevens and Featherman (1981) found the socioeconomic status index to be a valid correlate of such important measures of attainment as occupational prestige.

Race and/or ethnicity and socioeconomic status. This report also rests on the proposition that race and socioeconomic status are two social constructs meriting separate analysis, debate, and policies (Olivas, 1997). We readily recognize that the assumption that SES and race and/or ethnicity are intertwined is strongly rooted in the literature and public psyche (e.g., Carter, 1998; Hannah, 1996; Heller, 1997). In fact, some initiatives go as far as to suggest class-based affirmative action as a remedy to address both income and race inequalities in higher education (e.g., Kahlenberg, 1996). However, we disagree with the notion that one can learn about the influences affecting minorities’ college participation behavior by simply examining the corresponding process among low-SES students, and vice versa.² Our

²Our position against using SES as a substitute of race should not be used to draw conclusions regarding the lack of differences among ethnic groups. Camara and Schmidt (1999), for instance, have documented persistent differences on standardized test scores among ethnic groups. The topic of differences in admission test scores is beyond the scope of this document. The interested reader is advised to consult Olivas (1997) who provides a most comprehensive legal and psychometric literature review on this subject.

belief is supported by mounting evidence indicating that the association between race and/or ethnicity and socioeconomic status is, at best, a weak one. After examining the association between SES and race in the high school classes of 1972, 1982, and 1992, Bernal, Cabrera, and Terenzini (1999) found the correlation between the two ranged from .20 to .27. This low level of association means that 93 to 96 percent of the variance among high school students' ethnicity or SES status has nothing to do with either race or SES. Bowen and Bok (1998) highlighted another problem with a class-based policy as a viable substitute for a race-based affirmative action policy: numbers. Low-income whites are still in the majority among all low-income college students. Kane (1988) has argued that class-based college admission practices are unlikely to narrow the gaps between racial and/or ethnic groups. Olivas (1997), after examining postsecondary admission cases, also questions the validity of SES as a substitute for race. He concluded that "[t]here is no good proxy, no more narrowly tailored criterion, no statistical treatment that can replace race" (p. 1,095).

Because of the extensive research coverage of race and/or ethnicity as a factor in students' higher education attendance, experiences, and outcomes, in contrast to the attention given to social class, our purpose is to examine the role of the latter force. Thus, readers will find little attention given to differences relating to racial and/or ethnic origins. We seek to fill what we believe is a significant hole in the available knowledge base that now informs administrative practices and institutional and public policy making. Hodgkinson (1999) helps clarify the issue:

To the degree that Blacks, Hispanics and Native Americans are more likely to be poor, they are disadvantaged. But remember that in 1997, 20 percent of Black households had a higher income than the U.S. average, and that the fastest growing household income category for Hispanics was households over \$100,000 a year. Being Black or Hispanic is no longer a *universally handicapping condition*. However, being poor is a universal handicap—all poor children are born into a handicapping condition, and should become the focus of our efforts to increase equity in education and work (pp. 17–18).

Limitations and Other Things Readers Should Keep in Mind

As most scholars know, research is a series of compromises. Few things are gained without the sacrifice of something else, and this document is no exception. In

considering the findings and conclusions in this report, readers should keep the following in mind:

- The findings summarized in the literature review portions of this report, as well as the original analyses reported here, are all based on data sets that are, to varying degrees, dated. The social, economic, and educational forces that shape people's lives become apparent only over time. For example, learning how completing a college degree affects subsequent occupational outcomes requires giving that experience and event time to "work" and make itself known. Thus, looking today at the career outcomes associated with varying degrees of education requires beginning with individuals who were students 10, 20, or even 30 years ago. To varying degrees, things—social, economic, and cultural—were different then. Consequently, in distilling the practical, theoretical, and policy implications of the findings reported here, one must keep in mind that the mix of conditions that led to those relations and outcomes may be somewhat different now than they were when the data were collected. As the Chinese proverb has it, one cannot step into the same river twice.
- With one exception, we relied in our original analyses (as did the authors of the research we review and summarize) on data sets that tracked cohorts of students from the time they were in (or just graduating from) high school (e.g., the National Longitudinal Study of the High School Class of 1972, the sophomore and senior cohorts of High School and Beyond, the National Postsecondary Student Aid Study). The one exception is the Beginning Postsecondary Student Survey (BPS:90) series, which tracks all beginning students of whatever age (and in our analyses of this database, we focused on "students who work" versus "employees who study"). Consequently, this report gives almost exclusive attention to the characteristics, experiences, and college outcomes of traditional-age, undergraduate students attending two- and four-year, not-for-profit colleges and universities. We accord virtually no attention to students attending private, for-profit institutions, not because they and their institutions are unimportant or of no interest (neither of which is true) but because the vast majority of studies and the national databases on which they and we relied concentrate on traditional, undergraduate student populations. Traditional-age students do, to be sure, make up the vast majority of those who enroll in America's colleges and universities: Of all students beginning postsecondary education in 1995-96, for example, only 11 percent enrolled in private, for-profit institutions (Choy and Ottinger, 1998, Table 1). We were,

then, somewhat like Willy Sutton, who, when asked why he robbed banks, replied, “Because that’s where the money is.” We went where the literature and data sets were.

- Throughout this report, we have tried to keep readers apprised of the data set upon which the evidence is based. While this practice may sometimes seem like a scholarly nicety that slows reading and comprehension, we believe it is important. The databases on which we relied have different “census” dates: Longitudinal follow-ups are not always over the same periods of time. Thus, for example, the degree completion information based on the 1980 High School and Beyond senior cohort or the 1989-90 Beginning Postsecondary Student Survey were gathered five years after initial college enrollment. In contrast, the National Longitudinal Study of the High School Class of 1972 or the 1980 High School and Beyond sophomore cohort tracked students over much longer periods of time. Consequently, for example, percentages of how many students completed a degree or who “stopped out” (i.e., discontinued their enrollment for a period of time) will vary with the time period in the different studies.
- Much of this report describes our syntheses of research produced by others. In those summaries, we have tried to be clear about whether the findings are based on bivariate or more complex, multivariate analytical procedures. In some instances, however, we report findings of original analyses we conducted using several national data sets. In all of these original analyses, we employed bivariate statistical procedures (described in the text) to evaluate the statistical significance of differences. For these analyses, consequently, we can make no claims that any of the variables we identify as important are independent of other variables. Indeed, some overlap is almost a certainty, although the degree of overlap will vary. We sought only to describe the characteristics and experiences of low-SES students and to identify variables that may be theoretically and practically relevant for future, more complex analyses that were beyond the plan and scope of this report. We believe, however, that this literature review will provide a basis for more comprehensive, multivariate work in the future.
- Readers will find little information here dealing with gender differences. As just noted, our interest is in the influence of socioeconomic status on students’ college-going, experiences, and outcomes. Gender differences within socioeconomic classes may well exist and are certainly worthy of future study. Indeed, while gender and socioeconomic status are

common variables in most analyses, their joint effects (i.e., the influence of gender within or across SES categories) are almost never considered. Worthwhile as such analyses may be, they are beyond the purpose and scope of this study.

- Finally, readers will find most of the discussion of the effects of socioeconomic status presented in contrasts between the top and bottom SES quartiles. One might reasonably ask, “What about the middle?” Where significant differences exist, we call them to the reader’s attention. Where the dominantly linear pattern or trend is broken, that, too, is noted. As one might expect, however, the advantages and disadvantages of social origins are most sharply apparent between the haves and the have-nots.

Organization of the Report

The remainder of this report follows a conceptual framework that views students’ encounters with college as a three-stage, longitudinal process that begins as early as the ninth grade and ends at any point between that time and when the individual secures a college degree and its associated benefits. Such an approach is consistent with the extant literature showing that collegiate experiences and outcomes are intrinsically and unavoidably linked with the decisions, plans, and actions that students and their family undertook at the secondary level (e.g., Hossler, Schmit, and Vesper, 1999; St. John, Paulsen, and Starkey, 1996). Throughout the entire report, of course, our focus is on low-socioeconomic-status students.

Section II of our report (The College Choice Process) addresses the first stage. In this phase, socioeconomic factors, as well as academic ability and an array of other (sometimes intangible) considerations, are believed to influence a high school student’s predisposition to pursue a college education. In this stage, a student considers the “costs and benefits” (broadly understood) associated with enrollment at a particular institution. When the balance of assets and liabilities is favorable, the student develops an initial commitment to enroll in college and, subsequently, affect the decision to remain enrolled. Within this context, financial aid would not only positively influence a student’s thoughts of matriculation but would also predispose the student to select a particular institution.

In Section III of this report (Collegiate Experiences), we track students through the second stage of the college-going process. At this point, institutional characteristics (e.g., type and control) and the student’s collegiate experiences and academic performance modify or

reinforce the student's educational aspirations. Positive social and academic experiences in college reinforce, or even enhance, the student's perceptions of economic and noneconomic benefits associated with enrollment at, and graduation from, the institution. Financial aid is believed to affect persistence decisions positively through maintenance of equilibrium between the cost of attending college and the perceived benefits to be derived from the attainment of an educational degree. Negative college experiences, such as negative personal or educational experiences, or increases in tuition, can affect the initial costs-benefits equilibrium and nudge the student toward withdrawal.

Section IV (The Outcomes of College) summarizes the existing research (and introduces the results of some original analyses) describing the outcomes of college attendance. The outcomes examined involve persistence and degree attainment, learning outcomes, labor market outcomes, job satisfaction, and graduate and/or professional school attendance.

Section V concludes the report with a discussion of the conclusions and implications of the findings of our literature review and supplemental analyses.

This report is intended to be of value to faculty members and campus administrators, as well as to state and national policymakers concerned with improving the odds of college success for low-SES students. Despite the multi-billion-dollar investment in programs such as Talent Search and various forms of financial aid, college participation rates among low-SES students remain disproportionately low (King, 1996). Moreover, low-SES students' chances of getting a college degree lag in relation to those of higher-SES students. Knowing what factors are most relevant when low-SES students decide about whether and where to pursue a college degree should help institutions and policymakers frame effective intervention strategies. Ultimately, our goal is to help low-SES students as they struggle against the tides militating against their attending college, completing degrees, and enjoying the substantial benefits of a college education at rates equal to those of their more affluent counterparts.

II. The College Choice Process

In summarizing the extensive literature on factors predisposing high school graduates to attend college, Hossler, Braxton, and Coopersmith (1989) postulated that college choice is the product of three interrelated process stages:

1. development of predispositions to attend college,
2. search for potential institutions, and
3. choice among competing institutions.

Each stage is associated with a specific age cohort, corresponding to grades 7 through 12. The three stages have particular cognitive and affective outcomes that, cumulatively, prepare high school students to make certain decisions regarding their college education (see Table 1).

The literature also suggests these three stages interact with one another, each affecting the others in subtle and complex ways (Alexander and Eckland, 1975; Sewell and Shah, 1967; Sewell, Haller, and Portes, 1969). Figure 1 offers a schematic representation of the process linking the three college choice stages. Parental encouragement, a pivotal force in the emergence of occupational and educational aspirations, is conditioned by the

ability and high school preparation of the child, parental and sibling educational attainment, and access to information about college and costs. Parental encouragement, the availability of information about college, and perceived cost-benefit analysis of attending college also shape the institution set the student and family will seriously consider (e.g., McDonough, 1997). In turn, the final choice decision depends on the saliency of institutions, parental encouragement, financial considerations, the student's high school academic resources, the student's educational and occupational aspirations, and, of course, the student's academic abilities.

Predispositions

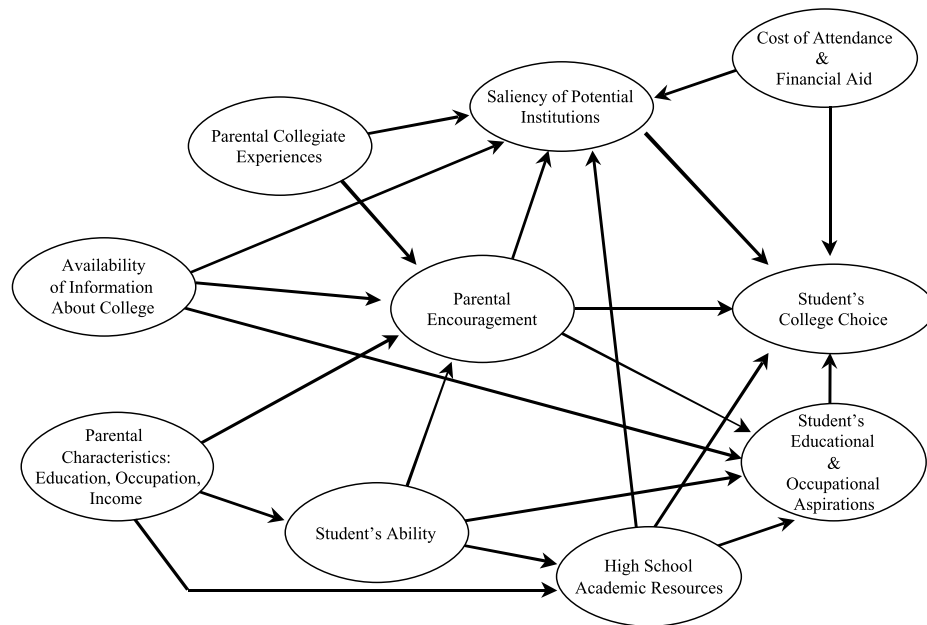
The predisposition stage involves the development of occupational and educational aspirations, as well as the emergence of intentions to continue education beyond the secondary level. The student comes to value a particular occupation and to see college enrollment as instrumental in securing such an occupation. This stage may begin as early as the seventh grade, and by the ninth grade most students have already developed occupational and educational aspirations (Stage and Hossler, 1989). Eckstrom (1985) found that 61 percent of those high school graduates who enrolled in college had made the decision to go to college by ninth grade. The litera-

TABLE 1

College Choice Process: Stages, Factors, and Outcomes

<i>Stages</i>	<i>Factors</i>	<i>Outcomes</i>
Predispositions: Grades: 7-9	Parental encouragement and support Parental saving for college Socioeconomic status Parental collegiate experiences High school academic resources Student ability Information about college	Reading, writing, math, and critical thinking skills Career/occupational aspirations Educational aspirations Enrollment in college-bound curriculum
Search: Grades: 10-12	Parental encouragement and support Educational aspirations Occupational aspirations Socioeconomic status Saliency of potential institutions Student ability High school academic resources	Listing of tentative institutions Narrowing list of tentative institutions Securing information on institutions
Choice: Grades: 11-12	Educational aspirations Occupational aspirations Socioeconomic status Student ability Parental encouragement Perceived institutional attributes (quality/campus life/majors availability/distance) Perceived ability to pay (perceived resources/perceived costs)	Awareness of college expenses and financial aid Awareness of institutional attributes and admission standards Attaining scholastic aptitudes and attitudes Perceived support from family and friends Institutional commitment Submission of applications Preregistration Attendance Application for financial aid

Source: Adapted from Nora and Cabrera (1992).



Source: Adapted from Flint (1993, 1997); Hossler and Vesper (1993); Hossler, Schmit, and Hauser (1975); Stage and Hossler (1989); St. John (1990).

Figure 1. College choice process

ture also suggests that factors making up the predisposition stage interact among themselves in a complex manner (Alexander and Eckland, 1975; Hauser, Sewell, and Alwin, 1976; Sewell and Shah, 1967; Sewell, Haller, and Portes, 1969). Higher-socioeconomic-status parents are more likely to talk to their children about college (Stage and Hossler, 1989). They are also more predisposed to make financial plans to pay for college (Flint, 1992) and are more knowledgeable about financial aid programs (Olson and Rosenfeld, 1985; Tierney, 1980). Of the six factors found to predict students' educational aspirations, parental encouragement is the strongest (Conklin and Dailey, 1981; Hossler, Schmit, and Vesper, 1999; Stage and Hossler, 1989).

Research suggests parental encouragement has two dimensions. The first is motivational: Parents maintain high educational expectations for their children and discuss college plans with them (Stage and Hossler, 1989). The second dimension is a proactive one: Parents (and sometimes the student) plan and save for college (Flint, 1992, 1993; Hossler and Vesper, 1993; Miller, 1997).

Developmental and maintenance of postsecondary education aspirations among high school students is proportionally related to the frequency with which parents provide encouragement (Flint, 1992). King (1996) noted that parental encouragement was a decisive factor in postsecondary plans among a sample of 1995 low-

income high school students who took the SAT. Low-income seniors, unsure whether their fathers were pleased with their postsecondary plans, were less likely than their better-off peers within their cohort to aspire to attend a public four-year college or university. Consistent parental encouragement also has a prominent influence on the type of college at which the student may enroll. Conklin and Daily (1981) found that high school graduates entering a four-year college were more likely to report consistent parental encouragement from grades ninth through twelfth. In contrast, students entering two-year institutions were more prone to report mixed parental support across the high school years.

Maintaining high parental expectations, in turn, is shaped by an array of socioeconomic factors. The influence of these factors on parental encouragement appears to be mediated by the ability and gender of the high school student. Research on occupational attainment indicates parents provide the most encouragement to the child with the apparent highest academic ability (Hossler, Braxton, and Coopersmith, 1989). Family size and gender also matter (Hossler, Hu, and Schmit, 1998). Stage and Hossler (1989) found that single parents and parents with children already in college are less likely to develop high expectations for the child, particularly when the child is female (the importance of gender may be declining in some fields; see Adelman, 1998b).

Saving for college is presumed to be an objective and key expression of parental encouragement to pursue a college degree (Stage and Hossler, 1989; Hossler and Vesper, 1993). Flint (1992, 1993) argues this encouragement manifests itself when parents initiate college savings plans, advise their children on a range of acceptable college costs, and search for additional sources of financial support. The extent of parental belief in education and the foundation for parental involvement can be found in a 1996 Gallup Poll of parents of college-bound high school students. The poll shows that the vast majority of parents (92 percent) regard a college education as the most important investment they can make for their children (Miller, 1997).

The amount of saving for college is associated with parents' own socioeconomic status. Miller (1997) noted that two-thirds of low-income parents had saved little—10 percent or less of the total college educational costs. She also found that most low-income parents expected to finance college education through financial aid. Reliance on financial aid varied in direct proportion with family income. Low-income parents were more likely to expect to go into debt to finance their children's college education than were upper-income parents (65 versus 40 percent).

Parental saving seems to be conditioned by knowledge of college costs and ways to finance a college education (Flint, 1991, 1992, 1993; Miller, 1997). Hossler and Vesper (1993) reported that the parents of Indiana eighth graders were more prone to save when they were knowledgeable about college costs. While little research exists on parental knowledge of costs and student college choice, some research indicates that knowledge of college costs and preparation to finance college education are more prevalent among upper-income parents (e.g., Miller, 1997; McDonough, 1997; Olson and Rosenfeld, 1984). In view of the role of information on parental propensity to save, Hossler, Schmit, and Vesper (1999) recommend providing parents with periodic financial information, especially during the early high school years. Hossler and Vesper (1993) suggest that information need not be detailed; general information may suffice to motivate parents to acquire enough knowledge to start saving for their children's postsecondary education.

In addition to parental encouragement and occupation, high school academic preparation seems to play a strong role in the development of postsecondary plans among low-income high school students (King, 1996). Using a sample of 1974 high school seniors who were within one month of graduation, Leslie, Johnson, and Carlson (1977) found the effect of high school academic experiences on postsecondary plans were more influential than family income. Controlling for family income,

Leslie et al. found plans to attend college were affected most by the student's high school GPA, high school curriculum, and father's occupation. More than 20 years after the Leslie et al. study, King (1996) observed similar trends. Using the 66 percent of low-income students who reported planning to attend college as the threshold, she noted that seniors with parents holding a professional position were 9 percent more likely to aspire to college than the norm. King's study is highly suggestive of the critical role quality of high school academic experiences plays in postsecondary plans, as well. Low-income seniors who ranked themselves among the top 10 percent of their peers in sciences, math, and writing planned to enroll in college at rates higher than the norm. Unlike the Leslie et al. study, King concluded that income has a pervasive effect on postsecondary plans. The percentage of low-income students planning to attend a four-year institution or college lagged behind those for middle- and upper-income seniors (66 versus 80 percent and 85 percent, respectively).

Perceptions regarding access to financial aid also shape postsecondary plans among low-income high school students. Leslie, Johnson, and Carlson (1977) found that low-income high school seniors were more likely to report availability of financial aid as instrumental in their plans to attend college than were their better-off counterparts. Likewise, King (1996) found that low-income students who anticipated receiving some form of financial aid were more likely to aspire to college than were the average low-income seniors.

