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EDITOR'S NOTE

John B. Craig, Ed.D.

John B. Craig, Ed.D. is Dean of University College (Interim) at West Chester University of Pennsylvania.

Welcome to the 5th volume of the Journal of Access, Retention and Inclusion in Higher Education. As always, the Journal places special emphasis on student success broadly defined. Practitioners, thought leaders and policy makers will be able to glean new knowledge from these submissions in this volume. Of particular note, each accepted manuscript which appears in the Journal is useful, research-based and is easily relatable to various types of institutions – public, private, two-year or four-year.

Our goal is that you will find salient and timely approaches, best and promising practices and research of which you can make immediate use in your respective institution. Whether you are teaching a developmental math class or you are directing a learning center, the articles contained herein are pertinent.

If you are interested in submitting a manuscript for consideration, each year, the call for manuscripts is released in January. We employ a double-blind review process. We would love to have your work appear in the Journal of Access, Retention and Inclusion in Higher Education.

If you have any feedback related to this volume, please let me know.

Journal of Access, Retention, and Inclusion in Higher Education

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FOREWORD

This volume of the *Journal of Access, Retention, and Inclusion in Higher Education* is filled with rich material that will help us all gain new perspectives and become better educators, no matter the role we play in working with students in higher education. Gone are the days where the field of student success is focused only on faculty, tutoring professionals, and administrators. We work in an age now where the field rightly recognizes the contributions to student success that all educators make, from those in the registrar's office to enrollment management to equity and inclusion offices to veterans' affairs offices to the developmental education classrooms to the peer tutoring centers and so many more.

According to Davis (2021), "we have in our power the ability to perform *the slow but necessary work* of turning visions into projects, values into practices, and strangers into neighbors. But only if we commit" (p. 19; emphasis mine).

As educators, we know that the work we do to improve higher education is, sometimes, "slow but necessary" and is oftentimes weighed down by bureaucracy, politics, or other frustrations completely unrelated to us or the students we serve. However, by making the commitment that you are making just by picking this journal up to read it, you are indicating your dedication to the field and to continuous improvement. Just because something makes slow progress does not mean that it will not happen. Slow and steady wins the race! Continue to be a light of progress on your campus and encourage your fellow student success professionals to join you in this important work.

The articles that follow give great insight into examining instructional models, exploring student experiences, partnering with different institutions, knocking down barriers, and embedding mindfulness. Share these articles with a colleague and discuss them together about how we might use the information gleaned to purposefully improve our practice and policies.

Meredith L. C. Sides, Ed.D.

President, National Organization for Student Success

Reference:

Davis, P. (2021). *Dedicated: The case for commitment in an age of infinite browsing*. Avid Reader Press.

**Math Developmental Models Examined: Pass Rate, Duration for Completion, Enrollment
Consistency and Racial Disparity**

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Abstract

Over the past 12 years, a large public research University in the southern part of the United States implemented three math developmental models consecutively. These developmental models all strive to equip developmental students with better math skills before they embark on college level credit bearing courses. With pre-requisite developmental models called into question by educators, the co-requisite developmental model has gained prominent support in recent years. This paper examined closely the effectiveness of these various models based on three quantifiable matrices: pass rate, duration for completion and enrollment consistency. Most importantly, the long existing racial disparities in developmental outcomes have also been thoroughly investigated and compared between developmental models based on data-driven analysis.

Introduction

A college education has become increasingly necessary to secure reliable middle-class employment (Stetser et al., 2014). For several historically disadvantaged racial groups, particularly African American and Hispanics, education is the primary means of status advancement (Bailey & Morest, 2006; Kerckhoff, 2001). However, the disparities in school readiness among America's children begin as early as kindergarten. Early learning disadvantages are likely to persist through their school years and into adulthood (García et al., 2015). With recent high school graduation rates at an all-time high of 80% (Stetser et al., 2014), a staggering 43% of those students who begin college do not earn a degree after six years (U.S. Department of Education, National Center for Education Statistics, 2010). Many of these students come to college underprepared, however it would be impractical to send an academically disadvantaged adult back to high school to acquire prerequisite skills. Alternatively, postsecondary remediation, commonly referred to as developmental education, serves the purpose of resolving deficiencies that obstruct access to postsecondary credentials (Peter Riley, 2010).

According to a comprehensive study by the Department of Education in 2006, 83% of 12th graders who took calculus in high school graduated college within 8 years, compared with only 40% of those who stopped at algebra 2 (Adelman et al., 2006). A previous study found that 27% of new entrants to college require at least one math developmental course to earn a Bachelor's of Arts degree (Livingston et al., 2003), however only less than 31% of students enrolled in math developmental course complete all of the recommended developmental sequence (Bailey, 2009).

In this study, three different developmental models (Model 1, Model 2, and Model 3) were studied closely to examine their effectiveness based on data gathered at a public research university in the South. At this university, students are placed into different levels of mathematics courses according to their college entrance and placement test scores, such as SAT or ACT. If meeting or

exceeding certain score cut offs, students are placed directly into gateway course such as college algebra (CA) or quantitative method reasoning (QMR), both of which are credit bearing college-level courses. If falling short of the cut offs, students are placed in developmental courses, either before they can start gateway courses or concurrently, depending on the developmental model.

Previous models, Model 1 and Model 2, placed students based on a prerequisite model. Model 1 required all developmental students to complete one or two prerequisite courses before they could enroll in a gateway course. Model 2 adopted an emporium style computer based modularized approach, first emerged and adopted at Virginia Tech (Twigg, 2011), where developmental students could work through pre-requisite course material at their own pace before starting a gateway course.

The current model, Model 3, allows developmental students whose test scores are close to the gateway math cut off to be placed into co-requisite courses. This allows these students to not only enroll in the gateway course with gateway students but also simultaneously enroll in a one-hour developmental course that's supplemental to the gateway course material. Under Model 3, developmental students whose test scores are lower are placed in a foundations course as a prerequisite to the gateway course.

To measure success through multiple matrices, developmental students' pass rates in gateway courses, total duration for completion, and enrollment consistency were investigated for each model. Further comparisons based on these three matrices were drawn between minority students and Caucasian students to further assess the effectiveness of developmental course on historically disadvantaged minority students. Based on rigorous quantitative analysis, this study uncovers the impact that this new developmental model has on fostering success among academically unprepared students at the college level and promoting racial equalities in an education setting.

Literature Review

Multiple studies echoed with the research findings by Complete College America that long developmental education course sequences are a barrier, not a bridge to college (Vandal & Complete College, 2014). The reasons are varied. Some believe that being placed in a developmental class, a type of prerequisite noncredit bearing course and being separated from their ‘more advanced’ peers induces a mindset of self-deficiency. This could convey stigma or negative expectations about a students’ capacity to learn math. If they internalize these expectations, it may tend to undermine their motivation to learn and hence their outcomes (Dweck, 2006; Oakes, 2005). Others believe this negative impact comes from low classroom peer skills, as teachers have been found to pitch the level, expectation, and pace of instruction to the median level of prior skills of the students in the classroom (Hallinan, 2000; Pallas et al., 1994). Therefore, being grouped with students who are less skilled reduces one’s exposure to more rigorous course content than being grouped with more skilled students. Some studies have also pointed out the between-term gap that, for some students, has served as an off-ramp from the math track by allowing them to simply not enroll in subsequent courses (Strother et al., 2019).

To prevent the loss of students during the sometimes long and stigmatizing prerequisite developmental classes, many institutions have moved to a co-requisite model (Rutschow et al., 2018). Unlike the pre-requisite model, the new corequisite courses are designed as a one-term offering. Students who would otherwise be placed in pre-requisite developmental classes can now take a credit bearing college level gateway course right from the start. Co-requisite models can be set up in different ways, but oftentimes students enroll in a developmental course the same semester as the college-level course. By enrolling in the developmental course during the same semester, this helps students grasp concepts that are necessary in understanding the material taught in the gateway course. Arguably, the co-requisite model could shorten the time it takes students to earn college-level math or statistics credit. As indicated in one study by Carnegie Math Pathways, 65.1% of 410 students from six colleges

who participated in new co-requisite offerings were successful in completing the courses in a single term (Stephens et al., 2019). By contrast, research has shown that only 6% of students who were placed in a traditional developmental math sequence achieve college-level math credit within a single year (Rutschow et al., 2018).

There has been overwhelming evidence to suggest that the corequisite model is more effective than the traditional developmental model in moving students through gateway courses (Rutschow et al., 2018; Texas Higher Education Coordinating, 2014; Vandal & Complete College, 2014) However, because past studies were carried out among various student cohorts and across a wide range of locations, it's difficult to control other possible contributing factors when studying the discrepancy of success among different developmental models. Most recently, The Carnegie Math Pathways study shows developmental success rates vary by institution and (within institutions that offered multiple sections) by section (Strother et al., 2019). Therefore, in order to validate prior research findings, it is vital that comparison between developmental models be made in a consistent educational setting with knowledge of students' demographic mix.

Also, prior studies often used the pass rate of developmental courses within a certain period as a singular measure of success (Strother et al., 2019; Vandal & Complete College, 2014). While pass rate is concise and easy to understand, it does not give enough attention to how well students transition from developmental courses to gateway courses. The duration of completion and enrollment consistency has long been overlooked to fully comprehend the effectiveness of various developmental models (Parsad et al., 2003).

Prior studies have also found that social-class disparities could affect people's access to and performance in professional education (García et al., 2015; Stephens et al., 2019). More specifically, math developmental success rates - the subject in which the greatest number of students require assistance - differ substantially by race (García et al., 2015; Peter Riley, 2010; Stetser et al., 2014).

Generally, racial groups that tend to be disadvantaged in math achievement, namely African Americans and Hispanics, also experience low rates of successful developmental (Peter Riley, 2010). However, it is unclear if racially disadvantaged groups are still left behind as developmental models have been modified over the years. This study draws comparison between students who identify as Caucasian and their peers. Overall, based on previous and emerging research developments in the domain of mathematics developmental education, this paper answers the following research questions:

How do different mathematics developmental models compare with regards to pass rates, duration for completion, and enrollment consistency?

Does the co-requisite model have any impact on narrowing the racial disparities among academically vulnerable students upon college entry?

Data Collection and Analysis

This study looks at data from a public research university in the southern part of the United States. It is ranked No. 1 in its state by U.S. News and World Report for social mobility, which measures a university's success in graduating economically disadvantaged students who are less likely to finish college (<https://www.usnews.com/best-colleges/rankings/national-universities/social-mobility>). At this institution, 47% of undergraduate students from the fall 2020 semester received Federal Pell Grant, a federal aid awarded to undergraduate students with exceptional financial need, and 48% of undergraduates are first-generation students. The student body is one of the most diverse of surrounding colleges and institutions. More than half of the students are over the age of traditional college students of 25, with an overall average age of 27.

For this study, data spanned the period from fall 2009 to spring 2020 and contained information on student demographic characteristics and academic performances. From fall 2009 to spring 2020, a total of 16,254 students enrolled in at least one developmental or gateway math courses. Of all those students, 6,932 (42.65%) were identified as needing developmental course, whom we call developmental students. Of all the developmental students, there were more female (61.66%) than male (38.3%), more over the age of 25 (68.64%) than traditional age 25 or younger (31.36%), and more minority (58.04%) than Caucasian (41.96%). Of all the minority developmental students, 2,646 (65.77%) were African American, 674 (16.75%) two or more races, 306 (7.61%) non-resident aliens, 235 (5.84%) Hispanic, 69 (1.72%) Asian, 64 (1.59%) unknown or refused to report, and 29 (0.72%) American Indian. See Table 1.

Table 1

Sociodemographic Characteristics of Students Studied 2009-2020

Gender	Frequency	Percent	
Female	4274	61.66%	
Male	2655	38.30%	
Unknown	3	0.04%	
Age	Frequency	Percent	
=<25	2174	31.36%	
>25	4758	68.64%	
Race or ethnicity	Frequency	Percent	
Caucasian	2909	41.96%	
Minority	4023	58.04%	
	American Indian	29	0.72%
	Asian	69	1.72%
	African American	2646	65.77%
	Hispanic	235	5.84%
	Non-Resident Alien	306	7.61%

	Two or More Races	674	16.75%
	Unknown or Refused to Report	64	1.59%

At this institution, three developmental models were implemented consecutively during the studied period.

The first model, Model 1, was in place from fall 2009 to summer 2012, and consists of a traditional developmental mathematics course sequence: Elementary Algebra for lower performing students and Intermediate Algebra for middle performing students as pre-requisites to the college-level gateway course.

The second model, Model 2, replaced Model 1 in fall 2012. It was developed and based on a new design, the emporium model, originated at Virginia Tech (Twigg 2011). Called the Pre-Core program, all developmental mathematics students started in the course Pre-Core I. There were ten modules to complete to be eligible to enroll in College Algebra and eight modules to complete to be eligible to enroll in Quantitative and Mathematics Reasoning (QMR, a course designed for non-STEM majors). If students did not complete all required modules in Pre-Core I, they then enrolled in Pre-Core II, Pre-Core III, and Pre-Core IV sub sequentially until all modules were completed.

Lastly, the third model, Model 3, replaced Model 2 in summer 2016. It was designed based on the concept of co-requisite courses which have proven to be more effective in multiple studies (Strother et al., 2019; Texas Higher Education Coordinating, 2014; Vandal & Complete College, 2014). In this model, high needs students enroll in a Foundations course (either Foundations of College Algebra or Foundations of QMR, depending on the pathway - STEM or non-STEM), and middle needs students enroll in a pair of co-requisite courses (either co-requisite College Algebra and Lab or co-requisite QMR and Lab, again, depending on pathway). During the lab hour, students work in either small groups or one-on-one and spend more time on topics from the gateway course. The co-requisite courses allow developmental students to enroll directly in the college-level course during the same

semester as a one-hour developmental course, thus bypassing standalone developmental course. Students who first enroll in the Foundations course must pass with a C or higher before enrolling in the gateway course.

