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## Diversity, College Costs, and Postsecondary Opportunity: An Examination of the Financial Nexus between College Choice and Persistence for African Americans and Whites

Questions about how student financial aid and the costs of attending college influence educational opportunity for diverse racial groups have lurked beneath the surface of the policy debates about higher education for decades. When the Higher Education Act (HEA) was passed in 1965, there was a general acceptance that the federal government had a role to play in equalizing educational opportunity. At that time, the civil rights of African Americans were a concern of the majority of Americans, as evidenced by the many Great Society programs of the period. However, since 1980, the federal commitment to need-based grants has contracted as a result of shifting political priorities (McPherson & Schapiro, 1991), if not as a result of a breakdown in the old consensus about equal opportunity. More recently, the federal courts have narrowed the acceptable remedies in desegregation litigation (St. John & Hossler, 1998) and have brought race into question as an explicit consideration in the awarding of student aid (Strope & Wells, 1998). In this context, it is vital that we begin to build a better understanding of the

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relationship between the costs of college, student financial aid, and the postsecondary opportunities for racially diverse groups.

However, the analysis of the effects of prices and student aid is complicated by a broad critique of the old progressive assumptions. On the one hand, some economists continue to raise questions about the efficacy of student aid (Kane, 1995). Indeed, this line of inquiry has led some to question whether states and the federal government should invest more in student financial aid, even after decades of decline in grant aid (Heller, 1997; St. John, 2003b). In contrast, other economists and higher education researchers, along with cultural-capital theorists, have begun to question some of the basic assumptions behind this position (McDonough, Korn, & Yamasaki, 1997; Paulsen, 2001a, 2001b; St. John & Paulsen, 2001). These newer perspectives offer a different vantage point from which to critique the new direction of public policy in higher education (e.g., decline in affirmative action, merit-based over need-based aid, loans over grant aid), but they do little to combat the decline in federal and state student aid.

This article examines the role of the costs of college and student financial aid in promoting postsecondary opportunity for diverse groups. First, we examine theory and research that might inform an assessment of the effects of student financial aid on the educational opportunities for diverse racial groups. Then we describe our methods and present the findings. We used the financial-nexus model (Paulsen & St. John, 2002; St. John, Paulsen, & Starkey, 1996) to assess the effects of student financial aid on college choice and persistence by African Americans and Whites. Finally, based on these analyses, we consider the understanding of the relationship between financial aid and the educational opportunities of diverse racial groups that emerges from this study.

### *Background*

Previous studies of the financial nexus have examined all students enrolled as undergraduates (St. John, Paulsen, & Starkey, 1996), students enrolled in public colleges compared to students in private colleges (Paulsen & St. John, 1997), and students across income groups (Paulsen & St. John, 2002). This study completes the full set of nexus studies on diverse groups of students enrolled in 1986–1987, by comparing how financial choices made by Whites and African Americans influenced their persistence. Given the age of this data, it is important to reconsider persistence by these populations, an issue we discuss after reviewing our logical approach.

### *The Logical Approach*

Researchers have started examining the ways perceptions of financial factors (i.e., college costs and student aid) formed in the enrollment process influence eventual persistence decisions. One approach involves assessing the impact of students' attitudes about their ability to pay for college as a variable that can influence academic integration and persistence decisions (Cabrera, Nora, & Castañeda, 1992). Research using this "role of finances" approach has revealed that early perceptions of financial problems can influence how students experience college. More recently, the nexus approach (St. John, Paulsen, & Starkey, 1996) has examined how the financial reasons for choosing a college relate to college experiences as well as how these financial expectations and actual prices and subsidies influence persistence. This approach argued that there was a "nexus" between the financial reasons for choosing to attend a college and the ways students responded to prices—that is, actual amounts of costs and aid. These analyses have confirmed this proposition, which provides insights into the ways students respond to student aid in different settings (Paulsen & St. John, 1997).

The nexus approach integrates analysis of the influences of perceptions of finances with the analysis of the effects of costs and aid, using a differentiated price-response model that overcomes the limitations of the net price approach. However, questions remain about whether an understanding of the role of finances can help inform policy deliberations on equal opportunity. Berger (2000) argues that the financial nexus should be extended to examine diverse groups:

Student choices regarding whether or not to attend college, which college to attend, whether to go full-time or part-time, what to study, whether to drop out, stop out, transfer, or complete their studies are all examples of important choices that individuals make regarding their postsecondary educational attendance. These are examples of what St. John, Paulsen, and Starkey (1996) identify as patterns of decision-making behavior. These patterns might also be defined in terms of an individual's habitus, and it stands to reason that students with similar habitus would be likely to continue to make similar choices once they enter college. Hence, we expect students with similar levels of capital resources to make similar types of decisions and act in similar ways while in college. (p. 103)

This argument, that there are diverse sets of patterns of choice, is vitally important given the changes in finance policy during the last two decades. A recent analysis of class differences related to the financial nexus (Paulsen & St. John, 2002) discovered marked differences in the ways students from

lower-income groups and those from higher-income groups responded to finances. Poor students were more negatively influenced by grant inadequacy, and, compared to higher-income students, working-class students were more negatively affected by inadequate loan and work-study aid. In this study, we extend the nexus approach by analyzing racial differences in persistence. We examine how well the nexus model illuminates the differences in educational choices made by students of different racial groups.

Earlier analyses of differences among racial groups in their responses to student aid have indicated that African Americans are more responsive to student aid (Kaltenbaugh, St. John, & Starkey, 1999; St. John & Noell, 1989). However, these initial analyses did not fully deal with the complexity of racial differences in college choice. Recent research has indicated that students' college choices are constrained by their social circumstances. For instance, lower socio-economic status (SES) students tend to be constrained by their financial circumstances in that they attend less expensive institutions closer to their homes (Carter, 1999).

