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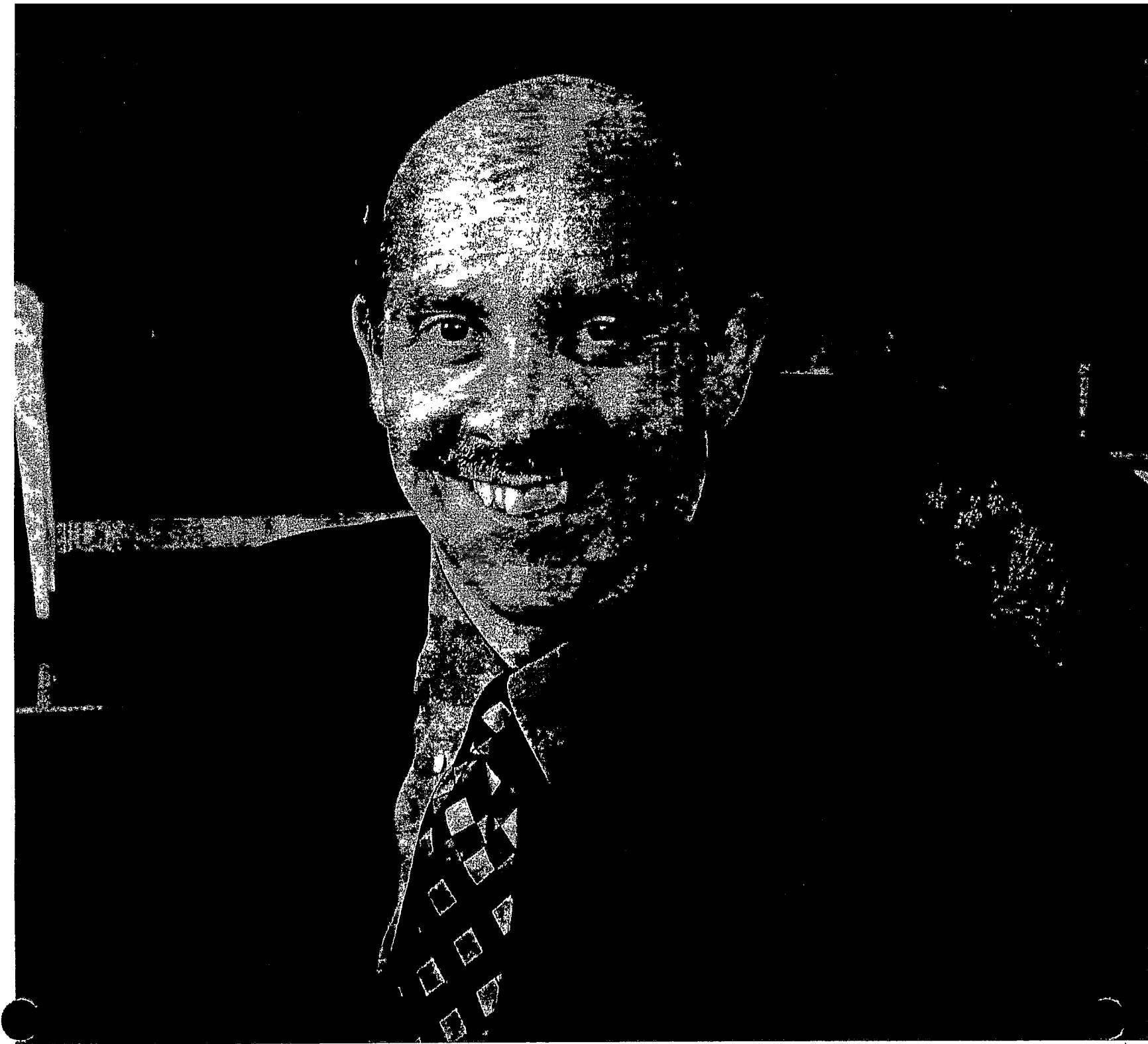
JAMIE P. MERISOTIS

Jamie P. Merisotis is the founding President of the Institute for Higher Education Policy. Established in 1993 in Washington, DC, the Institute is regarded as one of the world's premier research and policy organizations concerned with higher education policy development. As the Institute's President, Mr. Merisotis has worked extensively on nearly every aspect of the Institute's work. He is recognized as a leading authority on college and university financing, particularly student financial aid, and has published major studies and reports on topics ranging from higher education ranking systems to technology-based learning. Mr. Merisotis also manages the Institute's growing global portfolio, working to further educational opportunity and access primarily in nations in transition, such as in southern Africa and the former Soviet Union.

A champion of the idea that higher education reaps rich rewards for both society and individuals, Jamie Merisotis has focused much of his work on improving access to higher education for low-income, minority, and other underrepresented populations. This commitment to equality of opportunity was a major factor in the establishment of the Alliance for Equity in Higher Education, an unprecedented coalition of national associations that represent more than 350 minority-serving colleges and universities, including Historically Black Colleges and Universities, American Indian Tribal Colleges, and Hispanic-Serving Institutions. Founded in 1999, the Alliance serves as a leading voice for the interests of minority-serving institutions (MSIs) and has become a model of collaboration, unity, and innovation among communities of color. Mr. Merisotis serves as the coordinator and facilitator of the Alliance and is director of the Kellogg MSI Leadership Fellows Program, a year-long, intensive program designed to train the next generation of presidents at MSIs.

Prior to founding the Institute, Mr. Merisotis served as Executive Director of the National Commission on Responsibilities for Financing Postsecondary Education, a bipartisan commission appointed by the President and the Congressional leadership. He is a member of the Board of Trustees of Bates College in Lewiston, Maine, and is Trustee and Chair-Elect of Scholarship America, the nation's largest private sector scholarship and educational support organization. Mr. Merisotis is the recipient of numerous awards and honors, including the 2002 Robert P. Huff Golden Quill Award from the National Association of Student Financial Aid Administrators and the 2001 Community College Government Relations Award presented by the American Association of Community Colleges and Association of Community College Trustees. He was a 2005 finalist for the Brock International Prize in Education, and in 1998 was named one of the top young leaders (under the age of 45) in American higher education by *Change* magazine.

TESTIMONY OF

JAMIE P. MERISOTIS, PRESIDENT

INSTITUTE FOR HIGHER EDUCATION POLICY

Briefing on the Educational Effectiveness of Historically Black Colleges and Universities

UNITED STATES COMMISSION ON CIVIL RIGHTS

May 5, 2006

(Washington, DC

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TESTIMONY OF JAMIE P. MERISOTIS
President, Institute for Higher Education Policy

. UNITED STATES COMMISSION ON CIVIL RIGHTS

May 5, 2006

Mr. Chairman and Members of the Commission:

Thank you for this opportunity to appear at this Commission briefing regarding the educational effectiveness of Historically Black Colleges and Universities (HBCUs).

I would like to begin with a brief introduction to the Institute for Higher Education Policy and our role in the policy process. Established in 1993, the Institute is a non-profit, non-partisan research and policy organization whose mission is to foster access and success in postsecondary education through public policy research and other activities that inform and influence the policymaking process. The Institute's work addresses an array of issues in higher education, ranging from technology-based learning to quality assurance to student success. However, the Institute is probably best known for its studies and reports concerning higher education financing at all levels. These studies and reports address topics ranging from federal and state student financial aid to state funding formulas to trends in institutional expenditures and revenues. We also have worked on higher education financing issues in the international context, especially in southern Africa and Eurasia.

The Institute's independent voice on these issues is well known. Our primary funding is derived from major foundations that are interested in supporting higher education research and analysis. We also have conducted a fair amount of analytic work at the behest of state governing and coordinating boards for higher education, as well as national governments outside the U.S.

In addition to this independent analytic work, the Institute also plays a unique role as facilitator and convener of the Alliance for Equity in Higher Education, a groundbreaking collaborative established in 1999 by the American Indian Higher Education Consortium (AIHEC), the Hispanic Association of Colleges and Universities (HACU), and the National Association for Equal Opportunity in Higher Education (NAFEO). Combined, these three organizations represent over 350 colleges and universities that serve more than one-third of all students on color in the United States. As institutions educating the nation's emerging majority populations, these minority-serving institutions (MSIs) of higher education represent the vanguard of the nation's future potential and promise.

As the Alliance's facilitator, the Institute has served in two key roles: we have conducted research that examines the unique context of MSIs in areas such as teacher education and the use of technology, and we have functioned as a manager of programs that address common issues of concern to MSIs. Our program management responsibilities include a program to train future presidents of HBCUs and other MSIs (MSI Leadership Fellows), supported by the W.K. Kellogg Foundation; a program to enhance the data and analytic capacities of MSIs committed to increasing student learning and success (Building Engagement and Attainment of Minority Students [BEAMS]), supported by Lumina Foundation for Education; and an initiative to disseminate knowledge learned as the result of a decade-long investment to improve undergraduate education in Science, Technology, Engineering, and Mathematics (Model Institutions for Excellence), jointly supported by the National Science Foundation and the National Aeronautics and Space Administration. The Alliance also recently has assumed leadership and management of the National Articulation and Transfer Network (NATN), a major national initiative designed to increase enrollment, retention, and graduation rates for minority students.

Improving the educational effectiveness of higher education continues to be one of the most important contributions that the federal government, states, individuals, and

the private sector can make to our national well-being. The simple fact remains that increasing educational opportunities for all Americans results in tremendous public private social and economic benefits. As the chart at the conclusion of my testimony points out, going to college is much more than just a process of enhancing one's personal economic status. The combination of societal and individual benefits of higher education must continue to motivate what we do at many levels, and I hope it will be an important consideration for the Commission as it takes up this important issue of the educational effectiveness of HBCUs.

At this briefing you will be hearing from many distinguished leaders from the community of HBCUs, individuals who speak with a great deal of authority and experience. I will not take time to cover territory about the historical and contemporary role of HBCUs as key drivers of educational effectiveness, since these other witnesses are highly qualified to do so. Instead, as a complement to their testimony, I will focus my remarks on several issues regarding the effectiveness of HBCUs that draw from the Institute for Higher Education Policy's combined work as both an independent research and analytic organization and as an organization that manages programs on behalf of HBCUs and other minority-serving institutions.

My remarks address four areas concerning the educational effectiveness of HBCUs. These are somewhat lesser-known, but nonetheless critically important, ways in which we should be viewing the educational effectiveness of HBCUs. They are:

- HBCUs as leaders in student engagement;
- HBCUs as community-based institutions that promote civic engagement and service learning;
- HBCUs as drivers of educational attainment for low-income, first generation, and disabled students; and
- HBCUs as examples of success in the national effort to improve the quality of science, technology, engineering, and mathematics (STEM) education and research.

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In each case, I will point to a specific example of success of the effectiveness of HBCUs in this area. This information is illustrative of the types of accomplishments we have seen at HBCUs in recent years.

HBCUs and Student Engagement

One of the most important trends in higher education in the last decade has been an effort to document how well institutions engage in effective educational practices— that is, activities that are empirically related to desired learning and personal development outcomes of college. Perhaps the best example of this is the work that has been conducted by the National Survey of Student Engagement (NSSE), administered by the Indiana University Center for Postsecondary Research. NSSE is designed to obtain information from colleges and universities nationwide about student participation in programs and activities that institutions provide for their learning and personal development. The results provide an estimate of how undergraduates spend their time and what they gain from attending college. Nearly 1,000 higher education institutions have administered NSSE since it began national administration in the year 2000.

The NSSE survey questions focus on the frequency with which students participate in effective educational practices. For example, students are asked how often they discussed ideas with faculty outside of class, participated in a community-based project as a part of a course, and used an electronic medium for an assignment. In addition, the survey asks students to identify the degree to which their courses emphasize different mental processes (such as memorizing and analyzing), how many hours per week they spend studying, working, or participating in co-curricular activities, as well as how they would characterize their relationships with people on campus. All of these factors have been shown through prior research to influence student retention and graduation.

According to 2004 and 2005 data collected by NSSE at 37 HBCUs, African American students at HBCUs report more frequent interactions with faculty than African

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American students at predominantly white institutions (PWIs). HBCUs also generally appear to provide more supportive learning environments for students, including more contact with faculty. Students at these HBCUs report a greater belief that their institutions contribute to their personal spiritual growth, and report a higher likelihood that they will vote compared to their counterparts at PWIs.

These data from NSSE, combined with a significant body of research undertaken by others, suggest that HBCUs provide a superior level of student engagement, and therefore offer an educational experience that enhances the intellectual gains and accomplishments of students. This increased engagement of students is an important indicator of the effectiveness of HBCUs that deserves closer examination and study by those seeking to enhance the payoffs of the investment in HBCUs.

HBCUs and Civic Engagement/Service-Learning

A key national issue is the extent to which institutions of higher education contribute to civic engagement and participation in our democratic institutions, such as voting, volunteering, and community involvement. In general, we know that higher educational attainment is highly correlated with increased civic engagement. For example, a 50-state study of the benefits of higher education published last year by the Institute for Higher Education Policy found that 36 percent of Americans over the age of 25 with a bachelors degree volunteer, compared to just 21 percent of those with a high school diploma. Similarly, voting rates in national elections for individuals with a bachelor's degree are nearly 50 percent higher than for those with a high school diploma. Clearly higher education makes a profound difference in terms of our national civic well-being.

The question for higher education institutions is what specifically they may be doing to foster those values and goals. While there are many ways in which colleges and universities can contribute to the development of civically-engaged citizens, one way is through the use of service-learning or other activities that integrate service and democratic engagement into the curriculum of the institution.

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According to the National Campus Compact, which represents over 950 colleges and universities committed to the civic purposes of higher education, HBCUs and other MSIs do a remarkable job of civically engaging students. The 2004 Campus Compact membership survey found that these institutions are more likely than others to require service and service-learning for graduation. They also found that HBCUs and other MSIs are more likely than other colleges and universities to have a community service or service-learning office; to have a director of community service or service learning on their campus; and to have partnerships with local K-12 schools and faith-based organizations.

These intentional strategies by HBCUs to engage their students at the community or civic level are not well-documented in the national literature about service learning and civic engagement, but clearly deserve further exploration. As an example of the effectiveness of institutions, they point to a profoundly different approach to student success than what is seen at many other colleges and universities.

HBCUs and Success for Low-Income, First Generation, and Disabled Students

Another indicator of the effectiveness of HBCUs is the degree to which they have committed to the educational advancement of low-income, first generation, and disabled students. HBCUs are well-known for the opportunities they provide to students who come from educational and economically disadvantaged circumstances. In so doing, these institutions work hard to provide these students with additional support, guidance, and mentoring that will improve their opportunities to get into, and succeed in, college. For example, the federal government has long supported increased opportunity for these populations through the federally funded TRIO programs. These programs, authorized under the Higher Education Act, provide a continuum of services from pre-college to pre-graduate level study for the nation's low-income, first-generation, and disabled students. In FY 2006, the $828 million in funding for TRIO programs supported more than 850,000 students in over 2,700 distinct TRIO programs.

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There are a total of seven TRIO programs. The pre-college programs include Talent Search, which provides counseling and information about college admissions requirements and student financial aid to young people in grades six through 12, and Upward Bound, which works with students starting in the 9th grade to provide instruction in literature, composition, mathematics, and science on college campuses after school, on Saturdays and during the summer. In addition, Upward Bound Math Science helps students from low-income families to strengthen math and science skills, frequently providing research opportunities for underrepresented students, while Veterans Upward Bound provides intensive basic skills development and short-term remedial courses for military veterans to help them successfully transition to postsecondary education.

At the college level, Student Support Services programs provide tutoring, counseling, and supplemental instruction to help students stay in college through the completion of a degree, and in the case of community colleges, assist them in the transfer process. The Ronald E. McNair Post-Baccalaureate Achievement programs are designed to encourage low-income students and minority undergraduates to consider careers in college teaching as well as prepare for doctoral study. Students who participate in this program are provided with research opportunities and faculty mentors. Finally, the Educational Opportunity Centers located throughout the country primarily serve displaced or underemployed workers from low-income families with incomes.

According to the Council for Opportunity in Education, nearly three quarters of all HBCUs have TRIO programs, serving nearly 70,000 students. This compared to less than one quarter of all other colleges and universities. The more than $70 million in support provided by these programs to serve students at HBCUs goes a long way toward increasing the odds of student success than students who do not have the benefit of these programs.

HBCUs and STEM

The final example of ways in which HBCUs are educationally effective is the role that they play in improving the quality of STEM education and research. At the national level, investments in science, technology, engineering, and mathematics has been universally accepted as a national imperative. The President's proposed 2007 Budget, for example, advocates significant new investments in these efforts as key drivers of the nation's global competitiveness and economic capacity. However, research indicates that African Americans are significantly underrepresented both as a percentage of the national STEM workforce and as a proportion of those enrolling and succeeding in STEM programs at colleges and universities.

An interesting example of a program that is designed to increase the quality of STEM education and research at HBCUs is the Historically Black Colleges and Universities-Undergraduate Program (HBCU-UP) at the National Science Foundation (NSF). HBCU-UP provides an array of support to institutions to help strengthen STEM education and research. This includes curriculum enhancement, faculty professional development, undergraduate research, academic enrichment, infusion of technology to enhance STEM instruction, collaborations with research institutions and industry, and other activities that meet institutional needs.

According to NSF, Math gatekeeper passing rates—including in Algebra, Pre-Calculus, and Calculus I—have improved at 14 HBCU-UP grantee sites that have had projects in place for five years. Improvements have also been seen in other STEM gatekeeper courses, such as Biology I and Physics I. These improvements correlate to the faculty development and course revision and enhancement activities that are implemented by HBCU-UP projects. Similarly, several indicators of research and professional development activity have increased as a result of HBCU-UP—such as the number of refereed journal articles and other publications, conference presentations, and proposals submitted for external funding. This reflects increased research opportunities at HBCU campuses for undergraduates to experience either in their classes or as researchers. Approximately 25 percent of STEM graduates from

these HBCUs now have had an undergraduate research experience that better prepares them for success in graduate school.

These brief examples of the educational effectiveness of HBCUs are not intended to be definitive or inclusive. Rather they are designed to illustrate that the educational effectiveness of HBCUs has many dimensions that go beyond the simple calculation of aggregate graduation rates, retention rates, or job placements. In assessing the educational effectiveness of HBCUs, it is critical to consider a wide array of information and data that paint a more complete portrait of effectiveness than might be indicated by more narrowly drawn measures. This more comprehensive picture of educational effectiveness can then be used to provide a fair assessment of HBCU performance and, in so doing, help to improve the targeting of strategies to continuously upgrade quality and performance at these nationally essential institutions of higher learning.

Thank you again for this opportunity to appear before the Commission on this important issue. I would be pleased to answer any questions you may have.

THE ARRAY OF HIGHER EDUCATION BENEFITS

	Public	Private
	*Increased Tax Revenues	*Higher Salaries and Benefits
	*Greater Productivity	*Employment
Economic	*Increased Consumption	*Higher Savings Levels
	*Increased Workforce Flexibility	*Improved Working Conditions
	*Decreased Reliance on Government Financial Support	*Personal/Professional Mobility
	*Reduced Crime Rates	*Improved Health/Life Expectancy
	*Increased Charitable Giving/ Community Service	*Improved Quality of Life for Offspring
Social	*Increased Quality of Civic Life	*Better Consumer Decisionmaking
	*Social Cohesion/ Appreciation of Diversity	*Increased Personal Status
	*Improved Ability to Adapt to and Use Technology	*More Hobbies, Leisure Activities

Mikyong Minsun Kim
Associate Professor of higher education and
Director of the Virginia Campus Higher Education, the George
Washington University

Mikyong Minsun Kim (PhD, UCLA) is an Associate Professor of higher education and the Director of the Virginia Campus Higher Education Administration Doctoral Program of the George Washington University. Former posts include faculty positions at the University of Arizona – Tucson and the University of Missouri - Columbia. She also served as a grant panelist and consultant for the National Science Foundation.

She has been actively engaged in contributing to the field of higher education. Her teaching and research interests include college impact, comparative higher education, finance, equity and opportunity issues, higher education policy, institutional analysis, special colleges for special populations, organizational theory, and bridging K-12, higher education and work. While she encompasses a wide range of interest areas, she has dedicated a great deal of her focus on the impact and effectiveness of Historically Black Colleges and Universities on African-American students. Currently she has an article scheduled to be released in June 2006, *Research in Higher Education*, entitled, "The impact of Historically Black Colleges and Universities on the Academic Success of African-American Students." Contact: kimmi@gwu.edu, (703) 726-3771, (202) 973-1510.

The Effectiveness of Historically Black Colleges and Universities

Statement of **Mikyong Minsun Kim**
Associate Professor of Higher Education
The George Washington University

Thank you for the opportunity to testify before the Commission. My name is Mikyong Minsun Kim, and I am an Associate Professor of Higher Education and the Director of the Virginia Campus Higher Education Administration Doctoral Program at the George Washington University. Former posts include faculty positions at the University of Arizona – Tucson and the University of Missouri – Columbia. I have also served as a grant panelist and consultant for the National Science Foundation. While I have a wide range of scholarly interests, a great deal of my focus has been on the impact and effectiveness of Historically Black Colleges and Universities (HBCUs) on African American students. Therefore, my testimony will focus on research findings concerning the effectiveness of these institutions.

First, I will briefly compare the institutional and student characteristics of HBCUs with those of Historically White Colleges and Universities (HWCU). Second, I will review the findings of my studies on the effectiveness of HBCUs and compare my findings with those of other studies. Third, I will discuss how HBCUs contribute to the development of African American students and the higher education community. Fourth, I will discuss whether and why HBCUs merit strong support.

Institutional and Student Characteristics at HBCUs versus HWCUs

There are 103 HBCUs in this country (National Center for Education Statistics [NCES], 1996), and about 30 percent of the BA degrees earned by African Americans annually are awarded by the 89 four-year (41 public and 48 private) HBCUs (NCES, 1996, 2003). HBCUs, on average, have relatively fewer resources—from physical facilities to financial support and faculty salaries—than HWCUs. Table 1 shows that HBCUs tend to have academically less prepared students and poorer institutional resources than HWCUs (e.g., expenditure per FTE student and average faculty salary), and students' parents are less affluent. On the other hand, HBCUs tend to have a lower student-faculty ratio, lower enrollment, and somewhat higher student-faculty interaction, all of which are positive predictors of student development in general (Pascarella and Terenzini, 1991, 2005; Astin, 1993). From the mean comparison of Table 1, African American students are more likely to be involved in faculty's research projects at HBCUs, and this involvement is a positive predictor for degree completion. Although the degree completion rates for African American students are 55% for HBCUs and 63% for HWCUs, college GPAs of African American students did not differ between the two institution types. The information in Table 1 was drawn from my recent HBCU study, scheduled to be published in *Research in Higher Education.*

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Table 1.
Comparing Student and Institutional Characteristics of HBCUs and HWCUs:
Means, Standard Deviations, and Correlation Coefficients

Variable list	HWCU		HBCU		r with Black college
	Means	SD	Means	SD	
Individual-level variables					
Degree completion	0.63	0.48	0.55	0.50	−0.08
Age	3.03	0.57	3.10	0.56	0.06
Female (gender)	0.64	0.48	0.64	0.48	0.01
Degree aspiration	0.33	0.47	0.33	0.47	0.00
Parental income	6.96	3.28	6.25	3.21	−0.11*
Mother's education	4.91	1.96	4.82	2.12	−0.02
SAT	925.25	190.24	735.64	159.50	−0.48*
High school GPA	5.55	1.67	4.56	1.69	−0.29*
College GPA [2]	3.67	0.95	3.79	1.04	0.06
Institution-level variables					
Global characteristics					
Selectivity in admission	1105.00	120.63	724.80	77.32	−0.73*
Total enrollment	14486.94	10864.51	1823.40	1002.92	−0.67*
Black college					
Internal characteristics					
Student-faculty ratio	20.88	5.76	15.80	2.78	−0.42*
Percentage: female faculty	26.48	7.76	40.06	12.69	0.55*
Percentage: research project with faculty	22.96	7.23	31.89	5.77	0.50*
Student-faculty interaction	7.92	0.18	8.06	0.16	0.27*
Curriculum: senior seminar	1.15	0.50	1.00	0.00	−0.15*
Average faculty salary	42751.94	6579.04	26814.00	5470.87	−0.68*
Percentage: faculty with a Ph.D.	84.53	6.19	62.80	12.20	−0.68*
Percentage: total instruction-related expenditure	73.13	11.61	72.35	8.80	−0.03
Instruction-related expenditure per FTE student	9246	5306	6506	1208	−0.25*
Percentage: students transferring	12.25	7.48	15.71	6.41	0.22*
Percentage: undergraduates receiving aid	53.53	13.18	84.00	11.10	0.67*

Note: [1] The correlation coefficients are Spearman's rho; * $p < 0.05$ (two-tailed)
[2] The information of the variable was much reduced, and the available samples of college GPA for mean, SD, and correlation analyses were only 280.

Effectiveness of HBCUs versus HWCUs

Let me share with you some of my findings. Initially, the finding of no significant difference between HBCUs and HWCUs throughout three academic outcomes (overall academic ability, writing ability, and math ability) was rather surprising. However, I found the same pattern of "no significant difference" between HBCUs and HWCUs in their graduates' early career earnings as well as the probability of obtaining a baccalaureate degree. This finding is inconsistent with the reports of most previous studies on HBCUs, but it is somewhat consistent with Professor Pascarella's reports. I used national longitudinal data sets, institutional effectiveness models, and rigorous multi-level statistical techniques for the design and analysis of my HBCU studies. We should take the finding of "no significant difference" as a positive sign that African American students, as a group, now benefit equally in their academic development whether they attend HBCUs or HWCUs. By way of explanation, I speculate that the discriminatory climate at HWCUs might have eased since the desegregation movement.

How do students' learning opportunities differ between HBCUs and HWCUs?

African American students at HBCUs are more actively and deeply involved in the academic community than are their counterparts at HWCUs. As the previous studies contend, HBCUs seem to provide a more academically supportive and engaging environment for African American students. One of my studies also indicates less satisfying and more difficult academic experiences among African American female students at HWCUs. Although HWCUs provide African American students with equal access (or even preferential treatment) in admissions, they may still be less likely to

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include African American students in their academic communities. For example, my previous study of HBCUs revealed that helping more undergraduates participate in professors' research projects is a good strategy for improving African American students' retention and graduation rates. The same study also suggested that African American students had many more chances to participate in professors' research projects at HBCUs. Judging by the findings of my studies, as well as those of previous investigators' studies, there are obvious compensating factors, and the two types of institution contribute to student learning in different ways: HWCUs provide more visible monetary resources and prestige, while HBCUs offer greater humane support and deeper involvement.

Conclusion and recommendation

HBCUs appear to be more cost-effective in achieving their mission of educating black students. How are HBCUs able to have such an impact with relatively few resources and with students whose pre-college performance was poorer than that of their counterparts at HWCUs? How they manage to produce the same level of outcomes as HWCUs in spite of poorer academic resources needs to be investigated further in future studies. Given that HBCUs are significantly underfunded relative to HWCUs, the findings of my studies and of other reports lend support to the proposition that HBCUs contribute significantly to higher education in this country and merit strong support.

Thank you for this valued opportunity to participate.

(This is an outline; I plan to present more elaborate testimony on May 5.)

Raymond C. Pierce
Dean and Professor, North Carolina Central University
School of Law
and
Former Deputy Assistant Secretary for Civil Rights at the U. S.
Department of Education

Raymond C. Pierce was appointed Dean of North Carolina Central University School of Law in July 2005. Prior to this appointment Pierce had a successful career with the national law firm of Baker & Hostetler LLP. As a partner in the firm's office in Cleveland, Ohio, Pierce's legal practice concentrated in business transactions and public policy. In addition, he served state governments in higher education and pension investment-related matters and was also a member of the law firm's Federal Policy Group based in Washington D.C. where he assisted clients with government-related issues. Prior to joining Baker & Hostetler, Pierce was a candidate for mayor of Cleveland.

From 1993 to 2000, Pierce served as President Bill Clinton's Deputy Assistant Secretary for Civil Rights at the U.S. Department of Education. While deputy assistant secretary, Pierce managed the enforcement of federal civil rights laws in education and the development of federal civil rights education policy. Pierce led the development of the Clinton Administration's federal education and civil rights policy in response to the 1992 U.S. Supreme Court decision in *Ayers v Fordice*, 505 U.S. 717 (1992) which addressed equal protection in higher education opportunities for African-American students and the impact of state policies on Historically Black Colleges and Universities (HBCUs). Following the publishing of the *Fordice Notice*, Pierce directed the Department of Education's national higher education desegregation docket and negotiated resolution agreements with six states resulting in increased funding and enhanced educational programming for HBCUs. Through these efforts, Pierce was the commencement speaker at graduation ceremonies for five HBCUs on behalf of the Clinton Administration. He also served on committees with the White House Domestic Policy Council where he assisted in the development of federal urban economic development initiatives. Under Pierce's leadership, his agency received three Vice-President Awards for improving operations in the federal

government. During his service with the federal government, Pierce was appointed by the U.S. Secretary of Education to serve on three Senior Executive Service Appointment Boards. Pierce has lectured extensively on the subject of civil rights and education and served on numerous panels and task forces.

Prior to joining the Clinton Administration, Pierce was employed by the LTV Corporation from 1986-1993, beginning as a Labor Relations Counselor and later serving as an attorney in that company's Corporate Law Department. While in the Corporate Law Department at LTV, Pierce was a commercial transactions attorney primarily involved with the transportation section for railroads, waterways and trucking.

Pierce began his legal career in 1984 as a civil rights attorney with the John W. Walker Law Firm in Little Rock, Arkansas where he concentrated on class action employment discrimination cases. He is also a past Chairman of the Education Committee of the Cleveland Branch of the NAACP.

Pierce is the recipient of numerous awards including the Thurgood Marshall Scholarship Fund National Leadership Award, an NAACP National Service Award and the Case Western Reserve University School of Law Distinguished Graduate Award.

Pierce received his law degree from Case Western Research University School of Law in 1983 and his bachelor's degree in 1980 from Syracuse University where he was admitted into the Sigma Tau Delta English Honorary Society. He is admitted to practice in Ohio and Arkansas.

THE FAILURE OF THE FEDERAL GOVERNMENT TO ENFORCE FEDERAL CIVIL RIGHTS LAWS: A REAL THREAT TO HISTORICALLY BLACK COLLEGES AND UNIVERSITES

The value of Historically Black Colleges and Universities (HBCU) to our nation is clear. Our nation or any nation benefits from an educated population. HBCUs continue to provide educational opportunities for African Americans in significant numbers. There is no indication that closing public HBCUs would create a comparable shift in African Americans student enrollment in and graduation from traditionally white institutions. The case has been made for HBCUs in terms of their effectiveness and contribution toward the education of the people of this nation. This presentation however, focuses on a real and continuing threat to HBCUs in large part due to the federal government's refusal to enforce federal civil rights laws as they relate to African Americans attending HBCUs. This threat puts in jeopardy the significant contribution HBCUs provide in allowing our nation to be competitive in a world where higher education is necessary for participation in a fast moving global economy.

For the most part federal civil rights activity in higher education involving HBCUs followed school desegregation litigation in the wake of Brown v. Board of Education. In the area of higher education, the Adams cases of the 1970s tied equal protection for African Americans in the southern and border states to state treatment of publicly funded HBCUs. Nineteen states were involved in what can be called higher education desegregation activity. Higher education desegregation actually involved legal actions brought by private individuals seeking equal funding for HBCUs in relation to traditionally white institutions. These actions were coupled with federal efforts through intervention to desegregate state systems of higher education that were created with an apartheid approach to providing public higher education.

In the Adams cases southern and border states with public HBCUs were determined by a federal agency (the Office for Civil Rights of the Department for Health Education and Welfare) to be in violation of Title VI of the 1964 Civil Rights Act. Essentially these states continued to operate HBCUs with resources and standards substantially below traditionally white institutions. Private individuals (Adams) alarmed by the executive branch of the federal government's refusal to address violations of federal civil rights laws turned to the federal courts. The Adams litigation involved actions against the Office for Civil Rights (OCR) for its failure to enforce federal civil rights laws. States found in violation of federal civil rights laws continued to receive federal funding to support state systems of higher education that were wrought with vestiges of the system of apartheid. The federal government's OCR was not requiring these states to submit plans to bring themselves into compliance with Title VI, nor was OCR crafting guidelines for any such plans. The result of the Adams cases was a finding against OCR, the development of federal guidelines for desegregating state systems of higher education and southern and border states entering into desegregation plans (Agreements) with the federal government designed to bring about compliance with Title VI.

The Agreements with the various states designed to bring about Title VI compliance was based on 1978 federal civil rights policy derived in part from the court decisions in Adams. The federal civil rights policy for desegregating state systems of higher education was basically in two parts: 1. Strengthening HBCUs and 2. Affirmative Action at Traditionally White Institutions (TWIs).

Strengthening or enhancing HBCUs was aimed at accomplishing two things; providing expanded educational opportunities for African American students and attracting white students to form a more diverse student population. The history of HBCUs includes significant constriction in the educational programming offered at these institutions. Further the physical facilities were limited consistent with the limited educational programs. The federal policy for desegregation included the placement of attractive educational programs at HBCUs to address the history of limited educational programming and thus offer expanded educational opportunities to African Americans attending these institutions. In addition, this enhancement was intended to attract a more diverse student population seeking quality educational programs. The design was for students to select public colleges based on educational offerings and not solely on a legacy of racial congregation.

The second component of the federal higher education desegregation policy was one of affirmative action at the Traditionally White Institutions. The affirmative action here was not affirmative action in admissions but affirmative action in recruitment and affirmative action in scholarships both targeting African American students. The intent was to attract more African American students to become enrolled in the public Traditionally White Institutions.

Enhancing HBCUs to provide expanded educational opportunities and attract a more diverse student population combined with affirmative action programs at TWIs designed to attract African American students together formed the policy intended to do away with white colleges and black colleges and create one system of colleges. That was the plan.

Most of the nineteen states entered into compliance plans. Five states did not enter into agreements. Four of these states proceeded to federal court litigation. One state, Ohio, was prepared for litigation but pleadings prepared by the U.S. Department of Justice were never filed in court. Louisiana, Tennessee, Alabama and Mississippi all went to court with the Mississippi case going all the way to the U.S. Supreme Court. It was the Supreme Court decision in the Mississippi case that would produce the foundation for new federal civil rights policy on higher education desegregation that was published in 1994.

In 1988, the U.S. Secretary of Education, William Bennett, directed OCR to conduct reviews of those states that had entered into the Agreements and make determinations as

to whether or not those states had brought themselves into compliance with Title VI. Using a checklist analysis OCR concluded that eight of the nineteen states had performed according to the Agreements and that those states were now in compliance with Title VI. Reviews were not conducted for the remaining six states at that time (Virginia, Pennsylvania, Florida, Maryland, Texas and Kentucky). In 1994 OCR published new federal policy for higher education desegregation that was based on the U.S. Supreme Court decision in Ayers (the Mississippi case). The 1994 policy created a higher standard for compliance. Whereas the 1978 policy was based on a checklist analysis (e.g. did the states enhance the public HBCUs and implement affirmative action procedures at the TWIs) the 1994 policy was based on a vestiges analysis which is places on states an affirmative duty to remove all vestiges of the past practice of segregation that have present day effects to the greatest extent practicable.

Pursuant to the higher standard contained in the 1994 policy the remaining six states plus Ohio entered into new five year plans (New Agreements) designed to bring about Title VI compliance. In addition, there was some debate within OCR as to whether or not the eight states that were closed out in 1988 under the old 1978 standard should be reviewed for Title VI compliance using the newer standard contained in the 1994 policy. The five year plans focused mainly on further enhancement of the public HBCUs in the seven states.

The problem we are faced with today is almost a re-visitation of the situation that led to the Adams cases in the 1970's. There is substantial indication that many of the seven states have ceased performance pursuant to the New Agreements. In some of the states (Ohio in particular) there is actually action being taken to revert back to a policy of constraining HBCUs in their ability to offer attractive educational programs. Clearly in many cases in these states there is no focus on compliance with federal civil rights laws. In addition, there is strong evidence that HBCUs in some of the states that were closed out in 1988 are being negatively impacted by state actions that are in direct contradiction of federal higher education desegregation policy. The most egregious of these state actions is unnecessary program duplication. Duplication of programs in colleges within close proximity was historically done for apartheid purposes. Courts and federal civil rights policy have cited the unnecessary duplication of programs as being segregative and violative of Title VI. Unnecessary program duplication in a highly competitive business of higher education poses serious threats to HBCUs particularly with respect to their ability to compete in the arena of masters and doctorate level programs.

There is every indication that OCR will continue its non-enforcement of the Agreements of which it entered into with the various states for Title VI compliance purposes. At the same time it is clear that states will continue with initiatives, primarily at the legislative level, that encroach upon the vitality and strength of HBCUs. This is all going on while at the same time federal funds are being provided to these very states that continue to have outstanding violations of federal civil rights laws. This is in many respects the situation that existed that ultimately launched the Adams cases.

I submit that litigation against the federal government's OCR be initiated similar to that litigation that formed the basis of Adams.   As in Adams, declaratory and injunctive relief should be sought to both obtain a statement from the federal courts as to the constitutional obligations of the states in this matter and to also prevent further state actions that will have damaging effects on HBCUs. Federal court involvement is also needed as in Adams to declare the responsibility of OCR in this matter and to direct that agency to conduct compliance reviews of the various states with respect to the Agreements and in light of federal civil rights and higher education desegregation policy. There is some debate as to legal strategies to pursue such claims including whether or not case law subsequent to Adams would even allow such causes of action. These issues must be resolved and the appropriate litigation commenced. Otherwise there is no real preventative measure against what clearly are real threats to higher educational opportunities for significant numbers of African Americans.

Raymond C. Pierce
Dean and Professor of Law
North Carolina Central University

Earl S. Richardson
President, Morgan State University and
Former Chair of the President's Board of Advisors on Historically
Black Colleges and Universities
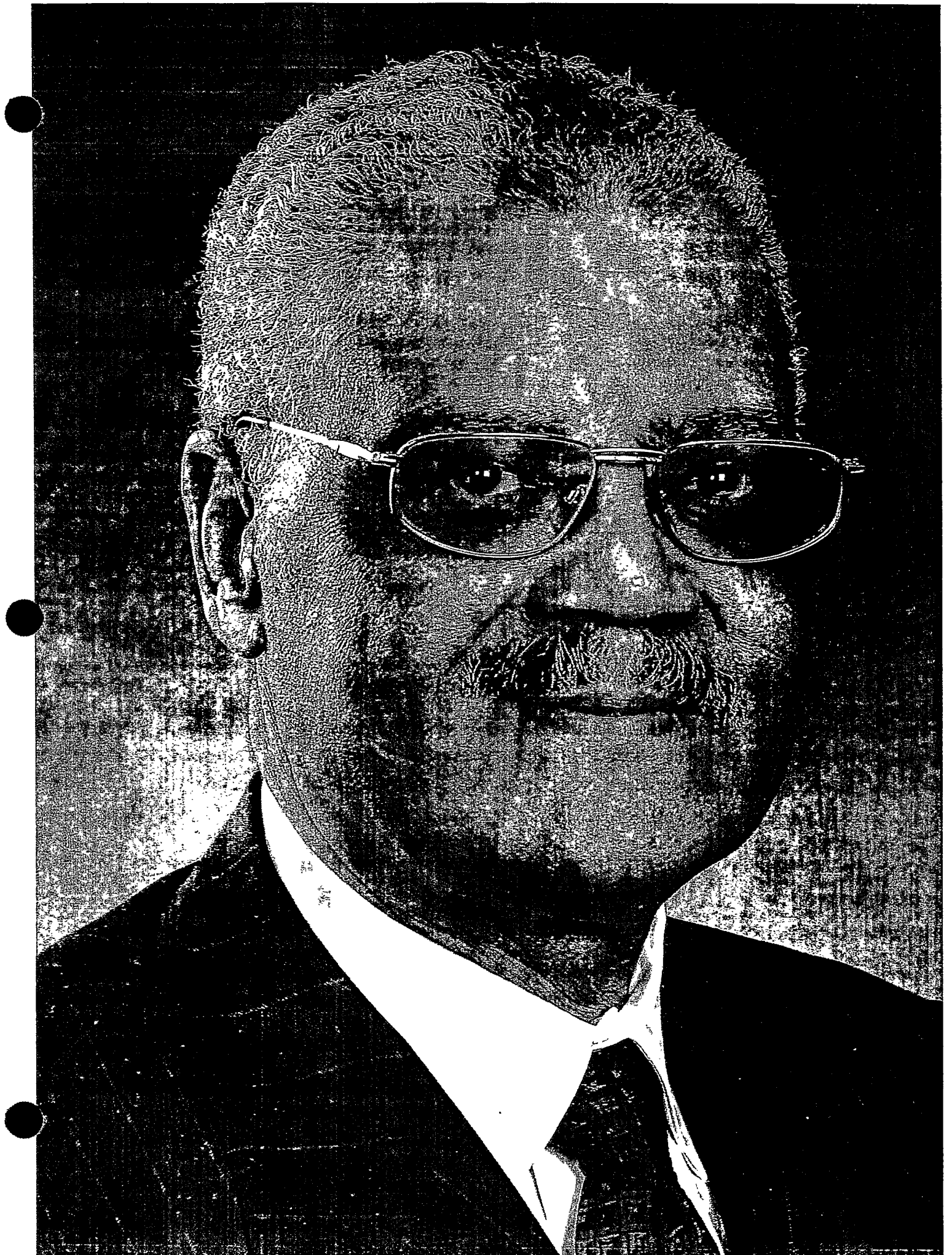
The President of Morgan State University

Dr. Earl S. Richardson was appointed the eleventh president of Morgan State University on November 1, 1984, after serving eight months as interim president. He took the helm of the University at one of the most critical moments in its history, a period of declining enrollment, fiscal uncertainty, a deteriorating physical plant and considerable anxiety both within and outside the institution about its future. The versatility and grace with which he has guided the University and the course on which he has led it since that time have distinguished his presidency as one of the great periods in the history of Morgan.

President Richardson joined the Morgan family as a forty-one-year-old scholar holding the Bachelor of Arts Degree in social science from the University of Maryland Eastern Shore (formerly Maryland State College) and both the Master of Science Degree and Doctor of Education Degree in education administration from the University of Pennsylvania. He came to Morgan with a wealth of teaching and administrative experience extending over a nineteen-year period: Assistant to the President, University of Maryland System and Executive Assistant to the Chancellor, Director of Career Planning and Placement and acting Director of Admissions and Registration at the University of Maryland Eastern Shore. This administrative experience was buttressed by solution-oriented research as fellows for the Ford and Kellogg Foundations and the publication of several articles on the implications of proposals to merge historically Black institutions with white institutions and on inter-institutional cooperation in higher education, all combining to make him a recognized authority on problems in higher education relative to racial autonomy, desegregation and integration.

Since becoming president of Morgan State University, Dr. Richardson has fashioned an all-encompassing strategy for strengthening the University: a growing inventory of graduate and undergraduate programs aimed at new technology and the global community of the 21st century; enhancement of the credentials and scholarly profile of the faculty; the establishment of national centers of excellence in a number of critical fields; and a variety of initiatives to increase minority representation in the professions and to ease the transition of students from high school and community colleges into four-year universities; a rapidly growing and greatly refurbished physical plant; burgeoning increases of over 75% in student enrollment, coupled with dramatic increases in the quality of students; sweeping improvements in external funding and government, corporate and foundation support. As a result of his leadership, Morgan has experienced noteworthy growth and improvement over the last two decades and is in the midst of the Renaissance that it is now celebrating.

Dr. Richardson is active in civic and community organizations. He is a member of the Boards of Directors of LifeBridge, Good Samaritan Hospital, the Council for Higher Education on Accreditation and the Goldseker Foundation; serves on the advisory board or honorary board of the Maryland Education Coalition, Baltimore Neighborhoods, Inc. and the Quality Education for Minorities Network; and sits on the Board of Trustees of the Educational Testing Service.

Dr. Richardson is married to the former Sheila Bunting of Oklahoma City, Oklahoma, and they have a son, Eric.

Presentation by
Earl S. Richardson
President, Morgan State University
To the
U.S. Civil Rights Commission

May 5, 2006

Since the Civil Rights Act of 1964 and the first serious efforts by the federal government to enforce that legislation beginning in the early 1970s, there has been a continuing discussion about the role that historically black campuses should play in contemporary higher education. Before that legislation, the role of HBCUs was clear – they were open to anyone of any race or ethnicity, but they were essentially the only place that African Americans could obtain a college education in the southern states. Because of the high concentration of blacks in the south, a very high percentage of the prominent African Americans in public life and the professions nationally have obtained their degrees from HBCUs. This is the case in the state in which Morgan is located. Morgan graduates have, among other accomplishments, been the first black judge in Maryland, the first black congressman, the first state senator, and the first official to hold any statewide office.

The Civil Rights Act changed the rules of the game. Now, black students for the first time could attend a traditionally white campus, if they qualified. And the traditionally white schools, under legal pressure to increase minority enrollments, provided inducements, particularly financial ones, to black students who in most instances could barely afford college, if at all. By contrast, HBCUs, by design, had been neglected. It had been the philosophy in segregated states to limit the educational opportunities available to blacks at all levels of education and neglect of HBCUs was part of this philosophy. Any campus president will tell you that it takes decades of hard work and adequate resources to build a quality institution. By the time the Civil Rights Act was enforced, most HBCUs were nearly a century behind their white counterparts. It is not surprising then that when the federal government began to enforce the Civil Rights Act the HBCUs were not in a position to compete for their traditional constituency, much less for white students. When people have choices, they choose their best alternative and in most instances HBCUs were not attractive options.

The initial impact of federal desegregation enforcement was devastating to black educational institutions. At the K-12 level, black schools were so poorly funded that most closed and their staffs were terminated as the students who would historically have attended them enrolled in formerly segregated predominantly white schools. At the college level, the movement of students was almost entirely in one direction, from HBCUs to formerly segregated predominantly white campuses. Morgan lost so many

black students after the early 1970s that it has been only recently that it has again enrolled students in comparable numbers. As the white campuses developed, HBCUs also usually lost their white enrollment. At Morgan, which had non-duplicated graduate programs in the Baltimore area until the early 1970s, we went from a large graduate student body that had a slight majority of white students to one that was almost entirely black ten years later. There is little question as to why the future of HBCUs was suspect.

However, unlike the K-12 experience, a number of factors have intervened to keep most HBCUs in business. Because initial federal desegregation efforts were focused on moving minority students to historically white campuses, HBCUs suffered enrollment declines. Therefore, the federal government subsequently began to require states to enhance their HBCUs if they were to conclude acceptable desegregation plans. This helped many of these campuses. Second, there remained and remains today a strong core of students who want to attend an HBCU. Third, demographic trends, since the since 1960s have been more favorable for the young black population than for the young white population. This began to translate into increasing numbers of college-age blacks in the mid-1980s, a period when the white college-age population would still be declining for another decade. While we are in a temporary period of increases for all racial groups of college age, in a few more years, the white college-age population will again decline. Finally, there has been the attraction of prestige. Whether due to rankings published in U.S. World and New Report and elsewhere or other factors, growing numbers of predominantly white campuses have given priority to increasing the academic profile of their entering classes. This has negatively affected black students, who on the average, score lower on standardized tests and other measures of pre-college academic achievement than white students. HBCUs, other liberal admissions campuses, and community colleges have become their campuses of choice in recent years. For the most part, their enrollment have increased significantly as a result

While the role of HBCUs has been of significance in providing access to the growing young minority population, measures of educational outcomes suggest a role of continuing importance. It is clear we have a long way to go and will probably have to change our priorities if we are to even approach educational equity for blacks and whites in our country. This goal is important not only from a social justice perspective but from the perspective of our global competitiveness. To a greater extent than at any time in our history, advanced education is important for our national well-being and we need to utilize the talents of as many of our citizens as possible in this environment.

Perhaps the single best indicator of how well we have been educating our young population is the percentage of the 25-29 age group holding at least a bachelor's degrees. I am going to use 1970 as a base year because that is the period during which we began to emphasize educational equality between the races and affirmative action. This emphasis has resulted in numerous high profile programs to improve minority educational attainment. Coincidently, it is the period during which the value of a high school degree relative to a college degree began to decline. The news is not good. While higher percentages of both black and white young adults hold college degrees than in 1970, the gap between the races has grown due to a more rapid increase in white college degree

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attainment. In 1970 the difference in the percentages of young black and white adults holding a college was ten percentage points. Now it is 17 percentage points, and the size of the population is much larger. This translates into a very large numerical difference. In 1970 about 160,000 more blacks in the 25-29 age group would have had to hold a college to have achieved parity with the white population. Today, that gap amounts to over 400,000 persons in this age group. This means that we have to almost double the number of baccalaureates awarded to blacks each year to achieve parity among young adults. This is a huge task.

Some might argue that we are need to be patient in our expectations for equality in degree attainment. We have to start at the lower grade levels. The news is not good here, either. On most measures of educational progress at the K-12 level, the gap as not been closing. Over the past decade white SAT scores have risen more rapidly than black SAT scores, even though they were much higher to begin with. While I would agree that there is a great deal of potential for improving the qualifications of minority students in the educational pipeline, I also would argue that we cannot wait. We have been waiting for over three decades without visible signs of progress. Instead we need to be concerned about how we can take college-age students where they are and improve their chances of obtaining a degree.

To illustrate how pre-college academic indicators affect admissions at selective colleges it is useful to look at how many students score in various ranges on the SAT. Most people know that whites score some 200 points higher on the combined math and verbal portions of the SAT. At the upper ranges, where majority campuses increasingly recruit, the differences are stark. Whereas 6% of whites score 1400 or higher on the SAT M+V, fewer than 1% of blacks do so. Fewer than 5% of blacks score 1200 or higher compared to 24% of whites. This is the range in which both moderately and highly selective campuses recruit. Fewer than one-quarter of blacks score over 1000 on the SAT while 60% of whites do so. It is no wonder that the lack of lower income and minority students at selective campuses has been the topic of so many articles and conferences in recent years. These campuses simply cannot mirror the increasingly diverse population of the nation if they remain so selective. Under current circumstances, they would have to tolerate a large disparity in pre-college credentials between the races to achieve anything approaching a student body that is representative of the college-age population. *This is why the selective campuses recruit from each other's pool rather than expanding the size of the pool of minority students enrolling in college.* Hence, less selective campuses, including HBCUs offer the only realistic option for significant increases in the numbers of minority students enrolling in and graduating from college.

A useful rule of thumb is that campuses that are relatively selective graduate student bodies that have only about half the percentage of African-Americans as the relevant population from which they recruit. For example, the Ivy League campuses, as a group, are national universities and have a graduating class that is 7%black. This is about half the national representation of blacks. UCLA and Berkley have graduating classes that are only 4% black, half the African-American representation in the state's population. The University of North Carolina – Chapel Hill graduates a class that is 11%

black, about half the black representation in that state. Hence, there is little that such campuses can do to significantly increase the representation of blacks among degree holders nationally.

One might also argue that there are many minority college students who could be admitted to more selective institutions if non-traditional measures of academic potential were utilized. The facts show a different picture. In most states, once you look beyond the flagship campus(es), you see relatively low graduation rates for African Americans. Morgan, for example, has a graduation rate of 43%. While this sounds like it is just average, it is well above average for African Americans at urban universities across the country. Hence, it is unlikely that selective campuses are likely to double the percentage of African Americans in their graduating classes by recruiting from the pool from which less selective campuses in their states recruit.

This leads one to look at the productivity of liberal admissions campuses as a source of African-American graduates. The HBCUs stack up well on this measure. For example, 24 HBCUs graduate as many black students as the University of Michigan and the University of North Carolina-Chapel Hill. My campus graduates almost as many black students as all of the Ivy League campuses combined. Southern University graduates more. Howard University and Florida A &M graduate more black students that the total University of California System, the largest public system in the nation. Thus, because the size of the degree attainment gap is so large and HBCUs are quite productive in the overall picture, they should be an integral part of any strategy for increasing the number of graduates nationwide.

One reason that HBCUs are effective in increasing the number of minority graduates is their tradition of providing a nurturing environment. These campuses always have had to educate many students who are not as well prepared for college as is desirable. For different reasons than in the past, there remains a large pool of under-prepared minority students of college age. A support system that is part of the campus culture, rather than a programmatic appendage, is a real advantage in addressing student academic needs, particularly when relatively large numbers may be in need of extra assistance. About ten years ago, Morgan was one of two HBCUs in a national study in which gains in student achievement were measured at various points during college. Even though a number of the campuses in the study were considerably more selective than the two HBCUs, the gains in educational achievement were greater for African Americans at the HBCUs than at the other campuses. The researchers conducting the study attributed this to the supportive environment found at the HBCUs.

On other measures of educational outcomes our campus does well even though we are a access-oriented institution whose graduates must compete with other graduates who typically began their college careers with stronger records of preparation. Our annual follow-up surveys of graduates find that the employment measures of our graduates are equal to statewide averages. Our graduate and professional school going rates are consistently above the state average. We are one of the leading producers of Fulbright scholars in the region, and near the top nationally on a size-adjusted basis.

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While I think that Morgan as well as other HBCUs do a pretty good job of making students from difficult backgrounds into productive middle class citizens I think that a lot of other access-oriented campuses do so as well. I include most regional college and universities, urban institutions, and community college in this group. However, the general public and many in the higher education community associate effectiveness with having a well-credentialed entering freshman class. I would submit that the intellectual distance your students travel while they are enrolled at your campus is a better measure. I think that until we face the fact that our current strategies have not closed the educational achievement gap between the races, many will continue to be preoccupied with input rather than output.

In summary, the magnitude of the educational attainment gap is large. The trend in recent decades has been a widening of this gap. Campuses which are relatively selective do not increase the size of the pool of African-Americans going to college. Rather they recruit from the relatively small pool of students who would be successful wherever they enrolled. Access-oriented campuses such as HBCUs have the greatest impact on degree attainment for student of all races. It is these campuses where additional resources will have the most impact because they have the ability to increase the size of the pool of students enrolling and completing college.

Louis W. Sullivan
Chair of the President's Board of Advisors on Historically Black
Colleges and Universities,
Founding Dean and first President of Morehouse School of
Medicine, and
Former Secretary of the U.S. Department of Health and Human
Services

THE HONORABLE LOUIS W. SULLIVAN, M.D.

Dr. Louis W. Sullivan is the founding Dean and first President of Morehouse School of Medicine (MSM) in Atlanta, GA. With the exception of his tenure as Secretary of the U.S. Department of Health and Human Services (HHS) from 1989 to 1993, Dr. Sullivan was President of MSM for more than two decades. On July 1, 2002, he left the presidency, but continues to assist in national fund-raising activities on behalf of the school and is an Adjunct Professor of Medicine.

A native of Atlanta, Dr. Sullivan graduated magna cum laude from Morehouse College, and earned his medical degree, cum laude, from Boston University School of Medicine. He is certified in internal medicine and hematology.

Dr. Sullivan became the founding Dean and Director of the Medical Education Program at Morehouse College in 1975. He left MSM in 1989 to join President George H.W. Bush's Cabinet as the Secretary of the U.S. Department of Health and Human Services (HHS). Dr. Sullivan's tenure (47 months) stands as one of the longest of any HHS secretary in U.S. history.

As head of HHS, Dr. Sullivan managed the federal agency responsible for the major health, welfare, food and drug safety, medical research, and income security programs that serve the American people. During his time as Secretary, HHS undertook the most extensive food labeling reform in the country's history, initiated the Human Genome Project, implemented major drug approval process reforms, including "parallel track" and combined 65 separate programs for children and families (and a supporting staff of 2,000) under a new, unified operating division, the Administration for Children and Families.

In January 1993, he returned to MSM and resumed the office of president.

Dr. Sullivan is Chairman of the Board of the National Health Museum in Washington, D.C. and is also Chairman of the Sullivan Commission on Diversity in the Healthcare Workforce (funded by the Kellogg Foundation). He also serves as Chair of the President's Board of Advisers on Historically Black Colleges and Universities, a member of the U S Secretary of Education's Commission on the Future of Higher Education and is Co-Chair of the President's Advisory Council on HIV and AIDS.

A member of numerous medical organizations, including the American Medical Association and the National Medical Association, Dr. Sullivan was the founding President of the Association of Minority Health Professions Schools. He is a former member of the Joint Committee on Health Policy of the Association of American Universities and the national Association of Land Grant Colleges and Universities.

THE CONTRIBUTIONS OF HISTORICALLY BLACK

COLLEGES AND UNIVERSITIES

(HBCUs) TO THE NATION*
BY
LOUIS W. SULLIVAN, M.D.

CHAIR OF THE PRESIDENT'S
BOARD OF ADVISOR'S ON HBCUS

PRESIDENT EMERITUS,
MOREHOUSE SCHOOL OF MEDICINE

U.S. SECRETARY OF HEALTH
AND HUMAN SERVICES, 1989-1993

PRESENTATION AT THE U.S. COMMISSION ON CIVIL RIGHTS
WASHINGTON, D.C.
MAY 5, 2006

FOR MORE THAN TWO CENTURIES THE UNITED STATES HAS STRUGGLED WITH THE SOCIAL AND ECONOMIC CONSEQUENCES OF FORMER SYSTEMS OF LEGALLY SANCTIONED SLAVERY OF ITS BLACK CITIZENS IN SOUTHERN STATESFOLLOWED BY LEGALLY-SANCTIONED SRGREGATION AND DISCRIMINATION, BASED UPON RACE.

THE MAJORITY OF THE NATION'S 106 BLACK COLLEGES WERE CREATED IN THE SECOND HALF OF THE NINETEENTH CENTURY, FOLLOWING THE EMANCIPATION PROCLAMATION BY PRESIDENT ABRAHAN LINCOLN WHICH ABOLISHED SLAVERY ON JANUARY 1, 1864. MANY OF THESE COLLEGES WERE CREATED BY RELIGIOUS ORGANIZATIONS AND OTHERS BY STATE GOVERNMENTS.

WITH PASSAGE OF VOTING RIGHTS LEGISLATION IN THE 1960'S AND OTHER LEGISLATION DESIGNED TO ELIMINATE THE VESTIGES OF SEGREGATION AND DISCRIMINATION, THE QUESTION HAS ARISEN ABOUT THE NEED FOR, THE EDUCATIONAL EFFECTIVENESS OF HISTORICALLY BLACK COLLEGES AND UNIVERSITIES.

FOR MOST YOUNG PEOPLE ENTERING COLLEGE, THIS IS THEIR FIRST EXPERIENCE AWAY FROM HOME FOR AN EXTENDED PERIOD. IT IS A TIME OF SOCIALIZATION, OF DEVELOPING A CLEAR IDENTITY AND A TIME FOR RE-ENFORCING THEIR VALUES. IT IS DURING THIS TIME THAT YOUNG PEOPLE MOVE FROM THE FAMILIAR PROTECTED ENVIORNMENT OF HOME TO THE NEW, MORE OPEN, CHALLENGING AND LESS SECURE AMBIANCE OF THE COLLEGE CAMPUS.

FOR SOME AFRICAN AMERICAN YOUNG PEOPLE, THIS INTERPLAY OF ACADEMIC, SOCIAL AND PERSONAL DEVELOPMENT WHICH OCCURS ON THE CAMPUS OF HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (HBCU'S) DURING THEIR PERSONAL TRANSITION FROM HOME TO THE WIDER WORLD CAN HAVE A PROFOUND INFLUENCE ON THEIR DEVELOPMENT AS SCHOLARS, FUTURE FAMILY MEMBERS, MEMBERS OF THE COUNTRY'S WORKFORCE AND AS RESPONSIBLE CITIZENS. AN EXAMPLE OF THIS IS ILLUSTRATED BY THE NUMBER AND PERCENTAGE OF THE GRADUATES OF SOME HBCU'S WHO

ARE SUCCESSFUL IN GAINING ENTRY TO, AND GRADUATION FROM, SCHOOLS OF MEDICINE, ENGINEERING, LAW AND OTHER FIELDS. FOR A NUMBER OF HBCUS THESE PERCENTAGES ARE EQUAL TO, OR EXCEED THE OUTCOMES ACHIEVED BY THE AFRICAN AMERICAN STUDENTS AND GRADUATES FROM PREDOMINANTLY WHITE COLLEGES AND UNIVERSITIES WHICH ARE OFTEN OLDER AND WEALTHIER.

AMONG THE HBCU'S WHO HAVE DEMONSTRATED THIS LEVEL OF SUCCESS IN THEIR GRADUATES ARE XAVIER UNIVERSITY, SPELMAN COLLEGE, MOREHOUSE COLLEGE, FLORIDA A&M UNIVERSITY, NORTH CAROLINA A&T UNIVERSITY, JACKSON STATE UNIVERSITY AND OTHERS.

THIS PHENOMENON MAY ALSO BE SEEN AT THE PROFESSIONAL SCHOOL LEVEL. I WISH TO SHARE WITH YOU OUR EXPERIENCE AT MOREHOUSE SCHOOL OF MEDICINE, (MSM), A PREDOMINANTLY AFRICAN AMERICAN MEDICAL SCHOOL WHICH WAS FOUNDED IN 1975 BY MOREHOUSE COLLEGE, TO INCREASE THE NUMBER OF AFRICAN AMERICAN (AND OTHER MINORITY) PHYSICIANS IN GEORGIA AND THE NATION. (MSM) BEGAN WITH

MODEST FINANCIAL RESOURCES, ADMITTING ITS FIRST CLASS AS A TWO YEAR SCHOOL OF MEDICINE IN 1978, BECOMING A FOUR YEAR MEDICAL SCHOOL IN 1981 AND RECEIVING FULL ACCREDITATION OF ITS M.D. PROGRAM IN 1985.

AMONG MSM'S 800 MD ALUMNI TODAY ARE (1) A STATE HEALTH COMMISSIONER, (2) A VICE PRESIDENT OF A LARGE MEDICAL SCHOOL, (3) THE PERSONAL PHYSICIAN OF THE PRESIDENT OF SOUTH AFRICA AND (4) PHYSICIANS WHO ARE PROVIDING CARE IN PREVIOUSLY-UNDERSERVED RURAL AND URBAN AREAS IN GEORGIA AND AROUND THE NATION.

TODAY, MSM'S STUDENTS PASS NATIONAL EXAMINATIONS GIVEN TO MEDICAL STUDENTS AT, OR ABOVE, THE PASSING RATES OF MEDICAL STUDENTS NATIONWIDE, ALTHOUGH MSM IS ONE OF THE YOUNGEST MEDICAL SCHOOLS IN THE UNITES STATES AND DOES NOT YET HAVE THE LEVEL OF FINANCIAL RESOURCES OF MOST U.S. MEDICAL SCHOOLS.

WHAT ACCOUNTS FOR THIS EXPERIENCE OF THE STUDENTS AND THE GRADUATES OF HBCU'S?

THERE ARE MULTIPLE FACTORS, INCLUDING (1) THE
DEDICATION OF THE FACULTY TO THEIR TEACHING
RESPONSIBILITIES, (2) THE SUPPORTIVE SOCIAL
ENVIRONMENT, (3) THE STRONG ENCOURAGEMENT GIVEN
TO THE STUDENTS TO EXPLORE A FULL RANGE OF CAREER
POSSIBILITIES (INCLUDING LEADERSHIP ROLES) IN
BUSINESS, THE SCIENCES, PUBLIC SERVICE, EDUCATION AND
OTHER FIELDS AND (4) THE ROLE MODELS FOR STUDENTS
AMONG THE FACULTIES OF THE HBCU'S.

AS U.S. CITIZENS, ALL OF US LOOK FORWARD TO THE
DAY WHEN THE LINGERING VESTIGES OF SEGREGATION
AND DISCRIMINATION WILL NO LONGER BE PRESENT IN OUR
SOCIETY. BUT, OUR EXPERIENCE AS A NATION HAS SHOWN
US THAT TO REACH THAT GOAL WILL REQUIRE THE
SUSTAINED AND DEDICATED EFFORTS OF ALL OF US. THAT
INCLUDES THE CONTRIBUTIONS OF HBCU'S TO OUR
NATION'S HIGHER EDUCATION COMMUNITY AND THE
EFFECTIVENESS OF HBCU'S IN FACILITATING THE

ACADEMIC, SOCIAL AND PERSONAL DEVELOPMENT OF A

SIGNIFICANT NUMBER OF OUR AFRICAN AMERICAN (AND

OTHER MINORITY) CITIZENS.

Educational Effectiveness:

- *Black Issues In Higher Education*, June 2, 2005, "Top Hundred Degree Producers—All Disciplines Combined: African American Baccalaureate – HBCUs V. TWIs," 2003-2004.

- Southern Education Foundation, 2005, *Igniting Potential: Historically Black Colleges and Science, Technology, Engineering, and Mathematics.*[2]

- National Science Foundation, 1996, *Undergraduate Origins of Recent (1991–95) Science and Engineering Doctorate Recipients.*[3]

- Daniel G. Soloranzo, "The Doctorate Production And Baccalaureate Origins Of African Americans In The Sciences And Engineering," *Journal Of Negro Education*, Winter 1995.

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[2] The full article is available on request.

[3] The National Science Foundation has not updated this report. The full article is available on request.

Black Issues In Higher Education, June 2, 2005, "Top Hundred Degree Producers—All Disciplines Combined: African American Baccalaureate – HBCUs V. TWIs," 2003-2004.

