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Social Class and College Costs

Examining the Financial Nexus Between College Choice and Persistence

During the past two decades there have been fundamental changes in the ways states and the federal government finance higher education (McPherson & Schapiro, 1998; Mumper, 1996; Paulsen, 1998; Paulsen & Smart, 2001; St. John, 1994). The federal government has shifted from using grants as the primary means of promoting postsecondary opportunity to using loans for this purpose. Decreases in state support for public colleges and universities have led to increases in tuition charges, which have shifted a larger portion of the burden of paying for college from the general public to students and their families (Breneman & Finney, 1997; Mumper, 1996; Paulsen, 1991, 2000). Thus, the last two decades of the twentieth century can appropriately be characterized as a period of high tuition, high aid, but with an emphasis on loans rather than grants. How have these changes in the costs of college influenced the opportunities of students in different income groups to attain a higher education? To address this question we examined the ways that college costs affect the college-choice and persistence decisions of students in four different income groups.

The idea that research on college students should focus on social class represents a departure from mainstream research on college students,

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which focuses primarily on students of traditional college-going age and background (Pascarella & Terenzini, 1991) and is centered in traditional values. This study extends an alternative approach to the study of college students based on the student-choice construct that has evolved over the past decade (Paulsen & St. John, 1997; St. John, 1994; St. John, Paulsen, & Starkey, 1996). The new approach presented in this study explicitly addresses the diverse patterns of student choice in its examination of the ways in which the effects of financial factors on students' choices differ across social classes. To provide background for this study, the following sections present the student-choice perspective that guides the study, describe the salient features of the financial nexus between college choice and persistence decisions, and explain why a focus on social class is an important step in efforts to understand the role of finances in student choice.

The Research Literature and Conceptual Framework that Inform the Study

The Student Choice Perspective

Research on college students has been dominated by the research traditions of developmental and change theories (Pascarella & Terenzini, 1991). These research traditions are primarily centered in the values of students of traditional college-going age and background and neither can be easily adapted to the study of the new, contemporary college aspirants, who are increasingly diverse in terms of age, ethnicity, and socioeconomic background. It is important to reflect briefly on the limitations of these traditional approaches before presenting student-choice theory as an alternative.

The limitations of traditional models. One of the dominant traditions in college student research is student development theory (Pascarella & Terenzini, 1991), which started with the study of students of traditional college-going age and background (e.g., Chickering, 1969; Perry, 1970). This approach was highly compatible with the characteristics and experiences of traditional students, but is not directly applicable to the college experiences of many of the new aspirants to college, an increasingly-large proportion of whom are minorities and older students. Minority students have different backgrounds and experiences before they attend college, compared to the middle-class students who were used as a basis for the developmental theories, while older students have already experienced and passed through many of the developmental sequences that are the focus of traditional stage theories of development.

Developmental theory is also limited because it has few direct link-

ages to matters of public policy. The focus is on how students change and how experiences during late adolescence and early adulthood influence personal values, attitudes, and related outcomes. These developmental issues have been a central concern in traditional liberal arts education, which values the academic, personal, and moral development of the individual student. However, these values and perspectives implicitly assume that students have relatively unimpeded access to and opportunities for postsecondary advancement, and therefore, provide limited insight into the struggles of poor and working-class students in the face of the financial barriers associated with college.

The most often used alternative, change theory (Astin, 1993; Feldman & Newcomb, 1969; Pascarella & Terenzini, 1991), also focuses primarily on students of traditional age and background. Early change theories tended to focus on inputs, process, and outputs, focusing on how college experiences influenced students (Astin, 1975, 1993). Change research then began to focus on specific educational choices, such as the decision to attend college (St. John & Noell, 1989), the choice of college (Jackson, 1978), and the intent to persist (Pascarella & Terenzini, 1979, 1980). Most of the research that tested these theories used data on traditional college-age students from national longitudinal studies and institutional samples of college freshmen. However, this second wave of research did consider the ways public policy influenced student outcomes. For example, Jackson (1978) and others (Manski & Wise, 1983; St. John, 1991; St. John & Noell, 1989) examined the influence of federal student aid on expanding access and choice; and Cabrera, St. John, and their colleagues considered the effects of student aid on persistence (Cabrera, Nora, & Castaneda, 1992; Cabrera, Stampen, & Hansen, 1990; St. John, 1989; St. John, Kirshstein, & Noell, 1991). And once the National Postsecondary Student Aid Survey became available, new studies focused on students of nontraditional age and from diverse backgrounds (e.g., Kaltenbaugh, St. John, & Starkey, 1999; St. John & Starkey, 1995b). Nevertheless, the logic of these models adapted concepts that evolved from studies of traditional-age middle-class students without fully considering the diverse patterns of choice related to the diversity of experiences across different groups of students.

The student-choice construct. Recently, a student-choice construct has been developed that can potentially guide a new wave of research that examines the experiences of diverse groups of students on their own terms. First, St. John (1994) proposed that a sequence of student choices, leading to various stages of attainment, could be used as a basis for advancing theory and reformulating policy. Next, St. John, Paulsen and colleagues (Paulsen & St. John, 1997; St. John et al., 1996) re-

viewed the literature on college choice and persistence and proposed and empirically tested the choice-persistence nexus as a new way of looking at the effects of financial policies across different types of choices in the sequence. St. John and Hossler (1998) then used the student-choice construct to assess how different types of court-ordered desegregation remedies might promote more diversity in enrollment at various types of institutions. This approach was also influenced by prior work of Walter Allen and colleagues (Allen, Epps, & Haniff, 1991), which focused on a range of educational choices by African American students and offered a lucid contrast to research on students from traditional college-going backgrounds. There are several basic assumptions that underlie this student-choice construct or approach.

There is a sequence in educational choices with explicit policy linkages. The choice sequence includes formation of aspirations, the decision to attend (opportunity), choice of college, choice and change of major, persistence to graduation, and graduate education. These choices are influenced by family background, environmental and educational experiences, and policy-related factors, including postsecondary information, student aid, tuition costs, and debt forgiveness.

There are diverse patterns of student choice, and therefore diverse groups merit study. Policy research on college students should consider diverse groups on their own terms. Patterns of student choice behavior are likely to differ according to the characteristics of diverse groups of students, such as those with different financial means, diverse ethnic groups, women compared to men, and students of traditional and nontraditional age. Studies that emphasize group comparisons provide a basis for refining theory.

Students make educational choices in "situated" contexts. Most theories of student outcomes assume geographic, social, and economic mobility and opportunity, as do most of the economic and social theories on which they are based. However, most of today's potential students have limited mobility, choice, and financial means. Furthermore, the cultures and values or habiti that constitute students' early school and family environments have a substantial influence on the ways they frame and make educational choices.

These principles provide a logical basis for conceptualizing new approaches to research on college students that can contribute to an understanding of diversity and how public policy can better acknowledge, value, and promote diversity in higher education. The overarching assumption behind this approach is that it is important to examine how students make situated decisions based on their own, suited circumstances. This study takes a step forward in this process by using the

choice-persistence nexus as a model to examine and compare students from different socioeconomic backgrounds in terms of their perceptions and experiences of financial factors, as well as the impact of finances, on their enrollment behavior.

The Financial Nexus Model

The financial nexus model has established new linkages between the two primary aspects of student enrollment behavior—college choice and persistence—that have been traditionally viewed as two distinct sets of behavior in theory and research (e.g., Astin, 1975; Bean, 1980; Cabrera et al., 1992, 1993; Hossler, Braxton, & Coopersmith, 1989; Pascarella & Terenzini, 1991; Paulsen, 1990; Tinto, 1993). The nexus model is uniquely suited for advancing our understanding of diverse patterns of educational choice, how such patterns may be related to differences in social class, and the ways public policy (e.g., financial policy) can promote and support diversity in higher education. To describe the model, we consider below how it relates to the principles of the student-choice construct outlined above.

First, the nexus model was developed as a means of looking across the sequence of student choices, focusing on how factors that affected earlier choices (i.e., the choice of college) could also influence subsequent choices (i.e., the persistence decision). The initial applications of the concept focused on the financial nexus between college choice and persistence decisions. In particular, initial studies examined the effects of students' financial reasons for choosing a college to attend and the actual dollar amounts of costs and aid, on their decisions to persist in their attendance (Paulsen & St. John, 1997; St. John et al., 1996). A meaningful examination of the financial nexus between college choice and persistence requires the consideration of how two sets of "parallel factors" influence persistence: (1) students' perceptions of financial factors, such as the availability of low tuition or high aid, that students view as very important at the time of their initial college choice decisions (finance-related college-choice variables); and (2) measures of the dollar amounts of financial variables (e.g., tuition, aid, living costs) that students actually experience at the time of a subsequent persistence decision.

Financial nexus theory argues that if students perceive low tuition or low living costs to be very important in their choice of college, such cost-consciousness may also have a direct impact on their subsequent persistence decisions. Similarly, in ways consistent with prior research, the actual dollar amounts of costs and aid a student experiences at the time of a persistence decision may have a direct effect on persistence. It is also possible that students' initial concerns about costs and aid at the

time of their college choice may subsequently interrelate with their experiences of the actual amounts of costs and aid in the determination of their persistence decisions. Initially, students are assumed to compare the costs and benefits of attendance based on their prematriculation perceptions or expectations about financial factors; a favorable judgment results in enrollment, which establishes an "implicit contract" between the student and the college. Subsequently, students compare their actual experiences of costs and benefits with their earlier perceptions and expectations about them. In the face of a favorable comparison, the student would view the implicit contract as inviolate, and a decision to re-enroll would result. Each of these arguments posed by the nexus model has been supported in initial empirical analyses (Paulsen & St. John, 1997; St. John et al., 1996), thereby supporting the view that students engage in a series or sequence of related choices, and at each stage their decisions are affected by financial factors.

Second, the nexus model can be used to examine cross-group comparisons, provided that the database has sufficient diversity. In the second study using the financial nexus, Paulsen and St. John (1997) compared persistence decisions by students in public and private colleges. Students attending private colleges were much more likely than those at public colleges to consider high aid an important factor in their college choices, were less sensitive to tuition and living costs, and were more substantially and positively influenced by grant aid. In contrast, students in public colleges more frequently considered low tuition important, were more responsive to tuition and living costs, considered location (close to home and could work) to be important, and were more negatively impacted by the inadequacy of student grants. Based on these findings, it seems appropriate to make further group comparisons.

Finally, the nexus model also provides insight into the situated and contextual nature of college choice. One of the most important findings of the first study of the financial nexus (St. John et al., 1996) was that students have dramatically different choice contexts, which have a pervasive influence on multiple stages of the sequences of student choices. Some students chose their colleges because of the availability of high aid or low tuition, as we would expect from prior research on traditional-age college students (e.g., Jackson, 1978; Manski & Wise, 1983). Others chose their colleges so they could economize on their living costs (e.g., by living at home) or so they could continue to work while attending college, patterns that would seem more compatible with non-traditional students who often have more constrained choices because of their limited financial resources or experiences. Findings from the second study of the financial nexus (Paulsen & St. John, 1997) illuminated the role of

students' circumstances in framing and constraining their educational choices. Choosing a college because it was close to home was consistently interrelated with living costs, whereas choosing a college because of low tuition or high aid was interrelated with students' responsiveness to costs and subsidies. Furthermore, these different patterns accentuated differences in the circumstances that constrained choices for students in public colleges compared to students in private college. Therefore, it is appropriate to use the financial nexus model to make additional group comparisons that will advance our understanding of the situated and contextual nature of student choice.

A Focus on Social Class and the Role of Finances

Although higher education research has given only limited consideration to the role of social class, it has long been evident that class plays an important role in education and attainment and should be considered when critically examining educational policy. A substantial volume of research has theoretically and empirically indicated that educational institutions and policies play a role in the class-based reproduction of social and economic stratification in American society (Bowles & Gintis, 1976; Carnoy & Levin, 1985; Jencks & Peterson, 1991; Morrow & Torres, 1998). The observation that social class structures educational opportunities has been documented for secondary education and vocational education (Grubb & Lazerson, 1981; Trow, 1977), for community and technical college education (Clark, 1960; Karabel, 1977), and for postsecondary education at other types of private and public colleges and universities (Hearn, 1984, 1990; McDonough, 1997, 1998). However, Carnoy and Levin (1985) conclude that the American system of "education both reproduces the unequal hierarchical relations of the nuclear family and capitalist workplace and also presents opportunities for social mobility and the extension of democratic rights" (p. 76). The present study, among other things, offers an investigation of the validity of this assertion.