In addition, researchers have frequently studied the degree to which race and social class affect student access to college. Researchers often conclude that class, more than race, affects student college-going opportunities (Hanson, 1994; Hearn, 1984). However, there are also important racial differences in college access. For instance, Kao and Tienda (1998) have discussed an "aspirations-achievement paradox" where African Americans have high aspirations but underachieve relative to their aspirations. Kao and Tienda believe that African American students' social segregation in school can help explain why the students maintain high aspirations since African American students may be more likely to compare their performance in school to that of other African Americans and to see themselves favorably in the comparison.

Students' (and parents') lack of information about higher educational options is not restricted to the African American population. An American Council on Education (ACE) study of the "public's knowledge and attitudes about financing higher education" showed that people do not understand the differences between public and private institutions or 2-year and 4-year colleges (Hartle, 1998). Seventy-one percent of the people surveyed believed that college is not affordable for most families; 83% of the African American respondents believed so. Most people surveyed overestimated the price of college by several thousand dollars, and most did not realize how much financial aid is available for families to help pay college costs (Hartle, 1998). These analyses convey a message that college is affordable for all groups, and that increased information about financing options is the main barrier. The current study further explores the proposition of affordability.

However, recent analyses have raised doubts that more information will solve the access problem. The Advisory Committee on Student Financial Assistance [ACSFSA] (2002) estimates that 4 million college-qualified low-income and middle-income students will be left behind in the next decade. Other analyses confirm there is a financial access problem (St. John, 2003b). If finances are a problem in enrollment and persistence, then it is even more important to examine these differences for diverse racial and ethnic groups.

This article adapts the financial nexus model to examine the role of perceptions about college costs in the responses by African American and White students to student financial aid in their college choices and enrollment decisions. African Americans and Whites have differing perceptions of college costs before going to college. These differing perceptions may also affect the groups' persistence once in college. It is crucial that evaluation research consider both the role of early expectations, formed as a consequence of financial opportunities, and the direct effects of costs and aid, especially when research considers diverse groups.

#### *Situating this Study*

The late 1980s was a turning point in the history of American higher education that went largely unnoticed. Between the Supreme Court's *Brown* decision in 1954 and about 1980, there had been an overt effort to equalize educational opportunity in the U.S. for African Americans compared to Whites. In the middle 1970s, African American high school graduates attended college at about the same rate as Whites (St. John, 2003b), but a gap in enrollment opportunity emerged after the 1980s. The college participation rate for African American high school graduates actually declined in the years after 1980, while the enrollment rate for Whites increased substantially, as did the overall enrollment rate. Therefore, the participation gap that is now the focal point of public policy (Ruppert, 2003) is relatively recent.

Starting in the late 1980s, analysts working for the federal government began to focus on differences in high school curriculum as the explanation for the recently emergent disparity in opportunity (Pelavin & Kane, 1988, 1990). While some researchers focused on the role of the decline in federal grant aid as the explanation of the new disparity (St. John, 1991, 1994), the academic explanation grew in popularity among analysts representing different constituents and points of view (Choy, 2002; Gladieux & Swail, 1999; Greene & Foster, 2003; King, 1999; NCES, 1997). And while the methodological error in some of the basic studies (e.g., NCES, 1997) have gained the attention of researchers in economics and higher education policy (Becker, in press; Fitzgerald, in

press; Heller, in press), the explanation for the downturn in opportunity for African Americans has not been sufficiently examined.

The nexus model provides a proven methodology that can be used to reexamine the educational choices made by college students during this important transitional period. Previous studies have explained some of the economic disparity that emerged in the late 1980s (Paulsen & St. John, 2002), an area of inquiry that has informed recent efforts to reexamine student aid policy (ACSFSA, 2002; Fitzgerald, in press; St. John, 2002, 2003b). By extending nexus research to explicitly consider persistence by African Americans and Whites, this article focuses on the ways federal policy on student aid—the increased emphasis on loans and the decline in grants that took shape in the late 1980s and that continues to present—influenced the disparity in opportunity for African Americans versus Whites that emerged during this period.

### *Research Approach*

The nexus model examines how student background, finance-related reasons for choosing a college, college experience, current aspirations, prices and subsidies, and living costs influence persistence. This section describes the statistical methods, model specifications, and study limitations.

#### *Statistical Methods*

Consistent with prior analyses using the nexus model, the current study uses sequential sets of logistic regression analyses of the National Postsecondary Student Aid Survey of 1987 (NPSAS-87) (Paulsen & St. John, 2002; St. John, Paulsen, & Starkey, 1996). Logistic regression is an appropriate approach for analyzing models with dichotomous outcomes, such as the decision to persist (Cabrera, 1994). We also converted beta coefficients to delta-p statistics using a method recommended by Cabrera (1994). Further, the systematic uses of sequential logistic analyses provide a means of examining the confounding relationships between different sets of variables in the persistence-decision process. In the nexus model, we examine the influence of variables related to student background, college choice, college experience, current aspirations, and financial support on persistence.

#### *Model Specifications*

First, we included 16 variables related to student background (see Table 1). Most of these variables were included in design sets of dichotomous variables. Students whose mothers had less than a high school education, some college, college degrees, master's degrees, or

doctoral degrees were compared to students whose mothers had completed high school. Students who completed GEDs and who did not complete high school were compared to students who had completed high school. Students from lower-, upper-middle-, and upper-income families were compared to students from lower-middle-income families. Four variables used conventional dichotomous coding: males were compared to females; married students were compared to students who were not married; working students were compared to non-working students; and independent students were compared to others (dependent aid applicants and non-aid applicants). In addition, one variable (age) used continuous coding.

Second, two design sets of dichotomous variables were added related to the financial reasons for choosing a college. First, students who gave the highest possible ratings to student aid, low tuition, and both tuition and student aid were compared to students who did not give these variables the highest ratings. These variables represent costs that were essentially fixed at the time students entered college and that were set by the college. Second, students who gave the highest rating to low living costs, to being able to work and attend school, or to both of these variables were compared to students who did not give any of these variables the highest rating. These cost-related considerations were considered “controllable” because students can constrain these costs by making financially astute choices about residences and employment opportunities. The inclusion of these choice-related variables represents the most distinctive feature of the nexus model since they assess the role of perceptions about college costs and aid in the persistence process.