In summary, both Model 1 and Model 2 require developmental students to pass noncredit developmental courses before they are allowed to attempt credit-bearing college-level gateway courses. In Model 1 students must finish either one or two developmental courses, depending on their placement score, whereas in Model 2, there is more flexibility since it's module-based and in theory enables students to manage their own progress. Unlike the previous two models, Model 3 adopted a partially co-requisite model where developmental students who tested within a certain range are allowed to take college-level courses directly as long as they enroll in a one-hour developmental lab at the same time. Developmental students who test below this cutoff must finish a prerequisite foundations course before they can attempt the college-level course. It is important to note that even though different ways to subdivide developmental students were utilized under various models, the cut-off between gateway students and developmental students have been consistent throughout the years. See Table 2. This way, we ensured that prior skills and abilities of developmental students were not to influence the outcome of each model by design.

Table 2

Summaries of remediation models and gateway course

Model	Semesters Implemented	Placement score (ACT)	Course Type	Course Registration Number	Course Sequence	Model Structure	N
1	2009 Fall - 2012 Summer	ACT less than 19	Developmental	300	Elementary Algebra	Need to pass intermediate algebra before enrolling in gateway courses	2666
		ACT 19-20	Developmental	301	Intermediate Algebra		

2	2012 Fall - 2016 Spring	ACT less than 21	Developm ental	0321, 0322, 0323, 0324	8 Pre-core modules for QMR or 10 pre-core modules for college algebra	Need to finish 8 or 10 pre-core modules before enrolling in gateway courses	2092
3	2016 Summer - 2020 Spring	0332 ACT less than 18	Developm ental	0332 or 0330 dependent on pathway	Foundation	Need to pass foundatio ns course before enrolling in gateway course	2174
		0330 ACT less than 16					
		1302/0102 ACT 18-20	Developm ental & gateway	1302 & 0102 or 1321 & 0121 dependent on pathway	Co-requisite course	Need to take lab with co- requisite gateway courses	
		1321/0121 ACT 16-17					
Gateway	2009 Fall - 2020 Spring	1302 ACT 21+	Gateway	1302 or 1321	Gateway course	Direct enrollm ent in gateway courses	9322
		1321 ACT 18+					

Methodology

Given the end goal of math developmental course is to help students enroll in and complete gateway courses, we gathered data on gateway course pass rates of developmental students. We then compared the pass rate under three developmental models to identify any differences.

Second, this study calculated the total duration for a student to complete both his developmental and gateway courses. It was calculated as the number of semesters elapsed from start to finish. For example, if a student started taking their developmental course in spring 2018 and ended up completing their gateway course in fall 2019, the total duration would be 6 semesters, including summer.

Third, this study calculated enrollment consistency to reveal how consistently a student stayed enrolled before they passed a gateway course. It was calculated as the number of semesters during which a student stayed enrolled divided by the number of semesters elapsed from start to finish. Taking from the previous example where a student had a total duration of 4 semesters to complete, if they stayed enrolled for 3 out of the 4 semesters, the enrollment consistency would be $\frac{3}{4}=0.75$.

Descriptive statistics was utilized in this study. The mean and standard deviation of duration and enrollment consistency under each developmental model was calculated. Using duration as the response variable, developmental model as independent variable, and comparing Model 1 and Model 2 with Model 3, a generalized linear model was used to identify any significant differences in duration between different developmental models. The same method was applied for enrollment consistency. Model 1 and Model 2 were compared with Model 3. Model 3 incorporated co-requisition developmental course by dividing developmental students into two groups, foundation students and corequisite students. Corequisite students are allowed to take a gateway course with their more advanced peers, and we are interested in finding out whether this improves the success of developmental students in college credit math courses.

Lastly, we compared the performance of Caucasian students and their minority peers under different developmental models. Pass rates of these two groups of students were compared using Chi-Square tests for each of the developmental models. T-test was also performed to make comparison of duration and enrollment consistency between these two groups under various developmental models. Significance level is set at 0.01.

Results

Pass rate of Gateway Course

Under Model 1, the percentage of developmental students eventually passing a gateway course is 26.18% (N=698). It is 27.06% (N=703) under Model 2 and 55.06% (N=1197) under Model 3. Within Model 3, among all the foundation students, 28.26% (N=217) of them passed gateway course. By contrast, among all the co-requisite students under Model 3, 69.70% (N=980) passed gateway course. See Table 3. While there is little difference in pass rates between Model 1 and Model 2, Model 3 doubled the pass rate for developmental students compared with the former two models. See Table 3.

Table 3

Gateway Course Pass Rate Comparison: By Remediation Model Types

Model	1	2	3	
			Foundation	Co-requisite
Pass rate	26.18%	27.06%	28.26%	69.70%
			55.06%	

Total duration

Among developmental students who have passed gateway courses, there is little difference between the total duration of Model 1 (N=887, Mean=5.6009, STD= 5.5873) and that of Model 2 (N=888, Mean=5.6171, STD =5.1028). However, Model 3 greatly shortens the total duration (N=1696, Mean=3.1197, STD=2.3615) and is significantly different from Model 1 and Model 2 (F=154.79, $p < 0.0001$). See Table 4.

Table 4

Total Duration of Completing Final Gateway Course Comparison: By Model Types

STARTMODEL	N	TDUR		F Value	Pr > F
		Mean	Std Dev		
1	887	5.60090192	5.58726374		
2	888	5.61711712	5.10275693		
3	1696	3.1196934	2.3615282		
Contrast	DF	Contrast SS	Mean Square		
compare control with 1,2	1	5374.395557	5374.395557	309.57	<.0001

Enrollment consistency

Enrollment consistency is similar between Model 1 (N=887, Mean=0.8305, STD=0.2522) and Model 2 (N=888, Mean=0.8233, STD=0.2390) for developmental students who have passed gateway courses. However, Model 3 greatly increases the enrollment consistency (N=1696, Mean=0.9409, STD=0.1651) and is significantly different from Model 1 and Model 2 (F=254.83, p<0.0001). See Table 5.

Table 5

Enrollment Consistency Comparison: By Model Types

STARTMODEL	N	EC		F Value	Pr > F
		Mean	Std Dev		
1	887	0.83049761	0.25218285		
2	888	0.82333636	0.23904776		
3	1696	0.94085395	0.16508199		
Contrast	DF	Contrast SS	Mean Square		
compare control with 1,2	1	11.25897452	11.25897452	254.83	<.0001

Comparison by race or ethnicity

Pass rate

The pass rates of Caucasian students are consistently higher than their minority peers throughout the three developmental models. The pass rate for Caucasian students is 30.75% compared with 22.37% for minority students ($\chi^2(1, N = 2666) = 24.0366, p < 0.0001$) under Model 1. It is 39.74% for Caucasian students compared with 29.34% for minority students ($\chi^2(1, N = 2092) = 24.5725, p < 0.0001$) under Model 2. Under Model 3, pass rate is 62.05% for Caucasian students and 50.67% for minority students ($\chi^2(1, N = 2174) = 26.9475, p < 0.0001$). See Table 6.

Table 6

Pass Rate Comparison: By Model Types and Between Races

Model	Pass Rate		Chi-Square p-value
1	Caucasian	Minority	<0.0001
	30.75	22.37	
2	Caucasian	Minority	<0.0001
	39.74	29.34	
3	Caucasian	Minority	<0.0001
	62.05	50.67	

Total duration

T-test reveals that differences in total duration between Caucasian students and minority students are not statistically significant under Model 1, 2 or 3. However, it is noticeable that on average Caucasian students experienced shorter duration (N=470, Mean=5.366, STD=5.1405) than their minority peers (N=417, Mean=5.8657, STD=6.0468) under Model 1 ($p=0.1838$). It is also the case

under Model 2 ($p=0.1247$) where Caucasian students ($N=409$, $Mean=5.3325$, $STD=5.1069$) complete their developmental and gateway course faster than their minority peers ($N=479$, $Mean=5.8601$, $STD=5.092$). Then, this trend reversed. Caucasian students' total duration ($N=671$, $Mean=3.2042$, $STD=2.6517$) exceeded their minority peers ($N=1025$, $Mean=3.0644$, $STD=2.1501$) under Model 3 ($p=0.2334$). See Table 7.

Table 7

Total Duration Comparison: By Models and Races

Model	Race or Ethnicity	N	Mean	Std Dev	Std Err	Minimum	Maximum	T-test p-value
1	MINORITY	417	5.8657	6.0468	0.2961	2	36	0.1838
	CAUCASIAN	470	5.366	5.1405	0.2371	2	35	
2	MINORITY	479	5.8601	5.092	0.2327	2	40	0.1247
	CAUCASIAN	409	5.3325	5.1069	0.2525	2	47	
3	MINORITY	1025	3.0644	2.1501	0.0672	2	26	0.2334
	CAUCASIAN	671	3.2042	2.6517	0.1024	2	25	

Enrollment consistency

No statistically significant difference in enrollment consistency has been found between Caucasian students and their minority peers using t-test under Model 1, 2 or 3. However, on average, Caucasian students are more consistently enrolled ($N=470$, $Mean=0.8313$, $STD=0.2598$) than their minority peers ($N=417$, $Mean=0.8296$, $STD=0.2436$) under Model 1 ($p=0.9226$). So is the case under Model 2 ($p=0.1027$) where Caucasian students have a higher enrollment consistency ($N=409$, $Mean=0.8375$, $STD=0.2365$) than their minority peers ($N=479$, $Mean=0.8112$, $STD=0.2408$). It is the opposite under Model 3 ($p=0.2384$) where Caucasian students experienced lower enrollment consistency ($N=671$, $Mean=0.935$, $STD=0.1853$) than their minority peers ($N=1025$, $Mean=0.9447$, $STD=0.1503$). See Table 8.

Table 8

Enrollment Consistency Comparison: By Models and Races

Model	Race or Ethnicity	N	Mean	Std Dev	Std Err	Minimum	Maximum	T-test p-value
1	MINORITY	417	0.8296	0.2436	0.0119	0.12	1.5	0.9226
	WHITE	470	0.8313	0.2598	0.012	0.1154	1.5	
2	MINORITY	479	0.8112	0.2408	0.011	0.1429	1	0.1027
	WHITE	409	0.8375	0.2365	0.0117	0.1277	1	
3	MINORITY	1025	0.9447	0.1503	0.0047	0.1154	1.5	0.2384
	WHITE	671	0.935	0.1853	0.00716	0.15	1.5	

Discussion

Our study examined differences in developmental outcomes under three distinct models. The overall outcome of developmental students from developmental Model 3 is better than those from Model 1 and 2. They are more likely to eventually pass a college-level gateway course while spending shorter time doing so. They also experience fewer enrollment gaps during the period of math developmental and gateway courses, as shown by their higher enrollment consistency.

There is reasonable basis to believe that students’ superior growth stems from the effectiveness of the Model 3 itself, rather than their prior skills or abilities. Students with ACT score higher than 21 were consistently placed into gateway groups and were not included in any developmental classes. This has been the case throughout the study period from year 2009 to 2020, and thus it is consistent under Model 1, 2 and 3. There has been no report on major shift in the selection criteria during admission, so it is safe to assume that the overall student body had similar prior skills. Given that the placement process has been objective and consistent as mentioned before, developmental students under Model 3 have had the same starting point as those under Model 1 or 2, to the best of our ability to measure prior skills.

Several factors might have played into Model 3's better outcome. One possible contributing factor to Model 3's success is that it eliminated the gap between enrolling in developmental courses and gateway courses by offering co-requisite courses. As one study has pointed out, many students may successfully complete their developmental education courses and never even enroll in the gateway courses (Vandal & Complete College, 2014). Closing this gap not only helped to improve success rates, but also shortened the time it takes to complete a credit-bearing college-level gateway course. As is shown in Table 3, total duration for completing a gateway course is 3.11 semesters for a developmental student under Model 3. It is a little more than a half of the average time it took Model 1 (5.60 semesters) or Model 2 (5.62 semesters) students. Similarly, enrollment consistency among developmental students improved substantially from 0.83 under Model 1 and 0.82 under Model 2 to 0.94 under Model 3. A shorter duration and more consistent enrollment in turn increase likelihood of successful completion (Vandal & Complete College, 2014) and hence creates a virtuous circle for the co-requisite model to produce welcoming results.

There's also been research showing that not only is there a disproportionately higher need for developmental course among African American and Hispanic students, but they do not benefit as much from developmental course as do Caucasian students (Peter Riley, 2010). As another study pointed out, race or ethnicity by itself does not induce disadvantages in education. Rather, social class is the single most influential factor on students' readiness to learn. Race and ethnicity are usually associated with students' social economic class and compound the disadvantages associated with low social class (García et al., 2015).

It is therefore crucial to break the vicious cycle for minority students so that they can truly reap the benefit of developmental course by completing their bachelor's degree and gaining access to middle class employment. The faster they can move through college, the less they must spend on college and the more money they can make through working. It is therefore promising to see that Model 3 reversed the trend in Model 1 and 2 where minority students had lower success rates, longer

duration for completion and lower enrollment consistency on average. This is particularly important because a door of opportunity to close the racial disparity in social economics status is thus created at the postsecondary education level, with its impact leveraging far into one's later life.

As noted by prior studies, differences in structural resources and cultural barriers experienced by minority students could contribute to social-class disparities in U.S. higher education institutions, undermining these students' opportunity to succeed (Stephens et al., 2019). Arguably, by situating math content in context that are relevant to students' lives, we can increase engagement for students from disadvantaged social backgrounds (Texas Higher Education Coordinating, 2014). For example, educators can contextualize math content in topics relating to personal finance, social justice, or immigration policy to further encourage participation from a diverse background of students.

Conclusion

Results have shown that compared with prior models, developmental Model 3 dramatically increased developmental students' pass rates in gateway math courses. It also shortened the duration for which developmental students complete their gateway math courses and allowed for more consistent enrollment. Furthermore, this study has shown that minority students reaped greater benefit from developmental Model 3, as their gateway course pass rate improved faster than their Caucasian counterparts.

Limitations

This study collected data from fall 2009 to spring 2020. These cut-off dates meant some earlier students might have taken longer to complete their developmental and gateway courses under Model 1 or Model 2. By contrast more recent students, mostly likely those enrolled under Model 3, would have been able to complete their courses if allowed more time in our study. The likely effect of this scenario is that the total duration of completion under Model 1 and Model 2 might be longer and pass

rate under Model 3 might be even higher if we were to extend our studied period. If this is the case, our results showing superior performance of Model 3 would be more amplified.

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**LIFT EVERY VOICE AND SING: A CASE STUDY EXAMINING THE EARLY
COLLEGE HIGH SCHOOL EXPERIENCES OF FIRST-GENERATION AND
SECOND-GENERATION AFRICAN AMERICAN ALUMNI**

Xavier Q. Brown, Ed.D.

