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Effects of a Comprehensive Model of Student Development on the Academic Achievement of
Black College Students.

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Abstract

Black student academic achievement in college has been a focus of concern from a variety of quarters (Steele, Nettles, others). The effects of a comprehensive program of academic advising and intensive course instruction is examined in this study. Students who participated in two distinct, though related intervention programs were compared to a Control Group of black college students at a major selective public university. Students in the two intervention programs were less prepared for a competitive college setting as measured by such variables as standardized test scores or high school Grade Point Average (HSGPA). Results of this study showed that despite weaker preparation, students in the intervention programs performed as well as the Control Group in terms of college achievement as measured by First Term Grade Point Average (FGPA). Use of the least squares means estimates for FGPA provides a basis for appreciating what such comparable achievement means.

Effects of a Comprehensive Model of Student Development Model on the Academic
Achievement of Black College Students.

Among the most fundamental principles of education everywhere in the world is the notion that good performance or satisfactory progress at an early stage is essential for continued progress at later stages. This notion is consistent with child development theory which maintains that mastery at initial stages is necessary before a child can advance to the next maturational stage. In educational systems around the globe, children are taught, tested in various ways, and then evaluated (graded); a positive evaluation serves as a testament that the student has achieved an appropriate level of subject matter mastery and so then can be passed on to the next level. Individual differences in school performance are used as part of the sorting mechanism of the educational system. Those students whose subject matter mastery is highest are often placed in more challenging curricula (e.g., accelerated or "honors" courses in high school) and given even more opportunities for advanced study, such as participation in programs for the gifted or, as they complete high school, admission to selective colleges and universities. This is the model we see everywhere; the best students are given additional opportunities to build upon their prior academic successes, while the educational opportunities for weaker students become progressively more limited over time.

From a systems management standpoint, this model is basically a sound one as it allows for large numbers of students to move through the educational system with relative efficiency, but it can produce some undesirable effects resulting in wasted human capital due to related factors. Poverty, for example, is related to school performance in a variety of ways (The Education Trust, 1996). Poor children often lack the proper materials and supplies to develop their knowledge; teachers in poor school districts are found to be less qualified than teachers in wealthier districts; similarly, poorer schools tend not to have the most up-to-date textbooks,

technology, and curricula available to their students. Thus, poor students often demonstrate a gap in school achievement in comparison to students from wealthier backgrounds. Black students in the United States demonstrate a similar pattern, a pattern exacerbated by racial isolation of schools. That is, more than two-thirds of black children in the United States attend predominantly minority schools and an achievement gap exists in virtually every academic area when blacks are compared to whites. Teachers in racially isolated schools have less education as measured by certification in fields of study; students in racially isolated schools have available to them and elect fewer courses in math and science; such students are less likely to enroll in college preparatory courses, and are more likely to enroll in vocational courses. Not surprisingly students who complete more math and science courses score higher on the Scholastic Aptitude Test (SAT), a widely accepted measure used in college admissions decisions (Education Trust, 1996).

Thus, poverty and race seem to accentuate the individual differences in achievement and learning opportunities that are already built into the educational setting. Nevertheless, the educational model of building upon past successes is just as applicable in racially and economically isolated schools as in others. That is, the best students from these communities compete favorably with all others who seek college admission and for the standard reason: demonstrated good performance in prior school work. Yet, the quality of schooling varies and a given level of performance (i.e., course grade) in one school does not necessarily mean the same thing in comparison to a comparable grade in another school. Nevertheless, the characteristic of good prior school performance is probably the single most important factor in college admissions. As Summerskill (1964) has pointed out, "at the core of college success is the need for sufficient prior training and ability to do college work. Secondary school grades are generally recognized as the best predictors of college grades." Iffert (1957) concluded that one's standing in high school is a better predictor of college success than one's standing on standardized tests. Relatedly, students who "drop-out" of college have been found to have

lower average high school grades and lower standardized test scores than students who graduate from college. Up to a third of those who drop out of college do so due to poor grades, and poor or failing grades at the beginning of one's college career are highly predictive of attrition. In addition, many of those who leave college do so for motivation reasons; Summerskill reported that almost half (45%) of college drop-outs left for motivational reasons. Relatedly, attitudes towards school and towards school work greatly influence persistence (Cooper, 1928; Frederickson and Schrader, 1951), and many of those who leave college also can be seen to have a long history of dissatisfaction with school and with school work.

