

An Academic Summer Program Closes the Achievement Gap  
in African American College Students.

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### Abstract

African American students with relatively low scores on college achievement predictors were assigned to participate in an intensive summer academic development program prior to enrollment as college freshmen. Despite large and statistically significant differences on college achievement predictor variables in comparison with other African American students, those who participated in the Summer Program were seen to perform equally well academically. Multiple regression analyses indicated a significant effect for participation in the Summer Program. It is concluded that participation in a summer academic program can do much to close the achievement gap expected from differences in the typical predictors of college achievement. The value of the summer intervention program as a means of generating momentum for academic success is discussed.

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Selective colleges and universities often face the problem of having more applicants than spaces available for an entering class of students. As a consequence, selective colleges often rely on a variety of indices as markers of future academic achievement in college. Perhaps the most typical of these are high school grades and standardized test scores, but other indicators of future achievement are considered as well, such as evidence of leadership qualities, special talents, or a diversity of experience deemed important by admissions officers. This fact has served to focus considerable national interest on college admissions practices and in particular on affirmative action programs and the role of standardized testing in college admissions (Bowser, et al, 1993; Thernstrom and Thernstrom, 1997; Bowen and Bok, 1998; Jencks and Philips, 1998; Neisser, 1998; Orfield and Miller, 1998; College Board 1999a). Many of these reports also detail differences between blacks and whites on standardized test scores or other measures of academic achievement such as grade-point averages. Numerous strategies have been implemented in efforts to close the "achievement gap" or to bolster academic achievement in minority college students. Most such efforts are designed to take place during the standard academic year (e. g., September through May) when such activities as tutoring, study groups, mastery learning sessions, or mentoring can provide useful adjuncts to the student's regular slate of courses.

An alternative approach, described in this report, is to generate momentum for academic success prior to the start of fall term courses through an intensive summer

developmental program. A number of such "bridge" programs are in place around the country and they generally are highly regarded by student participant-alumni, by the staff who work in them and by university administrators. Relatively few rigorous studies of such programs have been done, however.

The current study offers a detailed examination of a Summer Bridge Program that has been in existence for over 25 years at a major university. The study examines six classes of students, those entering in the years 1991 through 1996 inclusive, and compares their academic achievement and progress toward graduation to cohorts of students who entered college at the same time, but who did not participate in the Summer Bridge Program.

#### Program Description

The Summer Bridge Program is an intensive academic experience of seven weeks duration. About 80 students participate each year; of these, approximately two-thirds are African American. Summer Bridge students enroll in credit-bearing courses in English and Mathematics. In addition, students enroll in an introduction to computing course, and a seminar on adjustment to college, which includes a focus on study strategies.

Students are selected for Summer Bridge by admissions office staff whose review of applicants identifies students with promising, but uneven credentials. A typical case might be a student from an urban high school who has an excellent academic record, but mediocre standardized test scores. Similarly, a student who attended a private school and earned good, but not excellent grades, and who performed exceptionally well on standardized tests, might be offered the opportunity to attend Summer Bridge. In each case, other factors, such as leadership or extra-curricular involvement, are also taken into

consideration when determining that a given applicant has promise for success in the competitive college environment.

The "promising" students identified for Summer Bridge have all demonstrated that they have the potential to succeed academically, but in the eyes of an admissions officer they would benefit from additional development prior to the start of fall term. An alternative and perhaps more pragmatic view is that the very traits that lead to selection for Summer Bridge also impose a competitive hurdle for participants relative to other students who are even more exceptional in terms of academic credentials. That is, in the fall term, Summer Bridge students will find themselves in competition academically with classmates with high scores for both HSGPA and SAT while also sharing the same kinds of personal characteristics that so impress admissions officers. The fact that Summer Bridge students must successfully complete the program in order to enroll in the fall term provides added incentive.