All Disciplines Combined
AFRICAN-AMERICAN BACCALAUREATE - HBCUs vs. TWIs

2004 Rank	Institution	State	02-03 Total	Preliminary 2003-2004				
				Men	Women	Total	%	%Chg
	HBCU							
1	FLORIDA A&M UNIVERSITY	Fla.	1408	538	984	1522	95%	8%
2	HOWARD UNIVERSITY	D.C.	1001	321	833	1154	86%	15%
4	SOUTHERN UNIVERSITY AND A&M COLLEGE	La.	884	335	581	916	97%	4%
6	TENNESSEE STATE UNIVERSITY	Tenn.	821	321	511	832	82%	1%
7	NORTH CAROLINA A&T STATE UNIVERSITY	N.C.	877	318	499	817	89%	-7%
8	HAMPTON UNIVERSITY	Va.	832	242	547	789	97%	-5%
9	JACKSON STATE UNIVERSITY	Miss.	740	267	498	765	98%	3%
11	MORGAN STATE UNIVERSITY	Md	758	281	463	744	86%	-2%
13	PRAIRIE VIEW A&M UNIVERSITY	Texas	643	241	416	657	92%	2%
15	NORFOLK STATE UNIVERSITY	Va.	738	213	440	653	89%	-12%
21	NORTH CAROLINA CENTRAL UNIVERSITY	N.C.	527	172	397	569	87%	8%
24	ALABAMA STATE UNIVERSITY	Ala	567	194	366	560	95%	-1%
25	GRAMBLING STATE UNIVERSITY	La	575	184	364	548	97%	-5%
29	SOUTH CAROLINA STATE UNIVERSITY	S.C.	610	187	344	531	94%	-13%
30	ALABAMA A&M UNIVERSITY	Ala.	425	193	337	530	90%	25%
32	VIRGINIA STATE UNIVERSITY	Va.	605	213	310	523	96%	-14%
34	SPELMAN COLLEGE	Ga.	423	0	516	516	97%	22%
35	FAYETTEVILLE STATE UNIVERSITY	N.C.	526	166	348	514	75%	-2%
36	BOWIE STATE UNIVERSITY	Md	465	180	333	513	88%	10%
45	SOUTHERN UNIVERSITY AT NEW ORLEANS	La.	383	95	365	460	55%	20%
50	ALBANY STATE UNIVERSITY	Ga	393	127	314	441	95%	12%
56	XAVIER UNIVERSITY OF LOUISIANA	La	442	100	321	421	95%	-5%
57	MOREHOUSE COLLEGE	Ga.	462	420	0	420	93%	-9%
59	TEXAS SOUTHERN UNIVERSITY	Texas	409	139	270	409	91%	0%
61	CLARK-ATLANTA UNIVERSITY	Ga.	407	95	309	404	97%	-1%
	TUSKEGEE UNIVERSITY	Ala	360	119	281	400	91%	11%
	BENEDICT COLLEGE	S.C.	357	162	219	381	99%	7%
	WINSTON-SALEM STATE UNIVERSITY	N.C.	369	119	257	366	68%	-1%
82	SHAW UNIVERSITY	N.C.	314	104	250	354	86%	13%
86	DILLARD UNIVERSITY	La.	277	73	261	334	98%	21%
87	DELAWARE STATE UNIVERSITY	Del.	268	117	216	333	79%	24%
94	ALCORN STATE UNIVERSITY	Miss.	348	101	208	309	91%	-11%
97	UNIVERSITY OF ARKANSAS AT PINE BLUFF	Ark.	379	118	185	303	91%	-20%
97	UNIVERSITY OF MARYLAND-EASTERN SHORE	Md	330	112	191	303	81%	-8%
	TWI							
3	GEORGIA STATE UNIVERSITY	Ga	885	262	717	979	32%	11%
5	TEMPLE UNIVERSITY	Pa.	753	238	646	884	22%	17%
10	FLORIDA STATE UNIVERSITY	Fla.	748	253	505	758	12%	1%
12	UNIVERSITY OF MARYLAND-COLLEGE PARK	Md	647	260	414	674	11%	4%
14	UNIVERSITY OF MARYLAND-UNIVERSITY COLLEGE	Md	617	209	445	654	27%	6%
16	STRAYER UNIVERSITY-WASHINGTON CAMPUS	DC	516	238	413	651	36%	26%
17	FLORIDA INTERNATIONAL UNIVERSITY	Fla	594	204	439	643	13%	8%
18	CHICAGO STATE UNIVERSITY	Il	672	169	456	625	89%	-7%
19	UNIVERSITY OF FLORIDA	Fla.	508	191	424	615	7%	21%
20	FLORIDA ATLANTIC UNIVERSITY-BOCA RATON	Fla	547	191	420	611	16%	12%
22	UNIVERSITY OF SOUTH FLORIDA	Fla	492	175	392	567	10%	15%
23	MICHIGAN STATE UNIVERSITY	Mich	517	190	375	565	7%	9%
26	UNIVERSITY OF HOUSTON-UNIVERSITY PARK	Texas	507	184	361	545	12%	7%
27	GEORGIA SOUTHERN UNIVERSITY	Ga	470	181	363	544	27%	16%

2004 Rank	Institution	State	02-03 Total	Preliminary 2003-2004				
				Men	Women	Total	%	%Chg
28	OHIO STATE UNIVERSITY-MAIN CAMPUS	Ohio	480	187	347	534	6%	11%
31	UNIVERSITY OF SOUTHERN MISSISSIPPI	Miss.	492	145	382	527	21%	7%
33	UNIVERSITY OF MEMPHIS	Tenn.	547	147	371	518	38%	-5%
37	ST. LEO UNIVERSITY	Fla.	481	176	329	505	25%	5%
38	UNIVERSITY OF CENTRAL FLORIDA	Fla.	465	165	338	503	7%	8%
39	UNIVERSITY OF SOUTH CAROLINA-COLUMBIA	S.C.	515	160	338	498	17%	-3%
40	GEORGE MASON UNIVERSITY	Va.	543	198	299	497	15%	-8%
41	SOUTHERN ILLINOIS UNIVERSITY-CARBONDALE	Il.	601	241	252	493	11%	-18%
42	WAYNE STATE UNIVERSITY	Mich.	458	113	366	479	20%	5%
43	CALIFORNIA STATE UNIVERSITY-DOMINGUEZ HILLS	Calif.	473	98	374	472	25%	0%
44	VIRGINIA COMMONWEALTH UNIVERSITY	Va.	414	124	340	464	19%	12%
46	CUNY YORK COLLEGE	N.Y.	527	103	347	450	61%	-15%
46	OLD DOMINION UNIVERSITY	Va.	439	129	321	450	19%	3%
48	MISSISSIPPI STATE UNIVERSITY	Miss.	392	128	320	448	10%	14%
49	CUNY CITY COLLEGE	N.Y.	522	167	275	442	89%	-15%
50	UNIVERSITY OF NORTH TEXAS	Texas	367	161	280	441	10%	20%
52	CUNY LEHMAN COLLEGE	N.Y.	474	99	337	436	40%	-8%
53	PARK UNIVERSITY	Mo.	476	203	232	435	15%	-9%
54	RUTGERS UNIVERSITY-NEW BRUNSWICK	N.J.	424	147	286	433	8%	2%
55	CUNY BROOKLYN COLLEGE	N.Y.	423	134	297	431	26%	2%
58	EAST CAROLINA UNIVERSITY	N.C.	373	181	281	412	14%	10%
60	THE COLLEGE OF NEW ROCHELLE	N.Y.	424	242	363	405	45%	-4%
62	UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE	N.C.	439	136	264	400	14%	-9%
64	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	N.C.	380	108	293	399	21%	5%
65	CUNY HUNTER COLLEGE	N.Y.	379	99	298	397	10%	5%
66	MERCY COLLEGE-MAIN CAMPUS	N.Y.	389	98	297	395	29%	2%
67	CUNY JOHN JAY COLLEGE CRIMINAL JUSTICE	N.Y.	416	89	305	394	31%	-5%
68	CUNY BERNARD M. BARUCH COLLEGE	N.Y.	518	136	256	392	16%	-24%
69	NORTH CAROLINA STATE UNIVERSITY AT RALEIGH	N.C.	358	181	210	391	9%	9%
70	UNIVERSITY OF ALABAMA	Ala.	380	121	267	388	13%	2%
71	ROBERT MORRIS COLLEGE	Il.	336	79	305	384	37%	14%
73	UNIVERSITY OF HOUSTON-DOWNTOWN	Texas	364	86	294	380	26%	4%
74	UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN	Il.	389	133	246	379	6%	-3%
74	LOUISIANA STATE UNIV & A&M & HEBERT LAWS CTR.	La.	337	112	267	379	9%	12%
76	EASTERN MICHIGAN UNIVERSITY	Mich.	346	101	270	371	13%	7%
77	UNIVERSITY OF MICHIGAN-ANN ARBOR	Mich.	371	133	236	369	6%	-1%
78	UNIVERSITY OF ALABAMA AT BIRMINGHAM	Ala.	336	91	275	366	23%	9%
80	UNIVERSITY OF NORTH CAROLINA AT GREENSBORO	N.C.	329	74	287	361	17%	10%
81	THE UNIVERSITY OF TEXAS AT ARLINGTON	Texas	363	121	237	358	11%	-1%
83	AMERICAN INTERCONTINENTAL UNIV.-ATLANTA	Ga.	79	136	210	346	15%	338%
83	TROY STATE UNIVERSITY-MAIN CAMPUS	Ala.	303	127	219	346	26%	14%
85	PENNSYLVANIA STATE UNIVERSITY-MAIN CAMPUS	Pa.	344	101	241	342	4%	-1%
88	NATIONAL-LOUIS UNIVERSITY	Il.	278	99	229	328	29%	18%
89	NORTHERN ILLINOIS UNIVERSITY	Il.	308	97	229	326	9%	6%
90	WAYLAND BAPTIST UNIVERSITY	Texas	289	175	148	323	19%	12%
91	UNIVERSITY OF LOUISIANA AT LAFAYETTE	La.	342	91	231	322	16%	-6%
92	MONROE COLLEGE-MAIN CAMPUS	N.Y.	287	95	223	318	87%	11%
93	ST JOHN'S UNIVERSITY-NEW YORK	N.Y.	304	116	196	312	14%	3%
95	SUNY AT STONY BROOK	N.Y.	205	90	216	306	11%	49%
96	DEVRY UNIVERSITY-GEORGIA	Ga.	398	156	148	304	39%	-24%
97	UNIVERSITY OF NEW ORLEANS	La.	270	83	220	303	18%	12%
100	MIDDLE TENNESSEE STATE UNIVERSITY	Tenn.	253	123	176	299	10%	18%

The TOP 100-
Interpreting the Data

There's something about numbers. Regardless of whether we enjoyed or feared our math classes (with the majority of us in the latter category), we all recognize the power of numbers as symbols. Last year's 50th anniversary of the *Brown v. Board of Education* decision was a call for a year-long period of celebration and reflection. In this, our 14th consecutive year of presenting the "numbers" on minority degree conferrals, we once again look to see which institutions across our diverse higher-education landscape are contributing the most, quantitatively, to the well-educated minority U.S. population.

In the first edition of the Top 100 ranking (*Black Issues*, May 7, 1992), we reported on degrees conferred in the 1988-1989 academic year. Since that time, over 1.5 million African-American men and women have received bachelor's degrees in the United States. This represents close to 5 percent of the entire African-American population, and close to 10 percent of those between the ages of 20 and 50. Not coincidently, educational attainment among African-Americans, as measured by the percentage of the population age 25 or older who have a baccalaureate degree or higher, increased by almost 8 percentage points, from 10.8 percent in 1990, to 18.5 percent in 2004. Unfortunately, this has only narrowed the gap between the African-American and White educational attainment rates by 0.3 percentage points (from 8.2 to 7.9). So as we celebrate the addition this year of nearly 125,000 baccalaureate-educated African-Americans to our society, we note the continuing under-representation of college-educated Blacks in our communities.

These realities make it imperative that we take a close look at minority student degree attainment and begin to address trends and challenges in hopes of decreasing the access and persistence gap between minority and non-minority students. Add to this the proposed decrease in federal funding for programs that provide minority populations with exposure to college and a presidential administration that is focused primarily on K-12 education issues, and the necessity for swift action becomes more apparent.

METHODOLOGY

The data for this edition of the Top 100 analysis come from the U.S. Department of Education's National Center for Education Statistics (NCES) Integrated Postsecondary Education Data Set (IPEDS). They reflect degrees awarded during the 2003-2004 academic year. The institutions included in this analysis are Title IV-eligible colleges and universities in the 50 states and the District of Columbia that confer baccalaureate degrees. Because we must rely on "preliminary files," there may be a few institutions that are not yet part of the sample. Fortunately, most of the gaps pertain to relatively small institutions. Moreover, the data are complete and accurate for those institutions included in the analysis.

The data for this study are collected by NCES through the IPEDS Program Completer's Survey. Specifically, this survey asks for the number of degrees and other formal awards conferred in academic, vocational and continuing professional education programs. NCES uses the Classification of Instructional Program (CIP) codes, which provide a common set of categories into which institutions

Bachelor's Degrees Conferred to African-Americans by HBCUs Compared to Other Colleges And Universities

	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
Total	74,720	82,494	85,536	89,247	91,838	95,764	Not Available	104,258	106,487	110,988	117,600	123,205
HBCUs	20,686	23,295	23,863	25,286	25,063	25,408	25,382	24,953	25,016	.25,951	26,317	
	28%	28%	28%	28%	27%	27%	24%	23%	23%	22%	21%	
All Others	54,034	59,199	61,673	63,961	66,775	70,356	78,876	81,534	85,972	91,649	96,888	
	72%	72%	72%.	72%	73%	73%	76%	77%	77%	78%	79%	

*Based on preliminary totals. Most baccalaureate conferring institutions are included but the numbers may change slightly when the final dataset is released. NOTES: The data includes only Title IV-eligible institutions that are accredited by either a regional or specialized accreditation agency that is recognized by the U.S. Department of Education. This is based on institutions located in the 50 United States and the District of Columbia. Excluded are institutions in U.S. Territories and Protectorates, as well as the U.S. Service Academies. The 1998-99 data collection for degrees conferred was never completed by the National Center for Education Statistics due to the changeover from a hard-copy submission system to a web-based submission system.

report their data, allowing comparisons across all colleges and universities.

The lists included in this analysis are based on students' racial or ethnic status. Students self-report this information during their college career by choosing among a set of categories. Institutions may vary in the specific categories they offer but must report their enrollments and degrees to NCES using standard federal categories: non-resident alien, Black, non-Hispanic; American Indian or Alaskan Native; Asian or Pacific Islander; Hispanic; White, non-Hispanic; and race/ethnicity unknown. Only U.S. citizens or permanent residents are included in the minority categories.

The lists presented in this issue array the Top 100 degree granting institutions for each minority group overall, and the top 50 institutions that conferred degrees within specific disciplinary areas. Each list includes the total number of degrees granted last year to the targeted group and the number conferred to men, women and overall for the most recent. Two percentage columns follow the degree numbers. The first percentage indicates the representation of that specific racial/ethnic group relative to all students at that institution who received that type of degree. For example, if you are looking at the list of bachelor's degrees conferred to African-Americans in "Business, Management, Marketing and Related Services," you would find that the 375 degrees conferred by Florida A&M University to African-Americans represents 98 percent of all the degrees conferred in these business fields at FAMU. On the other hand, the 325 bachelor's degrees in business conferred to African-Americans at the second ranked institution. St. Leo University, represents

only 27 percent of bachelor's degrees in business conferred at St. Leo. The second percentage column reflects the growth or decline from the prior year. In our example, you would see that FAMU's current year output (375 degrees) is 16 percent higher than their prior year total (322). St. Leo University experiences only a 3 percent increase in bachelor's degrees to minority business majors between 2002-03 (316) and 2003-04 (325).

There may be slightly more or less than 100 or 50 institutions listed due to ties in rank at the end of the list. We will often stop the list just shy of the target count or go a little beyond the count to accommodate the last group, if a number of institutions are tied at one of the lower ranks.

In prior editions of the Top 100 rankings, we flagged with an asterisk (*) those institutions that reported as part of a "multi-institutional" reporting group. Unfortunately, this year's preliminary data file does not include the field that allows us to identify such institutional groups. As it turns out, this designation has become problematic, as the differences between single institutions that have multiple campuses, and multiple institutions that report as a single university are increasingly fuzzy.

TRENDS IN BACCALAUREATE DEGREE CONFERRALS

Throughout the history of this analysis, we have tracked the trend in bachelor degree conferrals to African-American students by HBCU institutions compared to all other institutions. The first display shows the relatively stable capacity of HBCU bachelor's degree production as contrasted with the

Changes In Baccalaureate Degrees Awarded By Institutional Characteristics

	1993-94		2003-04		Avg. Annual
	#	% of Tot	#	% of Tot	Pct. Change
Total	1,165,841		1,395,281		
African-Americans	81,989	7.0%	123,205	8.8%	3.8%
Asian Americans	54,341	4.7%	86,260	6.2%	4.3%
Hispanics	49,032	4.2%	88,699	6.4%	5.5%
American Indians	6,039	0.5%	9,975	0.7%	4.7%
All Others	974,440	83.6%	1,087,142	77.9%	1.0%
All Students					
Control					
Public	785,714	67.4%	902,219	64.7%	1.3%
Private, non-profit	371,561	31.9%	450,993	32.3%	1.8%
Proprietary, for-profit	8,566	0.7%	42,069	3.0%	15.6%
Carnegie Classification					
Research/Doctoral	539,520	46.3%	647,723	46.4%	1.7%
Master's	414,622	35.6%	488,515	35.0%	1.5%
Bachelor's	163,188	14.0%	171,511	12.3%	0.5%
Associates	1,376	0.1%	8,730	0.6%	18.3%
Specialized/Other	47,135	4.0%	78,802	5.6%	4.8%

continuing growth among other types of institutions. Although, in one sense, HBCUs are slipping in their market share of African-American baccalaureate recipients, it is important to note that this relatively small group of institutions, which account for only 2.2 percent of all bachelor's degrees conferred in the United States, confer over one in five bachelor's degrees to African-Americans.

The second display shows further details as to which types of institutions conferred bachelor degrees to African-Americans and members of other minority groups. The topmost section of the table examines the distribution of degree conferrals this past year compared to 10 years ago. Over this 10-year period, African-American representation among bachelor's degree recipients increased by 1.8 points from 7.0 percent to 8 8 percent. African-Americans are still the largest minority group among bachelor's degree recipients, although representation among Hispanics is growing at a slightly faster rate. Corresponding to the growth in representation among each minority group is a notable decline of over 5 percentage points in the representation of non-minorities among bachelor's degree recipients

The remainder of the second display examines changes in degree conferral patterns across institutions according to control (public, private-non-profit, and proprietary) and Carnegie Classification, (research doctoral, master's, bachelor's associ-

ates and specialized/other). The first panel shows the distribution of bachelor's degrees conferred to all students across these institutional categories. It shows, for example, that although there is considerable growth in degrees conferred across all control categories, the near 16 percent average annual growth rate among proprietary (i.e., private-for-profit) institutions has outpaced the growth rates among private-non-profit and especially public institutions. Despite this high rate of growth, proprietary institutions still account for a very modest proportion (only 3 percent) of all bachelor's degrees and public institutions still account for a large majority. Looking at overall production by the Carnegie categories reveals an even higher growth rate (18.2 percent average annually) in bachelor's degrees conferred by "associate" institutions, that is, community colleges and other institutions that primarily confer two-year degrees. But even with this growth, associate institutions do not yet confer even 1 percent of all bachelor's degrees.

It is instructive to compare the overall growth rates across institution types to the rates for specific minority groups. The first thing one notices is that the growth rate is generally higher among minority groups, reflecting the overall gain in minority representation. It is also clear that the small but increasing role of associate-level institutions in conferring bachelor's degrees is even more

evident for minority students. This past year, associate institutions were responsible for over 1 percent of all bachelor's degrees conferred to African-Americans and American Indians. Delving into this issue reveals one of the limitations with using the Carnegie classification system for comparison purposes over time. Among the "associates" group are 87 institutions that upgraded their missions between 1994 and 2004 from two-year to four-year colleges. Unfortunately, this change is not yet reflected in the Carnegie classification. Perhaps the most famous among these is Miami Dade College, which dropped the "Community" portion of its name two years ago to reflect the change in mission. But perhaps the change is more superficial than real, since during this past year, Miami Dade conferred well over 5,000 associates degrees and did not confer a single bachelor's degree.

The growing share of bachelor's degrees conferred by proprietary institutions is most notable among American Indians. Nearly 6 percent of bachelor's degrees conferred to American Indians in 2003-2004 were from proprietary institutions. Proprietary institutions are also serving Hispanic and African-American students in relatively greater proportions than among Asian Americans and majority students.

These aggregate data provide some modest insight into trends in bachelor's degree production in the United States. Even though they still lag considerably in educational attainment, minorities are increasingly represented in the system. Moreover, the system is slowly diversifying, with an increasing number of proprietary and former two-year colleges contributing to bachelor's degree production. But rather than giving too much life to these numbers that range in the tens and hundreds of thousands, we must remember that every single unit represents a life that has been transformed by education.

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' Originally created in the 1970s, the Carnegie Classification system is a taxonomy of all accredited, degree-granting U.S. higher education institutions. Designed primarily for research purposes, it has been used for a broad variety of purposes, including peer institution analysis and commercial rankings. The system has been revised a number of times over the years, with a substantial change due in the current calendar year (2005). ∎

Changes in Baccalaureate Degrees Awarded By Institutional Characteristics and Race

| | 1993-94 | | 2003-04 | | Avg. Annual |
	#	% of Tot	#	% of Tot	Pct. Change
African-Americans					
Control					
Public	53,346	65.1%	77,075	62.6%	3.4%
Private, non-profit	27,480	33.5%	41,045	33.3%	3.7%
Proprietary, for-profit	1,163	1.4%	5,085	4.1%	14.4%
Carnegie Classification					
Research/Doctoral	28,187	34.4%	45,509	36.9%	4.5%
Master's	35,370	43.1%	49,952	40.5%	3.2%
Bachelor's	14,840	18.1%	18,963	15.4%	2.3%
Associates	93	0.1%	1,301	1.1%	27.1%
Specialized/Other	3,499	4.3%	7,480	6.1%	7.2%
American Indians					
Control					
Public	4,856	80.4%	7,210	72.3%	3.7%
Private, non-profit	1,156	19.1%	2,180	21.9%	5.9%
Proprietary, for-profit	27	0.4%	585	5.9%	32.3%
Carnegie Classification					
Research/Doctoral	2,657	44.0%	4,253	42.6%	4.4%
Master's	2,513	41.6%	3,582	35.9%	3.3%
Bachelor's	623	10.3%	1,237	12.4%	6.4%
Associates	3	0.0%	105	1.1%	38.2%
Specialized/Other	243	4.0%	798	8.0%	11.4%
Asian Americans					
Control					
Public	37,619	69.2%	61,023	70.7%	4.5%
Private, non-profit	16,148	29.7%	22,860	26.5%	3.2%
Proprietary, for-profit	574	1.1%	2,377	2.8%	13.8%
Carnegie Classification					
Research/Doctoral	33,434	61.5%	54,533	63.2%	4.5%
Master's	14,729	27.1%	22,146	25.7%	3.8%
Bachelor's	4,082	7.5%	5,457	6.3%	2.7%
Associates	30	0.0%	354	0.3%	25.2%
Specialized/Other	2,066	2.5%	3,770	3.1%	5.6%
Hispanics					
Control					
Public	34,524	70.4%	60,722	68.5%	5.3%
Private, non-profit	13,845	28.2%	23,858	26.9%	5.1%
Proprietary, for-profit	663	1.4%	4,119	4.6%	18.1%
Carnegie Classification					
Research/Doctoral	23,138	47.2%	39,542	44.6%	5.0%
Master's	19,770	40.3%	36,504	41.2%	5.7%
Bachelor's	4,167	7.7%	6,225	7.2%	3.7%
Associates	68	0.1%	785	0.6%	24.9%
Specialized/Other	1,889	2.3%	5,643	4.6%	10.5%

Southern Education Foundation, 2005, *Igniting Potential: Historically Black Colleges and Science, Technology, Engineering, and Mathematics.*

The b...

Historically
Black Colleges
and Universities
and Science,
Technology,
Engineering
and Mathematics

Igniting
Potential

Southern Education Foundation (SEF)

The Southern Education Foundation, www.southerneducation.org, is a non-profit organization comprised of diverse women and men who work together to improve the quality of life for all of the South's people through better and more accessible education. SEF depends upon gifts and contributions to support its efforts. SEF develops and implements programs of its own design, serves as an intermediary for donors who want a high-quality partner with whom to work on education issues in the South, and participates as a public charity in the world of philanthropy.

SEF's Vision: We seek a South and a nation with a skilled workforce that sustains an expanding economy, where civic life embodies diversity and democratic values and practice, and where an excellent education system provides all students with fair chances to develop their talents and contribute to the common good. We will be known for our commitment to combating poverty and inequality through education.

SEF's Timeless Mission: SEF develops, promotes and implements policies, practices and creative solutions that ensure educational excellence, fairness, and high levels of achievement among African Americans and other groups and communities that have not yet reached the full measure of their potential.

SEF's Values and Principles: SEF is committed to.

- top quality work, assessment and con: improvement to achieve high impact
- collaborative efforts that draw on the be : institutions and communities in suppor: educational excellence
- creative problem solving
- integrity, accountability and transparent
- adaptability, flexibility, and future-oriented approaches, and
- honest and intelligent advocacy to achieve results

Igniting Potential

Historically Black Colleges and Universities make a disproportionately large contribution to the STEM pipeline, using best practices to prepare African Americans for advancement to graduate studies and success in science, technology, engineering and mathematics careers.

The United States needs to raise up and train a new, diverse generation of highly talented Americans skilled in science, technology, engineering and mathematics.

Introduction

The revolution in technology and related science fields has transformed the world, diminishing- distance and space among nations and their peoples, posing new challenges to government structures, recasting economic relations and dynamics, beginning the new "Information Age" and creating a "global village."

The United States is a world leader in no small measure because it has outstanding educational institutions; top quality students and teachers, a thriving business sector, a national aspiration to excellence and leadership in the global marketplace and a competitive edge in science, technology, engineering and mathematics (STEM). STEM is a major engine of economic development, innovation and transformation. The leaders of the United States understand that human capital development is the key means by which to create a better quality of life for all of the people

The number of the nation's STEM-trained professionals has not kept pace with demand. There is a present need for more and better-trained people in STEM fields.

How will the nation's colleges and universities adapt to changing circumstances and the proliferation of knowledge in STEM? From whence will come the top-flight scientists for industry, public service, teaching and the professorate of the future? What must be done to ensure outstanding training, research opportunities and other supports needed to ensure excellent results? In light of changing population demographics, what can be done to encourage more people of color and women who have historically been underrepresented in STEM fields, to pursue training and careers in these areas? How can the nation maximize its return on its STEM investment in higher education and reach national goals? All of these are weighty and important questions.

In this report, SEF points to the outstanding contributions made by Historically Black Colleges and Universities (HBCUs) to STEM training and fields. The report provides data about the productivity of HBCUs in STEM undergraduate education, describes best practices in STEM education, highlights creative ways in which selected HBCUs are working to enhance the number of students in STEM fields of study; documents patterns of investment in HBCUs' STEM programs and shares narratives of the HBCU experience by STEM graduate students.

Finally, the report summarizes some ways in which policymakers, public and private industry and education institutions can help HBCUs enlarge their vital STEM education programs.

Increased Demand, Dwindling Supply

Today the United States faces the prospect of a shortage of scientists and engineers in the national workforce. At a time when occupations in STEM are mushrooming, a large number of America's scientists and engineers are slated to retire over the next 10 to 15 years.

CHART 1   Percentage Change in Bachelor's Degrees Conferred, 1987-1988 to 1997-1998
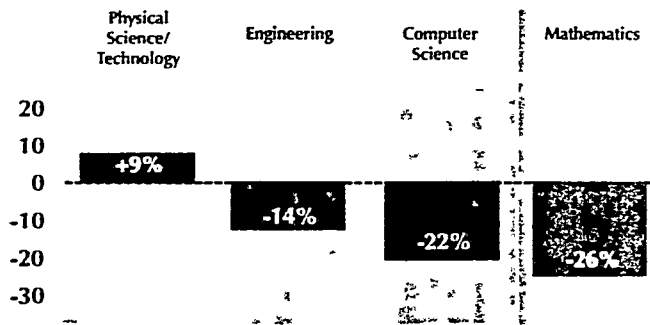
As a leader in the global economy, America may attempt to meet this challenge by increasing the recruitment of trained citizens from other nations, but as recent study by the Education Testing Service (ETS) concludes, this strategy will not be sufficient. The report says "Meeting our nation's future economic needs will not be possible without improving the math and science achievement of underrepresented minorities."

There are several reasons why this is so. In recent years, both the number of students receiving bachelor degrees and the number going into graduate school in most STEM fields have declined sharply compared to what they were at the end of the previous decade. The drop is as high as 22 to 26 percent for students receiving bachelor's degrees in computer science and mathematics. At the same time, nearly 70 percent of the growth in young adults between the ages of 18 and 24 is among members of minority groups, including a 19 percent increase in the number of African Americans. The net effect is that by the year 2010, 38 percent of all Americans between the ages of 18 and 24 will be people of color.

CHART 2   Percentage of Total Growth of 18-24 year olds among racial/ethnic groups, 2001 to 2010
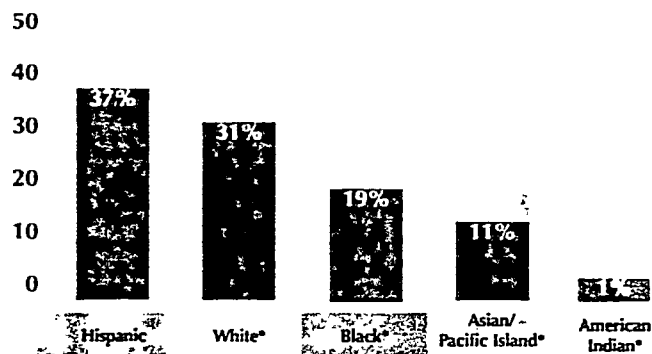
*Non-Hispanic

Source: U.S. Census Bureau http://www.census.gov/population/projections/nation/summary

This projection constitutes the front end of a clear trend in America's shift toward racial and ethnic diversity. By mid-century, the United States will have both a student population and an adult workforce that is primarily "majority minority."

Projected U.S. Population by Race and Hispanic Origin

| 1990 | | 2025 | 2050 |
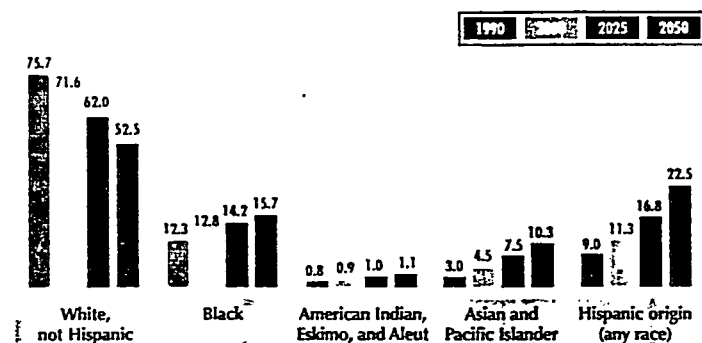
Source: U.S. National population projections, Population Profile of the United States 1995. Washington, DC: U.S. Bureau of the Census 1995 (CPS Report No. P23 189)

All demographic data point toward the necessity to educate and train larger numbers of students of color in order to meet the nation's needs for scientists and engineers. America must respond to these changes. It must serve the national interest by helping to undo the lingering effects of the nation's long history of denial and/or underinvestment in African American education. Undoing this legacy is the right and necessary thing to do.

HBCU's' Contribution to STEM Education

During the nation's first two hundred years, HBCUs were primarily responsible for the higher education of African Americans. Indeed, for several generations, these were the only institutions where African Americans could gain an education beyond high school in the South. Operating with scarce resources and very large challenges, HBCUs provided their students with their best and, in many instances, only chance to pursue higher education during the decades when Southern states with the force of law opposed equal opportunity.

In this connection, it is important to note that HBCUs have always been open to White students and have long had diverse faculty leaders and supporters. Today, the nation's 105 HBCUs have begun to enroll more non-African American students and remain integrated on the faculty and administrative levels. In this sense, HBCUs epitomize constancy and fidelity to American ideals of fair play and equal opportunity. Their continued existence is now part of the answer to the nation's legacy of racial exclusion and denial of higher education opportunities to African Americans.

HBCUs perform a vital role in the higher education of African American youth. Almost one out of every four African Americans who received a bachelor's degree in the United States in 2000 graduated from an HBCU.

In the STEM fields, HBCUs play an even greater role. In 2000, HBCUs graduated 40 percent or more of all Black students in America receiving bachelor's degrees in physics, chemistry, astronomy, environmental sciences (such as oceanographic science), math and biology. These institutions also graduated 23 percent of all Black engineers.

Percent of bachelor's degrees earned by Blacks at Historically Black Colleges and Universities (HBCUs), by field, 2000

Total (all fields)	24.5
Science and Engineering (S&E)	26.2
Engineering	22.7
Sciences	26.6
Natural Sciences	37.7
Physical Sciences	43.5
Mathematical Science	29.6
Biological Science	39.8
Agricultural Science	47.6
Social Sciences	20.6
Social Science	19.6
Psychology	22.2
Non-S&E	23.7

In almost every STEM field, HBCUs are ahead of the nation's larger, wealthier and traditionally White colleges in producing Black graduates. Last year, for example, HBCUs accounted for 12 of the 13 institutions with the highest number of African Americans graduating with bachelor degrees in biology. They also were 30 of the top 40 schools in this category. In mathematics, HBCUs made up 12 of the top 15 schools graduating the largest numbers of Black students with bachelor degrees, and they constituted 13 of the top 15 schools graduating the most African American students with bachelor degrees in the physical sciences.

The National Science Foundation has found that African American students who graduate from HBCUs in the sciences are more likely to go to graduate school and complete their doctoral degrees than Black students from other institutions. As a result, HBCUs are responsible for most of the Black students who acquire doctoral degrees. The Congressional Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development reported that a majority of the African Americans receiving doctoral degrees in most fields of science from 1975 to 1992 came through an HBCU undergraduate program. Another recent study of African Americans who earned Ph.D.'s from 1985 to 1995 indicates that HBCUs continue to serve this primary role.

Best Practices in STEM Education

During the last few years, several public agencies, institutions and special commissions have sought to identify ways to enhance the quality of STEM education and enlarge the numbers of students, including women and members of minority groups, pursuing degrees in STEM fields. A body of research has begun to emerge that focuses on the most effective programs and practices in this area. These studies have approached the issues in various ways but most have differed very little in their basic findings about the primary barriers to and the best practices for successful undergraduate STEM education. It really is not rocket science.

Most reports have found three factors in high school predict a student's low achievement in science and mathematics at the college level. (1) family poverty and limited parental education, 2 inadequate science and math curriculum and teaching, and 3 tracking into low-level courses.

Family poverty If students come from low income families and receive limited intellectual guidance from parents they are likely both to be unaware of STEM careers and have little or no exposure to role models. They are not likely to know how to advance their education interests in this unfamiliar turf called STEM

Many students of color especially African Americans, are disproportionately represented among those who come from low-income families or live in poverty. These students attend the least well-maintained public elementary and secondary schools, have the least experienced teachers, face high teacher turnover and, in short, have limited chances to develop the basic and/or high order skills needed to pursue higher education in STEM. HBCUs collective genius has always been to help such students develop, mature and gain the capacity to do college-level work.

It is important to note that not all HBCU students enter college with developmental needs. To the contrary. Many HBCU students enter school with excellent skills and would be competitive with students at the most selective colleges, had they chosen to attend them. A mix of students are enrolled in the nation's HBCUs.

Inadequate science and math curriculum and teaching Data from the No Child Left Behind Act about the number of "low performing schools" and the yawning achievement gap in most core subjects between affluent and low-income and minority and majority group students documents that many minority group students simply don't have an opportunity to learn or excel in STEM.

Tracking into low-level courses Many minority group students are deprived of opportunities to pursue college-level courses while in high school and are tracked into vocational or "special education" programs with little chance of reentry into academic coursework.

Programs and practices in colleges and universities that effectively anticipate and/or respond to these obstacles have increased the numbers of students who graduate with STEM degrees. The elements that make for success are:

- Intense, personal introductory preseason programs for entering students;
- High levels of counseling, mentoring, and guidance throughout undergraduate studies;
- Rigorous, interactive instruction;
- Adequate financial aid;
- Meaningful research experiences and internships, and
- Hospitable campus climates and caring learning environments.

While supplemental research would be valuable related to these issues—for example, studies on what the best standards are for talent identification, exactly "what aspects of

undergraduate STEM interventions increase entry, persistence, and degree attainment or what factors in undergraduate experience lead to doctoral studies—extant data still offer tantalizing insight into what works.

The practices that SEF found in evidence at the HBCUs that it studied—Morehouse College, Xavier University, Tennessee State University, Morgan State University, Spelman College, and Clark Atlanta University conform to the best practices cited in the literature.

The National Science Foundation has found that African American students who graduate from HBCUs in the sciences are _more likely_ to go to graduate school and complete their doctoral degrees than Black students from other institutions.

National Science Foundation, 1996, *Undergraduate Origins of Recent (1991–95) Science and Engineering Doctorate Recipients*.

Undergraduate Origins of Recent (1991-95) Science and Engineering Doctorate Recipients

Special Report

Susan T. Hill, Senior Science Resources Analyst

CONTENTS

In terms of the types of institutions providing S&E undergraduate education, the pattern for black and Hispanic doctorate holders differed from that of other racial/ethnic groups. Master's institutions played a much greater role than the other types of institutions in the undergraduate education of blacks and Hispanics in both science and engineering.

In comparing the top 25 baccalaureate institutions cited by all S&E doctorate holders with those cited by S&E doctorate holders from **underrepresented racial/ ethnic groups**,[13] several interesting differences come to light.

The list of the prominent baccalaureate-origin institutions cited by **Hispanic** S&E doctorate holders differed greatly from the list for all S&E doctorate holders. Many of the Hispanic S&E doctorates received their baccalaureates from four Puerto Rican universities (table 14). Also, significant numbers of institutions cited by the Hispanics were located in California, Florida, New Mexico, and Texas, as would be expected given the geographic concentrations of U.S. Hispanic populations.[14] Tables 14a-c show the baccalaureate-origin institutions of Mexican-Americans, Puerto Ricans, and other Hispanics separately.

Because of the small number of **American Indian** S&E doctorate holders, the list of their prominent baccalaureate-origin institutions includes the top 20 colleges and universities that produced three or more baccalaureates who went on to earn an S&E doctorate (table 15). Only six of these 20 institutions were also on the list of top baccalaureate-origins of all S&E doctorate holders. The differences in institutions cited by American Indian versus all S&E doctorate holders reflect to a certain extent the geographic concentrations of American Indian populations.

The top 26 baccalaureate-origin institutions for **black** S&E doctorate holders deviated significantly from the general top 25 list (table 16). Specifically, 12 of the top 26 baccalaureate institutions for black S&E doctorates were historically black colleges and universities (HBCUs).

ROLE OF HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (HBCUs) IN THE BACCALAUREATE EDUCATION OF BLACK S&E DOCTORATE RECIPIENTS

The HBCUs were originally established under legal segregation for the purpose of educating blacks. These institutions were significant in the baccalaureate education of black S&E doctorate holders.[15] S&E bachelors degrees are awarded by 81 HBCUs, most of which are classified as master's or baccalaureate institutions. In all, HBCUs accounted for almost 27 percent of the baccalaureate origins of recent black S&E doctorate recipients. HBCUs were of particular significance in providing the baccalaureate origins of black doctorate recipients in natural science fields[16] (chart 10).

[12]   Carol Fuller, *Baccalaureate Sources of 1975-1986 Doctorates Earned by American Indian, Asian, Black, Hispanic and White Men and Women Adjusted for Institutional Size* (Ann Arbor, MI: Great Lakes Colleges Association, 1989) and Norean Radke Sharpe and Carol H. Fuller, "Baccalaureate Origins of Women Physical Science Doctorates: Relationship to Institutional Gender and Science Discipline," *Journal of Women and Minorities in Science and Engineering*, vol. 2, pp. 1-15, 1995.

[13]   The following analysis of underrepresented racial/ ethnic groups has been limited to U.S. citizen S&E doctorate holders who were Black, Hispanic, or American Indian.

[14]   Daniel Solorzano, "The Baccalaureate Origins of Chicana and Chicano Doctorates in the Physical, Life, and Engineering Sciences: 1980-1990," *Journal of Women and Minorities*, Vol. 1, No. 4, p. 25.

[15]   John T. Hill and Susan T. Hill, "The Role of HBCUs in the Education of Black Scientists and Engineers," paper presented at the 1991 Conference on Blacks in Higher Education (Washington, D. C., 1991).

[16]   Cheryl Leggon and Willie Pearson, Jr., "The Baccalaureate Origins of African American Female Ph.D. Scientists," paper presented at the 1993 Conference of the American Association for the Advancement of Science (Boston, MA, 1993).

Chart 10. Black U.S.-citizen S&E doctorate recipients with baccalaureate origins in historically black colleges and universities, by broad science and engineering fields

Field	Percentage
Total S&E	27%
Agricultural science	47%
Biological science	39%
Computer science	32%
Physical science	29%
Social science	25%
Psychology	24%
Engineering	22%
Mathematics	11%

(x-axis: 0%, 5%, 10%, 15%, 20%, 25%, 30%, 35%, 40%, 45%, 50%)
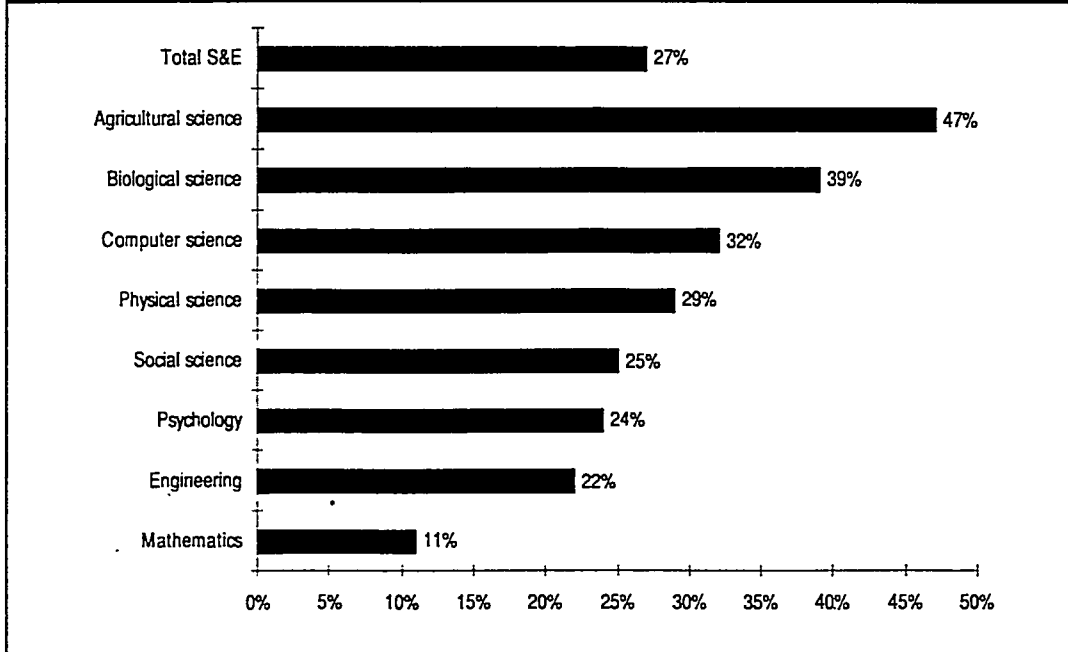
S&E: science and engineering

NOTE: HBCUs are the 90 historically black colleges and universities that award baccalaureates in S&E fields.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates for the years 1991-95.

Daniel G. Soloranzo, "The Doctorate Production And Baccalaureate Origins Of African Americans In The Sciences And Engineering," *Journal Of Negro Education*, Winter 1995.

doctorate production and baccalaureate origins of African Americans in the sciences and engineering, The

Solorzano, Daniel G

INTRODUCTION

For years, scholars and policy makers have been commenting on the dismal future of African American faculty production. However, as large numbers of college faculty approach retirement in the waning years of the 20th century, the opportunity to increase the number of Black professors presents itself. The key that opens one of the first doors to these faculty positions is the doctoral degree, yet little is known about the Black doctorate production of the 1980s—the decade from whence the faculties of the 1990s and the beginning of the 21st century will emerge.

Important research has been done on the career paths of select samples of professionals by Astin (1969) on women doctorates, Astin and Leland (1991) on women leaders, Berger (1990) and Riley (1988) on sociologists, McGrayne (1993) and Zuckerman (1977) on Nobel Prize-winning scientists, O'Connell and Russo (1983, 1988, 1990) on women psychologists, and Ryan and Sackrey (1984) on professors from working-class backgrounds. While each of these works identify factors that influence career paths, none focus primarily on Black scholars. However, as Conyers (1986) points out, empirically based studies of Black scholars are needed to "establish a baseline from which practitioners and researchers, in years to come, can evaluate the magnitude, direction, and significance of changes which seem to occur with respect to Black professionals, their social and educational origins and the process by which they are recruited" (p. 304).

In recent years, some attention has centered on the graduate school experiences of underrepresented minority groups. A primary concern has been the declining enrollment of African Americans, particularly Black males, in graduate school (Blackwell, 1991; Thomas, 1987, 1992). A few studies have shown that Blacks are underrepresented in all fields of graduate school, especially the sciences(1) and engineering (Bowen & Rudenstine, 1992; Brown, 1987, 1988; Carter & Wilson, 1994; Chipman & Thomas, 1984; Clewell, 1987; Dix, 1987; National Science Foundation, 1990; Nettles, 1990a, 1990b; Oakes, 1990; Task Force on Women, Minorities, and the Handicapped in Science and Technology, 1989; Thomas, 1986, 1992).

One of the important steps on the road to the doctorate is the baccalaureate degree. Indeed, there have been numerous studies of the baccalaureate origins(2) of science doctorates dating back to the 1950s and continuing to the early 1980s (Brazziel, 1983; Conyers, 1986; Hall, 1984a, 1984b; Hardy, 1974; Holland, 1957; Jay, 1971; Knapp & Goodrich, 1951; Pearson, 1985; Pearson & Pearson, 1985; Tidball, 1986; Tidball & Kistiakowsky, 1976). While Tidball (1986) and Tidball and Kistiakowsky (1976) looked specifically at educational origins of women scientists, they did not study minority females. Brazziel (1983), Conyers (1986), and Pearson and Pearson (1985) examined Black scientists but not Black female scientists Pearson (1985) and Jay (1971), however, examined both Black women and men in doctoral science. While most of the work on African American doctorate production and baccalaureate origins examines the period from 1876 to 1980 (Brazziel, 1983; Conyers, 1986; Jay, 1971), no one to date has examined the period from 1980 to 1990.

This article extends the existing research by answering the following question: What is the status of the 1980s Black doctorate science production from U.S. universities? This question will be answered by meeting two objectives:

(1) updating the baseline information by presenting an overview of African American doctorate production from U.S. universities generally as well as specifically in the sciences and engineering from 1980 to 1990, and

(2) examining the baccalaureate origins of African American doctorates generally and specifically in the science and engineering fields.

This study differs from earlier work in that it brings the research on Black doctorate production and baccalaureate origins to the 1990s. Additionally, it uses different measures of doctoral parity and baccalaureate institutional productivity, and adds an explicit gender analysis.

METHODOLOGY

Sample

To meet the two objectives of providing a national overview of African American science doctorate production and examining the baccalaureate origins of these degrees, data from the National Research Council's Doctorate Records Project (DRP) was utilized (Thurgood & Clark, 1995). The DRP gathers information using the Survey of Earned Doctorates from U.S. Universities. This yearly survey generates data on each doctoral recipient's field, baccalaureate origins, support received during years of doctoral study, doctorate-granting institution, and postdoctoral plans. The data are collected in the seven broad fields of physical science, life science, social science, engineering, humanities, education, and professional studies. In the present study, though all seven fields are examined, special attention was focused on the production and baccalaureate origins of African American physical science, life science, and engineering doctorates from 1980 to 1990. DRP data was disaggregated for African Americans by gender, field, and baccalaureate origins for the period under question.

Method of Analysis

Doctoral Parity Index. The number of doctorates produced in and of itself does not tell the whole story of African American PhD production. Rather, these figures must be compared to some base figure such as the number of Black baccalaureates. It could be argued that the rate at which Blacks receive doctorates is affected by the available baccalaureate pool. For instance, from 1980 to 1990, while African Americans averaged 11.9% of the population, they constituted 5.4% of all persons over 25 years old who had completed at least four years of college (U.S. Bureau of the Census, 1983b, 1992a). Therefore, one doctoral parity figure would compare doctorate production for a given period with baccalaureate production for the same period. However, by using educational attainment measures at each point in the school pipeline, one could reasonably hypothesize that the further Black students move through the pipeline, their numbers decline considerably and the comparative base gets smaller. Therefore, using baccalaureate degree attainment as a comparative base would overestimate Black doctorate production.

At least two other measures can serve as bases for comparison: the percentage of African Americans in the overall U.S. population versus their percentage in the 30-to-34-year-old cohort (Berryman, 1983; Leggon, 1987). Berryman (1983) chooses this age cohort because of the need to compare doctorate recipients with an age-relevant population. According to Berryman, this age group represents and encompasses the median age (32 years) at which the PhD is awarded. While the overall Black population average from 1980 to 1990 was 11.9%, African American females comprised an average 12.1% of the 30-to-34-year-old age cohort and African American males comprised an average 10.6% (U.S. Bureau of the Census, 1983a, 1992b). However, it should be noted that using population and age cohort rather than baccalaureate attainment figures to create an equity benchmark for comparing Black doctorate production data might underestimate this production because such an approach relies on overall population numbers.

parity index for each field of study was created by dividing the cumulative percentage of African American doctorates by the average percentage the 30-to-34-year-old cohort population for the period from 1980 to 1990 (Berryman, 1983). Thus, a parity number of 1.00 would indicate that Blacks are represented in doctorate production in the same proportion to their percentage in this cohort. Any number above 1.00 would indicate overrepresentation, while numbers below 1.00 would indicate underrepresentation. For this study, equity is defined as the point at which the percentage of African American doctorates produced is equal to their age cohort population average

baccalaureate Origin Carnegie Classification. To compare baccalaureate institutions, each school was assigned their 1987 Carnegie classification category (Carnegie Foundation for the Advancement of Teaching, 1987). The Carnegie classification system groups colleges and universities into categories on the basis of the level of degree offered and the comprehensiveness of their mission. Institutions are classified into Research I, Research II, Doctorate-Granting I, Doctorate-Granting II, Comprehensive I, Comprehensive II, Liberal Arts I, Liberal Arts II, and Specialized categories. Although the Carnegie classifications are not intended to rank institutions into a hierarchy, Research I and Liberal Arts I colleges and universities are generally considered among the most prestigious and selective schools in the United States (Carnegie Foundation for the Advancement of Teaching, 1987)

baccalaureate Origin Productivity Index. The institutional productivity hypothesis states that certain undergraduate colleges and universities are more successful at producing future doctorates than others (Astin, 1963; Holland, 1957). While most of the previous studies use institutional baccalaureate degree attainment as part of their productivity equation, they differ only slightly in their formulas (Hall, 1984a, 1984b; Hardy, 1974; Holland, 1957; Jay, 1971; Knapp & Goodrich, 1951; Pearson, 1985; Pearson & Pearson, 1985; Tidball, 1986; Tidball & Kistiakowsky, 1976). The sent study could have used the average number of baccalaureates per institution or African American student enrollment as a comparative However, this research starts from the premise of the nation's traditionally Black institutions of higher learning' that "all who are enrolled

can succeed" (Garibaldi, 1991). Therefore, Richardson and Skinner's (1990) equity enrollment formula was adapted using each institution's overall student enrollment instead of its Black student enrollment figures. In this fashion, each institution's baccalaureate contributions toward the doctorate could be compared by controlling for overall size of the campus, and not just for the number of baccalaureate recipients or Black student enrollment.

Because persons who earned their doctorates between 1980 and 1990 had to receive their baccalaureates at an earlier point in time, Fuller's (1985, 1989) productivity formula was employed in this analysis. Fuller suggests a four-year lag between students' attainment of their baccalaureate and doctorate degrees. Because the doctoral period of concern spans from 1980 to 1990 and the baccalaureate period spans from 1976 to 1986, the present study uses the average annual institutional enrollment figures reported to the Carnegie Foundation for the Advancement of Teaching (1987) for the period from 1982 to 1984. Bearing these considerations in mind, the institutional productivity index was computed by dividing the average yearly number of African American doctorates produced by each institution from 1980 to 1990 by its 1982-1984 enrollment average. Per thousand figures were derived by multiplying these figures by one thousand. The enrollment averages included undergraduate, graduate, and professional students and thus tended to underestimate the productivity indexes of schools with large proportions of nonundergraduate students.

RESULTS

African American Doctorate Production

Overall. In the 11-year period from 1980 to 1990, a total of 278,905 doctorates were produced by U.S. universities. Among the 106,592 female doctorates, 5,823 (5.5%) were African American females. Among the 172,313 male doctorates, 5,394 (3.1%) were African American males. However, as noted earlier, African American females represented an average of 12.1% of the 30-to-34-year-old female cohort, while African American males averaged 10.6% during this period (U S Bureau of the Census, 1983a, 1992b). As shown in Table I, five patterns of underrepresentation can be discerned from this analysis. First, African American males and females are underrepresented in each of the seven broad fields. Indeed, Blacks are well below parity in each field. Second, though African Americans are concentrated in the fields of education and social science, Black males appear to be slightly more dispersed throughout the seven fields than Black females. This is mainly due to a higher percentage of Black males in the physical sciences and engineering and the traditional concentration of Black females in education. Third, compared to African American males, Black females are equally represented in the social sciences, humanities, and professional fields; however, they are overrepresented in education. Fourth, during the first five years (1981-1985) and the last five years (1985-1990) of the decade, both Black female and male doctorate production declined--by 6% and 16%, respectively. In contrast, the African American female age cohort grew by 37% from 1980 to 1990, while the African American male cohort increased by 39% (U.S. Bureau of the Census, 1983a, 1992b). Fifth, depending on the field, increases in production 10 from 30% to 1,200% would be required before African American females and males could reach parity with their cohort representation (again, 12.1% and 10.6%, respectively).

In the Sciences and Engineering. As Table I shows, African Americans were far below parity in the science and engineering fields. (All tables omitted) Indeed, increases in doctorate production of from 500% to 1,100% would be required for Blacks to reach parity in these fields. Nonetheless; given the extremely small base numbers in the early 1980s, the numerical and percentage increases in African American science and engineering doctorate production that occurred during the latter half of the 1980s are impressive. Black males were more widely dispersed throughout the sciences and engineering than were Black females, who were also more widely underrepresented in these fields.

Baccalaureate Origins of African American Female Doctorates Overall. Fifty institutions produced 47% (2,752) of the 5,823 African American females who went on to get their doctorates between 1980 and 1990 (see Table II). Thirty-three of these top 50 baccalaureate producers were traditionally Black institutions (TBIs) During the 11 year period studied, they produced 76% of all African American female students who went on to receive doctorate degrees The first non TBI appears as 34th on the productivity list.

Without controlling for size, Howard University was the most productive source of African American female baccalaureates in the United States during the period under study. However, when controlling for size using the productivity index, Fisk University emerged as the most productive institution in this regard, followed by other small TBIs

Seven of the top 10 African American female baccalaureate producing institutions had average enrollments of less than 2,000 students, and 30 of the first 31 schools had enrollments of less than 10,000

n the Sciences and Engineering. The top 50 institutions produced 53% (292) of those 547 African American females who went on to get loctorates in science and engineering fields from 1980 to 1990 (see Table III). Thirty of these 50 produced 73% of this total, and again, they were 'BIs. The first non-TBI ranked 23rd on the productivity list.

Vithout controlling for size, Howard University was the most productive source of African American female baccalaureates who went on to eceive science and engineering doctorates. When controlling for campus size using the productivity index, Bennett College and several other mall TBIs emerged as the most productive. Seven of the top 10 institutions in this regard had average enrollments of less than 2,000 students; 32 if the top 34 schools had enrollments of less than 10,000.

!accalaureate Origins of African American Male Doctorates

)verall. The top 53 institutions produced 2,031 or 38% of-the 5,394 African American male students who went on to receive their doctorates etween 1980 and 1990 (see Table IV). Thirty-five of these schools were TBIs. During this 11-year period, these institutions produced 75% of all .frican American male students who went on to receive doctorate degrees. The first non-TBI ranked 34th on the productivity list.

Vithout controlling for size, Howard University and Morehouse College were the most productive sources of African American male !accalaureates in the U.S. However, when controlling for size using the productivity index, Morehouse and other small TBIs were the most prolific 1stitutions. Seven of the top 10 institutions had average enrollments of less than 2,000 students, while 35 of the first 38 schools had enrollments f less than 10,000.

n the Sciences and Engineering. The top 50 institutions produced 41% or 473 of the 1,154 African American males who went on to get a doctorate 1 science and engineering fields from 1980 to 1990 (see Table V). Of these, 23 TBIs were the baccalaureate origins of 57% of all African American cience and engineering doctorates. The first non-TBI shows up on the productivity list at 13th place.

Vithout controlling for size, Howard University, Tuskegee University, and Morehouse College ranked as the top producers in this category. When ntrolling for campus size using the productivity index, Tuskegee, Morehouse, and other small colleges and universities were the most roductive. Five of the top 10 producers had average enrollments of less than 2,000 students; 21 of the top 23 schools had enrollments of less than).000.

mparisons of Baccalaureate Origins by Carnegie Classification

iring the period under study, the majority of both female and male African American undergraduates attended Comprehensive I institutions -e Table V). Slightly more Black males than females attended Comprehensive II institutions, while more Black females attended Liberal Arts II hools. A plurality of both Black male and female undergraduates studying the sciences and engineering attended Comprehensive I institutions, it Black males attended Research I schools in greater numbers than did Black females.

iccalaureate Origin Summary

least three patterns emerge from his baccalaureate origin data. First, the majority of African Americans who received their doctorates during period from 1980 to 1990 began their career paths in small, traditionally Black institutions. Black male science doctorates, however, were less lined to begin their careers at TBIs. In comparison, Jay (1971) found that in a 1958 sample of Black doctorates, 72% received their :calaureates from TBIs. Pearson and Pearson (1985) reported similar findings, noting that two-thirds of Black scientists in 1978 had such ;ins. Second, while a few schools produced the largest number of future African American doctorates, when campus enrollment was controlled a number of small TBIs produced a disproportionate share of African American baccalaureates. One should note here, however, that the ·ductivity indexes of schools with large graduate and professional student enrollments tend to be underestimated. Third, though a majority of h female and male African American doctorates attended Comprehensive I undergraduate schools, fewer female than male African Americans he sciences and engineering attended such institutions. Overall, more African American doctorates had their origins in undergraduate 1tutions where research is not the primary mission. African American science and engineering doctorates were only slightly more likely to have ir origins in institutions whose mission is more research-oriented in focus

·CUSSION

The present study attempted to determine the status of Black science and engineering doctorate production from U.S. colleges and universities during the 1980s by pursuing two objectives. The first was to provide baseline information in the form of a national overview of African American doctorate production generally and specifically in the sciences and engineering. Analysis of the data revealed that African American females and males are underrepresented in the production of doctorates on both counts, and that it would take a tremendous increase in doctoral production to reach parity in either arena.

Efforts related to the second objective, that of determining the baccalaureate origins of African American doctorates, confirmed the findings of previous studies by Jay (1971), Pearson and Pearson (1985), and Thomas (1989). These studies showed that TBIs have been the leading educators of Black doctorates. The findings from the present study indicate that this is still the case. The vast majority of Black female and male doctorates were found to have their baccalaureate origins at TBIs and other less "prestigious" undergraduate colleges and universities. The data further confirm that obvious leaders exist among U.S. colleges and universities in the production of Black students who continue on to the doctoral degree. It is beyond the scope of this study to explain the impact of attending less prestigious undergraduate institutions on the process of graduate school recruitment and admission. As Duster (1976) notes, traditional meritocratic measures seem to privilege certain types of institutions and work to the detriment of others. However, because these institutions are in fact producing the majority of future African American doctorates, then, as Mickelson and Oliver (1991) suggest, scholars and policy makers might wish to reexamine their measures of "quality" and "prestige."

While a limited amount of research has been done on the graduate school experience of Black doctorates, it is well known that graduate school admissions and many merit-based scholarships, fellowships, and assistantships use the quality of the undergraduate institution as an important selection criteria. Not having the financial stability that these forms of aid provide can prolong the doctoral process and negatively affect Black doctoral recipients' future postdoctoral opportunities in the acquisition of additional aid, research experiences, and academic appointments. Additionally, professors tend to expect less of graduate students who attended less prestigious baccalaureate institutions.

Merton's (1968, 1977) concept of cumulative advantage provides a helpful conceptual handle to further our understanding of the impact of baccalaureate origins on later attainment and achievement. Cumulative advantage is essentially a scholarly interpretation of the secular adage "the rich get richer while the poor get poorer." In applying this concept, which he dubs the "Matthew Effect," to science production and mobility, Merton contends that the acquisition of opportunities and resources at an early point in one's career leads in turn to further opportunities, resources, and scholarly work as one moves through his or her career path. In other words, the place in the stratification system of education where the scholar starts out has much to do with where she or he will end up in that system. Thus, those who have their origins in high-prestige high schools, undergraduate, and graduate schools have a cumulative advantage and resultantly different career paths than those who have their origins in lower prestige institutions. The latter are presumed to have a cumulative disadvantage.

The results of the present study lead one to wonder how the educational experiences in elementary and secondary school affected opportunities and experiences of African American predoctoral students in undergraduate school. Moreover, what is the cumulative effect of attending less-prestigious and lower quality undergraduate and graduate schools on these students' later career opportunities? One might consider whether there is some thing unique about African American doctoral scholars that allows them to overcome the supposed cumulative disadvantage of attending less prestigious institutions. Future research might examine these students' coping mechanisms and strategies, along with other individual and institutional factors that positively or negatively affect their undergraduate, graduate, and postgraduate experiences.

This study identified traditionally Black institutions as producing a disproportionate number of African American students who continue on to attain doctorate degrees. With this in mind, Merton's (1973) construct of the "invisible college" might have research potential for increasing production of Black female and male doctorates. Merton defines the invisible college as a cluster of geographically dispersed scholars who engage in frequent scientific interaction with one another, who regard themselves as major reference individuals, and who see themselves collectively as a reference group. These small significant groups share the same field of study, set priorities for research, recruit and train students, communicate with one another, and monitor the changing structure of knowledge in their field. Perhaps by linking the concept of invisible colleges with these productive institutions, researchers can develop sociographic configurations of different individuals, laboratories, organizations, and institutions to examine the impact of these critical academic and social networks on the production of future African American science doctorates.

Role model theory hypothesizes that the more Blacks in high-status positions, the more likely Black students are to aspire and proceed to their own high-status occupations (Tidball, 1986). Therefore, increasing the number of African American faculty and peers at an institution should have a positive impact on future doctorate production (Blackwell, 1981, Malcom, 1990a, 1990b). The findings of the present study support this

notion. Therefore, research on the role of TBIs that are successful in the development of African American doctorates must continue, for it is clear that these institutions play a critical role in the education of Black students (Allen, Epps, & Haniff, 1991; Clark, 1985; Fleming, 1984; Garibaldi, 1984, 1991; Pearson, 1985; Pearson & Bechtel, 1989; Pearson & Pearson, 1985; Thomas, 1987, 1989, 1992). Accordingly, an even greater effort to support these institutions in the development and strengthening of additional programs, particularly in the sciences and engineering, are needed to ensure their survival and future success.

CONCLUSION

The present study continues a research tradition that contributes to our knowledge of African American doctorate production in the U.S. by providing a better picture of the relative distribution of Black females and males overall and in the science and engineering fields. Though Goodstein (1993) argues that there is not a shortage of science PhDs in the U.S., this study clearly shows that this is not the case for African Americans. By identifying those baccalaureate institutions that produce disproportionate numbers of students who continue on to the doctorate, the present study clears the path for future research that can closely examine these pockets of success. Additionally, future research might compare the findings from this study with data from other fields such as social science, the humanities, and education. Comparative studies of doctorate production among other racial/ ethnic and socioeconomic groups might also be conducted.

American scholars and educational policy makers should ask themselves two questions about the impact of the absence of any group from graduate education and the professions: (1) What would U.S. doctorate production be like today if Blacks and other minorities had been allowed to participate equally in higher education? and (2) what has U.S. doctorate production lost because of the exclusion of African American scholars? Answers to these questions will begin to unfold when this society makes a genuine commitment to breaking down barriers, abolishing policies of exclusion, and building on the strengths of Black students. This challenge is ongoing, and scholars and policy makers must commit themselves to meeting it. The data presented in this study can help policy makers as they look to the 21st century and develop ways to increase the pool of African Americans in academics and research generally and specifically in the sciences.

Unless otherwise noted, for the purposes of this article the terms "science" and "the sciences" will refer to the life, physical, and engineering ciences.

The baccalaureate origin is the baccalaureate institution of the doctorate recipient.

Traditionally Black institutions are those nonprofit, accredited colleges and universities in the United States that have at least 50% Black nrollment and that were established primarily to facilitate the education of African Americans (National Association for Equal Opportunity in ligher Education, 1990).

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Educational Effectiveness:

Academic, Social, and Labor Market Outcomes of African American Students that Attended HBCUs and African American Students that Attended Traditionally White Institutions

A Sample of Studies Showing Positive Impact of Attendance at HBCUs

Charles L. Outcalt and Thomas E. Skewes-Cox, "Involvement, Interaction, and Satisfaction: The Human Environment at HBCUs," The Review of Higher Education, Spring 2002, Volume 25, No. 3, pp. 331–347.

LaMont Flowers, "The Impact of College Racial Composition on African American Students' Academic and Social Gains Additional Evidence," Journal of College Student Development, May/June 2002, Vol. 41. No. 3, pp. 403–410.

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Jill M. Constantine, "The Effect of Attending Historically Black Colleges and Universities on Future Wages of Black Students," Industrial Labor Relations Review, Vol. 48, No. 3 (April 1995), pp. 531–546.

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Richard G. Ehrenberg and Donna S. Rothstein, "Do Historically Black Institutions of Higher Education Confer Unique Advantages on Black Students? An Initial Analysis,"[4] in Ronald G. Ehrenberg edited, *Choices and Consequences: Contemporary Policy Issues in Education,* ILR Press, Ithaca, New York, 1994, pp. 89–137.

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[4] Richard G. Ehrenberg and Donna S. Rothstein found that attendance at historically black institutions "did substantially increase [the] probability pf receiving a bachelor's degree within seven years. However, it had no apparent effect on .. had a significant impact on earning a bachelor's degree, but no effect on ... early career labor market success and on their probability of enrolling in postcollege graduate or professional schools." Richard G. Ehrenberg and Donna S. Rothstein, "Do Historically Black Institutions of Higher Education Confer Unique Advantages on Black Students? An Initial Analysis,"[4] in Ronald G. Ehrenberg edited, *Choices and Consequences· Contemporary Policy Issues in Education,* p. 131.

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Involvement, Interaction, and Satisfaction: The Human Environment at HBCUs

Charles L. Outcalt and Thomas E. Skewes-Cox

Recent court decisions and legislative actions have called into question the continued existence of historically Black colleges and universities (HBCUs) as institutions with the primary mission of serving the nation's African American community (*United States v. Fordice*, 1992). While these challenges to the unique character of HBCUs have taken many forms, a primary area of contention has been the racial/ethnic composition of HBCUs' student bodies. These schools are coming under increasing pressure to reconfigure their enrollment policies to include more non-African Americans (Mixon et al., 1995; St. John, 1998; St. John & Hossler, 1998). When

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one considers the mounting challenges to educational equity for African Americans and other students of color posed by changes in admissions policies in an ever-growing portion of the United States, including California, Washington, Florida, and those states affected by the *Hopwood v. Texas* (1996) decision, it seems likely that HBCUs will become ever more important sources of educational opportunity for African-American students. Thus, HBCUs will likely become more important at the very time they face increasing threats to their very existence and missions. A better understanding of the means by which these institutions achieve success with their student population becomes vital.

The higher education literature contains numerous studies attesting to the beneficial academic and professional effects of attending HBCUs for African Americans (Allen, 1992; Astin, 1975; Astin, Tsui, & Avalos, 1996; Bonous-Hammarth & Boatsman, 1996; Davis, 1991; Fleming, 1984; Roebuck & Murty, 1993). However, although research has demonstrated that, in general, student involvement is related strongly to student success, the literature does not contain many studies examining the relationship between student involvement and satisfaction for African American students at HBCUs. Similarly, educational research has not sufficiently addressed the complex relationship between institutional support for African Americans and these students' involvement and satisfaction. With this study, we seek to expand the understanding of the relationships between the HBCU institutional climate, African American student involvement, and their satisfaction with the college experience. Our conclusion discusses the implications of our findings within the current, fragile political environment for HBCUs.

IMPLICATIONS OF THE *FORDICE* CASE

The most significant recent legal case involving the future of HBCUs is *United States v. Fordice* (1992). The Supreme Court declared that Mississippi had not done enough to end segregation and ruled that several specific aspects of higher education must be scrutinized for vestiges of segregation, including admissions standards, educational program duplication, institutional mission assignments, and the continued operation of all eight Mississippi state universities (Mixon et al., 1995). Of particular concern to the Court was the "racial identifiability" of Mississippi's institutions of higher education. The Court held that states would not be in compliance with the Court's decision until they "eradicate policies and practices traceable to the prior *de jure* system that continue to foster segregation" (*United States v. Fordice*, 1992, p. 2892).

To date, no HBCUs have been closed as a result of the *Fordice* decision. However, second challenge to HBCUs—a shift in their historical charac-

ter and mission—stems from the portion of the *Fordice* decision requiring them to alter their admissions policies and mission statements to end racial and ethnic "segregation." As St. John (1998) notes, *Fordice* has placed a new emphasis on student choice at the expense of the pre-*Fordice* goals of developing HBCUs while removing traces of segregation.

THEORIES OF INVOLVEMENT AND HUMAN ECOLOGY

Alexander Astin's (1985) theory of student involvement provides the beginnings of a conceptual framework within which to understand the findings about involvement and interaction reported in the literature. According to Astin, student involvement leads to student success as students become engaged with and invest energy in their environment. Despite individual differences in the effects of involvement, Astin found consistently positive relationships between learning and academic involvement, between academic involvement and academic performance, and between peer group involvement and retention (Astin, 1993, p. 394). Astin found that almost all forms of student-to-student interaction and academic involvement lead to positive outcomes. While he did not focus explicitly on the relationship between involvement and satisfaction, his findings on the benefits of involvement indicate that involvement is linked to positive student outcomes in general, thus indicating the usefulness of further investigating the potential relationship between involvement and satisfaction.

Despite the usefulness of Astin's theory in understanding student involvement in general, it could be refined further to embrace the unique experience of African American students. The work of Bronfenbrenner (1979) can be useful in extending Astin's theory. Bronfenbrenner urges us to consider the *interaction* between individual and environment. In his words, "lying at the very core of an ecological orientation . . . is the concern with the progressive accommodation between a growing human organism and its immediate environment" (p. 13). He explains that this relationship must be considered in its wider social and physical context. We have attempted to bring Astin's emphasis on student involvement to bear on Bronfenbrenner's more general concepts of human ecology by devising the theory of *reciprocal engagement*.

This theory holds that students and their campuses exist in a relationship of mutual influence. Bronfenbrenner reminds us that environments must be studied as carefully as, and in tandem with, individuals. Because of the mutual nature of the student/campus relationship, studies of student experience will not be complete if they examine merely one side of this partnership, such as student involvement. Rather, an understanding of student experience must also include an examination of environmental factors, such as perceptions of the quality of interpersonal interactions and

other issues of campus climate. Bronfenbrenner's suggestion to focus on the interaction between students and their campus environments makes explicit what is too often buried in analyses of student/campus fit. Not only must students take active steps to become involved in their campuses, but campus communities must embrace their students in their diversity, particularity, and uniqueness. We have found our theory of reciprocal engagement useful in interpreting recent research on African American students' college experiences, and in framing our research and analyzing findings.

PRIOR RESEARCH ON HBCUs' UNIQUE ROLE

For more than thirty years, educational researchers have investigated the particular role played by HBCUs in educating African Americans. Analyzing data collected from more than 100,000 student surveys conducted in 1968 and again in 1972, Alexander Astin (1975) found that African American student isolation and alienation at predominantly White institutions (PWIs) might contribute to higher degrees of student success at HBCUs. His results have been substantiated by a host of researchers, beginning with Jacqueline Fleming, whose *Blacks in College: A Comparative Study of Students' Success in Black and White Institutions* (1984) remains foundational for those interested in African American student development, particularly as it varies among HBCUs and PWIs. Fleming's research, begun in 1977 and continuing over four years, surveyed 2,591 African Americans at HBCUs and PWIs and 388 White students at PWIs. Using quantitative and qualitative analyses, Fleming showed that African American students at HBCUs seemed to be both more comfortable and more successful in their HBCU environments. At HBCUs, they demonstrated higher academic achievement, greater satisfaction with their campus environment (including both academic and extracurricular activities), and better relationships with faculty than their counterparts at PWIs.