Search

The search stage involves the accumulation and assimilation of information necessary to develop the student's short list of institutions. This choice set, often heavily influenced by parental encouragement (Conklin and Dailey, 1981; Flint, 1992; Litten, 1982), consists of a group of institutions the student wants to consider and learn more about before making a matriculation decision. This stage usually begins during the tenth grade and ends by the middle of twelfth grade (Hossler, Braxton, and Coopersmith, 1989). At this stage, students begin to interact actively with potential institutions (Attinasi, 1989). Visiting campuses, securing catalogs, and talking to friends about college are some of the activities used in seeking such information (Hossler, Braxton, and Coopersmith, 1989; Litten, 1982).

The choice set is largely dependent on the level of sophistication and thoroughness of the search process. This degree of sophistication appears to be determined by socioeconomic factors (McDonough, 1997; Olson and Rosenfeld, 1984). In general, more affluent students, compared to their less well off peers, tend to rely on sev-

eral sources of information (including private counselors), are more knowledgeable about college costs, are more likely to broaden the search to include a wider geographical range, tend to consider higher-quality institutions, and have parents who planned and saved for college expenses (Flint, 1992, 1993; Hamrick and Hossler, 1996; Horn and Chen, 1998; Hossler, Schmit, and Vesper, 1999; Hossler, Schmit, and Bouse, 1991; Hossler and Vesper, 1993; Leslie, Johnson, and Carlson, 1977; McDonough, 1997; McDonough, Antonio, Walpole, and Perez, 1998; Miller, 1997; Olivas, 1985; Tierney, 1980).

The importance of information extends well beyond college choice. Satisfaction with college and achieving educational and career goals appear to be conditioned largely by the quality of information secured in high school (e.g., Hossler, Schmit, and Vesper, 1999; Hossler and Vesper, 1991). Using a longitudinal sample of Indiana eighth graders, Hamrick and Hossler (1996), for instance, found high satisfaction levels with collegiate experiences and certainty of college major among those college students who relied on a wide variety of sources of information while making decisions about college during their high school years.

Saliency of potential institutions. Setting boundaries on the college choice set appears to be closely associated with parental socioeconomic status (Hearn, 1984; McDonough, 1997). In a sample of Illinois parents of eighth graders, Flint (1992) found parents' income and education predisposed parents' preferences in regards to proximity, institutional selectivity, and tuition costs. Awareness of financial aid options, however, did alter this choice set. Flint (1993) found that knowledge of financial aid availability allowed parents to consider a wider range of institutions than they might have otherwise. Parental willingness to pay for college also altered the college choice set. Hossler, Hu, and Schmit (1998) reported that students' sensitivity to tuition costs and financial aid decreased to the extent that they perceived their parents were willing to finance their college education.

Financial aid and the role of parents: Knowledge and intergenerational effects. Knowledge of financial aid availability also influences the strategies parents follow when devising financial plans for their children (Flint, 1993). Based on the Parent Survey of the 1980 Senior Class of High School and Beyond, Olson and Rosenfeld (1984) found college-educated parents more knowledgeable than low-income parents not only about the different types of financial aid programs available, but about qualification criteria as well. Net of a parents' gender and college expectations for the child, parents' education and having other children in college exerted the strongest effects on parental knowledge of financial aid programs. The strategies parents followed in securing information also affected the amount of knowledge

the parents had regarding avenues to finance their children's college education. Olson and Rosenfeld reported that parents' knowledge of financial aid options increased the most when they employed a variety of information-seeking strategies, including consulting with high school guidance counselors and bank loan officers, as well as reading a variety of college financing pamphlets and books. How active parents are in planning for their children's college education also seems to be dependent upon their own collegiate financial experiences. Drawing from the 1990 National Postsecondary Student Aid Study, Flint (1997) documented an intergenerational effect whereby parents' plans to finance their children's college education were shaped by the strategies parents themselves followed when financing their own undergraduate education. Having been recipients of parental financial support or financial aid themselves motivated parents to contemplate a wide range of possibilities to finance their children's college education.

Students' access to information. For three decades, socioeconomic factors also have mediated students' access to information about college. Using data from the National Longitudinal Study of the High School Class of 1972 (NLS:72), Tierney (1980) reported low-SES students had fewer information sources than upper-level-SES students did. Leslie, Johnson, and Carlson (1977) reported similar findings. These researchers found low-SES students relying on high school counselors as the single most consulted source of information about college. In contrast, upper-income students reported a variety of sources including parents, students, catalogs, college representatives, and private guidance counselors. While low-income students may be limited in their access to a variety of sources of information, availability of high school-based academic information resources seems to level the playing field. King (1996) noted that low-income students who constantly consulted with a high school counselor regarding postsecondary plans were more disposed to plan on attending college. The same effect on postsecondary plans was noted among those low-income students who received information about admissions and financial aid from representatives of colleges' admission and financial aid offices.

The use of high school-based academic information resources appears to be mediated by the academic preparation of the low-income student, though. Using data from the High School Class of 1992 (NELS:88), Berkner and Chavez (1997) found college-qualified low-income students more likely to discuss financial aid with high school counselors and teachers (72 percent) and college representatives (49 percent) than were their middle-income (63 and 45 percent) and high-income (47 and 34 percent) peers.

Students' perceptions of ability to pay. Students' perceptions of their and their family's ability to pay also appear to weigh heavily in college selection among low-income students. Leslie, Johnson, and Carlson (1977) found low-income students weighting financial assistance more heavily than did upper-income students when narrowing the list of potential institutions of higher education. This finding seems to be indirectly supported by Tierney (1980), who noted that low-income seniors' probability of attending college was heavily influenced by perceived availability of financial assistance.

Choice

Of the three stages in the college choice process, the choice stage has drawn the most attention in the research literature. College choice has been scrutinized under two lenses, one economic, the other sociological (St. John, Paulsen, and Starkey, 1996). The economic perspective regards enrollment as the result of a rational process in which an individual estimates the economic and social benefits of attending college, comparing them to those of competing alternatives (Manski and Wise, 1983). The sociological approach examines the extent to which high school graduates' socioeconomic characteristics and academic preparation predispose them to enroll at a particular type of college and to aspire to a particular level of postsecondary educational attainment. As noted by St. John, Paulsen, and Starkey (1996), both approaches converge in portraying low-income students as sensitive to financial considerations and academic preparation for college.

The choice stage involves applying for and enrolling in college. At this stage, students develop strong preferences among institutions, evaluate their own qualifications for admission, ponder alternative mechanisms for financing college, and apply to colleges (Berkner and Chavez, 1997; Choy and Ottinger, 1998; Hossler, Braxton, and Coopersmith, 1989). Development of expectations and perceptions about the quality of the institution, campus life, availability of majors, and one's

ability to finance enrollment are the primary considerations that shape actual matriculation (Choy and Ottinger, 1998; Hossler, Schmit, and Vesper, 1999). In this stage, the high school senior develops mental pictures of the institutions under consideration (St. John, Paulsen, and Starkey, 1996). These images lead the high school senior to form predispositions and commitments toward certain institutions. How successfully the high school graduate makes the transition to college seems to rest, in part, on the extent to which these initial institutional commitments are based on accurate information about the institution (Hamrick and Hossler, 1996; Hossler, Schmit, and Vesper, 1999; Litten, 1982; Tinto, 1993). Within this context, perceptions of the availability of financial aid not only positively influence thoughts of matriculation, they also predispose students to select a particular institution (Choy and Ottinger, 1998; Hossler, Schmit, and Vesper, 1999; Jackson, 1978; King, 1996; Olson and Rosenfeld, 1984; St. John, 1994a, 1994b; St. John et al., 1996).

In fact, lowest-SES students are much more likely to report being very concerned about college costs and availability of financial aid in choosing an institution to attend (Berkner and Chavez, 1997) and to single out financial aid as a key factor in making a final decision (see Table 2). Data from the 1989–1990 Beginning Postsecondary Students Survey (BPS:90) entering postsecondary cohort reveal that at two-year institutions, lowest-SES-quartile students are more than twice as likely to consider financial aid an important choice factor than highest-quartile students (51 versus 23 percent, respectively). Among lowest-SES students at four-year colleges and universities, those at public institutions were nearly three times more likely (75 versus 28 percent) to cite financial aid as a key factor in college choice than their highest-SES peers. Lowest-SES students at private institutions were twice as likely as their highest-SES peers to stress financial aid (84 versus 44 percent).

Tuition and enrollment. The economic approach to the study of the college choice process has dominated the evaluation of the effects of public policy seeking to expand and equalize student access to college (St. John,

TABLE 2

Percentage of Students Reporting Financial Aid as Important in Their College Choice, by Institutional Type (BPS)

SES	Two-Year	Four-Year Public	Four-Year Private
Lowest SES	50.5	75.2	83.8
Lower middle	39.8	68.8	90.7
Upper middle	31.0	46.3	76.0
Highest SES	23.1	27.5	44.3
Total	30.7	38.8	55.8

1994b). Underlying the significant investment in financial aid lies the assumption that ability to pay plays an important role in students' decisions about college (Jackson, 1978, 1988; Manski and Wise, 1983; St. John, 1994a, 1994b).

Research consistently shows a significant and negative relationship between tuition increases and enrollment, an empirical relationship that conforms to public perceptions. Leslie and Brinkman (1987) reviewed 25 studies examining the connection between tuition and college enrollment by type (two-year and four-year) and control (public and private). They found all students to be sensitive to tuition costs.³ Leslie and Brinkman estimated that every \$100 increase (in 1982-83 dollars) would reduce enrollments between 1.8 and 2.4 percentage points. In his review of 10 tuition-enrollment studies published between 1975 and 1996, Heller (1997) found a pattern consistent with that identified by Leslie and Brinkman. Taking into account the differences in methodologies used, data sets employed, period of time under consideration, and type of students and institutions examined, Heller (1997) concluded that every tuition increase of \$100 leads to a decline in enrollment from 0.5 to 1.0 percentage points.

Tuition, student aid, and low-income students. Low-income students' decisions to attend college appear to be highly sensitive to tuition and financial aid levels (Heller, 1997; Hossler, Hu, and Schmit, 1998; St. John, 1994b). Several recent studies suggest that the increasing cost of attendance has compelled low-income students to restrict their enrollment to less expensive institutions (McPherson and Schapiro, 1998; St. John, 1994b). In summarizing their extensive research on the effect of net

cost increases (college expenses minus resources) on enrollment, McPherson and Schapiro estimated that a \$150 net cost increase (in 1993-94 dollars) would result in a 1.6 percentage point decline in enrollment among low-income students.

While low-income students can be adversely affected by tuition increases, financial aid can positively predispose them to attend college (Berkner and Chavez, 1997). Using data from the National Longitudinal Study of the High School Class of 1972, Jackson (1978) found low-SES students more likely to apply to college when offered financial assistance. Manski and Wise (1983) calculated that 17 percent fewer low-income students would have attended college in the 1979-80 academic year had it not been for the Basic Educational Opportunity Grants (BEOG) program.

Noting that economic research had not taken into account the role of different types of financial aid when estimating the effect of tuition, St. John (1990a) examined the joint effect of price and subsidies on enrollment decisions among college applicants from the 1982 High School and Beyond Study (sophomore cohort). Table 3 summarizes St. John's estimates for the whole cohort and by income levels, based on \$1,000 increases in either tuition or financial aid.⁴ He found all college applicants to be sensitive to both tuition and financial aid (see Table 3, column 2). Controlling for student socioeconomic background and high school grades, tested ability, and curricular track, a \$1,000 (in 1982-83 dollars) increase in tuition would depress total enrollment by about 3 percentage points (see column 2 in Table 3). St. John also found federal financial aid policy to be effective in increasing

TABLE 3

Predicted Percentage Point Changes in Probabilities of Enrollment per \$1,000 Increase in Tuition or Financial Aid, by College Applicants in the High School Class of 1980

Tuition and Financial Aid	All Students	Family Income			
		Low (<\$15,000)	Low Middle (\$15,000-\$24,999)	Middle (\$25,000-\$39,999)	Upper (\$40,000 or >)
Tuition	-2.8**	-3.4**	-3.9**	-3.3**	-1.4**
Grants	4.3**	8.8**	3.5*	3.1*	4.1
Loans	3.8**	1.1	5.3**	6.3**	3.6
Work study	4.6**	5.1	3.1	NA	NA

*p < .05; **p < .01; NA = not applicable.

Source: Adapted from St. John (1990a).

³ To facilitate comparisons across studies, Leslie and Brinkman standardized tuition elasticities. The standardized measure, termed student price response coefficient (SPRC), represents the change in probability of enrollment due to a \$100 change in tuition prices. SPRCs can be converted to tuition elasticities by multiplying them by a factor of 3, assuming that one-third of the college-age population attends college (see Leslie and Brinkman, 1987; St. John, 1994).

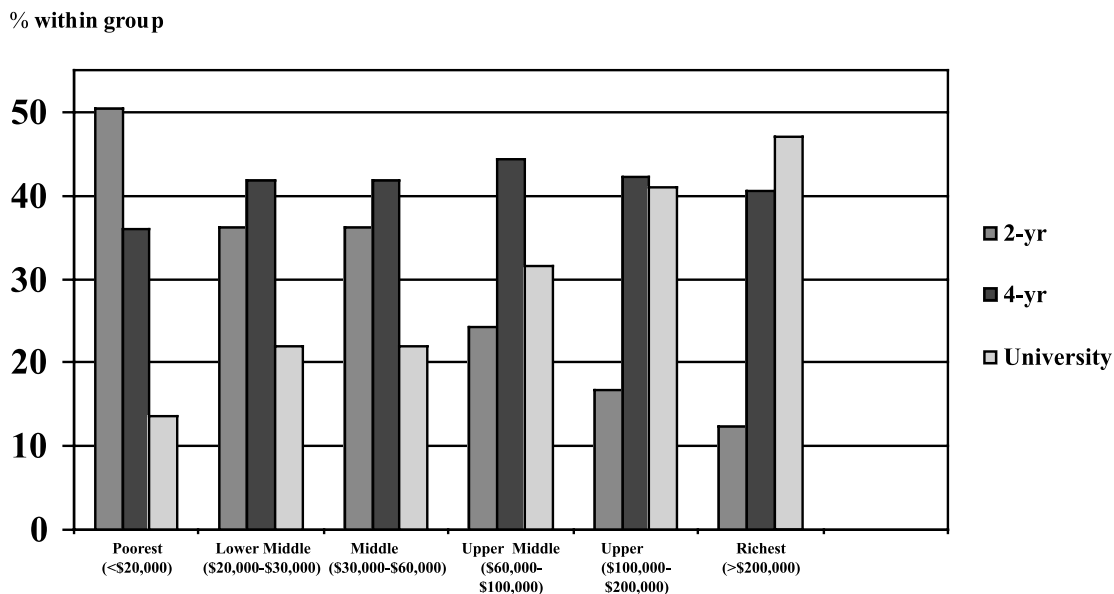
⁴ St. John's probabilities of enrollment are based on \$100 increases in either financial aid or tuition. Heller (1997) showed these elasticities could be better framed in \$1,000 increments.

enrollment: College applicants were more sensitive to financial aid than they were to changes in tuition when making decisions to attend college. For instance, a \$1,000 increase in grants, loans, and work-study programs would yield increases in enrollment ranging from 4 to 5 percentage points (see column 2 in Table 3). Noticeable differences in the effect of tuition and aid were observed when college applicants were examined by income quartiles. As a whole, low-income students were found to be highly responsive to grants and unresponsive to loans and work-study programs (see column 3 in Table 3). While slightly more sensitive to tuition increases than the average applicant, a low-income student was almost three times more likely to respond positively to increases in grants than to increases in tuition. A \$1,000 increase in grants was found to boost enrollment rates among low-income college students about 9 percentage points; an equivalent increase in tuition would depress enrollment among low-income students about 3.4 percentage points.⁵ The literature, with some exceptions (e.g., Hansen, 1983), provides empirical support for the current policy of targeting grants to low-income students.

College Destinations

Examination of the college destinations of students from different economic backgrounds has led to conflicting findings regarding the extent to which the present financial aid system provides equal educational opportunities in college choice. While McPherson and Schapiro (1998) find evidence of an inequitable college choice system in which a student's family income conditions college destinations, Alexander, Pallas, and Holupa (1987) and Hearn (1988, 1991) provide evidence of a meritocratic system in which socioeconomic factors play a secondary role to such factors as academic ability, preparation for college, and educational expectations. At the core of these discrepancies lie the level of analysis and the type of controls these studies employ.

At the aggregate level, evidence seems to support the notion of inequity of educational opportunities. McPherson and Schapiro (1998) used the American Freshman Surveys of first-year, full-time college students between 1980 and 1994 to analyze enrollment changes of students of different income levels. As shown in Figure 2, they identified a pattern of "increasing stratification of



Source: Based on data provided in McPherson and Schapiro (1998).

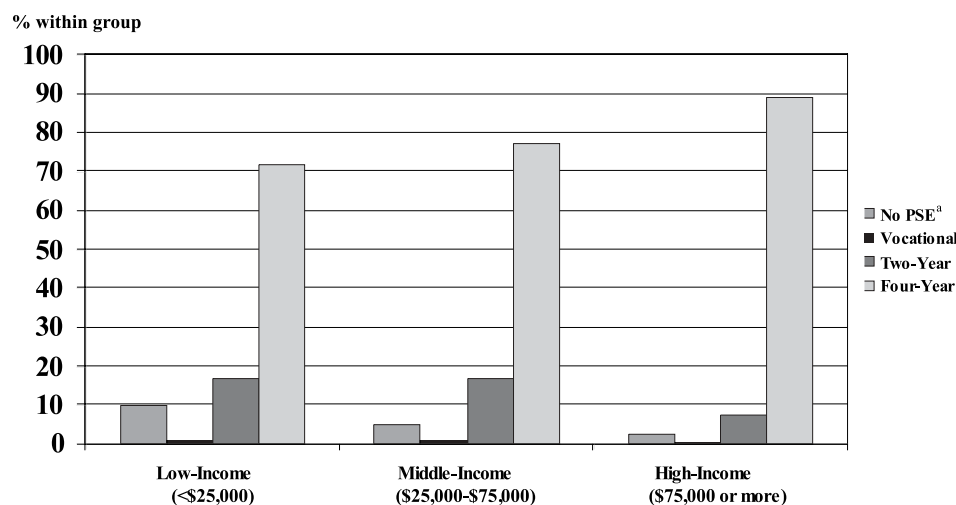
Figure 2. 1994 proportional enrollment distribution by institutional type within income groups.

⁵ St. John advances several explanations to account for the fact that his elasticities are lower than previous estimates. Unlike previous studies, St. John included financial aid in the computation of tuition elasticities; this method reduces cost of attending dampening then the effect of tuition. Moreover, he included far more controls in the form of high school preparation and motivation to pursue post-secondary education than did previous research. In contrast to McPherson and Schapiro (1989), who relied on time-series analyses, St. John examined the effects of tuition and financial aid following a cross-sectional design. Finally, he suggested tuition elasticities might have changed over time reflecting changes in policies, costs, and targeting of student aid.

public higher education by income” (p. 48). Most 1994 lower-income first-year students (81 percent) enrolled at public institutions and clustered in community colleges at rates disproportionately higher (50 percent) than those exhibited from the upper-income (17 percent) and highest-income (12 percent) levels. While 41 percent of the upper-income and 47 percent of the richest students enrolled at a university, only 13.5 percent of the poorest students did so. Contrasting 1994 to 1980, McPherson and Schapiro found that the proportion of lower-income students in public two-year institutions increased slightly (46 versus 47 percent), while the participation of upper- and richest-level students in the public two-year sector declined at a steadier rate: 17 versus 14 percent, and 15 versus 9 percent, respectively. The pattern of college attendance among middle-income students was mixed. Altogether, this group showed a slight increase from 16 to 17 percent in their enrollment at private four-year institutions, and a moderate increase from 20 to 25 percent in their participation rates at public four-year institutions. McPherson and Schapiro found that most of the changes in enrollment rates among middle-income students resulted from a redistribution of enrollments from the two-year to the four-year sector. They attribute this pattern of college attendance to increasing college tuition costs in the private sector, which compelled low-income students to opt for less expensive institutions, and to substantial tuition discounts at private institutions aimed at middle-income students.