Recent application of social reproduction theory to investigations of college students' enrollment decisions (DiMaggio & Mohr, 1985; Freeman, 1997; Karen, 1988; McDonough, 1997, 1998) have been based on applications of Bourdieu's concepts of "cultural capital" and "habitus" (Bourdieu, 1977a, 1977b; Bourdieu & Passeron, 1990). *Cultural capital* represents forms of symbolic wealth that are transmitted from upper- and middle-class parents to their children to sustain class status from one generation to the next (McDonough, 1997). Examples include familiarity with and access to the linguistic structures, school-related information, social networks, and educational credentials of dominant

groups (Bourdieu, 1977b; Bourdieu & Passeron, 1990; Lamont & Lareau, 1988; McDonough, 1997, 1998; Swartz, 1997). *Habitus* is an enduring, internal system of values, attitudes, beliefs, and actions, which is derived from the student's immediate family, community, and school environments and is common to members of one's social class. A student's social class and her related cultural capital and habitus consistently frame, constrain, and structure students' patterns of college choice (Bourdieu, 1977b; McDonough, 1997, 1998).

The habitus construct can be related to the student-choice construct and the financial nexus model used in this study. A student's habitus provides a powerful filter that implicitly determines what a student "sees," how the student interprets and values what she sees, and what action she will take as a result. When it comes to the financial nexus between college choice and persistence decisions, one's habitus would operate implicitly to frame, constrain, and inform the patterns of students' responses to financial factors in such choices in ways that are consistent with the views of others in the student's social class. In other words, each student's habitus serves to "situate" or "contextualize" their choices, and it represents a set of relatively stable predispositions with respect to what the student will see and value regarding the financial aspects of choice and persistence decisions (Berger, 2000; Paulsen & St. John, 1997).

There are also reasons to expect that an understanding of social class is critical to understanding the role of finances in students' choice and persistence decisions. It has been well documented that the recent changes in federal student aid policy have been especially problematic for low-income students compared to more affluent students (St. John & Starkey, 1995a), and more troublesome for African Americans than whites (Kaltenbaugh et al., 1999). In addition, a student's social class, cultural capital, and habitus influence how cost-conscious students are and even how students conceive of financial issues as part of the college-going decision (McDonough, 1997). And research has shown that lower-income students are more sensitive to college costs in their decision making than upper-income students; African American students are more sensitive to college costs than white students; community college students—which include a disproportionate share of low-income and minority students—are more sensitive to college costs than students attending other types of institutions (Heller, 1997; Leslie & Brinkman, 1988). Therefore, there is good reason to use the nexus model to examine the role of finances in student choice, with a particular focus on building an understanding of class differences in students' experiences with financial factors in their enrollment decision making.

The student-choice construct and financial nexus model used in this study also embrace some of the perspectives of critical theory (Apple, 1982; Foster, 1986; Tierney, 1992). For example, the present study examines the ways in which the effects of financial factors on students' choices differ across social classes. Therefore, this study explicitly examines the implicit assumption made in most previous research on college students in general, and in research on student choice in particular, that all students make their choices under similar circumstances, in similar situations and contexts, and based on similar habiti. Alternatively, the presence of substantial class-related patterns of choice behavior in response to financial policies would indicate that social class, at least to some extent, serves to structure postsecondary opportunities and reproduce class-related patterns of educational attainment (Bourdieu & Passeron, 1990; Bowles & Gintis, 1976; Carnoy & Levin, 1985; Hearn, 1990; Karen, 1988; McDonough, 1997, 1998).

Methodology

This study used a refined version of the financial nexus model to examine persistence by undergraduates in four distinct income groups. The financial nexus model examines the effects of student background, perceptions or expectations about costs (financial reasons for choosing a college), college experience (including measures of student achievement in college), current aspirations, and finances (market-based, monetary measures of prices and subsidies) on persistence. The key feature of the nexus approach is that it examines the influence on persistence of both cost-related factors that students considered important in their choice of college and the prices and subsidies students encountered at the time of subsequent persistence decisions. The variables used in the refined model are presented in Table 1.[1]

First, we included fifteen variables related to student background. Most of these variables were coded and included as design sets of dichotomous variables for ethnicity (African Americans, Latinos, and Asians are compared to others),[2] mother's education (students whose mothers completed less than high school, college degrees, master's degrees, and advanced degrees were compared to students whose mothers had a high-school education), and high-school experience (students with GEDs and without high-school diplomas were compared to students with high-school diplomas).[3] Several more dichotomous variables were included: males were compared to females; married students were compared to unmarried students; working students were compared to students who did not work; and financially independent students were

TABLE 1

Variable Coding

Variable	Coding
STUDENT BACKGROUND	
Ethnicity	
African American	1, 0
Latino	1, 0
Asian	1, 0
Other	Comparison group
Gender	
Male	1, 0
Mother's Education	
Less than high school	1, 0
High school	Comparison group
Some college	1, 0
College	1, 0
Master's	1, 0
Advanced	1, 0
Age	
Years old	year of age
Marital Status	
Married	1, 0
High school	
GED	1, 0
No high-school diploma	1, 0
High-school diploma	Comparison group
Employment	
Working	1, 0
Dependency Status	
Independent	1, 0
COLLEGE CHOICE (Perceptions/Expectations of Costs)	
Fixed Costs	
Financial aid	1, 0
Low tuition cost	1, 0
Tuition & financial aid	1, 0
Controllable Costs	
Low living cost	1, 0
Could work	1, 0
Living cost & work	1, 0
COLLEGE EXPERIENCE	
Private	1, 0
Four-year	1, 0
On campus	1, 0
Full-time	1, 0
Year in College	
Freshman	Comparison group
Sophomore	1, 0
Junior	1, 0
Senior	1, 0
Grades	
Below C	1, 0

TABLE 1 (*Continued*)

Variable	Coding
Mostly C	1, 0
B Average	Comparison group
Mostly A	1, 0
Not reported	1, 0
ASPIRATIONS	
Vocational	1, 0
Some college	1, 0
College	Comparison group
Master's	1, 0
Advanced	1, 0
FINANCIAL	
Fixed Costs	
Grant $	$/1,000
Loan $	$/1,000
Work $	$/1,000
Tuition $	$/1,000
Controllable Costs	
Food/housing $	$/1,000

compared to dependent students. Finally, age was treated as a continuous variable.

Many of these background variables may be related to social class differentiations. For example, in social attainment theory, income and parents' education are sometimes combined to create general hierarchical measures of social class (Alexander & Eckland, 1975; Blau & Duncan, 1967). However, a substantial volume of research has demonstrated that students' degree of concern about and responsiveness to college costs in their enrollment decisions are consistently and inversely related to the incomes of students and their families (Heller, 1997; Leslie & Brinkman, 1988; Paulsen, 1998; St. John & Starkey, 1995a). Because the purpose of this study is to analyze the relations between social class and students' sensitivity to college costs, we chose to examine the influence of various levels of mothers' education and other background variables on persistence within four distinct income categories. Descriptive statistics presented in a later section illustrate salient differences across the four income groups that correspond with the social class distinctions that are widely discussed in the literature.

Mother's education was used in the nexus model for a couple of reasons. First, previous research indicates that mother's education predicts persistence better than father's education or parents' education (St. John,

Kirshstein, & Noell, 1991). Second, mother's education is a more appropriate predictor because many students are from single parent homes, which means that a larger percentage of students are likely to be influenced by their mothers on a day-to-day basis. In this study, we examine the influence of mother's education, along with other background variables, on persistence by students in different income groups. We estimated the parameters of the financial nexus model separately for each of four income groups. The four groups were consistent with those used in previous research using NPSAS87 data (e.g., St. John & Starkey, 1995a): low-income students had income less than or equal to $11,000; lower-middle income students had income above $11,000 but less than $30,000; upper-middle-income students had income of at least $30,000 but less than $60,000; and upper-income students had income equal to or greater than $60,000.

Second, we used two design sets of dichotomous variables as measures of the perceptions and expectations about college costs held by students when they chose their colleges. The first set of variables provides an indication of the ways students viewed fixed costs related to choosing their colleges: students who considered financial aid, low tuition, or both low tuition and student aid as very important in their college choice were compared to students who did not think any of these fixed cost variables were very important. These variables serve as indicators of students' expectations or perceptions about the costs of attending. Examining the influence of these college-choice-related variables within the four income groups provides insight into social class differences in the perceptions and expectations of educational costs. In addition, we coded a design set of dichotomous variables related to controllable costs, the financial factors that enable students to keep their own costs down and/or earn more money while in college. This set of variables compared students who rated low living costs, being able to work, or both living costs and could work as very important in their college choices. Examining these college-choice-related variables across income groups provides visibility into social-class-related perceptions of ability to manage the affordability of college. In combination, these two sets of variables provide substantial insight into the perceptions and expectations held by different students about their ability to pay for their education when choosing which college to attend.

Third, ten variables related to the college experience were examined. These included three dichotomous variables: students attending four-year colleges were compared to students in two-year colleges, and full-time students were compared to students attending less than full time.[4] We used a design set of binary variables for year in college: sophomores,

juniors, and seniors were compared to freshmen. Another set was used for college grades: students with below-C grades, C averages, mostly A's, and no reported grades were compared to students with B averages.[5]

Fourth, current aspirations were coded as a design set of dichotomies. Students who aspired to complete a vocational qualification, some college, master's degree, or advanced degrees were compared to students who aspired to complete their college degrees. In combination, the sets of variables related to student background, perceptions and expectations about college costs, college experiences and current aspirations constitute the base model for which the parameters were estimated in step one of the analysis for each income group.

Finally, five finance variables were treated as actual amounts.[6] Grants, loans, work study, and tuition charges were added in a separate step (step two), to examine how these fixed costs—set by the institution—influenced persistence. Then living costs for food and housing—that is, costs over which many students, whether they live on campus or off campus, exercise some degree of control—were entered in the third step.[7] By adding these two types of finance variables, we built a more complete portrayal of the ways finances—that is, actual dollar amounts of tuition, aid, and living costs—interrelate with students' earlier perceptions and expectations about college costs when choosing to attend their respective colleges, as well as with other background and experience variables, for students in different income groups.

Data and Statistical Methods

Consistent with prior analyses using the financial nexus model, this study uses the National Postsecondary Study Aid Survey of 1987 (NPSAS87).[8] The 1987 National Postsecondary Student Aid Survey (NSAS87), the database used for previous nexus studies (Paulsen & St. John, 1997; St. John et al., 1996), is an especially appropriate database to use for this study, given our intent of examining class differences in how students experience financial factors in their college-choice and persistence decisions. In a study of this type, it is important to have a sample that represents all postsecondary students, as well as to have a database of sufficient size to be able to break it down by diverse subgroups. First, NPSAS87 was the first national sample of students already in college. Prior national databases used samples of high-school seniors, then followed the sampled cohort through their college years. It was not possible to examine college persistence by older students and high-school dropouts using these other databases. Second, NPSAS87 included a fall sample and a follow-up spring survey. This was an appropriate sampling approach for assessing within-year persistence, the per-

sistence outcome that is more directly related to college affordability and price response.[9] Subsequent NPSAS databases have had a revolving sample ensuring that students who enrolled in the spring but not the fall had an equal chance of being sampled. This sampling approach unfortunately confounds the fall-to-spring and spring-to-fall persistence decisions—which are conceptually distinct decisions, as noted in a footnote previously—and also reduced the size of the sample, which could limit group comparisons for income groups or ethnic groups. Thus, NPSAS87 represents the best available database for group comparisons of the type undertaken here.