The question of black student achievement at the college level is one that has received considerable recent attention (Nettles, 1997; Steele, 1997; Cose 1997). Blacks now complete high school at the same rate as whites, but while almost 60% of white high school graduates go on to college, only about 40% of black high school graduates do. Nationwide, about half of whites who enter college eventually graduate, while only about a third of blacks who enter college graduate. What accounts for these discrepancies in white and black student achievement? The traditional educational model represented by Summerskill (1964) suggests that those who are best prepared for college would outperform those who are not as prepared for the rigors of college work. Indeed, Nettles, et al (1985) found that measures of past achievement and academic ability were the strongest predictors of college academic achievement, with high school grade-point average (GPA) and SAT scores correlated highly with college GPA. Later work by Nettles (1988) found that the high school GPAs of black and white college students were essentially the same, while SAT scores differed significantly by race. Nettles argued that high school GPA was a highly subjective measure, while SAT score was more objective and thus a better indicator of preparation for college work. Nettles concluded that the difference in SAT scores was indicative of inferior preparation among blacks for college relative to whites and, therefore, that more focus on improving precollege preparation was needed. Kulik (1985),

in a meta-analytic study of programs that are concerned with improving preparation for college work, found that such programs have a positive impact on student achievement.

A number of programs exist around the country which seek to improve student preparation and ability for college work, both prior to and during college enrollment. One such program at the University of Michigan employs a comprehensive approach involving summer developmental work prior to first full term of college enrollment, as well as intensive instruction and systematic advising and progress monitoring during the academic year. The University of Michigan is a selective public university; it offers a number of programs to serve its large and diverse student body. Special residential and other programs abound on such a campus with many thousands of students, including some 5,000 first-year students each fall. There are programs for international students, for ecologically-minded students, for religious groups of students, for honors students, for athletes, and numerous other groupings of students. There are also programs concerned with the retention of minority students, including a program for “academically at-risk” students which focuses on developing their abilities for college during the summer prior to fall enrollment; the summer developmental program is a subset of the comprehensive program of advising and instruction emphasizing intense coursework in small classes, “time-on task” applications of active learning strategies, prompt feedback, and appropriate course selection. As a means of assessing the effectiveness of the comprehensive model, Black students in these programs can be compared to a control group of black students who were not selected for such intervention due to a record of past high achievement in school and on standardized tests.

METHOD

Subjects

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A total of 151 black students were identified for this study. All were enrolled as full-time students in the fall term 1996. Three distinct groups of students can be identified:

1. those who were admitted conditionally and were required to participate in a Summer Developmental Program
2. those who participated in the Comprehensive Program Model of Instruction and Advising
3. a randomly selected Control Group of Black Students who did not participate in a skills improvement program

The number of black students in each group was as follows:

<u>Group I</u> - Summer Program	n = 44
<u>Group II</u> - Comprehensive Model	n = 43
<u>Group III</u> - Control Group	n = 64
Total	N = 151

Procedure

For each student, a variety of pre-college measures were collected as well as data on academic achievement during Fall Term 1996. Variables of interest in this study included:

Scholastic Aptitude Test Combined Score (SAT)

High School Grade Point Average (HSGPA)

Fall Term Grade Point Average (FGPA)

Fall Term Credits Earned (Credits)

Advanced Placement Credits (AP)

Analyses

The data were analyzed by comparing group means to determine if differences existed between the groups under investigation. Regression model analyses were used to determine the impact of specific variables on academic achievement and to calculate least squares estimated means for different groups of students.

RESULTS

Figure 1 is a line graph showing how the three groups compare using standardized scores for SAT (to be read on the right Y-axis) as well as academic achievement as measured by HSGPA and FGPA (to be read on the left Y-axis). The graph reveals that those in the Control Group entered college with decidedly better preparation for college level work than the other groups; those students in the Developmental Summer Program were the least impressive in terms of preparation for college as measured by such variables as HSGPA or standardized test scores. But on the measure of college academic achievement, the groups are actually rather comparable, earning mean FGPA's of 2.73, 2.67, and 2.78 for the Summer, Comprehensive and Control groups respectively.

