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GRIT AND PERSISTENCE: FINDINGS FROM A LONGITUDINAL STUDY OF STUDENT PERFORMANCE

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ABSTRACT

Aim/Purpose The purpose of this study was to examine whether grit was a contributing factor to student persistence and success at minority serving institutions.

Background A number of studies conducted in the past fifteen years have concluded that grit is a positive predictor of achievement across many domains. But, is grit really the ultimate panacea for student success? This longitudinal study sought to answer that question by specifically focusing on business students attending a mid-Atlantic minority-serving institution that primarily serves low-income and first generation learners.

Methodology The research study under consideration used quantitative methods for data collection and analysis. It was initiated in the Fall of 2014 with the administration of the standard 12-item Grit assessment to all freshmen students enrolled in a university business department. Students were then followed longitudinally over a five year period with GPA and persistence to graduation documented. During the analyses, grit score was compared to participant first year GPA's as well as retention and persistence to graduation via comparison tables and ANOVAs.

Contribution A lack of substantive studies conducted at HBCUs and other minority serving institutions poses a major gap in the existing literature available on grit. A number of authors have put forth a call to action for faculty at minority serving institutions to conduct meaningful studies focused on grit and student persistence in order to better inform the HBCU community. This study is specifically purposed to help fill some of the gaps in the available literature. The results of the research presented in this paper hopefully shed light on the need to explore non-cognitive factors that may affect student performance. In particular, research should explore factors that may, or may not, contribute to the success of under prepared college students in particular those who are from low income,

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	first generation, and minority groups. This form of exploration is part of a commitment to positive student outcomes.
Findings	According to the findings, there is a significant positive correlation between higher grit scores and both GPA and persistence to graduation. First year GPA, however, was not found to be a reliable predictor of academic success.
Recommendations for Practitioners	As part of a commitment to positive student outcomes, faculty and administrators in higher education must be constantly exploring factors that may, or may not, impact student success.
Recommendation for Researchers	The results of this research help to shed light on the need to explore elements that may help to contribute to the success of under prepared college students in particular those who are from low income, first generation, and minority groups
Future Research	The authors conclude that while building the grittiness of freshmen students may lead to positive student outcomes, grit alone might not be enough. In fact, they postulate that grittiness without clarity of purpose, positive self-efficacy, and growth mindset may mean that students who may be gritty may not be exerting their energies appropriately. During the next phase, a model that is currently under development will be used as part of a mindset intervention to edify students about grit, growth mindset, locus of control/self-efficacy, and clarity of purpose. A complimentary research study examining student performance and perceptions will also be conducted.
Keywords	grit, persistence to graduation, student retention, graduation rates, business education, student success, first generation college students, HBCU, minority learners, UMES, University of Maryland Eastern Shore, persistence and perseverance, grit in education

INTRODUCTION

The term “grit” has become commonplace in our vernacular in the course of the past decade. Conceptually, it has been presented as a panacea of sorts that represents the ultimate elixir for success across all pursuits. Certainly abstruse, grit is defined as the persistence and perseverance to achieve goals. More specifically, it is acknowledged as the “tenacious” long-term pursuit of goals despite setbacks and obstacles (Duckworth & Gross, 2014).

The personality traits most commonly associated with grit include: self-regulation, self-discipline, resilience, dutifulness, conscientiousness, and low impulsivity (Buzzetto-Hollywood, 2017; Buzzetto-Hollywood, Quinn, Wang, & Hill, 2019; Buzzetto-More, 2015; Eskreis-Winkler, Duckworth, Shulman, & Beal, 2014; Goodwin & Miller, 2013). Figure 1 presents a model that illustrates the six personality attributes of grit whereas self-regulation is the ability to guide one’s behaviors in order to achieve goals, self-discipline is the ability to control weaknesses and apply one’s self towards the achievement of goals, resilience is the ability to recover from setbacks, dutifulness is having the sense of obligation to complete goals, conscientiousness is the vigilant desire to complete obligations, and low-impulsivity is the ability to resist temptation and be thoughtful before taking action.