ABSTRACT

This manuscript will review the findings of a qualitative case study, which examined the perspectives of first-generation and second-generation African American alumni who graduated from an early college high school in Dover, Delaware. Early college high schools were developed to create tuition-free postsecondary education attainable for students who are underrepresented while attending high school with the premise that students will continue to pursue a collegiate career. Further, this manuscript will provide readers with the perspective of first and second generation African American alumni pertaining to the role and influence of their early college high school, experiences (*challenges and accomplishments*) of navigating secondary and postsecondary education concurrently attaining a high school diploma and earning college credits, student achievement, and factors that contributed to developing confidence, motivation, ambition, and a thirst to continue pursuing postsecondary education. Social capital theory will be leveraged and unpacked with an emphasis on understanding the significance of social relationships and resources that are present at the secondary and postsecondary levels of education in addition to resources that were absent. Various forms of support that were identified within this study will be highlighted; those that helped and hindered alumni in reaching milestones and goals, as well as key differences that were identified between the perspectives of first-generation and second-generation African American alumni.

Keywords: African American, First Generation, Second Generation, Early College

BACKGROUND

The Civil Rights Movement played a significant role in promoting equality in the United States of America, which was enacted due to the unequal treatment of African Americans post-slavery. The movement sought to ensure social justice by obtaining equal rights under the law during the 1950s and 1960s. Equal education was a primary area of focus and a major goal of the Civil Rights Movement. In 1974, the Equal Educational Opportunities Act was passed, ruling that all students had the right to equal educational opportunities extending to post-secondary education (U.S. Department of Education, 1974).

The Equal Educational Opportunities Act set the tone in post-civil rights America that all students, despite race, ethnicity, gender, and socio-economic status, could have the opportunity to improve their lives via social capital through educational advancement (Freeman, 2015). However, as public schools across the United States were desegregated various gaps began to form, which led to disparities in the educational achievement of students from various races, ethnicities, and socio-economic statuses. The largest gap was illustrated between low-income African Americans and their more affluent Caucasian peers. Hence, the educational, opportunity, and achievement gaps have plagued low-income African American students into the 21st century and have demonstrated lasting effects beyond the classroom including a lack of resources, educational support, living conditions, job selection, and health care, leading to conditions that can trap generations of people (Freeman, 2015).

STATEMENT OF THE PROBLEM

Many first-generation and second-generation African American students who attend schools in urban areas are impacted by opportunity and achievement gaps (Bowman et al., 2018). Opportunity and achievement gaps are rooted in past and present economic and social conditions, where the adverse impact of prejudice and discrimination remain a barrier to learning. Inequalities have also surfaced in almost every other aspect of African American lives, including areas like housing and career advancement, amongst many others. Hence, many African American students' exposure and access to post-secondary education are oftentimes limited, under-resourced, and under-supported (Anderson, 2018).

Opportunity and achievement gaps have contributed to low rates of academic achievement, graduation, and enrollment into post-secondary education for African American students and students of color who are often labeled as low-income.

In the *Economic Payoff for Closing College Readiness & Completion Gaps*, Vargas (2013) noted:

Nationally, only 65 percent of low-income students who start eighth grade complete high school, compared with 87 percent of their higher-income peers. The gaps are even more significant when it comes to college completion. Nationally, only 17 percent of low-income students who start high school ever complete an Associate or bachelor's degree at a public institution of higher education. This compares with 57 percent of their higher-income peers. (p. 6)

Herein lies data that illustrates disparities within diploma and degree completion between low-income students who are frequently represented as African American students or students of color compared to their more affluent peers who are often represented as Caucasian students.

PURPOSE

The purpose of this study is to identify and explore the support and supporters that first-generation and second-generation African American alumni of an Early College High School expressed to be the most meaningful contributors to persisting through diploma and degree completion and continuing their postsecondary education.

SIGNIFICANCE OF STUDY

Conducting this research study was significant because there is not a substantial amount of research that provides a voice to first-generation and second-generation African Americans, who are oftentimes categorized as low-income students. Considering this population of students are representative of who Early College High Schools were designed to support and serve, I believed that it is essential to obtain qualitative experiential feedback. Obtaining feedback provided a wealth of information allowing researchers to take a deeper dive into understanding the Early College High School experience from the perspective of alumni who completed their high school requirements while earning college credits and continued their postsecondary education.

The research study also analyzed and evaluated the similarities and differences between first-generation and second-generation African American alumni of the Early College High School. Oftentimes, students can be grouped into categories and tokenized to speak for the masses, which illustrates the importance of understanding the two populations of research participants. This research study sought to identify if there were any distinguishing factors for both populations of research participants, despite the fact that they share race and culture as African American students. This study hypothesized that there will be significant differences.

OPERATIONAL DEFINITIONS

African American – Refers to ethnic groups of students with total or partial ancestry from any of the racial groups of Africa who were descendants of enslaved black people.

Alumnus/Alumna – Refers to former students at Early College High Schools who have conferred a high school diploma and an associate degree, concurrently.

Early College High Schools (ECHS) – An innovative way for high school students to earn both a high school diploma and a two-year associate degree (or up to two years' credit toward a bachelor's degree) saving the student both time and money.

First-Generation College Student – Learners who originate from a family where neither of their parents or guardians have obtained a bachelor's degree.

Second-Generation College Student – Learners who originate from a family where at least one of their parents or guardians have obtained a bachelor's degree.

Support for Students – Refers to services including prevention, assistance, transition, and follow-up services for students. Student support services professionals provide direct services for all students, especially those who are experiencing problems that create barriers to access and achievement (counseling, advising, advocacy, tutoring, etc.).

Academic Resources – Refers to a variety of campus-based academic support programs and services, employed to assist students to learn more in less time with greater ease and confidence.

LITERATURE REVIEW

Educational Models that Address African American Achievement & Opportunity Gaps

Over the past decade, early colleges have produced dramatic results beating typical outcomes for low-income youth, first-generation collegegoers, and students of color they were designed to serve (Webb et al., 2014). Yielding such positive results could catalyze the redesign of many public and charter high schools. Vargas (2019) said:

On key measures of student success, early college graduates consistently outperform their peers who did not attend early college. Among the impressive findings across a variety of studies, early college graduates: graduate high school at higher rates, complete both associate's and bachelor's degrees at higher rates, and are more likely to be employed full time 10 years after entering high school. (p. 4)

About 30% of early college students have earned an associate degree or other post-secondary credentials by the time they graduate high school, and many will continue that post-secondary education (Mickens Jr., 2014). In comparison, it was found that 90% of early college students earned a diploma compared to 78% of students nationally, 94% of early college students earn college credit in high school compared to 10% of students nationally, 71% of early college graduates enroll in college the semester following graduation compared to 54% of low-income graduates nationally, and 86% of early college graduates who enroll in college persist for a second year compared to 72% of college students nationally (Webb et al., 2014).

The statistics of student achievement are dramatic but necessary in the world we live in today. Now more than ever, earning a post-secondary credential is a prerequisite for economic well-being, educational and professional advancement. Our economy and democracy depend upon well-educated citizenry and millions of young people have and continue to graduate high

school unprepared for college, career success, and to become self-sufficient adults. To be exact, only 21% of entering U.S high school students graduate on time, enter college immediately, and earn a post-secondary degree within 150% of the standard completion time (Webb et al., 2014). This data represents students who fall through the cracks of the American public school system, where about 73% are students of color, 61% are from low-income families, and 56% are the first in their families to attend college (Webb et al., 2014). Hence, Early College High Schools benefit students by supporting them to overcome the consistent constraints of education, lack of preparation, and opportunity that students face year after year in the United States of America.

Opportunities have been available for a long time in the form of dual and concurrent enrollment, advanced placement (AP), and international baccalaureate (IB) courses. These opportunities are typically extended to the most academically advanced students—those who would have completed college in any case (Barnett, 2018). Hence, dual enrollment holds the potential to offer an onramp to post-secondary success for many students, but it is most resourceful if opportunities were presented and extended to underserved students. The onramp to post-secondary success is depicted as Morrison (2008) estimated that participation in dual enrollment increases the odds of attaining an associate degree by 61%.

Lastly, Fink et al. (2017) suggests “if colleges were more proactive in working with their high school partners to reach out to their dual enrollment students and advise them on the educational opportunities and potential cost savings that community colleges afford, they would thereby be able to increase the yield of their dual enrollment students who go on to enroll at their institutions after high school” (p. 25). These recommendations can significantly increase postsecondary opportunities for first-generation and second-generation African American students.

THEORETICAL FRAMEWORK

Social capital theory has been utilized within other studies to highlight the various ways that families, friends, and social networks support students' college-going efforts. In a study that evaluated family influence on the college-going process for black and Latino high school boys, it was found that familial capital equipped students of color with knowledge, information, inspiration, and resources that were extended through personal lessons, experiences, beliefs, and values of securing postsecondary educational attainment (Carey, 2016). When it comes to postsecondary educational attainment, social capital can be useful in so many ways.

Access to family members, friends, or a network of people who are readily available to share their experiences and to provide guidance and support can cultivate collegiate aspirations, confidence, motivation, and a strong value system for pursuing higher education. Early College High Schools possess a unique opportunity to provide a system of support through structure and application of social capital within their model and college-going culture by providing intentional access, exposure, and opportunity within postsecondary education.

METHODOLOGY

I went through the Institutional Review Board (IRB) process following the recruitment of participants via leveraging my relationship with the Early College High School's administration/leadership team, obtaining nominations, and making outreach to their alumni listserv. I contacted an equal number of men and women, but many men did not respond. For those who agreed to be participants, I requested all nominees to complete a survey, which sought information regarding demographics, enrollment, and experience within Early College High

Schools, and interest in being interviewed for this research study. This survey allowed me to ensure the nominees met the criteria of the research study. Once the survey results were completed, I reviewed and confirmed the eligibility of all research participants and created a pool of verified potential participants based on the eligibility requirements. Once the pool of verified potential participants were identified, I made contact via email to further explain the study's purpose and began the selection process. For those who agreed to participate, I requested to interview them and scheduled a time to connect via Zoom due to the COVID-19 global pandemic safety precautions.

I conducted a semi-structured interview with a minimum of 13 participants for 40 minutes each. Each interview consisted of the same questions to ensure continuity and to reduce experimenter bias. The interview questions consisted of open-ended questions relating to their interest in attending an Early College High School, the experiences and support that were most meaningful, and what supporters inspired, motivated, and helped them to graduate and continue their post-secondary education. One-on-one interviews were conducted digitally via Zoom. For all interviews, consent was obtained both orally and in writing. Audio of the interviews was also recorded upon receiving the participant's consent. To protect the anonymity of the participants and safeguard the data collected, each participant's identity was kept confidential, and all responses remained anonymous with the use of pseudonyms.

During the interviews, I asked clarifying questions to ensure that I had a true understanding of the participants' responses, and I took detailed notes. After each interview, I completed a transcription adding observational memos. A transcript of each interview was shared with each participant, who I asked to review and offer any corrections or clarifications.

Once each participant confirmed the accuracy of transcripts, I requested edits or clarifications that the participants wanted to include, to ensure accuracy and intention on behalf of the participants.

DATA/INFORMATION ANALYSIS

I transcribed and coded the participants' responses to each interview question. The transcripts were coded using initial coding to identify themes, with a focus on identifying information relevant to the four areas related to the research questions: (1) student supports; (2) academic achievement; (3) persistence through diploma and degree completion; and (4) continued post-secondary education. Following the information gathering and initial analysis, the information was further analyzed using axial coding. Following axial coding, I used causation coding to uncover emerging storylines related to the research questions. Multiple methods of information collection and analysis allowed me to saturate categories and triangulate data, permitting me to verify if the results were reliable and valid and thus relevant beyond this study. Based on the coding process, four themes were identified that answer all three research questions of this study. The identified themes are: (1) early access and exposure to university life, (2) family support and guidance, (3) social integration, and (4) early academic involvement.

RESEARCH DESIGN

This research study followed the tradition of a qualitative, case study design. A qualitative study was appropriate because the research questions of this study were tailored to extract human perspective via the experiences that first-generation and second-generation African American alumni expressed to have been meaningful within their educational journey of attending an Early College High School. Within this experience, one could imagine the thoughts, feelings, memories, ideas, and emotions that can only be prescribed in a social context. Hence,

the research questions of this study sought to uncover a rich understanding of the research participants' experiences and perspectives. Leedy and Ormond (2016) noted, "to answer some questions, we cannot skim across the surface. We must dig deep to get a complete understanding of the phenomenon we are studying" (p. 251).

Case study research was essential to this research study, as this particular Early College High School was also distinctively different from many other Early College High Schools. Those differences include school type, geographical location, admissions requirements for students, student population, and partnership with a four-year university. In addition to those attributes, the ECHS' post-secondary partner is a Historically Black College/University, which adds a layer of representation and connectedness to this study, as it focuses on the experience of first-generation and second-generation African Americans. I gained an in-depth understanding of how each experience influenced and impacted the first-generation African American alumni.

RESEARCH PARTICIPANTS

Thirteen research participants were selected using purposive sampling. This study required research accessible participants who met the selection requirements and who could provide relevant information about their experience within an Early College High School. The selection criteria required the research participants to have graduated from the Early College High School, identify as African American, be a first-generation or second-generation college student, and be currently enrolled in or have graduated from another College or University seeking a bachelor's, master's, or doctoral degree.

RESEARCH SITE

The Early College High School located in Dover, Delaware was the site for this research study. The Early College High School is a public charter school that originated in 2014, which grants all residents of Delaware eligibility to apply for admission. The school's primary focus is to make the dream of attending college attainable. In doing so, the Early College High School partners with a nearby four-year public Historically Black University to provide students an opportunity to earn 60 college credits for free while in high school.

The Early College High School's enrollment is roughly 320 students in total, where 80 students are admitted per year within each grade-level (class-size). Seventy eight percent (78%) of the students are reported to be African American/Black, while eleven percent (11%) are reported to be Caucasian/White, and two percent (2%) are reported to be bi-racial as members of two or more races. Sixty seven percent (67%) of the student population is reported to be female, while thirty three percent (33%) are reported to be male. The Early College High School has a 21:1 student-to-teacher ratio and a 212:1 student-to-counselor ratio. School begins at 9:00am and ends at 4:50pm, daily. Schooling is also offered year-round with an extended-day schedule due to block scheduling, buses and vans are provided to transport students, and there is no strict dress code.