Summer Bridge also includes a student development component emphasizing both personal and social growth over the seven-week period. This is deemed important because the large campus can seem quite impersonal and socially overwhelming during the regular fall and winter terms. Thus, the Summer Bridge Program is an intensive academic and personal growth effort that allows students the following opportunities:

- To develop academic abilities in specific content (e.g., Mathematics)
- To develop knowledge about college faculty expectations
- To develop insights about one's self (e.g., goals, strengths and weaknesses)
- To develop familiarity with the campus physical environment
- To develop a support network

Previous studies (Collins, 1996; Collins, 1998) have demonstrated that the specific objectives of Summer Bridge participation such as those mentioned above have been met quite well. The more general issue of the effect of Summer Bridge participation on academic achievement in comparison to non-Summer Bridge students is addressed by the present study. The opportunity for additional academic development may be particularly important for students whose prior academic experiences may prove limiting in the competitive college environment. An ideal study would randomly assign subjects to treatment conditions; that is, students would be assigned to Summer Bridge or not on a random basis to provide experimental control. In this real-world context, such a study is not feasible because the very purpose of Summer Bridge is to provide higher educational opportunity to students who would not otherwise attend the selective college. Yet, it is abundantly clear from the history of education that educational progress is built upon prior experience. In fact, this is the main principle at work in selective colleges as they make admissions decisions largely on the basis of prior good academic work. Doing so is no accident of history, as the best predictor of future academic success is widely recognized to be prior academic success. Thus, it would be unethical to use a random assignment basis to place some students, without intervention, into a competitive situation in which the likelihood for failure is known to be high. Similarly, it would be a waste of resources and good will to use random assignment to place students into an intervention program when it is known that they do not need it. This educational setting is categorically different from medical research, for example, in which treatment effects are unknown or in which subjects have nothing to lose, which together make double-blind random assignment to conditions useful. In the present situation, there exists very good

evidence of the effects of prior schooling on future academic achievement; moreover, the students in our investigation have much to lose: they could attend school elsewhere, they could take summer jobs to earn money for college, or they could forego college completely. Those of us who have benefited from college readily recognize its benefits and even extol them, but we must remember that only about 25% of the 25-29 year-old age cohort in the United States has earned at least a bachelor's degree. These considerations make our comparisons of student groups, even without random assignment, not unreasonable.

## METHOD

### *Subjects*

A total of 929 African American students who enrolled as freshmen in the years 1991 through 1996, inclusive, served as the subjects of this study. 258 of these students participated in the Summer Bridge Programs offered each year, while 671 "at-large" African American students serve as a comparison group. The "at-large" students were not participants in other special (i.e., affirmative action) programs available to minority students. The Summer Bridge students were required to participate as a condition of admission to a selective university.

### *Data*

The data were provided by the university registrar's office and consisted of official records for each student reflecting pre-college and college academic achievement variables including:

High school grade point average

SAT scores (where appropriate converted from ACT scores; and for each student standardized based on national data provided by the testing agency)

First semester college grade point average

In addition, demographic data such as race or gender were part of the dataset.

### *Analysis*

Multiple regression analysis was used to assess the effect of variables of interest on the dependent variable, First Semester Grade Point Average (FGPA).

## RESULTS

Table 1 shows descriptive statistics for the predictor variables for each group. The At-Large group demonstrates substantially higher achievement on the predictor variables and this is especially true for SAT Scores. Yet, there is considerable overlap in scores across the groups as demonstrated by Figure 1 which is a set of box-plots for the academic achievement variables for each group. Table 2 shows the intercorrelations among the variables. There are highly significant positive correlations among all the variables for the At-Large group, but only one significant correlation for the Summer Bridge group, that between HSGPA and Test Score, which is negative. For the At-Large group, the higher one's HSGPA or one's SAT score, the higher the attained FGPA. Also, HSGPA and SAT were highly positively correlated ( $r=.51$ ;  $p<.01$ ) indicating that high scores on one measure were associated with high scores on the other measure. In contrast, for Summer Bridge students essentially no relationship was found between FGPA and either HSGPA or SAT score. In addition, there was a negative correlation between



HSGPA and SAT score for Summer Bridge students indicating that high scores on one measure were associated with low scores on the other measure. These findings are consistent with the selection protocols for each group. The students in the At-Large group were selected based on strong performance on both HSGPA and SAT score. The Summer Bridge students, however, were selected because of the promise associated with high achievement on one measure and despite a relatively low score on the other measure. (It should also be noted that for both groups the same set of other non-cognitive factors were considered in making admissions decisions as well; for example, students in both groups would have been evaluated for extracurricular involvement in high school). Furthermore, the differences observed in the variable intercorrelations for each group suggests an inequality of slopes for the regression of FGPA on HSGPA and Test Score. Indeed, an F-test of the error variances confirmed their inequality ( $F=5.53$ ;  $df 1,933$ ;  $p<.02$ ). Thus, a nested regression model was employed to incorporate separate slopes in the analysis.