Figure 1: 6 Personality Attributes of Grit Model

BACKGROUND

Founded during a time of hostility and forced segregation, for over 100 years Historically Black Colleges and Universities have held a special place in the United States (Schexnider, 2017). Currently, there are 101 accredited HBCUs in educating nearly 300,000 students at tuitions averaging 30% less than those charged by comparable institutions. Approximately 80% of their students are African American, and >70% are from low-income families. While they account for only 3% of public and not-for-profit private institutions receiving federal student aid, they enroll 10% of African American college students nationwide, produce 17% of the bachelor's degrees earned by African Americans, 24% of the degrees earned by African Americans in science, technology, engineering and math, and are the top producers of African American Ph.Ds (Adams, 2012; Bridges, 2018; Lomax, 2015).

HBCUs have never abandoned their mission of providing educational opportunities to students who may be otherwise marginalized; however, they are currently facing a number of challenges including declining enrollment numbers and lower-than-average graduation and retention rates (Seymour & Ray, 2015). Nevertheless, HBCUs are found to provide deeply supportive educational environments that are unparalleled elsewhere with black graduates of HBCUs more likely than black graduates of other institutions to be thriving (Buzzetto-More & Mitchell, 2009; Buzzetto-More & Ukoha, 2009; Seymour & Ray, 2015). Additionally, studies have found that choosing to transfer to a Historically Black College or University over a majority serving institution is positively associated with higher GPAs, greater college persistence, and increased rates of degree completion (Umbach, Tuchmayer, Clayton, & Smith, 2018). Responsible for creating the Black middle class, they were found in a 2017 Brookings report to provide a foundation for economic growth and development that, with more investment, can revive some of America's most struggling cities (Perry, 2017).

Established in 1886, the University of Maryland Eastern Shore (UMES) is a Historically Black, 1890 land grant institution. It is a member of the University system of the State of Maryland and primarily serves first generation, low income, and minority learners (Buzzetto-More, 2015). The student population is approximately 3400, as of the fall of 2016, with a student body that is 78% African American, 9.6% white, 1.4% Hispanic, and 11% international. The gender distribution of the University is 64% female and 36% male. The freshmen-to-sophomore retention rate is 71%, and the graduation rate is 41%. The student to faculty ratio is 15 to 1 and 85% of students receive financial aid. UMES was ranked in the top 25 among Historically Black Colleges and Universities (HBCU) in 2018 and the

acceptance rate for applying students was 62.4% with the majority of students coming from the Mid-Atlantic region (Buzetto-Hollywood, Wang, Elobeid, & Elobeid, 2018).

The UMES Department of Business, Management, and Accounting is accredited by the Association to Advance Collegiate Schools of Business (AACSB) International. The Department offers a range of programs including business administration, accounting, marketing, finance, and business education. Additionally, certificate programs in business, marketing, and financial analytics were recently approved.

LITERATURE REVIEW

Duckworth, Peterson, Matthews, and Kelly (2007) introduced the construct of grit proposing that it is a concept that should be distinctly considered from the traditionally measured Big Five Personality Traits. They explained that grit is a sustained capacity to maintain interest and effort in challenging long-term projects. It is looking at goal achievement as a marathon rather than a sprint and exerting the stamina to overcome hurdles. To measure grit, a 12-item self-report survey instrument was developed and tested with findings that showed that grit was a better forecaster of achievement than talent alone.

Overtime, a number of studies have shown that grit can serve as a predictor of success. For example, Eskreis-Winkler et al. (2014) examined high school juniors in 98 Chicago Public Schools who completed the grit assessment. According to the results, students with higher grit scores were more likely than their less gritty peers to graduate from high school. Additionally, when cadets at West Point were examined, higher grit scores were found to be a powerful prognosticator of persistence (Duckworth & Quinn, 2009). Also, in a famous application with Scripps National Spelling Bee participants Duckworth et al. (2007) found that participants with higher grit scores were more likely to have performed more successfully as a result of having studied longer and harder than less gritty participants. In a small study, Wolf and Jia (2015) examined the role of grit among students in an introductory programming course finding a relationship between higher levels of grit and course achievement. When Robertson-Kraft and Duckworth (2014) explored the grit scores of novice teachers, grit was found to correlate positively with their likelihood to persevere and succeed as career educators. Finally, Hodge, Wright, and Benett (2018) measured grit, engagement and academic productivity among 395 Australian university students finding that there was no difference in grit among genders, first generation college students had increased grit scores, and that there was positive correlation between grit, engagement and academic productivity.