Similar to McPherson and Schapiro’s study, Berkner and Chavez (1997) reported a direct and positive association between postsecondary destinations and family income and parental education. However, the pattern of social stratification Beckner and Chavez depicted is not as accentuated. In examining the role of parental socioeconomic status in postsecondary destinations among a representative sample of the 1992 high school graduation class, Berkner and Chavez developed a rather creative test: the extent to which a high school senior’s plans of enrolling at a four-year institution were fulfilled within two years of high school graduation. In terms of family income, 72 percent of low-income seniors materialized their plan. Seventy-seven and 89 percent of middle-income and high-income seniors achieved this goal. About 17 percent of low-income students ended up in a two-year institution, while only 7.5 percent of upper-income seniors did so (see Figure 3). In terms of parental education (see Figure 4), seniors with non-college-educated parents were less likely to fulfill their plans of attending college immediately after high school (65 percent) compared to those whose parents had some college (73 percent) or held a college degree (87 percent).

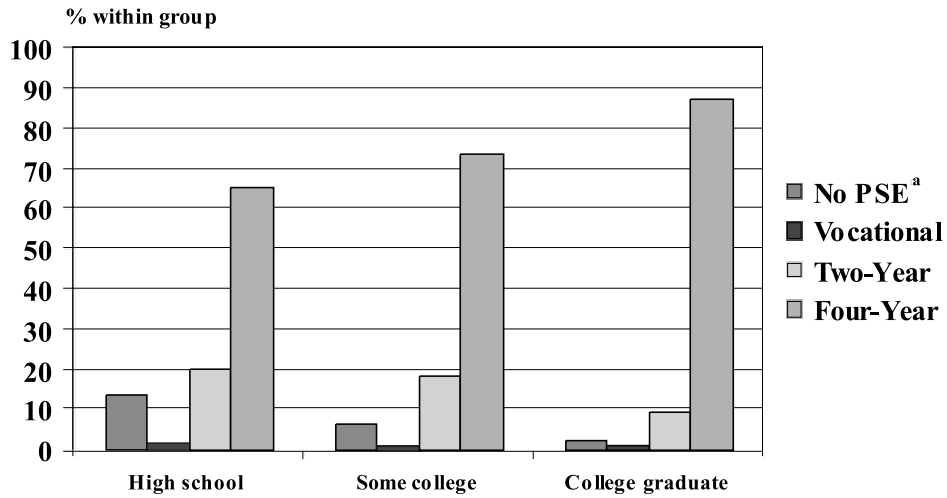
The dominant role of socioeconomic backgrounds in college destinations appears to diminish when longitudinal databases, along with powerful statistical models that control for socioeconomic background, preparation for college, and college application behaviors, are brought to bear (e.g., Baker and Vélez, 1996). In a series



^aPostsecondary Education

Source: Based on Table 10 in Berkner and Chavez (1997, p. 19).

Figure 3. 1994 percent enrollment distribution of 1992 high school graduates, by 1998 parental income, who planned to attend a four-year institution immediately after high school.



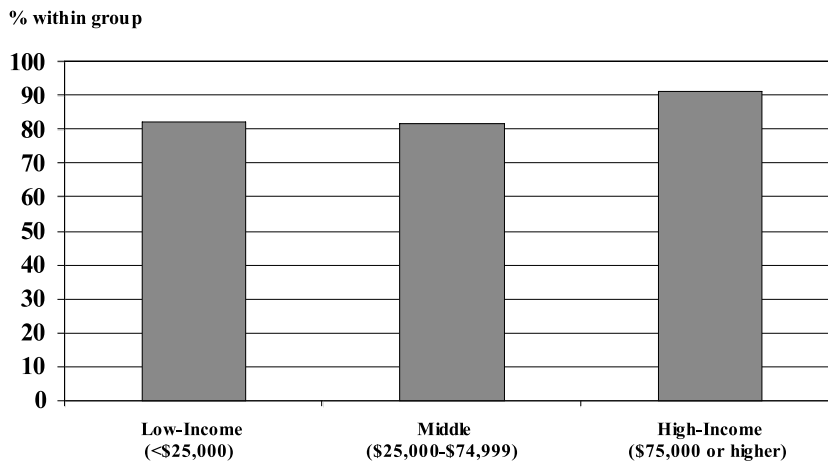
^aPostsecondary Education

Source: Based on Table 10 in Berkner and Chavez (1997, p. 19).

Figure 4. 1994 percent enrollment distribution of 1992 high school graduates, by parental education, who planned to attend a four-year institution immediately after high school.

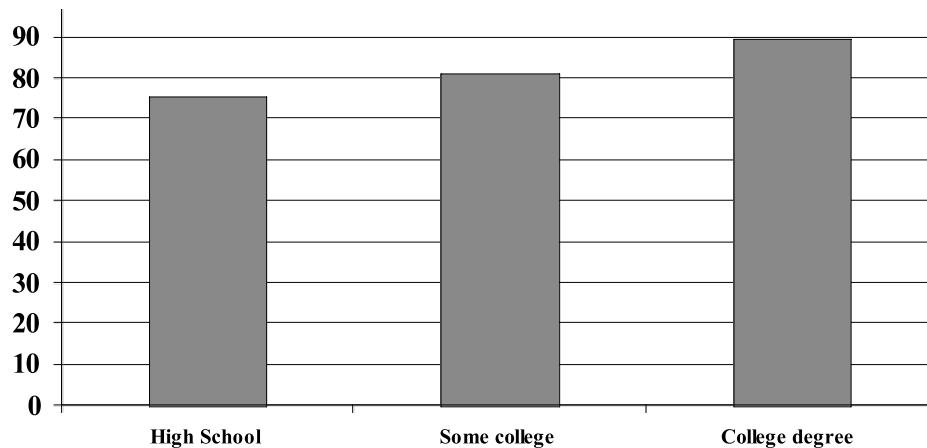
of logistic regression models aimed at examining enrollment decisions at either two- or four-year institutions, Alexander, Pallas, and Holupa (1987) found that academic preparation for college was more important than SES in college destinations among 1972 high school graduates (NLS-72). Along with preparation for college, taking steps to meet college admission require-

ments has been recently found to play a key role in eliminating differences in college participation rates between low-SES high school graduates and their middle- and upper-SES counterparts. As shown in Figures 5 and 6, Berkner and Chavez (1997) found that college-qualified 1992 high school seniors from poor educational and income backgrounds enrolled at four-year institutions



Source: Based on Table 23 in Berkner and Chavez (1997, p. 43).

Figure 5. 1994 percent enrollment distribution of college-qualified 1992 high school graduates, by parental income, who took steps toward admission (i.e., took entrance examinations or applied) to a four-year institution.



^a Took entrance examinations or applied to a 4-year institution.
Based on Table 23 in Berkner & Chavez (1997, p. 43)

Source: Based on Table 23 in Berkner and Chavez (1997, p. 43).

Figure 6. 1994 percent enrollment distribution of college-qualified 1992 high school graduates, by parental education, who took steps toward admission (i.e., took entrance examinations or applied) to a four-year institution.

at rates comparable to or slightly lower than those of seniors whose families had some college education (76 versus 81 percent), or were middle income (83 versus 82 percent), provided that they (a) took college entrance examinations and (b) submitted applications to four-year institutions.⁶ After examining net costs (total cost of college attendance minus student aid) of college attendance for dependent low-income students, Berkner and Chavez concluded that financial aid was responsible for removing ability to pay as a deterrent for these otherwise college-qualified individuals.

Socioeconomic status does not appear to be a major constraint for attending private or selective institutions as long as the low-SES high school graduate meets college qualifications criteria (Berkner and Chavez, 1997; Hearn, 1988, 1991). Using data from the 1980 High School and Beyond survey, Hearn found the direct effect of family income in attending higher-cost institutions diminished once precollege academic variables were taken into account. He reported enrollment at high-cost institutions to be influenced the most by educational expectations along with high school grades, curricular track, and academic ability. He concluded that the small size of the direct income effect might have been attributable to the growth of financial aid programs in the 1970s, which facilitated enrollment at high-cost institutions among academically able low- and middle-income high school

graduates. In terms of attending selective institutions, Hearn (1991), again, found precollege preparation playing a key role among 1980 high school graduates. While finding academic factors dominating college destinations, Hearn also reported SES exerting an indirect small influence in the selectivity of the institution black students attended. Among this group, “students with less educated or lower-income parents...were especially likely to attend lower-selectivity institutions even if their academic ability and achievements were high” (p. 164).

Regardless of institutional type or SES, however, postsecondary students in the entering 1989–90 class overwhelmingly report attending their first-choice institution. Table 4 shows that over 70 percent of the stu-

TABLE 4

Percentage of Students Reporting Attending First-Choice Institution

SES	Two-Year	Four-Year Public	Four-Year Private
Lowest SES	95.1	71.1	72.3
Lower middle	89.1	73.9	74.0
Upper middle	85.2	76.6	69.6
Highest SES	79.9	71.0	71.4
Total	84.4	72.8	71.2

Source: BPS:90.

⁶ The odds of college enrollment clearly favored seniors from high socioeconomic backgrounds. College participation rates for those college-qualified high school seniors whose parents were college educated or had high incomes were 93.5 and 91.8 percent, respectively.

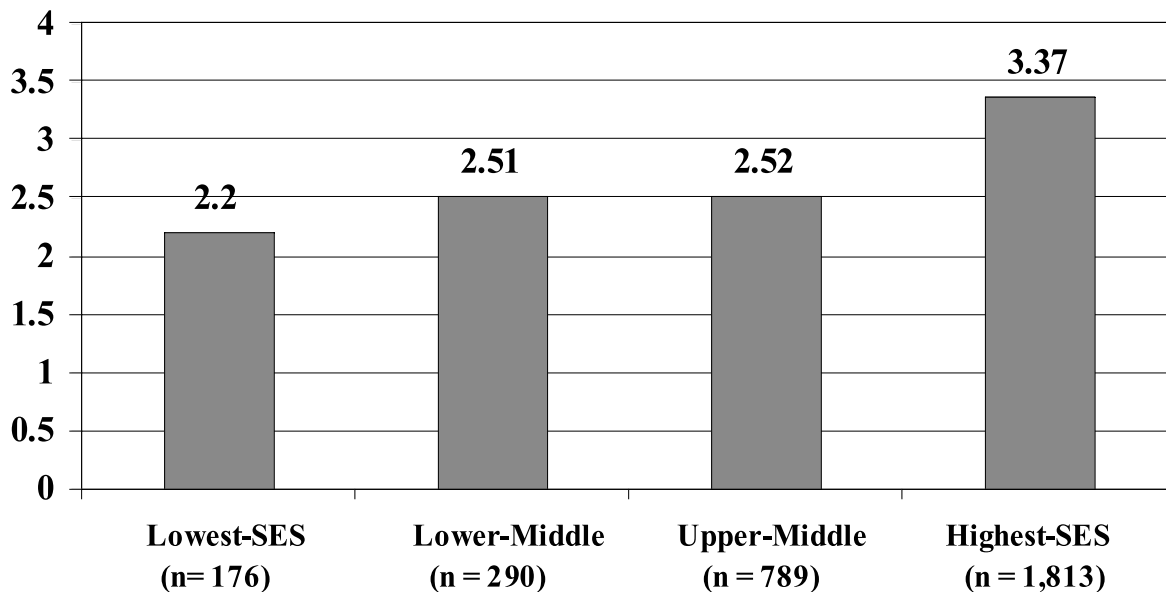
dents reported they were attending their first-choice institution. This trend ranges in strength from being strongest among two-year college students (84 percent) to weakest among those attending private four-year institutions (71 percent). However, comparative analysis of low- and high-SES student reports reveals a pattern that varies by institution type. Lowest-SES two-year college students are more likely to report their institution as first choice than are their highest-SES peers (95 versus 80 percent, respectively). The differences flatten out at four-year institutions, with lowest-SES and highest-SES students in nearly equal percentages (71 percent public, 72 percent private) reporting that they were attending their first-choice institution. Some differences were found at four-year institutions among middle-income students.

Although students report attending their first-choice college, it may be argued that low-SES students express satisfaction because they had a more restricted institutional choice set in the first place. In other words, lowest-SES students may be less likely to apply to as many institutions (or even to more than one) than their wealthier counterparts.⁷ To examine this possibility, we

analyzed the number of institutions applied to by SES quartile. Overall, students in the incoming class of 1989-90 applied to an average of three institutions (see Figure 7). A significant association between SES and number of applications does exist ($F = 43.78, p < .001$), with high-SES students applying on average to approximately one more institution than their lower- and middle-SES-quartile peers. Thus, the differences by SES exist only between the highest-SES students and their low- and middle-SES peers, who share the same patterns of college applications (see also Appendix B, II).

Once students have applied to college, what compels them to attend one institution versus another has not been extensively or clearly elucidated. The existing literature appears to assume that SES will determine the institution attended, meaning that among lowest-SES students, proximity to home and availability of financial aid will prevail over other factors such as institutional prestige and availability of course of study (e.g., Carter, 1999; Fenske and Porter, 1998). An examination of the most important factors driving the selection process as reported by first-year students in the 1989-90 entering class, however, disputes this claim (see Table 5 and Appendix B, II).

No. of institutions



Source: BPS:89/90.

Total $n = 3,068$ (unweighted; includes those who considered themselves primarily students).

Figure 7. Mean number of institutions applied to by SES quartile.

⁷ Don Hossler (personal communication, October 19, 1999) argues that community college students are more prone to indicate attending their preferred institutional choice simply because “they are more likely to apply to fewer or just one institution.” He also suggests that community colleges are ideal to serve the needs of commuters because of their proximity to home.

TABLE 5

Top Three “Very Important” Factors in College Choice Reported by First-Year Students in the 1989–90 Entering Class Across Institutional Type, by SES

SES	Two Year	Four-Year Public	Four-Year Private
Lowest SES	Offered course of study wanted (89.5%)	Offered course of study wanted (68.0%)	Obtained financial aid needed (78.1%)
	School close to home (66.5%)	Obtained financial aid needed (64.6%)	Offered course of study wanted/Good reputation placing grads (66.5%)
	Obtained financial aid needed (57.0%)	School has good reputation (57.7%)	School has good reputation (64.3%)
Lower middle	Offered course of study wanted (67.8%)	Offered course of study wanted (74.2%)	Offered course of study wanted (75.3%)
	Could live at home (65.7%)	Obtained financial aid needed (54.0%)	School has good reputation (75.0%)
	Can go to school and work (58.8%)	School has good reputation (53.1%)	Obtained financial aid needed (69.7%)
Upper middle	Can go to school and work (65.1%)	Offered course of study wanted (77.7%)	Offered course of study wanted (76.7%)
	Could live at home (64.4%)	School has good reputation (49.7%)	School has good reputation (72.1%)
	Tuition/other expenses less (53.4%)	Tuition/other expenses less (45.4%)	Good reputation placing grads (63.3%)
Highest SES	Could live at home (60.4%)	Offered course of study wanted (70.0%)	School has good reputation (74.3%)
	Tuition/other expenses less (49.6%)	School has good reputation (55.9%)	Offered course of study wanted (71.2%)
	Can go to school and work (47.8%)	Good reputation placing grads (42.7%)	Good reputation placing grads (65.4%)

Among those who selected two-year institutions, the expected pattern was reversed. Upper-middle and highest-SES students were least likely to cite academic considerations as preeminent in their college destination. The choice of their collegiate destination was dominated by such considerations as proximity to home and commuting options. In contrast, lowest- and lower-middle-SES students reported availability of the desired major field as the most important reason in their selection.

Among four-year public institution attendees, all students, regardless of SES, cited academic reasons within their top three most important factors. While financial considerations were important for all but the highest-SES students, reputation and course of study availability were among the top three considerations for all students.

In the private four-year sector, highest- and upper-middle-SES students do not report financial considera-

tions among their top three factors. However, financial issues remain important for lowest-SES students, who report that the private institution provided the financial aid they needed. Evidently, the private institutions do level the playing field for lowest-SES students by proactively meeting their college-related financial needs. Finances, perceived to be an insurmountable barrier for lowest-SES students aspiring to private college attendance, are actually the point of access when private institution financial aid packages can overcome students' inability to pay. This finding is consistent with St. John's (1994b) review of the research on financial aid packaging among private institutions. Once financial needs are addressed, it is evident that lowest-SES students choose private institutions because of institutional prestige, available course work, and graduate placement reputation.

III. Students' Characteristics and Collegiate Experiences

Low-SES students are a decided minority in American postsecondary education. Approximately 15 percent of the students who entered postsecondary education institutions in the 1989-90 academic year were in the lowest SES quartile, whereas 40 percent came from the top quartile. The imbalance is even greater at four-year institutions, where entering students in the lowest SES quartile were outnumbered more than 10 to 1 by their highest-SES-quartile counterparts (5.6 versus 57.5 percent, respectively). Lowest-SES-quartile students, however, were also in the minority among students entering a two-year college (19 versus 29 percent for the highest-quartile and 52 percent for the middle quartiles). They were, however, more than twice as likely as highest-SES students to enroll in an institution where the normal course of study is less than two years long (35 versus 14 percent) (Berkner, Cuccaro-Alamin, and McCormick, 1996, p. 15, Table 16).

The institutions in which these students enroll are the gateways to their futures. More precisely, colleges and universities provide an array of opportunities, depending on the characteristics of the students who enter, the

kinds of institutions they attend, how long they remain enrolled, how engaged they become in their education, the nonacademic demands made on them, and the nature of the experiences they have while enrolled. These gateways lead to an equally varied array of outcomes that help shape students' future circumstances in a range of areas, including the personal, financial, educational, intellectual, social, cultural, and civic areas.

Figure 8 extends the portrayal of the college choice process described in the preceding section (see Figure 1). In Figure 8 the reader passes conceptually through the gateway of institutional choice and into the world of postsecondary experiences, activities, and conditions that students encounter beyond the threshold. These are the multiple and intertwined forces that lead students to varying levels of cognitive and/or academic development and educational and occupational accomplishment. The model draws on the research and conceptualizations of the influences on college student persistence, performance, and outcomes (Bean and Metzner, 1987; Cabrera et al., 1990, 1992; Pascarella, 1985; Pascarella and Terenzini, 1991; Tinto, 1993, 1997). Our purpose in presenting this model is not to define precisely the forces and dynamics that shape students' lives and postsecondary outcomes (although we hope the model may be a step in that direction). Indeed, the model's main constructs and the variables within each are far from an exhaustive list of the forces at work. Rather, we seek to suggest to readers the daunting complexity of those

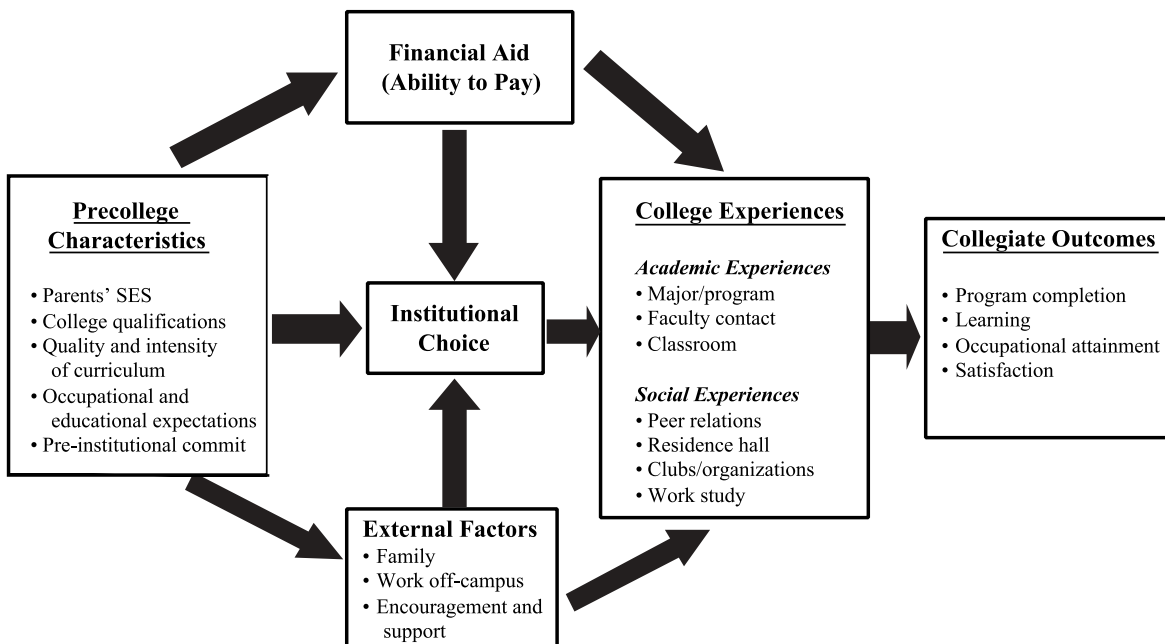


Figure 8. College processes and outcomes.

processes. As we hope will be clear from this report, faculty members, administrators, and policymakers seeking to extend significantly the benefits of postsecondary education to low-SES students—like the students themselves—swim against complex and powerful currents.