Logistic regression was used in these analyses because it is an appropriate statistical method for the study of variables that influence qualitative, dichotomous outcomes, such as persistence (Cabrera, 1994; Menard, 1995). Further, we used a sequential logistic analysis, which provides visibility into the ways different sets of variables interrelate to influence persistence. We analyze three logistic persistence models for each income group. In step one, we estimate the parameters of the basic model that examines the effects of variables related to student background, perceptions and expectations of college costs, college experiences, and current aspirations. In the second step, we add the "fixed" cost variables (tuition and aid). In the final step we add living costs for food and housing, a "controllable" cost for *both* on-campus and off-campus students.[10] When the significance of a variable changes between step one and steps two and three—that is, after the college cost measures are added to the base model—the interrelations among variables included in the various steps provide plausible explanations for changes in significance (Kmenta, 1986). Therefore, examining these interrelations becomes an important and useful feature of the subsequent sections in which the results of these analyses are presented.

Our analyses present delta-*p* statistics for the variables included in each model. We used a method for calculating delta-*p*'s proposed by Petersen (1984) and recommended by Cabrera (1994). The delta-*p* provides a measure of the change in probability of persistence attributable to a unit change in an independent variable. The delta-*p* provides a more easily interpreted measure of influence than do the beta coefficients or odds ratios.

In addition, we present a set of indicators of the quality of the model. This includes several measures related to the model's goodness-of-fit: a Somer's *D*, the R_L^2 statistic, which is a pseudo-R^2 recommended for use in logistic regression by Hosmer and Lemeshow (1989) and Menard (1995),[11] and the minus 2 log likelihood and the chi-square tests of its significance. The primary focus of our discussion, however, is on the di-

rect effects of the variables in the model, as well as the interrelations among variables, rather than on the quality or goodness-of-fit of the various models.

Limitations: The Data, Variables, and Procedures

This study does have a few limitations. Perhaps the most substantial limitation is that NPSAS87 lacks information on student achievement in high school, such as grades or achievement test scores. However, college and high-school achievement are usually highly correlated, and research has demonstrated that measures of high-school achievement or other precollege ability measures are only relevant to the prediction of persistence in the early college years. For the later years of college, high-school grades become less important, and college grades become more important in the prediction of persistence (Cabrera, Stampen, & Hansen, 1990; St. John, Kirshstein, & Noell, 1991). Therefore, the absence of such a measure is not necessarily problematic. Furthermore, we do examine the influence of two variables related to high-school completion, which have proven to be consistently significant and useful for illustrating that persistence is affected by students' high-school experiences in prior studies (e.g., St. John, Andrieu, Oescher, & Starkey, 1994).

Another possible limitation is that NPSAS87 was based on a sample of students initially studied in the fall, and then again with a follow-up survey in the spring (NCES, 1988). This sequence of events constitutes a sampling procedure that would have excluded students for whom the spring semester was the first semester of enrollment. Although this does not seem problematic, to the extent that there are differences in the between-semester persistence behaviors of those who started in the fall and those who started in the spring, the findings of this study may not be generalizable to the latter group.

Similarly, the sampling procedures employed might pose another possible limitation in the data. The initial surveys were conducted in mid-October of the fall semester. This means that students who began school in the fall semester, but dropped out in the first four or five weeks would not have been included in the sample. Therefore, the behavior of early-term dropouts, which may or may not differ from later-term dropouts, is not examined in this study.

The sample did contain some missing values for some of the variables included in the model, necessitating the deletion of some cases for the analysis. However, the number of missing values was small and the distribution of the missing values was assumed to be random.

Another issue relates to the fact that NPSAS87 is more than a decade old. However, because the policy shift toward higher tuition, lower

grants and more loan aid began substantially before 1986–87, this shift has continued in the 1990s, and government grant aid has not increased substantially since the late 1980s (College Board, 1998), the timing of the survey is situated around the middle of this period of policy changes. Therefore, we think this data set reflects well the current period of public finance. However, tuition and loans have increased substantially in the past decade, thus some of the problems identified in this analysis may have become more serious. Therefore, in order to capture the probable intensification of the problematic relations between social class and college costs observed in this study, it may be desirable to replicate these analyses using a more current national database.

Findings

The results of the analysis of the financial nexus are presented in six parts. First, we examine and compare the descriptive statistics for undergraduate students in the four income groups. Then we present the results of the sequential logistic regression analyses for the four income groups. We examine the effects of each of the five sets of variables separately, first across the three steps for each income group and then across the four income groups to highlight cross-class comparisons. Our analyses focus on building an understanding of how differences across social classes influence perceptions and expectations of costs and on how the effects of college costs on both choice and persistence decisions vary across income groups.

Income and Social Class: Cross-Class Comparisons of Descriptive Statistics

Undergraduates in the four income groups are compared in Table 2. There are clear differences across the four income groups that correspond with the class distinctions often made in the literature. We briefly review the characteristics of the four groups.

Low-income students. First, the low-income group is really comprised of two groups. About half are independent (46%), which helps explain why these students are older, on average, than the other three groups. Financial aid policy allows older students who are financially independent to apply for student aid, using their own income as a basis for need calculations. Thus, when we divide the population by categories related to adjusted gross income, a little more than half of the low-income students were from families that earned less than $11,000 and a little less than half had personal earnings (earnings with spouses) that were below this amount. Clearly $11,000 was a low income in 1987, but the meaning of

TABLE 2

Comparison of Income Groups

	Low Inc.		Low Mid.		Up. Mid.		Upper	
	%	Ave.	%	Ave.	%	Ave.	%	Ave.
STUDENT BACKGROUND								
Ethnicity								
African American	14.6		9.6		4.2		2.3	
Latino	6.3		5.1		3.1		2.4	
Asian	6.1		4.8		3.4		4.4	
Gender								
Male	44.2		45.3		48.3		48.0	
Mother's Education								
Less than high school	22.3		17.6		8.2		4.0	
High school	34.6		37.9		32.2		15.9	
Some college	23.3		24.4		25.7		20.7	
College	12.4		12.8		20.4		29.8	
Master's	4.8		4.6		9.6		15.9	
Advanced	2.7		2.6		3.9		13.7	
Age								
Years old		25.2		23.7		22.3		21.4
Marital Status								
Married	18.9		20.4		14.9		7.8	
High School								
GED	5.5		2.7		1.3		0.8	
No high-school dipl.	4.1		2.5		2.0		1.8	
High-school diploma	90.4		94.8		96.8		97.4	
Employment								
Working	60.9		64.4		58.3		45.1	
Dependency Status								
Independent	46.4		29.0		13.4		5.5	
COLLEGE CHOICE								
Fixed Costs								
Financial aid	27.2		21.9		13.2		5.3	
Low tuition cost	14.9		19.2		23.4		16.7	
Tuition & fin. aid	22.0		17.1		8.7		3.6	
Controllable Costs								
Low living cost	11.9		11.5		10.7		7.3	
Could work	28.1		30.5		23.5		14.7	
Living cost & work	13.9		13.1		10.7		5.3	
COLLEGE EXPERIENCE								
Private	38.6		42.0		44.3		56.4	
Four-year	76.9		77.5		83.8		92.0	
On campus	23.7		30.4		39.0		47.8	
Full-time	76.0		72.8		79.1		86.1	
Years in College								
Freshman	27.0		30.5		29.9		27.7	
Sophomore	24.1		26.8		26.3		24.5	
Junior	22.5		20.8		21.6		21.8	
Senior	26.4		22.1		22.2		26.0	
Grades								
Below C	7.1		6.8		6.6		5.3	

TABLE 2 (*Continued*)

	Low Inc.		Low Mid.		Up. Mid.		Upper	
	%	Ave.	%	Ave.	%	Ave.	%	Ave.
Mostly C	34.9		32.2		34.3		34.4	
B Average	28.4		29.7		30.7		31.4	
Mostly A	3.2		4.0		2.9		2.4	
Not reported	26.4		27.3		25.6		26.4	
ASPIRATIONS								
Vocational	2.7		2.0		1.3		0.5	
Some college	10.3		9.4		6.3		3.1	
College	39.0		42.9		43.1		37.6	
Master's	32.5		31.9		35.4		39.1	
Advanced	15.5		13.8		13.8		19.8	
FINANCIAL								
Fixed Costs								
Grant $		2,083		1,658		936		465
Loan $		1,161		1,045		787		354
Work $		162		148		84		33
Tuition $		2,396		2,608		3,087		4,311
Controllable Costs								
Food/housing $		1,369		1,349		1,652		2,139
PERSISTENCE								
Within year	89.6		89.5		91.6		94.0	
Sample *N*		4,862		7,647		10,120		4,130

this income varies for the two subgroups: some are younger and from families with little discretionary money; others are living on a low income themselves. Both subgroups would have limited financial support for college, but they could have different backgrounds.

The low-income subpopulation has a larger percentage of minority students than the other three income groups. Further, more than half of these students had mothers who had a high-school education or less—that is, they are first generation college students. Both of these characteristics indicate a lower socioeconomic status. However, about 12% did have mothers with college degrees and more than 7% had mothers with a master's degree or higher. Thus, some of the low-income college attenders were from families with attributes that are generally associated with a higher socioeconomic status. Some of these downwardly mobile students may have attended college when they were younger, then returned after becoming financially independent. This is consistent with the fact that the low-income subpopulation had a slightly lower percentage of students who were freshmen and a slightly higher percentage who were seniors than did the other income groups.

A larger percentage of low-income students and lower-middle income students were females. There are two probable explanations for this. First, low-income families were more likely to encourage their daughters to attend. Prior research indicates that, compared to white undergraduates, a larger percentage of African American undergraduates are females (Kaltenbaugh et al., 1999). Second, more adult women than men could return to college as adults. For women especially, attaining at least some college—research indicates at least six months of postsecondary education makes a significant difference—represents an important step toward increased earnings (Grubb, 1996; Lewis, Hearn, & Zilbert, 1993), an important motivation for returning to college. Thus, the current study provides an opportunity to examine gender differences across income groups.

Whether they are from low-income families and are potentially upwardly mobile, or they are living out a reverse pattern, college costs are an important factor in the college-choice process for low-income students. Most (64%) chose a college because of low tuition, student aid, or both. Further, more than half (54%) chose their colleges because they were close to their work, because they could have low living costs while attending, or both. Thus, the low-income students treated cost-related factors as a major consideration in their college-choice process. These financial constraints also appear to influence where low-income students attend. Compared to other income groups, a larger percentage of the low-income group attended public and two-year colleges, and a smaller percentage lived on campus.

In general, the overall distribution of grades these undergraduates received did not differ substantially from the other three income groups; however, low-income—and even more so for their lower-middle-income counterparts (see below)—students received more A's than upper- and upper-middle-income students. Nevertheless, when compared to other income groups, a higher percentage of low-income students aspired to complete only a vocational qualification or only some college, rather than complete a college or advanced degree.

Consistent with their financial status, low-income students received larger average loans and grant amounts than the other populations. However, they also attended lower-cost colleges. In fact, even though the average combined award for loans and grants was greater than the average tuition charge, it was still well below the total of tuition and living costs, indicating a substantial unmet need for low-income (and lower-middle-income) students.

Lower-middle-income students. Second, students from lower-middle-income families have a similar profile to that of low-income students,

but students in this income group are more aptly characterized as "working class." The lower-middle-income group included a relatively high percentage of minority students, and more than half of the students (56%) had mothers who had not attended college. Less than one-third (29%) were financially independent and most were working (64%). Indeed, a larger percentage of students in the lower-middle-income group were working than in any of the other three groups. These working-class students had constrained college choice, due to limited ability to pay, but were committed to attaining a college degree.

The college choice variables indicate a clear concern about college costs among lower-middle-income students. More than half (55%) considered work and/or living costs as very important in their college choices. A majority (58%) also considered tuition and/or student aid as very important in their college choices. Consistent with this concern about college costs, a smaller percentage of lower-middle-income students—compared to those in all other income groups—attended full time, further reflecting their concern about affordability.

In spite of having a constrained choice of college because of concerns about college costs, lower-middle-income students achieved academically in college. Compared to the other income groups, a larger percentage of these students had mostly A grades, however, a lower percentage aspired to attain more than a bachelor's degree. Thus, lower-middle-income students seem focused on more immediate goals of attainment of four-year degrees and are working hard toward these goals: they exhibit a working class academic ethic.

Student aid played an important role for lower-middle-income students. The average of grant and loan aid was about equal to their average tuition charges. Like low-income students, they had loans averaging more than one-thousand dollars, but they had lower average grants (by more than four-hundred dollars) and higher tuition charges (by more than two-hundred dollars). Thus they faced substantially higher net prices and were challenged by substantial unmet need. Further, lower-middle-income students had slightly lower living costs than the low-income students, further indicating their concern about managing college costs.