Grit levels have been known to have a direct relationship between overcoming adversity and perseverance (Flaming & Granato, 2017). Grit has been known to directly predict academic outcomes and goal attainment (Park, Yu, Baelen, Tsukayama, & Duckworth, 2018). Grit also has a direct relationship on the ways that people seek and retain information. Grittier individuals are known to engage in activities to seek meaning and purpose, in addition to having abilities that are malleable versus something that is fixed, also referred to as growth mindset (Park et al., 2018). From a behavior standpoint, Grittier individuals are found to participate in more self-regulated learning and deliberation (Wolters & Hussain, 2015).

Perez (2015) introduced a model for nurturing and strengthening grit in students on academic probation, as a means of increasing their GPA known as the Grit Effect (GE). Based on the application of her model, she concluded that grit as a personality characteristic can be built and strengthened and that it serves as a positive determinant of student academic success that is a better indicator than IQ.

Dale, Sampers, Loo, and Green (2018) following two experiments concluded that the choice to continue forward or cease activities can largely be predicted by differences in grit whereas individuals higher in grit are more likely to persist in challenging tasks. This relationship; however, was only ob-

served when a known reward was available that the participants believed that they had the ability to achieve.

Recently, Tang, Wang, Guo, and Salmela-Aro (2019) conducted a study in Finland that investigated the association of grit and goal attainment as well as whether growth mindset and goal commitment impacted grit with a population of 2018 students in 6th-9th grades. According to their findings, grit is associated with both increased engagement and academic achievement.

Doctoral studies requires tremendous persistence as they are based on the achievement of a long-term goal. As such, when the role of grit in online doctoral education was examined, Cross (2014) found significant relationships between grit and the number of hours spent studying per week as well as more positive student performance as measured through grade point averages.

The literature has linked grit in students to clarity of purpose and being mastery goal oriented (Arslan, 2014). Mastery goal oriented students have a focus on acquiring knowledge and self-improvement (Park et al., 2018). Further, being mastery goal oriented relates to growth mindset which is also often explored alongside grit. Growth mindset is the belief that cognitive capabilities are not fixed but rather can be developed through hard work and dedication (Dweck, 2018). Having a growth mindset requires that one has a belief in their own self-efficacy with self-efficacy referring to the confidence that one has the innate ability to achieve goals. Findings have shown that self-efficacy beliefs and mindset have a major impact on GPA and persistence (Vuong, Brown-Welty, & Tracz 2010).

Studies have found that mindset interventions are successful at increasing the grit and academic performance of students (DeBacker, Heddy, Lopez-Kershen, Crowson, Looney, & Goldman, 2016; Dweck, 2018) In an effort to understand the research on mindset interventions, Sarrasin, Nenciovici, Foisy, Allaire-Duquete, Riopel, and Masson, (2018) conducted a meta-analysis of 10 peer-reviewed studies including participants from age 7 to adulthood. According to their findings, attempts to build growth mindset by teaching neuroplasticity have an overall positive effect on motivation and achievement. Additionally, they found that mindset interventions are most beneficial for at-risk students.

A number of different indicators have been used over the years to measure student success in college including GPA, retention, and persistence to graduation. While grit is currently being explored as a predictor of student success, other variables have also been examined including motivational influences, social variables, and personality and mindset (of which grit can be a part) (Altman, 2017). A 2017 study by Altman used linear regression to predict achievement and persistence and found that motivational factors were the best predictors of GPA. More specifically, the author found that higher student achievement as measured by GPA was best predicted by a need for that achievement, less fear of failure, and a belief that academic institutions are unbiased in their treatment of students (Altman, 2017)

Not all studies have found positive correlations between grit and student attainment. Phillips-Martinez (2018) examined the role of grit, mindset, and gender and whether they were predictors of student success in an online high school course. The results of the study did not find a significant difference in student grades when organized by grit, mindset, or gender categories. Additionally, Abuhassan and Bates (2015) found that grit was not an indicator of long term consistency of performance. Their findings were based on application of a structural equation model on 494 subjects which concluded that the perseverance aspect of grit was a factor in predicting long-term achievement; however, it was not found to be associated with students GPA. They concluded that learning rate, IQ, ability, and school engagement may be better determinants of student achievement than grit. Finally, Taylor (2003) sought to develop a formula to predict college student academic performance and persistence and found that high school GPA and socioeconomic status were the most statistically significant contributors to predicting student success in college.