In this section, we examine what college is like for low-socioeconomic-status students. The examination comes in two parts. The first paints a portrait of low-SES students themselves—their family, educational, and demographic backgrounds and characteristics; their educational and occupational plans; and their preparedness for the collegiate tasks ahead. The second part characterizes the college experience for low-SES students, including such considerations as where they live while enrolled, the level of their involvement in a variety of academic and social areas and activities, their attitudes and values, and their levels of satisfaction with their college experience.

Low-SES Students in Profile

Background characteristics. Table 6 provides a demographic portrait of low-socioeconomic-status students who were eighth graders in 1988-89 and who entered postsecondary education at some point before 1994. The data come from the National Center for Education Statistics' National Education Longitudinal Study of 1988 (NELS:88; see Appendix B for details; BPS:90 was not used because it contains few items describing students' precollege backgrounds and characteristics). Percentages in the table reflect the distribution of each trait within each SES category (i.e., the percentages sum vertically, not horizontally). The effect sizes reported in the column to the right reflect the magnitude or strength of the relation between the characteristic and socioeconomic status. These effect sizes (which may be a Pearson's r , phi, or Cramer's V , depending on the variable) can range from 0 to 1.0 and are interpretable as product-moment correlation coefficients. Thus, values below .40 can be considered as "negligible" to "low," .4 to .6 as "moderate," .6 to .8 as "substantial," and .8 and above as "high to very high" (Best and Kahn, 1986, p. 240).

More women than men (56 versus 44 percent, respectively) are currently enrolled in America's colleges and universities (*Chronicle of Higher Education*, 1999), and that same distribution is apparent in the students who entered higher education in 1992. Few differences in the gender mix by SES are apparent, although men outnumber women only in the highest-quartile, albeit marginally (52 versus 48 percent, respectively).

White students numerically dominate each SES quartile, but they are far and away the largest proportion (86 percent) of students in the highest SES quartile. No

other group accounts for more than 6 percent of the racial and/or ethnic composition in that top quartile. Among low-SES students, whites again comprise the largest proportion, but in the bottom quartile they constitute a plurality (44 percent), not a majority of the total. Hispanic and black students each make up about a quarter of the membership of that group. The lowest SES quartile is by far the most racially and/or ethnically diverse. It is worth noting, however, that the strength of the relation between SES and race/ethnicity (.20), as noted in Section I, is relatively small despite being statistically significant (due, at least in part, to the large sample size of the NELS:88 data set).

As noted earlier, parents play a significant role in shaping students' early predispositions about attending college. Parental education is, of course, one of the components of socioeconomic status, and the disparities in parents' educational attainment across SES groups is nonetheless relevant and striking. As can be seen in Table 6 (column 4), 99.6 percent of the highest-SES-quartile students report that their parents have had at least some college. More than a third (37 percent) of those highest-SES-quartile students report that at least one of their parents has graduated from a four-year college, and another half (49 percent) have a parent with an advanced degree. In striking contrast, about three quarters (76 percent) of lowest-SES-quartile students report that their parents have a high school diploma or less. More than a third of those students came from families with parents who have reportedly not even completed high school. (Clifford Adelman [personal communication, September 1999] points out that student reports of parents' educational attainment often differ from what their parents report. Even if that is the case with the NELS:88 respondents, however, it seems unlikely that reporting errors would be so great as to close the gap significantly between the parental education levels reported by the students.)

Family composition constitutes another obstacle for many low-SES students. Being from a single-parent home is one of seven at-risk factors the National Center for Education Statistics (NCES; see also Astin, 1993) has identified as being negatively related to persistence and degree completion (these risk factors are discussed in greater detail below). The presence of both parents in the home is positively related to socioeconomic status: At each successively higher quartile, the likelihood increases that the student has both parents at home. In each SES quartile the majority of entering students come from two-parent homes, but in the case of low-SES students, the "majority" is a narrow one (55 percent). In the highest-quartile, the majority is a landslide (84 percent). Besides the predominance of two-parent families

TABLE 6

Student Characteristics, by Socioeconomic Status

Variable	Socioeconomic Status Quartile				Effect Size
	Low SES (1)	(2)	(3)	High SES (4)	
Gender					.06*
Male	45.1%	44.0	48.2	51.7	
Female	54.9	56.0	51.8	48.3	
Race					.20*
Asian, Pacific Islander	5.1%	3.1	4.1	5.4	
Hispanic	26.6	10.0	5.7	3.7	
Black, not Hispanic	23.2	12.1	10.3	4.8	
White, not Hispanic	44.2	73.8	78.8	85.9	
Native American, Alaskan	.9	1.0	1.1	.2	
Parent's highest education level (student reported)					.76*
Didn't finish high school	35.3%	2.3	.1	.0	
HS grad or GED	40.5	35.2	7.7	.4	
HS, some college	23.9	59.0	71.0	14.4	
College graduate	.2	3.0	18.6	36.6	
MA or equal	.1	.4	2.5	32.6	
Ph.D., M.D., or other	.0	.0	.1	16.0	
Family Composition in 89-90					.23*
Mother and father	54.7%	69.1	71.2	84.1	
Mother and other male	7.7	9.4	11.9	6.1	
Father and other female	1.7	1.9	1.7	1.4	
Mother only	26.6	15.9	12.2	6.4	
Father only	4.7	1.5	1.5	1.5	
Relative or nonrelative	4.5	2.2	1.5	.6	
Religion					.02*
Protestant	44.7%	46.2	46.3	42.6	
Catholic	29.4	28.1	28.8	31.2	
Other Christian	9.6	12.7	11.9	9.8	
Jewish	.1	.2	.7	1.2	
Moslem/Eastern	1.5	1.1	.7	1.2	
Other	6.1	5.1	4.1	2.1	
None	8.6	6.6	6.7	6.2	
Region of the country					.06*
Northeast	15.3%	18.9	19.6	24.7	
Midwest	22.5	33.2	26.4	25.8	
South	37.7	30.4	31.8	30.3	
West	24.5	17.5	22.2	19.2	
Offspring					.05*
Have children of own	4.3%	1.3	1.2	.3	
No children of own	94.0	98.2	98.2	99.5	
No, but expecting children	1.7	.5	.6	.2	
Totals	100.0%	100.0%	100.0%	100.0%	100.0%

* $p < .001$. $n = 1.8$ million, weighted.

Source: NELS:88.

for students in the highest SES quartile, perhaps the most striking finding is the fact that low-SES students

(compared with their top quartile counterparts) are more than four times as likely to come from a home

with a single mother (27 versus 6 percent, respectively). This circumstance constitutes yet another disadvantage for low-SES students inasmuch as single parents are less likely to promote higher education expectations for their children than are families with both parents in the home (Stage and Hossler, 1989).

Few SES-related differences are apparent with respect to religious preferences, geographic origins, or having children. In terms of students' religious preferences, however, the relatively similar proportions of Protestants across SES quartiles in Table 6 mask some differences. Not shown in the table is the fact that low-SES students are more than twice as likely as high-SES students to be Baptists (28 versus 11 percent). Given the strong representation of Baptists in the southern states, it is not surprising that the distribution of religious preferences roughly parallels the geographic distribution by socioeconomic status. While few of the entering students had children, low-SES students are somewhat more likely to have offspring than are their peers in the other three quartiles.

Students bring to college a wide range of personal, educational, and occupational goals, hopes, and expectations for themselves. While the variety of goals is extensive, and while the degree of importance attached varies from goal to goal, the level of importance for any specific goal is relatively invariant across socioeconomic status. For example, data from students who began their postsecondary education careers during the 1989-90 academic year (BPS:90) indicate only slight variations across SES categories in such areas as becoming an authority in a given field (range: 58 to 68 percent), being able to find steady work (82 to 89 percent), being a leader in the community (21 to 32 percent), influencing the political structure (17 to 19 percent), being successful in a given line of work (91 to 98 percent), or being very well off financially (47 to 53 percent).

Where differences in goals and hopes exist, they tend to be slight, but a couple are also revealing. For example, SES is inversely related to the importance students attached to going to college to get away from the area of the country in which they lived in 1989-90 (19 percent among low-SES students versus 8 percent among high-SES students). More interesting is the inverse relation between SES and the importance students attached to giving their children a better opportunity than they had (92 versus 74 percent among the lowest- and highest-SES-quartile students, respectively). Low-SES students also attached greater importance to becoming successful in one's own business (51 percent) than did their high-socioeconomic-status peers (38 percent).

Preparation for college. The most educationally relevant differences between lowest-SES-quartile students and their more affluent peers are no more apparent than

in students' preparedness for college study. As can be seen in Table 7, the proportion of students in the lowest achievement quartiles in reading, math, science, and social studies drops consistently (and sharply) as one advances upward across SES quartiles. In each of the four academic ability areas, low-SES-quartile students make up about 25 percent of the lowest ability quartile, whereas only 4 to 8 percent of the high-SES students perform at that same level. In contrast, about half of the high-SES-quartile students also rank in the highest ability quartiles in reading, math, science, and social science, compared to 15 to 18 percent of the low-SES students. In each of these ability areas, it is worth noting that the magnitudes of the differences across SES quartiles (the effect sizes, which are interpretable as correlation coefficients) are among the largest in Tables 6 and 7.

The patterns apparent in the specific content areas are reflected in more general measures of academic ability (these data are from BPS:90). On ACT composite scores, the relation is positive and linear: Students in each successive SES quartile score higher than those in the quartile(s) below them. Lowest-SES-quartile students score lowest and below the high-SES-quartile group by a statistically significant and substantial margin. The magnitude of the difference (effect size) is the equivalent of 22 percentile points (.59 standard deviations). That is, if the mean for the low-SES students were set at the fiftieth percentile, then the high-SES students' mean would be at the seventy-second percentile. The pattern is substantially the same with students' SAT scores. Students in the two lowest SES quartiles are virtually identical and occupy the lower end of the distribution. The magnitudes of the effects sizes (highest versus lowest-quartile) are: SAT-combined, 26 percentile points (.70 SD); SAT-math, 23 percentile points (.61 SD); and SAT-verbal, 23 percentile points (.62 SD). In all cases, the highest-SES-quartile students' SAT scores are significantly higher than those of their counterparts in the lowest two SES quartiles.

These ability distributions are reflected in the "academic resources" students bring with them to college. Because of imprecisions in using the "track" students follow in high school (e.g., college preparatory versus general versus other) as an indicator of their preparation for college-level work, Adelman (1999) has developed a detailed and revealing measure of the "academic resources" (dubbed "ACRES") students bring to college. ACRES reflects students' abilities (test scores), class rank, academic GPA, and a scale reflecting the quality and intensity of their high school curriculum (e.g., the numbers of units earned in core academic subjects, Advanced Placement, and highest level of mathematics

TABLE 7

Students' Preparedness for College, by Socioeconomic Status^a

Variable	Socioeconomic Status Quartiles				Effect Size
	Low-SES (1)	(2)	(3)	High-SES (4)	
Reading					.26*
Quartile 1 (low)	23.6	14.5	14.0	8.0	
Quartile 2	32.8	24.7	22.0	13.7	
Quartile 3	26.1	33.0	30.2	29.0	
Quartile 4 (high)	17.4	27.7	33.8	49.3	
Mathematics					.32*
Quartile 1 (low)	23.6	14.7	10.4	4.4	
Quartile 2	32.8	24.7	21.7	13.7	
Quartile 3	29.0	32.8	32.3	27.9	
Quartile 4 (high)	14.6	27.8	35.6	54.0	
Science					.30*
Quartile 1 (low)	27.7	16.0	12.8	6.9	
Quartile 2	33.8	27.2	23.1	14.4	
Quartile 3	23.5	30.7	30.5	28.3	
Quartile 4 (high)	15.0	26.1	33.6	50.5	
History/citizenship/geography					.28*
Quartile 1 (low)	25.8	14.8	12.2	5.6	
Quartile 2	29.6	26.2	23.1	15.9	
Quartile 3	26.4	30.6	30.5	27.8	
Quartile 4 (high)	18.1	28.4	34.2	50.7	
General academic ability (mean scores)^b					
ACT composite	18.8	19.4	21.1	21.9	See text.
SAT—combined	899	890	967	1010	See text.
SAT—math	475	473	506	546	See text.
SAT—verbal	427	416	461	495	See text.
Academic Resources (ACRES)^c	3.56	3.55	3.69	4.09	.37*
College expectations in 8th grade					.29*
Less than college	18.3	11.3	8.0	2.7	
Attend college	18.9	14.4	12.2	5.2	
Complete college	45.6	53.7	52.1	50.2	
Post college	17.2	20.5	27.7	41.9	
College attendance decision making					NA
Parents decide.	3.5	4.1	4.2	4.3	
Parents decide with me.	6.9	4.7	4.5	5.5	
We decide together.	25.6	32.4	31.4	37.9	
I decide with parents.	16.5	18.7	22.6	20.6	
I decide myself.	47.4	40.1	37.3	31.7	

* $p < .001$.^a All data from NELS:88 unless indicated otherwise. $n = 1.8$ million (weighted).^b Source: BPS:90. n 's = 694 (ACT), 1242–1248 (SAT); all unweighted.^c Source: HS and B:80 (sophomore cohort). See Adelman (1999).

studies). Adelman found the intensity of students' high school curriculum to be the strongest predictor of subsequent postsecondary education attainment.

The mean ACRES scores for 1980 High School and Beyond, sophomore cohort, at the time they graduated

are reported in Table 7. As can be seen there, students in the two lowest SES quartiles do not differ from one another in the level of the academic resources for doing college work. The upper two quartile students, as groups, are significantly higher than the lower two

groups, and the highest-quartile group is significantly higher than the upper middle quartile.

While Adelman found SES and ACRES modestly correlated (about .37), he also reports evidence from this same HS and B:80/sophomore cohort indicating that “Academic Resources can overcome the effects of SES... The long-term degree completion rate for those in the highest quintile of ACRES is 72.5 percent, 17 percent higher than for those in the highest quintile of SES. Yes, the higher one’s initial SES quintile, the stronger one’s platform for launching an effort to earn a bachelor’s degree, but acquiring academic resources pays off at a higher rate of interest, so to speak” (p. 23). Indeed, Adelman found that “students in the lowest two SES quintiles who are in the highest ACRES quintile earn bachelor’s degrees at a higher rate than a majority of the students from the highest SES quintile.” Moreover, students in the bottom two ACRES quintiles “earn degrees at low rate[s] no matter what their SES standing” (p. 24; emphasis in the original). Adelman concludes: “When the outcome is degree completion, who you are is less important than the amount and quality of the time you invest in activities that move you toward that goal” (p. 60).

Consistent with the results of other studies using other nationally representative databases (e.g., Carroll, 1989), low-SES students, as eighth graders, reported lower educational expectations than their more affluent counterparts. Lowest-SES-quartile students are also 1.5 to 6 times more likely as eighth graders to aspire educationally to something less than a college education. Lowest-SES-quartile students are only marginally less likely to expect to complete at least a college degree (46 versus 50 to 54 percent at higher SES levels), but the differences increase sharply when one includes plans for postbaccalaureate study (63 percent among lowest-SES-quartile students versus 92 percent among their highest-SES-quartile peers). While 42 percent of the high-SES students expect to complete some level of postbaccalaureate study, less than half that proportion (17 percent) of the low-SES students have such high expectations.

Some differences across socioeconomic levels are also apparent in how the decision to attend postsecondary education was reached. As indicated in Table 7, highest-SES-quartile students are about one-third more likely than lowest-SES-quartile students to make the college decision jointly with their parents (38 versus 26 percent, respectively), whereas lowest-SES students (compared with those in the highest SES quartile) are more likely to make the decision themselves (47 versus 32 percent).

At-risk factors. In its survey of students entering in the 1989-90 academic year (BPS:90), the National Center for Education Statistics identified and gathered information on seven characteristics their previous stud-

ies had indicated were useful in identifying students at-risk of not completing their degree programs. These risk factors included: (1) delayed enrollment after high school graduation; (2) not having a high school diploma; (3) enrolling on a part-time basis; (4) being financially independent; (5) working full-time while enrolled; (6) having children younger than age 18; and (7) being a single parent. On virtually all of these factors, low-SES students are at a disadvantage vis-à-vis their more affluent counterparts.

For example, as will be seen below in the outcomes section, only 5 percent of the low-SES students who had delayed entry into postsecondary education after graduating from high school eventually earned a bachelor’s degree, contrasted with 20 percent of the high-SES students (Tuma and Geis, 1995). Moreover, low-SES students delayed their entry three times longer than those in the highest SES quartile (22 months, on average, versus 8 months, respectively; 22 months, of course, is the equivalent of two academic years). Hearn (1992) found delayed enrollment to be a significant factor in changing attendance patterns related to socioeconomic status. He also found that students from lower-SES backgrounds were more likely to enroll part-time.

The pattern is the same on the other risk factors. As noted earlier, low-SES (compared to high-SES) students entering postsecondary education in the 1989-90 academic year were more likely to claim financial independence, to have children, to have come from a single-parent family, and (as will be seen in the next section) to work 30 hours or more per week off-campus.

The contrasts across SES quartiles are striking. Among students beginning postsecondary education in 1989-90, only 5 percent of the highest-SES-quartile students brought three or more risk factors with them, whereas 65 percent of the lowest-SES-quartile students did so. Where 6 in 10 of the highest-SES students entered postsecondary education with no risk factors, only 1 in 10 of the lowest-quartile students came so unencumbered (Berkner, Cuccaro-Alamin, and McCormick, 1996, Table 19). Indeed, among BPS:90 students overall, low-SES students brought with them to college, on average, 1.7 risk factors, contrasted with the .2 factors brought by high-SES students. This difference is the equivalent of 27 percentile points.

To summarize: Compared with their most affluent counterparts, low-SES students are more likely to be members of a historically underrepresented racial and/or ethnic minority group (although the low-SES group is still predominantly white); to come from a single-mother home; to have children (although the difference here is slight); to have made the decision to attend college without consultation with parents; to have

lower degree expectations; to attend a two-year (versus a four-year) institution; to be significantly underprepared in reading, mathematics, science, or selected social sciences; to be lower on more general measures of academic ability; and to have more risk factors standing between them and their degrees.

The Nature of the Collegiate Experience

The research literature is virtually silent about how the experiences of college students might vary by socioeconomic status. SES has not been missing from these studies, but in most cases, social class background has been used as a control variable rather than as an independent variable of intrinsic interest. A small (if growing) literature examines the college experiences of first-generation students, and while there is some overlap, even there the emphasis has been on the college choice process, the transition to college, and subsequent persistence (Terenzini, Springer, Yaeger, Pascarella, and Nora, 1996).

Evidence gathered as part of the National Study of Student Learning (NSSL) provides a window through which college life for low-SES students can be viewed. NSSL was a longitudinal study of approximately 4,000 students who entered 23 diverse colleges and universities around the country in the fall of 1992 and who were followed up at the end of each academic year thereafter for three years (see Pascarella, Whitt, Nora, Edison, Hagedorn, and Terenzini, 1996 for a description of the NSSL design and methodology). NSSL participant institutions were selected to reflect the heterogeneity of America's colleges and universities with respect to size, type of control, curricular mission, geographic location, residential/commuter character, and racial/ethnic mix of students. What NSSL gives away to other national longitudinal studies in terms of the number of students and institutions involved, it makes up for in the richness and depth of its measures. In the aggregate, NSSL respon-

dents are approximately representative of the students who entered college in the fall semester of 1992.

One of the instruments on which NSSL relied for information on students' lives during college was the College Student Experience Questionnaire (CSEQ) (Pace, 1984). The CSEQ consists of items and scales designed to tap the "quality of effort" students invest in their own education. The major scales describe how students use their time and energies in such areas as their course work, the library, extracurricular activities, interactions with faculty members, various social and cultural activities, and their use of other opportunities and facilities at their institution. Respondents are asked to indicate the frequency with which they engage in a variety of activities in each scale (using a scale where 1 is "never" to 4, "very often"). The component items (10 in each area) are then used to form scales, the internal consistency reliabilities (Cronbach's alphas) of which range from .85 to .92.