Upper-middle-income students. Third, upper-middle-income students followed a pattern typically associated with the "middle class." A relatively small percentage were from minority groups, a large percentage were male, and many more students had mothers with college degrees than did students in the two lower-income groups. More than half worked while in college (58%).

Concerns about college costs were still important considerations to

these upper-middle-income students, though clearly not as important as they were to the lower-income student groups. About 45% considered fixed costs (student aid and/or tuition) issues very important in their college choice and a similar percentage considered controllable costs (low living costs and/or having a college close to work) very important. Thus, a little less than half made costs a major consideration in their college choice process.

Upper-middle-income students were more likely than students in the two lower-income groups to attend private, four-year campuses. Larger percentages also attended college full time and lived on campus. Their average grades were similar to both lower-income and upper-income students. However, a larger percentage of upper-middle-income students aspired to attain master's and more advanced degrees than did students in the two lower-income groups.

For upper-middle-income students, financial aid was less substantial in comparison to tuition than for students in lower-income groups. The average grant and loan were about seventeen hundred dollars compared to an average tuition of over three thousand dollars. Further, upper-middle-income students also had higher living costs than either low-income or lower-middle-income students.

Upper-income students. Finally, upper-income students can be characterized as being in the "upper class" of American society. There was a far lower percentage of minorities and a higher percentage of students whose mothers held college and advanced degrees than in any of the other income groups. They were younger, less likely to be married, and more likely to have graduated from high school. Less than half worked and few were financially independent. Their demographic characteristics closely paralleled those typically associated with the social elite.

Cost considerations did not play a substantial role in the college choices made by most upper-income students. Only about one quarter considered student aid and/or low tuition to be very important in colleges choices, and only 27% considered low living costs or being close to work to be very important.

Their college choices also reflected this lack of concern about college costs. More than half (56%) attended private colleges, nearly all (92%) attended four-year colleges, almost half (48%) lived on campus, and most (86%) attended full time. However, their average grades were similar to students in other income groups. Their aspirations were higher, however, and they persisted at a higher rate. Thus, they appeared to benefit from their more stable financial situations. Their aid packages were substantially lower than any other group, and their average tuition charges and living costs were substantially higher.

In general, the results of this analysis of the social class distinctions across income groups—especially when comparing the lower-income with the higher-income subgroups—are consistent with previous research on the social stratification of educational attainment and postsecondary destinations of college-bound students (e.g., Hearn, 1984, 1990; Paulsen, 1990). These findings reveal empirical manifestations of variations in educational participation and attainment based on class-related differences in students' cultural capital, habitus, and perceptions of entitlement (Bourdieu, 1977b; Bourdieu & Passeron, 1990; McDonough, 1997; McDonough, Antonio & Trent, 1997). Various indicators of social class reproduction are apparent, especially when comparing the low-income and working-class groups with the two higher-income groups, in the following class-based contrasts: (1) lower-income (low- and lower-middle-income) students are more likely than higher-income (upper-middle- and upper-income) students to earn A grades, but aspire to substantially less postsecondary education; (2) compared to higher-income students, substantially more lower-income students have mothers without a high school education and are more likely to be high-school dropouts themselves; (3) substantially more lower-income students than higher-income students work while attending college; (4) lower-income students are much more likely than higher-income students to be highly cost conscious in their college choice behavior; and (5) compared to higher-income students, lower-income students are less likely to attend private colleges or four-year colleges, live on campus, or attend full-time. In these and other ways, the social reproduction of the existing class-based distributions of cultural capital, economic capital, and other patterns of privilege in our society is apparent in the class-based patterns of participation in our system of postsecondary education.

The Financial Nexus and Social Class: Cross-Class Comparisons from the Sequential Logistic Regression Analyses

In this section we present the findings of our sequential logistic regression analyses of the effects of student-background, college-choice, college-experience, aspirations, and financial variables on the persistence decisions of students in four distinct income groups: low-income (the poor), lower-middle-income (the working class), upper-middle-income (the middle class), and upper-income (the elite) students. As shown in Table 3, these effects were estimated separately for each income group, using a three-step sequential logistic regression approach. Step 1 (the initial model) included all student background, college-choice, college experience, and aspirations variables. Then, in step 2

(the tuition and aid model), a set of four fixed-cost financial variables were added—grants, loans, work study, and tuition. Finally, in step 3 (the housing and food or "final" model), students' living costs for housing and food—their controllable costs—were added.

In order to clarify the within-class effects of various factors on persistence, as well as to highlight the cross-class comparisons of these effects, we examine the effects of each set of variables—background, college-choice, college-experience, aspirations, and financial—separately, first across the three steps for each income group, and then across the four income groups, in the following sections. The analysis of persistence by low-income students provides insight into the ways students who are living in poverty contend with college costs in their educational choice processes, while the analysis of persistence by lower-middle-income students provides insight into the ways working-class students view and respond to colleges costs. The examination of persistence behavior among upper-middle-income students enhances understanding of the ways that students in America's middle class address the costs of college, while analysis of persistence decisions of upper-income students provides insights into how students from society's elite class view college costs.

Student background variables. Among poor (low-income) and working class (lower-middle-income) students, African Americans were more likely than white students (the base group) to persist, but African American students from the middle (upper-middle-income) or elite (upper-income) classes were no more or less likely to persist than other-race students. For low-income students, African Americans were more likely to persist in the first version (step 1) of the model, but not in the second two (steps 2 and 3). This was apparently attributable to the fact that African Americans received higher aid packages than students in the other ethnic groups (Paulsen, St. John, & Carter, forthcoming). African Americans were consistently more likely to persist than white students in the lower-middle-income group. Apparently, African Americans in the lower-middle-income group were less dependent on student aid than low-income African Americans, a conclusion we reach because the significance of this variable did not change when aid was added, as it did in the model for low-income students.

Latinos in the lower-middle-income group were more likely than white students to persist in the first version of the model but not in the second or third. Latinos choose to attend colleges with lower costs and are more loan averse than other ethnic groups (Paulsen, St. John, & Carter, forthcoming). Therefore we suspect that this change in significance is attributable to the ways Latino students respond to college

TABLE 3

Sequential Logistic Regression Analysis Across the Four Income Groups: Delta-p Statistics

	Low-Income			Lower-Middle-Income			Upper-Middle-Income			Upper-Income		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
SET/Variable/ Measures	Init Model	Tuit & Aid	House & Food	Init Model	Tuit & Aid	House & Food	Init Model	Tuit & Aid	House & Food	Init Model	Tuit & Aid	House & Food
BACKGROUND												
Ethnicity												
Afr. American	0.024*	0.018	0.022	0.024*	0.022*	0.024*	0.017	0.001	0.015	0.011	0.005	0.010
Latino	0.013	–0.005	–0.001	0.022*	0.006	0.010	0.030*	0.023*	0.026*	–0.051	–0.052	–0.049
Asian	–0.142*	–0.172*	–0.146*	–0.024	–0.039	–0.032	–0.032	–0.045*	–0.036*	–0.022	–0.036	–0.022
Gender												
Male	0.017*	0.016	0.017*	0.001	0.003	0.006	–0.003	–0.002	0.003	0.010	0.012	0.013*
Mother's Education												
Less than h.s.	–0.007	–0.009	–0.009	–0.014	–0.020*	–0.018	–0.007	–0.008	–0.004	–0.023	–0.023	–0.023
Some college	0.015	0.012	0.015	0.003	–0.006	–0.003	–0.007	–0.007	–0.005	–0.031*	–0.034*	–0.037*
College degree	0.044*	0.040*	0.039*	0.016	0.009	0.015	0.007	0.008	0.009	–0.094*	–0.104*	–0.103*
Master's	0.026	0.024	0.027	–0.008	–0.015	–0.010	0.022*	0.022*	0.024*	–0.041*	–0.046*	–0.036*
Advanced	–0.039	–0.039	–0.037	0.031	0.028	0.028	0.030*	0.035*	0.037*	–0.048*	–0.040*	–0.039
Age												
Years old	0.001*	0.001	0.001	–0.001	–0.001	–0.001	0.001*	0.001	0.001	0.001*	0.001*	0.001
Marital Status												
Married	0.013	0.003	0.002	–0.003	–0.006	–0.005	0.011	0.009	0.011	0.021	0.020	0.019
H-S. Experience												
GED	0.051*	0.052*	0.049*	0.008	0.009	0.013	–0.002	0.010	–0.009	–0.004	0.006	0.007
No h. s. degree	0.041*	0.038*	0.037*	0.014	0.009	0.009	–0.014	–0.019	–0.016	0.019	0.016	0.016
Employment												
Working	0.012	0.001	0.000	0.025*	0.028*	0.028*	0.016*	0.016*	0.013	0.020*	0.018*	0.017*
Dependency Status												
Independent	–0.024*	–0.002	0.003	0.028*	0.024*	0.026*	–0.001	–0.003	–0.006	–0.022	–0.019	–0.019

TABLE 3 (*Continued*)

SET/Variable/ Measures	Low-Income			Lower-Middle-Income			Upper-Middle-Income			Upper-Income		
	Step 1 Init Model	Step 2 Tuit & Aid	Step 3 House & Food	Step 1 Init Model	Step 2 Tuit & Aid	Step 3 House & Food	Step 1 Init Model	Step 2 Tuit & Aid	Step 3 House & Food	Step 1 Init Model	Step 2 Tuit & Aid	Step 3 House & Food
COLLEGE CHOICE												
Fixed Costs												
Financial aid	–0.020	0.017	0.022	–0.018	0.018	0.017	0.011	0.035*	0.036*	0.026	0.035*	0.036*
Low tuition	–0.016	–0.030*	–0.029*	–0.031*	–0.035*	–0.032*	–0.006	–0.010	–0.007	0.021*	0.018*	0.017*
Low tuition/fin. aid	–0.032*	–0.005	–0.005	–0.004	0.010	0.012	0.004	0.012	0.014	0.045*	0.045*	0.044*
Control Costs												
Low living costs	0.023	0.023	0.031*	–0.012	–0.022	–0.019	–0.006	–0.014	–0.015	–0.049*	–0.062*	–0.063*
Could work	0.034*	0.029*	0.028*	0.003	–0.007	–0.013	0.016*	0.013*	0.008	0.006	0.003	0.002
Living c./work	0.032*	0.027*	0.031*	0.007	–0.002	–0.004	–0.005	–0.012	–0.017	–0.001	–0.005	–0.009
COLLEGE EXPERIENCE												
Attendance												
Four-year	–0.040*	0.042*	0.042*	–0.028*	0.041*	0.043*	–0.042*	0.011	0.013*	–0.004	0.015	0.019*
On campus	–0.049*	0.008	0.029	–0.053*	0.009	0.046*	–0.049*	–0.001	0.045*	–0.014	0.010	0.035*
Full-time	–0.122*	–0.029*	–0.022	–0.146*	–0.060*	–0.054*	–0.108*	–0.056*	–0.049*	–0.139*	–0.098*	–0.093*
Year in College												
Sophomore	–0.000	0.008	0.011	–0.043*	–0.039*	–0.040*	–0.004	0.000	0.002	0.008	0.012	0.015
Junior	0.021	0.029*	0.032*	–0.015	–0.014	–0.010	0.015*	0.018*	0.021*	–0.007	–0.003	–0.000
Senior	–0.021	–0.024	–0.018	–0.035*	–0.046*	–0.046*	–0.015	–0.018	–0.012	–0.067*	–0.066*	–0.057*
Grades												
Below C	0.066*	0.063*	0.063*	0.071*	0.067*	0.067*	0.054*	0.050*	0.049*	0.037*	0.034*	0.036*
C average	0.037*	0.032*	0.033*	0.037*	0.036*	0.038*	0.010	0.007	0.009	0.016	0.013	0.013
A average	0.050*	0.045*	0.048*	0.034*	0.029*	0.029*	0.005	0.001	0.000	–0.038	–0.044	–0.046
None reported	0.065*	0.064*	0.065*	0.045*	0.043*	0.044*	0.040*	0.040*	0.040*	0.035*	0.035*	0.035*

TABLE 3 (*Continued*)