FINDINGS

This research study had three research questions: (1) What role did the Early College High School (ECHS) play in supporting their persistence through diploma and degree completion and continued post-secondary education? (2) What, if any, types of support for students within Early College High Schools (ECHS) hindered or were ineffective in contributing

to persistence through diploma and degree completion and continued post-secondary education?

(3) What are the similarities and differences of first-generation and second-generation African American alumni of the Early College High School?

The sample used for this research study was drawn from an Early College High School that provides students with the opportunity to experience post-secondary education via taking college courses at no cost while being enrolled in high school. First-generation and second-generation African American alumni benefited from enrollment and attendance within an Early College High School. The themes that emerged from the semi-structured interviews were: (1) early access and exposure to university life, (2) family support and guidance, (3) an opportunity for social integration, and (4) an opportunity for early academic involvement. As a result, the participants gained first-hand experiences and exposure to the post-secondary world, reducing the opportunity gap. The participants were also developed and supported in a college-preparatory model which provided support to become college-ready, reducing the achievement gap. Lastly, the participants illustrated how valuable the previously mentioned support and supporters were to graduate, earn college credits, and continue their post-secondary education beyond the Early College High School.

Table 1

Identified Themes

Identified Themes				
Main Theme(s):	Sub-theme 1:	Sub-theme 2:	Sub-theme 3:	Sub-theme 4:
Early access & exposure to University Life	Location of the University's Campus	-	-	-
Family Support & Guidance	Representation	-	-	-

Social Integration	Peer Support	Mentorship	Lack of Holistic Support	-
Early Academic Involvement	Post-Secondary Selection	Feelings of Preparedness		

The following table illustrates the participants' communications related to their reasoning and motivations for deciding to attend the Early College High School.

Table 2

Participants' Communication

Code	Frequency (N = participants mentioned)
Mother's Influence	N=8
Father's Influence	N=1
MS Teacher's Recommendation	N=1
Access to College Courses	N=10
Opportunity to Graduate Early/Get Ahead	N=2
Career Interest (specific field of study)	N=1
Different than a traditional HS experience	N=1
Financial benefit of getting 2 years ahead	N=1

In addition to the lack of mental health support, other participants reported attrition of the class size (beginning with 80 students and ending with 60), being treated like children, the challenge of finding a balance between high school and college, attending ECHS while it was being developed, not having a high school space of their own, the disorganization and lack of structure of ECHS (while in its infancy stage), professors asking if students were ECHS students (due to the perception of age), the experience being too academic, not having a traditional high school

experience, and the newness of the school (see table below).

Table 3

Participants' Communication

Code	Frequency (N = participants mentioned)
Lack of Mental Health Support	N= 1
Attrition of Class Size (Retention)	N= 1
Treated like Children	N= 1
Finding Balance between HS & College	N= 1
Newness of the ECHS	N= 4
Lack of HS space on College Campus	N= 1
Disorganization/Lack of Structure	N= 3
Not having a traditional HS experience	N= 3
Professors' identification as ECHS student	N= 1
Experience being too Academic	N= 2

When asked, "what are your future career plans and how does post-secondary education fit into those plans?" all 13 research participants expressed interest in attending graduate school, as it relates to continuing their post-secondary education and the profession/career that they are interested in obtaining. Regarding continued post-secondary education, seven of thirteen (7/13) research participants indicated an interest in attending medical school. Four of thirteen (4/13) research participants indicated an interest in attending graduate school to earn a master's degree. Two of thirteen (2/13) research participants indicated an interest in obtaining a terminal degree in various fields. Also, regarding sought after professions, seven of thirteen (7/13) research participants identified the medical field. Of those seven, two participants indicated an interest in

becoming doctors; one participant indicated an interest in becoming a pediatrician, one participant indicated an interest in becoming a pharmacist, one participant indicated an interest in becoming a dentist, and two participants indicated interest in becoming physicians and/or physician’s assistants. Other research participants found interest in becoming an FBI field agent/profiler, public relations social media branding expert, journalist, human resource director, and electrical engineer/roboticist (see table below).

Table 4

Participants’ Career/Post-Secondary Education Plans

Research Participant (pseudonym)	Career/Post-secondary Education Plans
EA	Become a Doctor - Attend medical school.
HA	PR/Social Media Branding - Attend graduate school for Mass Communications.
AB	FBI Agent/Profiled - Attend graduate school to obtain a Master’s in Psychology.
TF	Become a Pediatrician - Attend medical school.
JG	Journalism/Teaching - Earn a Doctorate.
AG	Become a Doctor - Actively preparing for the MCAT.
TJM	Become a Pharmacist - Attend medical school and eventually earn a Doctorate.
DK	Become a Dentist - Attend medical school.
CM	Robotics - Attend medical school.
JM	Become a Human Resource Director - Obtain a Master’s in Business Administration.
DP	Become a Physician’s Assistant - Attend medical school.
MS	Become a Physician - Attend medical school.

MT	Child Psychologist - Attend graduate school.
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On average, second-generation participants earned 10 more college credits than their first-generation peers. Six of the thirteen (6/13) research participants identified as second-generation and accumulated a total of 338 college credits. When divided amongst the six second-generation participants, their average was 56 college credits. In comparison, seven of the 13 (7/13) research participants identified as first-generation participants and accumulated a total of 324 college credits. When divided amongst the seven first-generation participants, their average was 46 college credits. Collectively, all 13 research participants earned 662 college credits before graduating from high school within their respective classes. Five students earned enough college credits for the equivalent of an associate degree (61-65 college credits) (see table below).

Table 5
Participants' College Credits

Research Participant (pseudonym)	# Of College Credits
First Generation African American Alumni = 46 (AVG)	
HA	33
AB	42
TF	45
TJM	45
JM	38
MS	60
MT	61
Second Generation African American Alumni = 56 (AVG)	

EA	63
JG	36
AG	76
DK	67
CM	30
DP	66

INTERPRETATION OF FINDINGS

Based on the findings of this research study, I present five (5) propositions that speak to the significance of the findings of this research study. The propositions include Proposition 1: It is beneficial for all first-generation and second-generation African Americans to have early access and be exposed to post-secondary education with support; Proposition 2: It is advantageous that all first-generation and second-generation African American students experience university life on the campus of a college or university as soon as possible within their educational journey; Proposition 3: It is paramount that all first-generation and second-generation African American students experience the representation of African American leaders, principals, college presidents, teachers, professors, and people who hold the credentials, own businesses, and operate in careers that students are interested in obtaining; Proposition 4: It is recommended for all first-generation and second-generation African American students to have access to at least one source of social capital to support them in their post-secondary journey; and Proposition 5: It is instrumental that all Early College High Schools provide holistic support to first-generation and second-generation African American students as they navigate the demands of high school and college, concurrently.

Proposition 1: Early Access and Exposure

First-generation and second-generation African American students benefited from having access and exposure to post-secondary education, with supporters and tailored support. They also communicated the benefits of early access and exposure to post-secondary education and how other students could benefit as well. Being afforded the opportunity to take part in the full college experience early enabled students to understand the difference between teachers and professors and the high school and college classrooms. Being guided into post-secondary education with the support of family, peers in a cohort model, high school personnel, and collegiate personnel (who are understanding of their partnership to promote a college education to high-school-aged youth) supported the interest, achievement, and retention of first-generation and second-generation African American students, as it relates to early access and exposure.

Proposition 2: University Life

First-generation and second-generation African American students gained an advantage from experiencing university life on the campus of colleges and universities early. They also communicated the benefits of experiencing university life on the campus of colleges and universities early and how others could benefit as well. Being afforded the opportunity to experience university life at a college or university early enabled students to develop a sense of belonging and envision themselves within post-secondary education compared to taking a traditional college tour as a junior or senior in high school. Walking a college campus, viewing the architecture, eating in the college's dining commons, relaxing in the college's student lounge, observing how full-time college students prioritize their learning in libraries, watching collegiate students as they transition from classes without permission, and being ravished by the energy of

a college campus catalyzed first-generation and second-generation African American students to envision a future within post-secondary education, as it relates to university life.

Proposition 3: Representation

First-generation and second-generation African American students benefited from experiencing representation within their high school personnel and collegiate personnel, as it relates to shared race, culture, and gender identity. They also communicated the benefits of representation and how other students could benefit as well. Being afforded the opportunity to share race, culture, and/or gender identity with individuals who they look to for leadership provided a level of motivation that affirmed what was possible to achieve and accomplish. It also led to an improvement in students' self-image and self-esteem. Having access to people who they look like, experienced the same things they have experienced, and identified with the very same beliefs they identified with created a sense of hope. Hence, students were able to see themselves within their leaders through familiarity and history. Comparable to the concept that "seeing is believing", students can and will eventually grow to stand on the shoulders of these identified individuals one day because they will become what their represented leaders are or have been.

Proposition 4: Social Capital

First-generation and second-generation African American students benefited from having access to and receiving support from at least one source of social capital, as it relates to trusted individuals who have an interest and willingness in sharing their personal experiences within post-secondary education, making recommendations, and providing guidance and mentorship. They also communicated the benefits of having sources of social capital and how other students could benefit as well. Similar to the basic building blocks of construction when an architect

plans to erect a building, they furnish construction plans with detailed measurements and markings that guide carpenters, electricians, plumbers, and HVAC technicians for the intended outcome of the construction project. Social capital provides the same experience for students, as trusted individuals offer a blueprint of their personal experiences within post-secondary education while guiding students to take advantage of opportunities and avoid potential mistakes that they may have made, attributable to the concept of eliminating risk factors. Being afforded the opportunity to have sources of social capital allowed students to gain a sense of protection, as if they were not on their own within a new potentially intimidating experience, as it relates to the perception of post-secondary education.

Proposition 5: Holistic Support

First-generation and second-generation African American students did not benefit from having access to and receiving holistic support related to non-academic services that contribute to the whole student including mental health support, counseling, and life coaching. The lack of holistic support was perpetuated as a barrier, which seemed to be detrimental. They also communicated the potential benefits of having access to and receiving holistic support and how other students could benefit as well. Being afforded the basic necessities of support services that create and sustain safe schools could have improved the physical and psychological wellness of students and foster the improvement of problem-solving skills. All school systems and local educational agencies (LEAs) should provide a plethora of holistic support; especially, early college high schools as ECHS students experience greater levels of stress managing the demands of secondary and post-secondary education concurrently. Furthermore, students would be able to overcome barriers to education and within their personal lives by confiding in a trusted member of the school community (which serves as social capital) and have a better chance of graduating

with their high school diploma and college credits, as well as to continue their post-secondary education due to an improved quality of life.

CONCLUSION

As first-generation and second-generation African American alumni of Early College High Schools continue to navigate post-secondary spaces, they stand on the shoulders of their supporters. Supporters may have come as family members, members of their community, friends, school leaders, or educators (teachers and professors). However, they all had one thing in common: uplifting a young person to achieve. For the participants of this research study, early access and exposure to university life, family support and guidance, social integration, and early academic involvement helped them earn their high school diploma and college credits and continue their post-secondary education. These identified themes were not just in pursuit of their bachelor's degrees, but also their master's and aspiration to earn terminal degrees.

First-generation and second-generation African American students need to access and be exposed to post-secondary education with support; especially, in today's society. Education is a birthright, not a privilege, and due to the residual effects of the African American achievement gap, it is even more profound to collect on America's promise. Affirmative action may be needed to protect opportunities that are likely to be stripped if an affirmative obligation to act fairly does not exist. Americans often forget that as late as the 1960s, most African Americans amongst many other minoritized people were educated in segregated schools funded well below other schools serving their more affluent peers. African Americans were also excluded from post-secondary institutions entirely.

Based on this account of history, it is imperative for school districts, board members, school executives, school leaders, and educators to analyze their systems to ensure equity and

identify programs and resources that uplift African American students to gain access and exposure to post-secondary education. In addition to gaining access and exposure, all African American students need to be able to envision pathways to live out their interests and passions instead of making decisions out of fear to overcome living in poverty. Most importantly, it is vital for all African American students to experience the representation of African American leaders, principals, college presidents, teachers, professors, and people who hold the credentials, own businesses, and operate in the careers that they are interested in obtaining. This experience affirms that African Americans can achieve too, despite what history says. African Americans benefit from seeing others with whom they share race, culture, and gender identity with.

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Scheduled Self-Care: Embedding Mindfulness in College Classrooms for Wellbeing

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Abstract

As college students returned to in-person instruction after a period of remote learning resulting from COVID-19 restrictions, they struggled with new and increased stressors. This article highlights a specific component of scheduled self-care from an introductory college yoga course that was part of a larger mixed methods study comparing students' perceived stress scores to their qualitative reflective work, including daily practice journals. Students documented the fatigue and heaviness of stress at the beginning of class and then detailed contrasting feelings after brief, contemplative practices. The resulting primary themes included finding a sense of ease, supercharging, preparing to tackle the day, and holding opposing forces. The purpose of this manuscript is to offer key findings from the initial study to inform educational practices in support of students' mental health across the curriculum. Students may benefit from brief mindfulness practices embedded across their coursework for improved academic success and retention.

Faculty and students in higher education have been riding a roller coaster throughout the COVID-19 pandemic with many hard climbs followed by sudden plummets. They have experienced many shifts between in-person, remote, and hybrid education models; concerns around masking, vaccination, and illness; loss and grief; and exacerbation of pre-existing high stress and poor mental health (American College Health Association [ACHA], 2021, 2022; Galea et al., 2020; Reger et al., 2020; Vahraton et al., 2021). Individuals in higher education have struggled to find relief in a “new normal” with the return to campuses, but many have found this challenge overwhelming (ACHA, 2021). For many, the pre-pandemic routine of daily life has seemingly morphed into a never-ending roller coaster with surprises around every bend. When students are overwhelmed by extreme life stress, they cannot absorb new information or focus on learning (Leitch, 2017; Loizzo, 2018; Mahfouz et al., 2018; Taylor et al., 2020; van der Kolk, 2015). Additionally, young adults who struggle with poor mental health report less satisfaction with their higher education experiences and are less likely to persist toward degree completion (Lipson & Eisenberg, 2018).