Academic involvement. Table 8 reports the means for each SES quartile on four CSEQ scales summarizing students' reports of their academic experiences during their first year of enrollment ($n = 2,600$; differences between or among groups were evaluated using one-way analyses of variance with Scheffe post hoc tests of pairwise comparisons).

With one exception, we identified no statistically significant, SES-related differences in students' reports about their academic experiences. The exception was in their course learning experiences. This scale reflects the level of students' involvement in their course work, including such activities as note-taking, participating in class discussions, working on a paper that requires the integration of ideas from various sources, summarizing major points and information in readings, explaining the material to another student or friend, and doing additional readings on course topics. The sharpest difference on this scale is between the lowest-quartile students and their peers in the highest quartile. While statistically significant, the difference is small (lowest

TABLE 8

Means of Students' Academic Experiences in Selected Areas, by Socioeconomic Status

Academic Experiences	SES Quartile				p <
	1 (Low) (n = 536-547)	2 (n = 598-609)	3 (n = 592-632)	4 (High) (n = 598-634)	
Course learning activities	2.67	2.72	2.75	2.79	.01
Writing experiences	2.61	2.59	2.57	2.55	n.s.
Experiences with faculty	1.93	1.96	1.96	2.00	n.s.
Library experiences	2.09	2.05	2.01	2.01	n.s.

Source: NSSL:CSEQ.

versus highest effect size is .22 standard deviation, or about 9 percentile points). SES-related differences on this scale may reflect differences in level of motivation, prior preparation, extramural obligations that limit the degree of involvement, or all of the above.

A somewhat different picture of students' level of academic involvement is presented in the BPS:90 data set. Among other things, BPS contains several items that reflect students' levels of academic and social integration. The "Index of Academic Integration" reflects students' involvement in such activities as attending career-related lectures, joining a study group, talking with faculty members about academically related matters, and meeting with advisors for academic planning. The academic integration index for the low-SES-quartile students in 1990 is significantly lower ($p < .05$, using the unweighted sample) than that of highest-SES-quartile students, although the absolute magnitude of the differences in means is modest (2.70 versus 2.82 for lowest- and highest-SES-quartile groups, respectively, the equivalent of an 8 percentile point difference).⁸

The NSSL instrument also asked students to indicate the amount of time they put into studying for their courses and working off-campus. Students in the two lower SES quartiles reported studying somewhat fewer hours per week than students in the upper two quartiles (2.67 and 2.73 versus 2.96 and 3.09, respectively; the item had five intervals where 2 equaled "About 20 hours per week," and 3 equaled "About 30 hours per week"). Given the group means, one might infer that lower-SES students probably invest about 25 hours per week in their studies, contrasted with the approximately 30 hours per week put in by higher SES students.

Grade performance and academic engagement. Table 9 arrays information on students' cumulative grade performance for the period from 1989 to 1994. Lowest-SES-quartile students tend to report getting B's and C's at a rate higher than students in the other three quartiles, but overall, more similarities than difference are apparent. Greater variations may exist, of course, across types of institution attended and the duration of enrollment.

Out-of-class involvement. Table 10 reports the means for each SES quartile on five CSEQ scales summarizing NSSL students' reports of their experiences outside the classroom during their first year of enrollment. (As with Table 8, n equals 2,600, with differences between or among groups evaluated using one-way analyses of variance with Scheffe post hoc tests of pairwise comparisons.) In contrast to their academic experiences (where only one SES-related difference was found), students' out-of-class experiences appear to vary considerably depending on their socioeconomic status. On all five CSEQ scales tapping various dimensions of students' nonacademic lives, statistically significant differences among the groups are apparent. Moreover, while the differences between any two groups are sometimes small, the directions of the differences are also perfectly consistent: Socioeconomic status is directly related to students' level of involvement in their personal experiences. The lower a student's SES, the lower that individual's level of involvement with other students or in self-reflection, with student acquaintances (making friends and engaging in serious discussions with other students, including those from different cultures), with clubs and organizations (membership and leadership involvement with formal student groups), use of the student union (for a variety of pur-

TABLE 9

Overall Grade Performance, 1989–94, by Socioeconomic Status

Overall Grades	SES Quartile			
	1 (Low)	2	3	4 (High)
Mostly A's	8%	13%	7%	11%
A's and B's	28	31	30	31
Mostly B's	22	37	33	34
B's and C's	33	15	25	20
Mostly C's or less	9	4	5	4
Total	100%	100%	100%	100%

$n = 924,555$ (weighted).

Source: BPS:94.

⁸ It should be noted that ANOVAs using the unweighted sample produce conservative estimates of overall group differences. The Scheffe test for *post hoc* comparisons is also a conservative test. Thus, the differences in the BPS-based groups provide "lower-bound" estimates of the differences between and among groups. Moreover, among community college students, the differences may be more closely related to role (i.e., being a "student who works" versus "an employee who studies") than to socioeconomic status.

TABLE 10

Means of Students' Out-of-Class Experiences in Selected Areas, by Socioeconomic Status

Out-of-Class Experiences	SES QUARTILE				Effect Size*
	1 (Low) (n = 536–547)	2 (n = 598–609)	3 (n = 592–632)	4 (High) (n = 598–634)	
Personal experiences	2.23	2.25	2.37	2.38	9
Student acquaintances	2.51	2.52	2.61	2.66	9
Clubs and organizations	1.68	1.84	2.00	2.08	21
Student union use	2.14	2.19	2.26	2.29	8
Athletic/recreation facilities	1.63	1.82	1.91	2.04	36

*Effect size given in percentile points for lowest- versus highest-SES groups. All effect sizes significant at $p < .001$.

Source: NSSL:CSEQ.

poses, including taking meals, socializing, or attending social or cultural events), and use of their institution's athletic and recreational facilities. On each of these five out-of-class experience scales, low-SES (compared with high-SES) students are less involved at statistically significant levels, although the effect sizes are small (8 to 9 percentile points) in three of the five comparisons. On three of the five scales, lowest-SES-quartile students are even significantly below the lower-middle-SES-quartile students. On three of five scales, students in the lower two quartiles are significantly less involved than those in the upper two quartiles. SES may not be a major factor in students' classroom lives, but it is clearly a salient force in students' out-of-class college experiences.

These findings are quite consistent with evidence from the BPS:90's "Index of Social Integration." That measure reflects the frequency with which students meet with faculty members outside of class, go places with friends from school, and participate in school clubs and organizations. As with the academic integration index, the social integration index score for lowest-SES-quartile students is significantly lower ($p < .001$) than that of highest-SES-quartile students (means equals 2.24 versus 2.59, respectively). That difference is the equivalent of a 20 percentile point spread. Indeed, on the social integration index, the four SES groups form three distinct clusters: lowest-SES-quartile students are by themselves (as a group) at the bottom of the social integration distribution, while students in the two middle SES quartiles make up a distinct middle group in terms of social integration, and the highest-quartile students are significantly more socially integrated than the other three groups.

Employment and school. Whether (and to what extent) employment affects students' performance and persistence has attracted substantial attention over the years (see Pascarella and Terenzini, 1991). Research (Horn and Berkold, 1998) using data from the 1995-96 National Postsecondary Student Aid Study (NPSAS:96)

indicates that 8 in 10 (79 percent) of all undergraduates enrolled in America's colleges and universities during that year reported working while enrolled (a figure slightly higher than the 72 percent reported by Cuccaro-Alamin and Choy [1998] for students enrolled in 1992-93). Half reported working to help pay for their education (i.e., they considered themselves "Students Who Work"), and fewer than 1 in 5 (15 percent) were employed on-campus (working on-campus was inversely related to the number of hours worked). The balance (29 percent) of students who worked while enrolled considered themselves primarily employees who were also taking classes ("Employees Who Study").

The students who work put in an average of 25 hours per week on the job, with 1 in 4 (26 percent) of them reporting 35 hours or more of work per week (i.e., holding a full-time job). Among the students who *work and who were enrolled full-time*, nearly 20 percent (19 percent) reported working 35 or more hours per week. That is, they were both enrolled and employed full-time. Another quarter (26 percent) reported working 21–34 hours per week. Thus, nearly half (45 percent) of those who considered themselves primarily students who work held jobs that required 21 or more hours of their time weekly (Horn and Berkold, 1998, Table 1).

Among all working undergraduates who are financially dependent on parents or guardians, few variations are apparent across income categories in the proportions who are primarily students who work versus those who are primarily employees who study (SES was not a variable in this study). Across five \$20,000-interval categories of income below \$100,000, the percentages of students in both work-student status categories vary by less than 3 percentage points: 84 to 87 percent are students who work, while 13 to 16 percent are employees who work. Only among dependent working students with incomes exceeding \$100,000 does the relative balance change (92 percent are students who work, and 8 percent are employees who study; Table 1.2).

Summarizing the reported consequences of mixing employment and school work, Horn and Berkold (1998) found that

...more than one-third of Students Who Work reported that work limited their class schedules, and about the same proportion reported that work had a negative effect on their academic performance. Furthermore, among those who worked more than half-time (21 or more hours), roughly half reported that work adversely affected their [academic] performance. Taken as a whole, therefore, these results indicate that more than one in four undergraduates who identify themselves as students who work to pay for education expenses are adversely affected by the amount they work (p. 15).

The National Study of Student Learning (NSSL) survey inquired about students' off-campus employment experiences. The likelihood of working off-campus and the number of hours spent working off-campus are both inversely related to socioeconomic status. Compared to high-SES-quartile students, low-quartile students were significantly and substantially more likely to work off-campus (48 versus 19 percent, respectively) and to work more than 30 hours per week off-campus (13 versus 3 percent). Work has other relevant influences on students. More than a third (35 percent) of the students who work also held a student loan (\$4,150, on average) (Horn and Berkold, 1998, Table 6). In addition, among students who work to meet education expenses, those working 15 or fewer hours per week were more likely to borrow than were their counterparts who worked more hours (46 versus 26 to 36 percent depending on the hours, respectively). Moreover, students working fewer hours also tended to borrow more (an average of \$4,344) than students working 21 to 34 hours (\$4,080) or 35 hours or more (\$3,800). They borrowed about the same amount as students working 16 to 20 hours weekly (\$4,216). These patterns held when analyses were done separately for students attending public and private, not-for-profit, four-year institutions.

Among students who entered postsecondary education, 52 percent were still repaying education loans five years later. The repayment burden, however, is not evenly distributed across SES quartiles. Where 43 percent of the highest-SES-quartile students were still repaying their loans in 1994, 61 percent of their lowest-SES-quartile counterparts were still paying off their debt. Moreover, where 25 percent of the highest-quartile students were receiving help in making their payments, only 7 percent of the lowest-quartile students were being similarly aided (Berkner, Cuccaro-Alamin, and McCormick, 1996, p. 149, Table 15.9).

The working-borrowing relation poses a subtle, but potentially significant, policy issue. As Horn and Berkold (1998) point out: "While borrowing results in debt that must be repaid when students finish their post-secondary education, choosing to work intensively in lieu of any borrowing may increase a student's chance of not finishing his or her degree" (p. 25). There may be other side effects. Time is a finite commodity. The more hours a student works, the fewer hours there are for school-related activities that affect both academic and social integration which, in turn, have been shown to be associated not only with persistence and degree completion but with cognitive, psychosocial, and attitudinal and value change and development (Pascarella and Terenzini, 1991). Thus, the work-rather-than-borrow strategy may backfire in two ways: (1) it reduces the chances of degree completion, and (2) although debt can be paid off at a later time, missed opportunities to learn and develop while in college can never be recovered.

The effects of student employment while in school on persistence and degree attainment have been widely studied. Pascarella and Terenzini (1991) concluded that, in general (and after controlling for a number of potentially confounding variables), the effect of employment depended on where the employment occurs—on- or off-campus. The weight of the evidence they reviewed suggested that full- or part-time work off-campus has a negative effect on both year-to-year persistence and degree completion. On-campus work, however (usually part-time and in the form of work-study assistance), had a positive influence.

Horn and Berkold's (1998) analyses, however, indicate that the location of students' employment might not be as influential a factor as is suggested by the literature reviewed by Pascarella and Terenzini (1991). Without taking other considerations into account, students working on-campus are more likely to be enrolled for more than the eight months of an academic year than were those working off-campus (11 versus 4 percent, respectively). After adjusting for the number of hours worked and other relevant variables, however, the percentages were virtually the same (10 percent) (Table 7). As the authors note, however, given the close correspondence between intensity and place of employment (few students work more than 15 hours weekly on-campus), once intensity of employment is controlled, the effects of location might be expected to disappear. Moreover, as these authors also note, the effects of working on-campus may be more influential in determining whether students return for the next academic year (versus completing an academic year).

A recent national study (Cuccaro-Alamin and Choy, 1998, Table 12) examined the influence of employment

intensity on degree completion. Working 14 hours or less per week had positive effects on degree completion or still being enrolled four years after entering college (BPS:90/94). Working 35 or more hours per week, however, was negatively related to degree completion. Borrowing also positively influenced degree completion or continuing enrollment. Socioeconomic status, however, was not a significant predictor of degree completion or still-enrolled status net of other variables, including the number of hours worked.

Like Cuccaro-Alamin and Choy (1998), Horn and Berktold (1998) also found that the intensity of student

employment was related to persistence (defined as continued enrollment throughout one academic year). Students who were not employed while enrolled had higher enrollment interruption rates than their counterparts who worked 1 to 15 hours weekly, a finding consistent with evidence reported by Cuccaro-Alamin and Choy (1998). This pattern held for both first-year and for continuing students, even in the presence of controls for students' attendance status, receipt of financial aid, type of institution attended, and income.

IV. The Outcomes of College

What are the consequences of the college enrollment for low-socioeconomic-status students? In this section, we summarize what the existing literature and some of our own analyses tell us about where the collegiate gateways and pathways led for low-SES students, what the journey was like for them, and how the destinations varied for them when compared with those of their more affluent counterparts. We examine the evidence relating to attendance patterns and rates of progression toward a postsecondary education degree or other credential, persistence and degree attainment rates, the sources of influence on students' degree attainment, learning outcomes, economic and occupational benefits, and other selected consequences of attending a college or university.

Carroll (1989) provides a useful metaphor for examining college persistence and degree attainment. For heuristic purposes, Carroll adopts a conceptual framework that he dubs "the persistence track." This "model" is founded on the popular (but, as his report makes clear, outdated) set of beliefs about how students progress through college:

The traditional flow into and through four-year institutions toward bachelor's degrees begins in the fall following high school graduation. Full-time enrollment in four-year institutions for the first academic year is followed by return for the second academic year (following the summer). This pattern of full-time enrollment continues for 4 academic years and culminates in the award of a bachelor's degrees. This traditional pattern or track represents an optimal flow through college. In other words, when students follow this track, they are awarded bachelor's degrees within the minimal amount of time and for a minimal cost. When students deviate from this track, they either do not earn bachelor's degrees or their degrees require more time and money (p. 2).

As will be seen, many of them do, indeed, "deviate from this track," a pattern more common 30 years ago than it is today.

Persistence and Attendance Patterns

Certain features of students' attendance behaviors in college clearly and sharply reduce the likelihood of completing the bachelor's degree (Pascarella and Terenzini, 1991). These threats include delayed enrollment after

high school graduation, enrollment in a two-year institution, part-time enrollment, and enrollment in nondegree programs. Carroll (1989) found that "less than one-tenth of the 1980 graduates who entered less-than-four-year institutions, attended part time, or delayed entry subsequently attained bachelor's degrees by February of 1986" (p. v). We hasten to add, however, that two-year institutions afford postsecondary educational opportunities that would otherwise be denied to many. Moreover, the two- and four-year sectors enroll very different kinds of bachelor's degree-seeking students. These clienteles differ in the nature and level of demands on their time, financial support, and access to and possession of the kinds of academic resources Adelman (1999) identified as keys to earning a degree.

While it appears that term-to-term persistence rates for low- and high-SES students are not (with one or two exceptions) strikingly different, the cumulative effect over the four-academic-year period was more dramatic. While 60 percent of the highest-SES-quartile 1980 graduates who started on track persisted through academic year 1983-84, fewer than 42 percent of their low-SES-counterparts accomplished the same feat (Carroll, 1989, Table 3.1). "When coupled with differences in rates of starting on track, the effect of low SES was devastating—the rate of starting and persisting for high-SES students was 5 times the rate for low-SES students (32 versus 6 percent)" (Carroll, 1989, p. 13).

When these 1980s students left the persistence track, high- (versus low-) SES-quartile students were more likely to stop out (i.e., interrupt their full-time studies for four months or more, excluding summers; 57 versus 37 percent, respectively), while low-SES students were three times more likely to drop out (44 versus 14 percent; Carroll, 1989, Table 3.2). The final outcome is predictable: "When high-SES students left the persistence track, their rate of bachelor's degree attainment was twice that of low-SES students (35 versus 17 percent)" (p. 25, Table 4.1).

The study of attendance patterns is a complex and confusing business because of the wide array of paths students can follow. Hearn (1992) took a somewhat different approach from Carroll (1989), although he used the same database: the 1980 high school graduates from the HS&B:80 (seniors) study and the first follow-up in 1982. Hearn formed 13 attendance patterns based on the intersections of three variables: timing of attendance (enrollment immediately after high school graduation versus late enrollment), course load (part- versus full-time), and type of institution attended (two versus four year). In two of the three models he examined, socioeconomic status was a statistically significant predictor of attendance pattern (one model included only back-

ground characteristics, the second both background and academic variables). When educational expectations were added in a third model, the effects of SES and ability disappeared. Further examination, however, indicated that “the aspirations variable serves mainly as a mediator of... [the] effects of [SES and academic factors], rather than as an active, independent causal agent in and of itself” (p. 675). SES was consistently related to variations in each of the three enrollment outcomes: when students enrolled, where they enrolled, and the intensity of their studies. In each case, “nontraditionality was found to be associated with a lower SES background, a lower level of academic credentials, and a lower level of educational aspirations” (p. 677). Hearn found the evidence supported each of three hypotheses about why some students choose nontraditional attendance while others do not: (1) because they are responding to “culturally or societally prescribed and proscribed roles” (p. 677), a hypothesis that received “mixed” support; (2) that nontraditional enrollment is “rooted in class socialization or in pressing financial concerns” (p. 678), a hypothesis that received “solid” support; and (3) that selection of nontraditional enrollment options is a function of “modest academic preparation, ability, and achievements” (p. 678), which received “definite” support. One might note that this last hypothesis and the evidence supporting it are consistent with Adelman’s (1999) concepts and findings relating to “academic resources” in promoting degree completion.

The role of financial aid. Probably the most widespread set of beliefs about why low-SES students drop out of college or otherwise interrupt their studies has to do with finances. Clarifying the relation between financial aid and student persistence or degree attainment, however, can be something of a Sisyphusian task. Financial aid is only one of a wide array of interrelated variables that shape persistence and degree attainment (Pascarella and Terenzini, 1991). Disaggregating the effects of particular variables is a complex task in itself. But as Sisyphus’s rock rolled back down the hill just as he reached the crest, so do federal and state policies on financial aid change (rapidly, at times), college costs shift, and state and national economies turn up and down.

Such caveats notwithstanding, the belief that students’ finances are a salient consideration in students’ persistence decisions is not without some basis in fact. Low-SES students are, indeed, less likely than their better-off peers to earn a baccalaureate degree (or to be still actively pursuing one) (36 versus 44 percent, respectively). This relation holds when only those seeking a bachelor’s degree are studied (Choy and Premo, 1996, Table 17). Moreover, low-SES students are also less likely to have completed a bachelor’s degree without interruption (28

versus 39 percent, Table 18). But do they interrupt their college careers because they cannot afford to continue?

A significant body of research has examined the impact of both the type and amount of financial aid (for reviews of this literature, see Jensen, 1983; Leslie and Brinkman, 1988). Much of that research, however, is based on students enrolled in college during the 1970s or before (St. John, 1991). The majority of those studies, moreover, concentrate on how financial aid influences whether and where students attend college. Comparatively few studies done before 1990 seek to estimate the effects of financial aid on student retention, and many of these studies were done at single institutions, rather than at the national level.

The available evidence on the relation between financial aid and persistence presents something of an inconsistent picture. After reviewing the evidence on persistence (largely from institutional studies), Tinto (1990) concluded that financial aid was not a major consideration. Leslie and Brinkman (1988), however, reviewed a broader research base containing more national studies and concluded that financial aid and persistence were related, and positively.