Figure 1 about here

Pre-college Measures

The analysis of subjects' records revealed that students in the Control Group had higher scores on each of the pre-college measures than did students in the Summer or Comprehensive Model. The higher scores were statistically significant for the SAT scores and for HSGPA. The results of the Student's-T analysis for SAT showed a pooled T-score of 7.98, ($p < .001$); for HSGPA the

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pooled T-score was 3.78 ($p < .001$). Table 1 summarizes the results of T-tests on academic achievement measures.

College Performance

The examination of student academic achievement during the first term of enrollment revealed no significant differences in performance as measured by First-term GPA. The three groups earned mean FGPA's of 2.73, 2.67, and 2.78 for the Summer Developmental Program, the Comprehensive Program, and the Control Groups, respectively.

Regression Model Analyses

Analysis of Covariance

The significant difference observed in standardized test score raises the question that it may have substantial influence on the outcomes observed. An Analysis of Covariance (ANCOVA) using standardized test score as the covariate for college academic achievement (FGPA) was performed to test this question. First, a test of the homogeneity of slopes revealed no significant interaction between group assignment and the covariate, making it plausible that the slope of the regression line on the covariate was equal in all cells ($F = .352$, n.s.). The results of the ANCOVA revealed that the treatment was significant when adjusted for the covariate; that is, that participation in the Summer developmental program or in the Comprehensive Program had a significant effect on academic achievement when adjusted for preparation for college as measured by standardized test score ($F = 3.42$; $df = 2, 148$; $p < .05$). The adjusted least squares means for FGPA for the three groups were 2.79, 3.01, and 2.52 for the Comprehensive, Summer Bridge, and Control Groups, respectively.

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Table 1. Summary of ANOVA for FGPA with Group (CSP, SBP, & Control), SAT score and HSGPA.

Dependent Variable: FGPA N: 151 MULTIPLE R: 0.320 SQUARED MULTIPLE R: 0.102

ANALYSIS OF VARIANCE					
SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
Group	2.894	2	1.447	3.415	0.036
HSGPA	1.060	1	1.060	2.502	0.116
NATSAT	5.509	1	5.509	13.003	0.000
ERROR	61.856	146	0.424		

ADJUSTED LEAST SQUARES MEANS for FGPA.

	ADJ. LS MEAN	SE	N
CSP	2.786	0.104	43
SBP	3.005	0.121	44
Control	2.515	0.106	64

Table 2 summarizes the results of the overall regression analysis and shows that SAT score was predictive of FGPA, while HSGPA was not.

Table 2. Summary of Regression analysis for FGPA.

Variable	B coefficient	T	<i>p(two-tail)</i>
SAT	.186	2.55	.012
HSGPA	.09	.712	n.s.

(F-Ratio = 4.74; df = 2, 148; $p < .02$)

When the groups are examined separately, HSGPA remains unproductive of FGPA while SAT is predictive of FGPA only for the Comprehensive Program group. Table 3 summarizes these results.

Table 3. Summary of Regression for Treatment Models examined separately.

	<u>Variable</u>	<u>B coefficient</u>	<u>T</u>	<u>p (two tail)</u>
<i>Group</i>				
Summer	SAT	.392	1.58	.121
Bridge	HSGPA	.194	.706	.484
		(F = 1.277; df = 2, 41; p=.n.s.)		
Comprehensive	SAT	.517	2.948	.005
Program	HSGPA	.056	0.296	n.s.
		(F = 4.41; df = 2, 40; p= .019)		
<i>Control</i>	SAT	.233	1.71	n.s.
<i>Group</i>	HSGPA	.437	1.82	n.s.
		(F = 4.51; df = 2, 61; p = .015)		

DISCUSSION

Previous research has suggested that the level of preparation of many black students places them at a disadvantage for success in college (Nettles, et al). Greater emphasis on quality preparation for college work during the high school years is a logical place to look for correcting the problem. But most blacks attend public schools and public schools are severely hampered by inadequate funding, deteriorating physical plant facilities, overcrowded classrooms, and underappreciated teachers. At the same time, many public school students bring to the classroom a plethora of personal, family, and social-based problems that can disrupt the