When GPA has been looked at specifically, studies have found it to be a significant predictor of student persistence and graduation (Gayles, 2012). For example, Al Ghanboosi and Alqahtani (2013) found that students with GPAs lower than 2.0 were more likely to drop out of college. Further, Chang (2014) found that perseverance correlated to higher first year GPAs; however, grit level was not a reliable predictor of the first year performance of students.

Strayhorn (2014) examined studied grit among Black males attending traditional predominantly White institutions. The findings asserted that higher grit scores were positively correlated with the increased academic performance of African American males attending majority serving institutions. Strayhorn recommended that grit research be extended to HBCUs, which is a crucial area that is lacking in the literature on grit and mindset.

GRIT AND HBCU STUDENTS

There is extremely limited research focused on grit and student performance at Historically Black Colleges or Universities. McCall (2015) conducted a very small study that looked at the experiences of 8 African American male instrumental music educators who had completed undergraduate degrees at an HBCU and who had transitioned to a graduate program at a predominantly White institution concluding that grittiness and culturally capital contributed to their success.

Slack (2014) considered the perceptions of 166 African American males who had completed a remedial education program at a HBCU. Using the Short Grit Scale, he found that there were significant correlations between grit score and self-efficacy.

Nelson (2016) examined 116 students who had just completed their freshmen year and from whom first year GPA information was available. The Short Grit Scale and the College Student Engagement Instrument were also employed. According to the findings, no statistically significant relationships could be found between grit and academic performance, or between student engagement and academic performance. Nelson did recommend that further research be conducted that is more thorough at HBCUs. Additionally, she suggested that future studies consider exploring additional non-cognitive constructs such as mindset.

Buzzetto-Hollywood et al. (2019) reported the results of a study that explored the relationship between grit and student success in fully online courses at a mid-Atlantic HBCU. Students were administered the standard 12-Question Grit Scale with the addition of a series of validated questions that sought to measure perceived self-learning efficacy. Additionally, student performances in online courses were recorded and correlations conducted. According to the findings, there is a direct positive correlation between grit score and both perceived self-discipline and perceived learning self-efficacy; however, higher grit scores were not found to correspond progressively to more successful performance in online classes.

STUDY JUSTIFICATION

A lack of substantive studies conducted at HBCUs and other minority serving institutions poses a major gap in the existing literature available on grit. Strayhorn (2013), Nelson (2016) and Buzzetto-Hollywood et al. (2019) have all put forth a call to action for faculty at HBCUs to conduct meaningful studies focused on grit and student persistence in order to better inform the HBCU community. This study is specifically purposed to help fill some of the gaps in the available literature on grit especially as it applies to student performance and persistence at HBCUs.

METHODOLOGY

This longitudinal quantitative study took place in the School of Business and Technology at the University of Maryland Eastern Shore. More specifically, it was conducted in a required Freshmen Development Course BUED 100 that is taken by all first-year students entering the Department of

Business, Management and Accounting. The course instructor co-authored the book used in the course and also serves as the academic advisor to all freshmen students. The course is interdisciplinary in nature with emphasis on preparing graduates for productive personal and professional lives. Course content includes the following: orientation to the University; the role and responsibilities of the students; the student as a member of the University team; expectations of the faculty and staff; effective study techniques; time management, conflict management; stress management; test taking skills; and learning style assessment. Determination/perseverance, time on task and help-seeking are emphasized. Throughout the course, the students benefit by invited guest lecturers as well as by attending cultural and community events.

