



Issues in Informing Science + Information Technology

An Official Publication
of the Informing Science Institute
InformingScience.org

IISIT.org

Volume 23, 2026

MINDSET AND ACADEMIC ACHIEVEMENT

Nicole Buzzetto-Hollywood*	University of Maryland Eastern Shore, Princess Anne, MD, USA	nahollywood@umes.edu
Leesa Thomas-Banks	University of Maryland Eastern Shore, Princess Anne, MD, USA	lpthomasbanks@umes.edu
Leslie West	University of Maryland Eastern Shore, Princess Anne, MD, USA	Lwest1@umes.edu

*Corresponding Author

ABSTRACT

Aim/Purpose	This paper presents the findings of a study that explores whether growth mindset, self-efficacy, and goal-setting skills impact student performance and/or are interrelated. It also examined students' perceptions of the efficacy of a mindset intervention program at a minority-serving institution.
Background	A mindset intervention was custom-created at a United States Historically Black College or University (HBCU) that included self-assessment instruments designed to measure self-efficacy, growth mindset, and goal setting.
Methodology	Self-assessment instruments were collected, and a satisfaction survey was administered. Descriptive analysis was performed to calculate the mean, standard deviation, and confidence at 95%. Additionally, ANOVAs, t-tests, and correlation analyses were conducted. During the analysis, the following hypotheses were tested.
Contribution	The results of this paper make a valuable contribution to a body of literature that has found a range of results regarding the efficacy of mindset interventions. Additionally, it focuses on a setting and a population that is all too often missing from the research literature. Nevertheless, more research across more environments is needed, especially at international minority-serving institutions.
Findings	In this paper, negative relationships were found between self-efficacy, goal setting, and student GPAs, whereas students with lower GPAs were found to have higher perceived self-efficacy and goal setting scores, which a possible interpretation could suggest may be linked to strong institutional supports for low academically achieving students, remediations, and compensatory behaviors resulting in a reverse causality. Growth mindset was found to have a weak relationship with student achievement, whereas higher growth mindset scores did correlate to higher GPA; however, the relationship was modest. With re-

Editor: Eli Cohen | Received: January 18, 2026 | Revised: March 11, 2026 | Accepted: May 11, 2026
Cite as: Buzzetto-Hollywood, N., Thomas-Banks, L., & West, L. (2026). Mindset and academic achievement.
Issues in Informing Science and Information Technology, 23, Article 4. <https://doi.org/10.28945/5798>

(CC BY-NC 4.0) This article is licensed to you under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/). When you copy and redistribute this paper in full or in part, you need to provide proper attribution to it to ensure that others can later locate this work (and to ensure that others do not accuse you of plagiarism). You may (and we encourage you to) adapt, remix, transform, and build upon the material for any non-commercial purposes. This license does not permit you to use this material for commercial purposes.

	spect to student perceptions of the value and utility of the mindset intervention delivered, students reported highly positive perceptions of the value, usefulness, and impact of the mindset intervention, citing increased awareness and clarity of purpose.
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	Research is needed to explore factors that may contribute to the success of underprepared college students, particularly those from low-income, first-generation, and minority groups.
Future Research	This mindset intervention can be replicated at the majority serving institutions, additional minority serving institutions, and institutions outside the United States, with findings compared. The self-assessment instruments utilized in this study have been validated and are freely available for adoption as long as attribution is provided.
Keywords	growth mindset, self-efficacy, goal setting, mindset intervention, reflective thinking, pedagogy, critical reflection, social cognitive theory, mastery goal orientation, learning intervention, learner confidence, mindset, assessment, HBCU

INTRODUCTION

Mindset refers to the internalized beliefs and attitudes that influence an individual's self-concept and interpretation of the world (Cherry, 2024). These cognitive frameworks, often implicit, inform expectations, shape perceptions, and guide responses to various circumstances (Primeau, 2021), thereby playing a critical role in determining outcomes of success or failure (O'Keefe et al., 2018). Importantly, mindset is closely interconnected with self-regulation, resilience, and a mastery-oriented approach to goals; these constructs function synergistically to enhance an individual's overall potential for achievement (Buzzetto-Hollywood et al., 2019).