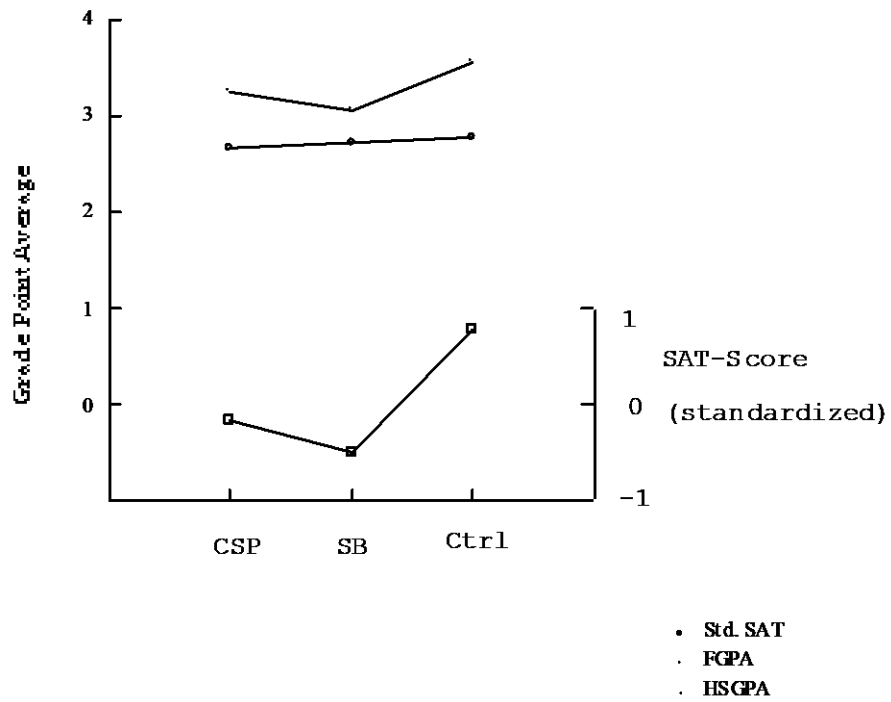
otherwise smooth flow of classroom activities and adversely impact opportunities for learning. Such difficulties notwithstanding, the best students from such circumstances deserve the opportunity to pursue post-secondary education as do top students from private and well-to-do schools. But students from poorer circumstances may also benefit academically from opportunities to develop their abilities with college level subject matter. College-based programs that promote skill development and provide additional learning opportunities can be a useful and supportive adjunct to regular college coursework and can serve to promote student achievement and retention.

Programs that focus on developing one's abilities are not necessarily remedial, they need not emphasize one's status as being "at-risk," and they usually, if not always, demand the same high standards and expectations as college faculty do in general. After all, the objective of a developmental program is success with regular line faculty in terms of course achievement. Yet, developmental academic programs can profitably serve at-risk students, or students who have historically been underrepresented in college. One widely recognized outcome is that a sense of community often develops among students in developmental programs, not because it is the goal, rather because people in close proximity, who are engaged in comparable challenges and activities, learn collectively from the experience and share in the sense of accomplishment that results. Many students develop a heightened sense of confidence, self-esteem, and sense of belonging as a result of participating in special programs of a wide variety. The data reported here support the idea that participating in a program of intense academic work, structured advising activities, and academic skill development can result in increased academic achievement; such achievement is all the more impressive given the differences in preparation that are apparent among students from diverse backgrounds as they begin their college careers. The adjusted least squares estimated means for FGPA illustrate the impact of the intervention strategies used. Essentially what the adjusted means suggest is that had the level of preparation for the three groups of students been equal, then their estimated academic achievement in terms

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of FGPA would be 2.79, 3.01, and 2.52 for the Comprehensive, Summer Bridge, and Control Groups, respectively. Thus, two important points can be concluded from this study: preparation for college level work is significantly related to academic achievement, but a program that intensifies and extends opportunities for learning college subject matter can erase the performance gap that is expected from differences in preparation.

Fig. 1 Mean Achievement Levels for CSP, SB, and Ctrl Groups



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