The study presented in this paper began in the Fall of 2014 with the administration of the standard 12 item grit assessment, created by Duckworth et al. (2007), to all students enrolled in BUED 100: Freshmen Professional Development. The scores were compiled and analyzed. Over the next five years, student performance was tracked and recorded including GPA and persistence to graduation. Basic statistical analyses were conducted including mean, variance, standard deviation, and confidence interval. Additionally, crosstabulations and pivot tables were generated and ANOVAs were performed. Finally, the following three hypotheses were tested:

Hypothesis₁: There is a positive correlation between grit score and GPA.

Examination of the correlation between grit score and GPA was based on the preponderance of literature that finds positive causation between the two variables (Cross, 2014; Hodge et al., 2018; Perez, 2015; Wolf; 2015). This hypothesis was tested with the use of a crosstabulation as well via the conduction of an ANOVA where a p value of <.05 was viewed as affirming the hypothesis.

Hypothesis₂: There is a positive correlation between grit score and graduation rate.

Grit score is often cited as a predictor of student persistence to graduation (Duckworth & Quinn, 2009; Eskreis-Winkler et al., 2014) and hypothesis two sought to explore the voracity of this notion. It was tested with the conduction of an ANOVA where a p value of <.05 was viewed as affirming the hypothesis.

Hypothesis₃: GPA is the best predictor of student success

GPA is the longest standing measure of student academic success which many feel is still an adequate predictor of future performance (Abuhassan & Bates, 2015; Gayles, 2012; Taylor, 2003). Hypothesis three considered whether the GPA's of freshmen students enrolled in their first semester year of college related to students' retention and persistence. This hypothesis was tested via the conduction of an ANOVA where a p value of <.05 was viewed as affirming the hypothesis.

FINDINGS

One hundred and twenty freshmen students enrolled in BUED 100: Freshmen Professional Development participated representing a participation rate of 99%. The mean grit score for the group was 3.69 with a standard deviation of 0.6105, a variance of 0.3728, and a confidence at 95% of 0.1092. The mean grade point average for the group was a 2.44 with a standard deviation of 0.9205, a variance of 0.8473, and a confidence interval at 95% of 0.1647. This data is presented in Table 1: Population GPA and Grit Score.

Table 1: Population GPA and Grit Score

<i>N=120</i>	<i>GPA.</i>	<i>Grit Score</i>
Mean	2.44	3.69
Standard Deviation	0.9205	0.6105
Variance	0.8473	0.3728
Confidence @95%	0.1647	0.1092

When graduation and persistence were considered, 31% of respondents hit the four year graduation target and the overall five year graduation rate was 41.7%. Fifty-eight percent of the students did not graduate out of which 31.7% departed the university in good academic standing and 26.6% were at some point academically dismissed due to low grades. These results are shown in Table 2: Graduation and Persistence.

Table 2: Graduation and Persistence

<i>N=120</i>	Number	Represented in Percentages
4-Year Graduation Rate	38	31.7%
Overall Graduation Rate After 5 Years	50	41.7%
All Not Graduating From Institution	70	58.3%
In Good Academic Standing But Did Not Return	38	31.7%
Dismissed Due to Poor Academic Standing	32	26.6%

The levels of persistence identified in Table 2 were used to establish subgroups. Means, standard deviation, variance, and confidence intervals at 95% were generated for each sub group and are depicted in Table 3: Data by Subgroup. As Table 3 shows, the mean GPA for four year graduates was a 3.125 with a grit score of 3.87, the mean GPA for all graduates was a 3.002 with a grit score of 3.82, the mean GPA for all non-graduates was 2.037 with a grit score of 3.56, the mean GPA for non-graduates who left in academic good standing was 2.697 with a grit score of 3.65, and the mean GPA for non-graduates who left because they were academically dismissed was 1.252 with a grit score of 3.41.