SET/Variable/ Measures	Low-Income			Lower-Middle-Income			Upper-Middle-Income			Upper-Income		
	Step 1 Init Model	Step 2 Tuit & Aid	Step 3 House & Food	Step 1 Init Model	Step 2 Tuit & Aid	Step 3 House & Food	Step 1 Init Model	Step 2 Tuit & Aid	Step 3 House & Food	Step 1 Init Model	Step 2 Tuit & Aid	Step 3 House & Food
ASPIRATIONS												
Vocational	0.008	0.003	−0.001	0.058*	0.055*	0.054*	0.032*	0.033*	0.030*	0.044*	0.047*	0.046*
Some college	0.008	0.012	0.007	0.017*	0.017*	0.015	0.019*	0.021*	0.020*	0.041*	0.041*	0.040*
Master's	−0.065*	−0.057*	−0.051*	−0.045*	−0.038*	−0.035*	−0.021*	−0.014*	−0.010	−0.005	−0.002	0.000
Advanced	−0.062*	−0.048*	−0.048*	−0.110*	−0.085*	−0.077*	−0.050*	−0.025	−0.021	−0.029	−0.017	−0.014
FINANCIAL VARIABLES												
Fixed Costs												
Grants $		−0.036*	−0.035*		−0.007	−0.005		−0.006	−0.005		−0.005	−0.007
Loans $		−0.028*	−0.023*		−0.012*	−0.007		−0.002	−0.003		0.004	0.007
Work Study $		-0.014	−0.013		−0.155*	−0.156*		0.003	−0.005		0.001	0.006
Tuition $		−0.158*	−0.156*		−0.187*	−0.185*		−0.101*	−0.094*		−0.028*	−0.026*
Control Costs												
Housing/food $			−0.035*			−0.050*			−0.062*			−0.036*
MODEL STATISTICS												
Baseline P	0.896	0.896	0.896	0.895	0.895	0.895	0.916	0.916	0.916	0.940	0.940	0.940
Model "N"	4,862	4,862	4,862	7,647	7,647	7,647	10,120	10,120	10,120	4,130	4,130	4,130
Somer's *D*	0.529	0.633	0.651	0.518	0.633	0.652	0.539	0.635	0.670	0.575	0.664	0.704
R_L^2	0.154	0.224	0.235	0.141	0.198	0.212	0.141	0.187	0.206	0.245	0.275	0.294
−2 Log L	3390.2	3109.7	3066.6	5616.7	5240.5	5152.4	6394.4	6057.7	5912.3	1898.6	1823.8	1776.2
Model X^2	618*	899*	942*	920*	1296*	1384*	1053*	1390*	1535*	617.6*	692.5*	740.0*
DF	35	39	40	35	39	40	35	39	40	35	39	40

*= $p < 0.05$

costs. However, Latinos in the upper-middle-income group were consistently more likely to persist, across all three steps of the model. Because there was no apparent interrelation with financial variables (tuition, aid, and living costs) added in steps 2 and 3, middle-class Latino families apparently place a great value on postsecondary educational attainment.

It is especially interesting to note that low-income Asian Americans were less likely to persist. Indeed, low-income Asian Americans were about 14 percentage points less likely to persist than other-race (mostly white) students. Although there is a widely held perception that Asian Americans are more likely to achieve academically than other ethnic groups, this generalization does not hold across income groups. Clearly there are some poor Asian American students who have limited opportunities for higher education. This may be especially true for newer immigrants from Southeast Asia. For example, in a recent persistence study of students in the State of Washington,[12] Asian Americans and African Americans were less likely to persist when student aid was inadequate; they had the same probability of persisting when aid was adequate (St. John, 1999). In addition, upper-middle-income Asian American students were 3 to 4% less likely to persist than other ethnic groups, an effect that became significant and negative only after tuition was controlled for in step two. Other analyses using the nexus model have indicated that although Asian students attended higher-cost colleges than other groups, they were also less responsive to tuition charges (Paulsen, St. John, & Carter, forthcoming). Given these insights, we conclude that the findings observed for Asian Americans in the upper-middle-income group are artifacts attributable to these ethnic differences in college choice and price response.

The finding that low-income women were less likely than men to persist is quite interesting. This finding may be related to the labor market and the fact that attaining at least some college is especially important for adult women seeking to support a family. Lewis, Hearn, and Zilbert (1993) found that only six months of postsecondary vocational education results in a statistically significant and substantial increment to income, especially for women, and for low-income women, in particular. All this is to say that the opportunities to increase income due to only "some" postsecondary education, coupled with the demands of supporting a family—due to the prevalence of single-female-parent households among low-income families—might function, in combination, to motivate low-income women to be less likely than men to maintain continuous enrollment, because they have met their immediate goals.[13] These findings are especially noteworthy, given subsequent changes in welfare policy, which have encouraged more women to attain technical training

and seek employment. Future studies should consider whether the patterns observed here hold in a new context in which welfare policies promote some kind of postsecondary educational experiences.

The only other time that gender was significant was in the final step of the model for upper-income students, after tuition, aid, and living costs had been added. There is no reason to suspect that issues of cost are problematic for these students, and it is unlikely that the need to find work in response to the job market is as important, or is important for the same reasons, for upper-income women as they would be for their low-income counterparts. Clearly, upper-income women face a different set of choices; and their educational choices may be less influenced by financial factors. This area merits further investigation and might be profitably studied by examining gender differences in the financial nexus.

The result that low-income students whose mothers had a college education were more likely than students whose mothers had only a high-school education to persist also merits attention. Clearly, for low-income students, having a mother with a college degree had a motivational value regarding persistence in college. Indeed, low-income students whose mothers had a college degree were 4 percentage points more likely to persist. A comparable pattern emerged among upper-middle-income (middle class) students; that is, students whose mothers had completed a masters or advanced degree were more likely to persist. These findings would tend to support the view that relationships between mothers and their children are an especially important motivational force for both poor and middle-class students. A related interpretation would be that poor and middle-class students whose mothers have college degrees, or postgraduate degrees, respectively, are guided by an upwardly-mobile habitus and aided in their pursuits by access to cultural capital that can help advance their educational and occupational status. The finding that working class students whose mothers had not completed high school were less likely to persist in the second step only (after tuition and aid were entered, but before living costs were considered) suggests that such students may have attended colleges with somewhat lower net tuition costs, but found their living costs to be problematic.

Among students in the elite class, the findings regarding mother's education were quite different and interesting. Upper-class students whose mothers had some college, college, master's, or advanced degrees were 3 to 10% less likely than other students to persist. Because these students have the most advanced educational aspirations (see Table 2) and the highest income of all four groups, it is unlikely that this pattern is the sign of a downwardly mobile habitus among elite-class students. A more

plausible explanation is that this pattern is evidence of the broader range of exit options available to elite-class students. For example, upper-class students—compared to those in lower-income groups—have far more access to valued cultural and economic capital, whereby they would be more likely to stop out to take advantage of attractive opportunities for employment or travel during their college-going years. Furthermore, even though these elite-class students are far more likely than others to attend high-status, high-cost colleges, these findings suggest that, depending on their performance and satisfaction with their experiences, some upper-class students may view their experiences as not worth the cost and elect to transfer to a less prestigious institution.

Among the poor and middle-income classes, older students were more likely than younger students to persist in the first step only, before tuition and aid were considered; and among the elite class, older students were more likely to persist in the first and second steps, but not in the third, after living costs were considered. Apparently, older students in the poor and middle-income classes were more likely than younger students to have attended colleges with lower net tuition costs, whereas older students in the elite class appear to have been more effective than younger students at managing their living costs.

The fact that low-income students with no high-school and GED degrees were more likely than high-school graduates to persist in college is especially noteworthy, given that this variable was not significant for any of the other income groups. Prior studies using NPSA87 have had similar findings (e.g., St. John et al., 1994), but they have not explicitly considered class differences. This study adds substance to the interpretation advanced in these prior studies, that students who entered college through non-traditional routes are more motivated. Apparently many low-income adults who did not complete high school subsequently learn that education is more important than they had previously thought. Considered by itself, this finding might be viewed as evidence of one factor that may serve in some way to reverse the patterns of reproduction of social class in postsecondary education.

Working-class students who were employed while attending college and those who were classified as financially independent were more likely than other students to persist across all three steps of the model. These findings reinforce the notion that there are links between an orientation toward work and an orientation toward attaining a college degree for students in this working-class-income group. Middle- and upper-class students who were employed while attending college were also more likely to persist. However, the magnitude of the positive effect of employment was smaller for these groups than for working-class stu-

dents. And among middle-class students, the positive effect was significant only for steps one and two of the model, indicating that middle-class students who worked were also better able to manage their living costs. Finally, although being financially independent had no effect on persistence among middle- and upper-class students; poor (low-income) students who were financially independent were less likely to persist in the first step, but not in the last two steps. This indicates that tuition costs, net of aid, tended to be somewhat higher, or more problematic, for financially-independent, but low-income students. One probable explanation for this is that such students—who were financially independent and applied for aid— received smaller aid awards than dependent students who demonstrated similar need, because of the Pell grant formula.

College-choice variables. The findings related to the effects on persistence of perceptions and expectations about costs at the time of college choice—that is, the college-choice variables—revealed some very interesting and distinct differences across the four income classes. Regarding fixed-cost college-choice variables, only the middle- and upper-income students who chose their colleges because of the financial aid available were significantly more likely to persist. More particularly, the availability of financial aid had a positive effect on persistence in steps two and three of the model, after tuition and student aid were controlled for. This suggests that the positive effects of student aid were repressed in the first model, due to the negative effects of the tuition costs of attending, but were revealed in steps two and three. This means that the positive effects of aid are indirect for middle- and upper-income students—that is, the positive effects of aid on persistence occurred as a result of the expectations and perceptions associated with the aid offer, rather than through the actual amount of aid itself. We reach this conclusion because none of the actual dollar amounts of the student aid variables were significant in steps two and three, a prospect that is considered in more detail below. Finally, as indicated in Table 3, poor and working-class students who considered the availability of financial aid as very important in their choice of college were no more or less likely than others to persist.

Poor students who chose a college because of low tuition—and not because of financial aid—were less likely to persist in the second and third steps, after tuition and aid (fixed costs) were entered, whereas working-class students who considered low tuition—but not financial aid—as very important in their college choice were less likely to persist across all three versions of the model. The lack of a negative effect on persistence in step one for low-income students indicates that at least some students may have been successful in identifying and attending colleges with lower-than-average tuition costs. However, in step two, tu-

ition and aid are entered, showing an alarmingly high sensitivity to tuition, as well as financial aid that is clearly inadequate relative to tuition costs, a prospect that is discussed further below. Therefore, even below-average tuition charges may have been too much for these low-income students—who chose their colleges due to their concern for low tuition—to afford. Because such students also did not consider aid as important in choice of college, they may have been unaware of aid availability, which would have made even their lower tuition charges appear much more costly. For working-class students, the negative effect on persistence across all three steps indicates that even for those students who made special efforts to choose colleges with below-average tuition, such tuition costs may still have been too much for some working-class students to afford. One probable explanation for this is based on the related finding (addressed below) that students in the lower-middle-income group were more sensitive to tuition increases than any other income group. Another explanation is that these students viewed low tuition as very important in their choice of college, but they did not consider financial aid to be important. Such students may have been unaware of available aid, which could have made even below-average tuition appear more costly than for other students who did consider financial aid as very important.

For low-income students, choosing a college because of both low tuition and student aid was negatively associated with persistence only in the first step, before actual cost variables were entered. When tuition and aid were controlled for in step two, the negative effect was no longer present. The fact that tuition, grants, and loans each had direct, negative effects on persistence when entered in step two (discussed below) indicates an inadequacy of financial aid relative to tuition costs and explains the negative effect of choosing a college because of both low tuition and aid in step one. In combination, these findings indicate not only that perceptions and expectations of low tuition and high student aid influence persistence, but they also indicate an inadequacy of financial aid relative to college costs for low-income students.[14]

For upper-income students, the findings revealed a pattern that is quite the opposite of the pattern observed for low-income students. In general, only a relatively small percentage of upper-income students considered student aid or low tuition as very important in their choice of college (see Table 2). However, just as in the case of those elite-class students who chose their colleges due to the financial aid available, those who were concerned about low tuition or both low tuition and aid available, were also consistently more likely than others to persist across all three steps of the model. This is an understandable finding because

upper-income students were far less sensitive to tuition than any of the other income groups and, unlike the case for lower-income students, results indicated that aid was adequate to cover costs for upper-class students (discussed below). But this is also an interesting finding, because even though wealthier students were not very responsive to college costs, they were still more likely to persist and attain their degrees when they gave serious consideration to the costs of college before they enrolled.