Several years after Fleming, Robert B. Davis (1991) used the National Study of Black College Students (NSBCS) to survey 888 African American students at HBCUs and 695 African American students at PWIs. Davis found significant differences in the ways African American students viewed their campuses and the means by which these campuses met their needs. More than twice as many African American students at HBCUs found that campus extracurricular activities reflected their interests (28% at HBCUs vs. 12% at PWIs), while significantly more African American students at PWIs reported that they "hardly ever" participated in campus activities (31% at PWIs vs. 23% at HBCUs). From these findings, Davis concluded that African Americans at HBCUs had benefited more from "social support networks" than their counterparts at PWIs.

The work of Fleming and Davis on the interaction between campus climate and African American student success has been extended by Walter Allen (1992). Allen used the NSBCS to survey 872 African American students at PWIs and 928 African American students at public HBCUs. Allen discovered that the greater success achieved by African American students at HBCUs might be attributable to a more hospitable environment at these institutions than at PWIs. In particular, African Americans at HBCUs were less likely to encounter overt racism, alienation, and isolation. Allen's research replicated Davis's conclusions regarding the supportive environment enjoyed by African Americans at HBCUs, as he found that African Americans who enjoy positive social support networks tended to have higher levels of satisfaction. Finally, Allen found that the proportion of African American students on campus had a positive effect on African American student satisfaction.

Bonous-Hammarth and Boatsman (1996) provide another study of the relationship between student experience and campus climate. Because their work is closely related to the current study, we will outline it in some detail. Bonous-Hammarth and Boatsman analyzed data from the Cooperative Institutional Research Program (CIRP), a nationwide study of full-time, first-time college freshmen administered by UCLA's Higher Education Research Institute and the American Council on Education. Using the 1985 Freshman Survey and its follow-ups, Bonous-Hammarth and Boatsman identified 1,144 African American students for their research. They found that African American students reported the lowest level of satisfaction with their education of all racial/ethnic groups surveyed. However, examining African American's reported satisfaction at HBCUs separately from PWIs shows a dramatic difference in satisfaction with the undergraduate institution: While only 65.4% of African Americans at PWIs would choose to re-enroll, 83.2% of African Americans at HBCUs would choose their undergraduate institution again. This percentage was higher than the greatest level of satisfaction reported by any ethnic group at PWIs.

After finding that African Americans at HBCUs were much more likely than their counterparts at PWIs to be satisfied with their undergraduate experience, Bonous-Hammarth and Boatsman (1996) used stepwise regression to investigate factors contributing to this difference in satisfaction. Replicating Allen's (1992) work, Bonous-Hammarth and Boatsman found that a high proportion of African Americans in the student body was a positive predictor of satisfaction for African American students at PWIs, although this proportion was not significant for students at HBCUs. Bonous-Hammarth and Boatsman's work demonstrates that, on a national level, African American students are more satisfied with their experience at HBCUs than their counterparts at PWIs. In addition, it suggests that the campus environment, as reflected in the diversity of an institution's student body, is related to this higher level of satisfaction.

The work of Alexander Astin, Lisa Tsui, and Juan Avalos (1996) provides another large-scale statistical perspective on this topic. These researchers, using the same data employed by Bonous-Hammarth and Boatsman, found that enrollment at an HBCU can enhance a student's chance of graduation when other factors such as academic preparation, institutional size, and institutional selectivity are held constant.

In summary, the higher education literature is unequivocal: African American students at HBCUs fare better and are more satisfied with their college experience than their peers at PWIs. While Astin's theory on involvement explains at least some of the benefits of HBCUs, our theory of reciprocal engagement offers a more powerful conceptual framework to explain the unique benefits of these institutions for African Americans.

The final two studies mentioned in our literature review not only expand our understanding of the role of HBCUs, but also point the way toward new research. Bonous-Hammarth and Boatsman's (1996) conclusion that African American students tend to be more satisfied with their environment at HBCUs, and the finding of Astin, Tsui, and Avalos (1996) that African Americans of similar backgrounds tend to be more successful than African American students at PWIs call for more detailed research on the nature and effect of the student/campus relationship for African American students at HBCUs and PWIs. With the current study, we hope to probe this relationship by pursuing two primary objectives:

1. To describe and analyze the student/campus relationship for African American students at HBCUs and comparable PWIs by investigating self-reported levels of involvement and satisfaction.

2. To isolate the particular role of HBCUs in African American student experience by determining whether enrollment at an HBCU adds to students' overall level of satisfaction with their college experience after statistically controlling for other relevant variables.

METHOD

Sample

Data in this study are drawn from two surveys, both administered through CIRP. Thus, in effect, these data form a more recent version of the information analyzed by Bonous-Hammarth and Boatsman (1996).[1] The data to which we had access contained responses from 15,367 of the 350,000-plus respondents to the 1993 Student Information Form (SIF), all of whom were first-time, full-time, first-year college students. These students were enrolled

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[1] We acknowledge with appreciation that our method is based partly on the work of Bonous-Hammarth & Boatsman (1996), although their work, unlike ours, did not focus particularly on involvement.

at over 100 institutions of higher education chosen for their representativeness of higher education as a whole in the United States. In 1997, the College Student Supplement (CSS) was mailed to 26,890 students selected from the total set of those who responded to the SIF, with preference to students attending institutions that participated in the 1995 Faculty Survey, also administered through CIRP. A response rate of 21.1% yielded 5,687 responses. As discussed below, these samples make it difficult to generalize our findings to all HBCUs; on the other hand, we believe the issues discussed here are of such importance that any information gleaned through this study will be useful for those interested in African American student satisfaction and HBCUs.

Identifying Comparable PWIs

We identified comparable PWIs by selecting only those schools with institutional characteristics roughly similar to the HBCUs under study. For example, we excluded two-year schools and research universities, since most HBCUs are four-year colleges. While these criteria do not match HBCUs and PWIs on many potentially relevant criteria, such as selectivity, geographical region, or type of control, we found it necessary to retain a broad classification to preserve sample size.

Describing Student Satisfaction and Involvement

After classifying HBCUs and identifying comparable PWIs, we used descriptive statistical procedures to meet our first research objective: to assess student involvement and satisfaction at the two types of schools we have identified, and to determine whether there are significant differences in these measures between the types of schools we have outlined above. These variables indicate factors that emerged from our literature review—particularly the work of Davis (1991), Allen (1992), and Bonous-Hammarth & Boatsman (1996)—as relevant to African American student involvement on and satisfaction with their campuses.

Identifying the Impact of Involvement on Success

To meet our second research objective, we employed logistic regression analysis. The use of this regression technique allowed us to isolate and analyze the effect of numerous student characteristics on the dependent variable—students' self-reported overall level of satisfaction as measured four years after first enrolling. By using logistic regression, we were able to isolate the effect of attending an HBCU on student satisfaction while we assessed the predictive power of involvement and satisfaction measures on overall student satisfaction at HBCUs and PWIs. The dependent variable for this regression was a modified form of the overall student satisfaction measure on the CSS. To make possible the use of this variable in a logistic

regression equation, we converted this continuous variable into a dichotomous measure. (See below for more details on this procedure.)

Limitations

The impreciseness of the survey questions that measure involvement limited our ability to understand the precise forms such involvement might have taken. While these questions were related directly to the involvement factors at the heart of this study, it would have been more useful to have had access to measures of the degree, rather than the mere fact of, involvement with the various academic and extracurricular activities under study. In addition, as noted below, our data contained responses from only seven HBCUs, which limits our ability to generalize from the results.

Results / Discussion

From matching HBCUs and their comparable PWIs, we derived 443 responses from African American students attending the seven HBCUs participating in the CSS and 443 responses from African American students attending the comparable 114 PWIs.

African American Student Involvement

Table 1 shows means scores for selected academic and extracurricular involvement variables for students at each of the types of schools considered in this study. The first set of variables had three possible responses: "not at all," "occasionally," and "frequently." The second set of variables was part of a list in which respondents were asked to check all items that applied. All of the variables that had a significant Pearson chi square ($p < 0.05$) are listed. In addition, the two variables listed in bold were the two measures included in the regression equation described below.

As Table 1 demonstrates, African American students at HBCUs and comparable PWIs tended to show different levels of extracurricular and academic involvement, with African Americans at HBCUs demonstrating higher levels of academic involvement on several measures. For example, more African American students at HBCUs tutored other students, more completed homework on time, and fewer felt bored in class. Fewer HBCU students participated in intramural sports, a finding that might be related to the continued use of athletic recruiting as a pathway to PWIs for African Americans. Interestingly, fewer HBCU students tended to attend racial/cultural workshops, take ethnic studies courses, or belong to racial/cultural organizations than PWI students. We interpret this finding as suggesting that African American students at HBCUs found less need for these types of activities, because the overall climate at HBCUs was more supportive than that at PWIs. This conclusion is bolstered by the greater levels of satisfaction with campus racial/ethnic climates revealed in Table 2.

Table 1

Academic and Extracurricular Involvement Measures for HBCUs and PWIs

	HBCU	PWI	Chi Square p-value
Academic Involvement			
(% reporting at least occasional participation)			
Took interdisciplinary courses	57.0	77.1	0.00
Worked on group project in class	97.3	97.7	0.01
Been guest in professor's home	25.0	45.8	0.00
Didn't complete homework on time	61.6	69.8	0.01
Felt bored in class	91.9	97.7	0.00
Did extra work for course	86.2	77.7	0.01
Challenged professor's ideas in class.	79.2	82.7	0.31
% indicating yes			
Taken developmental courses	28.2	12.4	0.00
Taken ethnic studies courses	64.8	74.3	0.02
Taken women's studies courses	16.5	24.4	0.04
Tutored another student	55.1	47.6	0.03
Took a leave of absence	14.0	8.6	0.01
Withdrew from school	11.3	4.1	0.00
Transferred to another college	19.0	6.3	0.00
Extracurricular Involvement			
% reporting at least occasional participation			
Participated in intramural sports	36.2	41.3	0.17
% indicating yes			
Had part-time job on campus	41.3	63.2	0.00
Had part-time job off campus	65.2	56.2	0.01
Worked full-time while student	17.6	10.4	0.02
Attended racial/cultural awareness workshop	47.4	61.2	0.00
In racial/ethnic student organization	38.6	58.9	0.00
In intercollegiate football / basketball	8.1	12.6	0.03

African American Student Satisfaction

As Table 2 shows, African American students at both HBCUs and PWIs tended to express strikingly different levels of satisfaction on a wide range of measures. This table shows clearly that African American students tend to be more satisfied with their experiences at HBCUs than at PWIs: Over 80% of African American students reported that they were "satisfied" or

TABLE 2

SATISFACTION MEASURES FOR HBCUs AND PWIs

Percentage reporting "Satisfied" or "Very Satisfied"	HBCU	PWI	Chi Square p-value
Ethnic / racial diversity of faculty	65.0	24.2	0.00
Ethnic / racial diversity of students	65.9	35.6	0.00
Sense of community on campus	57.6	44.6	0.00
Leadership opportunities	69.1	57.3	0.80
Interaction with other students	87.2	78.3	0.00
Overall satisfaction (dependent variable)	80.4	73.9	0.00
Courses in major	83.7	82.8	0.01
Ability to find faculty / staff	64.0	68.9	0.05
Campus health services	37.2	42.8	0.00
Overall quality of instruction	74.5	80.3	0.23
Job placement services	35.1	42.1	0.00
Career counseling	48.4	56.0	0.00
Library facilities	44.0	51.8	0.01
Financial aid services	36.0	45.3	0.00
Opportunity for community service	59.3	70.3	0.00
Lab facilities	41.7	55.1	0.00
Contact with faculty and administration	61.2	76.3	0.00
Student housing	26.3	42.9	0.00

"very satisfied" with their experience at HBCUs, in contrast to 74% of their PWI counterparts. In satisfaction measures related to racial/ethnic diversity at the school, African American students rated HBCUs higher than PWIs. For example, 65% of HBCU students reported that they were "satisfied" or "very satisfied" with the ethnic/racial diversity of their faculty, compared with only 24% of African American students at PWIs. Similarly, 58% of HBCU students reported being "satisfied" or "very satisfied" with the sense of community on their campuses, compared with 45% of their counterparts at PWIs. However, it must be noted that HBCU students were less likely to be satisfied according to several student service measures, including housing, financial aid, health care, community service opportunities, and career placement. As we interpret these individual measures of dissatisfaction with some HBCU features, they highlight the importance of the consistently higher measures of overall satisfaction students express toward HBCUs. If students were dissatisfied with these measures of student support services, yet remained more satisfied with their overall experience at HBC● hen the factors that produced greater overall satisfaction with HBCUs are powerful indeed.

Taken together, our findings replicate the research discussed above, which found that HBCUs tend to provide a more satisfying experience and supportive climate for their African American students. In addition, these results support our speculations on the importance of the mutual relationship between campuses and students.

General Discussion of Regression Results

The logistic regression equation we developed for students at HBCUs and PWIs allowed us to isolate and analyze the involvement and satisfaction variables that were most useful in predicting overall student satisfaction at HBCUs and comparable PWIs. Taking guidance from both our conceptual framework and the literature, we introduced a range of independent variables into the equation, including:

- Demographic characteristics, such as sex, parental education, and family income.
- Selected academic and extracurricular involvement variables, including measures of involvement, such as group study, faculty interaction, doing extra credit work, and interactions outside the classroom; and participation in such student activities as clubs, organizations, sports, and tutoring.
- A range of 26 satisfaction measures designed to elicit student reactions to a variety of aspects of campus life, from satisfaction with particular majors and class size to satisfaction with the ethnic diversity of the faculty and student body.
- Academic performance measures, such as college GPA.
- Degree aspirations at the time of college entrance.

We took the demographic variables and degree aspirations from the 1993 SIF, and the measures of involvement, satisfaction, and performance from the 1997 CSS. After controlling for demographic, involvement, and satisfaction measures, we introduced a dichotomous variable indicating enrollment at an HBCU at the time of the SIF. (See Astin, 1993, for a discussion of variables used in the CIRP surveys, including the SIF and CSS.)

Of primary interest to us were the variables related to involvement and satisfaction, since we hypothesized that introducing these measures into the equation as dependent variables would allow us to isolate the effect of these indicators on the dependent variable—overall satisfaction. Using attendance at an HBCU as a dichotomous measure would allow us to measure the particular effect of being a student at these institutions. Finally, other measures, including demographic variables, academic indicators, and educational aspirations were introduced to check for any differential levels of satisfaction among the demographic groups.

As mentioned above, the dependent variable was a dichotomous measure of satisfaction. We rated students who described thems●● as "satisfied" or "very satisfied" with their overall undergraduate ●●rience as

"satisfied" and assigned them a value of 1. We assigned 0 to all others (students who could not rate their undergraduate experience or were dissatisfied or neutral about it).

We introduced the independent variables in groups, selecting them by a stepwise regression procedure. After we had identified all of the relevant variables, we introduced the dichotomous variable indicating attendance at an HBCU. With the exception of college GPA, we entered all of the independent variables as categorical variables. This procedure was necessary for satisfaction measures because a possible response was "can't rate." Further, treating these variables as categorical was desirable for the other measures because it did not require a linear interpretation of the scale of the variables, as coded.

Table 3 displays the variables included in the final logistic regression, along with the Wald statistics, degrees of freedom, and the significance of the contribution of the variables. We report the total model chi-square as well as the classification table for the model, which shows that the model accurately predicts the dichotomous satisfaction level of 85% of the sample. We entered the categorical variables using a series of dummy variables (deviation coding) with the number of dummy variables equal to one less than the number of categories for each variable. It was not surprising that many of the satisfaction variables entered the analysis, since overall satisfaction is related to the subscales of satisfaction as measured by each of the individual measures.

Role of Involvement

The results presented in Table 3 tend to replicate Astin's conclusions on the importance of involvement, as well as previous research on African American experience in HBCUs and PWIs. Some direct measures of involvement, such as participation in internships, predict overall satisfaction. However, indicators of satisfaction with conditions related to *interaction* with fellow students and faculty/administrators, rather than mere *involvement* in campus activities, form the majority of predictors of overall satisfaction. As Table 2 showed, African American students at HBCUs tended to be more satisfied with the sense of community, student-to-student interaction, and the availability of leadership opportunities than their counterparts at comparable PWIs. In Table 3, these measures of satisfaction with interpersonal factors are key predictors of overall satisfaction with the college experience.

A primary result of this study is the coefficient for HBCU enrollment that is produced by the logistic regression procedure. In logistic regression, the coefficients indicate the relative change in the log (odds) ratio based on a unit change in the independent variables. In this analysis the regression coefficient for HBCU enrollment was 0.655. A somewhat more interpret-

TABLE 3

LOGISTIC REGRESSION PREDICTING 1997 REPORT OF OVERALL SATISFACTION FOR AFRICAN AMERICAN STUDENTS AT HBCUs AND PWIs

N = 855

Variable	Wald	Degrees of Freedom	Sig
Satisfaction: quality of instruction	27.38	4	0.000
Satisfaction: sense of community on campus	18.07	4	0.001
Satisfaction: contact with faculty and administration	13.93	4	0.008
Satisfaction: interaction with other students	27.54	4	0.000
Satisfaction: leadership opportunities	25.43	4	0.000
Participation in internship program	5.19	1	0.023
Challenged professor's idea in class (frequency)	6.35	2	0.042
College GPA	16.59	1	0.000
Enrolled at an HBCU	7.54	1	0.006

Model chi square	345.6	
Degrees of freedom	25	

Classification Table for Dependent Variable

	Predicted		Percent Correct
Observed	0	1	
0	111	83	57.2
1	42	619	93.6
Overall			85.4

able form of the coefficient is the exp (0.655) = 1.93, which indicates the change in the relative odds of the dependent variable. This value of 1.93 indicates that, over and above the influence of all of the other variables in the regression on overall satisfaction, attending an HBCU means that the odds of being satisfied are nearly doubled. In other words, attending an HBCU retains a positive effect on satisfaction, even after those effects of environmental experience have been taken into account. We term this unique advantage of HBCUs for satisfaction their multiplier effect.

The logistic regression equation confirms earlier studies of the positive effect of HBCUs for their African American students while further expanding our understanding of the benefits of these schools. It demonstrates that, even after controlling for relevant variables such as involvement, individual satisfaction, and academic performance, attending an HBCU almost doubles an undergraduate's chances of being satisfied with his or her college experience. We conclude further that HBCUs, because of their more supportive climate, provide greater opportunities for involvement than PWIs.

In addition to lending support to Astin's general theory of involvement in the particular situation encountered by African American students at HBCUs and PWIs, the results of this study—especially those on particular types of satisfaction—replicate the work of Fleming (1984), Davis (1991), Allen (1992) and Bonous-Hammarth and Boatsman (1996), each of whom found that African American students at HBCUs enjoyed more hospitable educational conditions. However, our results do not merely confirm the work of prior researchers. In addition to showing that African American students are more involved at HBCUs than at PWIs and that they are more satisfied with their experience at HBCUs, our results suggest that the most important elements in HBCUs' unique advantages are related to students' experience with their *human environment*. This finding underscores Davis's (1991) conclusions on the importance of social support networks for campus success. This finding clearly supports our theory of reciprocal engagement, which holds that student involvement and campus environmental conditions coexist in a mutually reciprocal relationship.

DIRECTIONS FOR FUTURE RESEARCH

The research results presented here indicate several possible directions for further study. One could undertake a longitudinal/historical analysis, possibly using CIRP data from the 1960s to the present, to examine long-term changes in the relationships between involvement, engagement, and satisfaction. What, for example, would be the levels of satisfaction and involvement over time at HBCUs that have experienced a decline in the proportion of African Americans in their student body? Evelyn (1997) reports that some, such as Bluefield State College in West Virginia, now have a student body that is less than 10% African American.

However, longitudinal analyses would be more significant if they were contextualized within the changing role of HBCUs in society. The challenge to these institutions and their historical mission posed by the outcome of the Fordice (1992) case, as well as the likely increasing importance of these colleges for African Americans in the wake of affirmative action retrenchments, make it especially important that we understand exactly how HBCUs ● ate beneficial environments for their African American students.

Longitudinal analyses could likewise address a key question deserving further study: What is the relationship between the size of the African American population on a campus and the multiplier effect that we were able to measure with our small sample of HBCUs? Such studies could address the difference between the relative and absolute sizes of a campus's African American student body. What is more important for creating a supportive environment—a certain minimum number of African American students, or a minimum proportion? Must the size of the racial/ethnic community be readily apparent during daily interactions or is knowledge of its presence sufficient?

Additional further studies could probe the nature of social support networks. Research could focus on the origins of these support networks, as well as the means by which students enter them. It would be very useful to understand more about how institutional policies could foster the growth of these networks. Qualitative analyses on a smaller but more personal scale may be useful for discerning in more detail the role involvement and engagement have in fostering positive student experiences at HBCUs.

Finally, while our study focused on addressed satisfaction, it would be helpful to know if the multiplier effect we identified is related to academic achievement during college and post-college occupational outcomes as well.

IMPLICATIONS FOR POLICY

Our research suggests that the multiplier effect we identified should be considered in two primary arenas. The first is in HBCUs, which have created this effect by their remarkable success in providing supportive environments in which African American students can achieve academic and personal success. The second is within any campus community that hopes to provide a rewarding and satisfying college experience for African American students.

According to both the educational literature and our results, HBCUs succeed in educating their African American students largely because they provide a climate in which African American students feel welcome, supported, and encouraged to take part in the social and academic life of the campus. However, the *Fordice* case mandates that these institutions eradicate those very factors that tend to create this environment—their "racial identifiability" and their particular appeal for African Americans. Our results suggest that success in reducing the "racial identifiability" of HBCUs will come at the expense of African American students. Ironically, challenges to HBCUs, such as the *Fordice* case, come at precisely the moment when African Americans face systematic exclusion from prestigious public universities in more and more states. While we do not suggest continued segregation within any type of educational institution, we believe that a revisiting or ●erpreting of *Fordice* is essential so that HBCUs can continue their hist●al mission of serving the otherwise underserved African A ▪

If HBCUs serve fewer and fewer African American students as a proportion of their entire student body, they must be careful to preserve their unique and supportive environments for these students. For example, academic offerings that highlight issues of concern to African Americans (such as African American culture in curriculum); targeted counseling, and "themed" residences for African Americans could promote the type of reciprocal engagement that fosters African American student success. This continued emphasis on the unique experience and needs of African American students would be consistent with St. John and Hossler's (1998) suggestion that HBCUs in the post-*Fordice* environment pursue "dual missions" of supporting both their historical African American students and those non-African Americans attending HBCUs in larger numbers.

It is important that PWIs also learn from the success of HBCUs, especially given recent changes in admissions policies. Contemporary challenges to the historic characteristics of HBCUs have been compounded by affirmative action backlash and retrenchment at a growing number of public institutions. As a result, the size of the underrepresented minority community has already begun to decline on many campuses (Haworth, 1998). With these declines, public colleges and universities must address the question of how well they are serving the minority groups on their campuses. Are institutional mechanisms functioning to help provide the social support networks that are so useful for African Americans at HBCUs? Are institutions taking active steps to promote interaction and involvement on the part of all of their students, including African Americans? Just as PWIs can model the success of HBCUs in promoting supportive environments, so could they use many of the academic and cocurricular steps we suggest above to further enhance the educational experience of African Americans. Such measures would encourage exactly the reciprocal engagement that we have demonstrated to be significant in the unique environments offered by HBCUs to their African American students.

In conclusion, the relationship between our results and the higher education climate faced by African Americans today is troubling. HBCUs seem poised to become even more important in the educational lives of African Americans as the elimination of affirmative action encourages more African Americans to seek campuses with substantial and supportive African American communities. Simultaneously, the *Fordice* decision (1992) challenges these institutions' existence and ability to fulfill their historical missions at precisely the point in recent history at which they may be most needed. The long and erratic march of progress in providing equality of educational opportunity for African Americans has not merely slowed but indeed could be reversed. Given recent threats to educational access, it is more important than ever to preserve institutional supportiveness for African Americans in higher education.

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The Impact of College Racial Composition on African American Students' Academic and Social Gains: Additional Evidence

Lamont A. Flowers

In this study of African American students from 207 postsecondary institutions, employing cross-sectional data collected over a 10-year period, self-report data from the College Student Experiences Questionnaire (CSEQ) were used to estimate the impact of attending a historically Black college or university (vs. a predominantly White institution) on social and academic outcomes in college. The findings of this study extend previous research by suggesting that even in the presence of important statistical controls, attendance at a historically Black college or university significantly enhances the academic and social growth of African American students. This finding held for self-reported measures of gains in understanding the arts and humanities, gains in personal and social development, gains in understanding science and technology, and gains in intellectual and writing skills.

Over the years, a considerable amount of research has focused on the effects of college racial composition on learning outcomes (Allen 1987, 1991, 1992; Bohr, Pascarella, Nora, & Terenzini, 1995; Fleming, 1984; Flowers & Pascarella, 1999; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996). To be sure, this body of research is consistent and suggests that African American students attending historically Black colleges and universities (HBCUs) accrue significantly greater learning gains than their peers attending Predominantly White Institutions (PWIs) do. It should also be noted that this finding has shown to be consistent despite the distinct methods utilized to operationalize cognitive development and academic growth—standardized measures of learning (Fleming, 1984; Flowers & Pascarella, 1999; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996) and self-report measures of learning (DeSousa & Kuh, 1996).

The present study directly extends the work of DeSousa and Kuh (1996) who found that attending a HBCU (vs. a PWI) resulted in greater academic and social gains for African American students. While the DeSousa and Kuh study is important and significantly contributes to our understanding of the impact of college racial composition on students' cognitive and social development in college, the present study extends their study by addressing three important considerations. First, their institutional sample included only one HBCU and one PWI. Second, their study included data from one year and thus did not benefit from multiple years of data collection. Third, their investigation did not introduce statistical controls for salient variables known to influence college outcomes. To address those important issues, the purpose of the present study was

to further investigate the relative academic and non-academic impact of college racial composition on African American students while statistically controlling for the influence of intervening variables using scores on self-report measures of academic and social gains collected over a ten-year period from 207 institutions.

METHODOLOGY

Conceptual Framework

The conceptual framework for this study is based on numerous investigations of research on student development. One line of this research suggests that student background factors and institutional characteristics mediate the effects of college on student growth and development (Pascarella & Terenzini, 1991). As such, the conceptual framework in this study is based, in part, on the notion that precollege and institutional characteristics represent an important predictor of cognitive and affective development in college. Another line of research suggests that student's academic and non-academic experiences in college influence student development in college (Astin, 1977; Astin, 1993; Pascarella & Terenzini, 1991; Terenzini & Wright, 1987). Thus, students' academic experiences (e.g., college major, hours spent studying, effort spent engaging in academic pursuits) are included in the conceptual model of the current study as a proxy for student involvement. Variables measuring non-academic experiences are also included in the model (e.g., campus residence, hours worked per week, participation in clubs and organizations) because of their impact on student learning in college (Pascarella & Terenzini, 1991; Terenzini, Pascarella, & Blimling, 1996; Terenzini, Springer, Pascarella, & Nora, 1995).

Data Source

The College Student Experiences Questionnaire (CSEQ) is the primary data source for this study (Kuh, Vesper, Connolly, & Pace, 1997; Pace, 1984). The CSEQ has been used by hundreds of colleges and universities to assess how students use their university environment to accomplish their goals and achieve academic success in college (Kuh, Vesper, Connolly, & Pace, 1997; Palomba & Banta, 1999). The CSEQ is a versatile assessment device because it obtains student data along four dimensions: (a) student background and demographic characteristics, (b) amount of student effort expended on 14 activities in college (e.g., library experiences, experiences with faculty, participation in clubs and organizations), (c) student perceptions of the institutional environment, and (d) student progress made in college in terms of cognitive growth and personal development (Decoster, 1989; McCammon, 1985). The CSEQ has had a long tradition of use in higher education research and in achieving the standards required by the criteria of reliability and validity (Brown, 1985; Kuh, Vesper, Connolly, & Pace, 1997; Miller, 1985; Pace, 1984, 1996). Accordingly, the CSEQ is a useful self-report instrument for institutions seeking data concerning how students perceive their college experience and how students perceive that their college experience is helping them to achieve academic success.

PARTICIPANTS

Because the study focused on the impact of attending an HBCU on African American students, the sample analyzed consisted of those African American students in the 207 postsecondary institutions who participated in the CSEQ data collection during

1990-2000. Data from other students were not used. Thus, analyses are based on: 7,835 African American students and included 5,072 women and 2,763 men. Of the 7,835 African American students, 1,385 African American students attended 1 of the 11 HBCUs in the institutional sample and 6,450 African American students attended 1 of the 196 PWIs included in the institutional sample. The student sample was comprised of approximately 40% freshmen, 22% sophomores, 17% juniors, and 21% seniors. Of the 207 postsecondary institutions included in the institutional sample there were: 47 Doctoral/Research Universities– Extensive, 18 Doctoral/Research Univer- sities—Intensive, 68 Master's Colleges and Universities I, 11 Master's Colleges and Universities II, 25 Baccalaureate Colleges– Liberal Arts, 24 Baccalaureate Colleges– General, 7 Associate's Colleges, and 7 Specialized Institutions based on the Carnegie Foundation for the Advancement of Teaching (2000).

VARIABLES
Dependent Variables

As stated earlier, the purpose of the study was to assess the impact of college racial composition on academic and social gains in college. As a proxy for academic and social gains in college, using previous research as a guide (Kuh, 1991; Mackay & Kuh, 1994; Whitt, Edison, Pascarella, Nora, & Terenzini, 1999), the study employed five dependent variables from the CSEQ. The measures were self-reported gains in understanding the arts and humanities, gains in personal and social development, gains in understanding science and technology, gains in intellectual and writing skills, and gains in vocational preparation. The gains in understanding the

arts and humanities scale assessed students' perceptions of how much they have gained during college in understanding literature, philosophy, and the arts (e.g., "developing an understanding and enjoyment of art, music, and drama" and "broadening your acquaintance and enjoyment of literature"). The gains in personal and social development scale assessed students' perceptions of how much they have progressed in college in understanding oneself and others (e.g., "developing your own values and ethical standards" and "understanding other people and the ability to get along with different kinds of people"). The gains in understanding science and technology scale assessed the extent to which students have progressed during college in understanding science and technology (e.g., "understanding the nature of science" and "understanding new scientific and technical developments"). The gains in intellectual and writing skills scale assessed students' perceptions on how much they have gained during college in communicating ideas in written form and thinking skills (e.g., "writing clearly and effectively" and "ability to think analytically and logically"). The gains in vocational preparation scale assessed students' perceptions on how much they have progressed in developing for a career (e.g., "gaining a broad general education about different fields of knowledge" and "gaining a range of information that may be relevant to a career"). Each gains scale has a response set comprised of 4-likert type scale choices: *very much, quite a bit, some,* and *very little.* Higher scores indicate higher progress made in each area.

Independent Variables

Four sets of independent variables were developed according to the conceptual framework of the study. The first set of

TABLE 1.

Effects of Attending a Historically Black College or University on African American Students' Academic and Social Gains[a,b]

Outcome Variables	β	R^2
College Student Experiences Questionnaire Gains in Understanding the Arts and Humanities	.288* (.035)	.31*
College Student Experiences Questionnaire Gains in Personal and Social Development	.303* (.034)	.25*
College Student Experiences Questionnaire Gains in Understanding Science and Technology	.448* (.068)	.17*
College Student Experiences Questionnaire Gains in Intellectual and Writing Skills	.401* (.054)	.28*
College Student Experiences Questionnaire Gains in Vocational Preparation	.071 (.012)	.30*

[a] Top number is the metric regression coefficient, number in parentheses is the standardized regression coefficient.

[b] Controlling for: age; sex; socioeconomic status; environmental emphasis on the development of academic, scholarly, and intellectual qualities; environmental emphasis on the development of aesthetic, expressive, and creative qualities; environmental emphasis on being critical, evaluative, and analytical; environmental emphasis on the development of vocational and occupational competence; year in school; enrollment status; hours per week spent studying; grade point average; college major; course learning scale; campus residence; hours spent working per week; clubs and organization scale; student acquaintances scale.

*$p < .01$.

independent variables was comprised of students' precollege characteristics and background traits: age, sex, and socio-economic status. The second set of variables consisted of characteristics of the institution: attends a HBCU—the independent variable of interest; four individual-level variables of students' perceptions of the institutional environment were also used in the analysis: students' perceptions of the extent to which the institution emphasized (a) development of academic, scholarly, and intellectual qualities, (b) development of aesthetic, expressive, and creative qualities, (c) development of critical, evaluative, and analytical thinking skills, and (d) development of vocational and occupational competence. Students' academic experiences constituted

the third set of independent variables: year in school, enrollment status, hours per week spent studying, grade point average, college major, and orientations toward learning. Students' social experiences constituted the fourth set of independent variables: campus residence, participation in clubs and organizations, and experiences with other students. Detailed compositions of all independent and dependent measures, along with appropriate psychometric characteristics, are provided in several publications (Arnold, Kuh, Vesper, Schuh, 1993; Bauer, 1995; Kuh, 1991; Kuh & Hu. 2001; Kuh, Vesper, & Pace, 1997; Kuh. Vesper, Connolly, & Pace, 1997; Mackay & Kuh, 1994; Watson & Kuh, 1996; Whitt, Edison, & Pascarella, 1999, Whitt, Edison, & Pascarella. 2001).

Analytical Procedures

Each dependent variable was regressed on the dummy variable indicating HBCU attendance (coded: 1 = attends a HBCU, 0 = attends a PWI), while applying statistical controls for the effects of all other variables (Pedhazur, 1982). Because the large sample size increased statistical power and increased the likelihood of making a Type I error (rejecting the null hypothesis when it is true), results are reported significant at $p < .01$ (Hays, 1994). Table 1 summarizes the direct effects of attending a HBCU (versus a PWI) on African American students' academic and social gains.

RESULTS

In the presence of statistical controls for age, sex, socioeconomic status, perceptions of the institutional environment, and academic and social experiences in college, attending a HBCU had significantly positive direct effects on self-reported gains in understanding the arts and humanities, gains in personal and social development, gains in understanding science and technology, and gains in intellectual and writing skills. Using the ratio of the metric regression coefficients from Table 1 to the respective pooled standard deviations of the outcome measures as a measure of effect size or practical significance (Hays, 1994), these results translated into total advantages for HBCU attendance of .09 of a standard deviation in gains in understanding the arts and humanities, .09 of a standard deviation in gains in personal and social development, .18 of a standard deviation in gains in understanding science and technology, and .14 of a standard deviation in gains in intellectual and writing skills. Converting these effect size values to percentile points under the normal curve this converted to a 4.0, 4.0, 7.0, and 6.0 percentile point advantage accruing to African American students attending HBCUs in understanding the arts and humanities, personal and social development, understanding science and technology, and intellectual and writing skills, respectively.

DISCUSSION

Overall, the evidence from the present study suggests that learning outcomes are enhanced for African American students at HBCUs. Specifically, the major finding of this study, suggested by the CSEQ data analysis and consistent with other research (e.g., Allen, 1987; Flowers & Pascarella, 1999, DeSousa & Kuh, 1996; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996), is that attendance at an HBCU leads to significantly higher self-reported academic and social gains for African American students. To understand why African American students who attend HBCUs accrue greater gains in college over and above that of their African American peers at PWIs, another line of research has considered how pedagogical issues such as teacher effectiveness and student-faculty interaction influence learning outcomes for African American students in college. For example, Newby (1982) surveyed faculty members at HBCUs in the social sciences to identify the most salient goals of faculty members at HBCUs and found that most HBCU faculty members considered teaching to be one of their most important concerns. In addition, Newby found that conducting research was one of the least important goals of HBCU faculty members. In light of these findings, Newby asserted:

The fact that most social science faculty members view the development of the ability to pursue research as the least important goal of their institutions provides further evidence that pre-dominantly black four-year colleges and universities are essentially· teaching institutions. (p. 55)

Fleming (1984), in her landmark study, found that faculty had infrequent interactions with African American students attending PWIs. Using the work of Fleming as a conceptual foundation, Wasson (1990) interviewed African American students to identify perceptions regarding effective teaching at PWIs. Wasson discovered that African· American students perceived the faculty as unresponsive and unwilling to support their academic development. Taken as whole, this literature may provide some potential answers for the effects found in this study by suggesting that African American students at HBCUs may produce greater learning gains because African American students at HBCUs receive more support and encouragement than their African American counterparts receive at PWIs. Clearly, the data analysis in this study does not enable the researcher to provide definite explana-tions concerning the outcomes of the study; this is clearly a limitation of the study. However, this study does seem to support Watson (1998) who noted:

> The positive attributes of HBCUs have a positive impact on the overall devel-opment of Black students. Black students show stronger intellectual confidence and a greater feeling of success and satisfaction with academic life than Blacks attending PWIs. (p. 81)

Implications for Future Research

Results presented in this paper, in com-bination with other research evidence on the impact of college racial composition, suggest that HBCUs seem to impart positive gains in knowledge and personal development to African American students in college. This finding held even after statistically controlling for the influence of students' demographic characteristics, institutional characteristics, and students' academic and nonacademic experiences in college. Additional research is needed that compares intellectual and social gains for African American students at HBCUs and PWIs by institutional type (e.g., public institutions versus private institutions) to determine if significant differences exist by institutional type. To be sure, additional qualitative research is needed in this area to better understand how African American students attending HBCUs make significantly larger learning gains than their peers at PWIs (Flowers & Pascarella, 1999). Specifically, to gain a better understanding of specific mechanisms and/or techniques used by administrators, faculty, and student personnel at HBCUs that are effective in producing positive gains, additional research efforts should consider studying African American students that have attended both HBCUs and PWIs. This line of research might then enable student affairs pro-fessionals at PWIs to begin to understand the potential programmatic initiatives that could be implemented on their campus to reproduce or replicate programs or policies at HBCUs that enhance African American students' academic and social gains in college. Since more African American students attend PWIs than HBCUs (Carter & Wilson, 1996), this important line of research is greatly needed and may provide additional insights for practitioners and policy makers interested in enhancing cognitive and personal develop-ment for African American students in college.

Research in Brief

Limitations of the Study

This study contains several limitations. First, given the fact that institutions were not selected randomly for inclusion in the institutional sample, the generalizability of the results to all colleges and universities is cautioned. Second, the student sample was comprised of volunteers. Thus, it is possible that the interaction of self-selection and treatment significantly reduced the generalizability of the findings (Pascarella & Terenzini, 1991). Third, since the study did not utilize statistical controls for pre-test self-report measures of the dependent variables, the overall level of internal validity was greatly reduced (Pascarella, 2001).

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The Color of Success: African-American College Student Outcomes at Predominantly White and Historically Black Public Colleges and Universities

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Black students' participation in higher education has experienced periods of growth and decline. The recent resurgence and proliferation of racial incidents on college campuses, coupled with a floundering economy, signals a need to place this issue at the forefront of our educational agenda once again. In this article, Walter R. Allen presents the results of a quantitative study on the differences in the college experience between Black undergraduates who attended historically Black colleges and universities and those who attended predominantly White colleges and universities. Building on the results of a number of related studies and analyzing data from the National Study on Black College Students, Allen further examines the effects of key predictors on college outcomes among these two groups of students. He thus sets the stage for some provocative conclusions, with implications that extend beyond the boundaries of academia.

During the 1960s, a watershed decade in U.S. history, our society responded strongly to the civil rights movement, making aggressive, widespread efforts to address many of the wrongs imposed on African Americans for centuries. Increased Black access to higher education was seen as one major solution to the problem of racial inequality; thus the decade witnessed the beginning of dramatic increases in the number of African-American students attending predominantly White colleges and universities. This response by institutions of higher learning to the civil rights movement's push for Black equality was abetted by unusually favorable conditions within higher education: public support for higher education was strong, and colleges and universities were experiencing a period of ongoing expansion.

Today, three decades later, both the country's mood regarding racial issues and the state of higher education have changed. The national moral response to Black demands for equality has been tempered by ambivalence; for example, Schuman, Steeh, and Bobo (1985) demonstrate a national trend of declining support among Whites for race-targeted social policies and programs. Persistent problems associated with downturns in the U.S. economy represent another negative influence. In higher education, a period of boundless expansion and optimism has moved into one of retrenchment and financial constraints, which is reflected in a dilution of higher education's commitment to Blacks and other minorities. African-American faculty and administrators still comprise only a minute proportion of the tenured and senior staff in White colleges and universities, and enrollment of Black students in four-year institutions has fallen short of anticipated goals, declining from an all-time high in 1980 of 926,909 to a low of 839,071 in 1984 (Deskins, 1991). In addition, studies of African-American students suggest that many have negative, anomic experiences in White institutions and that they suffer lower achievement and higher attrition than White students (Allen, Epps, & Haniff, 1991; Nettles, 1988).

Higher education's complacency on these issues has been shaken recently by the outbreak of ugly racial incidents on a number of college campuses across the United States. Universities as diverse as the Citadel, the University of Michigan, Princeton University, the University of Texas, and the University of California at Los Angeles have experienced racial incidents ranging in severity from the distribution of racist literature, to name-calling, to physical attacks. These incidents have led to considerable self-examination at many colleges and universities and, in some cases, to a revitalization of schools' commitment to Black and other minority students. How to implement this commitment effectively is by no means clear: despite a generation of experience with a significant presence of Black students in White institutions of higher education, there still exists only a limited and imprecise understanding of the factors that affect the increases and decreases in an institution's enrollment of minority students. More must also be known about what enables Black students to experience personal and academic success. Thus, even when an institution is ready to commit more resources to the minority endeavor, its leadership often lacks clear direction on how best to expend these resources.

The lack of concrete knowledge in this area is largely due to the historic change in higher education's opening to African Americans and other students of color, which has been the subject of minimal systematic, quantitative, or analytic research. In this article, which uses data from the National Study of Black College Students (NSBCS), I examine how individual characteristics combine with institutional characteristics either to assist or undermine academic achievement. Specifically, I seek to understand how Black students' college success is influenced by campus context and students' backgrounds.

Since the *Brown v. Board of Education* Supreme Court decision of 1954, profound changes have occurred in patterns of college attendance among African Americans. Previously, the overwhelming majority of Black college students were enrolled in historically Black institutions; by 1973 that percentage had declined to roughly one-fourth (Anderson, 1984). Three-fourths of currently enrolled Black

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college students attend predominantly White institutions; an estimated 60 percent of baccalaureate degrees awarded to Black students during 1988 were granted by predominantly White colleges and universities; and the proportion of Black students matriculating at and graduating from White universities will likely grow in the foreseeable future (American Council on Education, 1988). Relative to their numbers among all colleges, historically Black institutions continue to produce a disproportionately higher number of African-American college graduates, which demonstrates their ability to produce a sizeable share of Black B.A.'s. Clearly, the landscape of Black higher education has changed — and continues to change. In order to understand these changes better, researchers need to explore how personal characteristics and environmental factors assist or undermine college achievement.

What happens to African-American students at the critical stages between college entry, the election of a major field, and graduation — or dropping out? How does the college experience for African-American students differ on historically Black and predominantly White campuses? How do factors such as gender, social class, geographic region, or occupational goals influence Black students' success? Pursuing answers to these and related questions in this article, I examine three student outcomes: academic achievement, social involvement, and occupational aspirations. The data are from a national sample of African-American students attending selected predominantly White and historically Black state-supported universities. In the study, I explore how these outcomes are related to students' background characteristics, campus characteristics, campus experiences, and individual personality orientation.

Differences in Campus Racial Composition

Comparisons between African-American student populations on Black and White campuses require recognition of the "special mission" of Black colleges. To a large extent, Black colleges enroll students who otherwise might not be able to attend college because of social, financial, or academic barriers. These institutions pride themselves in their ability to take financially disadvantaged, academically underprepared Black students and correct their academic deficiencies. Thus, Black colleges graduate their students equipped to compete successfully in graduate schools or in their chosen professions (Blackwell, 1987).

African-American college students differ from their White peers in important ways: their parents are more often urban, have fewer years of education, work at lower status jobs, earn less, and are more often divorced or separated than White students' parents (Blackwell, 1982; Nettles, 1988); further, Black students on predominantly White campuses do not fare as well as White students in persistence rates, academic achievement, postgraduate study, and overall psychosocial adjustments (Allen, Epps, & Haniff, 1991; Astin, 1982; Fleming, 1984; Hall, Mays, & Allen, 1984; Nettles, 1988; Thomas, 1981).

Despite social, economic, and educational disadvantages, African-American college students have aspirations similar to (or higher than) their White counterparts; however, they attain these aspirations less often than White students. Edu-

cational attainment is also generally lower for Black students, and those who attend predominantly White colleges apparently experience considerable adjustment difficulties. Some of their adjustment problems are common to all college students, while others are unique to Black students (Allen, 1986; Thomas, 1984). For example, Black students often find it necessary to create their own social and cultural networks in order to remedy their exclusion from the wider, White-oriented university community. Of all problems faced by Black students on White campuses, those arising from isolation, alienation, and lack of support seem to be most serious (Allen, 1985, 1986; Smith & Allen, 1984).

On the average, African-American students who attend predominately White colleges do not perform as well academically as Whites (Allen, Epps, & Haniff, 1991; Braddock & Dawkins, 1981). Whether this fact results from adjustment problems or other difficulties is often debated. Black students' academic difficulties on White campuses are often compounded by the absence of remedial/tutorial programs and a limited informal information exchange with White faculty and students. Despite the initial difficulties most Black students experience, many make the necessary adjustments and achieve success in predominantly White institutions (Allen, Epps, & Haniff, 1991; Blackwell, 1987; Nettles, 1988). Typically, students who successfully adapt establish social relationships with Whites, adjust to Black-White cultural differences, and cope with college academic requirements that are more demanding than those they faced in high school (Allen, 1988; Pentages & Creedon, 1978; Peterson et al., 1978).

African-American students on historically Black campuses tend to have different backgrounds and opportunities than their peers (Black and White) on White campuses, and they generally lag behind in terms of family socioeconomic status, high school academic records, university faculty/facilities, available academic majors, and opportunities for advanced study (Allen, Epps, & Haniff, 1991; Blackwell, 1982; Pearson & Pearson, 1985; Thomas, 1984). They also tend to have lower standardized test scores and weaker high school backgrounds than do their peers on White campuses (Gurin & Epps, 1975; Nettles, 1988; Thomas, 1984).

Although much is made of real and imputed differences between Black students at historically Black and at predominantly White universities, these comparisons are usually based more on conjecture than on fact (Allen, Epps, & Haniff, 1991). The assumption is that White campuses provide superior environments for Black educational development, although empirical evidence disputes this conclusion. Fleming (1984) finds, for example, that in absolute terms, Black student intellectual gains are higher on Black majority campuses than on White majority campuses. Research also reveals a poor match between Black students' academic needs and White campus academic expectations (Allen, 1985; Nettles, 1988).

When the psychological development of Black students on Black and White campuses is compared, those on Black campuses seem to fare much better. Gurin and Epps (1975) found that Black students who attend Black colleges possessed positive self-images, strong racial pride, and high aspirations, while Fleming (1984) found them to have more favorable psychosocial adjustment than Blacks on White campuses.

Gender Differences

Researchers have identified persistent differences in the college experiences of African-American men and women (Fleming, 1984). In one of the earlier, more comprehensive comparisons of Black male and female college students, Gurin and Epps (1975) challenged the conventional views of a Black female advantage. In both relative and absolute terms, they found the female disadvantage to be consistent. They reported that women's goals were lower on all measures of educational and occupational aspirations, and that they more often aspired to jobs in the "female sector" of the economy—jobs that were disproportionately occupied by women and provided lower prestige, power, and pay. Males, on the other hand, were most influenced in their goals and aspirations by the college they attended and were three times as likely to plan to pursue a doctoral degree. For these reasons, Gurin and Epps concluded that Black women gained less status by attending college than did Black men.

Recently, the enrollment of women generally—and Black women in particular—in postsecondary institutions has risen dramatically. In fact, Black women now outnumber Black men in college by roughly two to one (American Council on Education, 1988). It is important to note, however, that this discrepancy owes more to declines in rates of Black male college attendance than to Black female gains. There is still reason to question rosy portrayals of African-American women's college experiences.

Gurin and Epps (1975) studied over 5,000 African-American students enrolled in ten traditionally Black institutions from 1964 to 1970. Fleming (1984) later studied a sample of 3,000 Black and White college students, which included students attending predominantly White colleges. Fleming's basic research question—"Who gets the most out of college?"—yielded answers that echoed Gurin and Epp's findings. On predominantly White campuses, White males benefitted more than females (both Black and White) and more than Black males from the college experience, measured in terms of cognitive growth, social participation, assertiveness, academic success, satisfaction, and general social-psychological adjustment. On historically Black campuses, the developmental profiles of Black males evidenced similar advantages relative to Black females. Fleming thus described college as a "man's world," where women usually brought up the rear. She qualified this conclusion by indicating that it was primarily true for White males enrolled in predominantly White colleges and for Black males enrolled in predominantly Black colleges.

Among Black students, Fleming found that females were more anxious in competition, felt less competent, and tended to be less assertive than males. Social passivity was especially common for Black females attending historically Black institutions, where they suppressed their assertiveness in order to cultivate relationships with men. On predominantly White campuses, however, Black females were more assertive, for which they paid a price. These articulate, interpersonally adept women gained more from the academic experience on White campuses than did Black males. At the same time, however, they felt socially ostracized, and they reported experiencing emotional pain from both failed relationships and social isolation.

Patterns for Black males were reversed from those of Black females studied by Fleming. On White campuses, they were characterized by developmental profiles

that were best described as depressed and feeling unhappy with college life. They displayed academic demotivation; they felt unfairly treated and had lower academic self-concept. At the other extreme were Black males on Black campuses who, like White males on White campuses, felt "in charge." These Black males showed greater academic gains, more eagerness to compete, and considerably more social assertion than Black males on predominately White campuses. In the supportive environments provided by Black colleges, Black males felt greater acceptance and showed less anxiety about interpersonal relationships than on White campuses, where just the opposite was true.

Findings from a national sample of over 700 African-American undergraduates on White campuses showed that Black males were more likely than Black females to have both high aspirations and good grades. In this sample, Black men with high college grade point averages also set high occupational goals for themselves, aspiring to more prestigious, powerful occupations such as physician, judge, or corporate executive. Black women with high grade point averages were less likely to set comparably high occupational goals for themselves, choosing low-status, low-power jobs in the female labor force, such as secretary, nurse, elementary school teacher, or social worker (Smith & Allen, 1984). This finding was a surprise, given that grade averages for Black females were higher than those for Black males. Further comparison revealed differences between men and women with the same grade point averages, with men consistently reporting higher occupational goals. In a later paper, comparing 700 Black students on White campuses with 900 on Black campuses, Smith (1988) demonstrated that, compared to their male peers, Black women on both White and Black campuses engage in more self-depreciation and often have low occupational aspirations despite their high grades.

Thomas (1984) reported gender and occupational expectations to be the strongest predictors of college major choice for African-American students attending predominantly White and historically Black colleges. Among both groups of students, Black females more often chose traditional over nontraditional majors than did Black males. Generally speaking, being male and having high occupational aspirations was predictive of majoring in the biological, technical, and natural sciences, although Black students on White campuses were significantly less likely to elect these majors, irrespective of gender.

Gender affected Black women's choice of college major, both directly and through its influence on career aspirations and traditional sex-role orientations. Black females reported that, during their younger years, they were less concerned with construction or repairing, advanced mathematics, science clubs, and famous scientists; instead they placed more emphasis on helping other people than on the pursuit of financially lucrative careers. Consistent with Gurin and Epp's findings, Thomas found that Black women were most likely to plan on entering nontraditional occupations when they attended private colleges characterized by frequent faculty/student interactions and a student culture that emphasized intellectual values.

In summary, the evidence suggests that Black students attending historically Black institutions have fewer socioeconomic resources than do both Black and White students attending predominantly White institutions. Their parents have fewer years of schooling, earn less, and have less prestigious occupations than the parents of Black and White students on White campuses. They also have lower

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high school grade point averages, lower standardized test scores, and, during college, have more limited educational opportunities (that is, fewer academic majors to choose from, more limited educational resources, and lower quality facilities) than their peers on White campuses.

Black students on Black campuses have advantages over Black students on White campuses in many other respects. For instance, they display more positive psychological adjustments, more significant academic gains, and greater cultural awareness/commitment than Black students on White campuses. In general, the "fit" between African-American students and higher education seems more favorable on historically Black campuses than on predominately White campuses.

In addition to the campuses' predominant racial identity, students' social-class origins and gender-identity were also revealed by previous research to be important determinants of Black student success (Fleming, 1984; Gurin & Epps, 1975; Smith & Allen, 1984). Students from lower socioeconomic backgrounds experienced barriers to their access and success in higher education. Black women were shown to encounter challenges and problems arising from their unique identity in two (gender and race), if not three (gender, race, and class) discriminated categories. These challenges often represented serious barriers to Black women's satisfaction with and achievement in college.

Methods

To date, research on Black students in U.S. higher education has generated as many questions as answers. There is a particular need to understand the effects of individual and institutional characteristics on student outcomes and, at the same time, to explore the relative importance of more proximate factors (such as campus race relations) versus more distant factors (such as parent educational attainment) as explanations for differential achievement by Black college students.

This study employs a multivariate approach to investigate relationships between the student outcomes of academic achievement, social involvement, and occupational aspirations, and students' educational backgrounds, educational goals, demographic characteristics, and personal adjustment to college and the college environment. The variables selected to represent each of the above categories are listed in Table 1. Many of the selected predictor variables were chosen based on prior research findings that had shown them to be correlated with student outcomes. Other predictors — for example, time spent studying, class level, Black student unity, and choice of institution — were included to test a working hypothesis that these variables were important influences on Black student college outcomes.

Data were collected using questionnaires that were developed and refined over a two-year period. These questionnaires were mailed and then returned directly to the University of Michigan. Some questions were taken from previous studies, while others were original constructions. Each questionnaire had undergone a minimum of three pre-tests and revisions. Pre-tests were administered in 1979 and 1980 to students at the University of Michigan and at the University of North Carolina. Students who participated in the pre-test phase of the study were not included in the 1981 or the 1982 data collections on these campuses. The selection of students for participation in the study was random, using lists of currently en-

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TABLE 1
Variable Names and Descriptions

Variable Name	*Descriptions*
Student Outcomes	
UGPA	University grade point average
FUT. OCC.	Occupational aspirations (1 = low; 5 = high)
SOC. INV.	A summary index (Cronbach's Alpha = .72) constructed from the following terms: To what extent do extracurricular activities on campus reflect your interests? (1 = not at all; 4 = considerably); How often do you participate in the extracurricular activities sponsored by student organizations? (1 = hardly ever; 4 = very often)
Educational Background	
HSGPA	High school grade point average
STU. TIME	Amount of time spent studying per week (1 = none; 6 = 20 + hours)
CLASS LEVEL	Class level (1 = Freshman; 4 = Senior)
Aspirations	
EDUC. ASP.	Educational aspirations (1 = some college; 4 = J.D., M.D., Ph.D.)
Demographics	
SEX	Dummy coded 0 for male respondents
SES	Socioeconomic status summary index (Cronbach's Alpha = .85) constructed from mother and father's education, occupation, and income
Personal Adjustment	
WHT. STU.	Relations with White students (1 = no contact; 5 = excellent)
PROF. EVAL.	Relations with faculty (1 = below average; 4 = highest)
SELF-CONF.	Self concept summary index (Cronbach's Alpha = .74) constructed from the following items: If you were compared to most other students at this university, how would you be rated on the following points by an unbiased observer? (self-confidence, leadership ability, kind of person you think you are?)
RIGHT CHOICE	How sure are you that you made the right choice in attending this university? (1 = definitely wrong choice; 5 = definitely right choice)
Environment	
CAMPUS RACE	Campus racial composition, dummy coded 0 for historically Black campus
UNITY	Campus unity among Black students summary index (Cronbach's Alpha = .63) constructed from the following items: There is a great deal of unity and sharing among Black students at this university. (1 = strongly disagree; 4 = strongly agree); Black men and women students on this campus really don't get along very well together. (1 = strongly agree; 4 = strongly disagree)

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rolled students supplied by registrars' offices. A total of four follow-up requests was mailed to nonrespondents.

The 1981 phase of the study collected data from a cross section of Black under-graduates (freshmen, sophomores, juniors, and seniors) at six predominantly White public universities (University of Michigan, Ann Arbor; University of North Carolina, Chapel Hill; University of California, Los Angeles; Arizona State University, Tempe; Memphis State University; and the State University of New York, Stony Brook).

Data for 1982 were collected from first-year undergraduate Black students (freshmen and transfers) attending the same six schools surveyed in 1981. The 1982 survey included only freshmen and transfers because this was the first year in a four-year longitudinal study of Black student academic careers. All of these students enrolled for the first time in 1982; therefore, none was among the students surveyed in 1981. The 1982 data also included Black students who attended two other predominantly White public universities not included in the 1981 study (University of Wisconsin, Madison, and Eastern Michigan University, Ypsilanti). Since these two schools were new to the study, cross-sectional data were collected; thus, the 1982 sample from these two campuses included freshmen, sophomores, juniors, and seniors. Two more White institutions were added in 1982 in order to have eight White campuses to compare to the eight Black campuses in the study.

The 1983 phase of the NSBCS collected data from freshmen, sophomore, junior, and senior Black undergraduates at eight historically Black public universities (North Carolina Central University, Durham; Southern University, Baton Rouge, LA; Texas Southern University, Houston; Jackson State University, Jackson, MS; North Carolina A&T State University, Greensboro; Central State University, Wilberforce, OH; Morgan State University, Baltimore, MD; and Florida A&M University, Tallahassee). These three data sets (1981, 1982, and 1983 study years) were then merged to compare and contrast African-American students at predominantly White versus historically Black universities.

The overall response rates and sample sizes for each year of the survey are as follows: the 1981 response rate was 30 percent (N = 695); the 1982 response rate was 35 percent (N = 976); and the 1983 response rate was 25 percent (N = 860). Together the data sets include a total of 2,531 Black students (953 from historically Black campuses and 1,578 from predominantly White campuses). It should be noted, however, that the validity of this study's findings might be attenuated as a result of less than optimal response rates. (Analysis for this article is restricted to the 1,800 cases—872 from predominantly White schools and 928 from historically Black schools—from the total sample for which complete data for all variables are available).

Considered in the best light, this study's findings provide information about the college experiences and outcomes of over 2,500 Black students. This information is detailed, self-reported, and specific to the circumstances of African-American college students in the sample institutions. The NSBCS represents one of the most comprehensive data sets currently available on the characteristics, experiences, and achievement of Black college students. Although the findings from this re-

search are of substantial heuristic and informative value, they cannot be generalized to the national Black college population without qualification. The results are, however, indicative of the experiences of African-American students who attended these sixteen institutions during the years of the survey. As an exploratory study, this research reveals fruitful avenues for future research, and also provides useful baseline data about how a sizeable population of Black students are faring in college.

The plan of analysis begins with an examination of general patterns in the sample data and moves on to explore more complex relationships. In order to investigate key bivariate relationships in the data, I employ correlational analysis. Next, I examine complex relationships in the data, using multiple regression analysis to specify the net and joint effects of key predictor variables on student outcomes.

Multivariate analysis is used to investigate relationships between three outcome variables — academic achievement, social involvement in campus life, and occupational aspirations — and five sets of predictor variables. The first set of predictor variables consists of student educational background factors (high school grade point average, time spent studying, class level); the second set includes student aspirations (how far the student plans to go in school, what the student considers to be a successful career); the third set includes demographic characteristics (gender, socioeconomic status); the fourth consists of personal adjustment factors (relations with White students, relations with White faculty, the student's self-concept, the student's attitudes concerning choice of institution); and the fifth set includes environmental factors (campus racial majority, unity among Black students). More specific details on measures are provided in Table 1.

Findings

The findings suggest that academic achievement is highest for students who have high educational aspirations, who are certain that their college choice was correct, and who report positive relationships with faculty (Table 2). Compared to Black students who attend historically Black colleges, those Black students attending predominantly White colleges report lower academic achievement.

College racial composition is also associated with social involvement: students attending predominantly White institutions report substantially lower levels of social involvement. Those who believe that they made the right college choice also report greater social involvement (Table 2), and those who report positive faculty relationships and feel positive about their connections to peers of both races have the greatest social involvement.

A positive relationship exists between occupational aspirations and educational aspirations (Table 2): students who aspire to prestigious, powerful occupations report higher educational aspirations, and those with high educational aspirations are also more likely to display high self-confidence and to maintain more favorable relations with faculty. Campus racial composition is correlated with academic achievement, high school grades, relations with professors, and class level. In general, African-American students who attend predominantly White schools report lower college grades, higher grades in high school, less favorable relations with

TABLE 2
Correlation Matrix for Variables[a] in Model (N = 1,800)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.0														
2	−.08	1.0													
3	.18	−.16	1.0												
4	−.04	.19	.16	1.0											
5	−.04	.03+	.00+	.12	1.0										
6	−.07	−.00+	.13	.04	.07	1.0									
7	.18	−.07	.01+	−.13	−.14	−.10	1.0								
8	−.06	.07	.01+	.18	.25	.08	−.16	1.0							
9	.09	−.39	.28	−.22	−.26	.11	.08	−.09	1.0						
10	−.04+	.14	.05	.22	.11	.14	.17	.11	−.08	1.0					
11	−.10	.08	.07	.12	.11	.07	−.06	.09	−.12	.29	1.0				
12	−.07	−.02+	.01+	.01+	.18	−.07	−.10	.21	−.12	−.05	−.01+	1.0			
13	−.04+	18	.04	.38	.17	.13	−.26	.16	−.18	.21	.10	.02+	1.0		
14	.00+	−.07	.08	.04	.10	.04	−.01+	−.00+	.05	.12	.06	−.02+	.06	1.0	
15	−.03+	−.01+	.04	.05	.19	.02+	−.08	.15	−.04	.04	.03+	.12	.13	.08	1.0

+ $p>.05$
[a]Variable Labels

1 SEX	4 UGPA	7 SELF-CONF.	10 EDUC. ASP.
2 CLASS LEVEL	5 SOC. INV.	8 RIGHT CHOICE	11 FUT. OCC.
3 HSGPA	6 STU. TIME	9 CAMPUS RACE	12 UNITY

13 PROF. EVAL.
14 SES
15 WHT. STU.

their professors, and are, on average, younger than their peers who attend historically Black institutions.

Student gender identity and economic background are also important predictors of college outcomes. Gender is significantly associated with high school grades and self-confidence (Table 2): Black females report higher self-confidence and better high school grades than Black males. Although socioeconomic status is not significantly correlated with student college outcomes, educational aspirations tend to be slightly higher among students from more affluent, economically secure backgrounds.

The regression analysis reported in Table 3 elaborates and clarifies the findings to this point. These results answer our research questions, which ask: What are the effects of student educational background, aspirations, demographic characteristics, personal adjustment, and campus environment on Black student college outcomes, when measured by academic achievement, social involvement, and career aspirations? Multiple regression analysis examines the specific effect of predictor variables on outcome (or dependent) variables, while controlling for the influence of other variables. Our model best accounts for variance in academic achievement ($R^2 = .21$, or 21 percent). The model is effective in the explanation of students' social involvement (18 percent) and is least effective in explaining occupational aspirations (12 percent).

The influence of campus racial composition is consistent across the different student outcomes; in two instances—social involvement and occupational aspirations—campus racial composition emerges as the strongest predictor of student outcomes. For academic achievement, campus racial composition is the second most important predictor. Students who have good relations with faculty and had higher grades in high school also accomplish a higher level of academic achievement in college. Other significant predictors of academic achievement reveal that college grades are highest for students who report high educational attainment aspirations and who feel they have chosen the right college to attend.

After college racial composition, Black students' social involvement is most influenced by their relations with White students and their belief that they made the right college choice. Students who get along well with faculty and who sense greater unity among Black students on campus also are more involved socially.

Occupational aspirations relate minimally to the predictor variables in the model. Students with high educational aspirations have substantially higher occupational aspirations, and, predictably, students who aspire to the most prestigious occupations also expect to attain more years of schooling. Consistent with findings from other studies, Black women report significantly lower occupational aspirations than Black males. Although there is no obvious gender effect on academic performance and social involvement, females are substantially more likely to identify with lower status, less prestigious, and consequently less powerful occupations than males. In short, the women in this sample state occupational aspirations below their obvious qualifications.

Given equal qualifications, females consistently report lower occupational goals than similarly qualified males. Paradoxically, student gender identity was a more effective predictor of occupational goals than were student grades, socioeconomic

TABLE 3

Regression Models Predicting Academic Achievement, Social Involvement, and Occupational Aspirations

Predictors[a]	I Achievement			II Involvement			III Aspiration		
	b	S.E.	B	b	S.E.	B	b	S.E.	B
Constant	1.29	.234		.989	.223		5.38	.405	
Student Outcomes									
UGPA	—	—	—	−.02	−.02	.02	.02	.01	.04
Soc. Inv.	−.03	−.02	.03	—	—	—	.08	.04	.04*
Fut. Occ.	.01	.01	.01	−.02*	.04	.01	—	—	—
Educational Background									
HSGPA	.20**	.19	.02	.02	.02	.02	.16**	.09	.04
Stu. Time	.03	.03	.02	.04*	.05	.02	.03	.02	.03
Class Level	.03	.04	.02	−.06**	−.08	.02	.01	.01	.04
Aspirations									
Educ. Asp.	.11**	.11	.02	.03	.03	.02	.45**	.26	.04
Demographics									
Sex	−.07	−.03	.05	.02	.01	.04	−.34**	−.10	.08
SES	.01	.01	.02	.06**	.09	.01	.02	.03	.03
Personal Adjustment									
Wht. Stu.	−.02	−.01	.04	.18**	.12	.03	.01	.00	.06
Prof. Eval.	.39**	.27	.03	.10**	.07	.03	−.01	−.00	.06
Self-Conf.	−.00	−.00	.03	.05*	.05	.02	−.04	−.02	.04
Right Choice	.07**	.07	.02	.17**	.17	.02	.07	.04	.04
Environment									
Campus Race	−.38**	−.18	.05	−.49**	−.25	.05	−.35**	−.10	.09
Unity	−.04	−.04	.03	.10**	.09	.03	−.05	−.03	.05
R^2 =		.205			.1814			.117	
S.E. =		.89			.85			1.61	
F =		33**			28**			17**	
N =		1,800			1,800			1,800	

* $p < .05$ level

** $p < .01$

B = partial regression coefficient

b = unstandardized regression coefficient

S.E. = standard error

F = F-ratio for the regression

[a]See Table 1 for complete description of variables.

status, or faculty relations (Table 3). In fact, gender identity nearly matched campus racial composition in ability to predict student occupational aspirations.*

Interpretations and Implications of Findings

Findings from this study assist our understanding of the relative influence of demographic, environmental, and personal adjustment characteristics on Black student outcomes in the institutions studied. When asked which factors were the most important influences on Black student academic achievement, social involvement, and occupational aspirations, these findings suggested that Black student college outcomes are influenced by the immediate surrounding social context, while interpersonal relationships represented the bridge between individual predispositions and the institutional setting or context. These factors—characteristics of the individual and characteristics of the institution—combine to influence academic performance, extent of social involvement, and occupational goals. The way a student perceives *and* responds to events in the college setting will differentiate his or her college experience and shape his or her college outcomes. What he or she does when confronted with difficult subject matter, how he or she handles the uncertainty of new situations, and how adept he or she is in help-seeking behavior will ultimately determine whether a student's college experience is positive or negative.

The informal elements of formal organizational structure are shown to be important predictors of student outcomes in this study. For example, using the predictor of campus racial composition, students in the sample who attended historically Black universities reported better academic performance, greater social involvement, and higher occupational aspirations than Black students who attended predominantly White institutions. In short, the college experience was most successful (measured by these outcomes) for African-American students on campuses with Black majority student populations.

The salutary effect of Black students attending a historically Black university speaks volumes about the importance of the social-psychological context for student outcomes. In this respect, previous research demonstrates unequivocally the profound difference that historically Black and predominantly White campuses represent for African-American students (Allen, Epps, & Haniff, 1991; Fleming, 1984; Nettles, 1988). On predominantly White campuses, Black students emphasize feelings of alienation, sensed hostility, racial discrimination, and lack of integration. On historically Black campuses, Black students emphasize feelings of engagement, connection, acceptance, and extensive support and encouragement. Consistent with accumulated evidence on human development, these students, like most human beings, develop best in environments where they feel valued, protected, accepted, and socially connected. The supportive environments of his-

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* It should be noted that several findings from our study suggest the possibility of interaction effects (e.g., gender by race and gender by race by class) in the determination of student outcomes. While it is important to test for the presence and statistical significance of such interaction effects, I chose not to do so in this article. Since this study is more exploratory in its analysis, to examine interaction effects in the detail required is beyond the goals of this article. Interested readers are referred to Allen, Epps, and Haniff (1991), which reports results from analysis of these data. Several studies in this book explicitly address interaction effects.

torically Black colleges communicate to Black students that it is safe to take the risks associated with intellectual growth and development. Such environments also have more people who provide Black students with positive feedback, support, and understanding, and who communicate that they care about the students' welfare.