Table 3: Data By Subgroup

G.P.A. and Grit Score for 4-Year Graduates		
<i>N=38</i>	GPA.	Grit Score
Mean	3.125	3.87
Standard Deviation	0.424218	0.573958
Variance	0.179961	0.329428
Confidence @95%	0.134879	0.182489
G.P.A. and Grit Score for All Graduates		
<i>N=50</i>	GPA.	Grit Score
Mean	3.002	3.82
Standard Deviation	0.452378	0.522783
Variance	0.204646	0.273302
Confidence @95%	0.125391	0.144905
G.P.A. and Grit Score for All Non-Graduates		
<i>N=70</i>	GPA.	Grit Score
Mean	2.037	3.56

Standard Deviation	0.96016	0.639273
Variance	0.921908	0.40867
Confidence @95%	0.224928	0.149756
G.P.A. and Grit Score for Students In Good Academic Standing Who Did Not Return After Freshmen Year		
<i>N</i> =38	GPA.	Grit Score
Mean	2.697	3.65
Standard Deviation	0.63452	0.569481
Variance	0.402616	0.324309
Confidence @95%	0.201745	0.181065
G.P.A. and Grit Score for Students Dismissed Due to Poor Academic Standing		
<i>N</i> =32	GPA.	Grit Score
Mean	1.252	3.41
Standard Deviation	0.633005	0.702025
Variance	0.400696	0.492839
Confidence @95%	0.219321	0.243235

Hypothesis₁: There is a positive correlation between grit score and GPA.

In order to test the first hypothesis a crosstabulation was conducted and a pivot table was prepared that compared grit score and GPA side by side and which is shown in Table 4: G.P.A. and Grit Score by Subgroup. As indicated in Table 4, there is a incremental positive increase in grit score based on student achievement; however, the total difference in grit score among all sub groups was only 0.46.

Table 4: G.P.A. and Grit Score By Subgroup

<i>N</i> =120	GPA	Grit Score
Dismissed Due to Poor Academic Standing	1.252	3.41
All Not Graduating From Institution After 5 Years	2.037	3.56
Left In Good Academic Standing But Did Not Return	2.697	3.65
Overall Graduates	3.002	3.82
4-Year Graduates	3.125	3.87

In addition to Table 4, an ANOVA was conducted which is depicted in Table 5: ANOVA Grit Score and GPA and where a p value of <.05 was established as the benchmark and a p value of 0.000 was observed.

Table 5: ANOVA Grit Score and GPA					
	SS	Df	MS	F	p
Between:	93.750	1	93.750	153.685	0.000
Within	145.184	238	0.610		
Total:	238.934	239			P<.05

Hypothesis₂- There is a positive correlation between grit score and graduation rate.

In order to examine the second hypothesis an ANOVA was conducted which is depicted in Table 6: ANOVA Grit Score and Persistence. In order to complete the ANOVA the persistence/graduation rate was placed on a scale where 1 equaled dismissed academically, 2 equaled that a student left in good academic standing, three represented a person that graduated in 5 or more years, and 4 equaled students who were 4 year graduates. With the means and standard deviations established for the group, the ANOVA was conducted with the p value set to <.05 and a p value of 0.000 observed.

Table 6: ANOVA Grit Score and Persistence					
	SS	Df	MS	F	p
Between:	88.574	1	88.574	98.380	0.000
Within	214.276	238	0.900		
Total:	302.850	239			P>.05

Hypothesis₃ GPA is the best predictor of student success

The third hypothesis was examined with an ANOVA displayed in Table 7 which looked at GPA and persistence to graduation with the p value set to <.05. The results of the ANOVA found a p value of .8 which is greater than .05.

Table 7: ANOVA GPA and Persistence					
	SS	Df	MS	F	p
Between:	0.074	1	0.074	0.065	0.800
Within	270.755	238	1.138		
Total:	270.828	239			P>.05

DISCUSSION

All one hundred and twenty freshmen students enrolled in BUED 100: Freshmen Professional Development participated. The average grit score for the group was 3.69 which is consistent with the 3.60 average grit score that is reported by the creator of the grit assessment Dr. Angela Duckworth (Duckworth & Quinn, 2009).

The overall graduation rate of the cohort under consideration was 41.7% which is identical to that reported by the larger university in 2016. It is also higher than the standard reported HBCU six year graduation rate of 35% but lower than the national graduation rate for all U.S. institutions of higher education which is 60% (The Undeclared, n.d.).