Third, 10 variables related to college experience were included in the analysis. These included three dichotomous variables related to the college attended: students attending 4-year colleges were compared to students attending 2-year colleges<sup>1</sup>; students living on campus were compared to other students; and full-time students were compared to others. Year in college was recoded as a design set of dichotomous variables, with sophomores, juniors, and seniors being compared to freshmen. Further, college grades were coded as a design set, with students with below C grades, mostly Cs, mostly As, and no reported grades<sup>2</sup> being compared to students with mostly B grades.<sup>3</sup>

Fourth, aspirations were coded as a design set of dichotomous variables. Students who aspired to complete vocational certificates, some college, master’s degrees, and advanced degrees were compared to students who aspired to complete bachelor’s degrees.

Fifth, four price-related variables were added: grant amount, loan amount, work-study amount, and tuition charges. These variables were

TABLE 1  
Coding of Variables

Variable	Coding
<b>Student Background</b>	
Gender	
Male	1,0
Mother's Education	
Less than H.S	1,0
High School	Uncoded
Some College	1,0
College	1,0
Master's	1,0
Advanced	1,0
Age	Year of Age
Marital Status	
Married	1,0
High School Graduate Status	
GED	1,0
No H.S. Diploma	1,0
H.S. Diploma	Uncoded
Employment	
Working	1,0
Dependency Status	
Independent	1,0
Income	
Lower	1,0
Lower Middle	Uncoded
Upper Middle	1,0
Upper	1,0
College Choice	
Fixed Costs	
Financial Aid	1,0
Low Tuition Cost	1,0
Tuition & Fin. Aid	1,0
Controllable Costs	
Low Living Cost	1,0
Could Work	1,0
Living Cost & Work	1,0
College Experience	
Four-Year	1,0
On Campus	1,0
Full Time	1,0
Years in College	
Freshman	Uncoded
Sophomore	1,0
Junior	1,0
Senior	1,0

TABLE 1 (Continued)

Coding of Variables

Variable	Coding
Grades	
Below C	1,0
Mostly C	1,0
B Average	Uncoded
Mostly A	1,0
Not Reported	1,0
Aspirations	
Vocational	1,0
Some College	1,0
College	Uncoded
Master's	1,0
Advanced	1,0
Financial	
Fixed Costs	
Grant \$	Actual \$/1,000
Loan \$	Actual \$/1,000
Work \$	Actual \$/1,000
Tuition \$	Actual \$/1,000
Food/Housing \$	Actual \$/1,000

divided by 1,000 because this coding of dollar amounts is easier to interpret. This approach to assessing the impact of financial aid variables provides a more reliable approach to assessing the impact of student aid than other commonly used approaches (St. John, Andrieu, Oescher, & Starkey, 1994).

Finally, annual food and housing costs<sup>4</sup> were used as indicators of living costs. This variable was also divided by 1,000 so that all dollar amounts would be comparable. Living costs were treated separately from price-related variables because it is easier for students to “control” their living costs (St. John, Paulsen, & Starkey, 1996).

The statistical analyses have two further distinctive features. First, we present change of probability measures (delta-p statistics) for each of the independent variables. This allows us to assess the impact of a unit change in the independent variable on the probability of persisting. Second, we use sets of design variables for categorical variables that have proven not to have a linear relationship with persistence (e.g., grades and year in college). This improves the predictive ability of the logistic

models. While this model represents a refinement over prior nexus models,<sup>5</sup> this approach does have a few limitations (St. John, Paulsen, & Starkey, 1996), discussed in the next section.

### *Limitations*

First, while the NPSAS-87 database is well suited for the analysis of within-year persistence, it does not include a full sample of all college students. The survey sampled all students enrolled in the fall term and followed up with a survey in the spring term. Students who enrolled in the spring but not in the fall were not included in the sample. Given our focus on continuous enrollment, this limitation is not a problem for this study.

Second, NPSAS-87 does not include a complete set of variables related to high school experience. Thus, the influences of high school grades and high school courses were not considered. However, because there is a high correlation between high school grades and college grades, this limitation is not a serious problem for this study.

Third, NPSAS-87 is more than a decade old. However, it merits further analysis because it is uniquely suited for the analysis of within-year persistence,<sup>6</sup> an outcome that is directly linked to equal opportunity.<sup>7</sup> Furthermore, the financial conditions of the late 1980s—including the growing emphasis on loans relative to grants—remain largely in place, and federal student grant aid has declined substantially since the late 1980s (College Board, 1998). Therefore while there have been changes in institutions' policies during the past decade, the analysis remains relevant to the current policy context.

### *Findings*

There were substantial differences in the characteristics of the four populations (Table 2). A larger percentage of African American college students was female, had mothers with high school educations or some college, was financially independent, and was from low- and lower-middle-income families. In addition, African Americans had lower grades, and a higher percentage aspired to complete master's degrees. Higher percentages of Whites had parents who had completed master's degrees, had completed high school, were from upper-middle- and upper-income families, and received B grades.