Mindset is malleable (Dweck & Yeager, 2019). Mindset theory posits that such human attributes as intelligence, mindset, and behaviors related to self-regulation/efficacy and goal setting can change and develop over time (Dweck & Leggett, 1988; Memari et al., 2024).

You see life through your own unique lens. This is your mindset – the assumptions and expectations you hold about yourself, your life, and the situations around you. Research shows that mindsets play a significant role in determining life's outcomes. By understanding, adapting, and shifting your mindset, you can improve your health, decrease your stress, and become more resilient to life's challenges. (Primeau, 2021).

Research consistently shows that mindset interventions yield the greatest outcomes for learners from underserved populations (Paunesku et al., 2015). This is likely because students from low socio-economic status environments are reported in the literature to be more likely to have been treated with a deficit mindset in educational settings (Buzzetto-Hollywood, 2023; Jury et al., 2017). Accordingly, it stands to reason that they should be widely adopted and effective in delivering positive outcomes at Historically Black Colleges or Universities (HBCUs) (Buzzetto-Hollywood & Mitchell, 2019; Claro et al., 2016; Clay, 2016). Further, the Thurgood Marshall College Fund, which provides scholarships to students attending American HBCUs, recommends using mindset interventions to build positive skills among HBCU students, suggesting the use of predictive self-assessment tests and analytics to develop knowledge and understanding of grit, resilience, and persistence (Clay, 2016).

While minority serving institutions are not new, existing in a number of countries, HBCUs are uniquely American institutions that are representative of a legacy of systematic oppression of marginalized groups (Buzzetto-Hollywood & Quinn, 2025) – founded during a time of forced segregation, for over 130 years. Historically Black Colleges and Universities have existed to provide educational opportunities to students who might be otherwise disregarded (Buzzetto-Hollywood & Mitchell, 2019; Schexnider, 2017). In the literature, HBCUs are found to provide deeply supportive educational environments that are unparalleled elsewhere in the United States, with Black graduates of HBCUs more likely than Black graduates of majority-serving institutions to be thriving – a phenomenon largely attributed to their culturally responsive teaching practices and highly supportive student-centered culture (Buzzetto-Hollywood & Mitchell, 2019; Buzzetto-Hollywood & Quinn, 2025; Seymour & Ray, 2015).

This paper focuses on a mindset intervention established after years of longitudinal research, intended to have a positive impact on the outlook, self-efficacy beliefs, and goal-setting behaviors of first-generation and under-prepared students attending minority-serving institutions in the United States. The instruments developed to support this project underwent several rounds of expert review prior to the pilot and were followed by reliability testing. This paper will explore whether growth mindset, self-efficacy, and goal-setting skills impact student performance and whether they are inter-related. It will also present students' perceptions of the intervention program's efficacy. The remainder of this paper will be organized as follows: literature review, methodology, findings, discussion, limitations, and conclusion. This paper represents the culmination of a project that has been documented in a series of papers.

LITERATURE REVIEW

A mindset intervention refers to a structured program or set of strategies designed to shift individuals from a fixed mindset (the belief that abilities are innate and unchangeable) to a growth mindset, which emphasizes the potential for intellectual and personal development through effort and effective strategies. In educational settings, such interventions aim to enhance students' academic outcomes and overall well-being by reshaping their beliefs about learning and intelligence while instilling more effective habits. Typically, these interventions involve instruction on the malleability of intelligence, the value of goal setting, the development of self-efficacy, the importance of sustained effort, and the application of effective learning strategies (Burnette et al., 2013; DeBacker et al., 2016; Dweck, 2018). Empirical research has demonstrated that mindset interventions can significantly improve students' persistence, resilience, and academic performance (Buzzetto-Hollywood et al., 2019; DeBacker et al., 2016; Dweck, 2018; Paunesku et al., 2015). Notably, developments in mindset theory and the implementation of related interventions have attracted considerable scholarly attention, leading to an expansion of research focused on evaluating their efficacy (Burnette et al., 2023; Memari et al., 2024; Yeager & Dweck, 2020).