Historically Black universities provide positive social and psychological environments for African-American students that compare to those experienced by White students who attend White universities. In the social aspect, the important ingredients are an extensive network of friends, numerous social outlets, and supportive relationships. In the psychological aspect, the key ingredients are multiple boosts to self-confidence and self-esteem, feelings of psychological comfort and belonging, and a sense of empowerment/ownership—a sense that "this is our campus." When these social-psychological ingredients are present in optimal combination, the chances that a student will be successful in college increase dramatically. Of course, the presence of these ingredients in optimal combination does not guarantee success, nor does their absence guarantee that a student will fail. We are addressing probabilities here, and the probability is that more students will succeed than fail under optimal social-psychological circumstances.

In conclusion, African-American student college outcomes can reasonably be viewed as resulting from a two-stage process. Using academic performance to illustrate the point, and the theoretical model implicit in such a conceptualization, I argue the following: whether a student successfully completes college and whether that student graduates with excellent grades are undoubtedly sizably influenced by individual characteristics. How bright the student is, his or her academic background or preparation, the intensity of his or her personal ambition and striving—all these factors will ultimately influence academic achievement. Beyond these personal traits, however, is a set of more general factors—characteristics that are more situational and interpersonal. Therefore, the student's academic performance will also be affected by the quality of life at the institution, the level of academic competition, university rules/procedures/resources, racial relations on the campus, relationships with faculty and friends, and the extent of social support networks on campus.

In discussing the aspiration-attainment process more than twenty years ago, Rehberg and Westby (1967) introduced the essential notion of *facilitation*. This concept is instructive, since the attainment process is influenced by a combination of cultural, institutional, interactional, and individual factors. The educational goals and activities of Black students are acted out in specific social environments that influence not only their ambitions, but also the possibility that they will realize their goals. Actors or agents in a particular setting—indeed, the setting itself—can either facilitate or frustrate the academic achievement of Black students.

Future studies of African-American student outcomes should examine the importance of this relationship between social context and student outcomes; apparently it is quite complex, and researchers need to understand better how historical, cultural, social, and psychological factors exert an independent, powerful influence on student outcomes. An example that supports this point of view is Tinto's (1987) hypothesis, reached after extensive research and review of published research findings, that student academic integration and social integration were highly correlated predictors of student attrition. Students who were well integrated

into campus social life and who had higher academic performance levels were more likely to graduate. On the other hand, students with poor social integration tended to have poor academic records and were therefore less likely to persist through graduation.

In effect, Tinto suggested that high social integration was a precondition for high academic performance, and that the combination of these factors assured student retention. An interesting point that emerged from the NSBCS study is that the presumed correlation is not necessarily accurate for Black students on White campuses. These students are often able to maintain high academic performance levels despite expressing high levels of social alienation or disconnection. This paradox suggests the need for further study of how social context affects the academic performance of African-American college students.

Commentary

African-American students continue to be plagued by problems associated with access, retention, and achievement in U.S. higher education. These problems have been stubbornly persistent, defying long-term, effective solutions. The decade between 1965 and 1975 represented an encouraging break with the tradition of Black disadvantage in higher education. Similarly, historically Black universities, from their inception and through this period, have been successful in the production of Black college graduates. However, the overall record of Black exclusion and failure in higher education gives more reason for despair than for celebration.

A major challenge confronting U.S. higher education is how best to replicate and expand examples of Black student college success. By what mechanisms have historically Black schools—and selected White schools—demonstrated a record of distinction in the recruitment, retention, and graduation of African-American students? Future research must address this question and articulate models that can be adopted by other schools. Such studies should shed more light on the process underlying Black student college success and elucidate the interaction between Black students, other individuals, and the university environment.

Lessons drawn from previous studies should be combined with ongoing new research. For example, we already know many of the factors that are associated with Black student success in college. The importance of financial support for this population is self-evident: where adequate financial aid is readily available, more Black students matriculate and graduate. It is also clear that adequate academic preparation and academic remediation are essential ingredients for Black student success. Thus, when Black students receive higher quality education during the early school years and when better college academic support services are available, they perform better academically. Finally, little doubt exists over the negative impact of hostile racial and social relationships on Black student achievement. When Black students are made to feel unwelcome, incompetent, ostracized, demeaned, and assaulted, their academic confidence and performance understandably suffer.

In short, African-American students' relative lack of access to and success in U.S. higher education is not shrouded in mystery. It is the result of the same historical, political, economic, social, cultural, and psychological patterns that have

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perpetuated Black subjugation and oppression since Blacks arrived on these shores in 1619. U.S. society has been—and in many respects continues to be—organized to thwart, restrict, and undercut Black progress and achievement (Blackwell, 1985; Farley & Allen, 1989). Thus it should come as no surprise when African Americans are "discovered" to suffer from disadvantages in higher education; these disadvantages merely reflect and parallel Black disadvantages in the wider society—in "choice" of neighborhoods, in rates of sickness and death, in quality of primary school education, in possession of wealth, in rates of criminal victimization and incarceration—in nearly every aspect of American life.

Any attempt to address the problems faced by African-American college students without considering the broader context of issues confronting Blacks as a discriminated minority in America is doomed to fail, for the experiences of Black students in higher education are in part products of larger systemic problems. Universities can clearly assist efforts to improve the quality of teaching and learning for African Americans in kindergarten through high school; they can also exert a positive influence on government social programs (e.g., lobby in support of jobs, training programs, and expanded educational funding). But universities must first map out and understand the complex relationships that culminate in so few Blacks qualifying for, entering, and completing college. Having done so, schools can then target places where intervention could yield positive results. Such an approach would be preferable to any response suggesting that universities are unable to address key factors that influence Black students' college attendance and graduation, factors that lie outside the school walls.

Barriers to Black access and achievement outside the academy are often seen as unresponsive to university efforts to achieve change. This is not true, however, for persistent barriers existing within the academy. A host of barriers calculated to insure the perpetuation of a status quo rooted in an unfair system of racial stratification is reproduced within the university. Among these barriers are admissions requirements that rely heavily on culturally and economically biased standardized tests; faculties dominated by middle-class, White males; soaring costs accompanied by inadequate financial aid programs; destructive pedagogical styles that emphasize "dog eat dog" competition; the embrace of exclusionary ethics that undercut attempts to achieve cultural pluralism and diversity; and norms that elevate "sorting-out" procedures over approaches that emphasize student learning, such as value-added, remedial strategies. Such barriers clearly fall within the purview and power of universities and colleges to change, if they are so motivated. In fact, change in these serious barriers to increased Black participation in higher education has been slow or nonexistent. The nation's colleges and universities seem to be not only content with, but committed to, the current system of structured inequality, a system in which African Americans suffer grievously.

Far-reaching, enduring change in higher education for African-American students will only come about when universities come to feel more keenly their responsibility for changing the system of unequal societal relationships based on race. Universities must also become more proactive and deliberate in the actions taken to address barriers to African-American success within their institutions. Thus the challenge confronting U.S. colleges and universities now and into the

twenty-first century is to achieve the promise of the high ideals of equality, representation, and solidarity in a culturally pluralistic society. If we fail to respond creatively and effectively to this challenge, not only will history judge us harshly, but this country will also continue to suffer the negative consequences, such as the loss of its competitive edge in the world market, that have resulted from its failure to develop fully and utilize the talents of all its people, without regard to race, gender, or class.

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THE EFFECT OF ATTENDING HISTORICALLY BLACK COLLEGES AND UNIVERSITIES ON FUTURE WAGES OF BLACK STUDENTS

JILL M. CONSTANTINE*

Using data from the National Longitudinal Survey of the Class of 1972, the author estimates the effect of attending historically black colleges and universities (HBCUs) on future wages of black students. She finds that although the pre-college characteristics of students who attended HBCUs predicted lower wages than did the pre-college characteristics of students who attended mixed or historically white four-year institutions, the value added in future wages from attending HBCUs was 38% higher than that from attending traditionally white or mixed institutions for the average black student graduating from high school in 1972. This evidence that HBCUs played an important role in the labor market success of black students in the 1970s, the author argues, should be carefully weighed in decisions affecting the future of these institutions.

One of the few uncontroversial statements that can be made about historically black colleges and universities (HBCUs) is that they have played an important role in educating blacks in the United States. Throughout much of their histories, HBCUs were virtually the only source of higher education for black students. These schools persist four decades after the U.S. Supreme Court, in *Brown v. Topeka Board of Education,* made it illegal to maintain segregated public institutions. However, a series of recent higher court rulings (including *U.S. v. Fordice,* U.S. Supreme Court, July 1992) poses possibly the greatest challenge ever faced by HBCUs.

There is a myriad of evidence that the economic returns to education increased in the 1980s, particularly the return to graduating from a four-year college or university (Blackburn and Neumark 1993;

Blackburn, Bloom, and Freeman 1990). There is also some evidence that blacks lost ground to whites in terms of earnings in the 1980s (Bound and Freeman 1992; Blau and Beller 1992; Smith 1991). Throughout the 1980s HBCUs continued to produce a disproportionately large share of black students with bachelor's degrees. Hence, a study of the economic effects of attending an HBCU may have important implications for both economics and higher education.

The fundamental economic question is whether HBCUs enhance the labor market performance of black students, relative to other institutions. Despite the continuing financial woes of HBCUs, their success rate in graduating black students with bachelor's degrees is very well documented: in 1990, HBCUs enrolled 17% of all black students but produced 27% of all bachelor's degrees awarded to black students (Hoffman 1992). This success can be ascribed partly to the fact that nearly all HBCUs are four-year institutions, whereas many non–HBCUs are two-year institutions that do not grant bachelor's degrees. It is also partly due, however, to lower dropout rates for black students at HBCUs than for black students at traditionally white four-year institutions. Extensive research by psychologists and education experts suggests that students persist at HBCUs for two reasons: the schools are prepared to offer more remedial courses for first-year students with relatively poor high school training, and the environments are more supportive (Deskins 1991; Pascarella and Terenzini 1991; Flemming 1983, 1984). Students at HBCUs are found to be more confident, more involved in campus activities, and more interactive with the faculty than are black students at other institutions.

Although it may be argued that a more positive college experience and an increased likelihood of obtaining a bachelor's degree are good things in themselves, very little research has investigated whether these benefits translate into positive outcomes in students' post-college lives. For example, since HBCUs have less stringent admission requirements than many mixed and historically white colleges and universities, perhaps HBCU students have higher persistence rates than black students at other institutions because they face less competition. The returns to obtaining a college degree could be reduced by attending a lower-quality institution. The confidence gained by students at HBCUs could be weakened when they have to compete in racially integrated environments. Finally, even if former HBCU attendees perform better in the labor market than do their counterparts who have attended other institutions, it is still important to determine whether this difference stems from the choice of college attended or from individual characteristics that differentiate the two groups. There may be characteristics such as upbringing or attitudes that cause both good performance in college and good outcomes in the labor market, and it could be that those characteristics are more commonly found among black students who attend HBCUs than among black students who attend other institutions.

Economists have only begun to analyze the labor market outcomes of HBCU attendees. The only study of that subject to date, Ehrenberg and Rothstein (1993), focused on students at four-year institutions. Ehrenberg and Rothstein found that students who attended HBCUs were more likely than black students at other institutions to receive a B.A. degree, controlling for college and individual characteristics, but reaped no labor market benefits in the form of higher wages.

This study differs from Ehrenberg and Rothstein's in two important ways. First, while Ehrenberg and Rothstein modeled the choice to attend an HBCU and then controlled for that choice when estimating wages, they limited their analysis to students who attended four-year institutions. An important contribution of this paper is its modeling of all the choices available to a black high school graduate (that is, no four-year college, four-year HBCU, four-year non–HBCU), which makes it possible to examine not only individuals who have chosen to attend four-year institutions, but other groups as well. Second, the wage observations used in this study were taken later in the careers of those sampled than were those used by Ehrenberg and Rothstein.

The Model of College Choice

The model of college choice used here follows the model of post-secondary school selection developed by Manski and Wise (1983). In this model, I assume black students have three choices: (1) to not attend

a four-year post-s cational college attendees are in individuals with school); (2) to att (3) to attend a no tution. An indivi that maximizes cu

Specifically, let teristics of an indiv this model each i characteristics (f ability measures) individual's succes benefits from colle acteristics of the j c of attending colleg tal approach to the derive from school assume that they v decision, that is, future income.[1]

The utility of the individual is

(1) u_{ij}

where $\bar{u}_j(z_{ij})$ is the conditional on obs The value of altern ates by ε_{ij}, where ε representing unob characteristics of p makes choice j. A chosen by person i

(2) $U(Z_{ij})$

I am assuming uti The probability that by individual i is

(3) $P_{ij} = Pr((Z_{ij}\gamma + \varepsilon_{ij}$

where k ranges over able to individual i.

[1]See Mincer (1972). human capital assumpti the only benefit of colleg the difference in future v specify the choice mode maximization m with comes being fut ge

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attendees are in this category, as well as
individuals with no schooling past high
school); (2) to attend a four-year HBCU; or
(3) to attend a non–HBCU four-year insti-
tution.' An individual chooses the option
that maximizes current and future utility.

Specifically, let Z represent the charac-
teristics of an individual i with j choices. In
this model each Z_{ij} represents a vector of
characteristics (family background and
ability measures) that determines the
individual's success in college as well as
benefits from college. It also includes char-
acteristics of the j choices such as the "cost"
of attending college. I take a human capi-
tal approach to the utility that individuals
derive from schooling past high school and
assume that they view it as an investment
decision, that is, they wish to maximize
future income.[1]

The utility of the jth alternative to the ith
individual is

(1) $$u_{ij} = \bar{u}_j(z_{ij}) + \varepsilon_{ij},$$

where $\bar{u}_j(z_{ij})$ is the average value of utility
conditional on observable characteristics.
The value of alternative j to person i devi-
ates by ε_{ij}, where ε_{ij} is a random variable
representing unobserved or unmeasured
characteristics of person i when she or he
makes choice j. Assume the jth choice is
chosen by person i if

(2) $$U(Z_{ij}) > U(Z_{ik}) \ \forall \ k \neq j.$$

I am assuming utility is linear in the Z_{ij}'s.
The probability that the jth choice is chosen
by individual i is

(3) $P_{ij} = \Pr((Z_{ij}\gamma + \varepsilon_{ij}) > (Z_{ik}\gamma + \varepsilon_{ik})) \ \forall \ k \neq j,$

where k ranges over all the choices avail-
able to individual i. The effect each vari-

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[1]See Mincer (1972). I do not make the strict
human capital assumption that future earnings are
the only benefit of college. If I did, I would include
the difference in future wages in the choice model. I
specify the choice model as a more general utility
maximization model with one of the measurable out-
comes being future wages.

able has on the likelihood that an indi-
vidual chooses j, as opposed to a reference
group, is measured by γ. Assuming a logis-
tic distribution over ε_{ij} yields the condi-
tional logit model

(4) $$P_{ij} = e^{Z_{ij}\gamma} / (e^{Z_{i1}\gamma} + e^{Z_{i2}\gamma} + ... + e^{Z_{iJ}\gamma})$$
$$j = 1 ... J.$$

Therefore, the probability that individual
i chooses alternative j is conditional on *all*
the choices that are available to the indi-
vidual.

Estimation of Wage Effect

The concern in measuring the impact on
wages of attendance at HBCUs is that there
will be unobservable variables that affect
the decision to attend college and also
affect wages. If there are, it is difficult to
estimate whether HBCUs have a causal ef-
fect on wages. That is, simply observing
that students who attended HBCUs have
higher or lower wages than students who
attended non–HBCUs does not tell us
whether attendance at HBCUs caused the
difference or whether the difference is at-
tributable to unmeasurable factors (such as
innate ability). Since I only observe wages
given the choice an individual makes, I
must condition on this choice when esti-
mating wage equations or the parameter
estimates may be biased.

Heckman (1979) derived the form of
this bias and developed a two–stage estima-
tion method to correct the estimates.
Heckman's two–stage method, however, was
developed for models in which the initial
choice was a dichotomous choice. Since I
want to estimate wages conditional on one
of three choices an individual makes after
graduating from high school, I will rely
instead on the method developed by Lee
(1982, 1983). The two steps involved in the
Lee method are to estimate the choice equa-
tion using a multinomial logit model and
then to estimate wage equations for each
choice.

If I could measure all of the characteris-
tics of an individual that affect wages, I
could simply estimate

(5) $W^* = Y\pi + S\pi,$

where S is a dummy variable indicating which sector is chosen. The coefficient π would be an estimate of the effect on wages of choosing a given sector. Since I cannot measure all the characteristics, W^* contains some latent variables. The wage equation I can estimate is

(6) $W_s = X\beta_s + \mu_s, \quad s = 0, 1, 2,$

where s represents the sector choice (the individual subscript i is dropped for convenience).

The dependent variable W^* in equation (5) is unobservable, but it has an observable realization from the utility model shown in equation (2). Call the indicator of the highest utility I, which is obtained from the probability model in equation (3).

(7) $I_s = Z_s\gamma_s + \xi_s$
                   $D_s = 1; \; s = 0, 1, 2$

The index I_s represents the difference in utility between the choices.[2]

. The characteristics Z are the same ones described in the choice model. The characteristics X are those characteristics in Z that directly affect wages. This vector includes variables such as ability and family income, but not measures of the direct costs of attending college.

The most important step in estimating a model that starts with more than two choices is to reduce the problem to a choice between two sectors, the sector actually chosen and the sector that was next most likely to be chosen (that is, the sector that yielded the next highest utility). Define ε_s as

(8) $\varepsilon_s = \max U_j \; j = (0, 1, 2) \; (j \neq s);$

that is, ε_s represents the maximum of the two alternatives not chosen. It must be true that $D_s = 1$ if $\varepsilon_s < Z_s\gamma_s$, that is, the sector chosen yields higher utility than the maximum of the two sectors not chosen.

Lee shows that a given continuous cumulative distribution function $F(\varepsilon_s)$ of ε_s can be transformed to a standard normal random variable distributed $N(0,1)$ where $\varepsilon_s^* = J(\varepsilon_s) = \Phi^{-1}(F(\varepsilon_s))$. ($\Phi^{-1}$ is the inverse of the standard normal distribution.) Since $J(.)$ is strictly increasing, it must be true that $\varepsilon_s^* < J(Z_s\gamma_s)$. ε_s^* yields strictly less utility than the sector chosen. If the μ's and ξ's in equations (6) and (7) are jointly normally distributed $(0, \sigma_s^2)$ and $(0,1)$ with a correlation coefficient equal to ρ, then unbiased estimates of the wage equation can be obtained. The form of the wage equation corrected for censoring due to the choice of sector is

(9) $W_s = x_s\beta_s - \phi(J(Z_s\gamma_s))/F_s(Z_s\gamma_s)\lambda_s + \eta_s.$

The two-step estimation of equation (9) yields heteroskedastic residuals, so a weighted least squares approach must be used. Since the Lee method reduces a polychotomous choice problem to a choice between two sectors, the error covariance matrix has the same form as in the dichotomous choice model.

Points About the Multinomial Logit Model

In addition to serving as the indicator model shown in equation (7), the logit model enables me to estimate the predicted probability of being in each sector for each individual. This capability is important when reducing the polychotomous choice problem to a dichotomous choice. I need to know the most likely alternative (to the sector actually chosen) in order to estimate the second term in equation (9). I use the predicted probabilities from the conditional logit model to determine which sector was the likely alternative.

The model I estimate in the first step is a reduced form choice model. I expect that many factors influence the decision to attend college. Specifically, since I assume that one important determinant of college choice is future wages, variables besides family background and high school achievement (such as perceived likelihood of obtaining a four-year degree, type of occupa-

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[2]For a description of the index function, see Schmertmann (1994).

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tion desired, expected years of work, and desired hours of work) are likely to be important factors. I consider these other outcomes such as B.A. attainment and occupational choice to be endogenous to this model, that is, they are functions of the same background variables that determine college choice. The choice model only includes the background variables that I believe affect all of these outcomes. The major drawback to this approach is that it specifies the choice model in a multinomial logit framework. The multinomial logit model is very often used in multiple choice models because it facilitates the calculation of the probabilities of each choice. It is much less computationally burdensome than the multinomial probit model. However, one major shortcoming of the multinomial logit specification is its assumption of the "Independence of Irrelevant Alternatives" (IIA).[3]

Hausman and McFadden (1984) developed a specification test for this property. The test consists of estimating a restricted and unrestricted choice model. The test statistic is

$$q = [\beta_r - \beta_u]'[V_r - V_u][\beta_r - \beta_u] \sim \chi^2_k,$$

where β_r and β_u are the estimated coefficient matrices of the restricted and unrestricted models and V_r and V_u are the covariance matrices of each. Based on this test statistic ($q \approx .4$), I do not reject the assumption of IIA. The multinomial logit specification should yield unbiased estimates.

The NLS–72 Data Set

The main source of data is the National Longitudinal Survey of the Class of 1972 (NLS–72), a survey of the high school graduating class of 1972. There were approxi-

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[3]The IIA property arises from the assumption that error terms are independent across choices. The property implies that the odds of choosing one alternative over another are independent of the presence of any number of other alternatives. This property is theoretically unappealing when there is reason to believe that the error terms across similar choices are correlated.

mately 22,000 respondents in the base year survey. They were followed up four times, most recently in 1986. In the most recent survey, the respondents were approximately 32 years old and had been out of high school for 14 years. Respondents were asked about their schooling and work histories. Over 3,000 black students were in the NLS–72, but there are good wage observations in 1986 for only 1,192 of them. Most of the observations that are lost for my purposes are individuals who were not resurveyed (or who dropped out of the survey) between 1979 and 1986. Very few observations are lost due to unusually high or low hourly wages.[4]

I model the decision of whether to attend college as a function of ability, other individual characteristics, family background, and measures of the direct costs of attending college. I will briefly discuss the variables used in the estimation. A complete list of variables and how they were constructed is in Appendix A.

Identification of the Model

An important issue in estimating systems of equations is identification of the parameters in the equations. Since the theory behind the choice model dictates that an individual considers future wages when making the college investment decision, all variables that affect future wages must also affect the decision to attend college. Therefore, I also employ some "zero restrictions," variables that should be in the choice equa-

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[4]Individuals with wages greater than $200 per hour and those with less than $1.67 were eliminated. (I chose $1.67, one–half the minimum wage in 1986, as a lower bound to allow for individuals earning less than minimum wage.) The 1986 follow-up of the NLS–72 only included 14,489 of the 22,652 respondents originally sampled. College graduates were more likely than non–college graduates to be in the 1986 survey (Research Triangle Institute 1981). As a result, HBCU attendees are somewhat overrepresented in this sample, since they are more likely to be college graduates. For example, HBCU attendees make up 45% of the total four-year college population in this study, whereas in 1972–76 they comprised between 30% and 40% of the four-year college population of black students.

tion and not the wage equation, to identify the parameters of the choice model separately from the wage models. I will note these variables as I describe them below.

The ability measures used are high school rank and test scores. Manski and Wise (1983) found high school rank and test scores to be the two most important predictors of the college application, admission, and attendance decision.[5] The family background variables that I use are mother's education, father's occupational status index (SEI), and family income. I include dummy variables to control for gender and participation in athletics in high school.[6] I also include a dummy variable indicating whether the respondent is from the South. This variable is included in both the choice equation, since there is a public HBCU in every southern state, and in the wage equation, to capture the lower cost of living (and lower earnings) in the South.

Since I am estimating wage equations, it would be desirable to have separate models for men and women. I do not do so, however, because the sample sizes in such an analysis would be small, and it would be difficult to estimate the parameters of the model precisely.

I expect the individual characteristics represented by these variables to affect both college choice and future wages. They

could affect the ability (both financial and academic) to attend college, success in college, and the return from attending college. Hence, they should all be included in the choice equation. I also expect these variables to affect future wages. Variables such as test scores, gender, and participation in athletics may directly affect wages if they are correlated (or perceived to be correlated) to productivity. Family background variables may affect future wages more indirectly, through occupational choice for example.

The variables I describe below, largely geographic variables, are included in the choice equation and not the wage equation. I assume these variables affect the likelihood of choosing a particular sector. That is, they are characteristics related to the sector choice as well as the individual. Unfortunately, some of these variables could also affect wages. Variables that affect only the sector choice and not future wages would be ideal candidates for exclusion from the wage equation. In practice, however, these are difficult variables to obtain.

One variable I use to identify the system is a measure of the direct cost of attending college. To measure direct costs I use the distance to the nearest two-year and four-year institutions as proxies for price.[7] At least one empirical study has shown proximity of college to be an important determinant of college attendance (Card 1993).[8] I include several variables that I expect to affect the decision to attend an HBCU versus a non–HBCU. The most important is whether there is a public HBCU in the respondent's state. Since most students attend college in-state (Manski and Wise

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[5]The test scores used are from a test battery consisting of six sections administered to the NLS–72 respondents. The sections are reading, mathematics, vocabulary, picture number, letter group, and mosaic composition. The first four tests are similar to the SAT, and a factor analysis on all test scores shows the first four load onto one factor (see Research Triangle Institute 1981). My test score measure is the sum of the student's scores on these four tests.

[6]Other studies (Manski and Wise 1983; Ehrenberg and Rothstein 1993) have used SAT and ACT scores as ability measures. Manski and Wise were attempting to address policy debates concerning use of the SATs, and Ehrenberg and Rothstein used SAT scores because they were studying college characteristics. However, the SAT and ACT are not the same tests, and although there are conversion methods for making scores across the two tests comparable, I minimize measurement error by using the same test administered to all respondents.

[6]Manski and Wise found participation in athletics to be an important predictor of college application, admission, acceptance, and financial aid receipt.

[7]I did have data on average tuition for state residents at public institutions that I tested in several specifications. Its effect was not significant, and the sign of the coefficient was positive. Both Behrman et al. (1992) and Manski and Wise (1983) found a positive effect of tuition on attendance and posited that it was acting as a college quality measure.

[8]Distance to the closest HBCU and non–HBCU would be better variables to include, since they would more directly measure the costs of these two choices, but those variables were not available in these data.

[9]The PETS[...]an[...]
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1983), the presence of a public HBCU is
likely to be crucial in determining whether
a student will attend. Public HBCUs are, on
average, a lower-tuition alternative to other
institutions. The public HBCU variable
overlaps the South variable because there
is a public HBCU in every southern state.

I also include a measure of the percent-
age of teachers in the respondent's high
school who are black. I interact this vari-
able with the public HBCU variable. If a
student lives in a public HBCU state and
has a high percentage of black teachers in
high school, it is likely that a large percent-
age of those teachers are HBCU graduates.
These teachers may encourage students to
apply to HBCUs or may work with contacts
to assist students through the application
and admissions process. Unfortunately,
the racial composition of the faculty of a
high school may also pick up other effects,
such as high school quality or economic
variations within a region smaller than the
state, so it is difficult to predict the effect of
this variable.

Descriptive Statistics

I assign individuals to a group based on
their responses to questions concerning
their activities within three years after gradu-
ating from high school. Individuals in each
of the two college groups reported being at
a four-year HBCU or non–HBCU in the fall
of 1972, 1973, or 1974, and everyone else is
in the high school/two-year school group.
Manski and Wise (1983) found that among
those who eventually attend a post-second-
ary institution, the vast majority do so im-
mediately after high school; 85% do so
within three years. Students who attend
college much later are quite different from
students who attend college soon after high
school, and they may fit a different model
of college choice.

Table 1 shows the means of relevant vari-
ables for each group. The table includes
four dummy variables for educational at-
tainment as of 1979, as reported in the Post
Education Transcript Survey (PETS).[9] The

[9]The PETS is an important attachment to the
NLS–72. Transcripts were gathered from the post-

much-cited difference in educational at-
tainment between HBCU and non–HBCU
students is supported by these data. Fifty-
six percent of the individuals in the HBCU
group receive a B.A., compared to 48% in
the non–HBCU group. This difference is
not as large as figures that are sometimes
cited, probably because the analysis is re-
stricted to individuals who went to a four-
year institution.

Individuals in the HBCU group reported
slightly higher mean hourly wages in 1986
than individuals in the non–HBCU group
($12.31 versus $11.68). This result is note-
worthy given that HBCU attendees appear
to have been academically and economi-
cally less well off than their non–HBCU
counterparts. HBCU attendees had slightly
lower high school rank and much lower test
scores (183 versus 194) than attendees of
non–HBCU institutions. This finding sup-
ports the popular perception that admis-
sion requirements (particularly standard-
ized test scores) are more stringent at non–
HBCUs than at HBCUs and may screen out
some black students. As expected, indi-
viduals in the high school group reported
much lower test scores and high school
rank than individuals in the other groups.

The family income measures are dummy
variables for categories of family income
ranging from less than $3,000 to $12,000+.[10]
The mean family income for individuals in
the high school group is much lower than
that for individuals in either four-year col-
lege group. HBCU attendees appear to
have come from slightly poorer families
than non–HBCU attendees. However, the
family income effect is regional in charac-
ter: when a control for residence in the
South is added, HBCU attendees had

secondary institutions that students said they attended
from 1972 to 1979. The PETS data yield a measure of
degree attainment that is not self–reported. Even
though I do not model B.A. attainment explicitly in
this paper, it is worthwhile to note the difference in
degree attainment between HBCU and non–HBCU
students in these data.

[10]This variable was recoded from a family income
variable that ranged, by category, from less than
$3,000 to $18,000+. I recoded the variable because
very few individuals reported family incomes in the
top two categories.

Table 1. Means of Individual Characteristics.
(Standard Deviations in Parentheses)

Individual Characteristic	HS or Two-Year (N = 711)	Four-Year HBCU (N = 217)	Four-Year Non-HBCU (N = 264)
Hourly Wage, 1986	8.56 (10.6)	12.31 (13.9)	11.68 (13.6)
High School or Voc.	0.69 (0.46)	0.17 (0.38)	0.13 (0.34)
College—No Degree	0.23 (0.42)	0.26 (0.44)	0.38 (0.49)
2-Year Degree	0.05 (0.22)	0.01 (0.12)	0.01 (0.51)
Bachelors	0.03 (0.18)	0.56 (0.50)	0.48 (0.50)
City	0.41 (0.49)	0.41 (0.49)	0.50 (0.50)
Public HBCU State	0.76 (0.43)	0.93 (0.26)	0.60 (0.49)
Test Scores	163 (24)	183 (25)	194 (29)
High School Rank	0.41 (0.25)	0.60 (0.25)	0.63 (0.27)
% Students Black	0.57 (0.33)	0.62 (0.31)	0.55 (0.33)
% Teachers Black	0.31 (0.21)	0.40 (0.25)	0.29 (0.22)
Family Income < $3000	0.27 (0.44)	0.24 (0.42)	0.20 (0.40)
Family Income $3000–$6000	0.27 (0.45)	0.24 (0.42)	0.23 (0.42)
Family Income $6000–$9000	0.25 (0.43)	0.22 (0.42)	0.21 (0.41)
Family Income $9000–$12000	0.12 (0.33)	0.15 (0.36)	0.16 (0.37)
Family Income > $12000	0.07 (0.26)	0.15 (0.36)	0.19 (0.40)
Dad SEI Index	24.75 (17.67)	34.06 (24.51)	33.10 (21.7)
Father's Education	10.90 (1.44)	11.60 (1.92)	11.84 (2.02)
Mother's Education	11.17 (1.58)	11.92 (1.98)	11.99 (1.97)
Miles to 4-Year College	15.12 (18.9)	16.96 (19.3)	10.36 (17.7)
Miles to Junior College	15.81 (21.4)	19.93 (25.1)	15.16 (23.5)
South	0.67 (0.47)	0.86 (0.35)	0.49 (0.50)
Athlete	0.42 (0.49)	0.57 (0.50)	0.53 (0.50)
Female	0.62 (0.49)	0.68 (0.47)	0.64 (0.48)

Source: National Longitudinal Survey of the High School Class of 1972—base year through fifth year follow-up surveys.

slightly higher mean family incomes than non-HBCU attendees (though the difference is not statistically significant). It is fair to say that within regions, HBCU and non–HBCU attendees had similar family incomes. The same is true for parent's education.

The biggest difference between individuals in the HBCU group and individuals in the other two groups is that over 90% of the former resided in public HBCU states, compared to 76% of those in the high school group and 60% of those in the non–HBCU group. The high schools of students who attended HBCUs were in more rural areas than the high schools of individuals from either of the other groups, as measured by the distance to the nearest four-year college and junior college. A high percentage of students who attended any four-year institution reported being involved in athletics in high school.

The distribution of students in public HBCU states shown in Table 1 reinforces the important policy implications of this analysis. Over 90% of students who attended HBCUs went to high school in states with public HBCUs, implying that the presence of public HBCUs in particular is an important determinant of college choice. The distribution of students also suggests that these data are well suited to test the effect of attending an HBCU. Since more than half of the students in the non–HBCU group also lived in states with public HBCUs, there are obviously students who choose not to attend an HBCU when a public HBCU is an option. This variation in choice is helpful in trying to determine the effects of public HBCUs.

Results of the Choice Model

Table 2 shows the marginal effects, in the choice model, of each variable in each group. The coefficients can be interpreted

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Note that both living in the South and living in a state with a public HBCU increases the chances of attending an HBCU. In this sample there are about 100 individuals from HBCU states who are not from the South. The effect of the presence of a public HBCU in the state appears to be very important even in this small sample.

The impact of residing in a public HBCU state has a large (12%) and significant effect on the probability of attending an HBCU. Note also that residing in an HBCU state has a large negative effect (−10%) on the chance of being in the high school/two-year college group, although the estimate is fairly imprecise. Therefore, a very important effect of public HBCUs may be to draw into four-year HBCUs those students who otherwise would have attended a two-year institution or perhaps no college at all.

Table 3 shows the parameter estimates from the choice model. The parameter

Table 2. Marginal Effects
from the College Choice Model.
(Standard Errors in Parentheses)

Model Parameter	HS or Two-Year (N = 711)	Four-Year HBCU (N = 217)	Four-Year Non-HBCU (N = 264)
Constant	2.489** (0.333)	−1.215** (0.127)	−1.274** (0.153)
Public HBCU State	−0.104 (0.104)	0.121** (0.051)	−0.017 (0.098)
South	−0.006 (0.069)	0.092** (0.037)	−0.086 (0.057)
High School Rank	−0.510** (0.108)	0.186** (0.050)	0.324** (0.073)
Test Scores*	−0.065** (0.011)	0.020** (0.005)	0.045** (0.007)
Dad SEI Index*	−0.031** (0.010)	0.019** (0.005)	0.011* (0.007)
Mother's Education	−0.041** (0.011)	0.019** (0.006)	0.022** (0.008)
Family Income	−0.015 (0.017)	0.014 (0.009)	0.001 (0.013)
Female	−0.051 (0.042)	0.043** (0.021)	0.009 (0.032)
Athlete	−0.146** (0.043)	0.088** (0.022)	0.058* (0.031)
% Teachers Black	−0.033 (0.050)	0.026 (0.026)	0.007 (0.047)
% Teachers Black * HBCU	0.022 (0.053)	−0.008 (0.027)	−0.030 (0.049)
City	0.001 (0.046)	0.027 (0.024)	−0.029 (0.036)
Miles to Junior College	−0.002* (0.001)	0.001** (0.0005)	0.001 (0.001)
Miles to 4-Year College	0.001 (0.001)	0.001 (0.001)	−0.002* (0.001)

*Statistically significant at the 10% level; **at the 5% level.

*Coefficient and standard error have been multiplied by 10.

Model includes dummy variables for missing values.

estimates can be thought of as the relative risk of being in one group compared to the reference group. The reference category is attendance at a non–HBCU, so these estimates show the impact each variable has on the other sector choices as compared to the non–HBCU choice. Therefore, the statistical significance of a parameter estimate in Table 3 indicates whether the apparent difference between the HBCU and non–

Table.3. Parameter Estimates
from the College Choice Model.
(Parameter Estimates for
Four-Year Non-HBCU Set to Zero)

Model Parameters	HS or Two-Year	Four-Year HBCU
Constant	10.399** (1.005)	−1.184** (1.195)
Public HBCU State	−0.070 (0.410)	0.863 (0.636)
South	0.437 (0.303)	1.028** (0.385)
High School Rank	−2.450** (0.430)	−0.480 (0.508)
Test Scores	−0.033** (0.004)	−0.011** (0.005)
Dad SEI Index	−0.011** (0.005)	0.006 (0.005)
Mother's Education	−0.175** (0.049)	0.012 (0.055)
Family Income	−0.031 (0.079)	0.085 (0.093)
Female	−0.125 (0.183)	0.226 (0.222)
Athlete	−0.522** (0.182)	0.265 (0.220)
% Teachers Black	−0.086 (0.211)	0.133 (0.314)
% Teachers Black * HBCU	0.189 (0.221)	0 206 (0.326)
City	0.149 (0.205)	0.322 (0.251)
Miles to Junior College	−0.006 (0.004)	0.003 (0.005)
Miles to 4-Year College	0.010* (0.006)	0.013** (0.007)

See footnotes to Table 2.

HBCU groups shown in Table 2 is also statistically significant. The parameter estimates themselves do not have a meaningful interpretation.

The significant variables in the HBCU group are the dummy variable for living in the South (positive), test scores (negative), and distance to a four-year college (positive). The public HBCU estimate is not quite significant at the 10% level, but the coefficient is large and positive.[11] These

[11]This result may be due to the use of four-year non–HBCU as the reference category If the reference category were the high school/two-year group,

results support many of the common beliefs about students at HBCUs. It is somewhat surprising that family income variables do not seem to matter. However, in the 1970s a great deal of federal financial aid was available to students, so limited family resources may not have been a very binding constraint.[12] All of the significant variables in the high school group have the expected sign.

Estimation of the Wage Equations

Table 4 shows the results of the wage equations estimated for each group, that is, estimates of equation (9) shown earlier. Columns 1, 2, and 3 include the Lee selection correction variable and the coefficient on that variable, λ. The most important result is that while there is no significant selection in the high school group or the non–HBCU group, there is a significant, negative selection in the HBCU group (the parameter estimate is −0.418). A negative selection term means the unobservable characteristics that caused an individual to choose an HBCU (over the next most likely alternative) are ones that would cause lower wages. For example, the individual may be of lower innate ability or have poorer elementary and secondary training.

Columns 1A, 2A, and 3A in Table 4 show the same wage equations not corrected for selection. Note that the constant term in the HBCU group is much lower when I do not include the selection term. This result may indicate that the impact of attending an HBCU is a direct shift upward of the intercept in the wage model. However, other parameters in the model also change substantially. For example, the estimate of the effect of being from the South has a moderate negative effect on earnings in column 2A, although this estimate is very imprecise. Once I control for the decision

the public HBCU parameter estimate would most likely be significant.

[12]The family income variable is also self–reported. If, as a result, it suffers from substantial measurement error, the coefficient may be too biased (toward zero) to allow strong inferences.

Table 4. Red

Independent Variable	
Constant	
South	
High School Rank	
Test Scores[a]	
Dad SEI Index[a]	
Mother's Education	
Family Income	
Female	
Athlete	
City	
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Table 4. Reduced Form Wage Equations with and without Correction for College Choice.
(Standard Errors Corrected)

Independent Variable	HS or Two-Year (1)	HS or Two-Year (1A)	Four-Year HBCU (2)	Four-Year HBCU (2A)	Four-Year Non-HBCU (3)	Four-Year Non-HBCU (3A)
Constant	1.102** (0.454)	1.034** (0.209)	3.345** (0.908)	1.773** (0.475)	2.62** (0.933)	1.620** (0.488)
South	−0.089** (0.045)	−0.088** (0.044)	−0.343** (0.186)	−0.060 (0.136)	0.031 (0.125)	−0.082 (0.082)
High School Rank	0.218 (0.161)	0.240** (0.097)	0.256 (0.241)	0.492** (0.218)	0.244 (0.240)	0.439** (0.177)
Test Scores[a]	0.039** (0.019)	0.042** (0.010)	−0.015 (0.023)	−0.002 (0.023)	−0.017 (0.027)	0.008 (0.017)
Dad SEI Index[a]	0.007 (0.014)	0.008 (0.012)	−0.014 (0.023)	0.007 (0.021)	−0.014 (0.020)	−0.009 (0.020)
Mother's Education	0.022 (0.017)	0.024** (0.013)	−0.026 (0.025)	−0.009 (0.024)	−0.009 (0.022)	0.004 (0.02)
Family Income	0.009 (0.019)	0.010 (0.019)	0.091** (0.039)	0.106** (0.04)	0.074** (0.031)	0.072** (0.031)
Female	−0.183** (0.042)	−0.181** (0.040)	−0.015 (0.097)	0.027 (0.098)	−0.241* (0.080)	−0.238** (0.083)
Athlete	0.059 (0.056)	0.065 (0.042)	0.082 (0.114)	0.206** (0.10)	−0.007 (0.082)	0.028 (0.079)
City	0.040 (0.041)	0.039 (0.041)	−0.076 (0.092)	−0.045 (0.094)	0.154** (0.076)	0.142* (0.078)
Lambda	0.034 (0.203)	—	−0.418** (0.208)	—	−0.268 (0.230)	—
R²	0.08	.08	0.04	.03	0.10	.09
N	711	711	217	217	264	264

[a]Coefficient and standard error have been multiplied by 10.

to attend an HBCU, the negative impact on earnings of living in the South is more severe, as shown in column 2.

This model suggests that if similar individuals from the HBCU and non–HBCU groups had not attended college at all, we would expect the non–HBCU group to earn higher wages based on their unobservable characteristics. Hence, the "value added" of attending an HBCU may be quite large.

The analysis so far suggests that attending an HBCU may have a significant effect on wages. Table 1 shows that mean wages are somewhat higher in the HBCU group than in the non-HBCU group and the choice/wage model indicates HBCU attendees are likely to be from lower in the wage distribution, so the wage effect may be even larger than indicated by the difference in average wages. In order to estimate the magnitude of the wage effect, I analyze the difference in predicted wages in each group based on the wage models.

Predicted Wages

One measure of the treatment effect of HBCU attendance is the mean difference in predicted wages for all individuals in the HBCU and non–HBCU groups. I compare the estimates from wage equations that do not include a selection term to the estimates from the equations corrected for selection. Comparing the uncorrected and corrected estimates will help to determine the order of magnitude of the bias when the effect of HBCU attendance on wages is considered without conditioning on the choice to attend an HBCU.[13]

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[13]To calculate selection-corrected predicted wages in each group, all parameter estimates are used from equations (2) and (3) in Table 4, but the coefficient

Table 5. Difference in Predicted Wages for Four-Year College Attendees.

Description	OLS Estimates	Corrected Estimates
HBCU Wage	$9.10	$17.11
Non-HBCU Wage	$8.45	$12.38
Ln Wage Difference	0.074	0.324
Percent Difference	8	38

Table 5 shows the difference in predicted wages for each group. Both models (uncorrected and corrected) predict a higher wage in the HBCU group. The uncorrected estimates predict a wage 8% higher, on average, in the HBCU group than in the non–HBCU group. That difference rises to 38% in the model corrected for college sector choice.[14] The uncorrected model shows an 8% difference in wages, which is slightly larger than the 5% difference in means shown in Table 1. This is not surprising, since the OLS estimates control for observable characteristics such as test scores and family background and Table 1 showed that HBCU attendees appear to have been slightly less well off on these measures. However, the corrected estimates show the extent to which the mean effect of HBCU attendance on wages is understated when selection results are not accounted for.

Uncorrected Estimates of Wage Equations

The wage effects found in this study differ appreciably from those found in Ehrenberg and Rothstein (1993). Ehrenberg and Rothstein found that HBCU attendance can increase the likelihood of

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on the selection term lambda is replaced with a zero. Since I am interested in the treatment effect of HBCU attendance, I want to know what the expected increase or decrease in wages would be for an individual chosen at random from the population. If I included the selection term, the predicted wages would be conditional on the sector actually chosen. For more details, see Trost and Lee (1983), footnote 9.

[14]The difference in predicted wages conditional on sector choice (that is, when the selection parameter is included) is 23%.

obtaining a B.A. degree by anywhere from 9% to 29%, but they found no benefits beyond B.A. attainment. In fact, they found no overall wage effect, because non-graduating HBCU attendees earned lower wages than non-graduating non–HBCU attendees (Ehrenberg and Rothstein 1993, Table 15). Table 5 in the present analysis shows a difference in predicted wages of 38%. I believe there are two main reasons for these differences.

Unlike the sample in the Ehrenberg and Rothstein study, the sample in this analysis includes all individuals for whom there are good wage observations in 1986, whether or not they attended a four-year institution. The results in Tables 2 and 3 suggest that one of the effects of an HBCU is to draw in students who would not have attended a four-year institution if an HBCU were not available. Hence, in this study, the presence of HBCUs is found to have increased the likelihood of obtaining a B.A. degree for two reasons: HBCUs increased the likelihood that a high school graduate would attend a four-year institution; and once a student was at a four-year institution, he or she had a better chance of persisting at an HBCU than at a non-HBCU. Ehrenberg and Rothstein capture only the second effect.

This study and Ehrenberg and Rothstein's also differ in the timing of wage observations. In this analysis the respondents were approximately 32 years old when the wage observations were taken, as compared to 25 in the Ehrenberg and Rothstein study. Human capital models of investment and wages predict lower wages while individuals are investing in themselves through formal schooling or training and then rising wages as they realize the return on their investment (Becker 1975; Mincer 1974). Hence, wages observed at the ten-year mark in a career are probably a better indicator of the return on human capital investment than are wages observed only about three years into the career.

It is difficult to tell whether the different specifications of the choice model, the use of data on wages at different points in individuals' careers, or both are responsible for

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mate uncorrected wage equations similar
to those in Ehrenberg and Rothstein's study.

Table 6 shows the results of ordinary
least squares (OLS) estimates of reduced
form wage equations. To mimic the
Ehrenberg and Rothstein study, the sample
I used to generate the results in this table
consists of all four-year college attendees.
Equation (1) is the same reduced form
equation used in Table 4, where it was
applied separately by group. The results
for equation (2) show an 11% increase in
wages associated with attending an HBCU
for the college population without control-
ling for eventual B.A. attainment. The
results for equation (3), which includes a
dummy variable for B.A. attainment by 1979,
show that the return to obtaining a B.A. for
the college population is very large—21%.
As expected, the effect of HBCU atten-
dance is reduced somewhat when degree
attainment is included. The increase in
wages from HBCU attendance is still 8%,
although the estimate is not quite signifi-
cant at the 10% level. To test whether the
benefits of HBCU attendance were accrued
entirely by individuals who eventually ob-
tained a bachelor's degree, I add an inter-
action term, HBCU attendance with B.A.
attainment. The coefficient on the interac-
tion term is small, .03, and the coefficient
on HBCU attendance drops to .06. Both
parameters are estimated very imprecisely
and are not significantly different from
zero.

Two important conclusions can be drawn
from the results in Table 6. First, none of
the groups of students examined appears
to have suffered from reduced wages due to
attending an HBCU. This finding contra-
dicts the results of Ehrenberg and
Rothstein's estimation of wage equations
for 1979. They found a 12% reduction in
wages from HBCU attendance when they
included B.A. attainment and the interac-
tion term.[15] Second, it is clear that the

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[15] When I estimated log hourly wage equations for
1979 using my 1986 sample of individuals, I found

Table 6. OLS Estimates of Impact
of HBCU Attendance on Wages in 1986.

Independent Variables	(1)	(2)	(3)	(4)
Constant	1.748**	1.687**	1.74**	1.75**
	(0.290)	(0.291)	(0.287)	(0.288)
South	−0.043	−0.092	−0.071	−0.072
	(0.063)	(0.068)	(0.067)	(0.067)
High School Rank	0.448**	0.462**	0.394**	0.396**
	(0.136)	(0.136)	(0.135)	(0.135)
Test Scores*	−0.001	0.002	−0.003	−0.003
	(0.013)	(0.013)	(0.013)	(0.013)
Dad SEI Index*	0.000	0.000	−0.002	−0.002
	(.014)	(0.014)	(0.014)	(0.014)
Mother's Education	0.000	0.000	−0.003	−0.003
	(0.015)	(0.015)	(0.015)	(0.015)
Family Income	0.082**	0.080**	0.076**	0.076**
	(0.025)	(0.024)	(0.024)	(0.024)
Female	−0.116*	−0.121**	−0.115*	−0.115
	(0.062)	(0.062)	(0.061)	(0.062)
Athlete	0.100*	0.0951	0.090	0.091
	(0.061)	(0.061)	(0.060)	(0.060)
City	0.086	0.079	0.103*	0.103*
	(0.059)	(0.059)	(0.058)	(0.058)
Attended HBCU	—	0.113*	0.081	0.064
		(0.060)	(0.059)	(0.081)
BA by 1979	—	—	0.213**	0.200**
			(0.055)	(0.074)
HBCU * BA in 1979	—	—	—	0.034
				(0.107)
R²	0.06	0.06	0.09	0.09
N	481	481	481	481

*Coefficient and standard error have been multiplied by 10.

career timing of wage observations is im-
portant. This result should not be surpris-
ing, especially since the individuals in this
sample invested in four years of college.
Initial wages may not reflect long-term earn-
ings for a variety of reasons. For example,
college graduates who are considering go-
ing on to graduate school may work for
some years in jobs that do not reflect their
eventual earnings.

The results in Table 6 also support the
findings in Table 5 that show how large the
estimation bias may be when the college
choice is not considered. The estimate of

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results very similar to those of Ehrenberg and
Rothstein: a negative wage effect of 11% after con-
trolling for BA attainment and including an interac-
tion term.

the wage effect of attending an HBCU without controlling for B.A. attainment in the OLS equations in Table 6 is 11%, very close to the 8% difference in predicted wages in the first column of Table 5. As is also shown in Table 5, these OLS estimates significantly understate the wage effect of HBCU attendance.

Conclusions

This analysis has answered in the affirmative the question of whether attending a historically black college or university (HBCU) affects future wages. Attendance at an HBCU appears to have yielded an average value added of 38% (in terms of wages) for the individuals in the sample examined here, who graduated from high school in 1972. Even the uncorrected OLS estimates, which do not control for the decision to attend an HBCU, show a boost to wages of between 8% and 11%—an estimate that, I have shown, probably understates the actual effect.

One potential shortcoming of this analysis is the pooling of men and women in the sample. The relatively small sample size disallowed separate analyses for men and women. A dummy variable for gender was included, but it only allowed the intercept to vary by gender. Because the decision to attend college may very well differ for men and women and the return to certain background variables in the wage equation may also vary by gender, the effect of attending HBCUs should be estimated separately for men and women. Results of preliminary analyses by gender (not reported in detail here) show that the model presented in this paper is appropriate for men, but not for women.

The results of this research have important policy implications. In particular, the central finding—that students who attended HBCUs in the 1970s apparently later enjoyed substantially higher value added to wages than black students who attended historically white or racially mixed four-year institutions—must be carefully weighed in any deliberations about phasing out HBCUs. Although it is true that many HBCUs are lagging in characteristics that are typically thought to represent the quality of an educational institution, these schools apparently provide students with benefits that are not captured by standard quality gauges.

Variable

Hourly Wage 1986

Public HBCU State

South

High School Rank

Test Scores

Dad SEI Index

Mother's Education

Family Income

Female
Athlete

Teachers Bl

City

Miles to Junior Colle

Miles to 4-Year Colle

High School or Voc.

College No Degree

2-Year Degree

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APPENDIX A

Description of Variables

Variable	Description
Hourly Wage 1986	Log of hourly earnings reported in 1986. Hourly earnings of less than $1.67 (one-half minimum wage in 1986) or over $200 are excluded.
Public HBCU State	Dummy variable equal to 1 if respondent's high school is in a state with a public HBCU, 0 otherwise.
South	Dummy variable equal to 1 if respondent's high school is located in the South, 0 otherwise.
High School Rank	Variable from 0 to 1 indicating student's high school percentile rank as reported by the high school. A rank of .90 means student is in the top 10% of the class.
Test Scores	Sum of scaled test scores on four sections of test administered for NLS-72 respondents. The test sections are reading, mathematics, vocabulary, and picture number. Scores in this sample range from 0 to 266.
Dad SEI Index	Duncan SEI occupational index for father's occupation as reported by respondent in 1972. Index ranges from 0 to 99.
Mother's Education	Years of education of respondent's mother as reported by respondent in 1972. Years of education range from 10 to 16.
Family Income	Categorical variable ranging from 1 to 5 representing family income as reported by respondent in 1972. Category 1 represents income of $3,000 or less and each category represents an increase of $3,000 up to $12,000.
Female	Dummy variable equal to 1 if respondent is female, 0 otherwise.
Athlete	Dummy variable equal to 1 if respondent participated in athletics in high school, 0 otherwise.
Teachers Black	Categorical variable ranging from 1 to 5 representing percentage of black teachers in respondent's high school as reported by the high school. Category 1 is 20% or fewer black teachers and each category represents a 20% increase in percentage of black teachers.
City	Dummy variable equal to 1 if respondent's high school is in a city larger than 50,000 as reported by the high school, 0 otherwise.
Miles to Junior College	Distance to nearest junior or community college as reported by respondent's high school. Ranges from 0 to 250 miles.
Miles to 4-Year College	Distance to nearest four-year college or university as reported by respondent's high school. Ranges from 0 to 250 miles.
High School or Voc.	Dummy variable equal to 1 if respondent has no post-secondary schooling (except for vocational training) past high school as of 1979, 0 otherwise.
College No Degree	Dummy variable equal to 1 if respondent has some post-secondary schooling but no degree as of 1979, 0 otherwise.
2-Year Degree	Dummy variable equal to 1 if respondent has a two-year academic degree as of 1979, 0 otherwise.
Bachelors	Dummy variable equal to 1 if respondent has a B.A. degree or more as of 1979, 0 otherwise.

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Exploring the Impact of Historically Black Colleges in Promoting the Development of Undergraduates' Self-Concept

Joseph B. Berger   Jeffrey F. Milem

The purpose of this study was to increase understanding of how institutional context affected the development of self-concept in a sample of 273 African American college students, 67% of whom were female. The findings from this study suggest that students attending church affiliated historically Black colleges develop significantly higher self-ratings in three domains of self-concept—psychosocial wellness, academic, and achievement orientation—than do students attending similar predominantly White institutions.

Self-concept among undergraduates tends to increase over the collegiate experience (Pascarella & Terenzini, 1991). However, the development of self-concept varies among different types of students and their experiences of different levels and types of involvement (Astin, 1977; Pascarella & Terenzini, 1991).Although student entry characteristics and involvement experiences in college seem to have the greatest impact on the development of self-concept, institutional differences can play a role for particular types of students (Smart, 1985; Smith, 1990). Pascarella and Terenzini found discrepancies in studies of undergraduate self-concept involving students who attended historically Black colleges and universities (HBCs) versus students who attended primarily White institutions (PWIs). For example, Astin (1977) found smaller than expected gains in self-concept at HBCs, whereas Pascarella, Smart, Ethington, and Nettles (1987) and Fleming (1984) found evidence of positive indirect effects that accrue to students who attend HBCs.

Traditionally, the general value of HBCs has been a matter of controversy. For example, some critics have asserted African American students

may receive a less rigorous and well rounded education at HBCs than they do at PWIs (Jencks & Reisman, 1968; Sowell, 1972). Moreover, these critics have argued that HBCs might be better off becoming secondary schools or abandoning their mission altogether (Jencks & Reisman). Claims like these are no longer made with such bold transparency; nonethless negative images of HBCs continue to appear in the broader educational policy environment. Evidence of negative perceptions can be found in the continued attacks levied at public HBCs and in the ongoing lack of support for many private HBCs.

A number of studies have confirmed that HBCs make important contributions to American higher education because of the educationally powerful environments they provide for students (Allen, 1991; Berger, 1997; Gurin & Epps, 1975; Jackson & Swan, 1991; MacKay & Kuh, 1994). Moreover, these environments generally do a better job of promoting growth and development for African American students than do PWIs in a wide range of student outcomes, including cognitive development, academic achievement, educational aspirations, degree attainment, and college satisfaction (Allen, 1991, 1992; Astin, 1993; Bohr, Pascarella, Nora, & Terenzini, 1995; Fleming, 1984; Gurin & Epps; Jackson & Swan; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996). The large body of evidence demonstrating the positive effects of attendance at HBCs suggests that self-concept is another outcome that would be positively affected by attendance at HBCs.

Given the wealth of empirical evidence that demonstrates the educational benefits that accrue to African Americans attending HBCs, and given the past controversies regarding the development

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of self-concept, the development of self-concept for students attending HBCs in contrast to students at PWIs must be revisited.

The study of the development of self-concept during the undergraduate years has been an important part of college outcomes literature for years (Pascarella & Terenzini, 1991). Despite numerous studies, the study of self-concept remains in disarray (Hansford & Hattie, 1982; Pascarella & Terenzini). Pascarella and Terenzini, in their review of studies on the development of self-concept in college, noted the difficulty in distinguishing between self-concept and other constructs, such as self-esteem, in existing literature. Some of the disarray has stemmed from the fact that self-concept has been studied from both psychological and sociological perspectives. Recent psychological studies have been focused narrowly on academic self-concept (e.g., Gribbons & Hocevar, 1998; Pajares & Miller, 1994) or on self-concept related to social disorders such as anxiety and anorexia (e.g., Johnson & Petrie, 1996; Levy & Hadley, 1998). These approaches are not appropriate for examining the more general development of self-concept, particularly when external sources of influence, such as attendance at an HBC, are of primary interest.

Even within the realm of studies that use sociological approaches, different researchers define self-concept in different ways. Pascarella and Terenzini (1991) defined self-concept as a "relational term that is used to denote students' judgments of their competence or skills (whether academic or social) *relative to those of other students*" (p. 171). Pascarella and Terenzini derived this definition of self-concept from an operational definition of the term in existing literature. They identified two major types of self-concept that pertain to the study of college outcomes—academic and social—based on earlier studies (Pascarella et al., 1987; Smart & Pascarella, 1986). Smart and Pascarella identified 11 self-rating items that could be formed into three self-concept subscales (Academic, Social, and Artistic) from the 1971 and 1980 Co-operative Institutional Research Program (CIRP) surveys.

Astin (1977) also used the self-rating items from the CIRP surveys to develop self-concept measures. He generated his measures of self-concept empirically and maintained that numerous categories of self-concept exist and are affected by the collegiate experience. Using CIRP data from the late 1960s, Astin (1977) derived four self-concept factors—Political Liberalism, Interpersonal Self-esteem, Intellectual Self-Esteem, and Self-Criticism. Included in this 1977 analysis were seven items from the survey that did not load high enough on any of the four factors. In a follow-up study that used more recent data, Astin (1993) redefined his categories of self-concept to include four basic categories—Drive to Achieve, Writing Ability, Physical Health, and Emotional Health. He also identified six personality types that are related to self-concept. One of these, scholarship, Astin (1993) also referred to as intellectual self-concept. Astin is one of the few researchers to develop an empirically based definition of self-concept and its subconstructs; nonetheless, some confusion exists as to whether these are true measures of self-concept or are more directly related to personality types. In addition to lack of clarity and consistency regarding these measures, Astin's schema includes so many categories related to self-concept that they cannot be used easily in further studies.

The CIRP self-rating scales were also used to define a third set of self-concept measures (Astin & Kent, 1983). In this study, the authors used factor-analytic techniques to derive three measures of self-esteem—Leadership, Social, and Academic. However, the authors provided no statistical information about the results of the factor analysis, and the results of the factor analysis do not appear to be conceptually pure. For example, items related to intellectual self-confidence and writing ability are part of the leadership scale rather than the academic scale. Although these scales were derived empirically, additional evidence regarding their construction would be helpful in determining whether they can be used as is, or if they need modification before being used in future studies.

The consistent use of CIRP data as the basis for developing measures of self-concept in college largely arises from the fact that this is

one of the few longitudinal surveys that includes items that can be used to measure aspects of self-concept for college students. However, existing studies have developed operational definitions of self-concept by creating scales based on data from samples that are composed of predominantly White students. One major criticism of much of the existing theory and research on student development and college impact is that it has largely been derived from White students, coupled with a substantial lack of theory that has been empirically generated and tested with non-White populations (Evans, Forney, & Guido-DiBrito, 1998; McEwen, 1996).

Proper measures of self-concept are necessary; however, the focus of studies has been and should be on the study of the *process of change* in self-concept during the college years. The academic and social systems of a campus seem to exert the most powerful effects on self-concept during the college years (Pascarella & Terenzini, 1991; Smart & Pascarella, 1986). This is consistent with other literature on college outcomes that emphasizes the important role that the academic and social systems of a campus play in student persistence (Tinto, 1975; 1993), socialization (Weidman, 1989), and other outcomes (Astin, 1991; 1993). Additionally, studies have demonstrated that students are more likely to participate in different types of academic and social activities depending on whether they attend an HBC or a PWI (Berger, 1997; Berger, 2000; DeSousa & King, 1992; Mackay & Kuh, 1994; Watson & Kuh, 1996).

Interpersonal relationships form the bridge between individual dispositions and institutional tendencies, and together, these factors determine individual student outcomes. The way a student perceives and responds to events in the college setting will differentiate the college experience (Allen & Haniff, 1991, p. 108). Hence, to document and to understand fully the process of change in self-concept for undergraduates, researchers must include appropriate measures of student involvement experiences in college.

HBCs appear to provide a very different environment in which the educational process occurs for African American students, and HBCs promote a variety of positive effects on the educational outcomes for students who attend them (Allen, 1991, 1992; Astin, 1993; Fleming, 1984; Gurin & Epps, 1975; Jackson & Swan, 1991). Although the effects of institutional size, type of control, and selectivity on the development of self-concept have been addressed in previous studies (Astin, 1977; 1993), differences between HBCs and PWIs have not been examined.

The conceptual framework used in this study was derived from a framework that Weidman (1989) developed for understanding the undergraduate socialization process. The methodological plan has been used in college impact studies, including Astin's studies on the development of self-concept (1970a, 1970b, 1977, 1991, 1993). Additionally, concepts from other studies (Astin & Kent, 1983; Smart & Pascarella, 1986) have been incorporated as a means of delimiting the important concepts and variables that should be considered in an investigation of self-concept. The basic model (see Astin, 1977, 1993) was built on the assumption that self-concept, as an outcome of the college experience, is affected by student entry characteristics as inputs and by two types of campus environment measures: type of college attended (HBC vs. PWI) and variables measuring types of involvement behaviors.

Our study was a sociological examination of the development of self-concept in African American undergraduates at religiously affiliated HBCs. The guiding research questions were: (a) Using existing measures of self-concept, can the construct of self-concept be clarified and defined as it pertains to African American students? and (b) Do levels of self-concept for African American students who attend HBCs differ from the levels of self-concept for African American students who attend PWIs? The first question was exploratory and the working hypothesis for the second question was that African American students attending the HBCs in this study would develop higher levels of self-concept than their counterparts at PWIs.

METHOD

The sample was comprised of eight church-related liberal arts colleges that are members of

an educational consortium. The institutions are similar in size and focus. Each institution participated in the 1992 Cooperative Institutional Research Project's (CIRP) Freshman Survey and in the 1996 follow-up of the entering class of 1992, the College Student Survey (CSS). Six of the institutions are predominantly White and two are historically Black. These institutions were selected on the basis of their participation in the consortium. Although this limits the generalizability of the sample, it also provides a rare opportunity to collect this type of data from HBCs, given the limited amount of previously existing longitudinal data on students who attend HBCs (Allen, 1992).

For this study we used a longitudinal student data set comprised of information from the CIRP 1992 Student Information Form (SIF) that surveyed all full-time entering students and the 1996 CSS of seniors. The SIF was sent by the Higher Education Research Institute at UCLA to campuses during the Spring and Summer of 1992 for distribution to new students during orientation or during the first few weeks of the Fall term. The CSS is a follow-up survey that can be combined with the SIF to provide longitudinal data for analyses of a broad range of student experiences and outcomes (Hurtado, Astin, Korn, & Dey, 1989; Milem, 1994). The CSS was administered to all seniors in the spring of 1996. 781 students (54%) of the population responded to both surveys. Of the students in the final sample, 273 were African American. Given that the purpose of this study was to focus on the development of self-concept at HBCs versus PWIs, only the 273 African American students were selected for the analyses in this study. Students attending HBCs (N.= 229) comprised 84% of the sample and students at PWIs constituted 16% of the sample. 67% of these students were female and the average age of the students in the sample was 22.3.

Procedure

A series of structural equations were conducted using blocked hierarchical ordinary least-squares regression to estimate the direct effects of the constructs in the proposed model. This method of statistical analysis enabled us to assess which

individual variables had the biggest effect on the development of self-concept while allowing us to look at the effects of groups of variables. In other words, by using this statistical technique we were able to estimate how much each variable contributed to the development of each measure of self-concept, and at the same time observe how the different groups of independent variables (student entry characteristics, institutional type, and involvement behaviors) contributed to the development of self-concept. Factor analysis was used to identify latent measures of the self-concept constructs that are used as the dependent variables in the three equations. Factor analysis enabled us to condense a large number of items into smaller groups that are easier to manage and interpret. In this study, we were able to reduce 26 items into three groups of items, with each group representing a different dimension of self-concept. After the dependent variables were identified, three regression equations were estimated, one for each of the self-concept measures (Psychosocial Wellness, Academic Ability, and Achievement Orientation).

Factor Analysis

The dependent variables were derived through factor analysis of 26 items included on the SIF and CSS. These items were rotated orthogonally, using the varimax method. A three-factor solution emerged as the most parsimonious from the factor analysis.

The first factor, *Psychosocial Wellness* self-concept, is composed of six items related to students' self-concept of their emotional and physical health, social and intellectual self-confidence, understanding of others, and co-operativeness. The alpha reliabilities were 0.74 for the pretest and 0.80 for the posttest scales. The second factor, *Achievement Orientation* self-concept, was composed of three items measuring students' self-concept of their drive to achieve, leadership ability, and competitiveness, with alpha reliabilities of 0.64 and 0.66, respectively. The final factor was an *Academic Ability* self-concept and included four items related to student self-perceptions about artistic, writing, public speaking, and academic abilities. The

alpha reliabilities for this construct were 0.56 and 0.63, respectively.

Regression Equations

Regression analyses were conducted using three blocks of independent variables: student entry characteristics, institutional data, and student involvement behaviors. Measures of gender, family income, high school grade point average, and political views were included as entry characteristics along with pretests for our measures of self-concept. The second variable block included a dichotomous measure indicating whether the college institution attended by the student was historically Black. The final block of independent variables included individual items and factorially derived scales representing a variety of involvement behaviors.

RESULTS

Table 1 provides variable descriptions and descriptive statistics for all of the variables used in this study. Tables 2, 3, and 4 display the results of the regression equations for the three dependent variables—Psychosocial Wellness, Academic Ability, and Achievement Orientation, respectively.

Predicting Psychosocial Wellness

Among the entry characteristics, we found that two independent variables served as significant predictors of student self-concept regarding their psychosocial wellness. The pretest for this measure ($\beta = .16$) was the largest positive predictor among entry characteristics of the outcome although being a woman negatively predicted ($\beta = -.10$) this subscale. Attending an HBC was the strongest predictor of psychosocial wellness ($\beta = .21$) in the regression equation. We were interested to note that this variable has greater predictive value than the pretest measure of psychosocial wellness. The final block of variables included items that measure the type and extent of student involvement in a range of activities while in college. In the final solution of the regression equation we saw that three of these measures served as significant positive predictors of the outcome. Academic support

from faculty ($\beta = .18$), same race contact ($\beta = .11$), and collaborative learning ($\beta = .11$) each serve as significant positive predictors of students' sense of psychosocial wellness. The regression model explained 20 % of the variance in our dependent variable at its final solution with the greatest amount of variance in the outcome explained by the involvement measures.

Predicting Academic Ability

Students' assessment of their level of academic ability at the time they entered college served as a significant positive predictor of their level of academic ability after 4 years in college ($\beta = .27$). In addition, students with higher high school GPAs were also more likely to report greater self-confidence in the area of academic ability after 4 years ($\beta = .10$). No other entry characteristics served as significant predictors of the outcome.

As in the previous regression equation, students who attended HBCs were more likely to rate themselves higher on academic ability 4 years after entering college than did students who attended PWIs ($\beta = .19$). Moreover, the magnitude of this effect increased (from $\beta = .17$ to .19) after the final block of variables entered the regression equation.

Four measures of undergraduate involvement entered the regression as significant predictors of the outcome. Academic support from faculty ($\beta = .19$), academic effort ($\beta = .12$), and participation in student government ($\beta = .16$) all serve as positive predictors of self assessments of academic ability. Conversely, more time spend socializing with peers ($\beta = -.11$) served as a negative predictor of the dependent variable. The regression model at final solution explained 23 % of the variance in the dependent variable.

Predicting Achievement Orientation

Interestingly, student self-assessments of achievement orientation at the time they entered college did not serve as a significant predictor of this measure after 4 years. In fact, the only entry characteristic that did predict the dependent variable was gender. Women were less likely to report increases in their achievement orientation after 4 years than were men ($\beta = -.21$).

TABLE 1.