There were also differences in the ways financial considerations influenced the college-choice process. Larger percentages of African Americans chose college because of financial aid offers and because of

TABLE 2  
Comparison of Populations

	African Am. % / ave.	White % / ave.
Student Background		
Gender		
Male	38.4	47.2
Mother's Education		
Less/H.S.	22.7	10.4
High School	33.4	32.3
Some College	25.6	24.4
College	10.6	19.2
Master's	5.1	8.8
Advanced	2.6	5.0
Age		
Years Old	23.8	23.0
Marital Status		
Married	11.4	16.8
High School		
GED	4.2	2.0
No H.S. Diploma	3.5	2.0
H.S. Diploma	92.4	96.0
Employment		
Working	57.9	58.6
Dependency Status		
Independent	27.0	22.5
Income		
Lower	36.0	15.0
Lower Middle	37.3	27.3
Upper Middle	21.8	40.2
Upper	4.9	16.8
College Choice		
Fixed Costs		
Financial Aid	25.3	15.9
Low Tuition Cost	17.2	19.8
Tuition & Fin. Aid	22.7	11.5
Controllable Costs		
Low Living Cost	14.4	10.0
Could Work	26.9	25.0
Living Cost & Work	14.9	10.6
College Experience		
Four-Year	80.2	82.2
On Campus	34.4	35.9
Full Time	75.2	78.2
Freshman	30.7	28.9
Sophomore	27.7	25.6
Junior	21.8	21.5
Senior	19.8	24.0

TABLE 2  
Comparison of Populations

	African Am. % / ave.	White % / ave.
Grades		
Below C	13.4	5.8
Mostly C	40.2	33.1
B Average	16.4	31.5
Mostly A	1.3	3.4
Not Reported	28.7	26.1
Aspirations		
Vocational	1.6	1.7
Some College	7.9	7.3
College	35.3	42.2
Master's	37.0	34.4
Advanced	18.1	14.3
Financial		
Grant \$	2,002	1,165
Loan \$	1,032	855
Work \$	197	98
Tuition \$	2,595	3,038
Food/Housing \$	1,466	1,598
Sample N	1,967	22,304

financial aid and low tuition. A larger percentage of African Americans were also concerned about finances when they made their college choices. Given these differences, there is good reason to use the nexus model to examine persistence decisions by these four distinct populations of undergraduates.

Finally, there were also notable differences in the financial situations facing both populations. African Americans had higher grants and loans as well as lower tuition charges. This means they had greater financial need and could still only afford to attend less expensive colleges. Whites attended colleges that were more expensive. Thus, there were marked contrasts in the relative financial situations of the two populations, which is a further indicator that the nexus model could reveal differences in how students in different racial groups experience college costs and make persistence decisions.

#### *African Americans*

First, for African Americans, five background variables were significant in at least one of the steps of the logistic analysis (Table 3). Three of

these variables had consistent effects across all three steps. Students whose mothers had some college were about 5% less likely to persist, while each year of age increased the probability of persistence by about 2%, and having no high school degree increased the probability of persistence by about 8%.<sup>8</sup> These findings suggest that the influence of parents' education, age, prior educational attainment, and prior education experience do not have a relationship with finances for African American students.

However, two background variables do change in significance across the steps in the model. Married students were more likely to persist only when housing and food costs were considered in the last step of the model. This suggests that students who were married had lower additional living costs associated with college attendance. In addition, financially independent students were less likely to persist in the first two steps, but not when living costs were also considered. It is possible that the federal need analysis criteria underestimate the costs associated with attendance by independent students. Thus, not only do both of these variables change in significance when housing costs are considered, but there also are logical reasons for these changes in significance.

Second, only one of the college choice variables was significant. African Americans who chose to attend their colleges because of financial aid offers were about 5% more likely to persist. Further, choosing a college because of low tuition or low living costs was not significantly associated with persistence. For African Americans, the offer of student aid appeared to have a substantial intrinsic value independent of the direct effects of student aid or other financial variables.

Third, several variables related to the college experience were significant for African Americans, four of which had consistent effects across the three steps. Attending full-time was negatively associated with persistence across all three steps. In addition, having below C grades, having A grades, and having no reported grades were all significant and positively associated with persistence across all three models. This suggests that the positive effects of attending full-time and the direct effects of grades on persistence do not interact with finances for African Americans.<sup>9</sup>

However, two college-experience variables did change in significance. Attending 4-year colleges and living on campus were negatively associated with persistence before financial aid was considered (step 1), but not in the final two steps. Both of these variables were logically related to college costs: Four-year colleges tend to charge higher tuition than 2-year colleges do, and residential colleges tend to charge more than locally situated campuses.

TABLE 3

Sequential Logistic Analysis of Within-Year Persistence by African American Undergraduate Students

Factor/Variable	Step 1 Initial Model Delta P	Step 2 Tuit & Aid Delta P	Step 3 Housing & Food Delta P
<b>Student Background</b>			
<b>Gender</b>			
Male	0.0008	-0.0054	-0.0055
<b>Mother's Education</b>			
Less than HS	-0.0304	-0.0054	-0.0349
Some College	-0.0463*	-0.0374*	-0.0513*
College Degree	0.0128	0.0531	0.0027
Master's	-0.0348	-0.0438	-0.0411
Advanced	-0.0055	0.0167	0.0185
<b>Age</b>			
Years Old	0.0042**	0.0036**	0.0032**
<b>Marital Status</b>			
Married	0.0272	0.0031	0.0378*
<b>High School</b>			
GED	-0.0045	-0.0097	-0.0251
No H.S. Deg.	0.0771**	0.0756**	0.0785**
<b>Employment</b>			
Working	0.0226	0.0154	0.0173
<b>Dependency Status</b>			
Independent	-0.0647**	-0.0458*	-0.0379
<b>Total Income</b>			
Lower	-0.0029	0.0009	0.0101
Upper-Middle	-0.0025	-0.0188	-0.0198
Upper	0.0229	0.0211	0.0232
<b>College Choice</b>			
<b>Fixed Costs</b>			
Fin. Aid	0.0331**	0.0555**	0.0556**
Low Tuition	-0.0115	-0.0167	-0.0146
Tuition & Aid	0.0126	0.0280	0.0245
<b>Controllable Costs</b>			
Low Living Costs	0.0221	0.0165	0.0270
Could Work	-0.0095	-0.0210	-0.0149
Living & Work	0.0118	-0.0034	-0.0013
<b>College Experience</b>			
Four Year	-0.0619**	0.0241	0.0246
On Campus	-0.0688*	-0.0115	-0.0279
Full Time	-0.1585**	-0.0672**	-0.0609**
<b>Year in College</b>			
Sophomore	0.0106	0.0098	0.0088
Junior	-0.0213	-0.0290	-0.0196
Senior	0.0072	-0.0047	0.0010
<b>Grades</b>			
Below C	0.0626**	0.0531**	0.0535**