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Insert Tables 1 and 2 about here  
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Table 3 summarizes the results of the GLM nested design model entering HSGPA, Test Score, and Group (Summer Bridge vs. At-Large) as predictors of the criterion variable FGPA. This analysis allows for an estimate of separate prediction equations for each group with the regression line passing through the origin. The  $R^2$  for the model is .944. The parameter estimates show a coefficient of 2.2 for the Summer Bridge group and a coefficient of 1.46 for the At-Large group, a difference of .74 in favor of the Summer Bridge group. This finding can be interpreted to mean that without consideration of HSGPA or Test Score, Summer Bridge students can be expected to have a base FGPA of

2.2, while the At-Large group would have a base FGPA of 1.46. As HSGPA and Test Score increase, FGPA changes in accordance with the respective beta coefficients. Both HSGPA and Test Score were more than twice as powerful as predictors of FGPA for the At-Large group than for the Summer Bridge group, reflecting the difference in selection criteria. Thus, for the At-Large group, FGPA would be seen to increase at a steeper slope than for the Summer Bridge group as HSGPA and Test Score increase. The parameter estimates show that for the At-Large group, for every point increase in HSGPA, FGPA increases by .337 of a point and for every 200-point increase in Test Score, FGPA increases .23 (i.e., 200 = one standard deviation on Test Score). For the Summer Bridge group, for every point increase in HSGPA, FGPA increases .12, while Test Score has essentially no effect on FGPA. In practical terms, the mean difference in HSGPA of .3 between the At-Large and Summer Bridge groups, can be said to contribute about .21 of a full grade point in differential FGPA achievement between the groups. Similarly, the mean difference of a full standard deviation in SAT score between the At-Large and Summer Bridge groups, can be said to contribute about .15 of a full grade point in differential achievement between the groups. Thus, participation in a Summer Bridge program, can be said to essentially close the gap in achievement that would be attributable to higher HSGPA or SAT scores of the At-Large group. In fact, evaluation of the covariates at the grand means for HSGPA and Test Score produces an identical predicted FGPA of 2.62 for both groups.

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Insert Tables 3 and 4 about here

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Table 4 summarizes retention data for the two groups and reveals that graduation and retention statistics for the two groups are essentially the same.

## DISCUSSION

Prior research has shown that participation in a Summer Bridge intervention program can achieve the goal of improving knowledge and academic skills. The current research findings show that participation in a Summer Bridge program also can close the achievement gap attributable to higher scores on HSGPA or standardized test scores. Programs that reduce the effects of differences in preparation for college are especially important in the light of lingering racial and economic inequality. Education Trust (1996) reports that about two-thirds of African American students attend high schools that are predominantly minority and that nearly one in four central city schools reported in 1991 that they had vacancies that they could not fill with a qualified teacher. The result was that principals used substitutes, hired less qualified teachers, or cancelled courses. In the same report, Education Trust mentioned that inner city schools were hampered by continuing inequities in instructional resources, such as the availability of fewer advanced placement courses or fewer computers per student than at suburban schools. In addition, the "1999 Profile of College-Bound Seniors National Report" of the College Board shows the continuation of a ten-year trend in which the "SAT scores of large-city and rural students have fallen further below those of suburban students" (The College Board, 1999b).

Such conditions create a school environment in which even talented, motivated students face a crisis of expectations once they get to college. The crisis of expectations is caused by inaccurate ability self-appraisals, relative to the college competition,

sanctioned by their prior schooling. To illustrate, consider that across the nation students who have excelled in high school have every right to feel proud of their accomplishments, especially in comparison to their classmates who did not do as well in the same courses. Yet, at every college in America, admissions officers recognize that a high school grade point average of, say, 3.8 from an inner city school does not mean the same thing as it means for a student from a suburban or private school. Thus, particularly at selective colleges, high school "quality" often leads to discounting the grade point average from school "A" while assigning a premium to the same grade point average from school "B." However, if you are a student from school "A" you may reasonably conclude that your high school experience was generally comparable to that of students from school "B." Thus, your expectations about such matters as the amount of reading required per course, or the number of hours one can work at a part-time job and still remain academically competitive, may be inaccurate relative to those of a student from school "B."