Hypothesis one sought to explore the relationship between grit score and GPA. The 12 item Grit assessment was employed to measure student's grit. A pivot table was prepared and an ANOVA was performed on the data in order to explore whether there were any statistically significant differences between the means of groups. A positive correlation was indicated between grit score and GPA based on consideration of the pivot table. When the ANOVA was examined a $p < .05$ was observed. As such, the hypothesis under consideration was confirmed. Based on the findings of this study, a relationship can be observed between grit score and student GPA. These findings are similar to what has been reported by Cross (2014), Hodge et al. (2018), and Wolf (2015) but are inconsistent with the findings of Abuhassan and Bates (2015) and Nelson (2016).

Hypothesis two focused on whether there is a correlation, as has been reported in the literature, between grit score and persistence to graduation. This hypothesis was examined with an ANOVA where a p value of 0.000 was observed thus confirming the hypothesis under consideration. These findings are similar to what has been reported in the literature through such as studies by Duckworth and Quinn (2009), Eskreis-Winkler et al. (2014), and Tang et al., (2019) but are different from the findings of Phillips-Martinez (2018).

The third, and final hypothesis, considered whether GPA is the most reliable predictor and indicator of student success. The third hypothesis looked at freshmen year GPA and persistence to graduation. The results of the ANOVA indicated a p value of .8 which is greater than .05 and which provided negative confirmation of the hypothesis under consideration. These results differ from what has been reported by Taylor (2003) who found that GPA and socioeconomic status were the most statistically significant contributors to predicting student success in college.

LIMITATIONS

The greatest limitation of this study is that is focused exclusively on students attending a single institution. However, at the same time, this study provides research on a population that is expanding in numbers in higher education and that the research, reports may be under-prepared for academic success (Adams, 2012; Buzzetto-Hollywood et al., 2018; Quinn & Buzzetto-Hollywood, 2019). Additionally, this paper builds on the findings of a number of studies that have been conducted at majority institutions and the smattering of studies conducted at HBCUs.

A lack of substantive studies conducted at HBCUs and other minority serving institutions poses a major gap in the existing literature available on grit. Strayhorn (2013), Nelson (2016) and Buzzetto-Hollywood et al. (2019) have all put forth a call to action for faculty at HBCUs to conduct meaningful studies focused on grit and student persistence in order to better inform the HBCU community. This study is specifically purposed to help fill some of the gaps in the available literature on grit especially as it applies to student performance and persistence at HBCUs.

CONCLUSION

The findings of this study indicate that the average grit score of freshmen business students attending the HBCU under consideration is similar to the average grit score found by the UPENN Character Lab for all grit survey participants. The 41.7% graduation rate observed is slightly higher than the 6 year average graduation rate of 35% reported by HBCUs in the United States but lower than the 60% U.S. national higher education average. There is a significant correlation that could be confirmed between GPA and grit score and grit score and persistence to graduation. As such the authors conclude that grit is reliable predictor of both graduation and of academic success. These are consistent with the preponderance, but not all, of the literature and as such further research will be conducted. Finally, a positive relationship could not be confirmed between student GPA and persistence to graduation with GPA not serving as a positive predictor of success.

The authors now conclude that while building the grittiness of freshmen students leads to positive student outcomes, grit alone is not enough. In fact, they postulate that grittiness without clarity of

purpose, positive self-efficacy, and growth mindset may mean that students who may be gritty may not be exerting their energies appropriately. Accordingly, the authors plan to expand this study at the same institution and with another cohort of students.

During the next phase, a series of models that were developed by the authors are being used as part of a mindset intervention unit to be delivered in BUED 100: Freshmen Professional Development which will focus on self-efficacy, locus of control, growth mindset, grit, clarity of purpose, and goal achievement. A complimentary research study examining student performance and perceptions will be also be conducted.

The results of the research presented in this paper hopefully shed light on the need to explore non-cognitive factors that may affect student performance such as grit, mindset, engagement, self-efficacy, and goal setting. In particular, research should explore factors that may, or may not, contribute to the success of under prepared college students in particular those who are from low income, first generation, and minority groups. This form of exploration is part of a commitment to positive student outcomes.

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