These inconsistencies may, to some extent, be artifactual. St. John (1991) suggested that the differences in conclusions might be attributable to differences in analytical models or to attenuated variance in aid awards at the campus (versus the national) level. Similarly, single-institution studies typically find that students’ precollege characteristics are less influential forces affecting persistence than are students’ experiences after matriculation. On the other hand, national studies (perhaps because of the statistical power afforded by their larger sample sizes) often find precollege characteristics to be statistically significant predictors (and sometimes very substantial ones; see Adelman, 1999). (National data sets, of course, lend themselves to the study of multilevel effects [i.e., institutional, as well as individual, effects] that are beyond the capabilities of single-institution studies.)

From his review, St. John (1991) concluded that “national studies consistently find that student aid has a positive influence on persistence. Further, this research demonstrates that loans, in addition to grants and work, are effective in promoting persistence. However, it is possible that large levels of debt could have a detrimental influence on persistence to degree completion...” (p. 26). At a later point, however, St. John notes that “loans as the only form of aid were negatively associated with four-to-fifth year persistence (or persistence to degree completion)” (p. 27). Carroll (1987) found that grants, but not loans, were positively associated with persistence. Adelman (1999) found that grants-in-aid were effective in the first year but not thereafter (net of other variables).

Less is known with confidence about the relations between financial aid and persistence for students in different income or SES groups. Baum (1987) found that, net of academic ability, family income had a strong influence on persistence, but her evidence indicated that low aspirations, rather than insufficient financial aid, was probably the dominant variable. Stampen and Cabrera (1986, 1988) found that financial aid promoted persistence among low-SES students (relative to more affluent students) but also that weak high school performance and being a member of a minority group depressed students' chances of persisting. Murdock (1987, 1990), following a meta-analysis of nearly 50 studies, reported similar findings.

Choy and Premo (1996, using BPS:90/94 data) found that among students enrolling in college in 1989-90, "both [low income and "not low income"] groups were about equally likely to have interrupted their enrollment and returned whether they completed their studies or were still enrolled in 1994" (p. 46). Using a linear regression model, they found that income level was not a significant predictor of earning a degree of any kind (or of being still enrolled) when other variables related to persistence were taken into account. The strongest predictors of attainment (or being still enrolled) were being female, having parents with a bachelor's degree or higher (versus having parents with a high school diploma or less), receiving parental contributions to one's education, and having taken out a loan in at least one year of one's college tenure. Being black (versus white, non-Hispanic), enrolling part-time, and borrowing from one's parents reduced the odds of attaining a degree or being still enrolled. Several of the statistically significant predictors (both positive and negative), however, are modestly correlated with low socioeconomic status, and isolating and estimating the unique effect of SES remains problematic.

Other studies (e.g., Cabrera, Stampen, and Hansen, 1990; St. John, 1990b; St. John, Andrieu, Oescher, and Starkey, 1994; Somers, 1995; St. John, Paulsen, and Starkey, 1996) all report findings that point to a relationship between one or another measure of "ability to pay" (e.g., income, SES), financial aid, and year-to-year persistence. Two findings from these studies, however, are particularly noteworthy. First, St. John et al. (1994, 1996) twice found evidence of a negative relation between financial aid and persistence. More detailed analyses, however, suggested that this relation more likely indicated that aid was *insufficient* rather than ineffective. Recent evidence from the College Board (1999) supports this proposition. According to the College Board, "The share of family income required to pay college costs has increased for many

families, but it has gone up the most for those on the bottom rungs of the economic ladder" (p. 5). Second, the studies by St. John and his colleagues, as well as the one by Cabrera, Stampen, and Hansen, all point to the conclusion that financial aid considerations—by themselves—present only a partial view of the complex dynamics at work at the intersections of SES, financial aid, and persistence.

Cabrera, Stampen, and Hansen (1990), for example, found not only that ability to pay has a direct effect on persistence, but also that "ability to pay moderates the effect of educational aspirations" on persistence (p. 329). In a follow-up study, Cabrera, Nora, and Castaneda (1992) found that ability to pay also shapes how students interact with their collegiate environment, affecting the level of their involvement in their institution, and, thus, the likelihood that they will persist. For low-income students, inadequate financial aid can interfere with students' academic and social integration, which, in turn, has been shown to be related to persistence decisions. Cabrera, Stampen, and Hansen (1990) conclude: "Our results underscore the need for policy makers to modify their expectations that monetary aid alone is sufficient to keep students in college... Rather, students' commitment, support from significant others, and goodness of fit with a school's academic and social components are also important in explaining college persistence" (p. 330). Others have reached the conclusion that unraveling the persistence problem and improving retention among low-SES and underrepresented groups requires consideration of more factors than just financial aid (e.g., Adelman, 1999; Cabrera, Nora, and Castaneda, 1992; Gladieux and Swail, 1998; King, 1996; Porter, 1991; Swail, 1995).

Taken together, this body of evidence fairly consistently indicates that, while students' socioeconomic status and ability to pay for a college education are important considerations in their decisions to persist or withdraw, financial aid considerations are by no means the only—or even the dominant—considerations. Other influences, such as degree aspirations, academic resources, ability, and academic and social integration, also play a salient role. The clear implication for current policy is that increasing financial aid alone is unlikely to improve persistence and attainment rates dramatically.

Degree Completion

The evidence fairly consistently indicates that federal and state financial aid policies have removed many financial barriers to some form of higher education for

students from all socioeconomic classes. As noted earlier, however, student access to the various types of higher educational institutions and related variations in the intensity and continuity of attendance are not as equal across socioeconomic levels (e.g., Hearn, 1992; McPherson and Schapiro, 1998; Mortenson, 1989). One implication of differences in the equality of access to various kinds of institutions is that students are not, thus, afforded equal access to the benefits of college attendance and degree attainment. The evidence fairly clearly suggests that the two forms of access are very different in kind, availability, and consequences for degree completion and other subsequent benefits.

America's colleges and universities are responsible not only for educating students but also for certifying them. Indeed, a bachelor's degree has been described as the passport to America's middle class (Bowles and Gintis, 1976; Jencks and Riesman, 1968). Educational attainment plays a dual role. First, it mediates the influence of an individual's background resources (e.g., socioeconomic status) on subsequent income and occupational status. Second, educational attainment has been shown to be directly related to status attainment, even when SES is controlled (Pascarella and Terenzini, 1991). Indeed, the evidence fairly consistently shows an earnings "bonus" for completing a bachelor's degree over and above the advantage received from each successive year of higher education completed. According to Pascarella and Terenzini, "the evidence on earnings is consistent with that on occupational status in suggesting that completing the bachelor's degree may be the single most important educational step in the occupational and economic attainment process (p. 529). Adelman (1999) put it in context: "Degree completion is the true bottom line for college administrators, state legislators, parents, and most importantly, students—not retention to the second year, not persistence without a degree, but completion" (p. v). In this section we examine primarily (but not exclusively) the evidence relating to students' educational attainment—the degree(s) they earn (or fail to earn).

According to Carroll (1989), who used data from the High School and Beyond, 1980 survey of high school graduates (HS&B, 1980: seniors) which was followed up four and six years later: "Only 16 percent of the total number of 1980 high school graduates started on [the persistence] track and persisted through academic year 1983-84. That is, more than 5 of every 6 1980 high school graduates did not persist in the traditional fashion. In other words, for every 1,000 high school graduates in 1980, only 157 persisted toward a bachelor's degree on track for 4 years" (p. 14). One should keep in mind, however, that Carroll's study tracked students

over a five-and-a-half-year period and may, consequently, underestimate the percentages of students who persist in (or return to) higher education when tracked over a longer period of time. Nonetheless, his statistics are sobering in light of the perceptions of many that a bachelor's degree attained in four years is the norm. Indeed, Tinto (1982) presents evidence that such a pattern has not been the norm since the early 1900s.

A similar study of 1980 high school sophomores, followed up 12 years later (HS&B, Sophomore Cohort, 1980-92), offers a longer perspective but no prettier picture. Tuma and Geis (1995) found that the highest degree earned by about half of these students was a high school diploma. "While 75 percent of these students aspired to some form of postsecondary education as sophomores in high school, the majority had not completed a postsecondary credential 12 years later. Indeed, one-third had not enrolled in any form of postsecondary education at all" (p. 2).

McCormick and Horn (1996) report evidence consistent with Carroll's and Tuma and Geis's (1995) findings. They based their analyses on data from the Baccalaureate and Beyond Longitudinal Study (BandB:93). That survey used a very different design (a nationally representative cohort of bachelor's degree recipients of all ages followed up a year later) rather than the national age-cohort sample of 1980 high school graduates tracked by Carroll or the 1980 high school sophomores studied by Tuma and Geis. The findings, however, shed the same harsh light on the myth embodied in the "persistence track" metaphor. McCormick and Horn report that less than a third (31 percent) of the bachelor's degree recipients in 1992-93 completed their degree programs within 4 years of high school graduation. Another 28 percent required between 4 and 5 years to complete, and 11 percent took between 5 and 6 years. Nearly a third (30 percent) of the graduates took more than 6 years (17 percent took more than 10 years). Adelman (1999, p. 120) provides a different measure of time to degree, estimating that the average time to earn a degree (in elapsed calendar years) was 4.74 years for degree completers in the High School and Beyond sophomore cohort (somewhat longer than the average 4.54 calendar years taken by completers who graduated in 1972 [NLS-72]).

The National Center for Education Statistics' Beginning Postsecondary Student Survey (BPS:90) provides a look at the educational attainment context nationally from yet a third perspective. BPS is a nationally representative sample of students who entered postsecondary education in the 1989-90 academic year (this cohort of students differs somewhat from those in the High School and Beyond series in that sample members

are not age mates). The BPS:90 students were followed up five years later. By that time, half of the entering students had attained a degree or certificate of some kind, and another 13 percent were still enrolled, yielding a 63 percent persistence and attainment rate. Just over 60 percent of those who started at a four-year institution had attained a credential of some sort (53 percent a bachelor's, 4 percent an associate's, and 2.9 percent a certificate). Another 15 percent of those who started at a four-year institution were still enrolled. By comparison, 38 percent of the students who entered a two-year institution had earned a credential (6 percent had earned a bachelor's degree, 19 percent an associate degree, and 14 percent a certificate), while 14 percent more were still enrolled (Berkner, Cuccaro-Alamin, and McCormick, 1996, Tables 1 and 2).

Off- and on-track starts and socioeconomic status. As can be seen in Table 11, the rates at which students started on Carroll's (1989) college persistence track varied considerably by socioeconomic status. Nearly half the students from families in the lowest-SES quartile never enrolled in a postsecondary institution, a rate nearly five times higher than that for students from high-SES-quartile families (48 versus 11 percent, respectively). While just over a third of the students from both the top and bottom quartiles started off-track, low-SES students are three and a half times less likely than their high-quartile counterparts to start on-track (15 versus 53 percent, respectively). The rates at which students began on the persistence track are consistent with their high school senior-year degree expectations. For example, 1980 high school graduates in the highest SES quartile in 1980 were nearly three times more likely than their less-affluent peers to expect to earn a bachelor's degree (74 versus 26 percent, respectively) (Carroll, 1989, Figure 2.3). A similar pattern was apparent among 1980 high school sophomores when they were studied two years later (Tuma and Geis, 1995).

Among the off-track starters, enrollment in a two-year institution was the most popular path among both the lowest- and highest-SES-quartile students, although

low-SES students chose that path at a higher rate (46 versus 36 percent). Low-SES students were also more likely than high-quartile students to enroll in a less-than-two-year institution (28 versus 10 percent). When not choosing to enroll in a two-year college, high- (versus low-) SES-quartile students were more likely to delay entry into a four-year institution (22 versus 12 percent) or to transfer from a less-than-four-year school at a later time (26 versus 12 percent). Wherever they enroll, however, when low-SES students start off-track, the effect on their bachelor's degree attainment is virtually fatal: Only 4 percent of these individuals subsequently earned a bachelor's degree (Carroll, 1989, Tables 2.2 and 4.1).

A similar study of 1980 sophomores who subsequently enrolled in a postsecondary institution found that only 5 percent of the low-SES students who delayed entry (one of the at-risk factors) eventually earned a bachelor's degree, compared to 20 percent of their highest-SES-quartile counterparts who delayed the beginning of their college educations (Tuma and Geis, 1995, Table 2.4.C). Moreover, low-SES students delayed their entry into postsecondary education nearly three times longer than those in the highest-SES quartile (21.5 versus 7.9 months on average, respectively) (Tuma and Geis, 1995, Table 7). Tuma and Geis noted that "within each SES and test score quartile, lower levels of attainment were strongly associated with longer delays. In other words, although length of delay is likely to be greater among students with lower SES and achievement, there is still a strong independent association between delay and attainment" (p. 10). They suggest this finding is important because it implies that increasing attainment rates may be facilitated in important ways by reducing the delayed entry in both frequency and duration "regardless of other variables (such as student demographics) that are strongly associated with attainment" (p. 10).

Degree completion among low-socioeconomic-status students. Whatever the type of institution they entered, however, low-SES students were at a disadvan-

TABLE 11

Rates at Which 1980 High School Graduates, by Lowest and Highest SES Quartile, Started on the College Persistence Track

Socioeconomic Status	Never Enrolled	Started Off-Track	Started On-Track
Lowest-quartile (n = 3,683)*	48.3%	37.0%	14.6%
Highest-quartile (n = 1,907)*	11.2%	35.9%	52.8%
Total (all quartiles) (n = 10,583)*	32.7%	38.3%	28.9%

*All n's are unweighted.

Source: Carroll (1989), Table 2.1.

tage. Among students who entered a four-year institution in 1989-90, 81 percent of those in the highest SES quartile had earned a credential or were still enrolled five years later. By comparison, only half (51 percent) of the lowest-SES-quartile students had attained a credential or were still enrolled over the same period. Among those entering a two-year institution, 42 percent of the low-SES students, compared with 59 percent of the high-SES students, had attained a credential or were still enrolled five years after entry (Berkner, Cuccaro-Alamin, and McCormick, 1996, Table 17).

Similarly, among students who entered higher education in 1989-90 and at any time pursued a bachelor's degree, nearly 45 percent overall had earned the baccalaureate within five years later (another 21 percent were still enrolled and pursuing the bachelor's). As with the attainment of a credential of any kind, however, the baccalaureate degree achievement rates were not uniform across socioeconomic categories. Students from families in the lowest SES quartile were only half as likely to have attained a bachelor's degree as their counterparts from families in the highest SES quartile (24 versus 51 percent, respectively) (Berkner, Cuccaro-Alamin, and McCormick, 1996, Table 6.2).

Learning Outcomes

Beyond information on students' educational attainment, employment, and occupational status, few national longitudinal surveys provide information about college-related student learning outcomes. Pascarella and Terenzini (1991) provide a complete review of the research literature published between 1968 and 1990, but they report no studies that examined differential learning outcomes related to socioeconomic status. Indeed, in virtually all studies of student gains in verbal, quantitative, and subject matter competence, or in their development of higher-order cognitive and intellectual skills, when SES is included, it is treated as a control variable rather than as an independent variable of intrinsic, substantive interest.

As it does with SES-related variations in students' college experiences, the National Study of Student Learning (NSSL) provides a rare glimpse into how college's effects on student learning may vary during the

first year depending on students' socioeconomic status. Table 12 arrays the mean responses provided by students who participated in NSSL in spring 1992, the end of their first year in college. The items listed in the table come from the College Student Experiences Questionnaire (Pace, 1984). The CSEQ asks students to estimate the gains they believe they have made during the past academic year in a variety of academic, vocational, and personal development areas. The 23 CSEQ "gains" items are clustered into four categories in Table 12: General/Liberal Education, Ability/Skill Development, Vocational Development, and Personal Development. The numbers reported there are arithmetic means, based on a 1 to 4 scale, where 1 equals "Very little" to 4 equals "Very much". Column 5 in Table 12 reports the statistically significant effect sizes for the differences between the means of the lowest- and highest-quartile SES groups. The effect size is the number of percentile points the highest-quartile SES group mean is above the lowest-SES-quartile group mean (which is set at the fiftieth percentile). For example, column 5 of Table 12 indicates an effect size of 9 percentile points between the average gains reported by members of the two groups in learning about different fields of knowledge. If the lowest-quartile SES group mean is set at the fiftieth percentile (the average in a percentile point distribution), the effect size of 9 percentile points indicates that the highest-quartile group mean would rest at the fifty-ninth percentile (i.e., 9 points above the average).

General and/or liberal education. As with the level of students' involvement in various academic experiences reported earlier, more similarities than differences in general and/or liberal education gains are apparent across SES quartiles at the end of students' first year. No statistically significant differences (using one-way analyses of variance) were identified in six of the nine CSEQ outcome items. Students in the lowest three SES quartiles were virtually identical in the gains they reported in gaining a broad general education and exposure to new ideas, and all three groups were significantly below the gains reported by students in the highest SES quartile (lowest to highest-quartile effect size equals 9 percentile points). Low-SES students also reported smaller gains in developing their understand-

⁹ Some readers may believe that students' self-reported learning gains are not to be trusted. Pike (1995) concluded that his findings "provide a highly qualified 'yes' to the question of whether self-reports of cognitive development during college can be used as proxies for achievement test results" (pp. 17-18). The key qualification concerned the level of content correspondence between the self-report measures and standardized test domains. Anaya (1999) concluded that self-reported measures of gains in cognitive skills are reasonable proxies of cognitive skills as measured by the verbal and math components of the Graduate Record Examination. Nonetheless, the reader should bear in mind that the CSEQ's self-reported gains, useful as they are for present purposes, lack the precision of a standardized test of learning. Moreover, the CSEQ items and scales reflect a broader array of skills than those typically tapped in standardized tests. The price to be paid for greater breadth in measurement is typically some reduction in internal validity.

TABLE 12

Mean Estimated Gains in Learning Outcomes, by Socioeconomic Status

	Socioeconomic Status				Effect Size ^a
	1 (Low) (n = 543–551)	2 (n = 606–613)	3 (n = 597–603)	4 (High) (n = 627–636)	
<i>Estimated Gains In:</i>					
General/liberal education					
Gaining broad general education about different fields of knowledge	2.55	2.56	2.58	2.73	9***
Understanding and enjoying the performing arts	1.96	2.06	2.15	2.16	9***
Broadening acquaintance/enjoyment of literature	2.12	2.12	2.15	2.22	--
Becoming aware of different philosophies, cultures, and ways of life	2.46	2.48	2.60	2.61	6**
Understanding the nature of science/experimentation	2.07	2.15	2.14	2.20	—
Understanding new scientific/technical developments	1.96	2.07	2.02	2.08	—
Becoming aware of the consequences of new applications in science and technology	2.08	2.10	2.06	2.10	--
Seeing the importance of history for understanding the present and past	2.43	2.37	2.38	2.50	^b
Gaining knowledge about other parts of the world and other people	2.21	2.19	2.22	2.24	--
Ability/skill development					
Writing clearly and effectively	2.61	2.64	2.57	2.60	--
Ability to function as a team member	2.60	2.58	2.58	2.62	--
Ability to think analytically and logically	2.59	2.64	2.65	2.72	4*
Quantitative thinking: Understanding probabilities, proportions, etc.	2.37	2.34	2.30	2.31	--
Ability to put ideas together, to see relationships, similarities, and differences between ideas	2.68	2.67	2.72	2.78	^b
Ability to learn independently, pursue ideas, and find information	2.82	2.77	2.81	2.88	--
Acquiring familiarity with the use of computers	2.55	2.55	2.51	2.46	--
Vocational development					
Vocational training: Acquiring knowledge and skills applicable to a specific job or type of work	2.16	2.07	2.15	2.12	--
Gaining range of information that may be relevant to a career	2.66	2.66	2.70	2.77	^b
Acquiring background and specialization for further education in some professional, scientific, or scholarly field	2.40	2.43	2.48	2.50	--
Personal development					
Developing personal values and ethical standards	2.65	2.68	2.73	2.78	^b
Understanding oneself: Abilities, interests, and personality	2.81	2.83	2.88	2.95	6*
Understanding other people and the ability to get along with different kinds of people	2.81	2.84	2.90	2.93	^b
Developing good health and physical fitness habits	2.31	2.38	2.42	2.37	--

^a Effect size given in percentile points for lowest- versus highest-SES groups. See text for explanation.

^b ANOVA for across-group differences was statistically significant, but no pairwise differences were detected by Scheffé tests of post hoc comparisons.