In one study, Porter et al. (2022) investigated a growth mindset intervention delivered by teachers in American middle schools. The intervention aimed not only to foster students' growth mindset beliefs but also to cultivate a supportive classroom environment conducive to academic success. The findings indicated that the intervention was particularly effective in improving academic performance among struggling students. Notably, the most significant gains were observed among students taught by educators who had previously demonstrated fixed mindset beliefs and behaviors prior to the intervention.

Harackiewicz et al. (2014) conducted a mindset intervention focused on reducing the social-class achievement gap by using self-affirmation and affirming goals that students set and controlled. The subjects were students in Biology courses at the University of Wisconsin-Madison. The study found that the intervention narrowed the achievement gap between first-generation and continuing-generation students in course grades by 50% and increased retention in a critical gateway course by 20%.

They concluded that “educators can expand the pipeline for first-generation students to continue studying in the biosciences with psychological interventions” (p. 375).

Employing a short duration (30-minute), scalable, ‘synergistic,’ self-administered online mindset interventions in six double blind studies with several thousand secondary and post-secondary students in the United States, Yeager et al. (2019) found efficacy when it came to both the development of a growth mindset and stress response. They concluded that their research identified a promising economic treatment for adolescent stress that could be scaled nationally.

In Africa, Islam et al. (2024), whose study focused on over 18,000 students from Tanzania, found that goal-setting had a significant positive effect on self-reported student time use, study effort, and self-discipline, but that academic benefits in terms of test scores and grades were insignificant. The study noted that the lack of academic impact was partially attributed to about two-thirds of students failing to set realistic goals.

Buzzetto-Hollywood et al. (2025) explored a custom classroom-based mindset intervention developed at a minority-serving institution of higher education in the mid-Atlantic United States, aimed at improving students’ frame of mind to enhance learning and achievement. The intervention involved creating a number of self-assessment tools that work together and complement each other, as well as fostering students’ critical reflection. The scales in question were designed to measure self-efficacy, growth mindset, and mastery goal orientation. The results of reliability testing via Cronbach’s alpha and inter-item covariance indicate that all three tools showed strong (good to excellent) reliability, with acceptable positive inter-item covariance, suggesting they are appropriate instruments for further adoption, use, and analysis.

Kyler and Moscicki (2024) conducted a large-scale systematic review of the literature, concluding that effective mindset interventions can improve academic performance, mental health, and socialization. They noted that, while the field of mindset research is robust and multifaceted, there are still areas of study that are under-focused, specifically domain relationships, which could lead to greater maximization of mindset intervention efficacy.

RELATED THEORIES

Mindset theory is conceptualized as a dichotomy between growth and fixed mindsets (Dweck, 2019). Growth mindset is the notion that personal characteristics can be cultivated with support and effort (Buzzetto-Hollywood et al., 2019; Yeager & Dweck, 2020), whereas an individual with a growth mindset perceives challenges as emblematic to progress taking a long term outlook and using goal setting to develop and exhibit a commitment to persisting through a long journey to success that requires hard work and dedication (Dweck, 2018). The opposite of a growth mindset is a fixed mindset, the belief that talent is set and unchanging. People with a fixed mindset are easily discouraged and lack resilience as they view talent and intelligence as unalterable (Buzzetto-Hollywood et al., 2019; Yeager & Dweck, 2020). According to Dweck and Yeager (2019), individuals who possess a growth mindset are more likely to persevere through difficulties and demonstrate continuous improvement.

Self-efficacy can be defined as the confidence an individual has in their innate ability to achieve goals. Self-efficacy was introduced by Albert Bandura (1977) and lies at the center of his social cognitive theory, which posits that learning occurs in a social context through a dynamic, reciprocal interplay among the person, their environment, and their behaviors. In the context of learning, it is the notion that a person’s confidence in his or her ability to successfully perform a behavior directly affects goal attainment (Bandura, 1995). Findings have consistently shown that firmer self-efficacy beliefs have a major positive influence on personal well-being, academic success, and resilience, impacting how a learner experiences and responds to learning situations and setbacks (Vuong et al., 2010).