TABLE 3 (Continued)

Sequential Logistic Analysis of Within-Year Persistence by African American Undergraduate Students

Factor/Variable	Step 1 Initial Model Delta P	Step 2 Tuit & Aid Delta P	Step 3 Housing & Food Delta P
C Ave.	0.0065	-0.0018	0.0022
A Ave.	0.0768**	0.0678*	0.0751**
None Rep.	0.0527*	0.0414*	0.0436*
Aspirations			
Vocational	0.0666**	0.0621*	0.0619*
Some Coll.	0.0344*	0.0361*	0.0360*
Master's	-0.0336	-0.0262	-0.0200
Advanced	-0.0946**	-0.0714*	-0.0500
Financial			
Grant \$		-0.0330**	-0.0327**
Loan \$		-0.0133	-0.0114
Work \$		-0.0213	-0.0219
Tuition \$		-0.1201**	-0.1170**
Housing/Food \$			-0.0454**
Baseline P			
Model "N"	1,967	1,967	1,967
Somer's D	0.520	0.624	0.645
au-a	0.106	0.127	0.131
-2 LOG L	1490.409	1398.914	1369.835
DF	35	39	40

\*p ≤ .05; \*\*p ≤ .01; \*\*\*p ≤ .001

Fourth, three variables related to current aspirations were significant in at least one step. Aspiring to complete some college or to attain vocational certification consistently increased the probability of persistence. Having short-term goals made it easier to persist in the face of inadequate financial support.<sup>10</sup> However, students who aspired to attain an advanced degree were less likely to persist before living costs were considered. This means that some students with long-term aspirations were forced to put off their enrollment to contend with short-term financial needs, another indicator of the inadequacy of federal student aid. While this is consistent with prior analyses of persistence by all undergraduates (St. John, Andrieu, Oescher, & Starkey, 1994; St. John, Paulsen, & Starkey, 1996), it is distinctive to African Americans in this analysis of the two distinct populations.<sup>11</sup> Thus, it appears that African Americans were more likely to be faced with difficult choices due to the inadequacy of student aid.

In the second step, financial aid and tuition were added. The amount of grant awarded was significant and negatively associated with persistence across the two steps, indicating that grant aid was insufficient even after living costs were controlled for. Further, tuition was negatively associated with persistence across both models. Each thousand dollars of tuition differential decreased the probability of persistence by about 12%. Not only were African Americans more responsive to tuition than the other populations, but they also attended colleges with lower costs (see Table 2). Therefore, it seems that the greater the tuition the less likely African American students would receive enough aid to offset costs. Further, living costs were negatively associated with persistence (see Table 2). Each thousand dollars of differential in living costs decreased the probability of persistence by 4.5% for African Americans.

It should also be noted that there was substantial economic diversity among African American college students. While the majority were low-income and highly price sensitive, approximately one quarter were in the upper-middle- or upper-income groups (see Table 2). Interestingly, 18% of all African Americans had mothers with college degrees or higher attainment. Further, more than one quarter did not consider low tuition or student aid to be very important in their college choice. In sum, even though this study focuses on differences between racial groups, it is important to note that there is evidence of substantial diversity among individuals within each group as well. Furthermore, this economic diversity is reflected in the significant effects of college choice and cost and aid variables.

### *Whites*

First, five background variables were significant for Whites (Table 4). Students with GEDs and working students were more likely to persist in all three analyses. Therefore, the effects of these factors on persistence were unrelated to college costs. However, males were less likely to persist, and students whose mothers had a master's degree were more likely to persist only in the final step, after living costs were considered; and older White students were more likely to persist before prices were considered. Thus, there were several confounding relationships between financial variables and background characteristics.

Second, three college choice variables were significant. Choosing a college because of the financial aid offer was significant and positively associated with persistence only after tuition and aid were considered. This indicates an inadequacy of student aid relative to tuition. Similarly, those choosing a college because of low tuition were less likely to persist

TABLE 4

Sequential Logistic Analysis of Within-Year Persistence by White Undergraduate Students

Factor/Variable	Step 1 Initial Model Delta P	Step 2 Tuit & Aid Delta P	Step 3 Housing & Food Delta P
Student Background			
Gender			
Male	0.0375	0.0057	-0.0084*
Mother's Education			
Less than HS	-0.0073	-0.0083	-0.0080
Some College	0.0030	0.0001	0.0017
College Degree	0.0101	0.0075	0.0090
Master's	0.0133	0.0109	0.0156*
Advanced	0.0084	0.0123	0.0134
Age			
Years Old	0.0008**	0.0005	0.0004
Marital Status			
Married	0.0072	0.0018	-0.0006
High School			
GED	0.0218**	0.0206**	0.0223**
No H.S. Deg.	0.0025	0.0011	0.0014
Employment			
Working	0.0200**	0.0190**	0.0167**
Dependency Status			
Independent	0.0032	0.0604	0.0089
Total Income			
Lower	0.0020	0.0051	0.0056
Upper-Middle	-0.0062	-0.0827	-0.0086
Upper	0.0013	0.0230	0.0051
College Choice			
Fixed Costs			
Fin. Aid	-0.0118	0.0188**	0.0218**
Low Tuition	-0.0072	-0.0140**	-0.0132**
Tuition & Aid	-0.0044	0.0079	0.0085
Controllable Costs			
Low Living Costs	0.0017	-0.0048	-0.0036
Could Work	0.0151**	0.0108*	0.0062
Living & Work	0.0058	0.0008	-0.0012
College Experience			
Four Year	-0.0314**	0.0215**	0.0231**
On Campus	-0.0445**	0.0057	0.0432**
Full Time	-0.1213**	-0.0563**	-0.0490**
Year in College			
Sophomore	-0.0210**	-0.0063**	-0.0126**
Junior	0.0020	0.0059	0.0092**
Senior	-0.0344**	-0.0375**	-0.0337
Grades			
Below C	0.0583**	0.0550**	0.0557**
C Ave.	0.0234**	0.0200**	0.0221**