Variables Definitions with Means and Standard Deviations

Variable Name	
1. Income	Single item measuring family income during the previous year 1 (*less than $6,000*) to 14 (*$200,000 or more*). SIF item. M = 5.80 SD = 2.67
2. Political View: Liberal	Single item asking students to characterize their political view 1 (*far right*), 2 (*conservative*), 3 (*middle of the road*), 4 (*liberal*), 5 (*far left*). SIF item. M = 3.19 SD = 0.83
3. High School Grade Point Average	Single item self-reported measure of high school grade point average 1 (*D*) to 8 (*A or A+*). SIF item. M = 5.06 SD = 1.64
4. Gender: Female	Single item identifying students' gender 1 (*male*), 2 (*female*) M = 1.67 SD = 0.44
5. Psychosocial Wellness	Four-item scale measuring 1 (*lowest 10%*) to 5 (*highest 10%*) when student compares self with persons their own age; students' psycho-social wellness self-concept, including (1) social self-confidence, (2) understanding of others, (3) cooperativeness, and (4) emotional health. SIF items for entry measure and CSS items for exit measure. Alpha reliability = .69 (entry) and .81 (exit). Entry: M = 15.51 SD = 2.31, Exit: M = 16.23 SD = 2.39
6. Academic Ability	Four-item scale measuring 1 (*lowest 10%*) to 5 (*highest 10%*) when student compares self with persons their own age; students' academic ability self-concept, including (1) intellectual self-confidence, (2) academic ability, (3) writing ability, and (4) public-speaking ability. SIF items for entry measure and CSS items for exit measure. Alpha reliability = .64 (entry) and .77 (exit). Entry: M = 14.32, SD = 2.26 Exit: M = 15.53 SD = 2.42
7. Achievement Orientation	Three-item scale measuring 1 (*lowest 10%*) to 5 (*highest 10%*) when student compares self with persons their own age; students' achievement orientation, including (1) drive to achieve, (2) competitiveness, and (3) leadership ability. SIF item for entry measure and CSS items for exit measure. Alpha reliability = .74 (entry) and .76 (exit). Entry: M = 11.16 SD = 2.15, Exit: M = 12.00 SD = 1.99
8. Historically Black College	Single item measure indicating whether student's college is an historically Black college 2 (*yes*), 1 (*no*). M = 1.88 SD = 0.24

table continues

TABLE 1. *continued*

Variables Definitions with Means and Standard Deviations

Variable Name

9. **Student Government Participation**

Two-item scale indicating level of student's participation in student government, including (1) whether the student participated in student government while in college and (2) whether the student was elected to office while in college. Alpha reliability = .70.

$M = 1.23$ $SD = 0.42$

10. **Academic Effort**

Two-item scale indicating level of student's academic effort, including (1) hours per week spent studying during the past year and (2) hours per week spent in classes and labs during the past year. Alpha reliability = .68.

$M = 10.43$ $SD = 3.28$

11. **Multi-Cultural Activities**

Four-item scale indicating student's level of participation in multi-cultural activities, including (1) whether a student participated in a racial/ethnic student organization while in college, (2) whether a student participated in a racial/cultural awareness workshop while in college, (3) whether a student enrolled in a racial/ethnic studies course while in college, and (4) whether a student enrolled in a women's studies course while in college. Alpha reliability = .56.

$M = 5.07$ $SD = 1.10$

12. **Collaborative Learning**

Three-item scale indicating level of student's participation in collaborative learning, including (1) how frequently student studied others, (2) worked on group project in class, and (3) discussed course with other students. Alpha reliability = .54.

$M = 7.89$ $SD = 1.12$

13. **Club/Group Participation**

Single item indicating how many hours per week during the last year student spent involved in club/group participation 1 (*none*) to 7 (*16 or more*).

$M = 2.83$ $SD = 1.86$

14. **Socializing with Peers**

Single item indicating how many hours per week during the past year student spent socializing with friends 1 (*none*) to 7 (*16 or more*).

$M = 4.80$ $SD = 1.84$

15. **Faculty Support: Personal**

Four-item scale indicating how often their professors provided a student with (1) respect, (2) emotional support and encouragement, (3) a letter of recommendation, and (4) help cutting through red tape. Alpha reliability = .68.

$M = 9.03$ $SD = 1.93$

table continues

TABLE 1. continued
Variables Definitions with Means and Standard Deviations

Variable Name	
16. Faculty Support: Academic	Eight-item scale indicating how often their professors provided a student with (1) encouragement to pursue graduate/professional school, (2) an opportunity to work on a research project, (3) advice and guidance about student's educational program, (4) an opportunity to publish, (5) assistance with improving study skills, (6) honest feedback about student's skills and abilities, (6) intellectual challenge and stimulation, and (8) an opportunity to discuss coursework outside of class. Alpha reliability = .85. $M = 17.86$ $SD = 3.64$
17. Same Race Contact	Two-item scale indicating how many of student's (1) close friends and (2) study partners are of their same race. Alpha reliability = .59 $M = 6.49$ $SD = 1.10$
18. Other Race Contact	Four-item scale indicating how frequently students (1) studied with, (2) dined with, (3) roomed with, and (4) dated someone from another racial/ethnic group. Alpha reliability = .69. $M = 5.58$ $SD = 1.50$
19. Encountered Racial Hostility	Three-item scale indicating how frequently students (1) heard faculty make inappropriate remark about minorities, (2) felt excluded from school activities because of racial/ethnic background, and (3) felt pressure not to socialize with students from other racial/ethnic groups. Alpha reliability = .70. $M = 4.19$ $SD = 0.59$

As with the two other regression equations, attendance at an HBC served as a positive predictor of students' assessments of their achievement orientation ($\beta = .15$). As with the previous regression, the magnitude of the relationship between this measure and the dependent variable increased after controlling for the effects of the measures of student involvement (from $\beta = .13$ to $\beta = .15$).

Four measures of involvement served as positive predictors of the outcome and one measure of involvement served as a negative predictor. Academic support from faculty ($\beta = .13$), academic effort ($\beta = .14$), involvement

in multicultural activities ($\beta = .11$), and involvement in student government ($\beta = .15$) predicted increased levels of achievement orientation after 4 years. Conversely, socializing with peers ($\beta = -.12$) predicted decreased levels in the outcome after 4 years. The final regression model explained 20 % of the variance in the dependent variable.

DISCUSSION

Taken together, the results from the statistical analyses suggest some important findings. First, three distinct dimensions of self-concept—

psychosocial wellness, academic ability, and achievement orientation—emerged as the most efficient and informative way of defining and measuring the components of this important student outcome for the African American students in this sample. Second, as expected, initial levels of self-concept were the best indicators of subsequent levels of self-concept. However, other entry characteristics and different types of involvement in college also played significant roles in shaping the development of self-concept in all three areas. The main working hypothesis for this paper, that students at HBCs would develop higher levels of self-concept, was supported in the regressions predicting all three measures of self-concept.

With regard to the relationship between institutional type (HBC vs. PWI) in facilitating increases in levels of self-concept, the findings of our analyses indicate that HBCs' provide educational environments are more beneficial than those at PWIs in helping African American students to develop increased levels of self-confidence after 4 years of college. In fact, in each of our prediction equations, institutional type (HBC) was among the strongest predictors of each self-concept subscale. Our findings and those of other studies (e.g., Allen, 1991; Berger, 2000; Fleming, 1984) suggest that this relates to the educational climate that exists at HBCs. This study provides additional support regarding the valuable role played by HBCs in promoting positive educational outcomes for the African American students who attend them.

As we considered the pattern of findings across each of the three regression equations, we noted a number of interesting results. Regarding the effect of entry characteristics, the pretest served as a significant predictor of final outcome in two of three regression equations. Although initial levels of psychosocial wellness and academic ability were statistically significant predictors of subsequent levels of these types of self-concept, the pretest for achievement orientation was not statistically significant. This finding may indicate that achievement orientation is more likely to be influenced by the collegiate experience than are the other two types of self-concept examined in this study.

TABLE 2.

Summary of Regression Equations Predicting Self-Concept Subscale: *Psychosocial Wellness*

Independent Variables	Blocks		
	1	2	3
Pre-test	.17**	.16**	.16**
Gender: Female	−.08	−.08	−.10*
Family Income	−.09	−.04	−.07
High School Grade Point Average	−.08	−.07	−.08
Political View: Liberal	−.05	−.04	−.06
Institutional Type: HBC		.21**	.21**
Faculty Support: Academic			.18**
Faculty Support: Personal			.02
Same Race Contact			.11*
Other Race Contact			−.01
Racial Hostility			−.02
Collaborative Learning			.11*
Academic Effort			.09
Multi-cultural Activities			.06
Student Government Participation			.08
Socialization with Peers			−.09
Club/Organization Participation			.02
R^2	.04*	.09***	.20***

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

TABLE 3.

Summary of Regression Equations
Predicting Self-Concept Subscale:
Academic Ability

Independent Variables	Blocks		
	1	2	3
Pre-test	.28***	.28***	.27***
Gender: Female	-.00	-.01	-.03
Family Income	-.04	-.00	-.05
High School Grade Point Average	.09	.10*	.10*
Political View: Liberal	-.07	-.05	-.08
Institutional Type: HBC		.17**	.19**
Faculty Support: Academic			.19**
Faculty Support: Personal			.07
Same Race Contact			-.01
Other Race Contact			-.01
Racial Hostility			.02
Collaborative Learning			.06
Academic Effort			.12*
Multi-cultural Activities			.03
Student Government Participation			.16**
Socialization with Peers			-.11*
Club/Organization Participation			.04
R^2	.08***	.12***	.24***

*$p < .05$. **$p < .01$. ***$p < .001$.

Other entry characteristics also showed some interesting patterns of findings. Women were more likely than men to report lower levels of psychosocial wellness and achievement orientation after 4 years of college. Hence, this suggested that men are at a greater relative advantage in developing self-concept than are women. This finding suggest that postsecondary educational environments continue to have embedded benefits for male students. Hence, women may not be as likely, because of their immersion in campuses with historical vestiges of male privilege, to develop higher levels of positive self-concept relative to their male counterparts.

In each of the three regression equations, African American students who attended HBCs were more likely than their peers at PWIs to report increased levels of social self-concept 4 years after entering college. Moreover, in two of three regression equations, the predictive value this measure increased after controlling for the effects of our measures of involvement. This suggests that students attending HBCs are likely to have more opportunities to become involved in the types of activities that lead to increases in self-concept.

In particular, interactions with others—faculty and peers—seem to account for much of the positive effects found at HBCs. Faculty support, in both personal and academic areas, are highly correlated with attendance at HBCs, as are involvement in student government and involvement with other students via participation in clubs or organizations. In addition, our findings suggest that even after controlling for institutional type certain types of involvement in college are significant in predicting changes in self-concept. In each of the three regression equations, students who reported receiving greater levels of academic support from faculty members were more likely to report increases in self-concept. In fact, in the regressions predicting psychosocial wellness and academic ability, this was the strongest of the involvement measures predicting self-concept.

Other involvement behaviors also appear to facilitate the development of self-concept. Higher levels of academic effort and involvement in

student government served as positive predictors of academic ability and achievement orientation. Both of these variables, academic effort and student government, represent levels of student involvement that are above and beyond expected levels. The fact that these measures were found to have strong positive effects on the development of two of the three measures of self-concept lends further support for Astin's (1985) postulates regarding the important role of involvement and reinforces Pascarella's (1985) emphasis on the importance of academic effort as a major influence on learning outcomes. This finding is consistent with Pace's (1980) notion that quality of student effort is crucial in the development of higher levels of desired outcomes in students.

Conversely, students who spent increased time socializing with their peers were less likely to report increases in their levels of academic ability and achievement orientation. However, involvement in organized activities with peers (e.g., student government and multicultural activities) have positive effects on self-concept, whereas unstructured social interactions tended to have a negative effect on the development of self-concept. This finding indicates that merely facilitating social contact among students is insufficient and potentially counterproductive to the development of desired educational outcomes, such as positive self-concept. Hence, this finding emphasizes the need for postsecondary educators and campus leaders to create purposeful and structured peer interactions to maximize the educational potential that students have for teaching each other.

This study sheds new light on ways in which researchers and educators might operationally define self-concept for undergraduate students. Given the conceptual and methodological limitations of previous definitions of self-concept, we believe that the three subconstructs that emerged from this study provide a valuable contribution. The definition offered here is methodologically and conceptually sound. In fact, each of the three subscales cover important types of educational outcomes. The Psychosocial Wellness factor focuses on the core concepts that have long been the focus of student development theorists and practitioners. The Academic Ability

TABLE 4.

Summary of Regression Equations Predicting Self-Concept Subscale: *Achievement Orientation*

Independent Variables	Blocks		
	1	2	3
Pre-test	.09	.09	.09
Gender: Female	−.16**	−.17**	−.21***
Family Income	−.01	−.04	−.06
High School Grade Point Average	−.02	−.02	−.02
Political View: Liberal	.02	.03	.01
Institutional Type: HBCU		.13*	.15**
Faculty Support: Academic			.13*
Faculty Support: Personal			.03
Same Race Contact			−.05
Other Race Contact			.01
Racial Hostility			−.07
Collaborative Learning			.07
Academic Effort			.14*
Multi-cultural Activities			.11*
Student Government Participation			.15**
Socializing with Peers			−.12*
Club/Organization Participation			.06
R^2	.04	.07*	.20***

$^*p < .05.$ $^{**}p < .01.$ $^{***}p < .001.$

subscale measures students' beliefs about their ability to perform a variety of tasks that are commonly used to assess their academic abilities. In other words, the Academic Ability subscale provides a description of how students' view themselves with regard to the core tasks that are asked of them inside the classroom. The final subconstruct, Achievement Orientation, measures how students' assess their abilities to be leaders and successes in life. American higher education has traditionally been viewed as having responsibility for the preparation of future leaders in all walks of life. Hence, taken together, these three subscales provide a comprehensive, yet concise, description of undergraduate self-concept in key areas of desired student outcomes.

The new insights gained from this study about the development of self-concept in African American students have some potentially important implications for the practice of student affairs. First, the findings from this study suggest that student affairs professionals should strive to develop programs and policies that facilitate the development of the dimensions of self-concept identified in this study. Second, the findings from this study reiterate the importance of student involvement in college life. Even after controlling for individual differences, student involvement in different campus activities (particularly student government) positively affected the development of self-concept for African American students. Finding ways to provide African American students with opportunities to become involved in these types of activities at PWIs is likely to have positive benefits regarding the development of self-concept of African American students.

Finally, this study focused specifically on African American students. For far too long African American students and other students from traditionally underrepresented groups, have been the subjects of studies using models and measures developed from research on primarily White student populations. This study developed an operational definition of self-concept by analyzing the students that are the target of the study. Hence, we can have a greater degree of confidence that the definition of self-concept used in this study is appropriate for this popu-lation. Future uses of this definition of self-concept may provide additional information about the suitability of this operational definition for other types of students.

LIMITATIONS

Some limitations should be kept in mind when considering the findings from this study. First, the sample of institutions in this study is composed entirely of small, private, church-related colleges and only of African American students. Hence, the results of this study may only be generalizable to this type of institution and for the types of students they enroll. Future studies should test these questions at other types of institutions and with other types of students. Second, the use of CIRP data presents some reason for caution despite its many advantages. Although CIRP represents one of the largest and most established data sets gathered from undergraduate students, this data tends to include a wide range of variables while sacrificing precision and depth of measurement for specific types of variables. Hence, CIRP data is not always an optimal source of data for studies like this one that are smaller, and more focused. Third, in this study we examined only direct effects of variables in the model. Future examination of indirect effects is likely to further illuminate the process by which HBCs and PWIs affect the development of undergraduate self-concept. Fourth, the newly developed self-concept subscales should be confirmed in other studies at a wider range of institutions to see if the same factor structure remains stable across a wider spectrum of student and institution types. Fifth, the numerical imbalance of respondents who attended PWIs versus those who attended HBCs (only 17% of the sample attended PWIs) may be a cause for concern. This imbalance warrants caution when making inferences from and drawing conclusions about the data.

The results of this study demonstrate the positive effect that HBCs exert on the development of self-concept. This finding, coupled with information gleaned from the effect of the involvement measures, suggests that what happens in college is as important, or more

important, than what African American students' bring with them to college regarding the development of a positive self-concept. The findings from this study suggest that additional research is needed to learn more about the educationally powerful learning environments found at HBCs. Given the importance of the topic, the lack of previous studies in this area, and the limitations of the data, we hope that this study serves to stimulate future research in this area. This line of inquiry may help educators to better serve the

needs of African American students at PWIs, although we suspect that it may help us to better serve all students at all institutions.

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Do Historically Black Institutions of Higher Education Confer Unique Advantages on Black Students? An Initial Analysis

Ronald G. Ehrenberg and Donna S. Rothstein

Throughout most of the late nineteenth and early twentieth centuries, the majority of black American citizens lived and were educated in the south. They were formally excluded from southern segregated white institutions of higher education and found higher educational opportunities only in Historically Black Institutions (HBIs).[1] Some HBIs (for example, Morehouse, Spelman, and Fisk) were private institutions that were initially established by church-related organizations. Others (for example, Florida A&M, Grambling, and Morgan State) were public institutions established in the southern states after the Civil War to provide separate education for black youths. In the absence of allowing blacks to attend the same institutions as whites, the establishment of the public HBIs was necessary if the southern states were to meet the requirements of the second (1890) Morrill Act. As part of providing funding for land grant institutions, the act required that the states provide educational opportunities for all of their citizens.

As the black population began to move to the north in response to urban industrial employment opportunities, the relative importance of the HBIs for the education of black college age students began to decline. The famous 1954 *Brown v. Board of Education* Supreme Court decision,

which outlawed separate but equal public schools, actually had very little impact on many of the southern states, and formally segregated higher educational systems remained. When integrated at all, the white institutions often did so only as a result of legal suits pursued by the NAACP.[3] It was not until the passage of the 1964 Civil Rights Act, Title VI of which prohibited the allocation of federal funds to segregated public educational institutions, that any real progress at integration was made. However, this progress was very slow, and in the 1973 Supreme Court decision *Adams v. Richardson*, the southern states were formally and finally ordered to dismantle their dual higher educational systems.

As recently as 1964, over half of all bachelor's degrees granted to black Americans were granted by HBIs. By 1973, with the continued black migration to the north and the beginnings of integrated higher education in the south, the HBI share had fallen to about one-quarter to one-third, a range in which it remains today. The 105 institutions officially classified as HBIs that exist today are listed in Table 4.1. Over 90 percent of the institutions are four-year institutions, and over 95 percent of the students enrolled in HBIs attend four-year institutions. While more HBIs are private than public, the former are often quite small, and about three-quarters of the students at HBIs are enrolled in public institutions. Approximately 20 percent of all black college students are now enrolled in HBIs.

Despite the declining relative importance of HBIs in the production of black bachelor's degrees, in recent years they have become the subject of intense public policy debate for two reasons. First, court cases have been filed in a number of southern states that assert that black students continue to be underrepresented at traditionally white public institutions, that discriminatory admissions criteria are used by these institutions to exclude black students (e.g., basing admissions only on test scores and not also on grades), and that per student funding levels, program availability, and library facilities are substantially poorer at public HBIs than at other public institutions in these states (Johnson 1991). In one 1992 case, *United States v. Fordice*, the Supreme Court ruled that Mississippi had not done enough to eliminate racial segregation in its state-run higher educational institutions (Chira 1992). Rather than mandating a remedy, however, the Court sent the case back to the lower courts for action.

What should the appropriate action be? Should it be to integrate more fully both the historically white and the historically black institutions by breaking down discriminatory admissions practices at the former and establishing some unique programs at the latter? Should the HBIs be

Table 4.1. Historically Black Colleges and Universities, by Location and Year Founded

Alabama
Alabama A&M Univ. (Huntsville), 1875—U
Alabama State Univ. (Montgomery), 1874—U
Carver State Tech. College (Mobile), 1962—U2S
Concordia College (Selma), 1922—R2S
Fredd State Tech. College (Tuscaloosa), 1965—U2S
J. F. Drake State Tech. College (Huntsville), 1961—U2S
S. D. Bishop State Junior College (Mobile), 1927—U2
Lawson State College (Birmingham), 1965—U2
Miles College (Birmingham), 1905—RS
Oakwood College (Huntsville), 1896—R
Selma Univ. (Selma), 1876—RS
Stillman College (Tuscaloosa), 1876—RS
Talladega Univ. (Talladega), 1867—RS
Trenholm State Tech. College (Montgomery), 1966—U2S
Tuskegee Univ. (Tuskegee), 1881—R

Arkansas
Arkansas Baptist College (Little Rock), 1901—RS
Philander Smith College (Little Rock), 1877—RS
Shorter College (Little Rock), 1886—R2S
Univ. of Arkansas (Pine Bluff), 1873—U

Delaware
Delaware State College (Dover), 1891—U

District of Columbia
Howard Univ., 1867—R
Univ. of the District of Columbia, 1851—U

Florida
Bethune-Cookman College (Daytona Beach), 1904—R
Edward Waters College (Jacksonville), 1866—RS

Florida A&M Univ. (Tallahassee), 1877—U
Florida Memorial College (Miami), 1879—R

Georgia
Albany State College (Albany), 1903—U
Clark Atlanta Univ. (Atlanta), 1865—R
Fort Valley State College (Fort Valley), 1895—U
Interdenominational Theol. Center (Atlanta), 1958—R
Morehouse College (Atlanta), 1867—R
Morehouse School of Medicine (Atlanta), 1978—R
Morris Brown College (Atlanta), 1881—R
Paine College (Augusta), 1882—RS
Savannah State College (Savannah), 1890—U
Spelman College (Atlanta), 1881—R

Kentucky
Kentucky State Univ. (Frankfurt), 1886—U

Louisiana
Dillard Univ. (New Orleans), 1869—R
Grambling State Univ. (Grambling), 1901—U
Southern Univ. A&M College (Baton Rouge), 1880—U
Southern Univ. of New Orleans (New Orleans), 1959—U
Southern Univ. (Shreveport), 1964—U2
Xavier Univ. of Louisiana (New Orleans), 1915—R

Maryland
Bowie State College (Bowie), 1865—U
Coppin State College (Baltimore), 1900—U
Morgan State Univ. (Baltimore), 1867—U
Univ. of Maryland-Eastern Shore (Princess Anne), 1886—U

Michigan
Lewis College of Business (Detroit), 1874—R2S

Table 4.1. (continued)

Mississippi	Pennsylvania
Alcorn State Univ. (Lorman), 1871—U	Cheyney State Univ. (Cheyney), 1838—U
Coahoma Junior College (Clarksdale), 1949—U2	Lincoln University (Lincoln), 1854—U
Jackson State Univ. (Jackson), 1877—U	
Mary Holmes College (West Point), 1892—R2S	South Carolina
Mississippi Valley State Univ. (Itta Bena), 1946—U	Allen Univ. (Columbia), 1870—RS
Rust College (Holly Springs), 1866—R	Benedict College (Columbia), 1870—R
Tougaloo College (Tougaloo), 1869—RS	Claflin College (Orangeburg), 1869—RS
Hinds Community College, Utica Campus, (Raymond), 1954—U2S	Clinton Junior College (Rock Hill), 1894—R2S
	Denmark Tech. College (Denmark), 1948—U2S
Missouri	Morris College (Sumter), 1908—RS
Lincoln Univ. (Jefferson City), 1866—U	South Carolina State Univ. (Orangeburg), 1896—U
Harris-Stowe State College (St. Louis), 1857—U	Voorhees College (Denmark), 1897—RS
North Carolina	Tennessee
Barber-Scotia College (Concord), 1867—RS	Fisk Univ. (Nashville), 1867—RS
Bennett College (Greensboro), 1873—RS	Knoxville College (Knoxville), 1875—R
Elizabeth City State Univ (Elizabeth City), 1891—U	Lane College (Jackson), 1882—RS
Fayetteville State Univ. (Fayetteville), 1877—U	LeMoyne-Owen College (Memphis), 1862—R
Johnson C. Smith Univ. (Charlotte), 1867—R	Meharry Medical College (Nashville), 1876—R
Livingstone College (Salisbury), 1879—RS	Morristown College (Morristown), 1881—R2
North Carolina A&T State Univ. (Greensboro), 1891—U	Tennessee State Univ. (Nashville), 1912—U
North Carolina Central Univ. (Durham), 1910—U	
Saint Augustine's College (Raleigh), 1867—R	Texas
Shaw Univ. (Raleigh), 1865—R	Huston-Tillotson College (Dallas), 1876—RS
Winston-Salem State Univ. (Winston-Salem), 1892—U	Jarvis Christian (Hawkins), 1912—R
	Paul Quinn College (Dallas), 1872—RS
Ohio	Prairie View A&M Univ. (Prairie View), 1876—U
Central State. Univ. (Wilberforce), 1887—U	Saint Philip's College (San Antonio), 1927—R2
Wilberforce Univ. (Wilberforce), 1856—RS	Southwestern Christian College (Terrell), 1949—US
	Texas College (Tyler), 1894—RS
Oklahoma	Texas Southern Univ. (Houston), 1947—U
Langston University (Langston), 1897—U	Wiley College (Marshall), 1873—RS
	U.S. Virgin Islands
	College of the Virgin Islands (St. Thomas), 1962—U

Table 4.1. (continued)

Virginia	West Virginia
Hampton Univ. (Hampton), 1868—R	Bluefield State College (Bluefield), 1895—U
Norfolk State Univ. (Norfolk), 1935—U	
Saint Paul's College (Lawrenceville), 1888—RS	West Virginia State College (Institute), 1891—U
Virginia State Univ. (Petersburg), 1882—U	
Virginia Union Univ. (Richmond), 1865—R	

Source: 43 Code of Federal Regulations 608.2 (revised as of July 1, 1991), "What Institutions Are Eligible to Receive a Grant under the HBCU Program?" and Charleen M. Hoffman et al.

Note. U = public; R = private, 2 = two-year; 5 = 1990 fall enrollment < 1,000.

eliminated and their campuses either folded into the historically white institutions or abandoned? Or should effort be directed at equalizing per student expenditure levels and facilities between campuses, rather than at worrying about the racial distribution of students at each campus, even if such policies might result in "voluntary separate but equal" institutions?

From an economic efficiency perspective, the appropriate policy responses depend at least partially upon the answers to a number of questions: Do HBIs, per se, provide unique advantages to black students that they could not obtain at other institutions? If they do, is this because of the racial composition of their faculty or the racial composition of their students? If they do, would enrolling more black college students in higher expenditure per pupil integrated institutions actually leave these students in a worse position?

There is a long literature that stresses the importance of HBIs to black students, especially those from poorer socioeconomic and academic backgrounds. A summary of the literature is found in Pascarella and Terenzini (1991).[3] This literature suggests that students at HBIs are likely to have better self-images, be psychologically and socially better adjusted, and to have higher grades than their counterparts at other institutions. Although many studies have asserted that HBIs graduate a larger proportion of the black students that enroll in them than do other institutions, a much smaller number of studies have addressed (with mixed findings) whether HBIs continue to appear to enhance black students' degree probabilities once one controls for differences in the characteristics of the students that attend HBIs and other institutions. Only a handful have addressed whether attendance at an HBI, per se, enhances black students' subsequent labor market and educational suc-

cess; these studies typically find that it does not. None of these studies takes account of the process by which black students decide to enroll (or are prevented from enrolling) in different types of institutions.

To shed some light on these issues, the next section presents econometric analyses of whether black college students who attended HBIs in the early 1970s had higher graduation rates, higher early career labor market success, and higher probabilities of attending graduate school than did their counterparts who attended other institutions. These analyses use data from the National Longitudinal Study of the High School Class of 1972 (NLS72). The econometric methods we employ control for characteristics of the students, characteristics of the institutions, and the above mentioned matching process between students and institutions.[4]

The second subject of policy debate relates to the production and employment of black doctorates (Ehrenberg 1992). Despite vigorous (or nonvigorous?) affirmative action efforts, the proportion of black faculty at major American universities is typically quite low. In part, this reflects the small number of black doctorates that are produced annually, and many people stress the need to increase the production of black doctorates to overcome this problem. Projections of forthcoming overall shortages of doctorates also reemphasize the need to increase black doctorate production to help avert these shortages, independent of concerns about the need for black faculty to serve as role models for black students.

What is the best way to increase the flow of black students into doctoral programs? Do HBIs currently serve disproportionately as the source of the black undergraduate students who go on for doctoral degrees? Should new doctoral programs be set up, or existing programs strengthened, at HBIs to enhance the flow of black doctorates? Or should attempts be made to recruit more black students from HBIs or from other institutions into existing doctoral programs at leading Research I institutions? In part, the appropriate policy responses depend on the answer to another question: Do those black undergraduate students from HBIs who go on to doctoral study and those who get doctoral degrees at HBIs fare as well in the academic labor market as do their counterparts from other institutions?

The third section provides partial answers to some of these questions by using special tabulations prepared for us from the National Research Council's Survey of Earned Doctorates. A brief concluding section summarizes the implications of our findings and suggests directions for future research.

DID HISTORICALLY BLACK INSTITUTIONS OF HIGHER EDUCATION CONFER UNIQUE ADVANTAGES ON BLACK STUDENTS IN THE 1970S?

This section presents a detailed description of our analyses of data on black college students from the NLS72. We focus on students who first enrolled in a four-year HBI or other four-year college within three years after their June 1972 graduation from high school.[5] Our interest is in learning whether attendance at an HBI per se increased the probability that these students received a bachelor's degree by 1979, improved their early (1979) labor market outcomes (as measured by earnings and an index of occupational prestige), and increased the probability that they subsequently enrolled in an advanced degree program.

These questions are all addressed in the context of models that permit the students' choice of college type (HBI or non-HBI) to be treated as endogenous. In places, the models also control for the process that determined whether an individual was employed in 1979. The sensitivity of our findings to the statistical models used are stressed throughout.

DESCRIPTIVE STATISTICS

Descriptive statistics for the 638 black students in our sample are found in Table 4.2. Forty-seven percent or 298, of these students attended HBIs at some time during the 1972–1979 period, while the remaining 340 students always attended other institutions.[6]

Mean SAT test scores (SAT) were substantially lower, and high school ranks (HSRANK) were somewhat poorer, for the students at HBIs. These students also tended to come from families with lower incomes (PARINC), and their parents were slightly less likely to have earned bachelor's degrees (DADBA, MOMBA). Not surprisingly, they were much more likely to have gone to high school in a state in the southeastern region of the country (SOUTH), where the majority of HBIs are located. Indeed, the proportion of full-time equivalent undergraduates enrolled in HBIs (SLOTS) in the states in which students went to high school was typically twice as large for students who subsequently enrolled in HBIs than it was for students who did not subsequently enroll in HBIs.

Characteristics of the high schools that the students attended also differed between the two groups. Students enrolled in HBIs were more likely to have attended a public high school (PUBHS), to have greater proportions of black high school classmates (BSTUDH) and black high

Table 4.2. Descriptive Statistics: NLS72 Sample

Variable	HBI Sample			Non-HBI Sample		
	N	Mean	S.D.	N	Mean	S.D.
SAT	189	69.157	13.264	237	76.024	16.186
HSRANK	239	.402	.262	297	.372	.262
MALE	298	.399	.491	340	.368	.483
PARINC	233	70.990	51.048	273	80.745	54.023
DADBA	294	.092	.289	335	.099	.298
MOMBA	295	.108	.312	338	.112	.316
DADSEI	243	30.432	18.359	289	29.904	18.273
BFACH	279	.400	.253	308	.235	.213
PUBHS	298	.919	.273	340	.882	.323
BSTUDH	279	.621	.318	308	.478	.325
COLL24	279	.445	.215	308	.448	.211
URBHS	279	.237	.426	308	.289	.454
SLOTS	298	.127	.077	340	.060	.078
SOUTH	298	.718	.451	340	.323	.469
CSAT	298	69.986	7.791	340	102.128	11.052
BFACC	255	.617	.131	317	.037	.043
BSTUDC	298	.925	.106	340	.100	.110
EXPST	298	27.362	12.005	340	31.295	21.209
PRIV	298	.332	.472	340	.274	.446
WAGE79	253	5.807	3.047	288	6.298	4.076
SEI79	253	43.415	17.067	288	45.829	17.641
BA79	298	.554	.498	340	.515	.501

Sources. Higher Education General Information Survey (HEGIS) (1972): EXPST, PRIV SLOTS, HEGIS (1976): BSTUDC, Equal Employment Opportunity Commission (1989): BFACC, American Council on Education (1972): CSAT, NLS72: all other variables.
Where
SAT   individual's total SAT score (divided by 10) (ACT scores converted to SAT
            scores using Astin's [1971] conversion method)
HSRANK   individual's high school rank (1 = lowest, 0 = highest)
MALE   1 = male, 0 = female
PARINC   parents' pretax income in 1972 (divided by 100)
DADBA   1 = father has a bachelor's degree, 0 = father does not have a bachelors' degree
MOMBA   1 = mother has a bachelor's degree, 0 = mother does not have a bachelor's
            degree
DADSEI   father's index of occupational prestige (10 = low, 90 = high)
PUBHS   1 = individual attended a public high school, 0 = other
BSTUDH   proportion of black students in the individual's high school
BFACH   proportion of black teachers in the individual's high school
COLL24   proportion of 1971 graduates at the individual's high school who went to two-
            or four-year colleges
URBHS   1 = urban high school, 0 = other
SLOTS   proportion of full-time equivalent undergraduate enrollment in HBIs in the
            individual's high school state
SOUTH   1 = went to high school in the southeast region, 0 = other
CSAT   average total SAT score of incoming freshmen at the individual's college
            (divided by 10)
BFACC   proportion of black faculty at the individual's college in 1989

Table 4.2. (continued)

BSTUDC   proportion of full-time equivalent black undergraduate students at the
            individuals's college
EXPST   educational and general expenditures per full-time equivalent student at the
            individual's college (divided by 100)
PRIV   1 = individual attended a private college, 0 = public college
WAGE79   individual's hourly earnings in 1979
SEI79   individual's index of occupational prestige in 1979
BA79   1 = individual received a bachelor's degree by 1979, 0 = did not receive a
            bachelor's degree by 1979

school teachers (BFACH), but were less likely to have gone to high school in an urban area (URBHS).

The characteristics of the colleges the students attended also differed. Mean SAT scores at the college or university in which the students enrolled (CSAT) were over 300 points lower in the HBI sample, while expenditures per full-time equivalent student (EXPST) averaged about 10 percent lower. The proportions of black students (BSTUDC) and black faculty (BFACC) at the students' institutions were both much higher in the HBI sample, and students at HBIs were more likely to be attending a private institution (PRIV).[7]

Turning to some of the outcomes that will be of interest to us, the proportion of students that had received a bachelor's degree by the 1979 survey data (BA79) was .04 higher in the HBI sample. In contrast, average hourly earnings for the roughly 85 percent of both samples that were employed in 1979 (WAGE79) was almost 10 percent lower in the HBI sample. An index of employed individuals' occupational prestige (SEI79) was also slightly lower for the HBI sample than for the non-HBI sample.[8]

One goal of our study was to estimate the effects of characteristics of colleges, other than whether they were HBIs, on students' educational and labor market outcomes. Of interest were questions such as: were outcomes higher at institutions that had greater expenditures per student and/or greater student test score selectivity? Were the advantages, if any, that can be attributed to HBIs due to the racial composition of the faculty or the racial composition of the students? Given that they historically have had different missions, did private HBIs benefit black students more or less than public HBIs did?

Our ability to answer such questions is limited by the high correlations that existed among these college characteristics; these correlations are tabulated in Table 4.3. It is clear that in the pooled sample we could not hope to disentangle the effects of HBIs from the effects of other variables. Similarly, in the non-HBI sample, the high correlations between CSAT

Table 4.3 College Characteristics Correlation Matrices

	CSAT	EXPST	BSTUDC	BFACC	PRIV
All (N = 638)					
HBI	.86	−.11	.97	.95	.06
CSAT		.40	−.86	−.83	.05
EXPST			−.16	−.11	.32
BSTUDC				.96	.08
BFACC					.06
HBI = 0 (N = 340)					
CSAT		.70	−.17	−.13	.34
EXPST			−.29	−.17	.30
BSTUDC				.56	−.00
BFACC					−.06
HBI = 1 (N = 298)					
CSAT		.33	−.29	−.18	−.00
EXPST			−.25	−.04	.43
BSTUDC				.44	.14
BFACC					−.01

Note All variables are defined in Table 4.2.

and EXPST and between BSTUDC and BFACC made it unlikely that we could estimate the effects of the variables. Correlations are substantially lower in the HBI sample; and hence, throughout the paper, we attempt to estimate the effects of the various institutional characteristics on the different outcomes attained by students enrolled in HBIs.

THE DECISION TO ATTEND AN HBI

Prior attempts to estimate whether attendance at HBIs improves black students' graduation probabilities or labor market outcomes have, for the most part, treated whether a black student attended an HBI as exogenous (Thomas and Gordon 1985; Cross and Astin 1981; Pascarella et al. 1987; Pascarella, Smart, and Stoecker 1989). If students are not randomly assigned to HBIs, such a procedure may lead to biased coefficient estimates. As a first step, this section analyzes students' decisions to attend HBIs.

Given that a black student enrolled in a four-year institution, what determines whether it was an HBI? The answer is a complex one because it depends not only on the student's preferences and resources, but also on the policies pursued by institutions. For example, a number of southern states use scores on standardized tests as the sole criterion to gain admission to their historically white public institutions of higher

education, in spite of the facts that black students often do poorly on these tests and that even the generators of the tests recommend that scores *not* be used as the only criterion for admissions decisions.

In the absence of being able to estimate a structural model in which we can identify both the admissions decision rules of all institutions and the preferences of each student, we adopt a simpler reduced form approach. A student's choice of institutional type, which resulted from his or her preferences and the constraints imposed by various institutions' decision rules, is assumed to have depended on the student's high school rank and SAT scores, characteristics of the student's family and of the high school that he or she attended, and the characteristics of the HBIs and the other higher educational institutions in the state in which the student attended high school.

Why consider the characteristics of only institutions in a single state? It is well known that, nationwide, the vast majority of students attend college in the same state in which they went to high school. As Table 4.4 indicates, this was true in the 1970s for students who attended HBIs as well. In 1976, 58 percent of the students enrolled in private HBIs, and 84 percent of the students enrolled in public HBIs, were in-state students.[9] Since roughly three-quarters of all students in HBIs attended public institutions, the overall in-state percentage was around 78.

Table 4.4 also contains a set of regression equations that seeks to explain the variation across HBIs in the proportion of freshmen that were in-state students. One key finding is that (holding the tuition level for out-of-state students constant) the lower was the tuition level for in-state students, the higher was the proportion of in-state students. In addition (other variables held constant, including tuition), private HBIs tended to attract a greater proportion of in-state students, and more selective HBIs tended to attract a smaller proportion of in-state students. These findings suggest several state-level institutional variables that should have influenced whether in-state students enrolled in an HBI in the state and, as described below, we include several in the model.

Table 4.5 presents probit estimates of our model of the determinants of whether an individual in our sample attended an HBI.[10] The only state-level variable included in the analyses reported in column 1 is SLOTS, the proportion of full-time equivalent undergraduate students in the student's high school state that were enrolled in HBIs.[11] The specification reported in column 2 adds three additional measures. RELTUI is the average (weighted by full-time equivalent [FTE] enrollments) tuition in HBIs in the state relative to the weighted average tuition for other institutions in the state. RELFAC is the weighted average proportion of

Table 4.4. *Determinants of the Proportion of Freshmen at HBIs That Are In-State Students (Absolute Value of t Statistic)*

	(1)		(2)		(3)		(4)	
	Fall '76	Fall '88	Fall '76	Fall '88	Fall '76	Fall '88	Fall '76	Fall '88
INT	.963 (16.3)	.803 (9.5)	.740 (3.7)	.447 (2.3)	.939 (13.5)	.760 (6.3)	.839 (3.7)	.591 (2.4)
PRIV	.095 (1.0)	.219 (1.9)	.064 (0.7)	.222 (2.0)	.169 (1.5)	.240 (1.7)	.153 (1.4)	.247 (1.7)
TUIN*	-.361 (3.5)	-.238 (3.3)	-.314 (2.8)	-.236 (3.3)	-.481 (4.0)	-.255 (2.8)	-.461 (3.6)	-.256 (2.8)
TUOUT*	.031 (0.4)	.069 (1.1)	.031 (0.4)	.075 (1.2)	.096 (1.2)	.113 (1.4)	.085 (1.0)	.113 (1.4)
RAT84			.235 (1.2)	.071 (2.1)			.022 (0.6)	.034 (0.8)
19 State dummies included?	no	no	no	no	yes	yes	yes	yes
N	89	94	89	94	89	94	89	94
R²	.395	.412	.391	.426	.526	.468	.515	.458

Sources: Barron's *Profile of American Colleges* (Woodbury, NY: Barron's Educational Service, 1984): RAT84, National Center for Education Statistics (NCES), Higher Education General Information System (HEGIS) (1976), and Integrated Postsecondary Educational Data System (IPEDS) (1988): Residence and Migration of College Students (1988): PSAME; HEGIS (1976) and IPEDS: Institutional Characteristics (1988): PRIV, TUIN, TUOUT.

Note: Also included are dummy variables for nonreporting of tuition levels and, in columns 2 and 4, absence of a selectivity rating. The weighted mean proportions of students that were in-state students (PSAME) in 1976 and 1988, respectively, were .58 and .37 in the private HBIs, and .84 and .74 in the public HBIs.

Where:
INT intercept
PRIV 1 = private institution, 0 = public
TUIN tuition level if private, in-state tuition level if public
TUOUT tuition level if private, out-of-state tuition level if public
RAT84 Barron's 1984 selectivity rating of the institution (4 = competitive, 5 = less competitive, 6 = noncompetitive)
PSAME proportion of freshmen that are in-state students
*Coefficients have been multiplied by 1,000.

Table 4.5. *Probit Estimates of the Decision to Attend an HBI (Absolute Value of t Statistic)*

	(1)	(2)
SLOT	5.780 (7.2)	3.841 (3.8)
HSRANK	.310 (1.2)	.292 (1.1)
PUBHS	.434 (2.3)	.354 (1.8)
BFACH	1.020 (2.3)	1.016 (2.2)
BSTUDH	.216 (0.7)	.217 (0.7)
COLL24	.279 (0.9)	.612 (1.9)
URBHS	.129 (0.9)	.200 (1.2)
SAT	-.017 (3.4)	-.018 (3.4)
MALE	.202 (1.7)	.201 (1.7)
MOMBA	.014 (0.1)	-.077 (0.4)
DADBA	-.049 (0.2)	.111 (0.5)
DADSEI	.005 (1.2)	.001 (1.4)
PARINC	-.001 (0.4)	.000 (0.1)
RELTUI		.497 (1.9)
RELFAC		.009 (1.2)
RELSAT		-.738 (0.6)
χ^2/DOF	170.142/20	197.386/25
N	638	638

Note: Also included in the equation are dichotomous variables for nonreporting of high school rank; SAT scores; other high school characteristics; mother's and father's education; father's occupational status; parents' family income in 1972; and, in column 2, the absence of HBIs in the student's state of residence in 1972 and the absence of data on black faculty in a state that has at least one HBI.

Where:

SAT individual's total SAT score (ACT scores converted to SAT scale) if reported, 0 = SAT not reported

RELTUI average (weighted by FTE enrollments) tuition in HBIs in the student's high school state relative to average (weighted) tuition in other institutions in the state

RELFAC average (weighted) proportion of black faculty in HBIs in the state relative to the average (weighted) proportion of black faculty in other institutions in the state

RELSAT average (weighted) SAT score of HBIs in the state relative to the average (weighted) SAT score of other institutions in the state

All other variables are defined in Table 4.2.

black faculty in HBIs in the state relative to the weighted average proportion of black faculty in other institutions in the state. Finally, RELSAT is the weighted average SAT score in HBIs in the state relative to the weighted average SAT scores of other institutions in the state. Our expectation is that these variables, respectively, should be negatively, positively, and positively related to the probability of enrollment in an HBI.

The estimates in Table 4.5 suggest that students with higher test scores

were less likely to attend HBIs. Students from public high schools and high schools with a greater proportion of black teachers were more likely to attend HBIs. Males were more likely to attend HBIs than were females. Finally, parents' educational backgrounds and income do not appear to have influenced the students' decision to attend an HBI.

The fraction of full-time equivalent undergraduate student slots in a state that were available in HBIs also mattered. While the other state-level variables proved to be jointly significant when included in the model, individually only RELTUI approached statistical significance, and its coefficient was positive. Higher levels of RELTUI may have signified increased relative quality of HBIs in a way not captured by SAT scores and, thus, may have led to an increased probability of black students' enrollment in an HBI.

THE CHARACTERISTICS OF THE COLLEGES STUDENTS ATTENDED

Characteristics of colleges, other than whether they are HBIs, may influence a student's educational and early labor market outcomes. The quality of an institution (as measured by its expenditure per student) or the quality of its students (as measured by their average test scores) have been shown to matter (James et al. 1989). Within the HBI sector, the proportions of students and faculty that were black varied considerably, and if HBIs did prove to confer unique advantages on black students, it is important to learn whether it was the racial mix of the students and/or that of the faculty that was responsible.[14] Finally, as noted at the start of this chapter, private and public HBIs may have had differential impacts on students. Thus, in some specifications, we include each of these variables in the educational and labor market outcome equations that appear in subsequent sections.

Of course, the characteristics of institutions chosen by students are not random, and it is of some interest to understand how individuals are matched to institutional characteristics. Table 4.6 provides such estimates for individuals enrolled in HBIs and those individuals enrolled in other institutions. The characteristics analyzed are the average SAT score in the institution (CSAT), institutional expenditures per student (EXPST), the proportions of black faculty (BFACC) and students (BSTUDC), and whether the institution was private (PRIV).[15] In each case, the character-istic was assumed to depend on the weighted mean value across institu-tions in the sector in the state in which the individual went to high school of the same characteristic, as well as a vector of characteristics of the individual, his or her family, and the high school that he or she attended.

Not surprisingly, given that most individuals remained in the same state for college, the mean values of the state/sector characteristics prove to be important predictors. In addition, more able students, as measured by higher test scores and class rank, enrolled in institutions with higher average test scores and higher expenditures per student. For students not enrolled in HBIs, an increase in their test scores also was associated with lower proportions of black students and black faculty in the institu-tion that the students attended. For students enrolled in HBIs, an increase in the proportion of black teachers in their high school was associated with an increase in the proportion of black faculty in their college. Finally, if a student graduated from high school in a state that had no HBIs and he or she attended an HBI, other variables held constant, the student tended to be enrolled in an HBI with higher average test scores, expenditures per student, proportions of black faculty and black students, and probability of being private. These latter findings suggest some of the institutional characteristics that black families who sent their children out of state to HBIs were interested in obtaining.

RECEIPT OF A BACHELOR'S DEGREE BY 1979

The proportions of students who received bachelor's degrees by 1979 were .554 in the HBI sample and .515 in the non-HBI sample (see Table 4.2). What happens to the difference in these proportions once one controls for differences between the two groups in the characteristics of individuals and of the schools they attended, as well as the process by which students enrolled in HBIs or other schools?

Table 4.7 presents probit estimates of the probability that a bachelor's degree was received by 1979. Equations were estimated for students who attended HBIs, students who attended other institutions, and the pooled sample. In the separate sample cases, specifications were reported in which the probability was assumed to have varied with measures of the individual's ability and family background, and then the probability was assumed to have varied with these variables plus the characteristics of the college the individual attended. The pooled analyses included a dichotomous variable for whether the individual attended an HBI and also specifications in which this variable was treated as endogenous. To accomplish the latter, instruments for the student's institutional type were obtained from the choice of sector equations reported in Table 4.5 (see Maddala 1983).

Turning first to the estimates by sector, students whose high school class rank was better were more likely to have received a degree in both

Table 4.6. Determinants of the Characteristics of the Colleges Attended
(Absolute Value of t Statistic)

	CSAT		EXPST		BFACC		BSTUDC		PRIV[a]	
	OTHER	HBI	OTHER	HBI	OTHER	HBI	OTHER	HBI	OTHER	HBI
MALE	1.708 (1.6)	.684 (0.8)	2.162 (0.9)	−.041 (0.0)	.001 (0.2)	.002 (0.2)	−.021 (1.7)	−.008 (1.7)	.100 (0.5)	−.106 (1.1)
HSRANK	−4.886 (2.1)	−3.853 (2.0)	−5.629 (1.1)	−4.937 (1.6)	−.007 (0.6)	.023 (0.6)	−.019 (0.7)	.029 (1.1)	−.853 (2.2)	−.565 (1.3)
SAT	.199 (4.5)	.048 (1.2)	.351 (3.8)	.190 (3.0)	−.000 (1.6)	−.000 (0.6)	−.963 (1.9)[b]	.761 (1.4)[b]	.005 (0.7)	.005 (0.6)
PARINC	−.004 (0.4)	−.004 (0.4)	−.024 (1.0)	.029 (1.8)	.000 (0.4)	−.000 (0.1)	−.000 (0.5)	.061 (0.5)	−.002 (1.3)	.003 (1.2)
DADSEI	−.014 (0.4)	.043 (1.6)	−.080 (1.0)	−.002 (0.0)	.038 (2.0)[b]	.096 (0.2)[b]	−.001 (1.2)	−.000 (0.5)	.013 (2.2)	−.009 (1.4)
MOMBA	4.259 (2.3)	−2.210 (1.4)	7.748 (2.0)	−2.972 (1.2)	.014 (1.5)	.002 (0.6)	.023 (1.1)	.022 (1.1)	.064 (0.2)	−.528 (1.6)
DADBA	1.058 (0.5)	1.173 (0.6)	−1.384 (0.3)	3.634 (1.2)	−.002 (0.2)	−.026 (0.8)	−.002 (0.9)	−.010 (0.5)	−.237 (0.3)	.333 (0.8)
PUBHS	−1.141 (0.7)	−3.066 (2.0)	−1.967 (0.6)	−4.417 (1.8)	.009 (1.6)	.010 (0.3)	.038 (2.0)	.020 (1.0)	−.290 (1.2)	−.416 (1.3)
BFACH	5.966 (1.4)	−1.266 (0.5)	13.877 (1.6)	−5.500 (1.2)	.019 (0.9)	.002 (0.0)	.005 (0.1)	.087 (2.2)	.172 (0.3)	.732 (1.2)
BSTUDH	−1.693 (0.6)	.230 (0.1)	−1.850 (0.3)	3.003 (0.8)	−.019 (1.4)	−.024 (0.5)	−.019 (0.6)	−.044 (1.4)	.391 (0.9)	−.693 (1.4)
COLL24	6.057 (2.1)	1.638 (0.8)	7.076 (1.1)	−.350 (0.1)	.027 (1.9)	−.076 (1.9)	.002 (0.1)	−.054 (1.9)	.917 (1.9)	−.142 (0.3)
URBHS	−.481 (0.3)	.969 (0.8)	−2.574 (1.0)	−2.038 (0.7)	.008 (1.3)	.021 (1.0)	.049 (3.3)	−.003 (0.2)	−.267 (1.3)	.603 (2.4)
OSAT	1.027 (7.1)									
OEXP			1.208 (5.9)							
OPBF					.763 (3.0)					
OPBS							1.130 (5.4)			
OPRIV									1.801 (3.4)	
HSAT		.617 (9.3)								
HEXP				.496 (8.3)						
HPBF						.868 (8.0)				
HPBS								.614 (9.0)		
HPRIV										2.780 (5.7)
HDV		45.299 (9.1)		16.476 (4.9)		.541 (7.3)		.520 (8.1)		1.266 (3.5)
R̄²/DOF	.319/319	.298/276	.190/319	.213/276	.029/296	.207/232	.104/319	.274/276		
χ²/DOF									48.019/20	64.121/21

Note: Also included in each equation are dichotomous variables for nonreporting of high school rank; SAT; parents' income; father's occupational prestige; mother's and father's educational level; high school characteristics; and, in BFACC equation for HBIs, black faculty.

Where:

HSAT   average (weighted) SAT score in HBIs in the student's high school state (divided by 10), 0 if no HBIs in the state

HEXP   average (weighted) expenditure per pupil in the student's high school state (divided by 100), 0 if no HBIs in the state

HPBF   average (weighted) proportion of black faculty in HBIs in the state, 0 if no HBIs in the state

HPBS   average (weighted) proportion of black students in HBIs in the state, 0 if no HBIs in the state

HPRIV   average (weighted) proportion of students in the student's high school state in HBIs who are in private institutions, 0 if no HBIs in the state

HDV   1 = no HBI's in the student's high school state, 0 = otherwise

OSAT, OEXP, OPBF, OPBS, OPRIV are similarly defined save that they refer to institutions other than HBIs.

All other variables are defined in Table 4.2.

[a]Probit analyses.

[b]Coefficient has been multiplied by 1,000.

	Students at HBIs		Other Students		Pooled–All Students	Pooled–All Students HBI Endogenous	
	(1H)	(2H)	(1O)	(2O)	(1A)	(1I1)[a]	(1I2)[b]
MALE	-.051 (0.3)	-.013 (0.1)	-.217 (1.4)	-.238 (1.5)	-.132 (1.2)	-.151 (1.4)	-.149 (1.4)
SAT	.008 (1.0)	.010 (1.2)	.020 (3.1)	.016 (2.3)	.015 (3.1)	.018 (3.5)	.018 (3.5)
HSRANK	-1.239 (3.4)	-1.275 (3.5)	-.950 (2.9)	-1.011 (2.1)	-1.085 (4.6)	-1.077 (4.5)	-1.079 (4.5)
MOMBA	.533 (1.7)	.493 (1.6)	.354 (1.3)	.406 (1.4)	.449 (2.3)	.437 (2.2)	.435 (2.2)
DADBA	-.236 (0.7)	-.238 (0.7)	-.118 (0.4)	-.149 (0.5)	-.159 (0.7)	-.173 (0.7)	-.177 (0.8)
DADSEI	-.002 (0.4)	-.002 (0.3)	.014 (2.5)	.014 (2.4)	.217 (1.2)	.006 (1.4)	.005 (1.4)
PARINC[a]	.328 (1.7)	.367 (1.8)	-.095 (0.6)	-.060 (0.7)	.088 (0.7)	-.105 (0.8)	.102 (0.8)
HBI					.254 (2.3)	.615 (2.5)	.604 (2.7)
CSAT		-.015 (1.3)		.002 (0.2)			
PRIV		.174 (0.9)		.144 (0.8)			
BFACC		-1.049 (1.5)		-1.657 (0.6)			
BSTUDC		-.179 (0.2)		-1.069 (1.1)			
EXPST		-.006 (0.7)		.003 (0.6)			
χ²/DOF	35.002 (13)	40.573 (19)	57.544 (13)	66.908 (19)	83.641 (14)	84.457 (14)	85.438 (14)

Note: Also included in each equation are dichotomous variables for nonreporting of SAT; high school rank; mother's and father's education levels; father's occupational prestige index; parents' income; and, in (2), proportion of black faculty in 1990 at the institution.
Where:
HBI 1 = student attended a historically black institution, 0 = student attended another institution
All other variables are defined in Table 4.2.
[a]Instrument for HBI derived from Table 4.5, column 1.
[b]Instrument for HBI derived from Table 4.5, column 2.

sectors. Higher SAT scores were associated with higher completion probabilities as well, but the relationship is statistically significant only for students who did not attend HBIs. Students from wealthier families, as measured by higher family income or higher father's occupational prestige, had higher completion probabilities, as did students from families where the mother had a bachelor's degree.

When one adds institutional characteristics to the analysis, they prove not to be statistically significant as a group in each sector; individually, no single characteristic was statistically significant either.[14] One cannot infer from these results, therefore, that increasing institutional selectivity, expenditure per student, or the proportions of black students or faculty increased black students' completion probabilities in either sector. Nor were private institutions associated with higher completion rates than those of public institutions. Turning to the pooled analyses, the results in column 1A clearly indicate that, holding other factors constant, the probability that a bachelor's degree was received by 1979 was significantly higher if the student attended an HBI than if the student attended another institution. Indeed, one can make use of the coefficient estimates from column 1A and the values of the explanatory variables for each individual to compute how much higher the probability would have been for each individual if he or she had attended an HBI.[15] When this is done, the mean value of these differentials is .090, and the standard deviation of the differentials is only .015. This is strong evidence that the probability of these black students receiving a bachelor's degree by 1979 was higher if they attended HBIs than if they attended other institutions.[16]

The estimates in column 1A do not control for the fact that enrollment in an HBI was not a random occurrence. To do so, we compute instrumental variable estimates for the probability that a student was enrolled in an HBI from each of the two enrollment models found in Table 4.5. We then reestimate the graduation probability model twice, replacing the dichotomous HBI variable in turn by each of the instruments. The resulting estimates appear in columns 1I1 and 1I2 of Table 4.7.

The latter two sets of coefficients prove to be virtually identical. The coefficients of the HBI instrument in both cases are much larger than the original HBI coefficient found in column 1A. Indeed, when one computes the implied impacts of attending an HBI in these models, as described above, one finds that the mean probabilities of obtaining a bachelor's degree by 1979 were over .20 higher in each of these two models if the individual attended an HBI. That is, controlling for the endogeneity of whether these students attended an HBI substantially increased our

estimate of the HBI/non-HBI probability of graduating by 1979 differential.

Given that we obtained virtually identical estimates when the two different instruments for attendance at HBIs were used, for simplicity, in the remainder of the chapter, we report results only for the instrument derived from the specification that excludes the relative characteristics from the enrollment equation (Table 4.5, column 1).

EARLY CAREER EARNINGS

Table 4.8 presents estimates of the logarithm of 1979 hourly earnings equations for individuals who initially were enrolled in HBIs, but who were employed in 1979 and not enrolled full-time in college. Missing from this sample then is full-time undergraduate or graduate students and/or individuals who were unemployed or not in the labor force. Table 4.9 presents similar estimates for individuals who were initially enrolled in other institutions.

Equations were estimated that both excluded and included whether the individual had received a bachelor's degree by 1979. For each of these cases, since enrollment in an HBI was nonrandom, specifications were also estimated that controlled for the factors that determined whether an individual enrolled in an HBI, using the sample selection bias correction method suggested by Heckman (1979).[17] As is well known, this involves computing, and then adding, an estimated correction factor (the inverse Mills' ratio) to the model and then reestimating the models.

Since employment in 1979 was also a nonrandom event, specifications were also estimated that controlled for the probability that each individual was observed employed. These latter specifications made use of estimated employment status equations and were estimated under the assumption that the correction factors for attendance at an HBI and employment in 1979 were independent of each other.[18]

The explanatory variables included in these models were personal and family characteristics of the individual, the area unemployment rate in 1979, and, to control for price differences across areas, a vector of regional dichotomous variables and a dichotomous variable that indicates whether the individual attended an urban high school. The high school urbanization variable served as a proxy for the extent of urbanization in the area in which the individual resided in 1979. Some specifications also included the characteristics of the college that the student attended. However, in neither sector did any of these college characteristics appear to significantly influence early career wages.

Table 4.8. *Logarithm of 1979 Hourly Earnings Equations: HBI Students*
(Absolute Value of t Statistic)

	OLS				Selectivity Corrected			
	(1)	(2)	(3)	(4)	(1A)	(2A)	(3A)	(4A)
MALE	.283 (4.7)	.271 (4.3)	.277 (4.8)	.259 (4.4)	.282 (4.6)	.304 (4.9)	.279 (4.8)	.298 (5.0)
SAT	.002 (0.1)	.002 (0.6)	.001 (0.4)	.001 (.03)	.002 (.06)	.002 (0.6)	.001 (0.2)	.001 (0.2)
HSRANK	-.350 (2.6)	-.328 (2.4)	-.252 (2.0)	-.220 (1.7)	-.349 (2.7)	-.336 (2.5)	-.252 (2.0)	-.249 (2.0)
URBHS	.107 (1.5)	.111 (1.4)	.131 (1.9)	.138 (1.9)	.108 (1.5)	.121 (1.6)	.131 (1.9)	.141 (2.0)
MOMBA	-.177 (1.7)	-.167 (1.6)	-.228 (2.3)	-.215 (2.1)	-.178 (1.7)	-.230 (2.1)	-.227 (2.3)	-.267 (2.6)
DADBA	.141 (1.2)	.135 (1.1)	.176 (1.5)	.167 (1.2)	.143 (1.2)	.110 (0.9)	.174 (1.5)	.147 (1.3)
DADSEI*	-.476 (0.2)	-.387 (0.2)	-.319 (0.2)	-.396 (0.2)	-.001 (0.2)	-.000 (0.2)	-.000 (0.1)	-.000 (0.1)
PARINC*	.794 (1.0)	.662 (0.9)	.519 (0.8)	.349 (0.5)	.001 (1.0)	.001 (1.4)	.000 (0.7)	.001 (1.0)
UNEMP	7.866 (2.0)	7.569 (1.9)	5.409 (1.4)	4.983 (1.3)	7.818 (2.0)	10.248 (2.5)	5.478 (1.4)	7.499 (1.9)
CSAT		.001 (0.1)		.002 (0.5)				
PRIV		.020 (0.3)		-.016 (0.2)				
BFACC		.313 (1.1)		.353 (1.3)				
BSTUDC		-.345 (1.1)		-.352 (1.2)				
EXPST		.001 (0.2)		.002 (0.6)				
BA79			.298 (5.3)	.310 (5.5)			.300 (5.3)	.282 (5.0)
λ (HBI)					-.014 (0.2)	-.006 (0.1)	.024 (0.2)	.031 (0.4)
λ (EMP)						-.395 (1.9)		.320 (1.6)
R̄²	.121	.109	.216	.211	.118	.128	.212	.218
N	253	253	253	253	253	253	253	253

Note: Each equation also includes seven regional dichotomous variables (to control for cost of living) and dichotomous variables for the nonreporting of SAT, high school rank, high school characteristics, mother's and father's education levels, father's occupational status, and parental income.

Where:
UNEMP   1979 unemployment rate in the individual's state of residence
BA79   1 = received a bachelor's degree by 1979, 0 = did not receive a degree by 1979
λ (HBI)   inverse Mills' ratio for attendance at HBI
λ (EMP)   inverse Mills' ratio for employed in 1979
*Coefficient has been multiplied by 1,000.

Table 4.9. Logarithm of 1979 Hourly Earnings Equations: Non-HBI Students
(Absolute Value of t Statistic)

| | OLS | | | | Selectivity Corrected | | | |
	(1)	(2)	(3)	(4)	(1A)	(2A)	(3A)	(4A)
MALE	.157 (2.9)	.155 (2.8)	.173 (3.2)	.172 (3.1)	.174 (3.2)	.194 (3.5)	.190 (3.5)	.207 (3.7)
SAT	.001 (0.4)	.001 (0.3)	.000 (0.1)	.000 (0.1)	-.001 (0.3)	-.000 (0.1)	-.002 (0.7)	-.001 (0.4)
HSRANK	-.150 (1.3)	-.132 (1.0)	-.097 (0.8)	-.076 (0.6)	-.146 (1.3)	-.118 (1.0)	-.092 (0.8)	-.073 (0.6)
URBHS	.229 (3.7)	.230 (3.6)	.229 (3.7)	.228 (3.6)	.228 (3.7)	.236 (3.8)	.228 (3.7)	.235 (3.8)
MOMBA	-.076 (0.8)	-.090 (0.9)	-.097 (1.0)	-.113 (1.2)	-.087 (0.9)	-.103 (1.1)	-.108 (1.2)	-.120 (1.4)
DADBA	.119 (1.1)	.120 (1.0)	.127 (1.1)	.128 (1.2)	.159 (1.5)	.113 (1.0)	.168 (1.6)	.124 (1.1)
DADSEI*	.001 (0.7)	.002 (0.7)	.001 (0.4)	.001 (0.5)	.002 (1.1)	.002 (1.2)	.002 (0.8)	.002 (1.0)
PARINC*	.002 (2.7)	.002 (2.6)	.002 (2.8)	.002 (2.8)	.001 (2.4)	.001 (2.5)	.001 (2.6)	.002 (2.7)
UNEMP	1.036 (0.2)	1.584 (0.3)	1.690 (0.4)	2.284 (0.5)	2.506 (0.6)	4.367 (1.0)	3.176 (0.8)	4.783 (1.1)
CSAT		-.001 (0.2)		-.001 (0.3)				
PRIV		.012 (0.2)		.004 (0.1)				
BFACC		1.035 (1.0)		1.130 (1.1)				
BSTUDC		-.187 (0.5)		-.145 (2.7)				
EXPST		.002 (0.9)		.002 (0.8)				
BA79			.141 (2.7)	.143 (2.7)			.142 (2.7)	.126 (2.4)
λ (HBI)						.241 (2.4)		.241 (2.4)
λ (EMP)					.238 (2.4)	-.291 (1.7)	.240 (2.4)	-.251 (1.6)
R̄²	.104	.089	.124	.111	.119	.127	.140	.145
N	288	288	288	288	288	288	288	288

Note: See footnote to Table 4.8 for the other variables included in the model.
*Coefficient has been multiplied by 1,000.

Our interest in these equations is primarily for the purpose of computing estimates from them as to whether individuals who attended HBIs earned more than they would have earned if they had attended other institutions. We make such estimates in a later subsection. For now, we note only two findings. First, the return to earning a bachelor's degree by 1979 was higher for individuals who attended HBIs than for other individuals. Second, correction for both types of sample selection bias appear important for individuals who did not attend HBIs, and correction for selection bias associated with employment status appears important for individuals who attended HBIs.

Table 4.10 presents estimates of wage equations when the data for individuals who attended both HBIs and other institutions were pooled together, and a dichotomous variable for attendance at an HBI was added to the model. The −.021 coefficient of this variable in column 1, which is statistically insignificantly different from zero, suggests that enrollment in an HBI did *not* lead to an increase in early career earnings for black college students in the sample. This conclusion continues to hold when the sample selection bias correction method is used to control for being employed (column 1A), when enrollment at an HBI is treated as endogenous and an instrumental variable estimate used instead of the actual value (column 1B),·and when the instrumental variable and the sample selection bias correction method are used simultaneously (column 1C). That is, we find no evidence that attendance at an HBI led, on average, to increased 1979 hourly earnings.[19]

What if we add whether an individual received a bachelor's degree by 1979 to the model, treat the degree attainment and wage equations as recursive, and estimate the augmented wage equation? The coefficient of HBI becomes −.036 and remains statistically insignificant. However, attainment of a bachelor's degree raises the logarithm of earnings by a statistically significant .214. Since individuals who attended HBIs were more likely to graduate, one may ask whether this positive indirect effect of HBIs on earnings was larger than the negative direct effect of attendance at an HBI.

The answer is no. The analogous (single-equation) estimate of the marginal impact of attending an HBI on degree attainment by 1979 was .090, and thus the total effect of attendance at an HBI on 1979 earnings is estimated in percentage terms as −.017 ([.214][.090]−.036). Similar findings occur (column 3C) when we control for both the endogeneity of HBI and for sample selection (employment) bias. With attendance at HBI treated as endogenous, the estimated mean impact of attendance at an HBI on degree attainment was .215. Hence, the estimated total effect

Table 4.10. Logarithm of 1979 Hourly Earnings Equations: All Students
(Absolute Value of t Statistic)

	OLS			Selectivity Corrected					
	(1)	(2)	(3)	(1A)	(1B)	(1C)	(3A)	(3B)	(3C)
MALE	.204 (5.2)	.218 (5.7)	.213 (5.6)	.222 (5.6)	.208 (5.3)	.225 (3.6)	.232 (6.0)	.224 (5.8)	.237 (6.1)
SAT	.001 (0.9)	.001 (0.3)	.001 (0.4)	.002 (1.1)	.001 (0.4)	.001 (0.8)	.001 (0.5)	-.000 (0.3)	.000 (0.1)
HSRANK	-.264 (3.1)	-.185 (2.2)	-.190 (2.2)	-.242 (2.8)	-.265 (3.1)	-.242 (2.8)	-.173 (2.0)	-.185 (2.2)	-.173 (2.0)
URBHS	.182 (4.0)	.188 (4.2)	.183 (4.3)	.194 (4.2)	.182 (4.0)	.194 (4.2)	.197 (4.3)	.187 (4.2)	.197 (4.3)
MOMBA	-.129 (1.9)	-.161 (2.5)	-.161 (2.5)	-.153 (2.3)	-.130 (1.9)	-.155 (2.3)	-.177 (2.7)	-.162 (2.4)	-.180 (2.7)
DADBA	.126 (1.6)	.140 (1.8)	.145 (1.9)	.085 (1.0)	.130 (1.7)	.088 (1.1)	.107 (1.4)	.146 (1.9)	.110 (1.4)
DADSEI	.001 (0.5)	.000 (0.1)	.000 (0.3)	.001 (0.6)	.001 (0.6)	.001 (0.8)	.000 (0.2)	.000 (0.3)	-.001 (0.5)
PARINC	.001 (2.7)	.001 (2.7)	.001 (2.5)	.001 (2.9)	.001 (2.5)	.001 (2.8)	.001 (2.8)	.001 (2.5)	.001 (2.7)
UNEMP	3.961 (1.4)	3.574 (1.3)	2.998 (1.1)	5.829 (2.0)	4.269 (1.5)	6.110 (2.1)	5.041 (1.8)	4.028 (1.5)	5.526 (2.0)
HBI	-.021 (0.5)	-.036 (0.9)	-.121 (2.2)	-.007 (0.2)			-.024 (0.6)		
BA79		.214 (5.7)	.142 (2.8)				.200 (5.2)	.217 (5.7)	.200 (5.3)
HBI*B79[a]			.151 (2.1)						
λ(EMP)				-.303 (2.4)	-.112 (1.1)	-.316 (2.5)	-.237 (1.9)	-.159 (1.6)	-.259 (2.1)
HBI[b]						-.068 (0.7)			-.121 (1.2)
R̄²	.129	.179	.184	.137	.130	.139	.183	.182	.187
N	541	541	541	541	541	541	541	541	541

Note: See footnotes to Tables 4.2, 4.7, and 4.8 for variables included in the model.
[a] The product of HBI and BA79.
[b] Instrumental variable estimate of HBI.

of attendance at an HBI on earnings in percentage terms was the direct effect (−.131) plus the indirect effect (.200)(.215) or −.088.