Introduction

The American College Health Association (ACHA) has documented the trend of increasing mental health issues among college students for over a decade, and these concerns have risen exponentially as a result of the COVID-19 pandemic (2021, 2022). The Centers for Disease Control and Prevention (CDC) found that 1 in 4 young adults contemplated suicide during the early stages of the pandemic (Vahraton et al., 2021). While many people are struggling with collective trauma around the world, college students face additional fears and challenges during their transition to adulthood in very uncertain times (Galea et al., 2020; Lederer et al., 2021; Mahfouz et al., 2018; Reger et al., 2020; Vahraton et al., 2021). As their

mental health declines, students report being unmotivated and unable to function in daily life with subsequent diminished academic performance and retention (Lederer et al., 2021; Lipson & Eisenberg, 2018; Mahfouz et al., 2018).

Universities have attempted to provide a variety of resources to improve wellbeing and health, but many counseling centers have long waiting lists and cannot meet the overwhelming need (ACHA, 2021, 2022; Lederer et al., 2021). Additionally, students who face additional barriers related to identity and background may be reluctant to seek out traditional counseling services due to fear of stigma (Conley et al., 2015; Neumark-Sztainer et al., 2020). Student affairs offices have also created attractive co-curricular programs that frequently target wellbeing (ACHA, 2021; Conley et al., 2015). However, students may benefit more from universal approaches that are embedded into their course schedule through interdisciplinary curricula and thus are more accessible to those from underserved groups (Conley et al., 2015; Mahfouz et al., 2018).

College administrators have increased specific first-year education tracks where faculty can provide greater support to ease students' transitions into higher education, and these courses may incorporate a focus on maintaining physical and emotional health (Mahfouz et al., 2018). Additionally, faculty can implement evidence-based self-regulation strategies within many courses across the curriculum from a trauma-informed stance. Faculty beliefs and expectations play a critical role in student success and retention, and educators with an awareness of trauma are better equipped to support students (Carello & Butler, 2015; Lipton & Eisenberg, 2018)

While K-12 education systems have adopted trauma-informed teaching methods in recent years, higher education has lagged in implementing these principles even before the pandemic (Carello & Butler, 2015). In current times, faculty and students have all faced some level of

trauma, loss, and grief throughout the COVID-19 pandemic and continue to struggle with the aftermath of waning motivation and difficulty focusing on learning in the present. Educators may expand empathy and grace by increasing trauma awareness as a starting point. From there, they can incorporate self-regulation strategies to help students change their neurobiology to release stress and improve engagement. Researchers have identified that students who practice self-regulation strategies and mindfulness may have increased academic success and motivation and are more likely to persist in their education when they face challenges (Caruth, 2018; Mahfouz et al., 2018).

Literature on Contemplative Practices for Wellbeing

The COVID-19 pandemic abruptly changed people's lives around the world in early 2020, and everyone shifted into an emergency response mode with uncertainty around spreading illness and maintaining a sustainable economy. When the brain and nervous system are hit by a sudden shock, people lose the ability to learn new information until they can downregulate the body's "fight, flight, or freeze" response (Leitch, 2017; Loizzo, 2018; Taylor et al., 2020; van der Kolk, 2015). While people may understand on a superficial level that chronic and traumatic stress negatively impacts the brain and overall health, this comprehension of the problem is not enough (Leitch, 2017). In order to change the adverse responses to chronic and traumatic stress, individuals need to reverse the negative feedback loops between the brain and nervous system (Leitch, 2017; McEwen & Morrison, 2013; van der Kolk, 2015). When people use contemplative practices including mindfulness and meditation, they can change the neurobiological response to chronic and traumatic stress and thus improve cognitive function and attention to tasks (Leitch, 2017; McEwen & Morrison, 2013; van der Kolk, 2015).

Contemplative Practices

Contemplative practices are one set of tools that individuals can use to recognize the habits of the stressed brain to perseverate on negative thought patterns related to past and future worries (Leitch, 2017; McEwen & Morrison, 2013; van der Kolk, 2015). First, mindfulness practitioners learn to check in with their emotional state without judgment, and then use that awareness to connect with their breath and physical body in the present moment (Kabat-Zinn, 2003). As the mind wanders frequently, individuals have endless opportunities to notice thought patterns and return their focus to their breath. When breathing slows, the nervous system begins to downregulate and reverse the acute impacts of excess stress (Leitch, 2017; McEwen & Morrison, 2013; van der Kolk, 2015). Thus, practitioners can use self-regulation strategies rooted in mindfulness and embodied yoga practices to soften the traumatic response and improve psychological and physiological wellbeing.

For this study, contemplative practices included a broad definition of classical yoga that included meditation and mindfulness. The curriculum in the larger study applied yoga as an embodied practice of postures synchronized with conscious breathing and also taught students the background history and philosophy of yoga including moral and ethical precepts (Klein, 2021). When contemplative practices are offered as part of a college curriculum, students are freed from many common barriers to these activities including cost, access, and time in their schedules which offers additional support for their use as a front-line strategy to improve wellbeing (Conley et al., 2015; Neumark-Sztainer et al., 2020). Students from marginalized groups may benefit to a greater extent when contemplative practices are offered universally as they often face greater barriers to accessing mindfulness and yoga classes in the community (Conley et al., 2015; Neumark-Sztainer et al., 2020).

Mental Health Concerns

Although administrators have sought to prioritize mental health improvement, students continue to struggle with poor outcomes (ACHA, 2021, 2022). Poor mental health is ubiquitous, and universal education across the curriculum could increase awareness and prevention of adverse outcomes (ACHA, 2022; Conley et al., 2015). Conley et al. (2015) evaluated the efficacy of various mental health endeavors in higher education and noted the importance of supervised, skills-based programs. In their meta-analysis, Conley et al. found that informational education was not enough and that students needed in-person opportunities to practice strategies. The most effective programs incorporated relaxation techniques, and those that used mindfulness and/or meditation also had positive results. If these strategies are included in the general curriculum, more students may have access to one effective method for managing stress and increasing engagement in academics.

Additionally, yoga and mindfulness have increased in popularity across gender and racial identities, and universal programs have the potential to reach more young adults from marginalized groups that endure greater stress (Neumark-Sztainer et al., 2020). Individuals who experience discrimination may fear the stigma of traditional counseling services while also having a greater need for supportive resources (Conley et al., 2015; Lederer et al., 2021; Neumark-Sztainer et al., 2020). While many college students struggled during the COVID-19 pandemic with complex financial issues, food insecurity, and social isolation, students of color dealt with added disparities of increased illness, grief, loss, and discrimination that worsened mental health even more (Lederer et al., 2021). In Spring 2021, an estimated 60% of college students had difficulty accessing mental health services as a result of COVID-related issues

(Lederer et al., 2021). If faculty can devote a brief portion of class time to share self-care strategies, they may be able to reach at least some of the students who are often left behind.

Methods

In this article, I highlight one aspect of data analysis from a larger mixed methods study that used an explanatory sequential design to better understand student experiences concerning wellbeing during a semester-long yoga course. In the original study, I first collected a preliminary quantitative measure of students' perceived stress scores followed by a more in-depth qualitative analysis of their reflective assignments. The sample ($n = 121$) consisted of undergraduate students enrolled in eight sections of an introductory yoga course taught by three different faculty. In the second phase, I selected a smaller random stratified sample of students ($n = 27$) from different levels of perceived stress for the qualitative phase, in which I thematically coded their reflective assignments (initial reflection, daily practice journals, and final reflection). I organized these assignments as a separate point of triangulation in Dedoose and repeated cycles of coding using the constant comparative method (Miles et al., 2014, pp. 69-104). I applied process coding to capture the active transformation that students described as they wrote about their experiences of stress and specific ways that the course supported their wellbeing.

Results

In the overall study, college students ($n = 121$) enrolled in eight sections of Yoga 1 completed the Perceived Stress Scale (PSS) during weeks 3, 7, and 11, and reported statistically significant decreases in stress between weeks 3 and 11 according to repeated measures ANOVA analysis with a significant effect for time, Wilks' Lambda = .92, $F(2, 119) = 5.02$, $p < .01$ (Klein, 2021). While many researchers may look for these changes in perceived stress across

intervention time to evaluate the efficacy, I found the qualitative data more illustrative of how students improved their wellbeing during the course. The students' initial reflections provided insight into their rationale and goals for enrolling in an introductory yoga course, and their daily practice journals demonstrated how relatively short practices can dramatically shift emotions and reduce stress.

Initial Reflections: Why Students Chose Yoga

Students answered questions about their reasons for enrolling in the course, past yoga experiences, and goals for the semester in the initial reflection. A primary theme that emerged from these reflections was the need for a *scheduled time for self-care*, and the participants identified that the course offered an opportunity to focus on their inner needs without feelings of guilt (Klein, 2021). Two distinct sub-themes within the scheduled self-care arose where some students wrote that they wanted to use this time as an *escape* free from all demands, while other students planned to *actively learn coping skills* during class time that they could incorporate into daily life. While these sub-themes appear very different, both are key aspects of wellbeing.

Kaplan (1995) found that people were able to reduce stress and improve cognitive function when they had time in restorative environments, or places without any expectations, including nature and meditation rooms (von Lindern et al., 2017). Alternatively, students also chose a scholarly approach to build a toolbox of practices and techniques for daily stress, which could provide benefits beyond the class time and duration of the semester. Regardless of their initial reason for enrolling in yoga, students were able to access both a restorative environment and methods for improving wellbeing as evidenced in their daily practice journals (Klein, 2021).

Daily Practice Journals

At the beginning of each class, instructors guided students to describe how they were feeling in their practice journals and to set an intention for what they wanted to create in their yoga practice. For example, if students observed that they felt anxious and tired, they might set an intention to create balanced energy in their practice. At the end of each class, students took a moment to notice and document their emotions and general feelings again. While the basic prompt was the same across instructors and throughout the semester, the instructors added some variety by offering rating scales of energy and emotions using numbers, colors, etc. (Klein, 2021).

In their practice journals, the participants in the qualitative sample ($n = 27$) shared a pattern of contrasting emotional states that often began as stressed, tired, and fatigued, but elevated significantly after yoga practice (Klein, 2021). Data analysis of the journal entries in Dedoose elicited primary themes of *finding a sense of ease*, *feeling supercharged*, *preparing to tackle the day*, and *holding opposing forces*. Students' descriptions of *finding a sense of ease* were categorized into sub-themes of feeling *happy*, *lighter*, *recovered*, *balanced*, and *peaceful*, while the sub-themes identified under *feeling supercharged* included becoming *energized*, *awake*, *capable*, and *rejuvenated*.

Under the main theme of *preparing to tackle the day*, students frequently used very active and assertive language to illustrate their renewed sense of productivity. When students feel that life is more manageable and that they can complete the tasks necessary for success in daily college life, they become more engaged in academics and co-curricular activities (Lederer et al., 2021; Mahfouz et al., 2018). Students who are actively involved in college life are more likely to

see the value in higher education and persist when they face challenges (Lederer et al., 2021; Lipson & Eisenberg, 2018).

Participants did not always find complete relief during class, and the main theme of *holding opposing forces* captured the complexity of simultaneously feeling conflicting emotions (Klein, 2021). This ability to understand complex and paradoxical emotions is a precursor to self-regulation and demonstrates emotional maturity (Brown, 2021). Students' journal reflections provided a powerful rationale for incorporating brief, contemplative practices within courses across the curriculum in future research.

Practical Application of Contemplative Practices

Faculty may deem that they do not have enough time to check in with students and incorporate contemplative practice and ensure adequate academic instruction. However, students may better attend to lecture content and engage with course material once they are centered and focused in the moment (Bamber & Schneider, 2016, 2020; Conley et al., 2015; Leitch, 2017; Mahfouz et al., 2018; McEwen & Morrison, 2013; van der Kolk, 2015). There are many simple self-regulation strategies rooted in contemplative practices that faculty could periodically offer in the first 5-10 minutes of class time when they observe that students enter the room ungrounded and inattentive. Educators would first need to learn these methods which may enhance their own wellbeing, and some faculty may already have a reflective practice (Beer et al., 2015). A few of these easily implemented strategies include mindful moments, body scan, breathing, and finger marking meditation.

Mindful moments

According to the Cambridge Dictionary, mindfulness is “the practice of being aware of your body, mind, and feelings in the present moment, thought to create a feeling of calm” (n.d., n.p.). Jon Kabat-Zinn (2003), the most renowned researcher on this topic, defined mindfulness as “paying attention, on purpose, in the present moment, non-judgmentally” (p. 145). Thus, anyone can practice mindfulness, anywhere, and at any time. This activity of paying attention to one's own experience sounds too simple, and yet many individuals fail to observe most of what is happening at any given moment.

An instructor can increase engagement by first acknowledging this lack of awareness and then asking students to recognize what distractions, thoughts, and sensations are taking their focus. When people notice where their attention is, they may instinctively push back and self-criticize for being “bad” at mindfulness (Kabat-Zinn, 2003). For this reason, the instructor should guide students to just observe what is happening in the moment without judgment, and then offer examples of common sensations that may be present in the environment. Faculty might notice that the room is cold and add that to their guidance. Another example would be when the educator notices that most students are stressed before an exam, and they can acknowledge the potential feeling of being overwhelmed to normalize students' experiences. Mindful moments are one brief activity that gives students a few minutes to settle into the classroom after transitioning from another class or work and prepare for new mental content. This simple act of faculty acknowledging the moment in time and guiding students to do the same does not take long but can offer a pause in busy schedules. The mindful moment is a preliminary activity within the next strategy of the body scan.

Body scan

The body scan is another mindfulness practice that faculty can incorporate to help students bring their attention to their bodies in the classroom. Traditionally, the instructor guiding the body scan would first direct practitioners to turn inward by closing their eyes or looking down, and then calmly encourage attention through the body by naming body parts or referencing a specific area of the body (Kabat-Zinn, 2003). When instructors guide participants in the body scan, they often bring attention first to the feet connected to the floor and move up the body which can elicit more grounding into the current environment and into the physical body (Kabat-Zinn, 2003). As in mindful moments, faculty would also acknowledge that discomfort in the body is normal and that students do not need to resist negative feelings.

Faculty may want to introduce the body scan when they notice that students are particularly distracted, tired, or stressed or to prepare for new content or exams. Students can practice the body scan at any time, and after learning the sequence, guide themselves outside of the classroom. While practitioners can focus on the overall body or a specific area, like their breathing, conscious breathing is a mindfulness practice on its own.