Choosing a college because of low living costs was positively associated with persistence for low-income students only after the actual amounts of students' living costs were considered (step 3), indicating that some may have struggled to control their food and housing costs, but were ultimately more likely to have persisted due to their cost-consciousness. However, low-income students who chose their colleges because they were close to work or because of both low living costs and being close to work were consistently more likely than others to persist across all three steps. Apparently, such students were successful in their efforts to manage their income from their jobs and economize on their living costs. Similarly, for middle-income students, choosing a college because it was close to work was positively associated with persistence before living costs were considered (steps 1 and 2). We expect that middle-income students who made their college choices so they could work were better able to manage their living costs. In general, cost-conscious low- and middle-income students appear to have been careful planners regarding income from their work and control of their budgets. In contrast, upper-income students who considered low living costs as very important in their choice of college were less likely than others to persist across all three steps. Because the majority of these students (56%) attended private institutions, they may well have underestimated the expenditures they would have to make to support their social integration and related activities at such colleges.

In general, these findings regarding the effects of fixed and controllable-cost college-choice variables reveal evidence of class-based differences in the ways students' perceptions and expectations about college costs impact their enrollment behavior. And, particularly in the case of the effects of students' perceptions and expectations about the availability of low tuition and financial aid on their persistence decisions, would appear to operate as a basis for the reproduction of social class in our postsecondary system.

College experience variables. The effects of full-time attendance on persistence were similar for all four income groups. Across all groups, the effects of attendance patterns on persistence were interpretable in

terms of the costs associated with characteristics of attendance. That is, it costs more to attend a four-year college, live on campus, and attend full-time. Although attending full time was negatively associated with persistence across steps one and two, the impact of this variable diminished substantially once fixed costs were controlled for in step two, illustrating the substantial negative influence of tuition that is associated with full-time attendance. In step three, the effect of attending full time was no longer significant for low-income students, but continued to have a significant, negative effect on persistence for working, middle-, and upper-income students, thereby indicating the additional negative effect of living costs related to full-time attendance.

For poor and working-class students, attending a four-year college was negatively associated with persistence in the first step and positively associated with persistence in the second and third steps. This indicates that the negative effects of the higher costs associated with attending a four-year college were mitigated by the positive effects of the four-year college experience—an interrelation that is revealed in step two, when fixed costs are entered. A similar pattern was observed for middle-income students. Attending a four-year college had a negative effect on persistence in step one, a neutral effect in step two, and a positive effect in the final step. For working- and middle-class students, the effect of on-campus residence on persistence was negative in step one, neutral in step two, and positive in step three. These findings indicate both the positive effects of on-campus residence on persistence as well as the way such positive effects were repressed by the net tuition and living costs associated with on-campus residence in steps one and two. Interestingly, upper-class students—like working-class and middle-class students—who lived on campus and/or attended four-year colleges were more likely to persist in the final version of the model. This indicates that the positive effects of traditional residential campuses were repressed by the costs associated with attending these colleges. However, these variables were not negatively associated with persistence in the first version of the model for upper-class students, as they had been for middle-class, working-class, and poor students. Thus, the repressed negative effects of costs were less substantial for upper-class students than for middle-class, working-class, or poor students. Finally, it should not go unnoticed that for poor and working-class students, attending a four-year college has positive impacts on persistence that are more than twice as large as those for middle- and upper-income students—that is, when they can afford to take advantage of these opportunities. Therefore, these findings represent evidence of another instance of class-based differences in the way students respond to the costs of college in their enrollment decision

making and would appear to operate as a basis for the reproduction of social class in our postsecondary system.

Students in all four income groups who had less than C averages and poor and working-class students with less than C or with C averages were more likely to persist than students with B averages. One explanation for this is that institutional policies often make it difficult to return to school after leaving school with low grades and poor academic standing. But this finding may also be due to the greater range of exit opportunities (e.g., transfer) that are available to students with B averages. The additional finding that poor and working-class students with A grades were more likely to persist than those with B grades is especially interesting. One possible explanation might be that students with the highest grades (A grades) may be experiencing the greatest quality of academic integration, personal satisfaction, and even extra attention from the professors with whom they interact in their studies; which in turn, could lead to higher rates of persistence. And opportunities for academic integration might well be more important for poor and working-class students, because they are the most likely to be of nontraditional age, married, living off-campus, attending part-time, working and financially independent. Among poor and middle-class students, juniors were more likely to persist than freshman. However, among working- and upper-class students, seniors were less likely to persist, a finding consistent with previous research using the NPSAS database (e.g., St. John et al., 1994).

Aspiration variables. For working- and middle-class students, all of the variables related to postsecondary aspirations were significant in at least one version of the model. Both working and middle-class students who aspired to complete vocational qualifications or some college were more likely to persist than those aspiring to a college degree across all three steps. Furthermore, both lower-middle- (working-class) and upper-middle- (middle class) students who aspired to complete a master's or advanced degree were less likely to persist in step one, before costs were considered in steps two and three. Indeed, these findings indicated that the set of aspiration variables had the inverse relationship with persistence that we would expect if we held conventional "middle-class" social-attainment assumptions. And this inverse relationship appears to be related to college costs and affordability; that is, working and middle-class students who planned to attend over a longer period of time apparently felt they had to modulate their level of enrollment to constrain their expenses or debt.[15] This conclusion is reinforced by the fact that the negative effects of aspiring to attain master's and advanced degrees were mitigated across the versions of the models. When net tuition costs

were controlled in step two, and when living costs were controlled in step three, the magnitude of the negative effects on persistence decreased or even became nonsignificant.

In contrast, among low-income students, aspiring to complete vocational qualifications or some college had no effect on persistence; however, those with long-term aspirations (master's or advanced) were significantly less likely to persist and apparently chose to attend periodically, rather than to maintain continuous enrollment. The finding also appears to be related to the financial circumstances of poor students, because even though the negative effect was significant across all three steps, its magnitude decreased as costs were controlled for in steps two and three. Finally, upper-income students who aspired to attain vocational qualifications and some college were more likely to persist than students who aspired to attain a college degree; whereas those who aspired to master's and advanced degrees were no more or less likely than others to persist. Overall, the general pattern of findings for the elite-class students is opposite of that experienced by the poor students and may serve to reproduce social class in the postsecondary system. The complete set of findings about the effect of educational aspirations illustrates how aspirations, costs, and educational choices interact: clearly educational choices are influenced by the direct costs of education, and these influences vary by social class.

Financial variables. For all income groups, one or more of the financial variables—actual dollar amounts of fixed-cost variables, such as tuition, grants, loans, and work study, as well as controllable living costs, including housing and food expenses—had a substantial direct influence on persistence. Regarding students' responsiveness to fixed-cost variables, two quite different patterns of response were observed—one exhibited by the poor and working-class students and the other experienced by the middle- and upper-class students. Among poor and working-class students, tuition had an alarmingly high negative influence on persistence, with each thousand dollars of tuition differential decreasing the probability that the otherwise-average student would persist by about 16 and 19 percentage points, respectively. In contrast, the tuition-responsiveness of middle-and upper-income students was much more moderate: each thousand dollars of tuition differential decreased the probability that the otherwise-average student would persist by only 9 and 3 percentage points, respectively.

For poor students, grants and loans—but not work study aid—were negatively associated with persistence, indicating both forms of aid were inadequate even after living costs were considered in step three. For working-class students, grants were not negatively associated with per-

sistence, but loans and work study definitely were. Work study, a form of aid that generally had a lower hourly pay rate than other employment was negatively associated with persistence across the last two versions of the model. The more hours working-class students had to work at these low, on-campus pay rates, the less likely they were to persist, perhaps because of the attraction of higher rates of pay available in off-campus employment. However, loans were negatively associated with persistence only before living costs were considered. This finding indicates that loan aid was inadequate to cover even tuition costs (step two), and working-class students faced a difficult trade off: they were essentially forced to borrow more to pay their living costs if they desired to have continuous enrollment (step three). Thus, the new emphasis on loans in financial policy intensifies the problematic nature of college choice and persistence decisions for both poor and working-class students. We suspect that these circumstance were upsetting the old equilibrium in academe—that is, the intrinsic value of attending classic undergraduate colleges (residential four-year colleges) was offset by the need to borrow large sums of money to afford these luxuries.

In contrast, none of the student aid variables had direct effects on persistence for middle- and upper-class students. Rather, for higher-income students, the effects of aid were mitigated through the students' expectations and perceptions of affordability at the time of college choice (manifested in the college-choice variables). As noted above, choosing a college because of student aid had a repressed positive effect in step one and a significant positive effect on persistence in steps two and three. The neutral coefficients for financial aid variables indicate that the aid itself was just adequate or minimally adequate. Interestingly, the positive effects of aid on persistence were a result of the expectations and perceptions associated with the aid offer, rather than through the actual amount of aid itself. Finally, living costs had a direct negative effect on persistence across all income groups, but students' responsiveness to these costs were moderate in comparison with their sensitivity to tuition, the degree of responsiveness to living costs being substantially less than that for tuition, among all but the elite-class students.[16]

Conclusions and Implications

The findings of this study inform our collective understanding of class differences in student choice processes. Indeed, the current study illuminated group differences indicating that postsecondary education plays an important role in both perpetuating and breaking the pattern of class reproduction. We consider the findings and their implications in two

parts. First, we consider how the findings contribute to the general understanding of the role of social class in postsecondary education. We then consider how the analysis of the financial nexus contributes to our understanding of the role of college costs and financial policy in class reproduction. Implications for future research, policy and institutional practices are included, as appropriate, in the discussion below.

Patterns of Reproduction: Social Class and Educational Opportunity

There were notable differences in the influence of attendance patterns, gender, high-school attainment, ethnicity, academic achievement and postsecondary aspirations across the income groups. Indeed, the findings confirm that social class is far more complex than is communicated by hierarchical variables like socioeconomic status (SES). The SES measures used in sociological and economic research have grouped a number of concepts and issues related to family income and education into a single indicator that assumes a linear relationship between increased status and increased attainment. The findings of this study suggest a much more complex pattern of social class and educational attainment and reveal some interesting ways in which our postsecondary system may serve as a medium in both the perpetuation and reversal of historical patterns of class reproduction in society.

First, cross-class comparisons of descriptive statistics about educational attainment revealed that lower-income students are less likely than higher-income students to attend private colleges, four-year colleges, attend full-time, or live on campus. In these and other ways, the social reproduction of the existing class-based distributions of cultural capital, economic capital, and other patterns of privilege in our society is apparent in the class-based patterns of participation in our system of postsecondary education.

Second, based on logistic regression analyses, women who live in poverty were less likely than men to maintain continuous enrollment, a finding that was not evident for working- or middle-class groups. For poor women, opportunities to increase employability and income by meeting more immediate, short-term postsecondary goals, along with the greater family responsibilities for women—due to the prevalence of single-female-parent households among low-income families—may work together to motivate low-income women to be less likely than men to maintain continuous enrollment. These findings suggest that our postsecondary system may function, in part, as one medium through which the class-based constraints on the educational attainment of poor women are reproduced in society. It is important that states provide a safety net

for poor women with inadequate education. However, these findings are also especially noteworthy, given subsequent changes in welfare policy, which have forced women into the work place. Policies have led more women to attain short-term technical training and seek immediate employment. Future research should consider whether the gender-specific patterns observed here hold in a new context in which welfare policies promote some kind of short-term, postsecondary educational experiences, as illustrated in the expanding practices of one-stop centers.