*p < .05; **p < .01; ***p < .001.

Source: NSSL:CSEQ.

ing and enjoyment of art, music, and drama than did students in either of the top two quartiles (effect size equals 9 percentile points). Low-SES students also reported smaller gains (compared with high-quartile students) in becoming aware of different philosophies, cultures, and ways of life (effect size equals 6 percentile

points). In sum, it appears that where low- and high-SES students differ in general education outcome areas, those differences are comparatively small.

Ability and/or skill development. The CSEQ asks about gains in seven areas that relate to students' academic and intellectual skills. In only one area—

developing the ability to think analytically and logically—were SES group differences apparent. As in the general and/or liberal education outcome areas, this single difference between lowest- and highest-SES groups, while statistically significant, is small (effect size equals 4 percentile points).

Vocational development. No group differences were identified between or among SES quartiles on any of the three CSEQ occupational development outcome items.

Personal development. Despite the consistently lower levels of social integration and involvement among low-SES students, the data shown at the bottom of Table 12 indicate only one statistically significant difference: understanding oneself, one's abilities, interests, and personality, with highest-SES-quartile students, again, reporting higher levels of development than students in the lower three quartiles. That difference, however statistically significant, was rather small (effect size equals 6 percentile points).

Satisfaction with college. Two NSSL questions tapped students' general level of satisfaction with college and with the institution they were attending. While there is a statistically significant ($p < .05$) tendency for students in the upper two SES quartile groups (particularly those in the highest-quartile) to report being "enthusiastic" about college, the differences are modest (37, 38, 40, and 47 percent from lowest to highest SES quartile, respectively). When asked, if they could start all over again, would they attend the same institution at which they were enrolled, no statistically significant differences were detected between or among groups (range equals 79 to 82 percent).

The NSSL findings on students' satisfaction with their collegiate experiences are consistent with those reported by Choy and Ottinger (1998) using NPSAS:96 data for students beginning postsecondary education at four-year institutions in 1995-96. With only three exceptions, between 83 and 93 percent of the students who began study at both public and private colleges and universities reported satisfaction with a variety of the academic dimensions of their institutions. These included the prestige of their institution, their campus's climate for students of different racial and/or ethnic origins, class sizes, their instructors' teaching abilities, their intellectual growth, and their social life. Satisfaction levels were sharply lower, however, with the price of attending (68 and 51 percent for public and private institutions, respectively), as well as with course availability, primarily at public institutions (76 versus 81 percent among their private college counterparts). With two exceptions, few income- (not SES-) based differences are apparent among dependent undergraduates at either public or private four-year institutions beyond those relating to the price of

attendance. First, among public college students, those from lower-income families (less than \$30,000) are satisfied with their instructors' teaching abilities (84 percent) than are students with family incomes of \$30,000 to \$69,999 or \$70,000 or more (86 and 90 percent, respectively). Second, among private institution students, those in the lowest family income category (< \$30,000) are less satisfied with the social life on their campuses (86 percent) than are their counterparts from middle- and upper-category families (90 and 92 percent, respectively) (Choy and Ottinger, 1998, Table 13). This study and the NSSL data are quite consistent on this point.

The generally high levels of satisfaction among beginning students at both public and private four-year institutions in 1995-96 also hold when one examines the activities in which they participated and the services they used. At both types of institutions, 90 percent or more of the students (who took part in the activity or used the service) were satisfied with their campus's cultural activities, counseling services, and sports and recreational activities. Noteworthy differences across income levels are missing in these areas. Satisfaction levels fall below 90 percent only with the job placement services (83 and 85 percent on public and private campuses, respectively), and other noteworthy differences are not apparent on either type of campus (Choy and Ottinger, 1998, Table 14). Similar satisfaction levels with academic factors and student services (and similarly few differences) exist for both types of institutions across levels of parents' educational attainment.

The findings from both of these studies are not particularly surprising, given the high proportion of students in all SES quartiles that reported attending their first-choice institution. It would appear that few institutions disappointed the students who chose to attend them, regardless of SES or income level.

Graduate and/or Professional School Attendance

Some differences do exist, however, across socioeconomic groups with respect to students' level of interest in going (or at least applying) to graduate or professional school and in the proportions who ever actually attended. Not surprisingly, lowest-SES-quartile students are both less likely to apply or intend to apply to graduate school and less likely to actually attend. Of the students beginning postsecondary education in 1989-90 and who had earned a bachelor's degree by June 1993, 48 percent of the lowest-SES-quartile students (versus 54 percent of their top-SES-quartile peers) had applied or intended to apply to graduate school. A year later, however, lowest-quartile students were nearly two and

one half times less likely to have actually attended graduate school in spring 1994 (5 versus 13 percent, respectively) (Berkner, Cuccaro-Alamin, and McCormick, 1996, p. 173, Table 16.5).

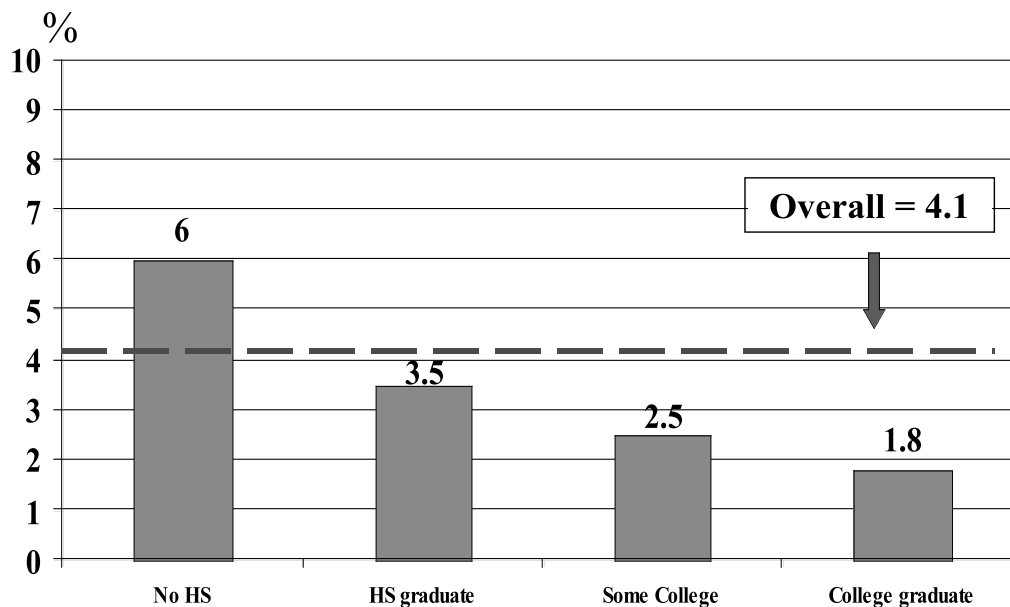
Labor Market Outcomes

The 1992 employment rates among those who were high school sophomores in 1980 were marginally higher for those who had obtained an associate's, bachelor's, and master's degree (90, 89, and 90 percent, respectively) than for those with only a high school diploma (82 percent) (Tuma and Geis, 1995, Table 3.1.A). Figure 9, using 1999 U.S. Department of Labor, Bureau of Labor Statistics (2000) unemployment rates, shows substantially the same picture.

When Tuma and Geis (1995) examined labor market participation by socioeconomic status, however, they found that 1980 high school sophomores in the lowest SES quartile were less likely to be working 12 years later than were those in the middle two or highest-quartiles (79, 86, and 87 percent, respectively, Table 3.1.A). Among bachelor's degree recipients, however, they found no statistically significant SES-related differences in employment rates. They concluded that "lower rates of employment among sophomores with lower SES...apparently reflected their lower average levels of educational attainment because employment rates in

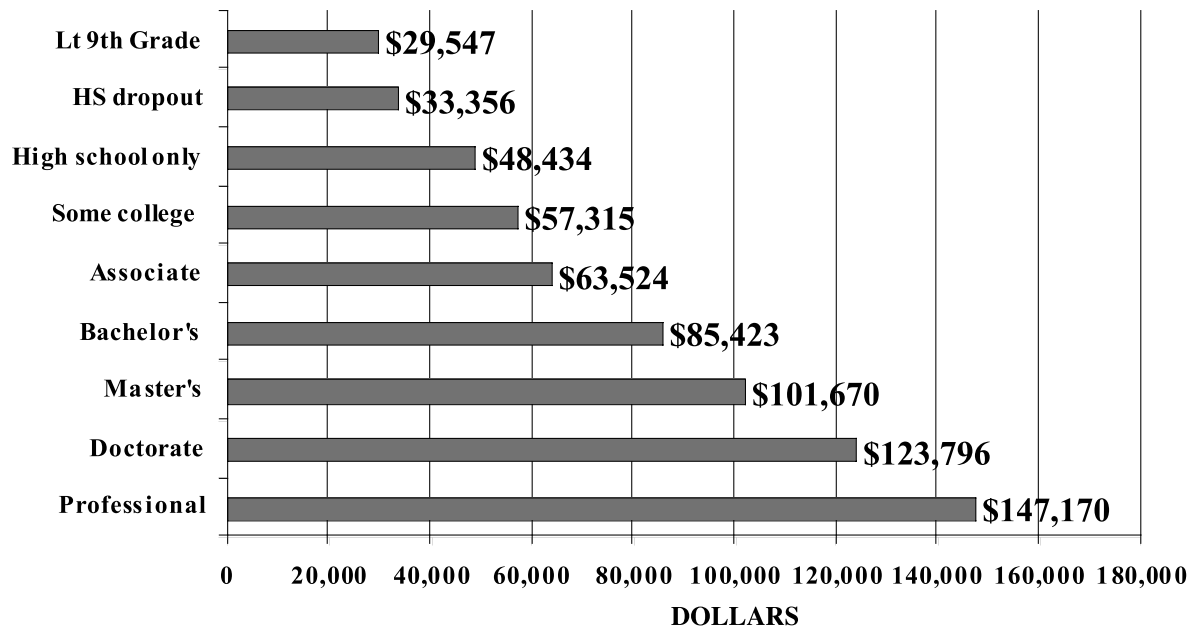
February 1992 were the same for all sophomores with bachelor's degrees, regardless of their SES . . . quartile in high school" (p. 49). As will be seen below, however, other analyses indicate that socioeconomic status effects on earnings persist even in the presence of controls for the characteristics of the institution attended and the nature of students' college experiences.

Not surprisingly, annual earnings are significantly related to educational attainment (Pascarella and Terenzini, 1991, Chapter 11). Figure 10 displays that relation based on 1998 average family income figures from the U.S. Bureau of the Census (in Mortenson, 1999). Raw income figures, however, mask a number of complex relations between educational attainment and earnings. First, the education-related differences in earnings shown in Figure 10 are unadjusted for a variety of individual background characteristics that also affect earnings (e.g., gender, race and/or ethnicity, SES, or high school preparation). Moreover, those earnings figures are unadjusted for field-related labor market variations or for other occupational conditions (e.g., years of experience and on-the-job training). Even when adjusted for such other variables, however, the earnings value of the baccalaureate degree still exceeds those of lower levels of educational attainment by significant and substantial margins (Adelman, 1994; Grubb, 1992a, 1992b, 1993, 1995; Kane and Rouse, 1995).



Source: Based on Tables A-1 and A-3 provided in U.S. Department of Labor, Bureau of Labor Statistics (2000). See References.

Figure 9. December 1999 unemployment rates of the civilian population 25 years and over by educational level (seasonally adjusted).



Source: Mortenson (1999)

Figure 10. Average family income by educational attainment of householder, 1998.

Beyond the gains attributable to the baccalaureate degree, however, the nature of the education-earnings relation is more complex than it may appear. The evidence fairly consistently indicates that students seeking a bachelor's degree and who begin that journey in a community college are about 15 percent less likely to complete that degree in the same period of time as similar students who begin at a four-year school (Pascarella and Terenzini, 1991; Pascarella, 1999). That disadvantage persists even when controlling for other relevant factors (e.g., high school grades, test scores, SES, work responsibilities, college grades, and degree expectations).

Any relative disadvantage in bachelor's degree attainment attached to beginning at a community college does not extend to longer-term labor market disadvantages. According to Pascarella (1999), "For those community college students who can overcome the obstacles of transfer to a four-year institution and complete their bachelor's degree, there appears to be an essential parity with similar four-year college students in such areas as stability of employment, job satisfaction, job prestige, and earnings" (p. 11; see also Smart and Ethington, 1985; Whitaker and Pascarella, 1994).

Considerable evidence indicates that having a two-year college education culminating in a degree or certificate (versus entering the labor market with only a

high school diploma) has significant individual benefits in both income and job status (Pascarella and Terenzini, 1991). That two-year education, however, does not appear to alter patterns of inequity between racial and/or ethnic, gender, and socio-economic groups (Adelman, 1994; Lin and Vogt, 1996). Using data from the nationally representative National Longitudinal Study of the High School Class of 1972 (NLS-72), followed up a dozen years later, Lin and Vogt (1996) found that nearly half (46 percent) of the community college degree earners came from the middle SES categories, but that successful students were more than twice as likely to come from high-socioeconomic-status families as from low-SES families (37 versus 17 percent). In answer to the question of whether completing a community college degree has occupational benefits for the recipient (compared with holding only a high school diploma), Lin and Vogt found that having the two-year degree conferred statistically significant and substantial advantages to individuals. In income, the unadjusted advantage was about \$7,000. After controlling for gender, parents' SES and education, high school grades and curriculum, and other variables typically controlled in such studies, the income advantage to the two-year degree persisted but was reduced to \$2,000. Substantially the same pattern emerged when occupational status was the outcome variable.

The picture becomes even more complex when the education-earnings relation is examined at the subbaccalaureate level. In a meta-analysis of several studies in this area (using NLS-72, the National Longitudinal Study of Youth, and three cohorts from the cross-sectional Survey of Income and Program Participation; follow-up periods for the first two data sets ranged from 7 to 14 years), Pascarella (1999) estimated (after controlling for a variety of potentially confounding variables) that men with an associate degree had an average earnings advantage of 18 percent over the annual earnings of men with only a high school diploma. Women with an associate degree enjoyed an even greater advantage (26 percent) over their counterparts with only a high school diploma.

These subbaccalaureate degree earnings advantages, however, were not uniform. In addition to the gender differences just cited (see Grubb, 1993, 1995, and Kane and Rouse, 1995, for refinements on this point), some noteworthy variations also exist across the fields to which the associate degree is attached. Health, technical, and trade and industry certificate and degree programs have the greatest payoffs for both sexes (Grubb, 1992a, 1992b). Men in technical fields and business and women in business and health programs appear to earn more than their counterparts in other fields. When other demographic and achievement variables are taken into account, however, these differences are diminished.

Some evidence suggests that earning credits without completing a degree program brings earnings advantages over simply completing high school (Grubb, 1995; Kane and Rouse, 1995), but these advantages tend to be small. Other evidence, however (Grubb, 1996, 1997; Pascarella and Terenzini, 1991; Pascarella, 1999), suggests the presence of a “credentialing” effect for the associate degree above and beyond the benefits of simply earning two years of community college credits without completing a coherent program and receiving the associated degree.

The evidence on the benefits of educational attainment for students from different socioeconomic backgrounds is harder to come by, but it seems to indicate that SES is a persistent force in individuals’ earning power, even after educational attainment is considered. Adelman (1994), for example, found that “the only postsecondary attendance pattern that consistently overcomes initial economic circumstance is that of four-year college attendance, whether or not a bachelor’s degrees was earned. Low-SES students who attended four-year colleges only [without completing the degree] ...had, at age thirty-two, higher earnings, more years of job experience, and less unemployment than [the average] students who were initially [in 1972] in the middle SES quartiles” (p. 165). Grubb (1993) reports: “One surprising result is that the effects of family background

persist, even after a detailed description of education is included. The effect of SES is consistently positive and significant;...differences associated with socioeconomic status and parental income persist even after the quality of postsecondary institutions is considered” (p. 377).

Does holding a two-year degree reduce the differences in occupational outcomes between more- and less-advantaged groups (versus individuals)? Lin and Vogt (1996) found their results “for our ethnic and social class groups are clear, and they are clearly negative. The gaps are bigger, absolutely and relatively;...two-year college education increased individual opportunity, but decreased social equity” (p. 460). That is, low-SES students who held a two-year degree were further behind high-SES students with a two-year degree, and low-SES students with only a high school diploma were further behind high-SES students with only a high school diploma. (Adelman [1994], however, found that the differences between middle- and upper-SES-quartile students were somewhat smaller than those between lowest-quartile and middle- and upper-quartile students.) Lewis, Hearn, and Zilbert (1993) report similar findings for vocational school students. The implication of these finding for the present study is that, not only does greater educational attainment confer higher income and job status advantages but it appears to do so at a differential rate that confers an even greater advantage on those already advantaged in comparison with the members of less affluent groups.

Job Satisfaction

BPS:94 also provides a look at variations in students’ satisfaction levels with various dimensions of their jobs. No substantive differences were found across socioeconomic groups with respect to the future educational opportunities afforded by their positions, the importance of the work they were doing, or in the difficulty or challenge they found in their work.

Some differences do exist, although the magnitudes are modest at best. In all cases, job satisfaction was positively related with SES level. Lowest-SES-quartile students were slightly less likely to be satisfied with their pay and fringe benefits package (68 versus 73 percent in both of the upper two quartiles), the opportunities for promotion (58 versus 65 percent for the lowest and highest quartiles, respectively), and their job security (74 versus 80 percent for bottom and top quartiles, respectively). In terms of overall job satisfaction, high-SES students were marginally more likely to be satisfied than were lowest-quartile students (85 versus 81 percent, respectively) (Berkner, Cuccaro-Alamin, and McCormick, 1996, p. 184, Table 17.3).

V. Conclusions and Implications

In 1998-99, the total amount of financial aid awarded to America's college students reached \$64.1 billion, an increase of about 85 percent in constant dollars over the past decade. Federal expenditures for such aid (\$46 billion) were up 43 percent, and state grant programs (\$3.5 billion) have grown 65 percent over the period (College Board, 1999). Despite the fact that "broadening access to higher education has been the primary goal of every piece of federal higher education legislation since 1965" (Hartle and King, 1997, p. 8), and despite the nation's enormous investment in equalizing educational opportunities for all Americans, the substantial evidence summarized in this report indicates that full achievement of equal education opportunity still lies sometime in America's future. With few exceptions, low-SES students are at a disadvantage when compared with their more affluent counterparts with regard to (a) the college choice process, (b) the transition from high school to college, (c) the college experience itself, and (d) the educational and occupational benefits derived.

Consider the following: When compared with their highest-SES-quartile counterparts, students from families in the lowest SES quartile:

The college choice process

- are more likely to have parents with a high school degree or less (76 versus 0.4 percent, respectively) who are less likely to be saving for their children's college education;
- are more likely to come from a single-parent home;
- have lower degree expectations (as do their parents), particularly for postbaccalaureate study;

The transition to college

- are less likely to enroll in any form of post-secondary education;
- bring fewer academic resources to college (e.g., are exposed to a less rigorous preparatory curriculum, score lower in admission tests, rank lower in their class, and have lower grade-point averages);
- are more sensitive to tuition costs and financial aid availability when choosing an institution;
- need more financial assistance to meet their needs fully;

- are more than twice as likely to enroll at a less-than-four-year institution;
- bring more risk factors to college;
- are less likely to begin college right after high school graduation;

The College Experience

- get less involved in out-of-class campus activities;
- are more likely to work off-campus and to work for longer hours;
- are more likely to borrow, to be repaying education loans, and to receive less help in making those repayments;
- are less likely to remain on the persistence track (once on it) and to complete a four-year degree;

Educational and occupational benefits

- without a bachelor's degree, are less likely to be employed 12 years after first enrolling;
- are likely to earn less and to be employed in lower-status occupations if their postsecondary credential is below the bachelor's degree; and
- are less likely to attend graduate or professional school after completing a bachelor's degree.

In several instances, to be sure, once in college lowest- and highest-SES-quartile students are not so sharply different (e.g., in their reports of gains in general and liberal education, academic skills, vocational preparation, or satisfaction with their colleges and jobs). Nonetheless, the list of disadvantages low-SES students confront is daunting. Indeed, as one reflects on this list and the overall import of the material described in this report, the metaphor of swimming against the tide is almost inescapable. The image is that of a large mass of swimmers struggling against a strong tide, in the grip of forces far stronger than they and ones they little understand. If the swimmers make any progress at all, it is slight. More often, they appear to be losing ground. The end is predictable. In the end, the question is whether we, as institutions, states, and a nation are willing to sit on the shore and watch.