Now, perhaps the most fundamental principle in psychology is that people are likely to repeat behaviors that were rewarded in the past. This means that in the academic context just described, students from both school "A" and school "B" are highly likely to believe that the approaches that worked for them in high school will also work in college. This is the basis for the crisis of expectations because what worked in high school, particularly high schools with fewer instructional resources, often will prove inadequate in college, particularly at selective colleges. The term "crisis" is not used here in the narrow sense of the word which is often intended to convey distress or disordered function; rather it is used in the more fundamental sense meaning a crucial turning point

or a situation in which decisive change is impending. Another way to think of "crisis" as used here is in terms of the Chinese cuneiform symbol for it, which means a challenge and an opportunity. For new college students, in particular, achieving the promise of their aspirations often entails the challenge of making decisive changes from academic habits that worked in the past, while seizing the opportunity to develop new and different approaches to success.

How, then, can talented, motivated, promising students, who are likely to experience a crisis of expectations, develop more accurate self-appraisals and improve their prospects for academic achievement in competition with the even more talented students they will encounter in college? A variety of options have been identified in the literature including institutional intervention programs (Kulik, Kulik and Scwalb, 1983), involvement in research as an undergraduate, or interaction with faculty (Pascarella, 1985).

The present study suggests that an intensive summer academic experience prior to fall term enrollment can effectively generate momentum for sustained academic achievement. The intensive program provides a realistic basis for assessing one's skills and expectations, while also generating confidence based on a committed work ethic and its consequent achievement. The result demonstrated by the intensive summer program is that students with promise can compete academically as well as, in some cases better than, their better prepared peers.

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Table 1. Means and standard deviations for academic achievement variables.

	<u>Summer Bridge</u>			<u>At-Large</u>		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
HSGPA	3.0	.40	258	3.3	.51	671
SAT Score	-.60	.60	258	.62	.77	671
FGPA	2.52	.71	258	2.72	.70	671

HSGPA: High School Grade Point Average

FGPA: First Semester College Grade Point Average

Table 2. Variable Intercorrelations

	HSGPA	Test Score	FGPA
HSGPA	1.0	-.382**	.043
SAT Score	.508**	1.0	.039
FGPA	.371**	.376**	1.0

HSGPA: High School Grade Point Average

FGPA: First Semester College Grade Point Average

*Correlations for Summer Bridge students (n=258) are above the diagonal, while those for At-Large students (n=671) are below the diagonal.*

\*\* $p < .001$



Table 3. Summary of GLM Parameter Estimates for FGPA predicted by HSGPA and Test Score for the Summer Bridge and At-Large groups.

<u>Source</u>	<i>B</i>	SE	t
Summer Bridge	2.2	.324	6.79***
At-Large	1.46	.186	7.84***
SB*HSGPA	.122	.112	1.09
At-Large*HSGPA	.337	.058	5.79***
SB*Test Score	.077	.074	1.04
At-Large*Test Score	.23	.038	6.03***

HSGPA: High School Grade Point Average

SB: Summer Bridge

$$R^2 = .994$$

#### Estimated Means for FGPA

(Estimates evaluated at the Grand means for covariates HSGPA and Test Score)

Summer Bridge      2.62

At-Large            2.62

Table 4. Graduation and Retention Statistics

	<b><u>Summer Bridge</u></b>	<b><u>At-Large</u></b>
Graduation/ Retention <sup>1</sup>	182 (71%)	480 (72%)
Drop-outs <sup>2</sup>	76 (29%)	191 (28%)
N	258	671

1/ represents students who had graduated or were currently enrolled in good academic standing.

2/ represents students who were not currently enrolled and had not been enrolled for at least two consecutive semesters.

Figure 1. Box Plots of Performance on Academic Achievement Variables by Group.