Conscious Breathing

Since breathing is an automatic response, most people do not pay much attention to how they breathe and how the pattern of breath affects their nervous system. However, the simple fact that breath is always present and tied to the nervous system is what makes conscious breathing a powerful self-regulation tool (Leitch, 2017; Mahfouz et al., 2018; McEwen & Morrison, 2013; van der Kolk, 2015).

Many people are familiar with the common advice to take 10 deep breaths when angry or frustrated but may not find this helpful if they have not practiced connecting with their breath when they are in a more neutral emotional state (Hanh, 2002). While yoga practitioners may incorporate a variety of breathing techniques, people can find relief in the simple act of observing the breath in and out as an instructor guides them into finding their natural rhythm with occasional prompts to watch for mind wandering (Hanh, 2002; Kabat-Zinn, 2003; van der Kolk, 2015). The Buddhist monk, Thich Nhat Hanh (2002), offered the simple advice for practitioners to silently say “in” during the in breath, and “out” while exhaling to effectively engage in conscious breathing. As students become attuned to their breathing, they can downregulate their nervous system, releasing stress and increasing cognition for immediate and future benefit (Leitch, 2017; Mahfouz et al., 2018; McEwen & Morrison, 2013; van der Kolk, 2015).

Finger marking meditation

There are a multitude of meditation techniques that practitioners can use to improve attention and reduce stress, but newer practitioners may find the specific practice of finger marking meditation to be more tangible than counting the breath (Birch, 2000). To teach this finger marking technique, the faculty would first provide instructions for the practitioner to breathe naturally throughout the practice while using the tip of the thumb to mark each breath (in and out) on a corresponding segment of each of the four fingers for a total of 12 breaths as depicted in Figure 1. The instructor would then check in with students verbally (or using a bell or chime sound) periodically to alert students to any potential mind-wandering and to notice the distracted state and return to marking their breath. One round of 12 breaths takes approximately one minute, and additional rounds can be added as time permits (Birch, 2000).

Figure 1

Numeric Sequence for Marking Breath on Fingers



Note. From Hand Counting Meditation Practice by Jo Kirsch, 2011. Copyright 2011. Reprinted with permission. <https://www.heartofvillageyoga.com/hand-counting-meditation-practice/>

Limitations

This article offers a practical application for the scheduled self-care aspect of a larger mixed methods study on a comprehensive yoga curriculum. The original study showed promising results for improving college students' wellbeing with statistically significant reductions in perceived stress and qualitative confirmation that students learned how to better acknowledge and shift complex emotions [name deleted to protect the integrity of the review process]. The key finding from the larger study was that all students reported feelings of stress and overwhelm regardless of their actual perceived stress scores and that participants also shared how the brief yoga practices improved their wellbeing. While more research is needed to confirm the effectiveness of incorporating these specific practices into higher education classrooms, there

is enough preliminary support to expand self-regulation strategies rooted in contemplative practice and backed by neuroscience (Bamber & Schneider, 2016, 2020; Conley et al., 2015; Leitch, 2017; Mahfouz et al., 2018; McEwen & Morrison, 2013; van der Kolk, 2015).

Subsequently, when students improve their mental health and wellbeing, they are more likely to stay engaged and motivated with course content (Lederer et al., 2021; Mahfouz et al., 2018).

Recommendations

While faculty can easily implement these self-regulation strategies in any classroom, they should also practice these strategies on their own and have a baseline understanding of trauma-informed teaching (Beer et al., 2015; Villate, 2015). Administrators may want to offer contemplative practice training to faculty members given that the ACHA recommended this for their own wellness in a briefing on the Fall 2021 return to campus. When faculty know how the practices impact their own body and mind, they can share these with others more authentically (Beer et al., 2015). Contemplative practices and self-regulation strategies will likely fail to produce results if used to just “check a box” as a quick fix. Thus, only faculty who have found these simple strategies to be personally helpful should be encouraged to share these with students. The recommendation to include self-awareness and self-regulation exercises in the classroom is not suggested as a mandate but as a tool for faculty seeking additional ways to support students' wellbeing.

Additionally, incorporating universal self-care strategies into all coursework is not a replacement for comprehensive contemplative practice classes. College students need an array of potential solutions that offer scheduled time for self-care to connect mind and body to be actively engaged in their lives and studies as whole people.

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First Generation College Students' Self-Perceived Barriers

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Abstract

Research has confirmed a variety of challenges that first-generation college students (FGCS) face in their pursuit of a post-secondary degree (Stephens et al, 2012; Stebleton & Soria, 2012; Markowitz, 2017). This research study compared self-perceived barriers of predominately female first-generation college students (FGCS) to the perceptions of their non-FGCSs counterparts. To investigate the relationship between both groups of students, a campus-wide survey was administered to staff, faculty, and students at a small, women's liberal arts college. The survey collected a total of 184 responses (91.6% female) and included 130 open-ended responses. Data of the ranked barriers determined that tuition and the financial aid processes are the major challenges of FGCS. In addition, FGCSs reported barriers in greater numbers than non-FGCSs. The thematic analysis of the open-ended responses indicated the support necessary for the success of FGCSs at the postsecondary level.

Keywords: first-generation college students, barriers, women's college students, perceptions

Introduction

First-generation college students (FGCS) often lack the support and schema to navigate through collegiate endeavors. These students frequently face barriers from academic, social, and financial standpoints. Current statistics show that first-generation college students represent nearly one-third of the undergraduate population (U.S. Department of Education, 2008). When compared to their non-first-generation peers, FGCSs account for a unique demographic in many higher education settings. Without understanding the struggles these students sometimes face, it is unfair to propose that they perceive the college experience in the same way as their non-FGCS peers and succeed at the same rate. This study extends the findings of previous research and provides a current perspective on this growing population of learners.

Statement of the Research Problem

Post-secondary degrees are more necessary today. In a recent review of opportunity, awareness, and achievement gaps, Markowitz (2017) states, “merely being a first-generation college student is one of the most often cited predictors of higher education failure” (p. 5). Swecker et al. (2013) research has shown that FGCS struggle to assimilate causing them to withdraw within the first year. FGCSs are reported to have a greater risk of leaving higher education before degree completion due to layers of unpreparedness. When compared to their non-first-generation peers these students lack a “familiarity with the culture of higher education” (Pelco et al., 2014, p. 50). Similarly, after evaluating the perceptions of first-generation female college students, Bolante (2002) reported that “first-gens are twice as likely to leave college before the 2nd year” (p. 1).

Purpose Statement

This survey research examined the barriers to post-secondary success as perceived by FGCSs. Gatto (2009) stated that first-generation students are at a disadvantage and are more likely to struggle academically, socially, and financially compared to those whose parents possess a college degree. According to the National Center for Education Statistics (2001), "first-generation college students were less likely to take college entrance exams, and when they did, they scored lower than their peers who were not first-generation" (p. 15). In the same study, the NCES (2001) also reported that "among those in the lowest quartile, first-generation students were more likely than students whose parents had earned a bachelor's degree...to have taken one or more remedial classes during their first year of postsecondary education" (p. 25). This study also investigated the needs of this underrepresented student population to offer ideas to support student success, maintain enrollment, and possibly increase retention and graduation rates. Toutkoushian et al. (2018) found that "...regardless of how we defined first-generation students, they were less likely than their counterparts to take steps to go to college and then to actually enroll in a postsecondary institution (p. 25). For this study, first-generation college students are defined as higher-education students whose parents or guardians did not obtain a college degree.

Background

Studies concur that there are barriers that impede the success of FGCS entering and throughout their time in college. When analyzing the research that examined the perceptions of FGCSs, it was evident that these students perceived the realm of higher education much differently than their non-FGCS counterparts. FGCSs struggled to assimilate to the culture of American education which aligns more closely with an independent cultural norm. Research indicated that this structure of higher education in America does not promote the success of

FGCSs, thus impacting their persistence and retention rates as a population (Stephens et al., 2012). To support FGCSs' success in colleges and universities, their perceptions offer valuable insight into the most necessary type of support.

Perceptions of First-Generation College Students

Several research studies examined the perceived barriers of FGCS. Stebleton and Soria (2012) surveyed 12,161 students across six large, public universities. This survey research reported obstacles to academic success. The following barriers were determined: (a) competing job responsibilities, (b) family responsibilities, (c) weak math skills, (d) weak English skills, (e) inadequate study skills, and (f) feeling depressed, stressed, or upset" (p. 12).

First-generation students perceive the idea of going to college as a foreign goal. Hutchison (2017) studied the perceptions of college students according to their differences in cultural capital. Hutchison (2017) surveyed and interviewed both FGCSs and non-FGCSs enrolled in a summer Scholars program. Hutchison stated that "it was apparent that the field of college was new for FGS, in a way that it was not new for non-FGS" (2017, p. 23). When asked about the perceptions of their professors, "FGS, particularly those whose parents had no college experience at all, were much more likely to view their professors as superiors" (Hutchison, 2017, p. 11). Conversely, students whose parents had some college experience viewed their professors as peers or as potential peers. This perceived relationship with faculty could impede FGCS's academic experience.

Academic Unpreparedness

FGCSs also felt academically unprepared in comparison to their non-FG peers. A lack of academic support at home and lack of rigor and opportunity throughout high-school coursework may be the cause for these underlying feelings. Banks-Santilli (2014) examined the experiences

of 54 FGCSs at a small private college in Boston, Massachusetts. “Eighty-eight percent of the first-generation college student sample reported feeling unprepared for college” (Banks-Santilli, 2014, p. 11). Of the FGCS participants that were interviewed, “one-third of the sample (17 students) talked about how discouraging it was to have divisions in their high schools that advantaged some and disadvantaged others in terms of college preparation” (Banks-Santilli, 2014, p. 11). If unsupported, these feelings of unpreparedness may cause strain on future academic endeavors.

Academic Retention Programs

A qualitative study conducted at a large southeastern university examined the perceptions of first-generation students. The researchers interviewed twenty-five students enrolled in the campus-based program called GenOne. This program was designed to increase retention rates among FGCSs (Schelbe et al., 2019). Students who qualify for admittance in the GenOne program begin with a Summer Bridge Program before their first semester at the university. "The Summer Bridge Program seeks to provide experience to help students prepare for the academic rigors of college" (Schelbe et al., 2019, p. 64). As mentioned in previous studies, FGCSs often do not have the appropriate support as they embark on a postsecondary journey. Over four months, students were interviewed on components of support, expectations, preparation, and resources of the GenOne program. “Overwhelmingly, the students attributed their success and retention to the support, expectations, preparation, and resources that they received through the GenOne program” (Schelbe et al., 2019, p. 73).

Research Design

To gain a better understanding of the perceptions of the FGCS population, this study examined the following questions:

1. Are there differences between first-generation and non-first-generation students in terms of their self-perceived barriers to enrolling and succeeding in college?
2. What are the participants' recommendations for FGCS success?

Quantitative and qualitative methods were implemented in this survey research that was designed to examine the perceived barriers of college students. Surveys are efficient in terms of time, resources, and the number of questions and participants (Ruel, 2019, p.5). The convenience sample of this study was composed of 184 participants who were categorized as undergraduates, graduate students, faculty, or staff who are part of a small, liberal arts women's college.

Participants self-identified as first-generation college students or non-first-generation college students as defined on the survey. Of the participants 164 were female, 15 were male, and 5 preferred not to include their gender.

The survey contained two components. The first portion asked respondents to rank barriers that impede student success. Barriers were selected from the review of research including Stebleton & Soria (2012) and Falcon (2015). All participants were presented with nine common barriers that one might face when pursuing a post-secondary degree. Participants could also select *no barriers* or *write in another barrier* not listed. Secondly, the participants were asked to respond to one open-ended question. This question asked the respondents to identify supports that they perceive would help FGCSs to consider, pursue, and remain enrolled in a post-secondary degree. The timeframe of this research did not permit further inquiry in conducting post survey interviews.

Analysis and Results

This section of results discusses the data on self-perceived barriers and outlines the prevalence of each. The data reflects a predominately female population. It is important to note

that in the open ended question, the non-FGCSs were asked to make recommendations for FGCSs to succeed in higher education. The researchers could not determine if some of the responses are from personal experience or simply recommendations.

One hundred ten participants selected *Tuition*. Tuition was the most common barrier amongst both groups at 60%. Of the total number of respondents who selected *Tuition* as a barrier, 54% were FGCSs and 46% were non-FGCSs. The second most common barrier chosen was the *Financial Aid Process*. Thirty-seven percent chose this as a barrier to success. Of this total, 53% were FGCSs and 47% were non-FGCSs. The third most common barrier selected amongst 32% of the surveyed population was *No Significant Barrier*. Of that total, 38% were FGCSs and 62% were non-FGCSs. *Application Fees* were the fourth most prevalent barrier amongst participants, with each group of students representing 50% in this category.

The following barriers were reported by less than 50% of the surveyed population. *Separations from Family/Community* with 16% of participants selecting this option. Sixty percent of those who selected *Separations from Family/Community* were FGCSs, and the remaining 40% were non-FGCSs. Fifteen percent of the total participants selected the *Application Process* as a barrier to enrolling in college. Both groups reported equally to that barrier. The remaining four barriers (*Availability of On-Campus Jobs*, *Complications Due to Raising Children*, *Pressure from Family to Not Go to College*, and *Lack of Opportunity*) were each selected by ten or fewer participants. Although identified as less of a barrier, the FGCSs identified these barriers more often than non-FGCSs. Table 1 displays the prevalence of the barriers by total population, FGCS, and Non-FGCS.

Table 1*Prevalence of Identified Barriers to Enrolling in College*

Parameters	Total		FGCS		Non-FG	
	n	%	n	%	n	%
<hr/>						
Characteristic						
Application Process	28	15	14	50	14	50
Application Fees	36	19	18	50	18	50
Financial Aid Process	68	37	36	53	32	47
Availability of On-Campus Jobs	10	5	5	50	5	50
Tuition (costs)	110	60	59	54	51	46
Pressure from Family to NOT go to college	7	4	4	57	3	43
Separation for Family/Community	30	16	18	60	12	40
Complications Due to Raising Children	8	5	5	63	3	38
Lack of Opportunity	7	4	6	86	1	14
No Significant Barriers	60	32	23	38	37	62
Other	11	6	9	82	2	18

Note. Total n = 184, FGCS n = 90, non-FG = 94.