The research indicates that students' expectations for college attendance emerge as early as the eighth grade, perhaps even earlier, and that those expectations are clearly tied to socioeconomic status. As students' SES increases, so does the altitude of their plans for educa-

tional attainment. Ultimately, nearly half of the lowest-SES quartile students will never even go to college, a rate five times that of students in the highest SES quartile. The disparities, however, are not for lack of aspirations. In the eighth grade, the desire to go to college is about as high among low-SES students as among their affluent classmates. Whereas nearly all of the latter will realize their aspirations, only about two-thirds of the former will do so.

Closing the aspiration-realization gap will require action on a broad front. If the literature reviewed earlier in this report tells us anything, it is that the college-going process is shaped by a wide array of interconnected forces and conditions. Some of them originate in the home, others in the elementary and secondary schools systems; some originate during the college experience, and others in state and federal agencies and legislative chambers. It seems highly unlikely that initiatives in only one or two areas will dramatically change the college-going and success rates of low-SES students. Action—integrated and on a broad front—will be required.

College-going starts at home. Parents are central players in the intergenerational legacies that are passed on and which shape children's educational attainment. In some cases, the legacies are assets. In other cases, they are liabilities. Parents—consciously or unconsciously—help chart their children's futures: in developing their predispositions toward going to college, in planning and preparing for college, and in the final decision on whether and where to continue their education beyond high school. High-SES parents are significantly more active and involved in encouraging, supporting, and guiding their children's college planning than are the parents in low-SES families. Ways must be found to reach not only low-SES students at an earlier age, when their college aspirations are high, but also to reach their parents. Low-SES parents need more and better information earlier in their children's lives about what is possible and available in the way of college attendance and financial aid. They need more information and advice about financial planning for their children's college education, about what is involved in the college search and selection process, and what is needed in the way of preparing their children to overcome the tide, to attend and succeed in college. Moreover, the information provided on college costs and financial aid should be clear, concise, and simple (Hossler, Schmit, and Vesper, 1999).

Parental outreach programs should be seen as a component of elementary and secondary school-based outreach programs. The research indicates that outreach programs, such as the TRIO portfolio, "I Have a Dream," "America Reads," the College Board's Equity

and Excellence project, the programs of the Education Trust, and similar efforts head their beneficiaries in the right direction, but they may be reaching (at least in the case of TRIO) less than 10 percent of the eligible students (Gladieux and Swail, 1998). If "equal opportunity" is to mean not merely an equitable chance to attend but also an equitable chance *to succeed and benefit from* postsecondary education, then a far greater investment of public and private energies and funds in these and similar outreach programs will be needed.

Additional efforts will be needed beyond the student-oriented, school-based outreach programs. Programs directed at America's elementary and secondary schools themselves are required. Calls for school reform are hardly front-page news. The literature reviewed in this report indicates that a critical element in students' subsequent persistence and success in college is their secondary school curriculum. Low-SES students score significantly below their more affluent peers on measures of specific learning areas and skills (e.g., reading, math, science, and selected social sciences), as well as on more general measures of academic achievement (e.g., ACT and SAT scores). According to Adelman (1999), "Many [secondary schools] do not offer mathematics beyond Algebra 2; many offer Algebra 2 courses that, in content, are closer to Algebra 1. Many cannot offer the three basic laboratory sciences, or foreign language study beyond the second year, or computer programming—let alone Advanced Placement courses. Students who enter higher education from these schools, enter with less momentum toward degrees than others" (p. 83).

Adelman (1999) recommends several ways of enhancing the curricular quality of such schools. One alternative is the expansion of dual enrollment policies. Under such an arrangement, a high school student unable to get instruction in higher-level courses (e.g., trigonometry, physics) could take those courses in a nearby university, college, or community college and receive both high school and college credit for the work. A second alternative Adelman refers to as "direct provision," in which a faculty member at a partner college might teach the needed course in the high school.

Colleges and universities, however, have a role to play in promoting the persistence and success of low-SES students before the students arrive on higher education's doorsteps. Adelman (1999) has suggested at least two, curriculum-related ways higher education institutions might contribute to preparation of low-SES students for postsecondary education. Colleges of education are under fire to contribute to school reform, and many are responding constructively. The contributions of colleges and universities, however, need not arise only in schools of education. Colleges and universities, both individually

and in the aggregate, have a significant self-interest in the reformation of the K–12 education system in the United States. The kinds of curricular and instructional partnerships suggested by Adelman and others now being implemented by the Education Trust (see www.edtrust.org) might be extended to other areas, including program planning and evaluation, administrative operations, technology, and instructional practices.

Beyond the contributions they can make to improve the quality of low-SES students' preparation for postsecondary education, colleges and universities also have a role to play in promoting the persistence and success of more low-SES students on their campuses. A substantial literature indicates that what happens to students after they matriculate is far more influential in students' persistence decisions than are the background characteristics students bring with them to college (Pascarella and Terenzini, 1991). The research summarized in this report also makes it abundantly clear that nondelayed entry and continuous enrollment are critical success factors. When high school graduates delay enrollment in a postsecondary institution, or when enrolled students leave and do not immediately enroll at another institution, their chances of completing a degree program drop sharply, and they drop most sharply for low-SES students. Programs and incentives for students, schools, and colleges and universities are needed to both encourage and make possible the immediate and continuous pursuit of a postsecondary education credential, even if only on a part-time basis. The rule of thumb is simple: Any enrollment is better than no enrollment.

Most institutions have "retention programs," including student orientation (some include a component for parents, something low-income parents are likely to find particularly beneficial), developmental studies programs for underprepared students, peer mentoring and counseling, first-year seminars, time management and similar workshops, academic advising, personal counseling, financial aid counseling, faculty mentors, and similar activities intended to promote student persistence and performance. The evidence generally suggests that most such efforts are successful (see Swail, 1995 for an examination of successful and practices and interventions). The underlying mechanisms that appear to be related to program success include more contact with faculty members, early development of peer relations and networks that provide *both* academic and social support, development of familiarity with campus services, positive classroom experiences, and more active participation in extracurricular activities.

In addition, successful retention efforts appear to be those that are integrated and coordinated, rather than piecemeal. Additional efforts, however, as well as the

resources to support them, should be targeted directly at low-SES students and as early as possible. While acknowledging the general effectiveness of "bridge" programs that assist recent high school graduates in making the transition to college, Adelman (1999), for example, notes that such programs "would be more effective if they began two summers earlier (after the tenth grade), on a much larger scale, and with follow-up cooperative curriculum-fortifying activities in the school district" (p. 84).

State and federal governments also have both some responsibility to bear for current conditions and a clear interest in moving more vigorously to promote the success and degree completion of low-income students. As Hartle and King (1997) put it, "It seems that most states have adopted the worst of both worlds: high tuition charges coupled with low student aid. The implications for low-income students are serious. If states are unwilling to maintain low tuition at public colleges, they have an obligation to provide significant amounts of student aid to ensure equal opportunity" (pp. 14–15). There can be little doubt that state and federal financial aid programs have increased the opportunities to attend college, but disparities across socioeconomic status levels clearly persist. Whether those same policies permit students to remain enrolled and persist to degree completion seems doubtful. A growing body of research suggests the need for a thorough reexamination of current financial aid policies that may no longer be providing sufficient aid for low-SES students and their families. These studies (e.g., St. John, et al., 1994, 1996) find some negative relations between financial aid and persistence. The evidence indicates, however, that financial aid is not so much ineffective as insufficient. Some research suggests that while financial aid may fill a portion of the gap between students' educational costs and what low-income families are expected to pay, nontrivial shortfalls may yet remain (e.g., Choy and Premo, 1996). In addition, an unintended consequence of the growing reliance on loans in packaging student financial aid may be to push some low-SES students who fear an unmanageable loan debt to choose instead to work longer hours to pay their educational expenses. The evidence clearly indicates that working longer hours, particularly off-campus, reduces students' chances to become academically and socially integrated in their institutions and, thereby, also reduces the likelihood that they will complete their degree programs.

Mortenson (1998) and others have noted the inequities in the redistribution of students from low-income families across kinds of higher education institutions. His studies indicate that the changes in state and federal financial aid and other policies have shifted

the cost of higher education from the taxpayers to the consumers over the past two decades. The impact has hit low-income students the hardest, promoting the growing concentration of low-income students in public two-year institutions. According to Mortenson, "The range of those who have access to higher educational opportunity is narrowing. The reasons are many but related to each other. Foremost among these is the collapse in state financial investment in higher education after 1979...States have been aggressively diverting resources previously committed to higher education to other state budget purposes" (p. 2). In describing the consequences, Mortenson does not mince his words: "As higher education becomes more important to people's lives, this rationing process of educational opportunity further divides us into the haves and the left-outs and greatly weakens us as a nation" (p. 20).

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Appendix A: Definitions of Wealth: A Review of the Literature

An extensive review of the literature on college choice, collegiate experiences, and outcomes was conducted in search of seminal papers examining the role of wealth-related indicators (e.g., income, parental education, socioeconomic status). Twenty-six seminal studies were

identified through ERIC database searches and solicitations of the expertise of 24 top scholars researching issues of access and persistence in higher education. The studies used a variety of methodologies and data sets to assess the impact of wealth measures on a range of higher education issues. Each study was analyzed to ascertain collegiate outcome(s) addressed, data source, and definition of wealth. Wealth measured varied widely across the studies with socioeconomic status being one of the most common measure (35 percent). However, one-third of the studies relied on self-reported family income data.

Researchers	Outcome(s)	Databases Used								Definitions of Wealth
		BPS 89-90	NPSAS	HSB:So	HSB:Sr	NLS-72	NELS:88	Inst.	Multi-inst.	
Adelman (1998,1999)	Persistence to graduation	X		X		X				2 lowest SES and SESINC composite quintiles.
Berkner and Chavez (1997)	Enrollment						X			Low income (<\$25,000), middle income (\$25,000 –\$74,999), and high income (\$75,000 or more). Income reported by parents in 1988.
Bowen and Bok (1998)	Graduation, academic outcomes, civic participation, and satisfaction with life								X	Low-SES(three levels). SES scores based on self-reported family income and parental education.
Cabrera et al. (1990)	Persistence				X					2 lowest SES quartiles.
Choy and Ottinger (1998)	College choice		X							Low income (<\$30,000), middle income (\$30,000–\$69,999), and high income (\$70,000 or more). Dependent students.
Choy and Premo, MPR (1996)	Financing college	X	X							Income below 125 percent of the federally established poverty threshold given family size.
Cuccaro-Alamin and Choy (1998)	Financing college	X	X							Lowest SES quartile (middle 2 combined).
Flint (1992)	College choice								X	Self-reported family income by \$10,000's (compared to Census %); no breakdown analysis for low-income students.
Flint (1997)	College choice		X							Self-reported family income by \$10,000's (compared to Census %); no breakdown analysis for low-income students.
Hearn (1992)	College choice				X					SES scores.
Horn and Chen, MPR (1998)	College choice and persistence						X			Lowest SES quartile and 5 at-risk factors.
Jackson (1978)	College choice— application stage					X				Lowest SES third.

chart continued on page 49

chart continued from page 48

Researchers	Outcome(s)	Databases Used									Definitions of Wealth
		BPS 89-90	NPSAS	HSB:So	HSB:Sr	NLS-72	NELS:88	Inst.	Multi-inst.		
King (1996)	College choice: Planning to attend									X	Self-reported <\$20,000 (lowest-quartile nationally).
Leslie, Johnson and Carlson (1977)	College choice: Planning to attend									X	Self-reported: low (\$7,500); middle (\$7,500–\$15,00); and high (>\$15,000).
Leslie and Brinkman (1986)	Degree completion									X	Summary of 25 different institutional research studies.
Leslie and Brinkman (1988)	College choice									X	Summary of 25 different institutional research studies.
Manski and Wise (1983)	College choice and persistence					X					Self-reported family income: lower (<\$16,900), middle (\$16,900–\$21,700), and upper (>\$21,700).
McPherson and Schapiro (1998)	College choice									X	Self-reported family income: 1980 <\$10,000; \$10,000–\$15,000; \$15,000–\$30,000; \$30,000–\$50,000; \$50,000–\$100,000; and >\$100,000 1994 <\$20,000; \$20,000–\$30,000; \$30,000–\$60,000; \$60,000–\$100,000; \$100,000–\$200,000; and >\$200,000.
Nunez and Cuccaro- Alamin, MPR (1998)	First generation college students	X									Lowest SES quartile (middle 2 combined).
Stampen and Cabrera (1988)	Persistence									X	Financial aid records. Classification based on demonstrated financial need: need 1 (mostly Pell grants); need 2 (based on GLS analysis system); nonneed (based on criteria other than economic need); and nonaided.
St. John and Noell (1989)	College choice: Applying and enrolling				X	X					Self-reported family income; no breakdown analysis for low-income students.
St. John (1990a) Enrollment	College choice:			X							Self-reported family income: <\$15,000; \$15,000–\$24,999; \$25,000–\$39,999; and >\$40,000.
St. John (1990b)	Persistence				X						Self-reported family income: <\$15,000; \$15,000–\$24,999; \$25,000–\$39,999; and >\$40,000.
St. John (1994a)	Pricing			X							SES quartiles and 3 need simulations (1, mostly Pell grants; 2, eligibility for other need-based aid; 3, not considered eligible for need-based aid).

chart continued on page 50

chart continued from page 49

Researchers	Outcome(s)	Databases Used								Multi-inst.	Definitions of Wealth
		BPS 89-90	NPSAS	HSB:So	HSB:Sr	NLS-72	NELS:88		Inst.		
St. John et al.	Persistence		X								<\$11,000; \$11,000–\$29,999; (1994) \$30,000–\$59,999; and >\$60,000; no breakdown analysis for low-income students.
St. John et al. (1994)	Choice and persistence		X								<\$11,000; \$11,000–\$29,999; \$30,000–\$59,999; and >\$60,000; no breakdown analysis for low-income students.

Appendix B: Sources of Data and Methodology

I. Databases Employed

National Longitudinal Study of the High School Class of 1972 (NLS-72)

The NLS-72 longitudinal study, the first of its kind conducted by NCES, followed the high school, collegiate, and workforce experiences of almost 23,000 1972 high school seniors. Data are available for the base year and the subsequent follow-ups: 1973, 1974, 1976, 1979, and 1986. High school records, SAT/ACT scores, and college transcripts were collected in 1973 and in 1984 as sources of verification for self-reported data.

High School and Beyond, Sophomore Cohort (HSB:82)

The HSB:82 NCES database (CD#98-135) follows almost 15,000 1980 high school sophomores. Data were collected in 1982, 1984, and 1986, and again in 1992, 10 years after their high school graduation. Student and parent data are available, along with SAT/ACT scores, high school transcripts, and college transcripts (collected in 1993).

National Education Longitudinal Study of 1988

The NELS:88 NCES database (NCES 96-130) follows nearly 15,000 1988 eighth graders, with follow-up surveys in 1990 (tenth grade), 1992 (twelfth grade), and 1994 (two years out of high school). Student and parental data are available. Because the NELS:88 sample was designed to follow 1992 high school seniors, trend comparisons can be made to 1972 (NLS-72) and 1982 (HSB:82) high school seniors. A follow up is scheduled to begin in January 2000. High school and college transcripts will be collected in 2001.

Beginning Postsecondary Students (BPS)

Building on the National Postsecondary Student Aid Study (NPSAS), BPS (NCES 96-136) followed a 1989-90 entering cohort of nearly 8,000 first-time postsecondary students. Data are collected every two years, including 1990, 1992, 1994, which are the most recent available at the time of this study. A new BPS cohort was established in 1995-96. A follow-up was conducted in 1998, and a second follow up is scheduled for

2001. BPS 1995-96 includes unobtrusive financial aid records and SAT/ACT scores.

National Study of Student Learning (NSSL)

This data set was developed by the National Center on Postsecondary Teaching, Learning, and Assessment (NCTLA), headquartered at the Center for the Study of Higher Education at Pennsylvania State University. NSSL includes information from nearly 4,000 students entering 23 diverse institutions around the country in 1992. Data on these students' college experiences were gathered each year during the succeeding three years. Compared with NCES databases, NSSL is limited in both the number of students and higher education institutions involved. It is, however, far richer in the scope, depth, and detail of its information on student experiences and educational outcomes.

II. College Choice

Factors in College Choice (Based on BPS weighted data—BPS94AWT)*

Importance of Financial Aid

OFERDFA1: This BPS variable asked the first-time student respondents to assess (yes or no) the importance of financial aid in the decision to attend college. Responses were disaggregated by control and type of institution attended across SES quartiles.

First-Choice Attendance

CHOICE: Contained in BPS, this NPSAS-based variable asked the student respondents whether they were attending the postsecondary institution of first choice.

Most Important Factors in College Choice

BPS asked respondents to indicate the extent to which 15 factors were important in their choice of postsecondary institution:

BETTRJOB:	Better chance to get job at the school
COSTLIVE:	Other living costs at the school were less
COURSEOFF:	Offered the course of study wanted
FARAWAY:	Far away from home
FINAID:	Obtained the financial aid needed
FRIENDAT:	Friends attended
GD_REP:	School has good reputation
LIVEHOME:	Could live at home
PARENT:	Parents (or guardians) wanted student to attend
PARNTATT:	Parents attended the school
PLACEMNT:	Good reputation for placing graduates
SCHCLOSE:	Close to home

* The weight was recommended by Anne Marie Nunez at MPR, Inc.

SCHLNWRK: Can go to school and work
 SHORTER: Could finish the course in a short period of time
 TUTTLESS: Tuition and other expenses were less
 Respondents were asked to rate each factor on a Likert scale measuring importance—not important, somewhat important, and very important. Only responses of “very important” were used to assess the top three factors involved in student institutional choice, by SES and institutional type and control. Following Adelman’s (1999, footnote 29) recommendations, only respondents who considered themselves to be primarily students—SCPRROLE—were retained.

Number of institutions applied by SES quartile among the 1989-90 beginning postsecondary students.

ANOVA was conducted to assess the extent to which SES students differ in the number of institutions they applied to (APPLYNSH). The dependent variable was

number of admission applications (APPLYNSH) submitted by the 1989–90 beginning postsecondary students. Only those respondents who considered themselves to be primarily students—SCPRROLE—were retained. Scheffé analyses were run to examine specific mean differences across each of the four SES quartiles. The data were unweighted, producing the most conservative estimates and avoiding design effect issues. Perna (2000) correctly notes the use of weights tends to produce biased standard errors.

DESCRIPTIVE STATISTICS
 (APPLYNSH: ADMISSION APPLICATIONS
 # AY89-90-N90)

SES Quartile	N	Standard Mean	Deviation
Lowest	176	2.20	2.23
Second lowest	290	2.51	2.22
Middle upper	789	2.52	1.72
Upper	1813	3.37	2.30
Total	3068	3.00	2.20

ANOVA RESULTS

DEPENDENT VARIABLE: NUMBER OF INSTITUTIONS APPLIED TO BY SES QUARTILE

	Sum of Squares	df	Mean Square	F	p Value
Between SES quartiles	608.312	3	202.771	43.769	.000
Within SES quartiles	14194.688	3064	4.633		
Total	14803.000	3067			

SCHEFFÉ MULTIPLE COMPARISONS AMONG MEANS

DEPENDENT VARIABLE: NUMBER OF INSTITUTIONS APPLIED TO

(I) SES	(J) SES	Mean Difference* (I-J)	Standard Error	p Value	95% Confidence Interval	
					Lower Bound	Upper Bound
Lowest SES	Lower middle	-.30	.206	.540	-.88	.27
	Upper middle	-.31	.179	.387	-.81	.19
	Highest SES	-1.16	.170	.000	-1.64	-.69
Lower Middle	Lowest SES	.30	.206	.540	-.27	.88
	Upper middle	-1.02E-02	.148	1.000	-.42	.40
	Highest SES	-.86	.136	.000	-1.24	-.48
Upper Middle	Lowest SES	.31	.179	.387	-.19	.81
	Lower middle	1.02E-02	.148	1.000	-.40	.42
	Highest SES	-.85	.092	.000	-1.11	-.59
Highest SES	Lowest SES	1.16	.170	.000	.69	1.64
	Lower middle	.86	.136	.000	.48	1.24
	Upper middle	.85	.092	.000	.59	1.11

*The mean difference is significant at the .05 level.