Finally, column 3 reports the results of allowing the effects of attendance at an HBI on earnings to vary with whether the individual actually graduated by 1979. The pattern of coefficients suggests that, holding other variables constant, individuals who had not graduated from HBIs earned less than individuals who had not graduated from other institutions. In contrast, other things held constant, graduates of HBIs earned more than graduates of other institutions. There may have been a larger payoff to attending an HBI, but only if the student succeeded in graduating. The lower earnings for nongraduates who attended HBIs undoubtedly reflects either perceptions that their quality, or the quality of the education they have received, is lower than that for nongraduates of other institutions, or simply increased discrimination against them.

EARLY CAREER OCCUPATIONAL PRESTIGE

Tables 4.11, 4.12, and 4.13 replicate the analyses of the previous three tables but replace the logarithm of hourly earnings with the index of occupational prestige in the occupation in which the individual was employed in 1979. The rationale for using this alternative variable is that individuals may trade off earnings early in their careers for training opportunities. Thus, occupational prestige may be a better measure of early career success than is earnings.

The results obtained when this alternative success measure is used are very similar to the earnings results, although neither correction for sample selection bias due to the nonrandom nature of employment status nor correction for attendance at an HBI mattered here. Once again, the analyses conducted for the pooled sample (Table 4.13) suggest that attendance at an HBI did not lead to an increase in black students' early career occupational success.[20]

ENROLLMENT IN GRADUATE EDUCATION

Historically, HBIs graduated many of the black Americans who went on to graduate and professional schools and who ultimately assumed professional positions in the black community. We discuss the role HBIs play in the production of black doctorates in the next section. Here, we examine the probability, conditional on having received a bachelor's degree by 1979, that graduates of HBIs in our sample were enrolled in a master's, doctoral, or professional degree program by 1979.

Table 4.11. 1979 Occupational Status Equations: Non-HBI Students
(Absolute Value of t Statistic)

	OLS				Selectivity Corrected	
	(1)	(2)	(3)	(4)	(1B)	(3B)
MALE	−.891 (0.4)	−1.301 (0.6)	.895 (0.5)	.520 (0.6)	−.607 (0.2)	.678 (0.3)
SAT	.291 (3.5)	.267 (3.0)	.214 (2.8)	.209 (2.6)	.273 (3.1)	.190 (2.2)
HSRANK	−8.358 (1.8)	−7.647 (1.6)	−2.636 (0.6)	−1.756 (0.4)	−8.319 (1.8)	−1.910 (0.4)
URBHS	2.635 (1.1)	2.790 (1.2)	3 126 (1.5)	3.079 (1.4)	2.310 (1.0)	2.778 (1.3)
MOMBA	2.397 (0.7)	2.626 (0.7)	.250 (0.1)	.250 (0.1)	2.221 (0.6)	.291 (0.1)
DADBA	5.189 (1.2)	5.523 (1.3)	6.046 (1.6)	6.350 (1.7)	5.479 (1.2)	6.994 (1.7)
DADSEI	.116 (1.5)	.111 (1.5)	.055 (0.8)	.058 (0.8)	.126 (1.7)	.065 (1.0)
PARINC	.001 (0.0)	−.006 (0.3)	.011 (0.5)	.003 (0.1)	−.002 (0.1)	.000 (0.0)
UNEMP	−13.382 (0.1)	−17.946 (0.2)	9.464 (0.1)	7.478 (0.1)	−.541 (0.0)	5.245 (0.1)
CSAT		.144 (1.0)		.147 (1.1)		
PRIV		.866 (0.3)		−.007 (0.0)		
BFACC		49.009 (1.1)		55.166 (1.5)		
BSTUDC		−28.715 (2.0)		−23.847 (1.8)		
EXPST		−.055 (0.8)		−.076 (0.6)		
BA79			15.083 (7.9)	14.936 (7.7)		15.199 (7.7)
λ(HBI)					2.934 (0.9)	2.777 (0.9)
λ(EMP)					−.826 (0.1)	1.902 (0.3)
R̄²	.129	.134	.290	.293	.125	.290
N	288	288	288	288	288	288

Note: Also included in each equation are dichotomous variables for the nonreporting of SAT; high school rank, urban high school; mother's and father's education levels; father's occupational status; parents' family income, and, where relevant, the proportion of black faculty.

Table 4.12. 1979 Occupational Status Equations: HBI Students
(Absolute Value of t Statistic)

	OLS				Selectivity Corrected	
	(1)	(2)	(3)	(4)	(1B)	(3B)
MALE	−3.998 (1.8)	−3.750 (1.7)	−4.417 (2.1)	−4.175 (2.1)	−3.196 (1.4)	−3.476 (1.8)
SAT	.051 (0.5)	.033 (0.3)	.016 (0.2)	−.012 (0.1)	.012 (0.1)	−.047 (0.5)
HSRANK	−16.383 (3.4)	−16.057 (3.3)	−11.212 (2.6)	−10.731 (2.4)	−16.154 (3.3)	−11.302 (3.6)
URBHS	−4.619 (1.7)	−4.266 (1.6)	−3.516 (1.5)	−3.204 (1.3)	−4.387 (1.6)	−3.599 (1.5)
MOMBA	−1.087 (0.2)	−.967 (0.2)	−3.556 (1.0)	−3.337 (1.0)	−2.303 (0.6)	−3.961 (1.1)
DADBA	−4.475 (1.0)	−5.060 (1.1)	−2.987 (0.7)	−3.578 (0.9)	−5.661 (1.3)	−3.772 (0.9)
DADSEI	.052 (0.7)	.069 (1.0)	.061 (1.0)	.071 (1.1)	.065 (0.9)	.075 (1.2)
PARINC	.087 (3.4)	.082 (3.0)	.072 (3.0)	.063 (2.7)	.089 (3.3)	.068 (2.9)
UNEMP	146.892 (1.4)	134.510 (1.2)	40.018 (0.4)	6.955 (0.0)	205.719 (1.9)	75.181 (0.8)
CSAT		−.206 (1.2)		−.141 (0.9)		
PRIV		2.834 (1.0)		1.123 (0.5)		
BFACC		.460 (0.0)		7.120 (0.1)		
BSTUDC		−11.168 (1.0)		−10.228 (1.0)		
EXPST		.093 (0.8)		.145 (1.4)		
BA79			15.205 (7.9)	15.196 (7.8)		15.130 (7.7)
λ(HBI)					2.590 (0.8)	4.249 (1.5)
λ(EMP)					−9.970 (1.5)	−4.527 (0.7)
R̄²	.116	.113	.297	.296	.119	.299
N	253	253	253	253	253	253

Note: See footnote to Table 4.11 for the other variables included in the model.

Table 4.13. 1979 Occupational Status Equations: All Students
(Absolute Value of t Statistic)

| | OLS | | Selectivity Corrected | | | | | |
	(1)	(2)	(1A)	(1B)	(1C)	(2A)	(2B)	(2C)
MALE	-2.762 (1.8)	-1.836 (1.3)	-2.534 (1.6)	-2.595 (1.7)	-2.385 (1.5)	-1.899 (1.5)	-1.490 (1.1)	-1.515 (1.1)
SAT	.231 (3.6)	.166 (2.9)	.235 (3.7)	.212 (3.2)	.220 (3.3)	.164 (2.9)	.127 (2.1)	.126 (2.0)
HSRANK	-12.293 (3.7)	-6.706 (2.2)	-12.080 (3.6)	-12.363 (2.5)	-12.133 (3.6)	-6.740 (3.6)	-6.731 (2.2)	-6.778 (2.2)
URBHS	-.032 (0.0)	.646 (0.4)	.178 (0.1)	-.138 (0.1)	.036 (0.8)	.608 (0.4)	.313 (0.2)	.293 (0.2)
MOMBA	.761 (0.2)	-1.597 (0.7)	.405 (0.1)	.798 (0.3)	.409 (0.2)	-1.504 (0.6)	-1.584 (0.7)	-1.540 (0.6)
DADBA	-.754 (0.3)	.311 (0.1)	-1.253 (0.4)	-.646 (0.2)	-1.177 (0.4)	.461 (0.2)	.558 (0.2)	.628 (0.2)
DADSEI	.100 (1.9)	.069 (1.5)	.103 (2.0)	.105 (2.0)	.108 (2.1)	.068 (1.5)	.079 (1.7)	.078 (1.7)
PARINC	.036 (2.0)	.034 (2.3)	.037 (2.2)	.033 (2.0)	.035 (2.0)	.034 (2.2)	.030 (2.0)	.030 (1.9)
UNEMP	61.374 (0.9)	24.785 (0.4)	84.955 (1.1)	65.543 (0.9)	89.456 (1.2)	17.087 (0.2)	36.016 (0.6)	32.931 (0.5)
HBI	-.602 (0.4)	-2.016 (1.6)	-.433 (0.3)			-2.071 (1.6)		
BA79	15.175 (11.2)	15.175 (11.2)				15.246 (11.0)	15.367 (11.3)	15.400 (11.2)
λ(EMP)			-3.924 (0.9)		-4.148 (0.9)	1.141 (0.3)		.528 (0.1)
HBI*				-3.274 (1.0)	-2.736 (0.8)		-7.415 (2.2)	-7.489 (2.4)
R̄²	.109	.281	.109	.111	.110	.279	.286	.284
N	541	541	541	541	541	541	541	541

Note: See footnote to Table 4.11 for the other variables included in the model.
*Instrumental variable estimate of HBI.

In the aggregate, 33 percent of the individuals who received a bachelor's degree by 1979 were enrolled in such programs by 1979. The comparable percentages for graduates of HBIs was 27 and for graduates of other institutions 38. These raw percentages, however, ignore differences in the two groups in students' academic ability or family backgrounds (e.g., income), both of which might influence their propensities to attend graduate or professional school.

Table 4.14 presents estimates of probit probabilities of enrollment in graduate programs by 1979, conditional on having received a bachelor's degree. The simplest model (column 1) included measures of a student's academic ability at the time he or she graduated from high school, the student's family background at that time, and whether the student attended an HBI. A student's academic ability and parents' income both positively influenced the probability of having been enrolled in postgraduate education, but attendance at an HBI per se did not significantly increase this probability. Use of an instrument for attendance at an HBI, to control for its nonrandom nature (column 2), did not change any of these findings.

When the data were stratified by whether the students attended an HBI, the characteristics of the institutions the students attended can be entered into the models. This is done is columns 4 (non-HBIs) and 6 (HBIs). In each case, an increase in the proportion of black students in the institution's undergraduate student body is associated with an increase in the probability of enrollment in graduate education.

DID ATTENDANCE AT AN HBI MATTER?

Table 4.15 summarizes the predicted mean (across individuals) proportional differential impacts of enrollment in an HBI on the probability of having received a bachelor's degree by 1979, on hourly earnings (if employed) in 1979, and on the occupational prestige index (if employed) in 1979.

In addition to the single-equation (pooled sample) estimates that have already been discussed, estimates are presented for when separate "outcome equations" were estimated for individuals attending HBIs and other institutions. In these latter cases, estimates of mean differentials are reported for individuals initially in each sector. In addition, to ascertain the sensitivity of the findings to the statistical model used, estimates are reported for models in which attendance at an HBI was treated as exogenous, attendance at an HBI was treated as endogenous, and (where relevant) being employed was treated as endogenous. In each

Table 4.14. Probit Probability of Enrollment in Graduate Programs by 1979 (Absolute Value of t Statistic)

	All		Non-HBI		HBI	
	(1)	(2)	(3)	(4)	(5)	(6)
MALE	.046 (0.2)	.027 (0.2)	.112 (0.5)	.094 (0.4)	.106 (0.4)	.178 (0.7)
SAT	.011 (1.8)	.013 (2.0)	.009 (1.0)	.004 (0.5)	-.011 (1.0)	.011 (0.9)
HSRANK	.713 (1.5)	-.694 (2.0)	-.142 (0.3)	-.064 (0.1)	-2.059 (3.1)	-2.042 (3.0)
MOMBA	.278 (1.0)	.273 (1.0)	.463 (1.4)	.289 (0.8)	.030 (0.6)	-.044 (0.1)
DADBA	-.569 (1.6)	-.559 (1.6)	-.059 (0.1)	-.050 (0.1)	-2.273 (2.6)	-2.290 (2.5)
DADSEI	.003 (0.6)	.003 (0.6)	.002 (0.3)	.002 (0.3)	.004 (0.6)	.006 (0.5)
PARINC	.003 (2.1)	.003 (2.1)	.002 (1.0)	.003 (1.1)	.007 (2.4)	.007 (2.2)
HBI	-.194 (1.3)					
HBI*		.047 (0.1)				
CSAT				.017 (1.1)		-.015 (0.8)
PRIV				-.044 (0.2)		-.231 (0.7)
BFACC				-4.747 (0.8)		-1.832 (1.6)
BSTUDC				3.547 (1.7)		4.914 (2.0)
EXPST				.003 (0.4)		.023 (1.5)
N	340	340	175	175	165	165
χ²/DOF	28.6 (14)	27.0 (14)	13.3 (13)	19.1 (19)	34.5 (13)	42.0 (19)

Note: Probit probabilities conditional on having received a bachelor's degree and enrollment in a master's, doctoral, or professional degree program. The proportions of college graduates enrolled in such programs were: All (340): .33, HBI .27, Non-HBI: .38.
*Instrumental variable estimate of HBI.

Table 4.15. Predicted Mean Percentage Impacts of Enrollment in HBI (Standard Deviation of Impact across Individuals)

	BA79	
	HBI Exogenous	HBI Endogenous[a]
Single equation	.090 (.015)	.213 (.039)
Separate equation for each sector		
a) in HBIs	.288 (.385)	
b) not in HBIs	.255 (.334)	

	WAGE79		
		HBI Endogenous[a]	
	HBI Exogenous	(N)	(Y)
Single equation	-.021	-.107	-.066
Separate equation for each sector			
a) in HBIs	-.020 (.152)	-.302 (.135)	-.293 (.140)
b) not in HBIs	.020 (.173)	.045 (.188)	.050 (.197)

	SEI79		
		HBI Endogenous[a]	
	HBI Exogenous	(N)	(Y)
Single equation	-.013	-.073	-.061
Separate equation for each sector			
a) in HBIs	-.007 (.155)	-.090 (.140)	-.089 (.144)
b) not in HBIs	-.010 (.166)	-.089 (.164)	-.078 (.172)

Note: (N) = no sample selection correction for employment status; (Y) = sample selection correction for employment status—assumed to be independent of sample selection correction for sector choice.
[a]Endogenous dichotomous variable in the single equation, sample selection correction for institutional sector in the separate equation for each sector model.

case, the models used are those that excluded the vector of institutional characteristics and (for wages and occupational status) excluded receipt of a bachelor's degree by 1979. In each case, the predicted impact was computed for each individual in the sample and then the mean of the individual responses reported.[21]

Table 4.15 makes clear that attendance at an HBI substantially increased the probability that black students in the sample received a bachelor's degree by 1979. Depending on the specific model and statistical method used, the mean probability was between 9 and 29 percent higher if a student attended an HBI. In contrast, the impact of attendance at an HBI on early career labor market success, as measured by 1979 earnings or occupational prestige, was much smaller. In many cases the estimates were negative, although given the statistical insignificance of the underlying coefficients, all of these impacts on early career labor market success are probably insignificantly different from zero.

How could HBIs have improved black students' graduation probabilities but not improved their early career labor market success? At least two explanations come to mind. On the one hand, employers may have discriminated more against black graduates of HBIs than they did against black graduates of other institutions.[22] On the other hand, the quality of education received by black students and the graduation standards may have been lower at HBIs. The data we have used do. not permit us to distinguish between these two explanations.[23]

THE PRODUCTION AND EARLY CAREER ATTAINMENT OF BLACK U S. CITIZEN DOCTORATES

Historically, HBIs have provided many of the black college graduates who have gone on to earn doctoral degrees in the United States. In recent years, approximately 40 percent of the new doctorates granted to black citizens have gone to individuals who received their undergraduate degrees from HBIs, even though HBIs grant only about 30 percent of the bachelor's degrees received by black Americans. Thus, HBIs are asserted to be an important component of the pipeline for the production of black doctorates (U.S. House of Representatives 1991).

This section investigates the role of HBIs in the production of black doctorates, using special tabulations prepared for us by the National Research Council from the Survey of Earned Doctorates (SED). Each year when doctoral candidates submit their dissertations to their graduate schools and receive their degrees; they are asked to respond to the SED. Of primary interest to us here are their responses relating to their field of doctoral study, the institutions at which they received their undergraduate and graduate degrees, and their plans for future employment or study. Because of the small number of doctoral degrees granted to black citizens in any one year, most of the tabulations that follow are based on data from a recent five-year period.

Table 4.16 presents data on the share of doctorates granted by HBIs to black U.S. citizens and the share that went to individuals who received their undergraduate degrees from HBIs, by field, over the 1987–91 period. Focusing initially on the latter, the share of doctorates granted to black citizens with undergraduate degrees from HBIs was .39. However, this aggregate figure masks considerable variation across fields. Over 47 percent of all black citizens' doctorates granted during the period were in the field of education, and the share of education doctorates going to individuals with undergraduate degrees from HBIs was .48. While the

Table 4.16. Share of Black U.S. Citizen Doctorates by Field, 1987–91

Field	Total Doctorates Granted to Black U.S. Citizens	Share Granted by HBIs	Share Granted to Graduates of Undergraduate HBIs
Physical sciences	164	.10	.28
Engineering	125	.03	.21
Life sciences	382	.10	.36
Social sciences	330	.09	.27
Psychology	507	.08	.22
Humanities	383	.06	.33
Education	1,993	.09	.48
Professional/other	331	.13	.43
Total Doctorates	4,215	.09	.39

Source: Computed from special tabulations prepared by the Office of Scientific and Engineering Personnel, National Research Council from the Survey of Earned Doctorates (sponsored by five federal agencies—National Science Foundation, National Institute of Health, U.S. Department of Education, National Endowment for the Humanities, and the U.S. Department of Agriculture—and conducted by the National Research Council.)

analogous shares for the professional fields, the life sciences, and the humanities were all greater than .3, the shares in the physical sciences, the social sciences, engineering, and psychology were less than .3. In these latter fields, at least, undergraduates from HBIs are not overrepresented among new black doctorates.

This table also indicates that the share of doctorates granted by HBIs was .09 during the period. The number of HBIs that grant doctoral degrees in any year is actually very small. For example, as Table 4.17 indicates, in 1991 there were only eight such institutions, and over two-thirds of the total number of degrees they granted were by Howard and Clark Atlanta Universities alone. If one excludes doctorates granted in education, the number of HBIs producing doctorates falls to four. The small number of doctorates produced annually by many of the doctoral programs in HBIs leads to the concern that these programs may be too small to reach the critical mass necessary to efficiently train doctoral students (Bowen and Rudenstine 1992).

What types of graduate institutions do graduates of HBIs attend for doctoral study, and how do these compare to the institutional types that other black doctorates attend? This question is of some importance because, as we show below, where one attends graduate school heavily influences a new black doctorate's employment prospects. To answer this question, Table 4.18 presents cross-tabulations, by field, of black doctorates' undergraduate and graduate institutional types. The graduate institutions are broken down into HBIs, Research I doctorate-granting

Table 4.17. HBIs That Conferred Doctorates in 1991, by Major

Institution	Total	PS	EAM	MC	ENG	BIO	HEA	AGR	PSY	SOC	HUM	EDU	PROF
Howard	60	2			1	14	1		7	13	6	4	12
Clark Atlanta	74	2				4			3	9	3	44	9
Morgan State	3											3	
Univ. Maryland-Eastern Shore	2		1					1					
Jackson State	4											4	
South Carolina State	15											15	
Meharry Medical	4					4							
Texas Southern	26											26	
Total	188	4	1	0	1	22	1	1	10	22	9	96	2

Source: National Research Council, *Doctorate Recipients from United States Universities: Summary Report 1990* (Washington, D.C.: National Academy Press, 1991), Appendix Table A7.
Note: Some of these doctorates went to other than black U.S. citizens. Abbreviations for majors are as follows: PS = Physical Sciences; EAM = Earth, Atmospheric, and Ocean Sciences; MC = Mathematics and Computer/Information Sciences; ENG = Engineering; BIO = Biology; HEA = Health; AGR = Agriculture; PSY = Psychology; SOC = Social Sciences; HUM = Humanities; EDU = Education; PROF = Professional.

Table 4.18. Number of Black U.S. Citizen Doctorates Granted, by Field and Type of Undergraduate and Doctoral Institution, 1987–91

Field of Doctorate (Doctoral Inst.)	All (T)	(H)	(R)	(O)	HBIS (T)	(H)	(R)	(O)	Liberal Arts I and Research I (T)	(H)	(R)	(O)	Other (T)	(H)	(R)	(O)
Physical sciences	164	16 (.10)	87 (.53)	61 (.37)	46	11 (.24)	16 (.35)	19 (.41)	58	3 (.05)	44 (.76)	11 (.19)	60	2 (.03)	27 (.45)	31 (.52)
Engineering	125	4 (.03)	86 (.69)	35 (.28)	26	2 (.08)	14 (.54)	10 (.39)	53	1 (.02)	49 (.92)	3 (.06)	46	1 (.02)	23 (.50)	22 (.48)
Life sciences	382	37 (.10)	217 (.57)	128 (.34)	139	25 (.18)	66 (.48)	48 (.34)	91	2 (.02)	72 (.79)	17 (.19)	152	10 (.07)	79 (.52)	63 (.41)
Social sciences	330	29 (.09)	173 (.52)	128 (.39)	88	14 (.16)	44 (.50)	30 (.34)	90	4 (.04)	62 (.69)	24 (.27)	152	11 (.07)	67 (.44)	74 (.49)
Psychology	507	41 (.08)	238 (.47)	228 (.45)	114	22 (.19)	47 (.41)	45 (.40)	189	9 (.05)	114 (.60)	66 (.35)	204	10 (.05)	77 (.38)	117 (.58)
Humanities	383	22 (.06)	223 (.58)	138 (.36)	128	15 (.12)	57 (.45)	56 (.44)	112	3 (.03)	83 (.74)	26 (.23)	143	4 (.03)	83 (.58)	56 (.39)
Education	1,993	177 (.09)	705 (.35)	1,111 (.56)	955	146 (.15)	296 (.31)	513 (.54)	238	3 (.01)	135 (.57)	100 (.42)	800	28 (.04)	274 (.34)	498 (.62)
Professional/other	331	42 (.13)	155 (.47)	134 (.40)	141	30 (.21)	56 (.40)	55 (.39)	70	3 (.04)	39 (.56)	28 (.40)	120	9 (.08)	60 (.50)	51 (.42)
Total doctorates	4,215	368 (.09)	1,884 (.45)	1,963 (.47)	1,637	265 (.16)	596 (.36)	776 (.47)	901	28 (.03)	598 (.66)	275 (.31)	1,677	75 (.05)	690 (.41)	912 (.54)

Source: Special tabulations prepared by the Office of Scientific and Engineering Personnel, National Research Council from the Survey of Earned Doctorates (sponsored by five federal agencies—National Science Foundation, National Institute of Health, U.S. Department of Education, National Endowment for the Humanities, and the U.S. Department of Agriculture—and conducted by the National Research Council).
Note: Figures in parentheses represent share of doctorates in the field/undergraduate institution category from the graduate institution category. Column subheads are as follows. (T) = all doctorate granting-institutions. (H) = historically black institutions that grant doctorates; (R) = Research I doctorate-granting institutions; (O) = all other doctorate-granting institutions

institutions (the institutions that produce a large number of doctorates in a number of fields and whose doctoral programs are often highly rated), and other institutions.[24] The undergraduate institutions are broken down into HBIs, Liberal Arts I (selective liberal arts) and Research I institutions, and other institutions.

In the aggregate, 9 percent of black doctorates during the 1987–91 period were granted by HBIs, 45 percent were granted by Research I institutions, and 47 percent were granted by other institutions. For those black doctorates whose undergraduate degrees were earned at HBIs, the comparable figures were 16, 36, and 47 percent, respectively; while for black doctorates from Liberal Arts I and Research I undergraduate institutions, the figures were 3, 66, and 31 percent, respectively. That is, black doctorates who earned undergraduate degrees at HBIs were much more likely to attend HBIs, and somewhat less likely to attend Research I institutions, for their doctoral study. Perusal of the field-specific data suggests that the same pattern holds for each of the doctoral fields, although in some cases the differences are not as large as the overall ones.

Why do black doctorates who received their undergraduate degrees from HBIs tend to be less likely to attend elite Research I doctoral programs than are graduates from Liberal Arts I and Research I institutions? In part, this tendency may reflect differences in the ability levels and undergraduate training of students from HBIs vis-à-vis their counterparts from research and liberal arts institutions. In part, it may reflect their personal preferences to remain for graduate study in what they perceive to be a supportive environment. And, in part, it may reflect ignorance about HBIs, discriminatory attitudes toward the graduates of HBIs, or the failure of faculty in the elite graduate programs to aggressively recruit potential graduate students from HBIs, most of which are located in different areas of the country than are the elite graduate programs.

The SED data do not permit one to distinguish between these various hypotheses. However, the facts that average test scores of black students tend to be lower at HBIs than at other institutions (see, e.g., Table 4.2) and that over a recent seven-year period only 20 percent of National Science Foundation Black Minority Graduate Fellowship winners received their undergraduate degrees at HBIs (Table 4.19) suggest that perceptions of differential ability or training are at least part of the problem. Indeed, 67 percent of these fellowship winners from HBIs came from four institutions, and 45 percent came from Howard University alone. The perceived quality of HBIs and their students may fall off quite rapidly.

Table 4.19. National Science Foundation Black Minority Graduate Fellowship Winners

Year	Number of Black Winners	Number of Black Winners from HBIs	Share of Black Winners from HBIs
1992	42	8	.191
1991	59	17	.288
1990	52	13	.250
1989	27	5	.185
1988	23	1	.044
1987	16	3	.188
1986	17	1	.059
1985	19	3	.158
Total 1985–92	255	51	.200

Source: Calculations from National Science Foundation, "Outstanding Science Students Awarded NSF Minority Graduate Fellowships" (Washington, D.C.: National Science Foundation): NSF PR 92–26, 91–23, 90–22, 89–18, 88–14, 87–16, 86–19, and 85–19).

The final information in the SED that is useful to us comes from the question that asks doctorates at the time their dissertations are approved if they have already made definite employment plans. For those who have, additional questions are asked about whether academic employment, another form of employment, or a postdoctoral appointment has been obtained. Finally, for those entering academic appointments, the name of the academic institution at which they will be employed is reported.

The tabulations reported in Table 4.20 indicate that, in the aggregate, 69 percent of all black U.S. citizen new doctorates during the 1987–91 period had definite employment plans at the time that they received their degrees and that 58 percent of these had definite plans to work in academia or in postdoctoral positions. The comparable percentages are both higher for doctorates from Research I institutions than they are for doctorates from HBIs; however, once one breaks the data down by field, a consistent pattern of results does not emerge. That is, once one controls for field, on balance doctorates from HBIs are roughly equally likely to have definite plans at the time they receive their degrees and equally likely to have a postdoctoral or an academic position as are doctorates from Research I institutions.

What is different, though, is the type of academic position doctorates receive if they do enter the academic sector. Table 4.21 provides data on the shares of black U.S. citizen new doctorates with definite plans in the academic sector who go on to employment in HBIs (including Howard University), Research I or Liberal Arts I institutions, and other institu-

Table 4.20. Black U.S. Citizen Doctorates, 1987–91

	All Inst.	Type of Doctoral Inst.			Type of Undergraduate Inst.		
		HBI	Research I	Other	HBI	Research I or Liberal Arts I	Other
All fields							
Total number	4,233	369	1,890	1,974	1,637	901	1,677
Share with definite plans	.69	.63	.71	.69	.71	.69	.68
Share of those with definite plans going to postdocs or academia	.58	.50	.65	.54	.55	.64	.60
Physical sciences							
Total number	164	116	87	61	46	58	60
Share with definite plans	.72	.44	.78	.70	.72	.71	.73
Share of those with definite plans going to postdocs or academia	.52	.72	.50	.53	.45	.53	.57
Engineering							
Total number	126	4	86	36	26	53	46
Share with definite plans	.67	.75	.71	.56	.65	.66	.70
Share of those with definite plans going to postdocs or academia	.51	.67	.54	.40	.35	.48	.61
Life sciences							
Total number	384	37	219	128	139	91	152
Share with definite plans	.71	.76	.71	.70	.72	.77	.68
Share of those with definite plans going to postdocs or academia	.80	.85	.78	.82	.84	.80	.76
Social sciences							
Total number	332	29	175	128	88	90	152
Share with definite plans	.63	.62	.65	.60	.68	.63	.59
Share of those with definite plans going to postdocs or academia	.73	.67	.76	.70	.75	.58	.80
Psychology							
Total number	507	41	238	228	114	189	204
Share with definite plans	.69	.54	.68	.72	.73	.62	.73
Share of those with definite plans going to postdocs or academia	.49	.41	.57	.44	.48	.53	.48
Humanities							
Total number	385	22	224	139	128	112	143
Share with definite plans	.74	.86	.72	.74	.81	.75	.67
Share of those with definite plans going to postdocs or academia	.91	.89	.90	.94	.91	.98	.86
Education							
Total number	2,002	177	706	1,119	995	238	800
Share with definite plans	.69	.60	.71	.69	.70	.72	.67
Share of those with definite plans going to postdocs or academia	.46	.26	.52	.46	.43	.51	.50

Source: Special tabulations prepared by the National Research Council's Office of Scientific and Engineering Personnel from the Survey of Earned Doctorates.

Table 4.21. Black U.S. Citizen New Doctorates, 1987–91, with Definite Plans in the Academic Sector

Share Going to Employment in:	All Inst.	Type of Doctoral Inst.			Type of Undergraduate Inst.		
		HBI	Research I	Other	HBI	Research I or Liberal Arts I	Other
All Fields							
HBIs	.23	.58	.18	.25	.41	.12	.12
RI/LAI inst.	.21	.04	.31	.13	.14	.36	.21
Other U.S. inst.	.56	.44	.51	.62	.46	.52	.67
Physical sciences							
HBIs	.32	.67	.27	.31	.67	.25	.10
RI/LAI inst.	.26	.00	.40	.15	.11	.50	.10
Other U.S. inst.	.42	.33	.33	.54	.22	.25	.80
Engineering							
HBIs	.30	1.00	.17	.57	.80	.18	.24
RI /LAI inst.	.27	.00	.38	.00	.00	.36	.29
Other U.S. inst.	.42	.00	.46	.43	.20	.45	.47
Life sciences							
HBIs	.34	.55	.23	.43	.62	.04	.18
RI/LAI inst.	.18	.09	.30	.05	.11	.30	.18
Other U.S. inst.	.48	.36	.47	.52	.28	.65	.63
Social sciences							
HBIs	.17	.40	.12	.21	.32	.12	.11
RI/LAI inst.	.25	.00	.35	.17	.16	.35	.25
Other U.S. inst.	.57	.60	.54	.63	.51	.54	.63
Psychology							
HBIs	.12	.80	.14	.04	.23	.13	.05
RI/LAI inst.	.31	.00	.32	.33	.26	.34	.31
Other U.S. inst.	.57	.20	.55	.64	.52	.53	.64
Humanities							
HBIs	.21	.63	.16	.25	.32	.16	.13
RI/LAI inst.	.28	.00	.34	.22	.11	.47	.28
Other U.S. inst.	.51	.38	.50	.53	.57	.37	.59
Education							
HBIs	.24	.40	.21	.25	.40	.08	.12
RI/LA I inst.	.15	.00	.27	.08	.12	.28	.14
Other U.S. inst.	.61	.60	.53	.68	.48	.64	.74

Source: Special tabulations prepared by the National Research Council's Office of Scientific and Engineering Personnel from the Survey of Earned Doctorates.

tions. In the aggregate, these shares are .23, .21, and .56, respectively. However, new doctorates from HBIs are much more likely to be employed in HBIs and much less likely to be employed in Research I or Liberal Arts I institutions than are new doctorates from Research I institutions.[25] Similarly, new doctorates whose undergraduate degrees were from HBIs are much more likely to be employed in HBIs and much less likely to be employed in Research I or Liberal Arts I institutions than are new doctorates whose undergraduate degrees came from Research I or Liberal Arts I institutions.[26] Similar results hold for each of the seven specific fields for which data are tabulated in Table 4.21.

Again, one cannot ascertain if the sorting by institution type that occurs in these data is due to inherent differences in the ability or training of black doctorates who attended HBIs as undergraduate or doctoral students vis-à-vis their counterparts at Research I or Liberal Arts I institutions, to lack of information about and effort to recruit students from HBIs by the Liberal Arts I and Research I institutions, or to discriminatory preferences. If, however, a social goal is to increase the flow of talented black students into Ph.D. programs and ultimately into academic positions in elite teaching and research institutions, a number of actions are possible.

First, one could increase the number and size of doctoral programs in HBIs.[27] Second, one could more aggressively recruit graduates of HBIs into the doctoral programs of Research I institutions and pursue extra efforts to retain these students until graduation. Third, one could more aggressively recruit black students who otherwise would attend HBIs to attend undergraduate programs at Research I or Liberal Arts I institutions. The data we have analyzed do not permit one to conclude which option is best. However, the third option is likely to have adverse effects on the "better" undergraduate HBIs, and, without other policies, the first option appears likely to continue the current segmentation of black doctorate employment. Hence, building "pipelines" between the HBIs' undergraduate programs and the Research I institutions' doctoral programs may well be the preferred strategy.

CONCLUDING REMARKS

What should public policy be toward the Historically Black Institutions of higher education? In an increasingly multicultural society, should public policy encourage the integration and/or incorporation of HBIs into the larger and often better funded historically white institutions? Or should public policy facilitate the HBIs "specializing" in the education of blacks and other underrepresented minorities on American campuses, by providing the HBIs with improved facilities and increased annual support?

At the outset, it should be stressed that the only real question relates to the status of public HBIs. There is a long tradition in American private education of institutions being established by particular religious groups and then continuing to draw the majority of their students from members of these groups. No one objects to Catholics voluntarily attending Notre Dame or Georgetown, Mormons voluntarily attending Brigham Young, or Jews voluntarily attending Yeshiva or Brandeis. If voluntary association with predominately members of one's own group in a private *nondiscriminating* institution is deemed by an individual to be in his or her best interest, this choice should be permitted. Hence, no one should question the importance to black Americans of the private HBIs, those institutions that receive much of their support through private fund-raising activities conducted by the United Negro College Fund.

What should public policy be toward the public HBIs? Our empirical analyses in the second section focused on all HBIs as a group; however, we did not find that the public/private distinction was an important predictor of the benefits of attendance at an HBI. For black students attending college in the early 1970s, attendance at an HBI did substantially enhance their probability of receiving a bachelor's degree within seven years. However, it had no apparent effect on their early career labor market success and on their probability of enrolling in postcollege graduate or professional schools. Moreover, for none of these outcomes did it appear that attendance at an HBI yielded larger benefits for students from low-income families or students with low test scores than it did for other black students.

Of course, "early success" is not the same as "career success," and in future work we will examine if data from later waves of the NLS72 provide any evidence of larger gains for students who attended HBIs.[28] In addition, all of our analyses were conditional upon students having enrolled in a four-year institution. We did not address whether the presence of HBIs enhances the probability that black students enroll in four-year institutions, and that too needs to be addressed in future research.

Furthermore, to contemplate making policy recommendations for the 1990s, up-to-date evidence is required on the effects of attendance at HBIs. Given that one needs data for at least seven to ten years after entrance to college to conduct any meaningful analyses, about the best

one can do is to use data on students who entered college in the 1980s. In subsequent work, we will conduct such analyses using data from High School and Beyond, a national longitudinal survey of students who graduated from high school in 1980 and 1982.[29]

Our analyses of the National Research Council's Survey of Earned Doctorates provided evidence on the patterns of black doctorates in recent years with respect to their undergraduate institutions, their graduate institutions, and whether they achieved academic positions in major American liberal arts and research/doctoral institutions. To the extent that one wishes to get more black Americans into faculty positions at major American colleges and universities, our tabulations suggest the need to increase the flow of black students into doctoral programs in major research institutions.

This conclusion presumes that hiring practices at American universities will remain the same and that perceptions of the quality of students at lesser programs, as well as the quality of training they receive, will remain unchanged. If federal funding for doctoral programs at HBIs could lead to high-quality programs that attract high-quality students, such funding may provide a viable option. Given the likely small scale of these programs and the complementary resources (e.g., libraries, faculty quality in other closely related fields) that they will have available (or unavailable) to them, one must question whether this option makes sense. Building better pipelines between the undergraduate HBIs and the Research I institutions' doctoral programs appears to be a preferred strategy.

Of course, increasing the flow of black Americans into faculty positions at major American colleges and universities is not an objective shared by all. Many people are justifiably concerned with simply increasing the production of black Ph.D.s, regardless of where they are ultimately employed. None of the research that we conducted in the third section really bears on methods to accomplish this objective, and this too is a subject for future research.

APPENDIX 4.1

FORMAL STATISTICAL MODELS USED IN THE ANALYSES

THE DECISION TO ATTEND AN HBI

The decision to attend an HBI can be modeled as:

$$I^*_{1i} = Z_i\gamma_1 + u_{1i}$$
$$I_{1i} = 1 \text{ if } I^*_{1i} > 0$$
$$I_{1i} = 0 \text{ if } I^*_{1i} \leq 0. \tag{4.1}$$

Here I^*_1 is an unobservable variable indicating desire to attend an HBI, Z is a vector of covariates that influence the probability of attending an HBI, γ_1 is a vector of coefficients, and u_1 is a normally distributed disturbance term with mean 0 and variance σ_{11}. While we cannot observe the value of I^*_1, without loss of generality the individual is assumed to enroll in an HBI ($I_1 = 1$) if the value of I^*_1 is greater than zero and not to enroll in an HBI ($I_1 = 0$) otherwise. Under these assumptions, equation 4.2 describes the probit model that was used to estimate the choice of college sector, where Φ is the standard normal distribution function:

$$P(I_{1i} = 1 | Z_i) = \Phi(Z_i\gamma_1/\sigma_1). \tag{4.2}$$

BACHELOR'S DEGREE ATTAINMENT

Separate equations, by sector, were estimated for whether an individual attained a bachelor's degree by 1979. We assumed that:

$$BA79^*_{Hi} = B_i\gamma_H + W_{Hi}\alpha_H + v_{Hi}$$
$$BA79_{Hi} = 1 \text{ if } BA79^*_{Hi} > 0$$
$$BA79_{Hi} = 0 \text{ if } BA79^*_{Hi} \leq 0 \tag{4.3}$$

$$BA79^*_{Oi} = B_i\gamma_O + W_{Oi}\alpha_O + v_{Oi}$$
$$BA79_{Oi} = 1 \text{ if } BA79^*_{Oi} > 0$$
$$BA79_{Oi} = 0 \text{ if } BA79^*_{Oi} \leq 0. \tag{4.4}$$

Here $BA79^*$ is an unobservable variable indicating desire to attain a bachelor's degree. Without loss of generality, the individual is assumed to have attained a bachelor's degree by 1979 ($BA79 = 1$) if $BA79^*$ is greater than zero and not to have a degree ($BA79 = 0$) otherwise. B is a set of explanatory variables describing individual and family background

characteristics, and W is a vector of variables describing college characteristics that one might expect to influence bachelor's degree attainment. Assuming that v_H and v_O are normally distributed disturbance terms with zero means, equations 4.3 and 4.4 can be estimated by probit maximum likelihood.[30] Equation 4.3 is estimated using the subsample that attended HBIs and 4.4 using the subsample that did not attend HBIs.

In order to compute the average percentage differential of whether an individual would have been more likely to achieve a bachelor's degree had he or she attended an HBI, probit coefficient estimates were used from equations 4.3 and 4.4 to construct predicted values $\widehat{BA79}_H$ and $\widehat{BA79}_O$ for each individual. The predicted percentage differential for each individual was calculated as:

$$(\widehat{BA79}_H / \widehat{BA79}_O) - 1. \tag{4.5}$$

The predicted percentage differential was then averaged across individuals, by sector.

Bachelor's degree attainment equations, using data pooled across individuals in both sectors, were also estimated, treating HBI first as exogenous and then as endogenous:

$$BA79^*_{B_i} = B_i \gamma_B + \delta_B I_{1i} + v_{B_i}$$
$$BA79_{B_i} = 1 \text{ if } BA79^*_{B_i} > 0 \tag{4.6}$$
$$BA79_{B_i} = 0 \text{ if } BA79^*_{B_i} \le 0.$$

Assuming that v_B is a normally distributed disturbance term with mean zero and variance σ_{BB}, equation 4.6 can be estimated as a probit using maximum likelihood. In order to treat HBI as endogenous, an instrument for it, I_1, was obtained through estimation of equation 4.2, which is described in the first section of this appendix.

The difference in the probability of receiving a bachelor's degree by 1979 if an individual attended an HBI was computed for each individual in the sample, and the individual differences were then averaged:

$$(1/N)\Sigma[\Phi(\{B_i\hat{\gamma}_B + \hat{\delta}_B\}/\hat{\sigma}_B) - \Phi(\{B_i\hat{\gamma}_B\}/\hat{\sigma}_B)]. \tag{4.7}$$

Here Σ indicates summation over all of the individuals in the pooled sample; the coefficient δ_B was estimated first treating attendance at an HBI as exogenous and then using the instrumental variable estimate.

WAGE EQUATIONS

Hourly wage equations for individuals in each sector (HBI, non-HBI) were first separately estimated. Let $LNWAGE^*_{Hi}$ be the hourly wage rate received if an individual attended an HBI and $LNWAGE^*_{Oi}$ be that value if he or she attended an other (non-HBI) college.[31] The following equations were assumed:

$$LNWAGE^*_{Hi} = X_i\beta_H + W_{Hi}\omega_H + u_{Hi} \tag{4.8}$$

$$LNWAGE^*_{Oi} = X_i\beta_O + W_{Oi}\omega_O + u_{Oi}. \tag{4.9}$$

Here X is a set of individual, family, and background explanatory variables that might influence wage rate, W is a vector of college characteristics, and u_H and u_O are mean zero, normally distributed disturbance terms with variances σ_{HH} and σ_{OO}.

Because individuals may systematically self-select into an HBI or a non-HBI (based on tastes, constraints, etc.), estimation of equations 4.8 and 4.9 on data from each sector separately, without taking into account the college sector choice decision, may result in biased estimates of the coefficients. Thus, the choice of sector must be added to the model. The choice equation of whether to attend an HBI was described by equations 4.1 and 4.2; 4.2 was estimated by maximum likelihood techniques.

For any individual in the sample, realizations of $LNWAGE^*_H$ and $LNWAGE^*_O$ will not both be observed. If $I_1 = 1$, then $LNWAGE_H = LNWAGE^*_H$; if $I_1 = 0$, then $LNWAGE_H$ is not observed. If $I_1 = 0$, then $LNWAGE_O = LNWAGE^*_O$; if $I_1 = 1$, then $LNWAGE_O$ is not observed. The conditional (on college sector choice) expectations of equations 4.8 and 4.9 are:

$$E(LNWAGE_{Hi}|X_i, W_{Hi}) = E(LNWAGE^*_{Hi}|X_i, W_{Hi}, I_{1i} = 1)$$
$$= X_i\beta_H + W_{Hi}\omega_H + E(u_{Hi}|I_{1i} = 1)$$
$$= X_i\beta_H + W_{Hi}\omega_H + (\sigma_{H1}/\sigma_1)[\phi(Z_i\gamma_1/\sigma_1)/\Phi(Z_i\gamma_1/\sigma_1)] \tag{4.10}$$

$$E(LNWAGE_{Oi}|X_i, W_{Oi}) = E(LNWAGE^*_{Oi}|X_i, W_{Oi}, I_{1i} = 0)$$
$$= X_i\beta_O + W_{Oi}\omega_O + E(u_{Oi}|I_{1i} = 0)$$
$$= X_i\beta_O + W_{Oi}\omega_O - (\sigma_{O1}/\sigma_1)[\phi(Z_i\gamma_1/\sigma_1)/(1 - \Phi(Z_i\gamma_1/\sigma_1))] \tag{4.11}$$

where ϕ is the standard normal density function, $\sigma_{H1} = \text{cov}(u_H, u_1)$, and $\sigma_{O1} = \text{cov}(u_O, u_1)$.

Heckman (1979) describes a method to estimate consistently the coefficients described in equations 4.10 and 4.11. Equation 4.2, the college sector choice probit, can be estimated on the entire sample using maximum likelihood. Utilizing estimates of γ_1 and each individual's characteristics, the inverse of Mills' ratio (λ_H or λ_O) can be calculated for each observation in the sample, where $\lambda_H = [\phi(Z\gamma_1/\sigma_1)/\Phi(Z\gamma_1/\sigma_1)]$ and $\lambda_O = -[\phi(Z\gamma_1/\sigma_1)/(1 - \Phi(Z\gamma_1/\sigma_1))]$. Then the predicted inverse Mills' ratio can be added as an explanatory variable to the wage equations. The

coefficients of the explanatory variables can then be consistently estimated when OLS is applied to the augmented equations:

$$LNWAGE_{Hi} = X_i\beta_H + W_{Hi}\omega_H + \theta_H\lambda_{Hi} + v_{Hi} \qquad (4.12)$$

$$LNWAGE_{Oi} = X_i\beta_O + W_{Oi}\omega_O + \theta_O\lambda_{Oi} + V_{Oi} \qquad (4.13)$$

where $\theta_H = \sigma_{H1}/\sigma_1$ and $\theta_O = \sigma_{O1}/\sigma_1$.[32] Equation 4.12 was estimated for the subsample that attended HBIs, and 4.13 for the subsample that attended non-HBIs.

One problem with the above analysis is that not all of the individuals in the sample are employed.[33] The switching regression model with more than one decision function is described by Maddala (1983). The two decisions—HBI versus other (non-HBI) college attendance and employment—fall under what Maddala terms a "joint model"; all four outcomes can be observed in the sample.[34] Thus the decisions are defined over all of the observations in the sample. The following (reduced-form) employment equation can be added to the above model:

$$\begin{aligned}
I^*_{2i} &= N_i\gamma_2 + u_{2i} \\
I_{2i} &= 1 \text{ if } I^*_{2i} > 0 \\
I_{2i} &= 0 \text{ if } I^*_{2i} \leq 0.
\end{aligned} \qquad (4.14)$$

I^*_2 is an observable variable indicating desire to be employed, N is a set of covariates (including nonlabor income, number of children, and state unemployment rate) that influences individuals' employment outcomes, and u_2 is a normally distributed disturbance term with mean zero. While we cannot observe the value of I^*_2, the individual is assumed to be employed ($I_2 = 1$) if the value of I^*_2 is greater than zero and not to be employed ($I_2 = 0$) otherwise. If it is assumed that $cov(u_2, u_1) = 0$, then equation 4.14 can be estimated as a probit on the entire sample, the inverse of Mills' ratio calculated for those who are employed, and then the ratio added to equations 4.12 and 4.13.[35]

Next, to compute the average percentage. hourly wage differential between attendance at an HBI versus other college attendance, coefficients from equations 4.12 and 4.13 were used to construct predicted values of $LNWAGE_H$ and $LNWAGE_O$ for each individual. More specifically, for a random individual who went to college in a certain sector and was employed in 1979, we ask what were his or her expected earnings in the HBI sector and what were they in the non-HBI sector. Thus, college sector choice (and employment status) is taken into account in the predictions.[36] The predicted percentage differential for each individual was calculated by:

$$[\exp(\widehat{LNWAGE}_H + .5\mathrm{var}\{\hat{v}_H\})/\exp(\widehat{LNWAGE}_O + .5\mathrm{var}\{\hat{v}_O\})] - 1. \qquad (4.15)$$

The predicted percentage differential was then averaged across individuals, by sector.

Hourly wage equations that used data pooled across individuals in both sectors were also estimated; HBI was first treated as exogenous, and then as endogenous:

$$LNWAGE^*_{wi} = X_i\gamma_w + \delta_w I_{1i} + v_{wi}. \qquad (4.16)$$

$LNWAGE^*_w$ is observed if $I_2 = 1$ (i.e., the individual is employed) and not observed if $I_2 = 0$. The procedure for estimating equation 4.16 is similar to that described above for equations 4.8 and 4.9, and the Heckman (1979) method was again utilized. As in equation 4.6, $I_1 = 1$ if an individual attended an HBI, and $I_1 = 0$ otherwise; an instrument for I_1 was obtained through estimation of equation 4.2, which is described in the first section of this appendix.

OCCUPATIONAL STATUS EQUATIONS

The methodology for estimating the occupational status equations, by college sector and for the pooled sample, is the same as that described in the previous section. The only difference is in the way that the average percentage occupational status differential between HBI and non-HBI college attendance (analogous to equation 4.15) was computed. Unlike the wage equation, where the dependent variable is a logarithm, the dependent variable in the status equation is an index. Hence, for occupational status the following was calculated for each individual:

$$(\widehat{SEI79}_H/\widehat{SEI79}_O) - 1. \qquad (4.17)$$

This was then averaged across individuals, by sector.

15. By classifying people according to the first college attended, I miss the fact that some will attend their first college for only a short period of time before transferring schools. In addition, some attend junior college before they intend to attend college—in other words, before they graduate high school, in the form of summer school. For instance, one famous economist is noted for having studied dinosaurs when seven years old at a local junior college. This problem is mitigated by the fact that I look at the first college attended between the ages of seventeen and nineteen.

16. Actually, many junior colleges are open to those without high school degrees or equivalency diplomas. In the NLSY, only about eight people who had not completed twelve years of school reported having attended a junior college. I suspect that this underestimates the actual use of junior colleges by those without high school degrees and is due to the way in which years of education are recorded in the survey.

17. Pincus (1980), 334.

18. I also estimated the model including the first college attended between the ages of fifteen and thirty-one. The results are substantively the same.

19. The test was administered in 1979. For most of my estimations I include only those who turned eighteen after 1979, which somewhat mitigates the problem that some people will have taken the exam after having attended college. When I estimate the binary decision of whether or not to attend college using an age-adjusted measure of ability (adjusted by regressing ability on dummies for age-at-test and using the residuals), the coefficient on the test score hardly changes

20. The local unemployment rate in the NLSY is the continuous unemployment rate from the geocode file. The unemployment rate is for the Standard Metropolitan Statistical Area (SMSA) if the individual lived in one, otherwise it is the unemployment rate from the balance (non-SMSA areas) of the state.

21. The wage data are calculated from the Bureau of Labor Statistics Annual Merge file of the CPS for years 1979–88. The experience-adjusted wage differentials are the coefficients on education dummies generated by regressing log wages on a constant, education, and a quartic in potential experience (age-education-6) and estimated separately by race for men and women in each of four regions. The sample included full-time workers under the age of seventy whose major activity the week before was working, who were not self-employed, and who earned at least one-half of the minimum wage.

22. Differences may be explained by the fact that the HSB represents decisions of one cohort within six years after high school, while the NLSY contains several cohorts, the oldest of which attended colleges at age twenty-eight. Also, the NLSY respondents self-reported their type of institution, and some may have included vocational or technical schools with the two-year colleges.

23. A table with results from a binary logit from the NLSY and the HSB are available from the author upon request.

24. To test for the statistical significance of the difference in the effects of independent variables on the choice of two- and four-year college, I tested whether the difference of two variables was statistically different from zero.

25. In ongoing work, Behrman, Kletzer, McPherson, and Schapiro (1992) are also studying the decision to attend both two- and four-year college using the NLS72. While their primary focus is on understanding which family background measures directly affect the decision to attend college (versus indirectly through measured ability), their results are mixed as to the importance of four-year college tuition. However, they use four-year college tuition as a proxy for both four-year and two-year college costs.

26. Also using the SCOPE survey, Radner and Miller (1975) report a nonlinear interaction between measured ability and family resources in predicting college attendance. Among high school seniors with measured ability above the median for the U.S. population, ability to pay (as measured by net cost to the family) was positively related to college attendance, while for those with measured ability below the median for the U.S. population, ability to pay was negatively related to college attendance.

27. I arrived at $2,600 by taking the real expected lifetime earnings of all males starting from age eighteen (to age sixty-four) who were high school graduates, under the assumption of a discount rate of 3 and a 1 percent productivity growth from the Statistical Abstract, (U.S. Bureau of the Census 1982) Table 725. I then multiplied this lifetime earnings of $531,000 by 0.005 (the increase in returns I wanted to simulate) to arrive at (about) $2,600.

28. The CPS changed its allocation of students to two-year and four-year colleges in 1987 and 1988. In fact, when I exclude 1987 and 1988 from the weighted regression, the coefficient on relative tuition is 0.01 with a standard error of 0.69.

Chapter 4

1. See Christy and Williamson (1992), Fleming (1981), Hill (1984), Hoffman, et al. (1992), and Mingle (1981) for more complete discussions of the formation and history of HBIs.

2. Many of these are vividly described in Rowan (1993).

3. Noteworthy studies include Allen (1986), Allen and Wallace (1988), Anderson and Hoabowsk (1977), Astin (1978), Ayres (1983), Baratz and Ficklen (1983), Cross and Astin (1981), Davis (1988), Fleming (1982, 1984), Pascarella et al. (1987), Pascarella, Smart, and Stoecker (1989), Peterson et al. (1979), Stoecker, Pascarella, and Wolfe (1988), Thomas and Braddock (1981), Thomas (1981), and Thomas and Gordon (1985).

4. In later years, when black students became more common on white campuses, the effects of attendance at an HBI may have changed. As such, in future research we will present similar analyses for black students who entered college in the early 1980s, using data from the High School and Beyond survey.

5. Over 95 percent of undergraduate enrollments in HBIs are in four-year institutions. Hence, the restriction of the sample to students initially in four-year institutions is not a major one. Eighty-one percent of both the HBI sample and other college sample were first enrolled in September 1972 and roughly 10 percent of both first enrolled in each of the next two years, so using a three-year "entrance window" should not cause any problems either.

6. Of the 298 students ever enrolled in an HBI, 253 were enrolled only in HBIs; 12 started in other institutions and shifted to an HBI, while 30 started at an HBI but shifted to another institution. Another 2 students started at HBIs and moved to other institutions, with a spell at an HBI sandwiched in between. In future work, we will analyze the behavior of individuals who changed institutional type.

7. Data on the proportion of black faculty at each American college and university have been collected every few years since 1976 by the Equal Employment Opportunity Commission (EEOC) as part of its Higher Education Staff Information survey. Citing confidentiality and budgetary restrictions, the EEOC formally declined to provide us with data from the early years of the survey. Data for 1989 had been provided to the U.S. Department of Education, however, and

the department kindly permitted us access to a version in which confidential data (earnings) had been removed.

The use of 1989 racial composition of the faculty data obviously provides us with an estimate of the racial composition of the faculty in the 1970s that contains considerable measurement error. As such, this reduces our likelihood of observing that this variable significantly influenced the outcomes of black students.

8. The index of occupational prestige is the revised Duncan index and is found in Featherman and Stevens (1982). The index is defined at the three-digit census occupation level and spans the range from 14.3 to 87.4 in our sample. Prior research has established that this index is highly correlated with the national median earnings and median education levels of individuals employed in the occupation.

9. As Table 4.4 also indicates, these percentages declined by 1988. This mirrors a national trend in which, faced with a declining applicant pool, more and more institutions recruited their students from wider geographic markets.

10. The appendix spells out the formal statistical models used here and throughout the chapter.

11. SLOTS is zero if no HBIs were present in the state.

12 For example, as indicated in Table 4.2, the standard deviations of the proportions of black students and black faculty at HBIs that students in the sample attended were .106 and .131, respectively.

13. For simplicity, we treat whether an individual enrolled in an HBI as given here. This factor could be made endogenous, as it is later in the paper, or determined simultaneously with the other characteristics.

14. Recall the earlier discussion about the high correlation of these variables in the non-HBI sector

15. See the appendix for details.

16. Similar calculations using the separate sample estimates, which we report below, yield similar findings. We note that in specifications not reported here we found no evidence that the effects of HBIs on bachelor's degree attainment were larger for students who had low test scores or came from low-income families.

17. See the appendix for details.

18. Again, see the appendix for details. The employment status equations included all of the variables that entered into the earnings equations, as well as variables reflecting the individual's marital status, number of children, and (if married) spouse's income—all in 1979. Each of these latter variables' effects were allowed to differ for men and women.

19. Furthermore, in specifications not reported here, we found no evidence that attendance at an HBI was associated with increased 1979 earnings for either students who had low test scores or students from low-income families.

20. Again, as in the previous note, no unique gains were observed for students from low-income families or students with low test scores who attended HBIs.

21. Again, see the appendix for details.

22. In addition, 1979 was no more than three years past college graduation; Labor market outcomes this early may not be good measures of the students' career labor market success. In future work, we plan to use data from the 1986 wave of the NLS72 to address this issue.

23. We have replicated much of the analyses reported in this section, restricting our sample to those students who graduated from high school in states with HBIs. On balance, we found a very similar pattern of results: Attendance at an HBI enhances graduate probabilities but has no impact on early career earnings, occupational status, or the probability of being enrolled in graduate school.

24. Howard University is classified throughout this section as an HBI, not as a Research I institution, which, in fact, it also is.

25. The two percentages are, respectively, for doctorates from HBIs 58 and 4, and for doctorates from Research I institutions 18 and 31.

26. Similarly, the two percentages are, respectively, 41 and 14, and 12 and 36.

27. For example, some federal funding for selected graduate programs at sixteen HBIs in science, engineering, mathematics, and professional fields is provided in fields in which African Americans are underrepresented under Section 303 of PL102-325, the Higher Education Amendment of 1992.

28. The last wave of the NLS72 was conducted in 1986. Unfortunately, the sample size was substantially reduced, which decreases the likelihood that we will be able to observe HBIs having any statistically significant effects in this data set.

29. HSB initially surveyed students who were high school seniors and sophomores in 1980. The former were last resurveyed in 1986 (six years after high school graduation) and the latter in 1992 (ten years after high school graduation). So again, at best, one can focus on early career labor market and educational success with them.

30. This does not take into account the decision of college sector, and future research may utilize a bivariate probit model to incorporate the college sector choice.

31. LNWAGE is only partially observable; its observance in each equation depends on sector choice.

32. This technique (using the switching regression model) was applied in an education setting by Willis and Rosen (1979).

33. An individual is counted as not being employed if he or she is not doing market work or is in school full-time.

34. These four outcomes are: (1) HBI and employed; (2) HBI and not employed; (3) non-HBI and employed; (4) non-HBI and not employed.

35. If the disturbance terms in the decision equations are correlated, then a bivariate probit is necessary for estimation.

36. In other words, for those who attended an HBI we are calculating $E(LNWAGE^*_{Hi} \mid X_i, W_{Hi}, I_{1i} = 1, I_{2i} = 1)$ and $E(LNWAGE^*_{Oi} \mid X_i, W_{Oi}, I_{1i} = 1, I_{2i} = 1)$.

CHOICES AND CONSEQUENCES

Contemporary Policy Issues in Education

Edited by
Ronald G. Ehrenberg

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Louise Bohr, Ernest T. Pascarella, Amaury Nora, and Patrick Terenzini, "Do Black
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College Student Development, Vol. 36, No. 1, January/February 1995, pp. 75–85.

Lamont Flowers and Ernest T. Pascarella, "Does College Racial Composition Influence
the Openness to Diversity of African American Students?, Journal of College Student
Development, Vol. 40, No. 4, July/August 1999, pp. 377–389.

Richard G. Ehrenberg and Donna S. Rothstein, "Do Historically Black Institutions of
Higher Education Confer Unique Advantages on Black Students? An Initial Analysis,"[5]

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[5] Richard G. Ehrenberg and Donna S. Rothstein found that attendance at historically black institutions "did
substantially increase [the] probability pf receiving a bachelor's degree within seven years. However, it had no
apparent effect on .. had a significant impact on earning a bachelor's degree, but no effect on ... early career labor

in Ronald G. Ehrenberg edited, *Choices and Consequences: Contemporary Policy Issues in Education,* ILR Press, Ithaca, New York, 1994, pp. 89–137 (article in previous section, Academic, Social, and Labor Market Outcomes of African American Students that Attended HBCUs and African American Students that Attended Traditionally White Institutions, A Sample of Studies Showing Positive Impact of Attendance at HBCUs).

market success and on their probability of enrolling in postcollege graduate or professional schools." Richard G. Ehrenberg and Donna S. Rothstein. "Do Historically Black Institutions of Higher Education Confer Unique Advantages on Black Students" An Initial Analysis" in Ronald G Ehrenberg edited, *Choices and Consequences Contemporary Policy Issues in Education* p 131

Historically Black vs. White Institutions: Academic Development among Black Students

Mikyong Minsun Kim

Black institutions of higher education are a historical by-product of systematic social discrimination against Blacks in the United States. Even half a century ago, the majority of African Americans had very limited opportunities for higher learning. Like women in this country, African Americans were believed to have inherently inferior intellectual and academic ability; thus, teaching them complex concepts and skills was considered wasteful and unnatural (Willie & Edmonds, 1978). Before emancipation, many Whites thought that providing African Americans with a college education would endanger the existing system of slavery or, later, jeopardize the racially divided social strata. Nevertheless, some religious organizations and White benevolent societies founded Black colleges, mainly to prepare Black teachers for the segregated schools (Lucas, 1994). The first Black colleges, such as Avery College and Lincoln University, were founded in the North

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around the 1850s. However, historically Black colleges were more numerous in the South after the Civil War, where a higher proportion of African Americans were located and the roots of racial discrimination were deeper (Lucas, 1994). Currently, 103 historically Black colleges and universities (HBCUs) operate in the United States, most of them in the South (National Center for Education Statistics, 2001). Among them are 89 four-year and 14 two-year HBCUs.

Until the U.S. Supreme Court's landmark *Brown v. Board of Education* decision in 1954, which directed higher education's move toward desegregation, over 90% of African American college graduates were educated by the historically Black institutions. However, as historically White institutions opened their doors to Blacks, enrollments at Black colleges and universities decreased, forcing dramatic organizational changes. To survive, some Black institutions merged with local White institutions. Most public HBCUs also began admitting non-Black students. By the mid-1990s, three historically Black institutions had student populations that were predominantly White (Wenglinsky, 1996).

HBCUs still play an important role for African Americans in higher education. During the last two decades, the overall enrollment at HBCUs has increased because non-Black students have joined a growing number of African American college-bound students. Approximately 17% of all Black college students attend HBCUs, and 28% of bachelor's degrees awarded to African Americans are from historically Black institutions (National Center for Education Statistics, 1996). Nevertheless, the question of whether these institutions are still needed continues to preoccupy both the U.S. Supreme Court and educational policy makers. The viability of any educational institution should be closely related to its ability to facilitate student development. Thus, it is important to document the institutional effectiveness of HBCUs on student outcomes. Only then will policy-makers and the public know how well Black institutions serve their students and whether it is beneficial to maintain and support HBCUs. However, empirical studies about college impact on the development of African American students are very limited (Pascarella & Terenzini, 1991), and studies on the comparative analysis of Black vs. White institutions are even more limited with often divergent findings.

Thus, this study's goal is to analyze the effectiveness of historically Black colleges and universities vs. historically White (HWCUs) colleges and universities in developing the academic and cognitive abilities of African American students. A continuous core mission of four-year colleges and universities is to develop students' academic and cognitive dimensions. In addition, this study examines how African American students at HBCUs differ from those at their white counterparts and how HBCU characteristics and academic resources differ from those of HWCUs. I used national longitudinal data and multi-level statistical analysis to enhance the research rigor and

generalizability of the examination. The data used in most existing HBCU studies are usually limited to one or two Black institutions, and I found no study using a multi-level statistical analysis (hierarchical linear modeling [HLM]) to compare the two institutional types. HLM is a relatively new statistical technique, with methodological advantages over a single-level standard regression analysis, especially in studies of organizational effectiveness on student outcomes (Bryk & Raudenbush, 1992; Kim, 2001; Kreft & de Leeuw, 1998).

RELATED LITERATURE

Studies about Student Characteristics

Literature suggests that at HBCUs African American students have different backgrounds than those of African American students at HWCUs. HBCU students tend to have lower high school GPA and SAT scores than the all-student national average (McDonough et al., 1997) and than Black students in HWCUs (Allen, 1992; Gurin & Epps, 1975; Nettles, 1988; Thomas, 1981). They also tend to come from families lower on the socioeconomic scale compared with African Americans at White institutions (Allen, 1992; Allen & Farley, 1986).

A generation ago Gurin and Epps (1975) reported that 60% of Black students at HBCUs had fathers who had not graduated from high school, compared with 45% of Black students at HWCUs. More recent data from the National Postsecondary Aid Study of 1990 (Wenglinsky, 1996) shows that parents of HBCU students are not less educated than those of HWCU students, although their incomes are lower, and that HBCU students are more likely to be younger, to be unmarried, and to live on campus. Wenglinsky (1996) reported that students at HBCUs have lower college GPAs, but Allen (1987) reported the opposite.

Additional research by Allen (1992) found that Black colleges enroll students who otherwise might not be able to attend college because of social, financial, or academic barriers. Financial aid packages and low tuition were among the top reasons for attending HBCUs (McDonough, 1997; Wenglinsky, 1996). Along with remedial programs, special financial assistance initiatives have been very high priorities at all HBCUs.

Studies on Institutional Resources and Characteristics

Only a limited number of studies reported on differences in institutional resources and characteristics between HBCUs and HWCUs. African American students on HBCU campuses seem to have different educational experiences than their peers on HWCU campuses. University faculty, facilities, available academic programs, and opportunities for advanced study are

poorer in HBCUs than in HWCUs (Allen, Epps, & Haniff, 1991; Thomas, 1981). Allen (1992) reported that African American students have more interaction with both Black and White faculty at HBCUs than at HWCUs. Wenglinsky (1996), however, found no significant difference in student-student interaction and student-faculty interaction between HBCU and HWCU students. These conflicting findings and the lack of information suggested a need to examine differences in HBCU and HWCU institutional characteristics.

Studies about Institutional Effectiveness

Empirical studies offer conflicting evidence regarding Black students' education. Fleming (1982, 1984) found that Black student cognitive gains are higher at HBCUs than at HWCUs. Fleming (1982, 1984) and Allen (1992) suggested that African American students attending HBCUs benefit from a more supportive social and academic environment. To assess the comparative effectiveness between Black and White institutions, Wenglinsky (1996) examined their effect on five student outcomes: college GPA, leadership potential, educational aspirations, occupational aspirations, and participation in community service. He concluded that students at Black institutions have higher educational aspirations than their peers at White institutions and are more likely to become professionals. (No significant difference was found in the other outcome dimensions.) Controlling for precollegiate characteristics and the institution's academic selectivity, researchers have suggested that attending a historically Black institution is positively associated with students' remaining in college and earning a bachelor's degree (Astin, 1975, 1993; Cross & Astin, 1981; Pascarella, Smart, Ethington, & Nettles, 1987). Allen (1992) noted that the "fit" between African American students and higher education is more favorable at HBCUs.

Boyd (1977) reported that most African American students adjust successfully to White colleges. Nevertheless, this seemingly successful adjustment may come at a price. Watson and Kuh (1996) compared African American and White students at two Black liberal arts colleges with those at two White liberal arts colleges, measuring their level of effort. They found that although African American students attending White institutions exerted greater effort in all areas, they made fewer gains than White students. Watson and Kuh further stated that Black institutions provide African American students with a developmentally powerful educational environment.

Allen (1987) contrasted the benefits of attending the two types of institutions. On HBCU campuses, Black students gain psychological well-being, cultural affinity, and nurturing academic relations, while on HWCU campuses they gain impressive physical plants, rich resources, and more diverse program options. Only Ayres's study (1983) reported that African American students attending White institutions had higher scores on the National Teachers Examination than their counterparts at historically Black colleges.

However, recent studies comparing Black students at HBCU and HWCU campuses (Bohr, Pascarella, Nora, & Terenzini, 1995; Pascarella, 1996) found no significant differences in cognitive abilities associated with attendance at historically Black versus White institutions. More specifically, Bohr et al.'s study compared freshmen's growth in reading, math, critical thinking, and the composite score of the three measures, whereas Pascarella, Edison, Edison, Nora, Hagedorn, and Terenzini (1996) compared writing skills and science reasoning. Despite their use of important measures, both of these studies had only two Black institutions in their data sets (versus 16 White institutions), which seriously limits the generalizability of their results.

Although existing research has improved our understanding of the effects of attendance at historically Black colleges, it has several important limitations or differences from this study. First, the studies often have a different comparative reference. Some compared Black students at HBCUs with those at HWCUs, while other studies lumped Black and White students together (Astin, 1968; Centra, Linn, & Parry, 1970; Wenglinsky, 1996). Second, existing research has ignored potentially important confounding factors in the research itself. While most studies investigating the effects of Black colleges have controlled for precollege academic preparation, many have ignored other precollegiate factors such as gender, academic aspiration, and parents' socioeconomic status, as well as such institutional factors as selectivity, enrollment, and single-sex college status, all of which may also influence student development during college. Third, data used for the comparative studies are too limited to generalize their results. Fourth, no previous study used a multilevel statistical analysis (HLM) to compare the effectiveness of two types of institutions on academic outcomes.