The second portion of the survey asked participants to respond to the following question: *Do you have any ideas of how children and young people could be encouraged and supported to become the first in their family to pursue higher education? (Help us consider what could be done to make it more likely that more people can have the opportunity to enroll and succeed in higher education).* A total of 130 open-ended responses were collected for this question. The responses were triangulated between the researcher and two other colleagues to prevent researcher bias. Several themes emerged from the responses. Each theme is addressed here.

Alleviating Financial Hardships

In response to the aforementioned survey question, several participants stated the need to alleviate the financial burden that is often accompanied with obtaining a degree. Among both groups of participants, many stated “making college more affordable” as a suggestion for increasing higher education enrollment amongst the FGCS population. One FGCS respondent stated, “Personally, the cost of college is definitely the biggest obstacle. If college were more affordable, it would ease a lot of my worries & stress. Furthermore, the difficulties in finding a sufficiently paying job after college makes the college journey seem less than worthwhile. Therefore, job opportunities directly impacted my outlook on college.”

The recommendation for similar support was prevalent among other participants. One non-FGCS stated, “I feel like the biggest issue is the financial aspect. The price of college can be very daunting even for families where the parent(s) or guardian(s) went to college.” In addition to the concern of cost, one participant stated that “books and supplies for class and dorm” were additional finances to consider.

Two FGCSs stated that mitigating the financial barrier for working students who are enrolled either full-time or part-time would be helpful in supporting FGCSs. One participant

expressed their thoughts that pursuing a college degree would be more feasible if tuition were free and classes were available at more convenient times. The financial challenge was evident in this response, “I needed to work in order to pay rent as I had a full-time job. All of that had to go in order for me to come to school.” Similarly, another FGCS student stated, “Make it easier for working students to receive financial aid without taking a full course load. Some students need a slower pace by not taking as many classes at one time, but that can be more costly when scholarships and financial aid often don't cover it unless it's full time.” Overall, the recommendation to make higher education more financially accessible for students was a common theme amongst both FGCSs and non-FGCSs.

Mentorship

Another evident theme was the need for a mentor or a mentorship program. A filtered search of the data produced eleven responses that included the term mentor. Of those 11 responses, eight were reported by FGCSs. One FGCS stated that while mentoring takes a lot of time, it would be beneficial for students to have a mentor's support with “signing up for tests, applications, and guidance through the financial aid process for the parents who may be reluctant to reveal finances...” Another non-FGCS suggested, “Mentorship helps a lot. Especially for students coming from low-income backgrounds no matter their race or gender. Mentorship allows for guidance and connections to be made which can help encourage students to pursue higher education. Getting students in connection with college students who are like them really allows for them to see hope and merit in going into higher education. Also, not enough schools push finding scholarships especially coming into college. More emphasis has been put on federal loans and aid.”

While mentorship was a common suggestion amongst both groups of students, the underlying theme of having a mentor seemed to be in order to provide support in the financial sector of applying to college. One non-FGCS suggested, "Many teens don't know how to apply to schools, scholarships, loans, etc. Having a mentor, counselor, etc. help with that process would make it much easier and less stressful."

Two FGCSs reported that a mentor would be beneficial to students who were interested in pursuing a post-secondary degree but lacked the support of their caregivers. "I believe a high school teacher should be a mentor to students who have the potential to succeed in higher education and/or who have interest but lack the support of family/caregivers." Another FGCS stated, "If students do not have support at home, we need to connect them to mentors who can support and encourage their progress." These comments indicate that mentorship would be an integral part of FGCS's success.

High School Support

In addition to providing students with access to mentors, many respondents stated that additional support should be provided at the high school. One non-FGCS stated, "I think support from a guidance counselor at the high school level is incredibly important. Some first-generation college students don't have the support they need to walk them through the complicated college application process and explain to them the financial aid process as well. Perhaps high schools could offer optional classes on writing common app essays, taking the SAT and the entire common app and other application processes." Another non-FGCS student similarly reported, "More support is needed at the high school level on how to navigate the application process from start to finish. Most students who would be the first to go to college have no idea how to navigate the application process and can easily miss out on deadlines and opportunities they were not

aware of." Similarly, a FGCS stated, "I believe that the college application process and financial aid process is difficult. I heard a story on NPR or somewhere saying that there's a large number of people who get accepted to colleges and don't show up. They said the main reason is the financial aid process is challenging and confusing and if they don't have someone showing them what to do, they either don't fill it out correctly or worse yet at all. I think we need to make sure we are putting those things into our high schools and providing those supports. But we are also having colleges reach out to families and assist them if they need help." This theme seems to be representative of both classifications of students as FGCSs and non-FGCSs.

Additional responses included that of a non-FGCS who claimed, "I lacked a lot of opportunities and resources from advanced classes, lab opportunities to help with the application process. I had to figure it out on my own and with my parents." As well as a FGCS participant suggested "Develop programs in underserved communities that allow high school students to gain knowledge of college opportunities, the financial aid process, the application process, etc."

Again, while the responses generally suggested providing additional support at the high-school level, the underlying reason for offering support is to mitigate the barriers due to the application process and the financial aspects of pursuing a degree.

Community Outreach

Numerous responses also indicated that community outreach in regard to exposing students to the opportunities that are available to them beyond high school would be helpful. As indicated by the participants, suggestions included: (1) introduction to colleges and technical schools starting at a young age, (2) introduction to a college environment early in their K-12 experiences, (3) provide more access to college tours and information on colleges, (4) create direct pipelines through community colleges to four-year institutions and link them with career

readiness in high schools, and (5) conduct meetings with children and their guardians to explain how possible it is to go to college and the options for those first-generation students.

Encouragement

A filter for the term encouragement generated 18 responses amongst both groups of students. The majority of those responses were related to the general encouragement of students to pursue a post-secondary degree. While barriers exist for both groups of students pursuing a post-secondary degree, several respondents stated that the initial prospect of pursuing a degree should be intrinsic. As one FGCS stated, "I think the drive has to come within oneself, and then be supported and encouraged by others." Similarly, a non-FGCS reported, "I think the only way to get encouragement is by yourself first and foremost, and then from your family and friends so that they can reassure you that you are doing the right thing." Additionally, one participant stated, "If students do not have support at home, we need to connect them to mentors who can support and encourage their progress."

In respect to encouraging FGCSs to pursue a postsecondary degree came from a non-FGCS who stated, "We need to be honest with them; college is four or more years of hard work and is certainly not for everyone, but if they are willing to put in the hard work required for it, we can encourage them to look into schools with their intended major, explore financial aid and loan options, offer assistance in application processes, and give advice and support. It's also just as important, however, to remind them that a degree doesn't make or break them. They can be equally as successful without a degree if they commit themselves to an occupation that can sustain them financially and give them satisfaction and happiness." While the prospect of attaining a post-secondary degree is considered a significant achievement, other options exist for

individuals who consider a different pathway. Encouraging students to pursue these options should also be supported.

Discussion

Keeping in mind the population described earlier and based on the results of the survey, the researchers determined several important conclusions regarding the perceptions of FGCSs. Background research is clear that FGCSs are statistically less likely to succeed in comparison to their peers. As Markowitz (2017) stated, "...merely being a first-generation college student is one of the most often cited predictors of higher education failure" (p. 5). Overall, the researchers concluded that FGCSs reported barriers in greater numbers than non-FGCSs. The data coincides with research that there are apparent differences between FGCSs and non-FGCSs, whereas FGCSs are less likely of obtaining a college degree (Bolante, 2017; Toutkoushian, 2018; Cominole, Shepherd, & Siegel, 2015). FGCSs represented the majority in the two most commonly perceived barriers: *Tuition* and *the Financial Aid Process*.

The greatest disparity in this data set was presented in the *No Significant Barrier* response. The majority of participants who did not experience any significant barriers in their pursuit of a postsecondary degree were the non-FGCSs. This is an important finding and distinction in this research. Non-FGCSs are overwhelmingly reporting less barriers to a higher-education experience.

FGCSs reported the following barriers in greater numbers, *Pressure from Family to NOT go to College*, *Separation from Family/Community*, *Complications Due to Raising Children*, *Lack of Opportunity*, and *Other* barriers to enrolling in college. The three categories in which FGCSs did not comprise the greater percentage were those in which the data was equally

distributed amongst both groups, *Application Process*, *Application Fees*, and *Availability of On-Campus Jobs*.

Literature supports that a FGCS's experience at the postsecondary level differs in many ways that are unlike those of their non-FGCS peers. (Canning et al., 2020; Hutchison, 2017; Banks-Santilli, 2014; Taylor & Bicak, 2019). FGCSs face difficulties related to misunderstood ideas of college culture, the inability to comprehend academic jargon presented in application forms and dealing with feelings of inadequacy at the collegiate level. The findings of this study indicate a need to support FGCSs in these areas.

There were five themes evidenced in the qualitative question of the survey. These themes were alleviating financial hardships, mentorship, high school support, community outreach, and encouragement. While alleviating financial hardships was not a surprising finding, it does support previous research. In addition, the need for mentorship was evidenced by the respondents. The support provided by a mentor or mentorship program was identified as a source to manage the process of applying for college, securing funds, and alleviating stress. The themes of high school support and community outreach asserted by the respondents indicate a need for exposure to the possibilities of higher education. Finally, the theme of encouragement was important to the participants and could be connected to studies on students' mental health in future research. It would appear by addressing these barriers FGCSs would have a better opportunity to succeed in higher education.

Research Limitations

There are two limitations of this research addressed here. The first limitation was utilizing a convenience sample at a predominately women's college with 91.6% of participants identifying as female. The findings cannot be generalized to other gender classifications. The

second limitation could be researcher bias. Although triangulation was utilized, researchers in the study are both first-generation college students which could have produced a biased perspective. Finally, as a recommendation not necessarily a limitation, face-to-face interviews would extend the understanding of both populations' perceptions.

Conclusion

This study contributes to and confirms the existing research concerning the barriers that FGCSs face. In addition, the results provide a direction and suggestions for higher education personnel to better meet the needs of these students. There are clear differences between the two groups of students in terms of their self-perceived barriers and their need to be successful in their educational pursuits. Participants provided clear recommendations evidenced by the themes. Implementing the suggestions may benefit FGCSs. Overall, recognizing and addressing the barriers may assist in better student success and retention.

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An Accelerated Dual Degree Partnership with Virginia State University and Virginia Tech

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Abstract

This exploratory study focuses on a 4+1 accelerated dual degree program where students earn a bachelor's degree and a master's degree in just five years, rather than the usual six or seven. The primary goals of this study are to a) examine the academic and social adjustment of two African American male graduate students that participated in a 4+1 Accelerated Master's Program and b) better understand faculty and administrators' perception of the program. We review the advantages and disadvantages of accelerated dual degree programs, describe examples of similar accelerated dual-degree partnerships, and provide background information about the partnerships with Virginia State University and Virginia Tech.

Introduction

An accelerated dual degree program, which can go by many names, is a special degree program where students can work towards two degrees with two entirely different focuses at the same time. Other names used to describe such programs include dual degree programs, joint degree programs, 4+1 programs, collaborative or combined degree programs (Obst, 2008; Culver, Puri, Spinelli, DePauw, and Dooley, 2012). Depending on the school and the type of combined program, students may either study for each degree at the same institution or at two different institutions that have a partnership agreement. Despite the varying classification, these programs all feature similar advantages and disadvantages and are principally designed to increase the number of graduates with professional degrees and strengthen the US talent pool, ideally creating a pool that is uniquely different from past decades (Chubin, May, and Babco, 2005).

There are several advantages to accelerated degrees and the details can vary depending on the subject and the university offering them. Generally speaking, these programs combine or expedite courses and lesson plans to condense the time it takes to complete the advanced degree. An advantage of these programs is that they are offered at a lower cost, which would save time and money for students by allowing them to take undergraduate and graduate-level coursework simultaneously. Academic departments allow students to take a certain number of graduate course credits, which ultimately allows students to receive course credit toward their undergraduate degree and allows students to trim a year or more of the total time to complete their graduate degree. Another advantage is these programs allow students to complete their degrees and enter the workforce at a faster pace. Employability and building on previous undergraduate degree content and learning experiences are critical features for prospective students considering participating in an accelerated degree program.

There are some disadvantages of these programs. As bachelor's degrees become more common and the job market becomes more competitive, a growing number of students are choosing to extend their studies and pursue master's degree programs. While there are good reasons to consider getting a master's, particularly in specialized careers requiring additional training, one disadvantage is that the degree is not for everyone. A second disadvantage is that accelerated degree programs require a significantly larger investment of time and energy than courses that are traditionally paced. These programs can move faster, but they can lead to students failing or dropping out. Some STEM subjects are going to be more difficult to learn on a compressed timetable.

Historically Black Colleges and Universities (HBCU) & Predominantly White Institution (PWI) Partnerships

Historically Black Colleges and Universities (HBCU) are colleges or universities that were initially established to educate students of African American descent. Predominantly White Institution (PWI) is the term used to define colleges and universities of higher education in which Whites account for 50% or greater of the student enrollment.

Some HBCUs have standing partnerships with PWIs that offer dual engineering programs and/or computer science (CS) programs. For decades HBCUs and PWIs have been coupled in partnership offering accelerated dual-degree engineering programs for STEM-focused students (Adessa & Sonnenwald, 2003; Chudin, May, & Babco, 2005; Darnell, 2017; Lloyd, 2007; Newman & Jackson, 2013). While some dual programs have memorandums of understanding, others tend to be agreeable handshakes amongst the institutions (Newman & Jackson, 2013). Although HBCUs operate with lower forms of various capital and they make up only 3% of the higher education population, they continue to produce higher percentages of Black students with advanced STEM degrees (Fletcher et al., 2019, Upton & Tanenbaum, 2014).

Amongst these alliances, the accelerated programs differ in degree attainment and completion time. The dual degree engineering model is different across campus partnerships. Institutions provide a wide array of degree completion options for the students that participate in dual-degree engineering programs. For example, some accelerated programs offer dual bachelor's degrees, bachelors and masters, and bachelors with joint masters and doctoral degrees. Dual-degree programs typically require students to complete a certain number of credits or years at each institution within the partnership.