Goal orientation theory identifies two contrasting goal orientations: mastery and performance (Dweck, 1986; Elliot & McGregor, 2001; Zhao et al., 2025). Whereas most people set a performance

goal to achieve a predetermined level of satisfactory performance in relation to social comparisons and to avoid a negative evaluation (performance goal orientation), mastery goal orientation represents a commitment to excellence and mastery (Akin & Arslan, 2014). Students with a mastery goal orientation focus on knowledge acquisition, self-improvement, and personal competence (Buzzetto-Hollywood & Mitchell, 2019; Park, 2021; Senko, 2019). A mastery goal orientation is related to positive outcomes such as engagement, interest, effort, persistence, grit, and positive affect (Akin & Arslan, 2014; Miller et al., 2021). In studies, a mastery goal orientation resulted in higher engagement and learning gains than a performance goal orientation (Daumiller et al., 2023; Han et al., 2025). In their meta-analysis of 44 studies, Diaconu-Gherasim et al. (2024) found that a mastery goal orientation has a negative correlation with anxiety and depression. Additionally, a meta-analysis of 90 studies in which goal orientations were experimentally manipulated found that mastery goal orientation was associated with higher task performance (Noordzij et al., 2021).

To bridge the conceptual gap between goal setting, goal orientation, and self-efficacy, one can think of them as being part of a series of action steps that impact a student's educational performance. Goal setting may be considered the map, or rather the first step, and a formal process of establishing a target. Locke and Latham (2002) explain that goals set standards, direct attention, mobilize effort, and increase persistence, establishing the structural framework, or rather, the what am I doing and the why I am doing it. Goal orientation is akin to a compass that navigates the journey and refers to an individual's disposition and motivation for pursuing a goal (Dweck, 1986). Finally, self-efficacy or self-regulation is the driver or the active management of thoughts, feelings, and behaviors that can aid or hinder us in the progression towards goals (Zimmerman, 2002). Zimmerman (2000) describes regulation as a cyclical process involving forethought, performance, and self-reflection. In essence, goal orientation serves as the filter and compass that drives us to set goals that establish the orientation map or standard by which we will engage, and regulation is the mechanism through which we actualize the effort used to achieve our goals while managing emotional and cognitive hurdles.

METHODOLOGY

Established in 1886, the University of Maryland Eastern Shore (UMES) is a Historically Black institution. It is a member of the University System of the State of Maryland and primarily serves first-generation (students for whom neither parent completed a four-year college degree), low-income, and minority learners. The student population is approximately 3,300 as of the fall of 2025, with an 88% minority student enrollment. The acceptance rate for applicants is approximately 61%, with the majority of students coming from Maryland, Virginia, Delaware, and the Baltimore and Washington, D.C., areas. UMES has a long history of providing academic programs and services for ethnically and culturally diverse students and, toward that end, offers programs and assistance that attract, serve, retain, and graduate many first-generation college students (Buzzetto-Hollywood et al., 2024; Buzzetto-Hollywood & Mitchell, 2019).

The development of the mindset intervention and custom instruments used in this project was documented in great depth in a paper published in the *Interdisciplinary Journal of e-Skills and Lifelong Learning* (Buzzetto-Hollywood et al., 2019). The instrument underwent multiple rounds of expert panel review and was presented at two separate conferences, where additional professional feedback was collected. An expanded pilot was conducted with business students enrolled in the required first-year professional development course between 2022 and 2023. All 255 students enrolled in the course experienced the intervention as a two-week, multi-session unit that included lectures, guided discussion, self-assessments, and reflective exercises. The completed self-assessments were anonymized, collected, and stored for analysis. Additionally, a randomized sample of students whose emails were entered into a random list picker was contacted for follow-up by email and invited to provide feedback by completing an anonymous satisfaction survey delivered via SurveyMonkey. Fifty-five of the 100 students invited completed the survey. A number of experts were consulted during the satisfaction survey design process, and the draft instrument was reviewed by an expert panel before IRB approval.