METHODS OF PRESENT STUDY

Data Source and Subjects

A national longitudinal student data set was obtained from the Cooperative Institutional Research Program (CIRP), sponsored by the American Council on Education and the Higher Education Research Institute (HERI) at the University of California, Los Angeles. CIRP's major purpose is to assess how college affects students. The subjects consist of 1,069 African American freshmen who responded to both an initial survey in the fall of 1985 and the follow-up survey taken during the summer of 1994; 416 attended 10 HBCUs, and 653 attended 71 HWCUs. The institutional data set consists of 7 private and 3 public HBCUs, and 40 private and 31 public HWCUs. Of the 103 functioning Black colleges, 89 are four-year institutions (41 public, 48 private), and the rest are two-year colleges. This study is limited to African American students who attended four-year colleges and

universities in the United States. Because African American students tend to take much longer to graduate than White or Asian American students, it seems reasonable to use nine-year follow-up data to study their development. HERI's megafile (the data file used for this study) had already integrated some institutional characteristics from the Higher Education General Information System (HEGIS) into its longitudinal student data set.

Originally, I planned to conduct this research using the fourth-year follow-up data but could obtain data for only a few institutions and less than one third of the students for the fourth-year follow-up. In spite of having more information (variables) available in the fourth-year data, I decided to choose the ninth-year follow-up data to achieve my original research purpose of comparing Black and White institutions using the nationally representative data with a large pool of students. HERI made a special effort to ·trace students by Social Security numbers for the ninth-year follow-up, so the number of cases almost tripled in the ninth-year data. I also planned to use more recent data, but the follow-up survey cases were even more limited, indicating that fewer African American students and fewer Black colleges were sampled. This nine-year data set (1985–1994) provides a much larger pool of students than any other data set for years in which the HERI survey is available.

Variables

I measured academic development by three outcome variables: academic ability, writing ability, and math ability. These abilities are operationally defined by responses to the following 1985 and 1994 survey items: "Rate yourself on each of the following traits [i.e., academic ability, writing ability, math ability] as compared with the average person your age. We want the most accurate estimate of how you see yourself." These attributes were measured by self-reports on a five-point scale ranging from lowest 10% to highest 10% (Astin et al., 1987, p. 110; Higher Education Research Institute, 1992).

The primary independent variable was Black college status (vs. White college status) with individual-level and institution-level predictors as independent variables for the two-level analyses. Individual-level predictors include the initial tests, SAT composite score, high school GPA, age, gender, degree aspiration in 1985, and family socioeconomic status. Institution-level predictors consist of selectivity (based on SAT combined scores), single-sex college status, institutional control (public or private college), total enrollment, total instruction-related expenditure per full-time-equivalent (FTE) student, percentage of total instruction-related expenditure, student-faculty ratio, student-faculty interaction, and percentage of faculty with a Ph.D.

I included single-sex colleges in the HLM analyses for two reasons. Kim's studies on the effectiveness of women-only colleges (1995, 2001) suggest that the effects of Black colleges and women's colleges can be confounded;

researchers should isolate one from the other. The data sets include 10 single-sex colleges; among them are 1 men-only Black college and 1 women-only Black college. However, I chose to control for single-sex college status (rather than women's college status) not only because the data sets have only one Black women's college, but also because Astin (1993) reported that students in both men's and women's colleges seemed to develop better academically than their coeducational counterparts.

Approach to Data Analysis

As a preliminary analysis, I used means, percentages, standard deviations, correlation, t-tests, and cross-tabulations to analyze differences and similarities among institutional characteristics of HBCUs and HWCUs. This article, however, presents only the results of means, standard deviations, and t-tests to compare HBCU and HWCU student and institutional characteristics. To answer the principal question of this study, I used an HLM method. In the nested data (e.g., students nested within colleges), HLM takes into account the dependencies among observations within clusters (Bryk & Raudenbush, 1992). I built HLM models in the study progressively: first, a reasonable individual-level model, then an institution-level model on top of it. The effects of college global characteristics (e.g., selectivity, single-sex college status, and enrollment) were adjusted to isolate the effect of attending a Black college. The model—a global college model—was constructed to test the hypotheses. That is, the hypotheses were tested after including global institutional characteristics in the equation but before including internal institutional characteristics. I used an alpha level of 0.05 to test this study's hypotheses. Finally, exploring internal college characteristics helped me understand their predictivity. If I found any significant institutional effects, then investigating internal college characteristics might help identify some possible reasons for the effects. The final model, including all possible variables, is called a full model.

Limitations

This study has three limitations. First, although it would have been ideal to collect data sets specifically for this study, it uses existing national data sets. To capture overall academic ability, I selected the respondents' self-reported academic ability, math ability, and writing ability from the surveys. This may not be a serious limitation. Although some consider it so, other studies indicate that students' self-reported responses are quite valid (Astin, 1991, 1993; Pace, 1985). Even while analyzing this study, I observed strong positive associations between self-reported academic ability and SAT scores and between academic ability and high school GPA. The correlation between pretest academic ability and SAT is 0.49; the correlation between pretest academic ability and high school GPA is 0.56. Notably, the correla-

tion in this study between students' high school GPAs and SAT scores is 0.48. The strength of its correlation with the two popular admission criteria suggests that self-reported academic ability is a valid construct.

Second, even though having longitudinal data sets with precollege data and a nine-year follow-up survey is the strength of this study, it also creates a limitation because we cannot know when each subject graduated from college. Moreover, noncollege experiences between graduation and the survey date may have influenced the responses. However, we know that overall academic ability, writing ability, and math ability are not easily developed within an occupation; rather they depend on academic discipline or postbaccalaureate education. The correlations between pretests and posttests were strong despite the nine-year gap; the pretest-posttest correlation coefficient of academic ability is 0.39 (p < 0.0005), that of writing ability is 0.35 (p < 0.0005), and that of math ability is 0.57 (p < 0.0005).

Third, it is fair to question whether the three academic measures can sufficiently capture students' overall academic ability developed in many disciplinary areas. Certainly they cannot capture all the dimensions of academic ability, but they can capture some of them.

RESULTS AND INTERPRETATIONS

HBCU and HWCU Institutional Characteristics

Table 1 presents means, standard deviations, and t-test results comparing institutional characteristics. HBCUs and HWCUs differ in average faculty salary, student-faculty ratio, percentage of faculty with a Ph.D., total instruction-related expenditure per full-time-equivalent (FTE) student, percentage of total instruction-related expenditure, percentage of undergraduates receiving aid, and total student enrollment and selectivity. Student-faculty ratio and total enrollment appear to be the only advantages HBCUs have over HWCUs for student development, given that previous studies (Astin, 1993; Pascarella & Terenzini, 1991) report that a lower student-faculty ratio and smaller colleges are better for student development in general.

Total instruction-related expenditure per FTE in HBCUs is much lower than in HWCUs ($6,506 vs. $8,645), while the percentage of instruction-related expenditure by HWCUs and HBCUs does not differ significantly. Average faculty salary and percentage of faculty with a Ph.D. were much lower in HBCUs. The percentage of undergraduates receiving aid was much higher in HBCUs (84% vs. 61%), which is not surprising because a high proportion of Black students are economically disadvantaged. The percentage of students transferring before graduating does not significantly differ between HBCUs and HWCUs. Overall, HBCUs appear to have fewer (and poorer) academic-related resources than HWCUs.

TABLE 1

COMPARATIVE CHARACTERISTICS OF BLACK AND WHITE INSTITUTIONS

(HBCU, N = 10; HWCU, N = 71)

	Mean	SD	t-ratio	p-value
Total enrollment				
HWCU	9068	9893.39	5.96	0.000
HBCU	1823	1002.92		
Selectivity				
HWCU	1074	133.57	8.05	0.000
HBCU	725	77.32		
Instruction-Related Expenditure per FTE Student				
HWCU	8645	4477.19	3.27	0.002
HBCU	6506	1208.22		
Percentage of Instruction-Related Exenditure				
HWCU	75.18	9.67	0.88	0.384
HBCU	72.35	8.80		
Student-Faculty Ratio				
HWCU	19.44	5.80	3.26	0.004
HBCU	15.80	2.78		
Average Faculty Salary				
HWCU	38322	8076	4.36	0.000
HBCU	26814	5470		
Percentage of Faculty with a Ph.D.				
HWCU	79.68	12.57	3.99	0.000
HBCU	62.80	12.20		
Percentage of Students Transferring before Graduation				
HWCU	13.59	7.11	-0.89	0.375
HBCU	15.71	6.41		
Percentage of Undergraduates Receiving Aid				
HWCU	60.93	15.77	-4.46	0.000
HBCU	84.00	11.10		

African American Students in HBCUs and HWCUs

Table 2 shows the results of t-tests comparing characteristics of entering African American students in HBCUs and HWCUs. The comparison of student characteristics may not reflect all Black freshmen because I compared only students who responded to both surveys. Based on higher parental income and father's education, African American students attending HWCUs seem to have higher socioeconomic-status parents; however, the level of mothers' education showed no differences, nor was there a difference in student age.

While selectivity based on mean SAT (Table 1) reflects average SAT composite scores of the sampled institutions split by type of institution (institutional data), SAT scores in Table 2 reflect mean SAT composite scores (aggregate data from the sample) of African American students attending the two types of institutions. Both SAT scores and high school GPA are significantly higher for African Americans attending HWCUs than those at HBCUs. There was no significant difference in the pretest of writing ability. However, Blacks in HWCUs rated their overall academic ability and math ability higher than did their counterparts in HBCUs.

Institutional Effectiveness of HBCUs and HWCUs

To evaluate the effectiveness of HBCUs and HWCUs, I examined three null hypotheses, one for each of the three outcome measures, through HLM analyses. They posit that there is no difference in institutional effectiveness between HBCUs and HWCUs in African American students' development of (a) academic ability, (b) writing ability, and (c) math ability. The coefficients, t-ratios, and p-level of each level of HLM analyses can be interpreted just as in the standard multiple regression model or Analysis of Covariance (ANCOVA) model. The distinction between institution-level and individual-level variability can be inferred as a variance decomposition component (between-group vs. within-group variance) in an Analysis of Variance (ANOVA) model.

Table 3 summarizes an unconditional ANOVA model, which is a preliminary step for most HLM analyses. To limit the number of tables in the article, I extracted and assembled only the most useful information (grand means, standard errors, and variance decomposition), from the ANOVA model. Determining the proportion of institution-level variability and individual-level variability requires a simple hand calculation (Bryk & Raudenbush, 1992). The three variables resemble each other in size of grand means and standard errors. Notably, most variability is located at the individual, not institution, level. This proportion of institution-level vs. individual-level variability suggests that most students' academic development may be explained by individual student characteristics rather than by group characteristics.

TABLE 2

CHARACTERISTICS OF AFRICAN AMERICAN STUDENTS IN BLACK AND WHITE INSTITUTIONS

(HBCU, N = 416; HWCU, N = 653)

	Mean	SD	t-ratio	p-value
Pretest: Academic Ability				
HWCU	3.87	0.71	5.07	0.000
HBCU	3.64	0.72		
Pretest: Math Ability				
HWCU	3.40	0.96	3.87	0.000
HBCU	3.16	0.95		
Pretest: Writing Ability				
HWCU	3.50	0.83	0.89	0.376
HBCU	3.45	0.78		
Age[a]				
HWCU	3.05	0.58	-1.73	0.085
HBCU	3.11	0.56		
SAT				
HWCU	922.39	187.63	16.52	0.000
HBCU	738.73	159.48		
High School GPA				
HWCU	5.51	1.66	8.87	0.000
HBCU	4.58	1.69		
Parental Income				
HWCU	6.84	3.25	2.85	0.005
HBCU	6.26	3.22		
Father's Education				
HWCU	4.80	2.12	3.17	0.002
HBCU	4.38	2.10		
Mother's Education				
HWCU	4.85	1.93	0.31	0.760
HBCU	4.81	2.09		

[a]Age was coded on a ten-point scale; "3" = age 18 and "4" = age 19. See the Appendix for a detailed coding scheme.

TABLE 3

GRAND MEANS AND STANDARD ERRORS OF OUTCOME VARIABLES
AND THE PROPORTION OF INSTITUTION-LEVEL AND
INDIVIDUAL-LEVEL VARIABILITY

Outcomes	Grand Mean (se)	Institution-Level Variability	Individual-Level Variability
Academic Ability	3.910 (0.036)	25.2%	74.8%
Writing Ability	3.801 (0.033)	15.4%	84.6%
Math Ability	3.403 (0.039)	16.9%	83.1%

Tables 4, 5, and 6 contain the results of HLM analyses. They list all variables included in their respective models, as well as the corresponding b coefficients, standard errors, and t-ratios. The criteria for variable selection was t = 1.5, unless a theory or a related study suggested that a particular variable should be adjusted to account for college effects. I next present the results of HLM analyses for three outcomes separately and discuss major or interesting findings.

Academic Ability

The individual-level analysis includes four predictors, all positively associated with self-reported academic ability in 1994 (Table 4). These four variables explain 6% of individual-level variance. Both SAT composite scores and high school GPAs were very significant contributors, suggesting that self-reported academic ability is strongly associated with real academic ability or performance scores. It is interesting that, in spite of a nine-year gap, pretest of academic ability was the most significant contributor. This pattern was consistent with the other outcomes.

Surprisingly, parental education (both father's and mother's education level) was not a significant predictor for self-reported academic ability in 1994, although parental income contributed slightly to the outcome. After I composed a reasonable individual-level (level 1) model, I next constructed an institution-level (level 2) model.

For the institution-level analysis, I included mean pretest academic ability, mean parental income, selectivity, and Black college status in the institution-level model, along with four individual-level variables. (See Table

TABLE 4

ACADEMIC ABILITY AS DEPENDENT VARIABLE

(Global College Model = Full Model)

Independent Variables	Coefficients	se	t-ratio
Institution-Level Variables			
Intercept	1.4330	0.2803	5.112***
Mean pretest: academic ability	0.5019	0.0754	6.656***
Average income	0.0317	0.0158	2.005**
Black college	0.0780	0.0815	0.957
Selectivity	0.0003	0.0002	1.131
Individual-Level Variables			
SAT	0.0006	0.0002	4.001***
Pretest: academic ability	0.1792	0.0346	5.181***
High school GPA	0.0584	0.0148	3.935***
Income	0.0100	0.0064	1.573

Variance Component			
Random Effect	SD	df	Chi-square	p-value
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Institution-level variance	0.0061	76	75.3775	> 0.500
Individual-level variance	0.6097			

Note: $*p < = .10$
$**p < = .05$
$***p < = .01$

4). No internal college characteristics were significant after I took the four global college characteristics into account. Surprisingly, these four institution-level variables explain 97% of institution-level variance. The variance component of Table 4 shows that the standard deviation of institution-level intercept dropped to almost zero, while the p value exceeded 0.50. In other words, little variability remained after taking the four institutional characteristics into account.

The null hypothesis—that historically Black and White institutions do not differentially affect the development of self-reported academic ability among African American students—was not rejected ($p = 0.339$). Although attending an HBCU is a positive predictor for academic ability, as rated in 1994, the size of the b coefficient was trivial. This result suggests that attending a

Black college makes no significant difference in developing academic ability when three factors are controlled for: the mean pretest of academic ability, mean parental income, and selectivity.

Selectivity was highly significant in the equation without mean pretest of academic ability. Its coefficient, however, dropped dramatically and became insignificant once mean pretest was added to the model. This drop pattern suggests that selectivity and mean academic ability share a significant amount of predictivity. The global college model and the full model are the same because no internal college characteristics were added.

Writing Ability

For the individual-level analysis, I included four variables: pretest writing ability, SAT, being female, and father's educational level. (See Table 5.) All four were positive and significant predictors for self-reported writing ability in 1994 and accounted for 7% of the individual-level variation. Students' initial rating of writing ability was a very strong contributor. Consistent with educators' typical observations on female students' strengths in verbal ability, being female was positively associated with self-reported writing ability. Students with higher SAT scores (better academic preparation) also tend to write better. The level of fathers' formal education may positively influence Black students' writing ability.

At the institution-level analysis of the global college model, I used four institution-level predictors: mean pretest of writing ability, selectivity, single-sex college status, and Black college status. I also included the four individual-level predictors. The hypothesis—that historically Black and White institutions do not affect writing ability differently—was not rejected by the model ($p = 0.943$) presented in Table 5. Holding mean pretest, selectivity, and single-sex college status constant, the effect of Black college status was close to zero ($b = 0.0077$, $t = 0.072$, Table 5). In other words, whether an African American student attends an HBCU or an HWCU will not yield differences in his or her writing ability.

It is important to mention that, in the model omitting single-sex college status, Black college was a significant positive predictor. If I had not included the single-sex college variable, which the previous studies on Black colleges failed to do, the result would have favored Black colleges. It seems likely that some effects assigned to Black colleges per se may actually be attributable to the single-sex Black colleges.

For the institution-level analysis of the full model, I included five institution-level predictors, which collectively explained 89% of institution-level variance. Controlling for the four global college characteristics in the model showed that only the percentage of faculty with Ph.D.'s was a significant predictor among the internal institutional characteristics considered. (See Table 5.) The variance components (bottom of Table 5) suggest that very little unexplained variation remained at the institution level ($p > 0.50$).

TABLE 5

WRITING ABILITY AS DEPENDENT VARIABLE

Independent Variables	Global College Model			Full Model		
	b	se	t-ratio	b	se	t-ratio
Institution-Level Variables						
Intercept	1.8134	0.4100	4.42***	1.4182	0.4450	3.19***
Global characteristics						
Mean pretest: writing						
ability	0.3500	0.0905	3.87***	0.3649	0.0900	4.05***
Black college	0.0774	0.1071	0.07	0.0469	0.1076	0.44
Selectivity	0.0006	0.0002	2.50**	0.0004	0.0003	1.40
Single-sex college	0.1317	0.0779	1.69*	0.1305	0.0759	1.72*
Internal characteristics						
Percentage of faculty with Ph.D.				0.0068	0.0032	2.17**
Individual-Level Variables						
SAT	0.0003	0.0002	1.72*	0.0003	0.0002	1.72*
Pretest: writing ability	0.3159	0.0300	10.54***	0.3159	0.0299	10.56***
Female	0.0916	0.0558	1.64*	0.0916	0.0557	1.65*
Father's education	0.0261	0.0121	2.16**	0.0261	0.0120	2.16**

Variance Component

Random Effect	SD	df	Chi-square	p-value
Global College Model				
Institution-level variance	0.0284	76	75.3958	> 0.500
Individual-level variance	0.7376			
Full Model				
Institution-level variance	0.0162	75	70.8981	> 0.500
Individual-level variance	0.7363			

Note: $*p <= .10$
$**p <= .05$
$***p <= .01$

Math Ability

The individual-level model that I analyzed consists of math pretest, SAT composite score, and father's education, which collectively account for 16% of the individual-level variation. Again, the pretest was highly significant in predicting the posttest on math ability. (See Table 6.) While most people would expect the father's education to positively predict the student's math ability, the findings indicate the reverse. Yet, in the previous section, father's

education positively predicted writing ability. I hypothesize that highly educated African American fathers are less likely to work in science or technically oriented fields and further speculate that Black students follow occupational paths similar to their fathers'.

I included mothers' education level because studies indicate that Black culture tends to be matriarchal. However, this factor was not a significant predictor for the three academic outcomes. I find it likely that Black students attending four-year colleges have different family backgrounds than the general Black population.

In conducting the institution-level analysis, I included four variables in the institution-level model: mean pretest of math ability, Black college status, selectivity, and single-sex college status. When controlling for the four global college characteristics, no internal college characteristics were significant. Thus, the global college model and the full model were the same. The four variables explain 96% of the total institution-level variation. No other institution-level variables considered were significant after controlling for these four variables. The p-level of institution-level variance ($p >$ 0.50, bottom of Table 6) also shows little variation left unexplained at the institution level.

The null hypothesis—that there is no difference in the effectiveness of HBCUs and HWCUs in developing African American students' math ability—was not rejected ($p = 0.202$). Holding mean pretest, selectivity, and single-sex college status constant, Black college status was an insignificant predictor. In other words, no significant difference in math ability is expected for African American students attending either Black or White institutions as long as the student selectivity policies are similar. Single-sex college status added little to the explanation of the institution-level variation. However, I included it in the model because I noticed a nontrivial change in the effect of Black college status between the models without single-sex college status (HBCU: $b = -0.0704$) and the model with single-sex status (HBCU: $b = -0.1367$). The negative effect of Black college attendance on math ability became stronger by controlling for the positive effect of single-sex college status.

DISCUSSION AND CONCLUSIONS

Based on national longitudinal data sets, this study attempted not only to fill a gap left by previous studies, but also to extend the terrain of studies on the institutional effectiveness of Black colleges on African American students' academic outcomes. This study also sought insight into the institutional academic academic environment and the characteristics of Black students attending both types of institutions. Moreover, it provides empirical information for policy makers and the public about the effectiveness of HBCUs and HWCUs in facilitating African American students' develop-

TABLE 6

MATH ABILITY AS DEPENDENT VARIABLE

(Global College Model = Full Model)

Independent Variables	Coefficients	se	t-ratio
Institution-Level Variables			
Intercept	1.6710	0.3306	5.06***
Mean pretest: math ability	0.6236	0.0710	8.78***
Black college	-0.1367	0.1071	-1.28
Selectivity	-0.0003	0.0003	-0.95
Single-sex college	0.0949	0.0746	1.27
Individual-Level Variables			
SAT	0.0008	0.0002	4.21***
Pretest: math ability	0.4807	0.0267	18.00***
Father's education	-0.0263	0.0118	-2.22***

Variance Component

Random Effect	SD	df	Chi-square	p-value
Institution-level variance	0.0066	76	57.7565	> 0.500
Individual-level variance	0.7280			

Note: $*p <= .10$
$**p <= .05$
$***p <= .01$

ment. This section summarizes the study's major findings and relates them to higher education policies.

HBCU Institutional Characteristics

The average SAT score of Black students at White institutions is much higher than that of Black students attending Black institutions. Low SAT scores at HBCUs doubtless reflect the open admission policy at many of these institutions. Also, overall academic resources at HBCUs are much poorer than at HWCUs. Total instruction-related expenditure per FTE, average faculty salary, and percentage of faculty with a Ph.D. were also significantly lower at HBCUs. Not surprisingly, the percentage of undergraduates receiving financial aid is much higher at HBCUs than at HWCUs. However, both student-faculty ratio and total student enrollment were smaller at HBCUs. Studies of college impact indicate that a lower student-faculty ra-

tio and smaller enrollments are generally favorable environmental factors (Astin, 1993; Pascarella & Terenzini,1991). Fewer Ph.D.'s and lower average faculty salary may partially explain how HBCUs can afford to maintain a lower student-faculty ratio.

African American Students' Characteristics at HBCUs

Black students at HBCUs tend to be academically less prepared, as measured by high school grades and SAT composite scores, while parents' income and fathers' education levels tend to be lower than those of their peers at HWCUs. Although there is no significant difference in students' initial writing ability, both math and academic abilities are higher among Black students entering White institutions. The findings of students' poor academic preparation and low parental socioeconomic status are consistent with Allen's findings (1992).

The Effectiveness of Black Colleges

Through HLM analysis, all three null hypotheses were not rejected ($p > 0.05$). When students' precollege characteristics and global institution characteristics are controlled for, attending Black colleges does not appear to be more beneficial in developing Black students' overall academic ability, writing ability, and math ability than attending White institutions. This finding is somewhat consistent with previous studies by Bohr, Pascarella, Nora, and Terenzini (1995), Pascarella, Edison, Nora, Hagedorn, and Terenzini (1996), and Centra, Linn, and Parry (1970).

Because no significant differential institutional effects or effects of internal institutional characteristics on the three outcomes were found, pursuing reasons for differences—as originally intended—was unnecessary. Nevertheless, I checked the coefficient changes of Black college status while including the variables of internal college characteristics in HLM equations. Among the internal college characteristics I considered, only one variable, the percentage of faculty with a Ph.D., was a significant positive predictor for the development of writing ability. Based on the coefficient change of Black college status on writing ability (when this faculty variable was held constant), it appears that the lower percentage of faculty with a Ph.D. at HBCUs has a detrimental effect on students' development in writing ability. Apparently faculty with a Ph.D. could demand more academically rigorous papers from students, thus developing their writing skills.

No other internal college characteristics that I considered seemed to explain the outcome measures of academic ability and math ability, when I controlled for global college characteristics such as mean pretests and selectivity in admission. Notably, the global college characteristics of the models explained most of the total institution-level variance, leaving very little unexplained variance.

However, most of the previous studies reported that HBCUs significantly affect Black students. Here are some potential reasons for the differences between my results and those of earlier studies. First, previous studies on historically Black colleges did not isolate or consider the effects of single-sex colleges among Black colleges. In other words, some of the previously reported success of HBCUs could be attributed to single-sex colleges among HBCUs, as the findings of this study suggest. This means that future studies on Black colleges should isolate the effect of single-sex colleges for more accurate conclusions. Second, this study adjusted for other potential confounding factors such as selectivity, total enrollment, parental socioeconomic status, high school GPA, and pretests. Third, the previous studies and this study used not only different data sets but also different data collection terms. While this study used longitudinal data collected with a nine-year gap between pretests and posttests, most other studies did not use longitudinal data. Fourth, this study used a multi-level modeling technique, while others used standard single-level regression analysis. Fifth, the discriminatory climate at HWCUs may have eased since the desegregation movement.

CONCLUSIONS

The finding that no significant difference existed between HBCUs and HWCUs in their ability to influence overall academic ability, writing ability, and math ability was rather surprising. However, it would be premature to close or merge Black colleges just because they show no significant differential effect on Black students' academic development. We should take the finding of "no difference" as a positive sign that African American students, as a group, now benefit equally in their academic development whether they attend HBCUs or HWCUs. This result widens their choices in pursuing higher education.

It may be significant that, despite their lack of academic resources, HBCUs are as effective as HWCUs. In fact, historically Black colleges appear to be more cost-effective in achieving their mission of educating Black students. Future studies should investigate how they manage to produce the same level of outcomes as HWCUs in spite of poorer academic resources. Other types of institutions might have something to learn from them. As Allen (1987, 1992) and Fleming (1982, 1984) noted, the success of Black colleges may stem from their culturally and psychologically supportive and nurturing climate for African American students. Or, as Watson and Kuh (1996) suggested, African American students at HWCUs may spend much energy and time dealing with feelings of alienation and frustration, as well as a lack of campus support, at HWCUs, that could be better used for their academic advancement. Whatever the case, future studies should investigate any aspects of Black colleges that might explain how they compensate for the great gap in institutional resources.

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APPENDIX

Variables and Coding Scheme

	Individual-Level Variables
Pretests	five-point scale, from 1 = lowest 10% to 5 = highest 10%
Academic ability	(All measured in 1985)
Mathematical ability	
Writing ability	
Student's gender	1 = male and 2 = female
Age of student on 12/31/89	10-point scale from 1 = 16 or less, 2 = 17, 3 = 18 to 10 = 57 or more
SAT	students' combined SAT scores, ranging from 400 to 1600
High school GPA	average high school grades, 8-point scale from 1 = D to 8 = A or A+
Parental income	14-point scale from 1 = less than $6,000 to 14 = $150,000 or more
Father's education	8-point scale from 1 = grammar school or less to 8 = graduate degree
Mother's education	8-point scale from 1 = grammar school or less to 8 = graduate school
Degree aspiration in 1985	Ph.D., M.D., D.D.S., D.V.M., LL.B., J.D., Doctor of Divinity = 2, Master's degree, B.A. = 1
Posttests	5-point scale from 1 = lowest 10% to 5 = highest 10%
Academic ability	(All measured in 1994)
Writing ability	
Mathematical ability	

	Institutional-Level Variables
Mean pretest of academic	aggregated from individual-level scores ability
Mean pretest of mathematical ability	
Mean pretest of writing ability	
Mean income	
Mean father's education	
Mean mother's education	
Black college (vs. White (college)	1 = historically White institution; 2 = historically Black institution
Selectivity	institutional selectivity based on SAT combined scores, ranges from 400 to 1600
Institutional total enrollment	Single-sex college 1 = coeducational college, 2 = single-sex college
Institutional control	1 = public institution, 2 = private institution

Total enrollment
Percentage of undergraduates receiving aid
Percentage of students transferring before graduation
Total instruction-related expenditure per full-time-equivalent (FTE)
Percentage of total instruction-related expenditure
Student-faculty ratio
Average faculty salary
Percentage of faculty with a Ph.D.

The Impact of Historically Black Colleges and Universities on the Academic Success of African American Students

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Abstract

Anchored in national longitudinal data analyzed through hierarchical linear and non-linear modeling, this study found that African American students have a similar probability of obtaining a BA degree whether they attended a historically Black college or university (HBCU) or a historically White college or university (HWCU). Among African Americans, females seem more likely to obtain a baccalaureate degree than males. Especially given that HBCUs are significantly underfunded relative to HWCUs, the findings of this study lend support to the proposition that HBCUs contribute significantly to higher education in this country and merit strong support from both the public and private sectors.

Until the midpoint of the twentieth century, more than 90 percent of the African American students enrolled in higher education in this country were educated in Historically Black Colleges and Universities (HBCUs). However, since the early 1960s, in part because of public pressures to desegregate higher education, the percentage of African American college-going students at HBCUs has dramatically declined--with only 17 percent of Black students enrolling in the 103 HBCUs in this country (National Center for Education Statistics [NCES], 1996). Yet, about 30 percent of the BA degrees awarded to African Americans annually are produced by the 89 four-year (41 public and 48 private) HBCUs (NCES, 1996, 2003). Among African American college graduates, a disproportionately high percentage of political leaders, lawyers, doctors, and Ph.D recipients have graduated from HBCUs (Gray, 1998; Jackson, 2002; Willie and Edmonds, 1978; Wolf-Wendel, Baker, and Morphew, 2000).

Notwithstanding HBCUs' historic contribution to educational opportunities for African Americans, questions continue to be raised about their educational quality and value. In the 1992 case of *United States v. Fordice*, the U.S. Supreme Court raised questions regarding the educational quality and value of HBCUs. The legitimacy of HBCUs has also been called into question by, among others, policymakers in states such as Mississippi, who have called for mergers between HBCUs and HWCUs (Historically White Colleges and Universities) and, in some instances, the closure of HBCUs. Moreover, some African American students and their parents, along with other constituencies, have expressed concerns about the relative value of attending an HBCU as opposed to an HWCU.

Degree completion is often used by policymakers as well as students and their families in making public and private decisions about HBCUs. Completing a baccalaureate degree is not only considered an indicator of academic success, but also a vehicle to professional advancement and a symbol of membership in the American middle class (Beeghley, 1989). Among minority

students in particular, college degree completion is a highly valued goal, especially because it is often viewed as the only hope and means for upward social mobility (Bowles and Gintis, 1976; Collins, 1979). Nested within this context, the purpose of this study was to examine the impact of HBCUs on the academic success—as reflected in degree completion—of African American students.

Literature on HBCUs: Comparisons with HWCUs

There is a growing literature comparing HBCUs with HWCUs. As a foundation for this study, we look briefly at major student demographic characteristics as well as institutional characteristics of HBCUs. We then examine the literature on the major areas of impact examined in our study: academic success and degree completion.

Student demographics and institutional characteristics of HBCUs

The literature on Black college students suggests that those matriculating at HBCU campuses tend to have backgrounds different from those at HWCUs. Though African Americans score far below their white counterparts on undergraduate admission tests even after controlling for family income and parental level of education (Nettles and Perna, 1997), Black students at HBCUs tend to have even lower high school GPAs and SAT scores compared with Black students attending HWCUs (Allen, 1992; Gurin and Epps, 1975; Nettles, 1988; Kim, 2002a) and with all students nationally (McDonough, Antonio and Trent, 1997). Black students attending HBCUs also tend to come from families lower on the socioeconomic scale than those of their peers at White institutions (Allen, 1992; Allen and Farley, 1986; Kim, 2002a), and they are likely to be younger and unmarried (Wenglinsky, 1996).

A limited number of studies have also reported on major differences in institutional resources and characteristics between HBCUs and HWCUs. Just as HWCUs traditionally enroll more affluent students than HBCUs, their resources are greater as well. The quality of the

faculty, facilities, available academic programs, and opportunities for advanced study is often poorer at HBCUs (Allen, Epps, and Haniff, 1991; Thomas, 1981). Still, while most African American students adjust successfully at HWCUs and the schools' resources are likely superior to those of HBCUs, they are less likely to feel that their institution has responded to their needs (Allen, 1992; Hemmons, 1982).

HBCUs, on the other hand, seem to make up for what they lack in resources by providing a more collegial and supportive learning environment for students and faculty. Retention studies of students at all institutions (e.g., Pascarella & Terenzini, 1979; Terenzini and Pascarella, 1980; Nagda, Gregerman, Jonides, Hippel, and Lerner, 1998) have shown that the frequency of student-faculty contact is positively related to students' academic growth. Nagda et al. (1998) found that student-faculty research partnerships positively affect students' persistence at the University of Michigan. Their research reported that the effect was strongest for African American students—especially sophomores. Studies by Ellis (1988) and LaVant, Anderson, and Tiggs (1997) also reported the benefits that Black students at both HBCUs and HWCUs receive from faculty mentoring. More research is needed, however, to determine if involvement in faculty research is more likely to make a student graduate from an HBCU. In studies specifically relating to Black students, Allen (1992) suggests that academic achievement is highest for students—at both types of institutions—who have, among other things, positive relationships with faculty. Allen (1992), Ross (1998), and Wells-Lawson (1994) reported that Black students have more frequent, and meaningful, interaction with both Black and White faculty at HBCUs than at HWCUs, whereas Wenglinsky (1996) found no significant difference in student-faculty interaction between students at HBCUs and those at HWCUs. Kim (2004, p. 120) also stated that Black students at HBCUs are "more actively and deeply involved in the academic community" than Blacks at HWCUs.

Impact of HBCUs on students' academic success and degree completion

Currently, research regarding the impact of attending HBCUs versus HWCUs on students' academic success is limited, and the little research there is has produced mixed results. Studies by Bohr, Pascarella, Nora and Terenzini (1995), Centra, Linn, and Parry (1970), and Kim (2002a) found no significant differences in cognitive and academic abilities associated with attendance at either type of college. Using a national data set, Kim (2002a) found that no significant difference existed between HBCUs and HWCUs in their ability to influence overall academic ability, writing ability, and mathematics ability. Fleming (1982, 1984) reported greater cognitive growth, especially among African American female students in HBCUs. Pascarella, Edison, Nora, Hagedorn, and Terenzini (1996) reported that HBCU students do as well as or better than their counterparts at HWCUs on standardized measures of writing skills and science reasoning. Other studies have also shown that Blacks at HBCUs receive higher grades (Allen; 1987; Allen and Wallace, 1988; Anderson, 1984; Fleming, 1984; Wenglinsky, 1996) and have higher degree aspirations (Heath, 1992) than their counterparts at HWCUs.

In terms of retention and graduation from college, Cross and Astin (1981) and Pascarella, Smart, Ethington, and Nettles (1987) reported that attending an HBCU is positively associated with students' remaining in college and earning a bachelor's degree. Using data from the National Longitudinal Study of the High School Class of 1972, Ehrenberg and Rothstein (1993) also found that Black students who attended HBCUs were more likely than Black students at HWCUs to receive a bachelor's degree. Numerous other studies on HBCUs have merely cited the positive finding of these few studies.

While the extant research has contributed to our understanding of the impact of HBCUs on African American students, the literature is limited in several major ways. For one, there has been very little research on the impact of HBCUs on what is arguably one of the most important

domains—academic success as reflected in BA degree completion by African Americans. For another, existing research has ignored potentially confounding factors that may influence student outcomes. In particular, while most studies estimating the effects of HBCUs have controlled for academic preparation, many have ignored other background factors such as respondents' gender and socioeconomic status of parents, as well as institutional factors such as selectivity and enrollment size—factors that may also influence student development during college. Moreover, we used a non-linear multilevel modeling technique rather than a single-level OLS regression analysis because the data are hierarchically nested (students in a college) and explaining institutional effect on student graduation involves handling a dichotomous (non-linear) variable.

Theories of Degree Completion

As an anchor point for the study, we briefly examine theories related to student degree completion and how our study is informed by the strengths and limitations of these theories.

Tinto's departure theory (1975, 1987) is clearly the most frequently cited and debated framework guiding research on dropout and retention, even though many other researchers have studied the topic for the last three decades (e.g., Astin, 1975; Spady, 1970; Braxton, 2000; Braxton and Lien, 2000; St. John, Cabrera, Nora, and Asker, 2000; Pascarella, Smart, Stoeker, 1989; Tierney, 1992; Bean and Metzner, 1985). We reflected on Tinto's departure theory because we believe that the predictors for departure, or dropout, may be closely related to those for graduation. Simply, if we succeed in retaining students, they will eventually obtain their degrees. The core of Tinto's theory is that academic and social integration, along with goal commitment (before and after exposure to the college academic and social environment), have a significant influence on students' decision to leave college. Tinto's theoretical model (1975) advances the notion that the dropout decision or consequence is based on the interaction among

students' demographic and background characteristics, goal commitment, academic system

(academic integration), and the social system (social integration).

Notwithstanding its contribution, Tinto's integration theory was based on traditional

college students (Bean and Metzner, 1985) and serves for an ethnic and cultural majority

population rather than for minority students (Tierney, 1992). African American students may

differ from traditional White students in some important ways. Moreover, Tinto's theoretical

concept did not take into account students' financial considerations—which other researchers

have subsequently identified as a major explanation for student dropout—and, in turn, failure to

complete their degrees, especially among students from low-income families or non-traditional

college-age populations (Braxton, 2000; Bean and Metzner, 1985; St. John, Cabrera, Nora, and

Asker, 2000). This study considered the important components of Tinto's model—such as an

initial degree goal, socioeconomic indicators, and academic and social environment, but we did

not model degree completion as suggested by theorists in this tradition (e.g., eliminating the role

of integration in degree completion).

Tinto's notion of integration was superseded with the concept of "student" involvement

that was developed by Astin (1984). According to Astin (1984, 1991), involvement theory was

originated from retention and persistence efforts. Based on his long-term large data analysis (the

same data source as this study), Astin found that student involvement in campus activities

directly affects students' learning outcomes and attachment to school and peer. According to

Astin (1991, p. 134), "Student involvement refers to the amount of physical and psychological

energy that the students devote" to the general and specific school experience. Astin (1984)

notes that the amount of student learning and development associated with any educational

program is directly correlated with the quality and quantity of student involvement in the

program. Kuh's "seamless learning environment"and "engagement" concepts (Kuh, 1993) are

similar to Astin's involvement theory. Both Astin and Kuh emphasize building educational

learning structures beyond classrooms, making students more involved in and attached to

educational settings and bridging classroom and out-of-classroom experiences. It is important to

note that this study did not explore individual students' involvement and integration patterns

owing to data limitation, but the analysis of institutional internal college characteristics variables

in the hierarchical non-linear model may support the notion of involvement or engagement

theory. (See the discussion section.)

Finally, Kim's institutional effectiveness model (1995, 2001) also provides a conceptual

and methodological framework for this study to examine whether there is a differential effect

from attending an HBCU vs. an HWCU in terms of the outcome of degree completion. Through

her dissertation research, Kim (1995) expanded Astin's input-environment-outcome model to

study the institutional effectiveness of women-only colleges on various intellectual and ethical

outcomes. Applying a multi-level modeling perspective, Kim not only attempted to

systematically distinguish global college characteristics from internal college characteristics, but

also emphasized the simultaneous influence of college-level culture, structure, and opportunities

and individual-level activities and experiences. The combined design of the institutional

effectiveness model and multi-level modeling was also used to examine the effectiveness of

Catholic schools and HBCUs on student development (Kim, 2002a and Kim and Placier, 2003).

We demonstrate Kim's institutional effectiveness model further in the methods section, where

we present our strategies for the hierarchical non-linear modeling.

Research Objectives and Hypotheses

In light of the shortcomings of the existing literature, along with the significance of the

issue to policymakers, prospective students, and their parents, the objective of this study was to

examine the effects of HBCUs on the academic success of African American students and, in

turn, the institutional factors in HBCUs that may contribute to and militate against the effects being investigated. In exploring the impact of HBCUs on the touchstone, we compare HBCUs with HWCUs as the natural frame of reference. First, we examine comparative student and institutional characteristics of HBCUs and HWCUs. Second, we examine whether HBCUs have a differential impact on obtaining a baccalaureate degree for African American students. We also examine the difference between male and female students in the probability of obtaining a baccalaureate degree. To discern the effects of attending HBCUs vs. HWCUs, we examined the following null hypothesis: There is no differential institutional effect between HBCUs and HWCUs in terms of African American students' probability of obtaining a bachelor's degree. Finally, we explored whether any internal college characteristics can explain the differential effect of attending an HBCU vs. an HWCU and advance educational implications for policy and practice.

Methods

Data Source and Subjects

To achieve the objectives of this study, we obtained a national longitudinal student data set from the Cooperative Institutional Research Program (CIRP). CIRP, which is sponsored by the American Council on Education and the Higher Education Research Institute (HERI) at the University of California, Los Angeles, has conducted the largest longitudinal surveys of college students nationwide since 1966. The subjects used in this study were 941 African American freshmen who responded to both an initial survey in the fall of 1985 and a follow-up survey taken nine years later during the summer of 1994. HERI made a special effort to trace students by Social Security numbers for the nine-year follow-up. Notably, our data demonstrate degree completion rates of African American students who first enrolled in HBCUs or HWCUs.

Because African American students tend to take considerably longer to graduate than White students (Kim, Rhoades, and Woodard, 2003) and only 35 percent of four-year college students complete their baccalaureate degrees within four years (American Council on Education, 2002, p. 28), it was decided to use nine-year follow-up data in this study. Along with the students who did not respond to the follow-up survey and were therefore eliminated from the sample, we removed those colleges with four or fewer responding students to avoid a situation whereby only a few students would contribute to the creation of institutional means for the multi-level analysis used in the study. After cleaning the data, we compared the descriptive statistics of all variables between the original and new data; little difference was observed except for the number of HWCUs. The missing cases across the variables were small, under 3 percents of the total initial data.

The final sample included 401 students in 10 HBCUs and 540 students in 34 HWCUs. Among the 10 HBCUs, two were under public control; among the 34 HWCUs, 19 institutions were under public control According to the National Center for Education Statistics (NCES) (2003), a higher proportion of HBCUs were under private control. The data set consisted of only three single-sex colleges: one White women's college, one Black women's college, and one Black men's college. Thus, we decided not to include single-sex college status in HNLMs.

Data Comparability. The gender distribution of respondents in both the HBCUs and HWCUs is broadly similar (about 64 percent of students were female): 197 males and 343 females in HWCUs, and 144 males and 257 females in HBCUs. While the female response rate to the surveys was higher than for males in general, the subject ratio in the sample is close to the actual ratio of college graduates between African American male and female populations (NCES, 2003). Of 227,000 black students at HBCUs, 61 percent were female and the ratio of gender distribution was about the same between public and private HBCUs (NCES, 2003).

The average SAT combined scores of the African American respondent in the data

suggest a great gap between the two types of institutions: 925 for Blacks in HWCUs vs. 736 for

Blacks in HBCUs. The overall respondents' SAT combined scores (846) are not much different

from the national means for African Americans. Mean SAT scores for African American

students are generally much lower than those of white students: For example, in 1986/87, the

average SAT score for Blacks was 839 compared with 1,038 for Whites (in 1995/1996, 856 for

Blacks vs. 1,049 for Whites).

Variables

Dependent Variables. The outcome variable was respondents' BA degree completion

(graduation status). Students' degree completion was measured in 1989 and 1994; the

information measured in 1989 was later integrated into the 1994 data. Degree completion is a

dichotomous variable coded as 0 = not completed and 1 = completed. The coding schemes for

variables are listed in the Appendix, and the means and standard deviations, separated by the

type of institution (HBCU and HWCU), are presented in Table 1.

Independent Variables. Two kinds of independent variables were included in two-level

analyses: individual-level and institution-level predictors. Individual-level predictors include

high school GPA, SAT scores, age, initial degree aspiration, gender, and family socioeconomic

status (parental income and mother's education). We included these variables because these

student background characteristics and indicators of academic preparation have shown to

influence students' college choice, college experiences, and educational success. In the

individual-level modeling procedure, all individual-level variables were centered around their

grand means in order to control for differences in student composition among institutions.

Institution-level predictors consisted of Black college status (versus White college

status), selectivity (mean SAT scores), public versus private college status, and student

enrollment, as well as other internal college characteristics. We decided not to include single-sex

'college status not only because of the limited number of single-sex colleges in the data, but also

because of its statistical insignificance (close to a zero effect). The internal college

characteristics variables were included to explore the association between HBCUs and internal

characteristics, as well as the causal relationship between the dependent variable and internal

characteristics such as expenditure, faculty, curriculum, and peer factors used in the study. We

included percentage of total instruction-related expenditure and instruction-related expenditure

per full-time-equivalent (FTE) student. Moreover, we considered instruction-related expenditure

variables because one of the major differences between HBCUs and HWCUs is their academic

resource availability and because instruction-related expenditure measures can be related to

students' academic success and degree completion (Allen, Epps, and Haniff, 1991; Kim, 2002a).

Relatedly, Wolf-Wendel, Baker, and Morphew (2000) reported that instructional expenditure per

student had a positive effect on the doctoral productivity rate among white women.

We included a faculty variable—research project with faculty—because we reasoned that

working with faculty in research may help not only in promoting students' intellectual

development but also in their involvement in and attachment to the college (Nagda, Gregerman,

Jonides, Hippel, and Lerner, 1998), which in turn will positively influence students' degree

completion. We chose the course status of curriculum offerings in freshman core course,

freshman seminar, and senior seminar because they may help with students' stress reduction,

integration among courses, and academic success at the beginning or end of their college years.

Other internal college characteristics (such as student-faculty interaction) were also

considered in building hierarchical non-linear models (HNLM) because the literature (Astin,

1993; Pascarella and Terenzini, 1991) and common sense suggest them as potentially important

factors in student development. Several of the variables considered were eventually removed

because of a strong correlation with other variables in the models, their insignificant contribution to the models, and our decision to limit the number of predictors for an optimal HLM/HNLM modeling strategy (suggested by Bryk and Raudenbush, 1992; Heck and Thomas, 2000; Raudenbush and Bryk, 2002).

Method of Analysis

In a preliminary analysis, means, percentages, standard deviations, correlation, t-tests, and cross-tabulations were examined to discover similarities and differences between the characteristics of HBCUs and HWCUs. In Table 1, we present means, percentages, standard deviations, and Spearman's correlation (rho) (the latter because many of the variables were ordinal or categorical variables). To address the principal questions of this study, we used a hierarchical linear and non-linear model program (a multi-level statistical technique): we used hierarchical non-linear models (HNLM) to test the major hypothesis and to examine the relationship of individual- and institution-level variables (the combination of dichotomous, ordinal, and continuous variables) to respondents' graduation (or baccalaureate degree completion). In the HNLM models, we used a Bernoulli model (which requires 0 or 1 coding for the outcome measure) among the nonlinear multilevel model options because degree completion has only two values, completed vs. not completed. HLM or HNLM has well-established methodological advantages over standard regression techniques for evaluating the effectiveness of schools and colleges and handling multi-level nested data sets (Bryk and Raudenbush, 1992; Burstein, 1980; Ethington, 1997; Raudenbush and Bryk, 2002). Yet another important advantage of the HLM or HNLM program is that it gives more weight to colleges that have more students (subjects) and less weight to institutions with fewer students or less precise data (Kim, 2002b, p. 478; Bryk and Raudenbush, 1992). We also chose robust estimation because it gives somewhat less weight to the extreme cases, or outliers, when the sample size of colleges varies.

The conceptual and methodological basis of HNLM models was anchored in Kim's institutional effectiveness model (developed from Astin's input-environment-outcome model, see Kim, 1995; Kim, 2001; Kim, 2002b). Along with the related literature review and theories of degree completion (Tinto's and Astin's models), the combination of the research capacity of HNLM and the institutional effectiveness model guided the selection of variables, statistical modeling, and the analyses of this study. Tables 2 present the results of three kinds of models: student model, global model, and full model.

The student-level model incorporates personal qualities that students bring initially to their undergraduate program. The student-level model consists only of individual students' characteristics or their family background; it does not include school-level predictors. Students' influential pre-collegiate characteristics were screened before building the global and full models because it was important to hold the effects of individual background characteristics constant in order to examine Black college effect. For the student models, HNLM was grand-mean centered, while institution-level variables were not centered. That is, the intercept term for each college provides an adjusted degree completion rate, assuming the college enrolled students with mean values on all the student-level variables for the entire sample (see Raudenbush and Bryk, 2002).

Grand-mean centering equalizes institution-level units on each predictor at the individual level; in other words, institutions are adjusted for the differences of students on each individual-level predictor (for the equalization effect, see Bryk and Raudensbush, 1992; Heck and Thomas, 2000, pp. 68-69). In the individual-level models, there tends to be little variation in college slopes; hence, they were treated as non-varying (or fixed). Because of the equalization effects, we did not have to build both individual and institution models symmetrically (as in the group-mean-centering case) nor did we have to crowd the HNLM models with many similar variables

(Raudenbush and Bryk, 2002).   In addition, we needed to restrict the number of institution-level variables in consideration of the ratio between the number of institution-level variables and the number of sampled institutions (Raudenbush and Bryk, 2002; Heck and Thomas, 2000).

The global models include all the variables of student models and college global characteristics. According to Kim (2001), the global characteristics are institutional structural characteristics that are difficult for college administrators or program developers to change or manipulate but may be alterable in the long run (e.g., Black college, selectivity, size).

The full model consists of all the global model variables plus internal institutional characteristics. Internal college characteristics are not easily distinguishable to outsiders yet are mutable and observable to students and faculty during their involvement within the college community (e.g., curriculum, faculty and student characteristics) (Kim, 2001). The purpose of the full models is to explore why there is an institutional effect (if there is) and to identify internal institutional characteristics that may explain students' degree completion.

The distinction between the global and full models not only provides conceptual clarity in organizing the environmental characteristics, but also has a methodological advantage in identifying the point at which a study's hypothesis should be tested. The effect of HBCUs is evaluated after controlling for all other significant global college characteristics but before including the colleges' internal characteristics. The major hypothesis was tested at the 0.05 alpha level.

In building the HNLM models, we chose to include the variables of individual and institution levels for theoretical and practical modeling reasons. We decided to retain some variables regardless of their significance level; for example, initial degree aspiration for the degree completion model and an indicator of family socioeconomic status were included at the individual level, and institution size, Black college, institutional control, and selectivity in

admission were included at the institution level. Unless previous studies, along with our

educated common sense, indicated that we should control for the particular variables, we

retained the student and college (especially in the full model) characteristics variables that were

significant at the 0.10 level and then re-estimated the model. The model building was like a

step-up procedure; all the chosen variables in the previous models were retained for the more

complex models. The similar modeling technique was used by several researchers studying

Catholic vs. public schools, women's colleges vs. coeducational colleges, school dropout rates,

and student development (e.g., Bryk and Thum, 1989; Lee and Bryk, 1989; Rumberger, 1995;

Kim, 2001, 2002b). This technique also helps to address the ratio issue between sample cases

and variables in HLM or HNLM (see Bryk and Raudenbush, 1992; Heck and Thomas, 2000;

Raudenbush and Bryk, 2002). For more information about HNLM, see Raudenbush and Bryk

(2002, ch.10.)

Results and Implications

Comparative Student and Institutional Characteristics of Black and White Institutions

Before conducting HLM and HNLM analyses, we examined student and institutional

characteristics of HBCUs and HWCUs using t-tests, correlation analysis, and other descriptive

statistics. Table 1 presents means, standard deviations, and correlation coefficients of the

important variables considered in HLM and HNLM analyses. Spearman's correlation

coefficients with HBCUs were presented for reference to help readers understand the difference

between HBCUs and HWCUs.

(TABLE 1 ABOUT HERE)

To begin with, African American students' academic and parental background

characteristics differ between the two types of institutions. Mirroring the literature, the HWCUs

in our sample are more affluent than HBCUs in terms of institution-wide academic resources. In

addition, white institutions tend to have more African American students from families with higher parental income and with fathers who have more formal education. Based on mean comparison, African American students in White-majority institutions also were more academically prepared in terms of mean high school GPAs and SAT scores (Table 1). Interestingly, however, African Americans at HBCUs had the exact same level of degree aspirations as their counterparts at HWCUs. College GPAs of African American students did not differ significantly between the two types of institutions (Table 1). Women's degree completion rate was higher than men's (66 percent vs. 49 percent), while the degree completion rate of HBCUs is 55% and that of HWCUs is 63%.

To describe differences between institutional academic environments, we examined selected characteristics of faculty, students, expenditures, and curriculum that can be related to degree completion. Consistent with Kim (2002a), HWCUs tend to have a higher percentage of faculty with a Ph.D., higher average faculty salaries, and a higher proportion of instruction-related expenditure per FTE student than HBCUs (Table 1), all of which are positively related to the outcome. On the other hand, HBCUs tend to have a lower student-faculty ratio, lower enrollment, and somewhat higher student-faculty interaction (Table 1), all of which are positive predictors of student development in general (Pascarella and Terenzini, 1991, 2005; Astin, 1993). The two types of institutions seem to have differently compensating environmental factors.

Although some previous studies indicate that African American students are more likely to graduate from HBCUs than from HWCUs, the institutionally reported data in this study suggests that the overall percentage of students transferring during their undergraduate years is higher in HBCUs. At the same time, HBCUs are making meaningful efforts to retain African American students. For example, from the mean comparison of Table 1, African American

students are more likely to be involved in faculty's research projects at HBCUs, and this involvement is a positive predictor for degree completion, according to our HNLM analysis in this study, as discussed below.

We also examined the course status of curriculum offerings in freshman core course, freshman seminar, and senior seminar between the two types of institutions as well as the effect of these courses on the outcome. In our sample, the freshman core-curriculum seems to differ: HBCUs tend to offer more freshman core-courses as requirements than HWCUs. Table 1 shows that no HBCU has freshman or senior seminar courses (mean: 1, SD: 0). (In HNLM analysis, institutional emphasis on senior seminar courses is positively related to increasing the odds of degree completion.)

Using HNLM Analysis to Examine the Effects of Attending HBCUs

Before building models with predictors, we analyzed unconditional ANOVA models. An ANOVA model has only an outcome variable; it is a no-predictor model. In HLM, this basic model provides some useful information, such as the estimated grand mean, a reliability estimate, and baseline variances for individual level and college level that enable us to calculate an intraclass correlation (a measure of within-college dependency). As for the HNLM models of degree completion, HNLM does not provide a baseline variance to calculate an intraclass correlation at the individual level because the variance-decomposition is not meaningful when the nature of the outcome variable is binominal (degree completion vs. non-completion).

While we do not present the unconditional ANOVA model output, we extracted some useful information to enhance the understanding of multilevel models. To begin with, the estimated grand mean (intercept) of degree completion was 0.599. The average in college-level unit reliability of degree completion is 0.763; reliability estimates that seem to be moderate

considering their sizes are related to the number of sampled students within each institution as well as the individual- and institution-level variances (Raudenbush and Bryk, 2002).

The Probability of Obtaining a Baccalaureate Degree

Student-level model. Table 2 presents the results of HNLM analysis used to determine the probability of obtaining a BA. The individual-level model includes students' gender (female), students' high school GPA, SAT scores, mother's education, and initial degree aspiration. All of these variables were positively associated with the probability of obtaining a baccalaureate degree. However, initial degree aspiration was not a significant predictor for the degree completion (p > 0.10), controlling for the four other independent variables.

The coefficients in the student-level model represent the estimated effects on differences in adjusted mean graduation rates across colleges -- the odds ratio of graduation [p/(1-p)] due to a one-unit change in the independent variable to the odds of graduation without the change. The intercept term for the student-level model is the estimated mean graduation rates for colleges.

(TABLE 2 ABOUT HERE)

Table 2 shows that both high school GPA and SAT are positive predictors of degree completion. Many educators and researchers believe that high school GPA and SAT scores capture and reflect students' academic preparation and scholastic aptitude. Our data suggests that good grades might be a more powerful predictor of graduating from college than high SAT test scores among African American students. Parental income was removed because its effect was trivial when mother's education level was controlled and it was correlated with mother's education (r = 0.38). The positive effect of mother's education is somewhat consistent with the literature on African American family structure (Hrabowski, Maton, and Greif, 1998; McCubbin, Thompson, Thompson, and Futrell, 1998)—that is, the female-headed family structure often visible among African-American families. Being female is positively related with the odds of

degree completion. We conducted the analyses of gender interactions and found not to be of importance with the data set.

Twenty-one percent of the college-level variance was explained by the individual-level model; 59 percent of the variance was explained by the global college model; and 71 percent was explained by the full model. The addition of college structural and internal measures increased the explained variance by 50 percent. In short, differences in the college characteristics explain the majority of the college-level variance

Institution-level models. The global college model was created to test the null hypothesis of the effectiveness of HBCUs versus that of HWCUs. To test the effect of HBCUs on degree completion, the global college model included four institution-level variables (in addition to the five individual-level variables): Black college status, selectivity in admission (institutional mean SAT), private college status (institutional control), and enrollment size. The null hypothesis (there is no differential institutional effect between HBCUs and HWCUs in African American students' probability of obtaining a bachelor's degree) was not rejected. After controlling for all the other variables in the model, attending an HBCU versus an HWCU does not make a significant difference in African American students' college degree completion. The 95% confidence interval is (-2.496, 0.35), whose interval includes zero, suggesting the probability of no difference between Black and White institutions in students' degree completion. In other words, students in Black colleges tend to have slightly lower chances of graduation, but the difference did not seem to be statistically significant—a finding that contradicts those of Cross and Astin (1981), Ehrenberg and Rothstein (1993), and Pascarella, Smart, Ethington, and Nettles (1987).

Taking individual students' academic preparation and/or ability into account, attending a selective institution does not particularly enhance the probability of obtaining a BA degree. It is

important to note that we included the selectivity variable even though it was not a significant

predictor in the model (especially including individual-level SAT scores). We initially decided

to include selectivity regardless of its significance because college selectivity can be a very

important factor influencing institutional missions and priorities, as well as student peer

characteristics. Moreover, the results concerning HBCU effectiveness differed from those of the

HNLM model that did not include selectivity. When we did not control for the selectivity

variable, attending an HBCU turned out to be a significant negative predictor for degree

completion. In other words, controlling for institutional selectivity, the differences between the

two types of institutions are negligible.

The intention behind the full model was to explore why there is an institutional effect and

to learn which internal institutional variables explain (promote or deter) a student's probability of

graduation. Although the null hypothesis was not rejected, we further explored influential

internal college characteristics that might promote students' degree completion. Thus, three

additional institutional-level variables were added to the full model: instructional expenditure per.

FTE student, aggregated student involvement in professors' research projects, and senior seminar

curriculum status.

Table 1 shows that HBCUs' instructional expenditure per FTE student was much lower

than that of HWCUs. The amount of expenditure was positively associated with students'

degree completion, though it did not seem to make a significant difference in the outcome.

Including the instructional expenditure variable did not improve the model. In other words,

instructional expenditure does not matter so much in graduating students. Human factors might

be more powerful than money factors.

Aggregated student involvement in professors' research projects and senior seminar

curriculum status were positively associated with the outcome—degree completion. Holding

global college characteristics and student background characteristics constant, we found that involvement in professors' research projects and having a senior seminar course appear to enhance the odds of degree completion. It is also important to note that the HBCU coefficient increased sharply (negative direction) in the full model. This increase was mainly due to the inclusion of the variable "involvement in professors' research project." The coefficient and t-ratio changes in HNLM models (Table 2) indicate that HBCUs provide or promote more positive college experiences, such as engagement in professors' research projects, for their African American students than do HWCUs. Additional mean comparison and correlation analysis (Table 1) suggest that opportunities for African American students' involvement in research projects are significantly more favorable on HBCU campuses. HWCUs are, however, more likely to offer students senior seminars; no sampled HBCU offered a senior seminar course.

Notably, the expenditure variables were not significant predictors for the outcome. In other words, different instructional expenditures between the two types of institutions may not be directly connected with or decisive in determining degree completion. Initially we also considered average faculty salary as a resource indicator, but we had to remove it from the models because it was very strongly correlated with selectivity in admission ($r = .80$) and strongly correlated with enrollment ($r = 0.56$). Also, average faculty salary and instructional expenditure had a moderate strength of correlation ($r = 0.32$).

We did not encounter any sign or warning of multicollinearity throughout the HNLM analysis. We checked the changes in the pattern of regression coefficients and the size of standard errors, and we employed other diagnostic tools to check for multicollinearity.

Discussion of Findings, Implications for Practice, and Future Research

This study aimed to provide findings to help policymakers, educators, and students become better informed regarding the effects of attending HBCUs on Black students' degree

completion. Using nine-year longitudinal data and hierarchical non-linear modeling analyses, this study found that attending either an HBCU or an HWCU results in a similar probability of obtaining a BA degree. Our preliminary analysis (Table 1) showed that the mean degree completion rate did not differ significantly between HBCUs and HWCUs.

We also found that college GPAs of African American students did not differ between the two types of institutions, which is inconsistent with previous studies that used students' mean GPAs as a comparative reference or a measure of institutional effectiveness on students' academic success (Allen, 1987; Allen and Wallace, 1988; Anderson, 1984; Fleming, 1984; Wenglinsky, 1996). Another new finding from our descriptive analysis is that a higher (almost 1.5 times) proportion of African American students at HBCUs had worked with faculty on their research. This finding suggests that HBCUs might provide more academic opportunities to African American students which is consistent to Kim (2004). At the same time, this study confirmed previous findings (Allen, 1992; Kim, 2002a) that institutional educational resources (e.g., instruction-related expenditure per FTE student, percentage of faculty with a Ph.D.) are markedly greater at HWCUs and that the level of students' academic preparation as well as that of their parental income is higher among African American students at HWCUs.

The finding of no differential effect of HBCUs on obtaining a bachelor's degree is inconsistent with Cross and Astin (1981), Pascarella, Smart, Ethington, and Nettles (1987), and Ehrenberg and Rothstein (1993), who reported that matriculation at an HBCU is positively associated with students' securing a bachelor's degree. Significantly, these latter studies and this study used different data sets and methods (single-level versus multi-level regression analysis). It could well be that Black students are adapting to White institutions better today than they were more than a decade ago, not least because HWCUs have had some success in addressing the chilly and discriminatory climate often associated with them.

Individual-level student characteristics were included in the study to control for the pre-collegiate characteristics that might affect African American students' degree completion. It is interesting to note the long-term effect of pre-college academic preparation on degree completion. High school GPA and SAT were found to be the most influential variables in college completion. It is also important to point out gender effects in degree completion. Consistent with Kim, Rhoades, and Woodard (2003), females were found to be more likely to graduate than males among African Americans. Nettles and Perna (1997) have also reported that among recent African American baccalaureate degree recipients, fewer than one-fifth of men and fewer than one-third of women completed their degrees within four years.

In the study both percentage of participation in research projects with faculty and status of senior seminar were positively associated with degree completion among African Americans. Helping more undergraduates participate in professors' research projects (Nagda et al., 1998) and providing senior seminar curricula seem to be good strategies for improving students' retention and graduation. The senior seminar requirement may promote students' engagement and reduce their anxiety and uncertainty during the senior year; once again, more research is needed that explores the association between senior seminar courses and degree completion. These are examples that Astin's involvement theory and Kuh's seamless learning environment concept can intertwine and, in so doing, contribute to African American students' meaningful academic experiences.

We did not find instructional expenditure per FTE student making a significant difference in students' degree completion. Future research examining additional internal characteristics variables may help to provide an enhanced foundation for institutional decision-making.

Researchers who have studied retention, dropout, and college impact (e.g., Astin, 1975, 1993; Pacarella and Terenzini, 1991; Tinto, 1975) have noted that student-faculty interaction and

student-student interaction are important. In our study, however, these two types of interactions were not found to be significant predictors. We believe that academically engaging interactions such as participation in research projects may be more meaningful and influential for African American students' degree completion than other, less purposeful, interactions between student and faculty. For results of mean comparison and HLM analyses suggest that African American students' opportunities for involvement in research projects are more favorable on HBCU campuses. This may well be because African American students are still more likely to be "marginalized" than White students in HWCUs.

Limitations. While using a national-scale nine-year longitudinal data set is a major strength of this study, the absence of some important information circumscribed our research scope and statistical modeling. Like most nationally collected existing data sets, which are often created for general or multiple purposes, the CIRP nine-year follow-up data set does not have all the desirable variables for this study. Although the nine-year survey purposefully oversampled HBCUs and African American students based on HERI's grant support, the sample size is still small and the number of variables describing college experiences are very limited. Because the institutions and respondents were oversampled and participated in the survey by the combination of the institutional pay-based participation and HERI's stratified sampling methods, the data might be considered as non-representative. Nevertheless, the gender ratio of each type of institutions and the gap of academic test scores (e.g., SAT) between HBCUs and HWCUs are similar to the nationally reported data (NCES, 1996; NCES, 2003).

Moreover, we cannot ignore a possibility of response bias. Those who graduated from college would be more likely to respond to the follow-up than those who did not, although a relatively high percentage (about 40%) of students did not graduate by the time of the follow-up

survey. However, it is not likely that student response patterns would systematically differ between the two types of institutions.

Conclusion. In broad strokes, our research has shown that there is no differential impact between HBCUs and HWCUs in terms of degree completion. On the one hand, our findings do not support the results of a small number of earlier studies that found that HBCUs have a more positive effect on African American students' college graduation rates. On the other hand, our findings show that HBCUs are doing as well as HWCUs in producing African American college graduates. That HBCUs are doing as well as HWCUs seems to us to be quite remarkable in light of two major considerations. First, HBCUs, on average, have relatively fewer resources—from physical facilities to financial support and faculty salaries—than HWCUs. Second, African American students attending HBCUs have traditionally done less well academically in high school than their HWCU counterparts, yet they are performing as well in terms of college graduation. HBCUs may be providing higher levels of graduation for less academically prepared African American students. In light of our conclusion regarding the salutary effects of HBCUs on African-American students, future research should—above all else —probe more deeply into HBCUs. How are they able to have such an impact with relatively few resources and with students with backgrounds who have performed less well than their counterparts at HWCUs before entering college? Or, what can all of us in higher education learn from HBCUs?—a question raised by only a handful of contemporary scholars (Conrad, Brier, and Braxton, 1997). In order to address these questions, researchers might have to bring in additional data and analytical lens.

In short, HBCUs—even while significantly under-funded—are having no less of an impact on the academic success of African Americans compared to HWCUs. Not least significant, HBCUs are taking initiatives—such as having students conduct research with

faculty—to advance the academic success of African American students. Not only can HWCUs

learn from HBCUs about how to enhance their impact on African American students, but also

public policymakers and private citizens alike may justifiably have an enhanced appreciation for

the positive role of HBCUs. As a result, they may well choose to increase their investments—

pecuniary and otherwise—to ensure that these institutions continue to remain an integral part of

the fabric of higher learning in the United States.

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APPENDIX
Variables and Coding Scheme

Individual-level variables

Student's gender	0=male and 1=female
Age of student on 12/31/89	ten-point scale from 1=16 or less, 2=17 to 10=57 or more
Degree aspiration in 1985	Ph.D., M.D., D.D.S., D.V.M., LL.B., J.D., Doctor of Divinity =1, Master's degree, B.A.=0
SAT	students' combined SAT scores, ranging from 400 to 1600
High school GPA	average high school grades, eight-point scale from 1=D to 8=A or A+
Parental income	fourteen-point scale from 1=less than $6,000 to 14=$150,000 or more (measured in 1985)
Mother's education	eight-point scale from 1=grammar school or less to 8=graduate school
College GPA	average college grades, eight-point scale from 1=D to 8=A or A+

Outcome variable

Degree completion	0=Not completed BA degree; 1=completed BA degree (measured in 1989 and 1994)

Institutional-level variables

Institutional global characteristics

Black college (vs. White college)	0=historically white institution 1=historically black institution
Mean SAT (Selectivity)	institutional selectivity based on SAT combined scores, ranges from 400 to 1600
Institutional total enrollment	
Single-sex college	0=coeducational college, 1=single-sex college
Private college	0= public institution, 1=private institution
Total enrollment	

Institutional internal characteristics

Percentage: total instruction-related expenditure
Total instruction-related expenditure per full-time-equivalent (FTE) student
Percentage: undergraduates receiving aid
Percentage: students transferring before graduation

Average faculty salary
Percentage: faculty with a Ph.D.
Student-faculty ratio
Percentage: female faculty
Percentage: research project with faculty
Student-faculty interaction

Curriculum: freshman core	0= Not required; required=1
Curriculum: freshman seminar	
Curriculum: senior seminar	

Table 1. Means, Standard Deviations, and Correlation Coefficients of the Variables

Variable list	HWCU		HBCU		r with Black college [1]
	Means	SD	Means	SD	
Individual-level variables					
Dependent variable					
Degree completion	0.63	0.48	0.55	0.50	−0.08
Independent variables					
Age	3.03	0.57	3.10	0.56	0.06
Female (gender)	0.64	0.48	0.64	0.48	0.01
Degree aspiration	0.33	0.47	0.33	0.47	0.00
Parental income	6.96	3.28	6.25	3.21	−0.11 *
Mother's education	4.91	1.96	4.82	2.12	−0.02
SAT	925.25	190.24	735.64	159.50	−0.48 *·
High school GPA	5.55	1.67	4.56	1.69	−0.29 *
College GPA [2]	3.67	0.95	3.79	1.04	0.06
Institutional-level variables					
Global characteristics					
Selectivity in admission	1105.00	120.63	724.80	77.32	−0.73 *
Total enrollment	14486.94	10864.51	1823.40	1002.92	−0.67 *
Private college status	. 0.44	0.50	0.80	0.42	0.30 *
Single-sex college	0.03	0.17	0.20	0.42	0.28
Black college					-
Internal characteristics					
Student-faculty ratio	20.88	5.76	15.80	2.78	−0.42 *
Percentage: female faculty	26.48	7.76	40.06	12.69	0.55 * ′
Percentage: research project with faculty	22.96	7.23	31.89	5.77	0.50 *
Student-faculty interaction	7.92	0.18	8.06	0.16	0.27 * ·
Curriculum: freshman core	1.15	0.50	1.67	0.94	· 0.36 *
Curriculum: freshman seminar	1.24	0.61	1.00	0.00	−0.19 *
Curriculum: senior seminar	· 1.15	0.50	1.00	0.00	−0.15 *
Average faculty salary	42751.94	6579.04	26814.00	5470.87	−0.68 *
Percentage: faculty with a Ph.D.	84.53	6.19	62.80	12.20	−0.68 *
Percentage: total instruction-related expenditure	73.13	11.61	72.35	8.80	−0.03 -
Instruction-related expenditure per FTE student	9246	5306	6506	1208	−0.25 *
Percentage: students transferring	12.25	7.48	15.71	6.41	0.22 *
Percentage: undergraduate receiving aid	53.53	13.18	84.00	11.10	0.67 *

Note: [1] The correlation coefficients are Spearman's rho; * $p < 0.05$ (two-tailed)

[2] College GPA was not used in the HLM/HNLM analyses. The information of the variable was much reduced, and the available samples of college GPA for mean, SD, and correlation analyses were only 280.