Students in the Rowland Scholars Program at Clark Atlanta University can participate in a 3+2 dual-degree model (Payton, Suarez-Brown, & Smith, 2012). Students conduct three years of course work at Spelman, Morris Brown, and/or Morehouse College, and their last two years of engineering curriculum is spent at Georgia Tech, Auburn University, Massachusetts Institute of Technology (MIT), or Rochester Institute of Technology (RIT). Upon completion of five years, students will have earned a B.S. from not one but two institutions. Notably, South Carolina State University and Clemson University offer a similar 3+2 model for STEM students. However, this dual-degree program assures students receive a B.S. and a master's degree after five years of course work.

An example of a 4 +1 accelerated dual-degree engineering program can be found in the partnership of Virginia State University and Virginia Polytechnic Institute and State University (Virginia Tech). Students spend four years at Virginia State University and an additional year at Virginia Tech to receive a B.S. from Virginia State and a master's degree in engineering within five years. Similarly, a 4 +1 dual-degree engineering partnership exists between Barnard Women's College and Columbia University. Other dual-degree engineering programs such as the partnership between Howard University and Carnegie Mellon University present students with a Ph.D. from each institution upon program completion. Researchers have documented and demonstrated that there are several benefits of having accelerated dual-degree engineering partnerships between HBCUs and PWIs.

Although there is limited literature on the partnership between HBCUs and PWIs, researchers affirm that several beneficial factors exist within these collaborations. For instance, the union between the two institutions of higher education enacts greater resources (e.g., stipends and scholarships) and research opportunities for students at HBCUs (Adessa & Sonnenwald, 2003; Lloyd, 2007; Sidbury & Johnson, 2015). Scholars endorse that by expanding the opportunities for students of color in engineering, they can have more hands-on experience and access to additional research platforms (e.g., conferences). Furthermore, students are more likely to gain access to additional summer research and internship opportunities (Newman & Jackson, 2013;

Sidbury & Johnson, 2015). Moreover, other researchers declare that such partnerships increase the number of Black students graduating with engineering degrees (Newman & Jackson, 2013). Brawner et al., (2019) and Chubin et al., (2005) both assert that such collaborations also help diversify the pool of candidates for STEM jobs. While many advantages exist for all of the stakeholders involved (e.g, HBCU & PWI institutions, faculty, and students) so do potential disadvantages.

Newman & Jackson (2013) declare that such disadvantages may include but are not limited to student “transfer” status, racialized stigmas, degree completion time, and HBCUs remaining in the shadows or behind their peer PWI institutions. When students transfer, they may not be able to transfer all of their course credits to their new institutions. They must not only learn the institution but also rebuild their support systems and various networks. In addition, the student has to try and insert themselves or find ways to connect with other students who have already had many years of classes and possible research opportunities together. Students, therefore, may have some issues with both academic and social adjustment factors.

While a growing body of literature examines the partnerships, benefits, and disadvantages of accelerated dual-degree engineering programs between HBCUs and PWIs, a gap remains. Currently, there is very little empirical research that further investigates this collaboration (Adessa & Sonnenwald, 2003; Newman & Jackson, 2013). Moreover, there is very limited information available on post-secondary institutions that offer 4+1 Accelerated Master’s Program in Engineering between HBCUs and PWIs. Administrators who work with this population of students have traditionally been left out of such research studies. This qualitative case study aims to close the gap in such empirical studies examining this underrepresented population of students in accel accelerated dual-degree engineering programs

VSU & VT Partnership

The purpose of this paper is to examine the academic and social adjustment of graduate students that participated in a 4+1 Accelerated Master’s Program and better understand faculty and administrators’ perception of the program. The history of the partnership with VSU grew out of the joint membership in the Commonwealth Center for Advanced Manufacturing (CCAM) where Associate Dean Jack Lesko (VT) and Dean Keith Williamson (VSU) both served as members of the CCAM Board of Directors. The unique nature of the research facility with universities working alongside corporations involved in advancing manufacturing techniques posed an ideal situation for the engagement of graduate students in the facility. Lesko and Williamson also began the development of several pilot efforts to introduce VSU undergraduates to opportunities to understand more about what it means to go to graduate school. VT offered Grad School 101, which ultimately led to the development of other opportunities to think about a pathway to VT graduate programs.

In partnership with VT’s Graduate School, VT’s College of Engineering led the creation and execution of the first annual HBCU Research Summit in October 2016, offering a prospective graduate student track and a faculty research collaboration track. The event was designed to create long-term, mutually beneficial research partnerships with regional HBCUs and encourage the development of pathways to graduate programs. As a result of the 2016 Research Summit,

VSU and VT began to explore an articulation agreement centered around their CCAM partnership. What resulted from these discussions is the 4+1 accelerated graduate program in Industrial Systems Engineering's Manufacturing Systems Engineering, which was signed in 2018.

Research Location

The study will consist of data collected across two campuses that have a partnership in a 4 + 1 dual-degree engineering program. During the time that data were collected, Virginia State University (VSU) had an enrollment of 4,020 students, including 3,659 undergraduates and 361 graduate students. VSU does not have graduate programs in their College of Applied Engineering Technology. Virginia Tech had an enrollment of 37,024 students including 30,020 undergraduate and 7,004 graduate students and offers bachelor's, master's, and doctoral degrees.

There are two groups of participants for this study. The first group is composed of current master's and Ph.D. students, who are or previously participated in the 4+1 program. They received their bachelor's degrees at VSU before starting their master's degrees at Virginia Tech. The researchers contacted the students directly about participating in the study. The second group of participants are administrators from Virginia Tech and Virginia State University, who have been instrumental in the implementation of this collaboration.

Methods

The research design for this study featured a qualitative methodology approach. The researcher implemented two phases for the study. The data obtained from this study was gathered mainly from surveys and interviews with its participants.

In the first phase of the study, we distributed an open-ended survey to 10 faculty and 5 administrators from both Virginia State University and Virginia Tech. The faculty/administrators had between 5 and 25 years of experience in higher education. The goal of the administrators surveyed was to ascertain their thoughts on the 4+1 Accelerated Dual Degree Partnership program. To that end, they were asked questions like, "*What do you see as the value of the 4+1 Accelerated Dual Degree Partnership with VSU and Virginia Tech?*" and "*What do students find helpful during their time in the 4+1 Accelerated Dual Degree Partnership with VSU and Virginia Tech?*" The answers given by the faculty/administrators gave us a glimpse into what the faculty, administrators, of the program thought of its effectiveness, and how the students under them fared.

In the second phase of the study, we conducted in-depth interviews with the two African American male student participants to learn about their experiences and perspectives on the program. Research currently available demonstrates that even with small sample sizes, insightful conclusions can be obtained (Burt, 2020; Sydor, 2013). Instead of examining participants broadly, the study's goal was to do so in depth. The sample size in this study offers a chance to clearly address and comprehend the study's purpose. We interviewed the participants via Zoom. The questions were similar to what the administrators were asked with many follow-up questions. The students were asked questions such as, "*How would you describe the quality of*

advice given to you by advisors/faculty on the coursework that should be completed before attending Virginia Tech?” and “What was it like to transition from your undergraduate college environment to your current college environment?”, giving us an idea of some of the more personal impressions that the students had of the program.

With the survey and interview answers in hand, the researchers set out to find distinguishing themes from the answers given. The first step of the qualitative assessment was to characterize the general sentiments of the answers to every question. The result of that analysis of a 2-tiered list, where the top level was a question we asked of the administrators/students and the bottom level was characteristics of the answers, as well as some quotes that encapsulate the answers given. From our list, we were able to then derive general themes of all the answers. Like the 2-tiered list in the first step of the qualitative assessment, we created another 2-tiered list for the analysis of the themes. The first tier of the list is a general theme that was noticed from the answers (ex. Academic Support), and the second tier is a subtheme of the general theme. As a result of the theme analysis and the one-by-one assessment of the survey/interview questions, we were able to present our findings in an easily digestible manner.

Limitations

This study, like other studies, had limitations that should be noted. For instance, African American male students in various dual programs and institutions, may have had different experiences than the two participants in this study. Another major limitation is the type of institution the participants attended for undergraduate school and were they decided to pursue their accelerated degree. This suggests that further and larger studies need to be undertaken to determine the attrition and success of students as accelerated from these different types of HBCUs. Amidst these limitations, we are confident that students' unique insights will provide fresh perspectives into their experiences in an accelerated dual degree program.

Findings

In analyzing the survey and interview data, two general themes emerged which will be discussed in this section. These themes were: social support and academic support. In addition to the general themes found, we also derived sub-themes that arose from the general themes. The sub-themes were mentorship, partnership, time, money savings, and preparation for the academic rigors.

Social Support

Data from the survey and interviews revealed the importance of the program's social support to the participants. We define the theme of social support as the inter-personal factors that affect a student's ability to carry out and complete their duties in the 4+1 program. For most of the questions asked in the survey and interviews, at least one answer mentioned social support. For instance, when asked what the strengths of the 4+1 Accelerated Dual Degree Partnership are, one respondent noted,

The main strength of the program is a great[er] support [for] our students [which they] receive from VT ISE department during taking VT online courses while they were at

VSU as well as [a] smooth transition to VT. The orientation meetings were also strong relationship building and our students got the information they needed before attending VT.

Note that while the respondent could have talked about academics or some other aspect of the program, they chose more social aspects related to works like “support” and “relationship building”. This type of word choice was also reflected in many of the answers the student participants gave. We asked student participants how they decided to attend graduate school at Virginia Tech. They responded that a trusted faculty member said that

I should do the 4+1 Program and, again, I was like, I have nothing else to do. I don't really have any plans after graduation. So sure, I'll do this. And here I am.

The student participant could have mentioned academics or the community, but they chose to highlight the relationship they had with their faculty advisor.

Behind the overarching theme of social support, we also noticed some sub-themes arising from the general theme. A sub-theme we note here is the mentorship the students received from their research advisors. By mentorship, we refer to the one-on-one advice and guidance the students received from their research advisor at Virginia Tech. Coming to Virginia Tech after 4 years at Virginia State University can be quite a jarring experience, especially because they only have a year.

Personally tailored and consistent support from their faculty advisors increased the level of trust the student had in their advisors and improved the chances that they would successfully complete the VT portion of the partnership. Another sub-theme identified in the data was “partnership”. A partnership, by definition, consists of two or more people who combine their resources to form an agreement. Sub-theme between Virginia Tech and Virginia State University. As several respondents alluded to in their answers, the more familiar the undergraduate students are with Virginia Tech before coming and starting their graduate studies, the more comfortable they will be when they arrive. Therefore, fostering relationships with the relevant entities at VT helps the students get a feel for the social climate of the area.

Academic Support

Another theme that arose in this study was the academic support that the students received. Similar to social support, we define academic support as the institutional factors that affect a student's ability to carry out and complete their duties in the 4+1 program. However, question answers that fit the theme of academic support emphasize the importance of factors that are largely outside of the student's control in their success, rather than social factors that are largely in the student's control. For example, when asked to describe the quality of advice given to you by advisors/faculty on the coursework that should be completed before attending Virginia Tech, one of the student participants said,

The advice that they gave me mainly was to just try my hardest. I needed A's and B's, so I couldn't slack off.

Some keywords one can associate with academic support are access, accessibility, availability, and opportunity.

Like with social support, we also noticed some sub-themes arising from the general academic support theme. Much of the answers related to academic support also talked about the importance of time and money saved from the program for the participants. For many students, the financial obligations of spending two years getting a Master's degree prove to be a barrier. Having to do only one year of a master's program under the 4+1 partnership saves the student's time and money. When asked about the value of the 4+1 Accelerated Dual Degree Partnership, one administrator noted that it,

It serves to attract those students who have the capacity to endure the rigor of graduate studies but do not want or couldn't afford to spend two years in graduate school.

Another administrator/faculty member said,

Saving time is the biggest advantage of this program. Students can save at least one semester of schooling time. Since earning degrees with this program is faster than earning them individually, there will be significant savings as well.

A second sub-theme is the preparation for the academic rigors of graduate school courses. While the students typically take some graduate courses before they enter graduate school, having to do research and classes upon entering VT can be an unexpected challenge. The support and advice the students receive regarding handling the research/course dynamic is a boon to their coursework efforts. As one administrator noted,

Some of the students find the graduate coursework very challenging and do not feel as if they were prepared. That is not uncommon for most graduate students.

From this quote, one can conclude that both the administrators/faculty and student participants believe that coursework and academic preparation are important aspects of the program.

Discussion, Limitation, and Conclusion

Our paper explored a four-year accelerated dual degree program in which students earn a bachelor's degree and a master's degree in five years, instead of the usual six to seven. A major objective of the study is to a) assess the academic and social adaptation of graduate students taking part in the new program, and b) better understand how faculty and administrators view the program in general. The article described the strengths and weaknesses of accelerated dual-degree programs; gave examples of accelerated dual-degree partnerships; and provided a background on the partnerships with Virginia State University and Virginia Tech.

The discussion with 2 participants demonstrated that they understand the nature of the 4+1 accelerated dual degree program. The faculty and administrators concurred with their responses in the survey. Additionally, the findings demonstrated that when selecting an institution, students tend to research the program to ensure that their needs are met academically and socially. Some participants raised concerns about financial obligations and that selecting a cost-effective institution is key for many of them. Administrators, faculty, and students should be mindful of how much financial aid is needed for the program (i.e. as travel, books, materials, etc.).

We understand that there is a small number of participants in this study. The two student participants were both African American males. The results cannot be seen as representative of the population at HBCUs. Given the sample limitation of this study, more research is needed on 4+1 accelerated dual degree programs and other non-engineering programs. Future research should examine larger populations of students who participate in such programs. Also, it would be interesting to study such 4+1 programs with all female populations. Since retaining women in STEM is important in higher education, a study can be conducted on the benefits of a 4+1 accelerated dual degree program for that population. Collaborations between PWI's and other minority institutions with similar programs should be studied to see if there are similar impacts on students. Additional research can also examine faculty in such programs to learn more about their participation and the impact the programs have had on them personally, professionally, and socially.

This exploratory study allowed the researchers to review academic and social adjustment issues. The mentoring from faculty and administrators helped students become involved in the campus, which increased their exposure to support systems inside and outside of the classroom, facilitated the development of relationships with role models, and enhanced their commitment to the university. Students will have access to two institutional networks. These networks may play a key part in discovering a meaningful internship or employment. Students will have access to research experiences. This may contribute to a better understanding of familiarity with the research opportunity.

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