After data collection was concluded, the data were imported into SPSS, version 30, where reliability testing via Cronbach's alpha and inter-item covariances was conducted, with the results published in the Social Sciences journal (Buzzetto-Hollywood et al., 2025). According to the findings, all three tools showed strong (good to excellent) reliability with acceptable positive covariance. These results are depicted in Table 1.

Table 1. Reliability statistics

Category	No. of items	Cronbach's alpha	Mean inter-item covariance matrix
Growth Mindset	6	0.836	0.756
Self-Efficacy	6	0.946	0.777
Goal Setting	20	0.976	0.563

This paper presents the analysis of the data collected during the expanded pilot as well as the results of a survey of student perceptions from a subset of students. The data were downloaded from the SurveyMonkey system and exported to SPSS, where descriptive analyses were performed to calculate the mean, standard deviation, and 95% confidence interval. Additionally, ANOVAs, t-tests, and correlation analyses were conducted. During the analysis, the following hypotheses were tested:

- Hypothesis 1: There is a relationship between self-efficacy and GPA.
- Hypothesis 2: There is a relationship between growth mindset and GPA.
- Hypothesis 3: There is a relationship between goal setting and GPA..
- Hypothesis 4: There is a relationship between goal setting and self-efficacy.
- Hypothesis 5: There is a relationship between goal setting and growth mindset.
- Hypothesis 6: There is a relationship between self-efficacy and growth mindset.
- Hypothesis 7: Students view the mindset intervention positively.

Hypotheses 1-3 were tested with an ANOVA, and symmetric measures with Spearman's rank and Pearson's rho correlations. Hypotheses 4-6 were tested with a t-test and symmetric measures with Spearman's rank correlation. Hypothesis 7 was tested by examining the means for the question set, with a mean greater than 3.5 considered to affirm the hypothesis.

More specifically, a one-way analysis of variance (one-way ANOVA) is a standard statistical test used to determine whether there are statistically significant differences between the means of independent groups. An ANOVA examines the variance (the spread of the data) to determine whether group differences are real or just random noise. Spearman's rank and Pearson's rho are both symmetric measures that attempt to determine the strength and direction of association between categorical variables. sPearson's rho specifically measures the strength and direction of the linear relationship between two variables, whereas the Spearman rank correlation is a nonparametric test that, instead of looking at the raw numbers, converts the data into ranks (1st, 2nd, 3rd) and then looks for a relationship between those ranks.

FINDINGS

Two hundred and fifty-five students participated in this study, with 236 usable responses. The demographics of participants, including age, race, and gender, are presented in Table 2 and indicate that most participants (84.7%) were aged 18-24, approximately 80% were Black or African American, and gender was fairly evenly split between males and females.

Table 2. Demographics

Demographic	%
Age	
18 – 24	84.7
25 – 34	6.8
35 – 44	2.1
45 – 54	2.5
55 – 64	0.4
65 – 74	3.2
Prefer not to say	3.8
Race/Ethnicity	
Asian/Asian American	1.7
Black or African American	79.7
Caribbean/West Indies	1.0
Hispanic or LatinX	6.8
Indigenous American	0.8
Multiple Ethnicities/Other	0.8
Prefer not to say	3.4
White/Caucasian	7.2
Prefer not to say	10.6
Gender Identity	
Female	49.6
Male	45.3
Nonbinary/gender fluid	1.3
Prefer not to say	3.8

Students were asked to self-report their GPA on a 4.0 scale, whereas 16.5% reported having between a 3.6 and a 4.0, 25.4% reported having between a 3.1 and a 3.5, 39.4% reported having between a 2.6 and a 3.0, 15.3% reported having between a 2.1 and a 2.5, and 1.7% reported having below a 2.0. These results are presented in Table 3. A 4.0 GPA scale is the most common system used by colleges and universities in the United States to measure a student's academic performance. It converts letter grades earned in courses into numerical values and then averages them, where an A is represented by a 4, a B by a 3, a C by a 2, a D by a 1, and an F by a 0. GPA had to be self-reported in this study in order to ensure the anonymity of participants, which also meant that additional measures of academic performance could not be ascertained.