Third, it was very interesting to find that poor people with nontraditional precollege educational experiences—those with no high-school degrees and GEDs—were more likely to persist than those with high-school degrees. If attaining at least some college has become the screening device for a decent job (Grubb, 1996), then students who have no postsecondary education are a step below those who do and have a hard time finding jobs that provide a livable wage. It appears that many low-income adults who did not complete high school later learn that education is more important than they had once thought. The findings of this study suggest that in such instances, the poor and undereducated are especially motivated to attain a college degree. Institutions should be more diligent in their recruitment of students who have worked so hard to overcome the daunting obstacles faced by the high-school dropout and thereby learned the lesson of the power of persistence. This finding might also be viewed as evidence of one way in which our postsecondary system may serve as a medium to reverse the patterns of class reproduction.

Fourth, the analysis of the choice-persistence nexus by social class produced interesting findings about the role of race and ethnicity in educational choice. African Americans in the poor and working classes—but not in middle- or upper-income groups—were more likely to persist than their white peers. Indeed, these findings support the argument that there is an African American habitus that promotes the acquisition of cultural capital related to personal affiliations with significant others and a community of caring that values postsecondary education (McDonough et al., 1997). Indeed, this may be another instance in which our postsecondary system, or as research suggests, our historically black colleges and universities in particular (Allen et al., 1991; McDonough et al., 1997), serves as a medium to reverse the historical patterns of class reproduction. These findings indicate the importance of increased federal and state government funding to invest in and support HBCUs in promoting educational attainment.

In addition, findings indicated that poor Asians Americans were less likely than other-race (mostly white) students to persist. This finding is

inconsistent with the widely held perception that Asian Americans are more likely to achieve academically than other groups and indicates that some poor Asian Americans lacked some of the advantages and opportunities for postsecondary educational achievement frequently attributed to this group. There is some research to suggest that this pattern may be characteristic of some of the newer immigrants from Southeast Asia (St. John, 1999). In combination, these findings about race and educational attainment suggest that in future research it is important to begin thinking about race within class, rather than think of race and class as loose proxies for each other within broad, universalistic models.

Fifth, cross-class comparisons of descriptive statistics about educational attainment revealed that poor and working-class students were more likely than middle- and upper-income students to earn A grades, but aspired to substantially lower levels of postsecondary educational attainment. A disturbing manifestation of class reproduction is portrayed here: the lower-income students are the most likely to receive A grades and would presumably be the most meritorious, yet they expect the least in terms of their aspirations for educational attainment; whereas the higher-income students are less likely to receive A grades, yet they expect so much more in terms of their aspirations for educational attainment. The logistic regression analyses revealed more about the relation of these factors to educational attainment and how the relation varies by class. First, regarding educational aspirations, whereas aspirations to attain master's or advanced degrees had no effect on the persistence of elite-class students, poor students who aspired to attain such degrees were less likely to persist. This finding suggests another pattern of class reproduction and is apparently the product of the differing habiti of poor and elite-class individuals which differentially shape students' expectations, attitudes, and aspirations (McDonough et al., 1997). A more equitable and widespread dissemination of accurate information about postsecondary opportunities may be one way of expanding the access to new forms of cultural capital for low-income students. The success of the Indiana Postsecondary Encouragement Experiment in terms of increasing the rates of participation in higher education among minorities and low-income students offers a compelling argument for similar investments in cultural, and therefore subsequently, economic capital, in other states (Hossler & Schmitt, 1995).

Although receiving A grades had no effect on the persistence of elite-class students, poor students who earned A grades were more likely to persist. Academic performance has been well established as one of the most important indicators of academic integration, which promotes persistence (Pascarella & Terenzini, 1991). It seems plausible that opportu-

nities for academic integration might be more important for poor and working-class students, because they are more likely to be of nontraditional age, married, living off-campus, attending part-time, working, and financially independent. Perhaps institutions should make special efforts to guarantee that opportunities for regular faculty-student interaction and academic counseling are plentiful and readily accessible to their poor and working-class students, who are likely to perceive these important opportunities to be less accessible to them—because they necessarily spend less time on campus—than to the middle- and upper-class students who are more likely to live on campus.

The Financial Nexus and Class Reproduction

In general, the findings of this study not only confirm that it is important to discern diverse patterns of student choice, particularly by social class, but they also indicate that the new financial conditions in higher education have had differential effects across social classes. Clearly, there are two ways that college costs influence postsecondary opportunity: directly in response to prices and subsidies, and indirectly through perceptions and expectations of the affordability of college costs. The findings of this study regarding the direct effects of college costs follow a pattern that is consonant with prior research on the economics of higher education: low-income and lower-middle-income students are far more responsive to prices than students from upper-middle- and upper-income families. However, the role of expectations or perceptions about college costs has not been adequately examined in prior research on higher education finance. As illustrated by the results of this study, when we examine the effects of college costs using the financial nexus model, we achieve a fuller understanding of the effects of students' expectations and perceptions about college costs on both their college choice and persistence decisions. The findings of this study clearly indicate that future research on student persistence should explicitly consider the important effects of students' prematriculation perceptions and expectations about college costs.

The findings of this study revealed clear and substantial class-based patterns of enrollment behavior related to students' perceptions and expectations about college costs. Indeed, low- and high-income students engaged in nearly opposite patterns of behavior. When it comes to the fixed costs of tuition and aid, middle- and upper-class students experience positive effects on persistence when they choose their colleges because of the availability of low tuition and financial aid. In stark contrast, poor and working-class students experience either negative or no effects on persistence when they choose their colleges because of the availability of low tuition and financial aid. However, when it comes to

controllable costs, only low-income students who choose their colleges so that they will be able to control their living costs and work while attending are more likely than others to persist. In contrast, upper-income students who choose colleges to have lower living costs are less likely than others to persist, apparently because they underestimate the much higher levels of living costs associated with attendance at the prestigious and costly institutions most often attended by elite students. In summary, when it comes to the fixed costs of college—tuition, net of financial aid—cost-conscious college choices among the middle- and upper-income students promote persistence, whereas cost-conscious college choices among the poor and working-class students tend to reduce their likelihood of persistence in college. These findings constitute evidence of class-based differences in the ways students perceive and respond to college costs in their enrollment behavior, and these differences, particularly in the case of expectations about the availability of financial aid and low tuition, would appear to operate as a basis for the reproduction of social class in our postsecondary system.

Lower-income and higher-income students also respond in very different ways to the direct effects of the actual dollar amounts of college costs (tuition and aid) in persistence decisions. In particular, the responsiveness of poor and working-class students to tuition increases is alarmingly high—reducing their probability of persisting by 16 and 19%, respectively, per $1,000 increment in tuition. Again, in stark contrast, middle- and elite-class students are much less sensitive to tuition increases: each $1,000 increment in tuition reduces their probability of persisting by only 9 and 3%, respectively. Our findings indicate that financial aid was not adequate to support persistence for lower-income students.

Financial aid for low-income students, in the form of both grants and loans, had a direct negative effect on their persistence decisions, indicating that both forms of aid were inadequate. Among working-class students, both loans and work-study aid had negative direct effects on persistence. The more hours working-class students worked in low-paying on-campus work-study jobs, the less likely they were to persist, most likely attracted by the higher pay of off-campus employment. Working-class students who were financially independent and employed off-campus were more likely than others to persist in college. It appears that work-study aid, in its present form, is not an effective form of financial aid for working-class students. In addition, for working-class students, loan aid was inadequate to cover even tuition costs, and such students faced the difficult decision of having to take out additional loans to cover their living costs in order to continue their enrollment. In contrast, none of the financial aid variables had direct effects on the persistence of

middle- or upper-income students, indicating that aid for such students was adequate to cover their college costs. Living (housing and food) costs had a direct negative effect, of moderate size, on persistence for all income groups. Finally, the findings of this study indicated that in spite of the positive effects of attendance at four-year residential colleges, the rising tuition and living costs of attending such institutions were problematic for students across all income groups.

The high-tuition, high-loan environment is clearly problematic for poor and working-class students. For such students, the cost of tuition, net of available aid, is clearly not affordable. More to the point, it is precisely those poor and working-class students who are aware of the problematic nature of college costs, those who self-identify and profess that they are financially at risk in the face of such costs and who intentionally select the colleges they attend according to the availability of financial aid and low tuition, who are the least likely to elect to reenroll at the time of a subsequent persistence decision. In other words, college costs take a toll on the poor and working-class students, in spite of their careful planning.

It appears that institutions themselves are not effectively identifying these students who are financially at risk. Among poor and working-class students, there appears to be a substantial amount of unmet need that is not being accurately identified or satisfactorily met by existing federal, state and institutional policies and practices. There is a compelling need for new and more accurate methodologies for assessing all aspects and components of students' financial need. Simply put, the high-tuition, high-loan approach—not to be confused with an effective high-tuition, high-need-based-grant approach—to higher education finance does not appear to be working. If appropriations to institutions from state and local governments continue to constitute a reduced portion of institutional revenues, standards of equity would require that adequate amounts of need-based grants to offset tuition increases be targeted for, and made accessible to, students with demonstrated need—that is, accurately assessed by improved methodologies—through federal, state, and institutional programs and policies. Adequate funding for access to postsecondary education is still not an entitlement for poor and working-class students in our nation. It appears that our postsecondary system may continue to serve as an instrument of class reproduction until these challenges are directly and effectively addressed.

Notes

[1]We describe the refinements to the model and our reasons for making these refinements in the endnotes in this section.

[2]"Others" includes primarily Caucasians, who represent over 80% of the entire

NPSAS sample, plus Native Americans and Alaskan Natives, who account for only 0.7% of the sample.

[3]When available, it is desirable to have variables related to high-school achievement (grades or achievement test scores). However, because these measures can be highly correlated with college grades, their absence in the NPSAS database is not considered very problematic.

[4]In the previous model, students in private colleges were compared to students in public colleges (St. John et al., 1996). However, because attending private colleges and tuition were highly correlated in the samples used in this study, we decided to leave this variable out of this version of the model.

[5]This represents one of the refinements of this version of the financial nexus model. In the original version of the model, students with no reported grades were combined with students who had B averages (e.g., St. John et al., 1996). The approach used here for coding students with no reported grades produces a more refined model which both retains all students without reported grades in the sample and avoids co-mingling these observations with those B-average students that constitute the majority of students in the comparison group.

[6]Each of these variables was divided by 1,000 in the logistic models.

[7]This represents a third refinement of the previous model. In previous studies, separate measures for housing and food costs were used; however, those students with no reported living expenses were inadvertently coded as having zero expenses—which could have introduced some measurement error into the data. To correct for this, in this model we used a composite measure of living costs for food and housing developed and calculated by the National Center for Education Statistics as part of the NPSAS87 database. Fortunately, results using the NCES composite measure are highly consistent with those obtained in previous studies— that is, living costs had a significant and substantial negative effect on persistence in both the current and previous studies.

[8]Although NPSAS87 oversampled students with various characteristics—such as those from minority groups—in order to study trends in costs and aid for such groups, we used the weights computed by NCES to redistribute the observations so they were once again representative of the distribution in the overall population (NCES, 1993, p. 3).

[9]Year-to-year persistence is complicated by the fact that students are more likely to transfer between academic years. Several researchers have noted that within-year persistence is an appropriate outcome for persistence research (e.g., Carroll, 1987; St. John, 1999).

[10]Students living off campus probably have somewhat more opportunity to control, or constrain, their living costs in the areas of housing and food, when compared to students living on campus. However, even though many students who live on campus must address constraints based on housing contracts and meal plans, students can establish on-campus living arrangements that do allow for some control over such costs, especially for those who select no meal plans or alternative meal plans that permit students to economize on their expenses.

[11]The R_L^2 statistic is computed as follows: $R_L^2 = \{(\text{model } X^2) / [(\text{model } X^2) + (-2 \text{ Log L})]\}$.

[12]Washington has a high percentage of Asian Americans, many of whom are recent immigrants from Southeast Asia.

[13]Being male was significant and positive at a 0.05 level in the first and third models, but barely slipped (0.001) below this level of significance in step two. Therefore, among low-income students, males were more likely to persist than females.

[14]We reach this conclusion because of the findings about the impact of fixed prices, as discussed below.

[15]We reach this conclusion about debt because of the findings about student aid below.

[16]Because we have not emphasized the "goodness-of-fit" of the models in our interpretations of results, we note here that all such measures provide evidence to support the predictive "quality" of the models. For example, as shown across all models in Table 3, the model chi-square statistics were significant at the level of .001 for every step in every model estimated in this study. And other goodness-of-fit measures—such as the Somer's D and R^2_L—ranged from 65 to 70% and 21 to 29%, respectively, for the final versions of each model.