TABLE 4 (Continued)

Sequential Logistic Analysis of Within-Year Persistence by White Undergraduate Students

Factor/Variable	Step 1 Initial Model Delta P	Step 2 Tuit & Aid Delta P	Step 3 Housing & Food Delta P
A Ave.	0.0189**	0.0156*	0.0152*
None Rep.	0.0421**	0.0419**	0.0422**
Aspirations			
Vocational	0.0320**	0.0318**	0.0306**
Some College	0.0194**	0.0211**	0.0193**
Master's	-0.0300**	-0.0229**	-0.0186**
Advanced	-0.0534**	-0.0331**	-0.0297**
Financial			
Grant \$		-0.0135**	-0.0131**
Loan \$		-0.0089**	-0.0044
Work \$		-0.0389*	-0.0385*
Tuition \$		-0.1090**	-0.1042**
Housing/Food \$			-0.0495**
Baseline P	0.913	0.913	0.913
Model "N"	22,304	22,304	22,304
Somer's D	0.546	0.641	0.666
Tau-a	0.087	0.102	0.106
-2 LOG L	14555.422	13702.51	13430.221
DF	35	39	40

\*p ≤ .05; \*\*p ≤ .01; \*\*\*p ≤ .001

after price-related variables were considered, indicating that even though such students might have attended colleges with lower tuition, students' tuition-sensitivity could have had offsetting effects. Further, Whites who chose their colleges so they could work were more likely to persist before living costs were considered, indicating that these students either had lower living costs or were able to efficiently manage living costs with work-related income. In combination, these findings indicate direct relationships between financial reasons for choosing college and college costs for Whites.

Third, all of the variables related to college experience were significant for Whites. Attending a 4-year college and living on campus were negatively associated with persistence before price-related variables were considered (step 1) and positively associated with persistence after the effects of both prices and living costs were considered (step 3). In addition, even though attending full-time was consistently negatively associated with persistence, the effects became less negative as prices

(step 2) and living costs (step 3) were added to the model. In combination, these findings indicate that 4-year, on-campus, and full-time college attendance are all associated with higher college costs. However, when costs are controlled for, results indicate that 4-year and on-campus attendance increase the probability of persistence, due to greater academic and social aspects of the college experience related to living on campus.<sup>12</sup> Interestingly, sophomores and seniors were consistently less likely to persist than freshmen were, while juniors were more likely than freshmen were to persist only after living costs were considered.

Fourth, there was an association between grades and persistence for some groups and not others. Including non-reported grades helped clarify the role of grades compared to earlier analyses. Students with low grades (C average or below C), as well as those with very high grades (A average), were consistently more likely to persist than those with B average grades. This means that the relationship between college achievement and grades does not have a linear association with persistence.

Fifth, all of the aspirations variables were significant and associated with persistence. Aspiring to complete a vocational qualification or some college consistently had a positive association with persistence compared to aspiring to complete a college degree, while aspiring to attain a master's or advanced degree consistently had a negative association with persistence. This again suggests that students with more immediate goals were more likely to continue their enrollment because of those goals.

Sixth, all of the price-related variables were significant for Whites. Grants, work-study, and tuition differentials were negatively associated with persistence in both models, indicating that aid was insufficient. Further, loan amounts were negatively associated with persistence when prices were first considered (step 2), but not when living costs were considered (step 3). This finding illustrates that loans were inadequate to contend fully with living costs. Conversely, borrowing money to pay for living costs could have an adverse impact on persistence. Further, there is a negative association between living costs and persistence. Each thousand dollars of differential in living costs decreased the probability of persistence by about 5%.

While there was economic diversity among White students, the majority was from upper-middle- or upper-income families. Further, a smaller percentage chose their colleges because of low tuition or student aid. Thus, while grants, loans, and work-study aid were influential in students' persistence decisions by Whites, a percentage of this group was adversely affected by aid inadequacy.

### *Conclusions and Implications*

These analyses provide insight into the role financial aid played in the emergence of the new equality. As a conclusion, we first examine patterns of choice among diverse racial groups, and then we consider the implications for public policy and higher education finance.

#### *Patterns of Student Choice*

Our primary conclusion is that there were diverse patterns of educational choice both across and within both racial groups. Further, there is a continuity of choice patterns within each group, suggesting that habitus is reinforced as a result of the confluence of family backgrounds and public policies. Distinctive patterns were evident for the two groups examined.

African Americans were highly sensitive to finances in their college choices and in their persistence decisions. Tuition and student aid played a substantial role in the college choice process for African Americans, while grants and tuition had a substantial and direct influence on persistence. Further, choosing a college because of student aid was positively associated with persistence even when the direct effects of tuition and student aid were considered. This majority pattern among African Americans was similar, in some respects, to the pattern of college choice by students from low-income families observed in a recent analysis of social class and college costs (Paulsen & St. John, 2002).

However, a substantial percentage of African Americans were from high-earning families with high levels of education. Further, levels of parents' education, as well as students' aspirations, were associated with persistence for African Americans, indicating that those with cultural capital may have aspired to reproduce this capital in their families, albeit with mixed success. Thus, within the African American population there is clearly a pattern of economic diversity that accentuates the role of finance in college choice and persistence for African Americans.