Table 3. GPA

GPA	%
3.6-4.0 (5)	16.5
3.1-3.5 (4)	25.4
2.6-3.0 (3)	39.4
2.1-2.5 (2)	15.3
2.0 or below (1)	1.7

The three aspects of students that were explored were self-efficacy, growth mindset, and goal setting (Table 4).

Table 4. Summary

	Number	Mean	Standard deviation	Confidence @ 95%
Self-efficacy	236	3.94	0.875	0.112
Growth mindset	234	3.16	0.878	0.112
Goal setting	235	4.18	0.747	0.136

Self-efficacy was measured with six prompts on a five-point scale, where 5 indicated strongly agree, and 1 indicated strongly disagree. Accordingly, a higher score indicates greater self-efficacy. An overall mean of 3.94 was achieved with a standard deviation of 0.875 and a confidence level at 95% of 0.112 (Table 5).

Table 5. Self-efficacy

Self-efficacy	Number	Mean	Standard deviation	Confidence @ 95%
I am confident in my ability to excel in my courses	234	4.00	0.987	0.126
I am confident in my ability to pass challenging classes	235	3.88	0.958	0.122
I am confident that I will graduate from college	235	4.29	1.018	0.130
I am self-disciplined when it comes to my studies.	234	3.75	1.023	0.131
I have the study skills necessary to pass courses with challenging subject matter	234	3.71	1.012	0.129
I can overcome any obstacle I may face in a class	234	4.00	0.947	0.121
Summary	235	3.94	0.875	0.112

Growth mindset was assessed with six prompts on a five-point scale, each written from a negative, fixed mindset frame. As a result of the reverse scale, a lower score equals a higher growth mindset. These results are presented in Table 6, where a mean of 3.16 was achieved, with a standard deviation of 0.878 and a 95% confidence interval of 0.112.

Table 6. Growth mindset

Prompt	Number	Mean	Standard deviation	Confidence @ 95%
You can learn new things, but you can't really change your basic intelligence.	234	3.35	1.174	0.150
Your intelligence is something about you that you can't change very much.	233	3.62	1.191	0.153
People are born with a certain amount of intelligence that they will not be able to change.	233	3.68	1.230	0.158
People are born with natural talents, which means they will likely succeed at some things and fail at others	233	2.67	1.245	0.160
We should put our efforts into those things in which we are likely to succeed	234	2.47	1.130	0.145

If you keep failing at something, it is better to switch to something else where you have a better chance of succeeding	234	3.20	1.082	0.139
Summary	234	3.16	0.878	0.112

Goal setting was measured with 20 prompts on a 5-point scale, where 5 indicated strongly agree and 1 indicated strongly disagree. Accordingly, a higher score indicates greater goal-setting skills. These results are presented in Table 7, where a mean of 4.18 was achieved, with a standard deviation of 0.747 and a 95% confidence interval of 0.136.

Table 7. Goal setting

Prompt	Number	Mean	Standard deviation	Confidence @ 95%
I set short-term goals for myself (like finishing all my homework or exercising for an hour).	235	4.09	0.897	0.115
I set long-term goals for myself, such as earning a college degree or entering a career.	235	4.32	0.861	0.110
I set goals to achieve what I think is important.	235	4.30	0.825	0.106
I imagine what life will be like when I reach my goal(s).	235	4.37	0.879	0.113
My goals are meaningful to me.	234	4.41	0.856	0.110
My goals are based on my own interests and plans for the future.	235	4.43	0.856	0.110
I set goals to help me improve myself.	234	4.37	0.850	0.109
I set goals to help me be more successful in school.	235	4.20	0.931	0.119
I set goals to help me do my personal best.	234	4.32	0.857	0.110
When I want to learn something, I make small goals to track my progress.	235	4.04	0.942	0.121
I focus on my own improvement instead of worrying about whether other people are doing better than me.	235	4.03	0.965	0.124
Even if I do not succeed, I'm pleased if I have improved.	234	3.91	0.998	0.128
Based on everything I know about myself, I believe I can achieve my goals.	234	4.32	0.857	0.110
When I set goals, I think about barriers that might get in my way.	235	4.01	0.945	0.121
When I'm struggling, I set goals to help me improve	234	4.02	0.942	0.121
I set goals that are challenging but achievable.	235	4.09	0.887	0.114
I set short-term goals to help me achieve my long-term goals.	235	4.15	0.939	0.120
When I set a goal, I am confident that I can meet it.	235	4.15	0.852	0.109
I actively keep track on the progress I am making towards my goals.	234	4.00	0.956	0.123
I regularly reflect on my goals.	235	4.05	0.959	0.123
Summary	235	4.18	0.747	0.136