Table 2. Degree Completion as Dependent Variable

Independent Variables	Student Model		Global College Model		Full Model	
	Coefficient	*t-ratio*	*Coefficient*	*t-ratio*	*Coefficient*	*t-ratio*
Institution-level variables						
Intercept	0.557	3.149 ***	3.117	1.459	4.718	1.815
Global college characteristics						
Black college			-1.073	-1.478	-2.255	-2.433
Private college			-0.155	-0.292	-0.265	-0.692
Mean SAT[1]			0.003	0.021	-0.282	-1.309
Enrollment[1]			-0.007	-1.834 *	-0.008	-2.528 **
Internal college characteristics						
Instructional expenditure/FTE					0.006	1.236
Research project with faculty					0.045	1.977 *
Curriculum: senior seminar					1.290	3.962 ***
Individual-level variables						
Female	0.440	2.052 **	0.496	2.060 **	0.493	2.008 **
High school GPA	0.233	3.574 ***	0.244	3.424 ***	0.250	3.583 ***
SAT	0.167	2.515 **	0.162	2.203 **	0.143	2.046 **
Mother's education	0.072	1.978 **	0.073	1.763 *	0.083	1.952 **
Degree aspiration	0.200	1.293	0.183	1.113	0.183	1.071

Note: * $p<=0.10$; ** $p<=0.05$; *** $p <= 0.01$
[1]Mean SAT, Enrollment, instructional expenditure, and SAT were divided by 100.
The coefficients represent the odds-ratios of degree completion.

Do Black Students Learn More at Historically Black or Predominantly White Colleges?

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This study investigated the relative freshman-year cognitive impacts on black students of two historically Black and sixteen predominantly White colleges. Controlling for individual precollege ability, average precollege ability of the students attending each institution, gender, socioeconomic origins, academic motivation, age, credit hours taken, and place of residence, there was a general parity between Black students attending historically Black colleges and their counterparts at White institutions in standardized measures of reading comprehension, mathematics, critical thinking, and composite achievement.

Although the majority of Black students attend college at predominantly White institutions (Allen, Epps, & Haniff, 1991; Peterson, Blackburn, Gamson, Arce, Davenport & Mingle, 1979), historically Black colleges and universities still educate a significant number of Black men and women (Nettles, Thoeny, & Gosman, 1986; Trent, 1984). A modest but growing body of evidence has examined the relative educational outcomes for Black students associated with attending historically Black versus predominantly White institutions. Generally, this research can be divided into four relatively distinct lines of inquiry. The first has addressed the nature of the overall experience of college at historically Black and predominantly White institutions. The weight of evidence suggests that Black students attending predominantly White institutions experience significantly greater levels

of social isolation, personal dissatisfaction, alienation, and overt racism than their counterparts at historically Black colleges (e.g., Allen, 1986, 1987; Allen, Bobo, & Fleuranges, 1984; Allen, Epps, & Haniff, 1991; Bean & Hull, 1984; Braddock, 1981; Davis, 1986; Guloyan, 1986; Livingston & Stewart, 1987; Loo & Rolison, 1986; Pascarella & Terenzini, 1991). Consistent with these findings, a second line of research has suggested that for Black students, attendance at a historically Black institution is positively linked, both directly and indirectly, to their persistence in college and bachelor's degree completion. Moreover, this positive link remains even after controlling for such salient confounding influences as academic aptitude, socioeconomic origins, secondary school achievement, educational aspirations, college grades, and the size, public or private control, and academic selectivity of the institution attended (e.g., Anderson, 1985; Astin, 1975; Cross & Astin, 1981; Pascarella, Smart, Ethington & Nettles, 1987; Pascarella, Smart & Stoecker, 1989; Thomas, 1981; Thomas & Gordon, 1983).

A third line of inquiry has attempted to assess for Black students the socioeconomic benefits associated with their attendance at historically Black or predominantly White postsecondary institutions. Aside from a small, positive, indirect effect on occupational status for Black women, and a tentative positive impact on Black students becoming physicians, little evidence has supported the notion that attending a historically Black college confers any sub-

stantial net economic or occupational advantage or disadvantage for Black students (Astin, 1977; Pascarella, Smart & Stoecker, 1989; Thomas & Gordon, 1983).

A fourth general line of inquiry has examined for Black students the cognitive or intellectual effects associated with attendance at historically Black versus predominantly White colleges and universities, but the evidence has been sparse and the results inconclusive. In an analysis of 10 predominantly White and 5 historically Black colleges in North Carolina, Ayres (1982, 1983) found that Black students attending the White institutions had higher scores on the National Teachers Examination (NTE) than did their peers at historically Black colleges--an effect that persisted even after controlling for precollege academic aptitude. This finding was only partially supported in a similarly designed study by Davis (1977), using the NTE; and Fleming (1982, 1984) actually found that Black students at a Black college demonstrated larger differences between freshmen and seniors than did their counterparts at a White college in the ability to formulate concepts and think critically.

Other researchers examining the relative cognitive impacts of historically Black and predominantly White colleges have used the Graduate Record Examination (GRE) as the dependent measure. Controlling for student precollege aptitude, Centra, Linn, and Parry (1970) and Astin (1968) found no significant differences in GRE area scores between students at White institutions and students at Black institutions. Unfortunately, their samples from predominantly White institutions include White as well as Black students. Thus, it is difficult to determine whether their findings reflect the specific impact of college racial composition for Black students. Although the existing research has contributed to our understanding of the cognitive and intellectual impacts of historically Black colleges, it has limitations. First, the accumulated evidence is somewhat dated, because the most recent research is now substantially more than a decade old. Since then, major demographic changes have occurred in the population of the American postsecondary student body. Second, the predominant depen-

dent measures employed (e.g., the NTE and the GRE) were not taken by samples of students representative of an institution's entire student body. Thus, the generalizability of research findings to date may be seriously limited. Furthermore, tests such as the NTE and the GRE were developed primarily for professional licensing or graduate school admission decisions. They may not be the best instruments for assessing the cognitive skills or intellectual capabilities fostered by the undergraduate experience.

The existing research also has nontrivial methodological problems. Most studies estimate the effects of college racial composition while controlling for precollege academic aptitude. Although controls for student precollege academic aptitude are essential if one is to get a realistic estimate of the unique effect of college racial composition on cognitive development, factors such as academic motivation, age, socioeconomic background, on-campus residence, extent of enrollment, and gender may also directly or indirectly influence cognitive development during college (Pascarella & Terenzini, 1991; Pascarella, Bohr, Nora, Zusman, Inman & Desler, 1993). These potentially important confounding influences have thus far been largely ignored in research. There are also design problems. In the one investigation that attempted to estimate the general intellectual effects of attending historically Black versus predominantly White colleges (Fleming, 1982, 1984) cross-sectional comparisons of different freshman and senior cohorts were made, but the same students were not followed over time. While such cross-sectional comparisons are useful, they do not provide the same level of control for confounding influences as do longitudinal studies (Pascarella, 1987; Pascarella & Terenzini, 1991).

Finally, research to date has focused almost exclusively on estimating the general, rather than conditional, cognitive effects of attendance at historically Black colleges. That is, researchers have made the implicit assumption that the cognitive effects of college racial composition tend to be the same for all Black students. Such an approach ignores the possibility that such effects may vary in magnitude for different kinds

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of students (e.g., students differing in gender, precollege aptitude, academic motivation, age, or socioeconomic origins).

The present study involved a longitudinal investigation of the effects of college racial composition· on Black students' freshman-year cognitive development. The study's first purpose was to assess the net effects of college racial composition using standardized measures of Black students' freshman-year development in reading comprehension, mathematics, critical thinking, and composite achievement. To do this, instruments specifically designed to assess cognitive skills acquired in the first 2 years of college were employed. The second purpose was to determine the extent to which the cognitive effects of college racial composition differ in magnitude for Black students with different background and other characteristics (e.g., gender, precollege aptitude, precollege motivation, and age).

METHOD

Institutional Sample

The sample was selected from incoming students new to 18 four-year and 5 two-year colleges and universities located in 16 states throughout the United States. Institutions were selected from the National Center on Educational Statistics IPEDS database to represent differences in colleges and universities nationwide on a variety of charactéristics, including institutional type and control (e.g. private and public research universities, private liberal arts colleges, public and private comprehensive universities, 2-year colleges), size, location, commuter versus residential, and the ethnic distribution of the undergraduate student body. In aggregate, the first-year student populations of those 23 schools approximated the national first-year population of undergraduates by ethnicity and gender. Two of the 18 four-year institutions were historically Black colleges. One of those· was a public institution located in a mid-Atlantic state and the other was a private institution in a southern state. Since both historically Black colleges were 4-year institutions, the comparison group of predominantly White institutions was limited to the 16

remaining 4-year institutions. Consequently, all analyses reported here are based on student samples from the 18 four-year colleges and universities studied.

Student Sample and Instruments

The individuals in the overall sample were 2,416 freshmen who participated in the National Study of Student Learning (NSSL), a large longitudinal investigation of the factors that influence learning and cognitive development in college. The research was sponsored by the federally funded National Center on Postsecondary Teaching, Learning, and Assessment. The initial sample was, as far as possible, selected randomly from the incoming freshman class at each participating institution. The students in the sample were informed that they would be participating in a national longitudinal study of student learning and that they would receive a stipend for their participation. They were also informed that the information they provided would be kept confidential and would never become part of their institutional records.

The initial data collection took place in the Fall of 1992 and lasted approximately 3 hours. Each participating student was paid $25. Students were reminded that the information they provided would be kept confidential and that all that was expected of them was that they give an honest effort on tests and a candid response to all questionnaire items. The instruments included a precollege survey that gathered information on student demographic characteristics and background, as well as aspirations, expectations of college, and orientations toward learning. Participants also completed Form 88A of the Collegiate Assessment of Academic Proficiency (CAAP). The CAAP was developed by the American College Testing Program (ACT) specifically to assess selected general intellectual and cognitive skills typically acquired by students during the first 2 years of college (ACT, 1990). The total CAAP consists of five 40-minute, multiple-choice test modules, three of which— reading comprehension, mathematics, and critical thinking—were administered during the first data collection.

The CAAP reading comprehension test

consists of 36 items that assess reading comprehension as a product of skill in inferring, reasoning, and generalizing. The test has four prose passages, each of which is about 900 words in length designed to measure the level and kinds of writing commonly encountered in college curricula. The passages were drawn from topics in fiction, the humanities, the social sciences, and the natural sciences. The K-R 20 internal consistency reliabilities for the reading comprehension test range between .84 and .86. Based on data from 58 postsecondary institutions the reading comprehension test correlated .38 with sophomore cumulative grade point average and .23 with junior English grades (ACT, 1991). The mathematics test contains 35 items designed to measure a student's ability to solve mathematical problems encountered in many postsecondary curricula, and the emphasis is on quantitative reasoning rather than formula memorization. The content areas tested include pre-, elementary, intermediate, and advanced algebra, coordinate geometry, trigonometry, and introductory calculus. The K-R 20 reliability coefficients for the mathematics test ranged between .79 and .81. The mathematics test has been found to correlate .35 with sophomore grade point average and .23 with junior year mathematics grades (ACT, 1991). The critical thinking test is a 32-item instrument measuring the ability to clarify, analyze, evaluate, and extend arguments. The test consists of four passages designed to be representative of the issues commonly encountered in a postsecondary curriculum. A passage typically presents a series of subarguments that support a more general conclusion. Each passage presents one or more arguments and uses a variety of formats, including case studies, debates, dialogues, overlapping positions, statistical arguments, experimental results, and editorials. Each passage is accompanied by a set of multiple-choice items. The K-R 20 reliability coefficients for the critical thinking test ranged from .81 to .82 (ACT, 1989). In pilot testing of various instruments for use in the National Study of Student Learning on a sample of 30 college students, the critical thinking test of the CAAP was found to correlate .75 with the total score on the Watson-Glaser Critical Thinking Appraisal.

Each of the 18 institutions was given a target sample size relative in magnitude to the respective sizes of the freshman class at each institution. The overall target sample for the Fall 1992 data collection at the 18 institutions was 3,910. The overall obtained sample size, (i.e., those students actually tested) was 3,331, or a response rate of 85.19%.

A follow-up testing of the sample took place in the Spring of 1993. This data collection required about 3 1/2 hours and included and extensive set of measures of the students' freshman year experience and Form 88B of the CAAP reading comprehension, mathematics, and critical thinking modules. Students were paid a second stipend of $35 by the National Center on Postsecondary Teaching, Learning, and Assessment for their participation in the follow-up data collection. Of the original sample of 3,331 students who participated in the Fall 1992 testing, 2,416 participated in the Spring 1993 data collection, for a follow-up response rate of 72.53%.

Given the high response rate at both testings, it is not particularly surprising that the sample was reasonably representative of the population from which it was drawn. However, to adjust for potential response bias by gender, ethnicity, and institution, a sample weighting algorithm was developed. Specifically, within each of the individual institutions, participants in the follow-up data collection were weighted up to the institution's freshman population by gender (male or female) and ethnicity (White, Black, Hispanic, other). Thus, for example, if Institution A had 100 Black men in its freshman class and 25 Black men in the sample, each Black male in the sample was given a sample weight of 4.00. A similar weight was computed for participants falling within each gender by ethnicity cell within each institution. The effect of applying sample weights in this manner was to adjust not only for response bias by gender and ethnicity, but also for response bias by institution.

Of the 2,416 students participating in the follow-up testing, complete data for the different analyses conducted in the study were available for 405 Black freshmen. Of these 405 Black students, 243 attended one of the two historically

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Black institutions, and 162 attended one of the 16 predominantly White institutions. Based on the weighted sample, these 405 Black students represented a population of 3,523 Black students--1,772 in the freshman classes at the two historically Black colleges and 1,751 in the freshman classes at the 16 predominantly White institutions.

Design and Data Analysis

The study design was a pretest-posttest quasi-experimental design, in which comparison groups were statistically equated on salient precollege (Fall 1992) and other variables. The comparison groups were Black students attending historically Black colleges and Black students attending predominantly White institutions. The dependent variables were Spring 1993 scores on the CAAP reading comprehension, mathematics, and critical thinking tests, plus a measure of freshman-year composite achievement that combined all three tests. The composite achievement measure was constructed in two steps. First, each of the three CAAP tests (i.e., reading, math, and critical thinking) was standardized to put each on the same metric. Subsequently, the composite achievement score was computed by summing across standardized scores and assigning an arbitrary scale mean of 100 and standard deviation of 10 for the entire follow-up sample (n=2,416). The alpha internal consistency reliability for the composite achievement measure was .83.

Least-squares analysis of covariance was the basic analytic approach used to control statistically for precollege and other salient differences between Black students attending historically Black institutions and those attending predominantly White ones. Individuals were the unit of analysis. Given the existing body of evidence on the factors that independently influence learning and cognitive development during college (e.g., Astin, 1968, 1977, 1993; Astin & Panos, 1969; Kuh, 1993; Pascarella & Terenzini, 1991), the individual-level covariates in the study included the following.

1. Individual Fall 1992 (precollege) CAAP reading comprehension, mathematics, critical thinking, and composite achievement scores (each employed in analysis of the appropriate end-of-freshman-year [Spring 1993] CAAP reading comprehension, mathematics, critical thinking, and composite achievement score).

2. Gender.

3. Family social origin: the combination of standardized measures of mother's and father's level of formal education and combined family income.

4. Fall 1992 (precollege) academic motivation: an 8-item, Likert-type scale (4=*strongly agree* to 1=*strongly disagree*) with an internal consistency reliability of .65. The scale items were developed specifically for the NSSL and were based on existing research on academic motivation (e.g., Ball, 1977). Examples of constituent items are: "I am willing to work hard in a course to learn the material, even if it won't lead to a higher grade," "When I do well on a test it is usually because I was well prepared, not because the test was easy," "In high school I frequently did more reading in a class than was required simply because it interested me," and "In high school I frequently talked to my teachers outside of class about ideas presented during class."

5. Age: age in years in Fall 1992.

6. Credit hours taken: total number of credit hours for which the student was enrolled during the freshman year.

7. On- or off-campus residence: a dichotomous variable indicating whether the student resided on-campus or lived off-campus and commuted to college during the freshman year.

Because the existing body of evidence suggests that institutional context can often shape the impact of college in indirect, if not direct, ways, we also included one institutional-level variable as a covariate in the analytic model. This was:

8. The level of academic aptitude of the freshman class: estimated by the average Fall 1992 CAAP reading, mathematics, critical thinking, or composite achievement score for the freshman class at each of the 18 institutions. Each student in the sample was given the mean of his or her institution on all three CAAP tests, plus the composite, and each of the institutional mean scores was employed in analysis of the appropriate end-of-freshman-year (Spring 1993)

TABLE 1

Analysis of Covariance Summaries for End-of-Freshman-Year Reading Comprehension, Mathematics, Critical Thinking, and Composite Achievement

SOURCE	Reading Comprehension		Mathematics		Critical Thinking		Composite Achievement	
	df	F	df	F	df	F	df	F
Covariates[a]	8	33.52*	8	56.73*	8	44.86*	8	77.22*
Attended a Historically Black versus a Predominantly White College	1	1.16	1	2.69	1	0.02	1	0.55
Residual	395		395		395		395	
Total	404		404		404		404	

[a] Individual Fall 1992 reading, math, critical thinking, or composite achievement score; average Fall 1992 reading, math, critical thinking, or composite achievement score for each institution; gender; family social origins; Fall 1992 academic motivation; age; freshman-year credit hours taken; on- or off-campus residence.
* $p < .01$

individual-level reading comprehension, mathematics, critical thinking, or composite achievement score. This variable was included as a covariate because controlling for differences among institutions in the average academic selectivity of their student bodies was important.

The analysis of covariance for each of the four dependent measures employed a least-squares regression solution and was conducted hierarchically. The influence of attending a historically Black versus a predominantly White institution was estimated while controlling for the effects of all eight covariates. The results of this analysis provided estimates of the effects of college racial composition on end-of-freshman-year reading comprehension, mathematics, critical thinking, and composite achievement, controlling for influence of the covariates. Since precollege (Fall 1992) reading, mathematics, critical thinking, and composite achievement scores were included among the covariates, a significant effect attributable to college racial composition that there are significant net differences between Black students attending historically Black and predominantly White institutions, not only in end-of-freshman-year

reading comprehension, mathematics, critical thinking, and composite achievement but also in the gains made on those cognitive dimensions during the freshman year (Linn, 1986; Linn & Slinde, 1977; Pascarella & Terenzini, 1991).

The second stage of the analyses involved testing for the presence of covariate by college racial composition conditional effects, one of the assumptions of the analysis of covariance model (Elashoff, 1969; Kerlinger & Pedhazur, 1973). A series of cross-product terms was computed between college racial composition and each of the eight covariates. These were then added to the regression model containing the covariates and a dummy variable representing attendance at a historically Black versus a predominantly White institution (i.e., the main-effects model). A statistically significant increase in the explained variance (R^2) attributable to the set of cross-product terms (over and above the main-effects model) indicates that the net effects of college racial composition vary in magnitude for individuals at different levels of the respective covariates.

The weighted sample of Black students (N=3,523), adjusted to the actual sample size

(N=405) to obtain correct standard errors, was used in all analyses. Although a set of supplementary unweighted analyses yielded results essentially the same as those with the weighted sample, weighted sample estimates are reported in the remainder of the paper.

RESULTS

Table 1 shows the analysis of covariance summaries and Table 2 reports the weighted covariate-adjusted means and standard deviations on all four cognitive outcomes for Black students at historically Black and predominantly White institutions. As shown in Table 1, when the influence of all eight covariates was controlled, there were no statistically significant differences between Black student groups on any of the four end-of-freshman-year cognitive outcomes. As indicated in the Methods section, this is essentially the same as saying that there were no significant group differences in the freshman-year gains made in reading comprehension, mathematics, critical thinking, or composite achievement. Only one analysis approached statistical significance. On mathematics, the null hypothesis for the group effect could be rejected at p<.10.

As shown by the covariate-adjusted means

in Table 2, there was a nonsignificant trend for Black students attending historically Black colleges to have higher end-of-freshman-year scores in reading comprehension, mathematics, and composite achievement than their Black counterparts attending predominantly White institutions. On end-of-freshman-year critical thinking there was a virtual parity between the two groups.

The second phase of the analyses focused on determining whether the cognitive effects of college racial composition differed in magnitude for Black students with different precollege or other characteristics and whether the cognitive impacts of college racial composition differed, depending on the average academic preparation of the student body. In none of the four analyses conducted was the set of eight Covariate x College Racial Composition cross-products associated with a significant increase in explained variance (R^2) over and above the main-effects model (i.e., the eight covariates, plus college racial composition). This finding suggests that the cognitive effects of college racial composition are general rather than conditional. That is, the small nonsignificant group trends shown in Table 2 tend to apply irrespective of a student's particular position or

TABLE 2

Covariate-Adjusted Means and Standard Deviations for End-of-Freshman-Year Reading Comprehension, Mathematics, Critical Thinking, and Composite Achievement

GROUP	Reading Comprehension	Mathematics	Critical Thinking	Composite Achievement[a]
Attended a Historically Black College				
Mean	60.15	57.28	59.99	95.93
SD	4.77	3.49	5.10	8.60
Attended a Predominantly White College				
Mean	59.63	56.78	60.06	95.53
SD	5.10	3.56	5.36	8.40

[a] z scores (mean=0, standard deviation=1) were used to form Composite Achievement from the sum of Reading Comprehension, Mathematics, and Critical Thinking. These were then transformed to standard scores with a mean=100 and a standard deviation=10 for the entire sample (N=2,416).

score on any of the eight covariates (i.e., gender; family social origins; academic motivation; age; credit hours taken; on- or off-campus residence; individual level of Fall 1992 reading, math, critical thinking, or composite achievement for each institution).

DISCUSSION

A long standing critique of historically Black colleges holds that these institutions may not provide an educational experience equal to that of many predominantly White institutions because of relative disadvantages in important educational resources such as libraries, laboratories, computer facilities, distinguished faculties, available financial support, and academically well prepared students (e.g., Bowles & DeCosta, 1971; Jencks & Reisman, 1968; Sowell, 1972). Indeed, evidence from national samples indicates that historically Black colleges (as compared to their predominantly White counterparts) have lower educational expenditures per student and enroll students from lower socioeconomic backgrounds who are also less prepared academically for college (e.g., Pascarella, Smart & Stoecker, 1989). Implicit in this critique is the assumption that an institution's stock of financial, educational, and human resources is a valid index of its ability to provide an influential educational experience. A recent review of evidence on the impact of college suggests, however, that resources alone do not guarantee institutional impact (Pascarella & Terenzini, 1991). Rather, institutional impact may be more a function of what colleges do programmatically with the resources they have to foster effectiveness in such areas as general education, the quality of teaching, student services and student life, student-faculty inter-

action, student involvement in the academic and social systems of the institution, and sense of campus community (Astin, 1984, 1993; Chickering & Reisser, 1993; Pascarella & Terenzini, 1991).

Even if they are at a relative disadvantage in terms of educational resources, an impressive body of evidence suggests that historically Black colleges have nevertheless been able to create a social-psychological campus climate that not only fosters students' satisfaction, sense of community, and adjustment to college, but also increases the likelihood of persistence and degree completion. The findings of this study suggest further that the supportive campus environments of historically Black colleges do not come at the cost of intellectual or academic rigor. Using a more extensive set of individual and institutional-level controls than in any previous research, and employing measures specifically designed to capture intellectual skills gained in the early college career, this study revealed no significant differences in the net cognitive effects attributable to college racial composition.[1] Black students attending historically Black institutions made net freshman-year gains in reading comprehension, mathematics, critical thinking, and composite achievement (i.e., the sum of all three scales) that were as large, if not larger than, those made by their Black peers attending predominantly White institutions. Indeed, on all scales except critical thinking, where there was an essential parity, the statistically nonsignificant trends favored Black students from historically Black institutions. The findings also suggest that cognitive effects of college racial composition are general rather than conditional. That is, they are not significantly influenced by a student's individual characteristics (e.g., gender, precollege aptitude, precollege academic moti-

1.   It is sometimes risky to interpret nonsignificant differences substantively because they can be caused by statistical and measurement artifacts. However, those particular artifactual conditions are unlikely to hold in the present study. First, the unweighted sample size of 405 is sufficiently large to detect rather small between-group effects (Cohen & Cohen, 1975). Second, each of the four dependent measures had more than adequate reliability (.80 or higher) to detect between-group differences (Thorndike & Hagen, 1977). Third, the use of strong covariates, including a parallel precollege measure of each dependent variable, substantially lowered the error term and dramatically increased the probability of finding any real between-group differences that existed (Pedhazur, 1982). Finally, the dependent measures employed in the study each tap cognitive dimensions shown to be significantly influenced by exposure to postsecondary education (Pascarella & Terenzini, 1991).

vation, age, socioeconomic origins) or the average freshman class academic aptitude of the institution attended.

Clearly, strong national efforts have been made to increase student ethnic diversity within particular American colleges and universities, and certain positive educational impacts of such within-college diversity have been found (Astin, 1993). Yet, when viewed within the context of the total body of evidence on the educational impacts of college racial composition, the findings of the present study underscore the potential importance of also maintaining some place for *homogeneous institutions* in the American postsecondary system. Because they tend to be racially homogeneous, Black colleges obviously run counter to the national trend for greater student ethnic and racial diversity within colleges and universities. Moreover, it can be argued that the racial homogeneity of historically Black colleges tends to reinforce racial separation rather than increasing the likelihood of interaction and understanding among different racial groups. At the same time, these issues may need to be weighed against the growing body of evidence that historically Black colleges are more effective than predominantly White institutions in providing a supportive social-psychological environment for Black students that enhances persistence and degree completion while maintaining an academic climate that is at least equivalent in intellectual rigor and impact.

The findings may also have implications for student affairs professionals who work with Black students at predominantly White institutions. It may be time to take a closer look at the policies and practices of those historically Black colleges that are able to create a supportive environment for students without sacrificing academic standards or intellectual impact. Clearly the racial composition of historically Black colleges may be integral to the institutional culture they create. Yet such colleges may also be providing unique programs and services that even further enhance an environment that Black students find both psychologically supportive and intellectually challenging. If such particularly effective programs and services are found at historically Black colleges it may be possible to implement them at predominantly White institutions. Doing so might constitute an important step in creating a more supportive environment for Black students when they are a minority culture on campus.

LIMITATIONS

This investigation's limitations should be kept in mind when one interprets the findings. First, although the overall sample is multi-institutional and consists of a broad range of institutional types from around the country, the fact that only two Black colleges were studied means that the results cannot necessarily be generalized to all historically Black institutions. Similarly, although attempts were made in the initial sampling design and subsequent sample weighting to make the sample as representative as possible at each institution, the time commitment required of each student participant undoubtedly led to some self-selection. Those who were willing to participate in the study might not have responded in the same way as those who were invited but declined to participate in the study. Third, although this study involved several different measures of cognitive development in college (reading comprehension, mathematics, and critical thinking) these are certainly not the only dimensions along which students develop intellectually during the college years. Alternative conceptualizations or approaches to the assessment of cognitive development might have produced findings different from those yielded by this investigation. Finally, because this study traced the cognitive growth of Black students only over the first year of college, one cannot be sure that the apparent parity in freshman-year cognitive growth demonstrated by Black students at historically Black and predominantly White colleges would persist over time.

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Does College Racial Composition Influence the Openness to Diversity of African American Students?

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In this study of African American students from 18 four-year institutions, an eight-item Likert-type scale was used to estimate the unique impact of college racial composition on African American students' openness to diversity during college. Controlling for an extensive set of confounding influences, including precollege openness to diversity, the evidence from the study suggests that the racially homogenous environment of historically Black colleges does not inhibit growth in African American students' openness to racial, cultural, or value diversity.

The number of African American students in college continues to rise (Carter & Wilson, 1996; Cross, 1998), and a significant number of African American students attend Historically Black Colleges (HBCs) (Nettles & Perna, 1997; Thomas & Hill, 1987). As a result, in the last two decades, a large amount of research has been conducted that seeks to comparatively assess the educational and psychological benefits for African American students who attend HBCs versus African American college students who attend Historically White Institutions (HWIs). Specifically, the research has examined the extent to which African American students accrue cognitive and intellectual gains from attending HBCs as compared with African American students who attend HWIs (Astin, 1968; Ayres, 1982, 1983; Bohr, Pascarella, Nora, & Terenzini, 1995; Centra, Linn, & Parry, 1970; Davis, 1977; Dawkins & Braddock, 1982; Fleming, 1982, 1984; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996a). Although this line of research is not totally consistent (as far as the research findings are concerned), the weight of evidence

suggests that African American students attending HBCs make cognitive gains that are the equivalent of their counterparts attending HWIs.

Another line of research involves assessing and comparing affective outcomes of college among African American students by institution type, including issues concerning social adjustment, perceptions of racial climate, and feelings of social isolation and alienation (Allen, 1985, 1987, 1992; Cross & Astin, 1981; D'Augelli & Hershberger, 1993; DeSousa & Kuh, 1996; Hughes, 1987; Nettles, Thoeny, & Gosman, 1986; Thompson & Fretz, 1991). This area of research suggests that African American students attending HBCs experience relatively lower levels of alienation, social detachment, and discrimination.

In addition, the research contrasting African American students by institutional type focuses on identifying and comparing the relative gains in degree attainment among African American students attending HBCs versus African American students attending HWIs (Pascarella, Smart, Ethington, & Nettles, 1987; Pascarella, Smart, & Stoecker, 1989; Thomas, 1981; Thomas & Hill, 1987). This body of research suggests that African American students attending HBCs are more likely to remain in college and graduate than their peers at HWIs. Overall, the weight of evidence from these various lines of research suggests that African American students make cognitive and psychosocial gains at HBCs that are equal to, if not greater than, the gains made by African American students attending HWIs.

Although the existing body of research has made important contributions to our understanding of the impact of college racial compo-

sition, little is known about the influence of college racial composition on African American students' social attitudes, such as openness to diversity. If racial, cultural, and value diversity are destined to become a central part of American society in the 21st century, then openness to diversity is an important goal of postsecondary education for all students. We do know from a small body of research on gains in openness to diversity during college that interaction with diverse student peers (i.e., those who are different racially and culturally) plays a significant positive role (Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996b; Whitt, Edison, Pascarella, Terenzini, & Nora, 1998). Presumably, the more homogenous peer environment of HBCs might not be as effective in fostering openness to diversity as the more racially heterogeneous environment (at least for African American students) at HWIs. Consequently, a major purpose of this study was to estimate the unique impact of college racial composition on African American students' openness to diversity during college. Additionally, the study also had two other purposes. First, we sought to estimate the impact of a range of college environmental factors and students' academic and nonacademic experiences during college on openness to diversity. Second, we sought to determine if the effects on African American students' openness to diversity of college racial composition were general or conditional. That is, was the magnitude of the net effect of attending an HBC (versus an HWI) the same for all African American students, or did it differ for African American students with different precollege characteristics, or who had different academic and nonacademic experiences during college?

METHOD

Currently, research about college students suggests that at least four sources of influence must be considered in attempting to understand the effects of college (Astin, 1993; Chickering & Reisser, 1993). These sources of influence are: (a) preenrollment characteristics of students, (b) organizational and environmental characteristics of the institution attended, (c) students'

academic experiences, and (d) students' non-academic experiences. In designing and implementing the study, we assumed that college outcomes are a function of complex interactions among student and environmental (institutional, interpersonal) characteristics and experiences. Specific ways in which this framework informed the research are described in the following sections.

Samples

Institutional Sample. The institutional sample in this study was 18 four-year colleges and universities located in 15 states. Institutions were chosen from the National Center on Education Statistics Integrated Postsecondary Education Data System (IPEDS) data to represent differences in colleges and universities nationwide on a variety of characteristics, including institutional type and control (e.g., private and public research universities, private liberal arts colleges, public and private comprehensive universities, HBCs), size, location, patterns of student residence, and the ethnic distribution of the undergraduate student body. Our sampling technique produced a sample of institutions with a wide range of selectivity. For example, we included some of the most selective institutions in the country and some that were essentially open admission. Two of the 18 institutions were HBCs. One of those HBCs was a public institution located in a mid-Atlantic state; the other was a private institution in a southern state.

Overall Student Sample. The individuals in the overall student sample were participating in the first, second, and third follow-ups of the National Study of Student Learning (NSSL), a longitudinal investigation of the factors that influence learning and cognitive development in college. The initial sample was selected at random from the incoming first-year class at each of the 18 colleges and universities in the institutional sample; each was given a target sample size relative to the size of its first-year class. The students received a cash stipend for their participation in each data collection, and they were informed that any information they provided would be kept confidential and would never become part of their institutional records.

DATA COLLECTION
Initial Data Collection

The initial data collection was conducted in the Fall of 1992 with 3,331 students from the 18 institutions participating. Data collected included an NSSL precollege survey of student demographic characteristics and background, students' aspirations and expectations of college, and students' orientations toward learning. The dependent variable in the study, an eight-item Likert-type scale, was also administered in the initial data collection. Participants also completed Form 88A of the Collegiate Assessment of Academic Proficiency (CAAP). The CAAP was developed by the American College Testing Program (ACT) to assess general intellectual skills typically acquired by students during the first 2 years of college (ACT, 1989, 1991).

First Follow-Up Data Collection

The first follow-up data collection was conducted in Spring 1993. This data collection included Form 88B of the CAAP reading comprehension, mathematics, and critical thinking modules; the College Student Experiences Questionnaire (CSEQ) (Pace, 1984); and a follow-up instrument developed for the NSSL designed to measure aspects of students' college experiences not covered by the CSEQ. The CSEQ and the NSSL follow-up instrument were used to measure a wide range of students' curricular and out-of-class experiences in the first year of college. The dependent variable in the study, an eight-item Likert-type scale, was also administered in the first follow-up data collection.

Of the original sample of 3,331 students involved in the Fall 1992 data collection, 2,416 students participated in the first follow-up (72.53%). To provide at least some adjustment for potential bias by sex, ethnic identity, and institution in the sample of students persisting in the study, a weighting algorithm was developed. Within each of the 18 institutions, participants in the first follow-up data collection were weighted up to the institution's end-of-first-year population by sex (male or female) and ethnic identity (White, African American, Hispanic, other). Thus, for example, if an institution had

100 African American men in its first-year class and 25 African American men in the sample, each African American man in the sample at that institution was given a weight of 4.00. An analogous weight was computed for participants in each sex ∞ race/ethnicity cell in each institution. Applying sample weights in this manner allowed us to adjust not only for sample bias by sex and ethnic identity, but also for sample bias (i.e., differential rates of sample persistence in the study) by institution. Precedent for this weighting procedure can be found in other published reports using data from the NSSL (e.g., Pascarella, Bohr, Nora, & Terenzini, 1995; Springer, Terenzini, Pascarella, & Nora, 1995; Terenzini, Springer, Pascarella, & Nora, 1995).

Second Follow-Up Data Collection

The second follow-up of the NSSL sample was conducted in the Spring of 1994. Similar to the first follow-up, extensive measures of students' second-year experiences were taken from their responses on the CSEQ and the NSSL follow-up survey. Students also completed Form 88A of the CAAP writing skills and science reasoning modules. The dependent variable in the study, an eight-item Likert-type scale, was also administered in the second follow-up data collection.

Of the 2,416 students who participated in the first follow-up (spring 1993), 1,613 students participated in the second follow-up (spring 1994), for a response rate of 66.8%. A second weighting algorithm, analogous to the one employed in the first follow-up, was developed to adjust for end-of-second-year sample bias by sex, ethnic identity, and institution.

Third Follow-Up Data Collection

The third follow-up of the NSSL sample took place in the Spring of 1995. Measures of students' third-year experiences were taken from their responses on the CSEQ and the NSSL follow-up survey. Participants also completed Form 88B of the CAAP reading comprehension and critical thinking modules. The dependent variable in the study, an eight-item Likert-type scale, was also administered in the third follow-up data collection. Of the 1,613 four-year college students who participated in the Spring 1994 data

TABLE 1.

Item-Total Score Correlations for Openness to Diversity/Challenge Scale

Scale / Item	Item-Total Score Correlations
I enjoy having discussions with people whose ideas and values are different from my own.	.64 - .67
The real value of a college education lies in being introduced to different values.	.56 - .62
I enjoy talking with people who have values different from mine because it helps me understand myself and my values better.	.62 - .63
Learning about peope from different cultures is a very important part of my college education.	.58 - .60
I enjoy taking courses that challenge my beliefs and values.	.55 - .57
The courses I enjoy the most are those that make me think about things from a different perspective.	.55 - .58
Contact with individuals whose background (e.g., race, national origin, sexual orientation) is different from my own is an essential part of my college education.	.55 - .57
I enjoy courses that are intellectually challenging.	.48 - .51

Note. The alpha reliabilities for the Openness to Diveristy/Challenge Scale ranged from .83 to .84.

collection, 1,054 participated in Spring 1995, for a third-year response rate of 65.3%. A third weighting algorithm, analogous to the one employed in the first and second follow-ups, was developed to adjust for potential end-of-third-year sample bias by sex, ethnic identity, and institution.

Variables

The dependent variable in the study is an eight-item, Likert-type scale (5 = *strongly agree* to 1 = *strongly disagree*) entitled: Openness to Diversity/Challenge Scale. The scale was developed through factor analysis in a longitudinal pilot study. The eight items constituting the scale are shown in Table 1. Note that the Openness to Diversity/Challenge Scale assesses a student's openness to cultural, racial, and value diversity (e.g., "Learning about people from different cultures is a very important part of my college education."). Thus, openness to diversity/challenge, as operationalized in this study,

measures a satisfaction from being intellectually challenged by distinct and different ideas, values, and perspectives. Table 1 shows the range of the scale items' correlation with the total scale score and the scale reliabilities. The scale was administered at all four data collections in the study (i.e., the initial precollege data collection, and all three follow-ups.)

Because we focused on the institutional and college experience factors that influenced openness to diversity in African American students, the sample analyzed consisted of those African American students in the 18 institutions who participated in the first, second, or third follow-up data collections. Data from other students in the sample were not used. Thus, our analyses are based on: 402 African American students in the first year, the weighted sample had a mean age of 22 and included 257 women and 145 men; 255 African American students in the second year, the weighted sample had a mean age of 22 and included 158 women and 97 men;

167 African American students in the third year, the weighted sample had a mean age of 20 and included 105 women 62 men.

Four sets of independent variables were developed according to the conceptual framework of the study. The first set of independent variables comprised students' precollege characteristics: precollege openness to diversity and challenge (as measured by the Openness to Diversity/Challenge Scale), estimated precollege academic ability (a composite of precollege scores on the CAAP reading, math, and critical thinking modules), age, and sex. We also included socioeconomic status and a precollege academic motivation variable (e.g., "In high school, I frequently did more reading in a class than was required simply because it interested me."). The second set consisted of aspects of the institutional environment: the average precollege openness to diversity/challenge of each institution's first-year class; a scale measuring students' perceptions of the extent to which the institution's racial environment was nondiscriminatory (e.g., "Instructors treat all students the same regardless of race."); and students' perceptions of the extent to which the institution emphasized (a) development of academic, scholarly, and intellectual qualities, (b) development of aesthetic, expressive, and creative qualities, (c) being critical, evaluative, and analytical, and (d) development of vocational and occupational competence. Within the second set of variables we also included a categorical dummy variable indicating if the students attended a HBC (coded 1) or an HWI (coded 0).

Students' academic experiences in the first, second, and third years of college constituted the third set of independent variables: cumulative credit hours taken; hours spent studying; cumulative number of courses taken in five academic areas: social sciences, mathematics, technical/preprofessional, arts and humanities, and natural sciences and engineering; the CSEQ course learning scale (e.g., "I took detailed notes in class."); and the CSEQ experiences with faculty scale (e.g., "I worked with a faculty member on a research project.").

Students' nonacademic and social experiences in college constituted the fourth set of

independent variables: place of residence (on-campus or off-campus), Greek affiliation, participation in a racial or cultural awareness workshop, participation in intercollegiate athletics, hours worked per week, the CSEQ Participation in Clubs and Organizations scale (e.g., "Met with a faculty advisor or administrator to discuss the activities of a student organization."), the CSEQ Student Acquaintances scale (e.g., "Made friends with students whose race was different from yours."), the CSEQ Topics. of Conversation With Peers scale (e.g., current events, different lifestyles and customs), and the CSEQ Information in Conversations With Peers scale (e.g., "[I] explored different ways of thinking about a topic."). Detailed composition of all independent and dependent measures, along with appropriate psychometric characteristics, is available from the second author.

Analytic Procedures

Data analysis occurred in a two-stage process. In the first stage, ordinary least squares regression was used to estimate the net or unique effect of each independent measure on end-of-first-year (Spring 1993), end-of-second-year (Spring 1994), and end-of-third-year (Spring 1995) openness to diversity/challenge, while applying statistical controls for the effects of all the other independent variables. Because we were particularly interested in the influence of attending an HBC, we estimated both total and direct effects for this particular variable.

The second stage of the analysis considered whether the effects of attending an HBC versus a HWI were general or conditional. That is, was the influence on openness to diversity/challenge of attending an HBC (versus a HWI) similar in magnitude for all African American students (general effects), or did it differ for students with different background characteristics or with different academic and nonacademic experiences during college (conditional effects)? To test for the presence of conditional effects, a series of cross-product terms was computed between the dummy variable indicating attendance at an HBC and each of the other independent variables in the prediction model. The set of cross-product terms was then added to the general effects

TABLE 2.

Regression Analysis Summaries for the Prediction of End-of-First-Year Openness to Diversity/Challenge

Predictor	Zero-Order Correlation	Beta	β
PRECOLLEGE VARIABLES			
Precollege openness to diversity/challenge	0.646	0.529	0.598**
Precollege academic ability	−0.083	−0.005	−0.012
Female	0.069	−0.018	−0.188
Age	0.058	−0.088	−0.064
Socioeconomic status	−0.073	−0.026	−0.053
Precollege academic motivation	0.356	0.000	−0.003
ENVIRONMENTAL EMPHASIS OF THE INSTITUTION ATTENDED			
Attends an historically Black college	−0.059	−0.077	−0.760
Average first-year student precollege openness to diversity/challenge	0.097	−0.007	−0.035
Nondiscriminatory racial environment	0.107	0.102	0.093*
Environmental emphasis on the development of academic, scholarly, and intellectual qualities	0.138	−0.008	−0.033
Environmental emphasis on the development of aesthetic, expressive, and creative qualities	0.162	0.050	0.205
Environmental emphasis on being critical, evaluative, and analytical	0.159	0.063	0.282
Environmental emphasis on the development of vocational and occupational competence	0.012	−0.120	−0.451*
STUDENT ACADEMIC EXPERIENCES			
Total credit hours completed	−0.061	−0.032	−0.104
Hours per week spent studying	0.081	0.070	0.265
Social sciences courses taken	0.078	0.099	1.284
Mathematics courses taken	0.066	−0.001	−0.007
Technical/preprofessional courses taken	−0.100	−0.008	−0.028
Arts and humanities courses taken	−0.028	−0.014	−0.016
Natural sciences and engineering courses taken	0.007	−0.103	−1.372*
Course Learning scale	0.305	0.084	0.347
Experiences With Faculty scale	0.242	0.031	0.132
STUDENT SOCIAL/NON-ACADEMIC EXPERIENCES			
On-campus residence	−0.034	0.041	0.406
Joined a fraternity or sorority	−0.009	−0.007	−0.208
Participated in intercollegiate athletics	−0.039	−0.021	−0.283
Participated in a racial or cultural awareness workshop	−0.075	0.081	0.820
Hours worked per week	0.126	0.046	0.066
Clubs and Organizations scale	0.329	0.092	0.349
Student Acquaintances scale	0.291	0.107	0.351*
Topics of Conversation scale	0.300	0.066	0.222
Information in Conversations scale	0.361	0.083	0.271
R^2	0.527**		

*$p < .05$. **$p < .01$.

equations employed in the first stage of the analyses. A significant increase in explained variance (R^2) due to the set of cross-product terms indicated the presence of significant conditional effects (Pedhazur, 1982).

RESULTS

Tables 2, 3, and 4 show the results of the regression of end-of-first-year, -second-year, and -third-year openness to diversity/challenge on the four sets of independent (predictor) variables. The zero-order correlation is the simple correlation of each predictor variable with end-of-year openness to diversity/challenge. The Beta is the standardized partial regression coefficient and the β is the unstandardized or metric partial regression coefficient. The results that follow are organized according to the three types of analyses (effects) we used to understand and investigate the influence of college racial composition on levels of openness to diversity: (a) total effects, (b) direct effects, and (c) conditional effects. In each section, we discuss the effects with respect to each year. Next, we summarize the results of the study and determine the overall influence of college racial composition on fostering the development of openness to diversity for African American students in the first 3 years of college.

Total Effects

Total effects for attending an HBC (versus an HWI) were computed using reduced-form equations (Alwin & Hauser, 1975). For each year of the study, openness to diversity/challenge was regressed on the dummy variable, indicating attendance at an HBC, plus all of the precollege variables and the measures of institutional environment. The results of these yielded small and statistically nonsignificant regression coefficients for the HBC dummy variables in all 3 years. The standardized HBC coefficients for the first, second, and third years of the study were −.058, −.106, and −.116, respectively. Thus, with controls for student precollege characteristics and other measures of the institutional environment, attendance at an HBC had only a trivial and nonsignificant total effect on African American students' openness to diversity/challenge across

all 3 years of the study.

Direct Effects

Direct effects for attending an HBC as well as for all other independent variables, were estimated by equations that regressed openness to diversity/challenge on HBC attendance, student precollege characteristics, institutional environment measures and measures of students' academic and nonacademic experiences. The results of the equations for the first, second, and third years of the study are reported in Tables 2, 3, and 4, respectively.

Year 1 (Table 2). In the presence of controls for all other predictors in the equation attending an HBC (versus and HWI) had a small and nonsignificant direct effect on end-of-first-year openness to diversity/challenge. However, two other measures of the institutional environment did have significant direct effects. Growth in openness to diversity was positively influenced by attending an institution with a nondiscriminatory racial environment and negatively influenced by attending an institution where the environment stressed vocational or occupational competence. Additionally, end-of-first-year openness to diversity was negatively influenced by the number of natural sciences and engineering courses taken but positively influenced by one's peer interactions, as measured by the CSEQ Student Acquaintances scale.

Year 2 (Table 3). As with the first year of the study, attending an HBC (versus an HWI) had no statistically significant influence on end-of-second-year openness to diversity when controls were made for other variables in the equation. Similarly, attending an institution with a nondiscriminatory racial environment had a positive influence on growth in openness to diversity, as did attending an institution where the environment emphasized the development of aesthetic, expressive, and creative qualities. Participation in a racial or cultural awareness workshop in the first year of the study (though not in Year 2) had a modest positive impact.

Year 3 (Table 4). Consistent with the first two years of the study, attending an HBC did not have a significant direct effect on end-of-third-year openness to diversity/challenge, whereas a

TABLE 3.

Regression Analysis Summaries for the Prediction of End-of-Second-Year Openness to Diversity/Challenge

Predictor	Zero-Order Correlation	Beta	β
PRECOLLEGE VARIABLES			
Precollege openness to diversity/challenge	0.537	0.408	0.441**
Precollege academic ability	−0.148	−0.060	−0.142
Female	−0.057	−0.045	−0.432
Age	0.117	0.003	0.002
Precollege academic motivation	0.352	0.025	0.220
ENVIRONMENTAL EMPHASIS OF THE INSTITUTION ATTENDED			
Attends an historically Black college	−0.193	−0.127	−1.234
Average first-year student precollege openness to diversity/challenge	0.166	0.079	0.382
Nondiscriminatory racial environment	−0.058	0.137	0.760*
Environmental emphasis on the development of academic, scholarly, and intellectual qualities	0.060	−0.115	−0.470
Environmental emphasis on the development of aesthetic, expressive, and creative qualities	0.210	0.137	0.567*
Environmental emphasis on being critical, evaluative, and analytical	0.111	0.059	0.239
Environmental emphasis on the development of vocational and occupational competence	0.029	−0.027	−0.980
STUDENT ACADEMIC EXPERIENCES			
Total credit hours completed	−0.026	0.026	0.078
Hours per week spent studying	0.139	0.089	0.298
Social sciences courses taken	0.035	−0.082	−0.113
Mathematics courses taken	0.039	0.059	0.100
Technical/preprofessional courses taken	0.014	0.080	0.141
Arts and humanities courses taken	0.133	0.116	0.127
Natural sciences and engineering courses taken	−0.039	−0.047	−0.064
Course Learning scale	0.367	0.068	−0.046
Experiences With Faculty scale	0.226	−0.091	−0.046
STUDENT SOCIAL/NON-ACADEMIC EXPERIENCES			
On-campus residence	0.006	0.079	0.761
Participated in intercollegiate athletics	0.063	0.005	0.068
Participated in a racial or cultural awareness workshop in Year 1	−0.098	0.130	1.282*
Participated in a racial or cultural awareness workshop in Year 2	−0.148	−0.045	−0.428
Hours worked per week	0.156	0.128	0.185
Clubs and Organizations scale	0.260	0.136	0.048
Student Acquaintances scale	0.375	0.138	0.057
Topics of Conversation scale	0.331	0.123	0.052
Information in Conversations scale	0.331	−0.046	−0.032
R^2	0.453**		

$*p < .05.$ $**p < .01.$

nondiscriminatory racial environment continued to have a positive influence. In terms of academic experiences, hours per week spent studying and the number of technical/preprofessional courses taken positively influenced growth in openness to diversity; and exposure to social sciences courses had a negative impact. Three non-academic variables also had significant, positive direct effects on openness to diversity: participation in intercollegiate athletics, the CSEQ Involvement in Clubs and Organizations, and Topics of Conversation scales.

Conditional Effects

In the second stage of the analysis we sought to determine if the impact on openness to diversity/challenge of college racial composition was general or conditional. In the first and third years of the study, the addition of the conditional (or interaction) terms to the direct effects equation produced increases in explained variance (R^2) that were small and nonsignificant. Thus, in the first and third years of the study, the impact of attending an HBC on growth in openness to diversity/challenge was essentially the same in magnitude for African American students differing in precollege characteristics or in academic and nonacademic experiences during college.

In the second year, the addition of the set of cross-product terms for institution type accounted for a statistically significant increase in explained variance of 11.1% ($p < .05$). This result suggested that the net effects on openness to diversity/challenge of the independent variables differed in magnitude for African American students attending HBCs versus African American students attending HWIs. Three significant conditional effects were identified in Year 2: (a) HBC ∞ academic motivation, (b) HBC ∞ gender, and (c) HBC ∞ number of mathematics courses taken.

To determine the nature of these conditional effects we then regressed end-of-second-year openness to diversity/challenge on the full prediction model for: low versus high precollege academic motivation (divided at the mean), men versus women, and a low versus a high number of mathematics courses taken (divided at the

mean). Attending an HBC had a negative impact on end-of-second-year openness to diversity for African American women but a modest positive effect for African American men. Attending an HBC had a negative impact on second-year growth in openness to diversity for African American students with relatively low levels of precollege academic motivation. However, as level of precollege academic motivation increased, the impact of attending an HBC became more positive. Finally, attending an HBC had a negative impact on second-year openness to diversity for African American students taking a relatively high number of mathematics courses, but this effect became less pronounced as the number of mathematics courses taken decreased. The possible skewness in the distribution of mathematics courses taken might account for this conditional effect.

DISCUSSION

The study has a number of major findings. First, with controls made for important confounding influences, including a precollege measure of the dependent variable, we found little consistent evidence to suggest that attendance at an HBC (versus a HWI) has a pronounced negative influence on the development of openness to diversity in African American students. In the presence of controls for precollege characteristics such as sex, age, socioeconomic status, standardized academic ability, academic motivation, and openness to diversity, as well as college environmental characteristics, attendance at an HBC (versus a HWI) had no significant total effect on growth in openness to diversity/challenge in any of the three years of the study. Moreover, when we introduced additional controls for students' academic and nonacademic experiences, the net direct effect of HBC attendance on openness to diversity/challenge did not reach significance in the first, second, or third year of the study. Thus, the evidence from the study suggests that the racially homogenous environment of HBCs does not seriously inhibit growth in African American students' openness to racial, cultural, or value diversity.

The second major finding of the study is that

TABLE 4.

Regression Analysis Summaries for the Prediction of End-of-Third-Year Openness to Diversity/Challenge

Predictor	Zero-Order Correlation	Beta	β
PRECOLLEGE VARIABLES			
Precollege openness to diversity/challenge	0.525	0.441	0.505**
Precollege academic ability	0.008	-0.047	-0.126
Female	0.211	0.062	0.650
Age	0.095	0.091	0.086
Precollege académic motivation	0.276	-0.078	-0.725
ENVIRONMENTAL EMPHASIS OF THE INSTITUTION ATTENDED			
Attends an historically Black college	-0.014	-0.093	-0.953
Average first-year student precollege openness to diversity/challenge	0.271	-0.077	-0.430
Nondiscriminatory racial environment	0.283	0.332	0.171**
Environmental emphasis on the development of academic, scholarly, and intellectual qualities	0.118	0.004	0.015
Environmental emphasis on the development of aesthetic, expressive, and creative qualities	0.230	0.009	0.034
Environmental emphasis on being critical, evaluative, and analytical	0.150	-0.069	-0.283
Environmental emphasis on the development of vocational and occupational competence	0.252	0.031	0.119
STUDENT ACADEMIC EXPERIENCES			
Total credit hours completed	0.077	0.051	0.188
Hours per week spent studying	0.178	0.194	0.678**
Social sciences courses taken	-0.025	-0.147	-0.146*
Mathematics courses taken	-0.025	-0.049	-0.066
Technical/preprofessional courses taken	0.148	0.186	0.227**
Arts and humanities courses taken	0.195	0.082	0.073
Natural sciences and engineering courses taken	0.064	-0.078	-0.070
Course Learning scale	0.364	-0.152	-0.053
Experiences With Faculty scale	0.417	0.067	0.024
STUDENT SOCIAL/NON-ACADEMIC EXPERIENCES			
On-campus residence	0.031	-0.077	-0.738
Participated in intercollegiate athletics	0.167	0.133	1.607*
Participated in a racial or cultural awareness workshop in Year 2	-0.210	-0.023	-0.234
Participated in a racial or cultural awareness workshop in Year 3	-0.196	-0.035	-0.365
Hours worked per week	0.161	0.051	0.101
Clubs and Organizations scale	0.424	0.292	0.077**
Student Acquaintances scale	0.267	-0.058	-0.018
Topics of Conversation scale	0.399	0.190	0.067*
Information in Conversations scale	0.422	0.100	0.056
R^2	0.626**		

*$p < .05$.   **$p < .01$.

growth in African American students openness to diversity appears to be sensitive to the perceived racial environment of the institution attended. Taking into account all other influences in the prediction equation, including precollege openness to diversity and the racial composition of the institution attended, a nondiscriminatory racial environment had a significant, positive influence on growth in openness to diversity/ challenge in all three years of the study. By the third year in college, the positive impact of a non-discriminatory racial environment was substantial (Beta = .332).

A third major finding of the study tends to support Astin's conclusion that the student's peer group is a particularly powerful source of influence on growth and change during the college years. Indeed, as Astin (1993) stated: the "magnitude of any peer group effect will be proportional to the individual's frequency and intensity of affiliation or interaction with that group." (p. 402) In this study we employed four scales to represent the degree of interaction with one's peers. Irrespective of such factors as precollege levels of openness to diversity, college racial composition, and whether or not one lived on campus, peer group involvement had a significant positive effect on growth in openness to diversity in one or more years of the study. The Student Acquaintances scale had a positive influence in the first year of the study. The Topics of Conversation and Involvement in Clubs and Organizations scales each had a significant positive effect in the third year of the study. In short, the more African American students interacted with diverse peers and, to a lesser extent, the degree to which those interactions focused on controversial or value-laden issues that may engender changes in openness to different perspectives, the greater their growth in openness to diversity.

Consistent with the importance of diverse peers may be the finding in the third year of the study that intercollegiate athletic participation facilitates growth on openness to diversity for African American students. Intercollegiate athletics may be another area of campus life where one is likely to interact and work cooperatively with students of different racial and ethnic

backgrounds. The result may be a greater respect for, and openness to, racial or ethnic diversity and the cultural and value differences that may accompany it.

A fourth major finding of the study was that the effects of college racial composition on African American students' growth in openness to diversity were conditional rather than general in the second year of the study. That is, the magnitude, and in some cases the direction, of the impact on openness to diversity of attending an HBC (versus HWI) varied for students with different precollege characteristics or different experiences in college.

Replicated conditional effects in college impact research have not proved particularly robust across different samples or studies (Pascarella & Terenzini, 1991). Nevertheless, the conditional effects uncovered in these analyses underscore the often-complex nature of college's influence on student growth and development. Given the growing diversity among students entering American postsecondary education (Pascarella & Terenzini, 1998), student affairs professionals should perhaps anticipate that the impact of any particular experience or set of experiences will differ in magnitude, and perhaps even direction, for different kinds of students. Indeed, the current findings underscore this complexity of conditional influences even within a nominally homogenous racial group—African American students. Studies of college impact that fail to consider the possibility of conditional effects may well result in findings that mask, or even mislead, with regard to the impact of any particular experience.

POLICY IMPLICATIONS

The results of this study suggest possible actions that student development professionals might employ to enhance the growth in openness to diversity for African American students on campus. First, this study indicates that the perceived racial environment of the institution significantly impacts African American students' level of openness to diversity. Irrespective of the racial composition of the institution attended, when African American students perceived a

supportive and nondiscriminatory racial environment, it resulted in a statistically significant and positive impact on growth in openness to diversity. This finding suggests that African American students who perceive low levels of discrimination on their campus are likely to be more open to diversity than African American students who perceive high levels of discrimination on their campus. Consequently, student development professionals must determine how African American students perceive the racial climate on campus and counteract any negative perceptions with programs and services designed to promote a sense of belonging and inclusion.

Additionally, the results of this study highlight the positive effects of student interactions with peers on growth in openness to diversity. Specifically, the results of the study suggest that student services personnel should recognize the power of the peer group in fostering attitudes and dispositions that promote diversity-minded beliefs and feelings. Therefore, student development professionals should consider planning programs and services that focus on peer-group counseling, peer-mediated discussion groups, and other programs that use student interaction as a tool for engendering positive gains in openness to diversity for African American students.

LIMITATIONS OF THE STUDY

This current research contains significant limitations the reader should be aware of when interpreting the results. First, there were only two HBCs in the sample. As a result, the generalizability of the findings to all HBCs is tenuous. Second, although we attempted in the initial sample design and subsequent sample weighting procedure to make the sample as representative as possible at each institution, the time commitments required of each student participant undoubtedly led to some self-selection (Pascarella & Terenzini, 1991). The responses of the students who participated in the study might have differed from those who were invited to participate but declined. Although our weighting procedure provides at least some adjustment for bias in the samples that we analyzed, it cannot adjust for nonresponse bias.

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End Note:

Into the Future

Walter R. Allen and Joseph O. Jewell, "A Backward Glance Forward: Past, Present, and Future Perspectives on Historically Black Colleges and Universities," *The Review of Higher Education*, Spring 2002, Volume 25, No. 3, pp. 241–261.[6]

A Backward Glance Forward: Past, Present, and Future Perspectives on Historically Black Colleges and Universities

Walter R. Allen and Joseph O. Jewell

The American dream lies at the very heart of the American cultural ethos. At the center of the American dream is the emphatic conviction that, in this society, education opens the door to success. The belief that even the poorest American can achieve greatness with talent and hard work is one of this society's cherished cultural ideals (Hochschild, 1995). In most instances, talent is equated with educational attainment. African Americans have embraced these beliefs to the extreme. Dating back to when Black slaves were

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1999; Collins, 1998). Inevitably these patterns of hierarchy and discrimination take root and are reflected in HBCUs, since the larger society leaves its footprints, to a greater or lesser degree, on these institutions. The challenge confronting HBCUs is how to best define and realize a new vision wherein all types of difference are appreciated and celebrated rather than feared or persecuted.

The worsening racial climate nationally, and at TWIs for Blacks and other minorities, presents HBCUs with a monumental opportunity to continue to expand upon their established traditions of inclusion by recruiting Latinos, Asians, Native Americans, and even lower-income Whites as students. HBCUs can draw upon the lessons from the past, where White missionary teachers and their families interacted with Blacks inside and outside of the classroom. There are lessons to be learned as well from the increasingly multiracial and multiethnic reality of contemporary American society. HBCUs can experiment with and perfect the implementation of a truly multicultural campus environment while offering educational opportunities to the youth of other groups who, like African Americans, are facing severely limited access to higher education (Hurtado, Milem, Clayton-Pedersen, & Allen, 1999). In so doing, HBCUs might reaffirm their commitment to community empowerment and racial equality by taking a leading step in promoting concrete political and economic coalitions between communities of color as well as with lower-income Euro-Americans.

It is especially ironic, given their long history as institutions that taught racial tolerance and the work of their distinguished alumni in promoting equality and cross-cultural understanding, that HBCUs should play so small a role in the current debates on multiculturalism in American higher education. Having been among the first such institutions in America, they should by rights occupy a leading position in such discussion, offering the insight that only they have gained from their distinctive traditions of opening doors to students and faculty regardless of race, class, religion, or gender. Those who control debates over multiculturalism in higher education fail to understand the rich multicultural contributions of HBCUs toward resolving the problems. Though direct descendants of the Black/White paradigm in American race relations, HBCUs have continued to expand their vision beyond these stereotypic constraints.

BACK TO THE FUTURE: HBCUS, THE NEW MILLENNIUM, AND THE CONTINUING STRUGGLE FOR BLACK HIGHER EDUCATION

Sankofa, an oft-seen African cultural symbol, shows the body of a bird facing forward while the head looks backward. The message is explicit: the past shapes the future. As we reflect on the future of HBCUs at this dawning of a new millennium, it is appropriate to look backward to better see

what is ahead. One inescapable lesson is that African Americans have found the road to higher education stony, fraught with obstacles and resistance. In many respects, the Black struggle for higher education is an apt metaphor for the larger Black struggles for citizenship, self-determination, and personhood in this society. Education generally, and higher education in particular, has been and continues to be fiercely contested ground for African Americans. Black educational gains have been hard won. Because our victories tend to be partial and/or precarious, African Americans often find themselves revisiting the same battlefields. Currently, national political movements against affirmative action in higher education (e.g., California's Proposition 209) and for "high stakes" standardized tests (e.g., to determine high school graduation or college admission) pose very real threats to African American access and success in higher education. Along with several court decisions that withdrew legal support for compensatory programs (e.g., *Hopwood*) and a societal-wide retreat from a commitment to equity, these trends place the future of African American higher education at risk.

Hearing that African American progress in higher education is at risk, some will find such a pronouncement alarmist. They will argue that U.S. cultural ethos and practices have changed so fundamentally that African Americans are ensured continued access to higher education. We, however, are less sanguine on this point. Looking backward, we see eerie resemblances between the systematic efforts to turn back the clock of Black progress at the end of the 20th century and similar efforts during the post-Reconstruction period at the end of the 19th century. Concretely, the 1998 implementation of the University of California Board of Regents' decision to end affirmative action in admissions (subsequently ratified in a statewide referendum, Proposition 209) resulted in a 40–50% reduction in the enrollment of African American and Chicana/o/Latina/o students at UCLA and UC-Berkeley. At the same time, several HBCUs have "converted," that is, they now have—or will soon have, given current trends—a majority of White students. Examples are Bluefield State University in West Virginia and Lincoln University in Missouri. Further, extreme fiscal crisis threatens the continued viability, if not existence, of several public and private HBCUs. In short, at the very moment when higher education options for Black students at predominantly White institutions are shrinking, we are also seeing constriction in the options available at HBCUs. Today, as in the past, HBCUs are called upon to complete the herculean task of contributing disproportionately to the higher education of African Americans.

Although greatly outnumbered and comparatively impoverished in economic and physical resources, HBCUs continue to rise to the challenge. The over 100 HBCUs represent roughly 3% of all institutions of higher learning in the nation; yet during the 1990s, these institutions enrolled around one-quarter of all Black students in U.S. higher education. These

institutions also granted over 25% of baccalaureate degrees, 15% of master's and professional degrees, and 10% of Ph.D.'s to African Americans (Carter & Wilson, 1997; Nettles & Perna, 1997).

The accomplishments of HBCUs are truly impressive by any standard. HBCUs have helped to liberate and empower Black aspirations for the American dream. HBCUs were conceived at the intersection between ideal aspirations and racial restriction. Despite White racism and White paternalism, these institutions managed to form "free spaces," racially segregated arenas where African Americans were able to forge and pursue visions of equality and self-determination, removed from the gaze and direct control of White power structures (Morris, 1984; Robnett, 1997). However, as Robnett (1997) reminds us, rarely are free spaces completely free; thus, they tend to have both positive and negative aspects. HBCUs were never left entirely alone; the reach of White domination, whether benevolent or hostile, constricted, distorted, or destroyed the interior of HBCUs to control expressions of independence and self-determination. These efforts to direct and/or suppress the higher education and development of African Americans were motivated by what W.E.B. Du Bois refers to as "The Great Fear"— the fear felt by oppressive forces of the moment "when a human being becomes suddenly conscious of the tremendous powers lying latent within him." Du Bois continues: "When this happens in the case of a class or nation or a race, the world fears or rejoices according to the way in which it has been trained to contemplate a change in the conditions of the class or race in question" (qtd. in Aptheker, 1973, pp. 8–9). For Du Bois, education represented a vital tool for empowerment, education that had been systematically denied Blacks to maintain a system of White supremacy. The goal of this oppressive system was to educate African Americans to "put their rights in the background; emphasize their duties—say little of ambition or aspiration[;] . . . if their young men will dream dreams, let them be dreams of corn bread and molasses" (Du Bois, qtd. in Aptheker, 1973, p. 9). By Du Bois's account, the salvation of African Americans lay in HBCUs: "I regard the college as the true founding stone of all education, and not as some would have it, the kindergarten" (qtd. in Aptheker, 1973, p. 3).

To prosper in this new millennium as academic institutions of the first order and not, as some uniformed observers view them, as relics of America's less enlightened racial past, HBCUs must continue to evolve and change to reflect America's new reality. They must maintain and solidify the worldview and traditions that have anchored them and kept them viable for more than a century. At the same time, these institutions will need to adapt to the new reality best exemplified by the increasing number of racially, culturally, and economically diverse student bodies that they will be called upon to educate.

Certainly HBCUs will be affected by the general transformations sweeping U.S. higher education and will respond to a variety of questions as they

reassess their missions and decide how best to serve their constituencies. Among these questions are: How to do more with less? What will be the role of faculty governance? How viable is distance education? What are the information and technology needs of the future? What are effective strategies for upgrading institutional budget, records, and facilities infrastructure? How should capital campaigns be managed? What are essential elements for the 21st century curriculum? What changes will be required to recruit and serve multiracial/multicultural student bodies? What are pressing faculty needs? The list goes on.

Beyond these relatively common, utilitarian questions is another set of questions about the "heart and soul" of HBCUs, questions about their *raison d'être*, special place, and distinctive roles. These conversations are best left to my colleagues who live and work daily in these institutions. However, I would suggest that W.E.B. Du Bois's articulated vision of the nature, theory, content, and purposes of the education of Black people is an appropriate starting point for such inquiries. To be truly education, according to Du Bois, it must be partisan and—given the realities of the social order—fundamentally subversive. In this sense, he was concerned in the first place with the education of his people in the United States and with education as part of the process of the liberation of his people. He insistently called on Black people to exercise great energy and initiative in controlling their own lives, engaging in continued experimentation and innovation (Aptheker, 1973).

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