In contrast, on average, Whites were more economically advantaged than were African American students, as evidenced by the distribution of students across income categories. Yet there was considerable economic diversity among the White population, which would explain why Whites were quite responsive to tuition and student grants. However, while loans were negatively associated with persistence by Whites, they ceased being significant when living costs were controlled for, indicating that loans were more effective for Whites than for other groups.

### *Policy Implications*

First, student grants and tuition levels play more substantial roles in college choices and persistence by African Americans than for Whites. Thus, reductions in federal grants, and concomitant rapid growth in tuition, during the past two decades have had a more substantial influence on African Americans than on Whites, because grants and tuition play more substantial roles in choice processes for African Americans than for Whites. Further, institutional policies that use grants to offset tuition increases and to promote diversity would seem an especially viable approach to encouraging African American enrollment.

In contrast, the emphasis on loans seems to favor Whites. Not only was a larger percentage of Whites from high-income families, but Whites used loan capital to pay living costs associated with college attendance. Thus, the new loan policy environment accentuates the privileges of Whites and increases inequities between Whites and African Americans.

On a positive note, this study confirms arguments that student aid can be used to reduce the inequalities in higher education, as was the case in the 1970s. The challenge facing policymakers on campuses, in state houses, and in Washington, DC, is to figure out strategies for using aid that are fair and just for all groups. Clearly, the current policy environment accentuates differences in ways that simply are not just for all. At the very least, there is a need to reexamine arguments for need-based grant aid, an approach that would increase equity for African Americans, if not to also reconsider low tuition policies, approaches that seem especially important for African Americans given their high tuition sensitivity.

More generally, these findings have implications for admissions and retention efforts aimed at improving diversity. The recent Supreme Court decision in the Michigan case constrained the use of race in admission. However, it is still possible to design admission and retention programs in ways that target students with high needs or students who have achieved in spite of their disadvantages. Specially, it is important to provide academic support for all students. Financial aid is linked to the opportunity to be engaged in faculty research for high achieving students of color (St. John, 2003a). It is important that the research community continue to seek better ways of directing need-based aid and merit aid to students who need this support to become engaged as learners in their colleges and universities. It is equally important to intervene to make sure there are opportunities for such engagement. This article reinforces the emergent understanding that opportunities for engagement are limited for high achieving, low-income students—including students of color—who must work excessive hours to pay for college.

*Notes*

<sup>1</sup>This represents an adaptation of the nexus model. Prior analyses examined only students in 4-year colleges. The population was expanded to capture sufficient cases for separate analyses of each ethnic group. Further, in the initial analysis, students attending private colleges were compared to students in public colleges (St. John, Paulsen, & Starkey, 1996). This variable was dropped from the current analyses because of a high correlation between attending a private college and tuition charges.

<sup>2</sup>In previous persistence studies using variations of this model, students with reported grades remained uncoded and thus were combined with students with mostly B grades (e.g., St. John, Andrieu, Oescher, & Starkey, 1994; St. John, Paulsen & Starkey, 1996). Treating no reported grades as a distinct variable represents a further refinement of the nexus model.

<sup>3</sup>High school and college grades are generally highly correlated. Therefore, a potential limitation due to the absence of data on high school achievement (i.e., test scores and grades) is somewhat mitigated.

<sup>4</sup>Housing and food represents a further refinement over prior models. This variable was constructed by the National Center for Educational Statistics and included fewer missing cases than the housing and other-living-costs variables used in prior analyses (e.g., St. John, Paulsen, & Starkey, 1996).

<sup>5</sup>We described these refinements in the footnotes above.

<sup>6</sup>NPSAS-87 included a fall sample of all students enrolled in postsecondary institutions and a spring follow-up survey. In subsequent years, this sampling approach was replaced with a revolving sample to get a better approximation of full-year enrollment.

<sup>7</sup>It provides a measure of whether students can actually afford to complete the academic year, a basic measure of affordability.

<sup>8</sup>We expect that students with no high school degrees were more likely to persist because these students were more committed, possibly because they have fewer options to fall back on.

<sup>9</sup>In fact, in looking across the results for each racial/ethnic group, these variables did not change in significance across any of the populations.

<sup>10</sup>This is a consistent pattern across populations and is consistent with prior analyses (St. John, Paulsen, & Starkey 1996).

<sup>11</sup>We base this interpretation on a comparison of the significance of this variable across the analyses of the different populations (see Tables 3 and 4).

<sup>12</sup>We agree with the reviewers of this paper that this interpretation is supported by research on college students by Astin (1975), Tinto (1987, 2000), and others who have examined integration processes for students who live on campus.