References

Alexander, K. L., & Eckland, B. K. (1975). Basic attainment processes: A replication and extension. *Sociology of Education, 48*, 457–495.

Allen, W. R., Epps, E. G., & Haniff, N. Z. (Eds.). (1991). *College in black and white: African American students in predominantly white and in historically black public universities.* Albany: State University of New York Press.

Apple, M. W. (1982). (Ed.). *Cultural and economic reproduction in education.* London: Routledge & Kegan Paul.

Astin, A. (1975). *Preventing students from dropping out.* San Francisco: Jossey-Bass.

Astin, A. (1993). *What matters in college: Four critical years revisited.* San Francisco: Jossey-Bass.

Bean, J. P. (1980). Dropouts and turnover: The synthesis of a causal model of student attrition. *Research in Higher Education, 12,* 155–187.

Berger, J. B. (2000). Optimizing capital, social reproduction, and undergraduate persistence: A sociological perspective. In J. M. Braxton (Ed.), *Rethinking the departure puzzle.* Nashville: Vanderbilt University Press.

Blau, P. M., & Duncan, O. D. (1967). *The American occupational structure.* New York: John Wiley and Sons.

Bourdieu, P. (1977a). Cultural reproduction and social reproduction. In J. Karabel & A. H. Halsey (Eds.), *Power and ideology in education* (pp. 487–511). New York: Oxford University Press.

Bourdieu, P. (1977b). *Outline of a theory of practice.* Cambridge, UK: University Press.

Bourdieu, P., & Passeron, J-C. (1990). *Reproduction in education, society, and culture.* Beverly Hills, CA: Sage.

Bowles, S., & Gintis, H. (1976). *Schooling in capitalist America.* New York: Basic Books.

Breneman, D., & Finney, J. (1997). The changing landscape: Higher education finance in the 1990s. In P. M. Callan & J. E. Finney (Eds.), *Public and private financing of higher education.* Phoenix, AZ: Oryx Press.

Cabrera, A. F. (1994). Logistic regression analysis in higher education: An applied perspective. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 10). New York: Agathon.

Cabrera, A. F., Nora, A., & Castaneda, M. B. (1992). The role of finances in the persistence process: A structural model. *Research in Higher Education, 33,* 571–593.

Cabrera, A. F., Nora, A., & Castaneda, M. B. (1993). College persistence: Structural equations modeling test of an integrated model of student retention. *Journal of Higher Education, 64,* 123–139.

Cabrera, A. F., Stampen, J. O., & Hansen, W. L. (1990). Exploring the effects of ability to pay on persistence in college. *Review of Higher Education, 13,* 303–356.

Carnoy, M., & Levin, H. M. (1985). *Schooling and work in the democratic state.* Stanford, CA: Stanford University Press.

Carroll, C. D. (1987, April). *Student financial aid and its consequences.* Paper presented at the 147th annual meeting of the American Statistical Association, San Francisco.

Chickering, A. W. (1969). *Education and identity.* San Francisco: Jossey-Bass.

Clark, B. R. (1960). *The open door college.* New York: McGraw Hill.

College Board. (1998). *Trends in student aid.* Washington, DC: College Board.

DiMaggio, P., & Mohr, J. (1985). Cultural capital, educational attainment, and marital selection. *American Journal of Sociology, 90,* 1231–1261.

Feldman, K. A., & Newcomb, T. M. (1969). *The impact of college on students.* San Francisco: Jossey-Bass.

Foster, W. (1986). *Paradigms and promises.* Buffalo, NY: Promotheus.

Freeman, K. (1997). Increasing African Americans' participation in higher education. *Journal of Higher Education, 68,* 523–550.

Grubb, W. N. (1996). *Working in the middle.* San Francisco: Jossey-Bass.

Grubb W. N., & Lazerson, M. (1981). Vocational solutions to youth problems: The persistent frustrations of the American experience. *Educational Analysis, 3,* 91–103.

Hearn, J. C. (1984). The relative roles of academic, ascribed, and socioeconomic characteristics in college destinations. *Sociology of Education, 57,* 22–30.

Hearn, J. C. (1990). Pathways to attendance at the elite colleges. In P. W. Kingston & L. S. Lewis (Eds.), *The high status track: Studies of elite schools and stratification* (pp. 121–145). New York: SUNY Press.

Heller, D. E. (1997). Student price response in higher education: An update to Leslie and Brinkman. *Journal of Higher Education, 68,* 624–659.

Hossler, D., Braxton, J. M., & Coopersmith, G. (1989). Understanding student college choices. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5, pp. 231–288). New York: Agathon.

Hossler, D., & Schmitt, J. (1995). The Indiana postsecondary-encouragement experiment. In E. P. St. John (Ed.), *Rethinking tuition and student aid strategies.* New Directions in Higher Education, No. 89 (pp. 27–39). San Francisco: Jossey-Bass.

Hosmer, D. W., & Lemeshow, G. S. (1989). *Applied logistic regression.* New York: Wiley.

Jackson, G. A. (1978). Financial aid and student enrollment. *Journal of Higher Education, 49,* 548–574.

Jencks, C., & Peterson, P. E. (1991). (Eds.). *The urban underclass.* Washington, DC: The Brookings Institution.

Kaltenbaugh, L. S., St. John, E. P., & Starkey, J. B. (1999). What difference does tuition make? An analysis of ethnic differences in persistence. *Journal of Student Financial Aid, 29* (2), 21–31.

Karabel, J. (1977). Community colleges and social stratification: Submerged class conflict in American higher education. In J. Karabel & A. Halsey (Eds.), *Power and ideology in education* (pp. 232–254). New York: Oxford University Press.

Karen, D. (1988). *Who applies where to college?* Paper presented at the annual meeting of the American Educational Research Association in New Orleans.

Kmenta, J. (1986). *Elements of econometrics.* New York: Macmillan.

Lamont, M., & Lareau, A. (1988). Cultural capital: Allusions, gaps and glissandos in recent theoretical developments. *Sociological Theory 6*(2), 153-168.

Leslie, L. L., & Brinkman, P. (1988). *The economic value of higher education.* New York: Macmillan.

Lewis, D. R., Hearn, J. C., & Zilbert, E. E. (1993). Efficiency and equity effects of vocationally focused postsecondary education. *Sociology of Education, 66,* 188–205.

Manski, C. F., & Wise, D. A. (1983). *College choice in America.* Cambridge, MA: Harvard University Press.

McDonough, P. M. (1997). *Choosing colleges: How social class and schools structure opportunity*. Albany: SUNY Press.

McDonough, P. M. (1998). Structuring college opportunities: A cross-case analysis or organizational cultures, climates, and habiti. In C. A. Torres & T. R. Mitchell (Eds.), *Sociology of education: Emerging perspectives* (pp. 181–210). Albany: SUNY Press.

McDonough, P. M., Antonio, A. L., & Trent, J. W. (1997). Black students, black colleges: An African American college choice model. *Journal for a Just and Caring Education*, *3*, 9–36.

McPherson, M. S., & Schapiro, M. O. (1998). *The student aid game*. Princeton: Princeton University Press.

Menard, S. (1995). *Applied logistic regression analysis*. Thousand Oaks, CA: Sage.

Morrow, R. A., & Torres, C. A. (1998). Education and the reproduction of class, gender, and race: Responding to the postmodern challenge. In C. A. Torres, & T. R. Mitchell (Eds.), *Sociology of education: Emerging perspectives* (pp. 19–45). Albany: SUNY Press.

Mumper, M. (1996). *Removing college price barriers.* Albany: SUNY Press.

National Center for Education Statistics (1988). *Undergraduate financing of postsecondary education: A report of the 1987 national postsecondary student aid study.* Washington, DC: author.

National Center for Education Statistics (1993). A note from the chief statistician. Unpublished document. Washington, DC.

Pascarella, E. T., & Terenzini, P. T. (1979). Interaction effects in Spado's and Tinto's conceptual models of college drop-out. *Sociology of Education, 52,* 197–210.

Pascarella, E. T., & Terenzini, P. T. (1980). Predicting voluntary freshman year persistence and withdrawal behavior in a residential university: A path analytic validation of Tinto's model. *Journal of Educational Psychology, 51,* 60–71.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students.* San Francisco: Jossey-Bass.

Paulsen, M. B. (1990). *College choice: Understanding student enrollment behavior.* ASHE-ERIC Higher Education Report No. 6. Washington, DC: The George Washington University, School of Education and Human Development.

Paulsen, M. B. (1991). College tuition: Demand and supply determinants from 1960 to 1986. *Review of Higher Education, 14,* 339–358.

Paulsen, M. B. (1998). Recent research on the economics of attending college: Returns

on investment and responsiveness to price. *Research in Higher Education, 39,* 471–489.

Paulsen, M. B. (2000). Economic perspectives on rising college tuition: A theoretical and empirical exploration. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 15, pp. 39–104). New York: Agathon.

Paulsen, M. B., & Smart, J. C. (Eds.). (2001). *The finance of higher education: Theory, research, policy, and practice.* New York: Agathon.

Paulsen, M. B., & St. John, E. P. (1997). The financial nexus between college choice and persistence. In R. Voorhees (Ed.), *Researching student financial aid* (pp. 65–82). New Directions for Institutional Research No. 95. San Francisco: Jossey-Bass.

Paulsen, M. B., St. John, E. P., & Carter, D. F. (forthcoming). *Examining the racial and ethnic diversity of experiences with the financial nexus between college choice and persistence.*

Perry, W. (1970). *Forms of intellectual and ethical development in the college years: A scheme.* New York: Holt, Rinehart & Winston.

Petersen, T. (1984). A comment on presenting results from logit and probit models. *American Sociological Review, 50,* 130–131.

St. John, E. P. (1989). The influence of student aid on persistence. *Journal of Student Financial Aid, 19*(3), 52–68.

St. John, E. P. (1991). What really influences minority attendance? Sequential analyses of the high school and beyond sophomore cohort. *Research in Higher Education, 32,* 141–158.

St. John, E. P. (1994). *Prices, productivity, and investment: Assessing financial strategies in higher education.* ASHE-ERIC Higher Education Report Number 3. Washington, DC: The George Washington University.

St. John, E. P. (1999). Evaluating state grant programs: A case study of Washington's grant program. *Research in Higher Education, 40,* 149–169.

St. John, E. P., Andrieu, S. C., Oescher, J., & Starkey, J. B. (1994). The influence of student aid on persistence by traditional college-age students in four-year colleges. *Research in Higher Education, 35,* 455–480.

St. John, E. P., & Hossler, D. (1998). Higher education desegregation in the post-Fordice legal environment: A critical-empirical perspective. In R. Fossey (Ed.), *Readings in equal education.* New York: AMS Press.

St. John, E. P., Kirshstein, R. J., & Noell, J. (1991). The effects of student aid on persistence: A sequential analysis of the high school and beyond senior cohort. *Review of Higher Education, 14,* 383–406.

St. John, E. P., & Noell, J. (1989). The effects of student financial aid on access to higher education: An analysis of progress with special consideration of minority enrollment. *Research in Higher Education, 30,* 563–582.

St. John, E. P., Paulsen, M. B., & Starkey, J. B. (1996). The nexus between college choice and persistence. *Research in Higher Education, 37,* 175–220.

St. John, E. P., & Starkey, J. B. (1995a). An alternative to net price: Assessing the influence of prices and subsidies on within-year persistence. *Journal of Higher Education, 66,* 156–186.

St. John, E. P., & Starkey, J. B. (1995b). The influence of prices on the persistence of adult undergraduates. *Journal of Student Financial Aid, 25*(2), 7–17.

Swartz, D. (1997). *Culture and power: The sociology of Pierre Bourdieu.* Chicago: University of Chicago Press.

Tierney, W. G. (1992). An anthropological analysis of student participation in college. *Journal of Higher Education, 63,* 603–618.

Tinto, V. (1993). *Leaving college.* Chicago: University of Chicago Press.

Trow, M. (1977). The second transformation of American secondary education. In J. Karabel & A. Halsey (Eds.), *Power and ideology in education* (pp. 105–118). New York: Oxford University Press.