*References*

- Advisory Committee on Student Financial Assistance. (2002). *Empty promises: The myth of college access in America*. Washington, DC: Author.
- Astin, A. W. (1975). *Preventing students from dropping out*. San Francisco: Jossey-Bass.
- Becker, W. E. (in press). Omitted variables and sample selection problems in studies of college-going decisions. In C. Teddlie & E. A. Kemper (Series Eds.) & E. P. St. John (Vol. Ed.), *Readings on equal education: Vol. 19. Public policy and college access: Investigating the federal and state roles in equalizing postsecondary opportunity*. New York: AMS Press, Inc.
- Berger, J. B. (2000). Optimizing capital, social reproduction, and undergraduate persistence: A sociological perspective. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 95–124). Nashville, TN: Vanderbilt University 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, pp. 225–256). New York: Agathon Press.
- Cabrera, A. F., Nora, A., & Castañeda, M. B. (1992). The role of finances in the persistence process: A structural model. *Research in Higher Education, 33*, 571–593.
- Carter, D. F. (1999). The impact of institutional choice and environments on African American and White students' degree expectations. *Research in Higher Education, 40*, 17–41.
- Choy, S. P. (2002). *Access & persistence: Findings from 10 years of longitudinal research on students*. Washington, DC: American Council on Education.
- College Board. (1998). *Trends in student aid*. Washington, DC: Author.
- Fitzgerald, B. (in press). Federal financial aid and college access. In C. Teddlie & E. A. Kemper (Series Eds.) & E. P. St. John (Vol. Ed.), *Readings on equal education: Vol. 19. Public policy and college access: Investigating the federal and state roles in equalizing postsecondary opportunity*. New York: AMS Press, Inc.
- Gladieux, L. G., & Swail, W. S. (1999). Financial aid is not enough: Improving the odds for minority and low-income students. In J. E. King (Ed.), *Financing a college education: How it works, how it's changing* (pp. 177–197). Westport, CT: Oryx Press.
- Greene, J. P., & Foster, G. (2003). *Public school graduation and college readiness rates in the United States*. (Education working paper #3). New York: Center for Civic Innovation at the Manhattan Institute.
- Hanson, S. L. (1994, July). Lost talent: Unrealized educational aspirations and expectations among U.S. youths. *Sociology of Education, 67*, 159–183.
- Hartle, T. W. (1998). Clueless about college costs. *Presidency, 1*(1), 20–27.
- Hearn, J. C. (1984, January). The relative roles of academic, ascribed, and socioeconomic characteristics in college destinations. *Sociology of Education, 57*, 22–30.
- Heller, D. (1997). Student price response in higher education: An update of Leslie and Brinkman. *Journal of Higher Education, 68*, 624–659.
- Heller, D. E. (in press). NCEs research on college participation: A critical analysis. In C. Teddlie & E. A. Kemper (Series Eds.) & E. P. St. John (Vol. Ed.), *Readings on equal education, Vol. 19. Public policy and college access: Investigating the federal and state roles in equalizing postsecondary opportunity*. New York: AMS Press, Inc.
- 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.
- Kane, T. J. (1995). *Rising public college tuition and college entry: How well do public subsidies promote access to college?* (Working paper series No. 5146). Cambridge, MA: National Bureau of Economic Research.
- Kao, G., & Tienda, M. (1998). *Educational aspirations of minority youth*. *American Journal of Education, 106*(5), 349–384.
- King, J. E. (1999). Crisis or convenience: Why are students borrowing more? In J. E. King (Ed.), *Financing a college education: How it works, how it's changing* (pp. 165–176). Westport, CT: Oryx Press.
- McDonough, P. M., Korn, J., & Yamasaki, E. (1997). Access, equity, and the privatization of college counseling. *The Review of Higher Education, 20*(3), 297–317.
- McPherson, M. S., & Schapiro, M. O. (1991). *Keeping colleges affordable*. Washington, DC: Brookings Institution.

- National Center for Education Statistics. 1997. *Confronting the odds: Students at risk and the pipeline to higher education*. (NCES 98-094). By Laura J. Horn. Project officer: C. Dennis Carroll. Washington, DC: Author.
- Paulsen, M. B. (2001a). The economics of human capital and investment in higher education. In M. B. Paulsen & J. C. Smart (Eds.), *The finance of higher education: Theory, research, policy and practice* (pp. 55–94). New York: Agathon Press.
- Paulsen, M. B. (2001b). The economics of the public sector: The nature and role of public policy in the finance of higher education. In M. B. Paulsen & J. C. Smart (Eds.), *The finance of higher education: Theory, research, policy and practice* (pp. 95–132). New York: Agathon Press.
- Paulsen, M. B., & St. John, E. P. (1997). The financial nexus between college choice and persistence. In R. A. Voorhees (Ed.), *Researching student aid: Creating an action agenda* (pp. 65–82). San Francisco: Jossey-Bass.
- Paulsen, M. B., & St. John, E. P. (2002). Social class and college costs: Examining the financial nexus between college choice and persistence. *Journal of Higher Education*, 73(3), 189–236.
- Pelavin, S. H., & Kane, M. B. (1988). *Minority participation in higher education*. Washington, DC: Pelavin Associates.
- Pelavin, S. H., & Kane, M. B. (1990). *Changing the odds: Factors increasing access to college*. New York: College Board.
- Ruppert, S. S. (2003). *Closing the college participation gap: A national summary*. Denver: Education Commission of the States.
- St. John, E. P. (1991). What really influences minority student attendance? An analysis of the High School and Beyond sophomore cohort. *Research in Higher Education*, 32(2), 141–158.
- St. John, E. P. (1994). *Prices, productivity and investment: Assessing financial strategies in higher education* (ASHE/ERIC Higher Education Report, No. 3). Washington, DC: George Washington University.
- St. John, E. P. (2002). *The access challenge: Rethinking the causes of the new inequality* (Policy Issue Report # 2002-01). Bloomington, IN: Indiana Education Policy Center.
- St. John, E. P. (2003a). *Diverse pathways: The roles of financial aid and student involvement in expanding educational opportunity*. Prepared for the Bill & Melinda Gates Foundation.
- St. John, E. P. (2003b). *Refinancing the college dream: Access, equal opportunity, and justice for taxpayers*. Baltimore: Johns Hopkins University Press.
- St. John, E. P., Andrieu, S. C., Oescher, J., & Starkey, J. B. (1994). The influence of student aid on within-year persistence by traditional college-age students in four-year colleges. *Research in Higher Education*, 35, 301–334.
- 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* (pp. 123–156). New York: AMS Press, Inc.
- 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, 563–581.
- St. John, E. P., & Paulsen, M. B. (2001). The finance of higher education: Implications for theory, research, policy and practice. In M. B. Paulsen & J. C. Smart (Eds.), *The*

- finance of higher education: Theory, research, policy and practice* (pp. 545–568). New York: Agathon Press.
- 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.
- Strope, J. L., Jr., & Wells, J. A. (1998). The Podberesky Case and race-based financial aid. *Readings in Equal Education, 15*, 157–172.
- Tinto, V. (1987). *Leaving college: Rethinking causes and links of student attrition*. Chicago: University of Chicago Press.
- Tinto, V. (2000). Linking learning and leaving. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 81–94). Nashville, TN: Vanderbilt University Press.