H₁ - There is a relationship between self-efficacy and GPA

Hypothesis 1 was tested with an ANOVA, Spearman's rho, and Pearson's rho. In contrast, a one-way analysis of variance (ANOVA) was used to determine whether there were statistically significant differences among the means of the five GPA groups. In contrast, the ANOVA p-value was 0.008, indicating a significant difference between the means. Finally, a symmetric measures table was generated to assess the strength and direction of association between categorical variables, whereas the interval-by-interval Pearson's r had a value of -0.239, indicating a small to moderate negative linear correlation between self-efficacy and GPA. Further, because the p-value is less than 0.001, the relationship is statistically significant. The ordinal-by-ordinal Spearman's rho had a value of -0.310, showing a possible moderate negative monotonic association between self-efficacy and GPA. Because the p-value is less than 0.001, the relationship is statistically significant. These results are depicted in Table 8 and indicate that higher perceived self-efficacy may correlate with lower GPA.

Table 8. Hypothesis 1

ANOVA - Self-efficacy and GPA					
	Sum of squares	df	Mean square	F	Significance
Between groups	10.535	4	2.634	3.570	0.008
Within groups	167.459	227	0.738		
Total	177.994	231			
Symmetric Measures Self-efficacy and GPA					
		Value	Asymptotic standard error ^a	Approximate T ^b	Approximate significance
Interval by Interval	Pearson's R	-0.239	0.077	-3.736	<.001 ^c
Ordinal by Ordinal	Spearman correlation	-0.310	0.062	-4.950	<.001 ^c
No. of valid cases		232			

H₂ - There is a relationship between growth mindset and GPA

Hypothesis 2 was also tested with an ANOVA and symmetric measures. The ANOVA significance was <0.017, indicating a significant difference between the means. According to the symmetric measures table, the interval-by-interval Pearson's r had a value of -0.219, indicating a small negative linear correlation between growth mindset and GPA. Further, because the p-value is less than 0.001, the relationship is statistically significant: as the score increases (indicating a lower growth mindset), GPA tends to decrease slightly, or vice versa. The ordinal-by-ordinal Spearman's rho had a value of -0.205, showing a weak negative monotonic association, and because the p-value is 0.002, the relationship is statistically significant (Table 9).

Table 9. Hypothesis 2

ANOVA - Growth mindset and GPA					
	Sum of squares	df	Mean square	F	Significance
Between groups	9.244	4	2.311	3.090	0.017
Within groups	169.050	226	0.748		
Total	178.294	230			
Symmetric measures growth mindset and GPA					
		Value	Asymptotic standard error	Approximate T	Approximate significance
Interval by interval	Pearson's R	-0.219	0.072	-3.396	<0.001 ^c

Ordinal by ordinal	Spearman correlation	-0.205	0.067	-3.174	0.002 ^c
No. of valid cases		231			

Hypothesis 3: There is a relationship between goal setting and GPA

When Hypothesis 3 was explored, the significance for the ANOVA was $p < 0.001$, Pearson's r had a value of -0.289 with a p -value less than 0.001, and Spearman's ρ had a value of -0.256 with a statistically significant p -value. Overall, the data indicate a moderate negative relationship between goal setting and GPA, with students who report stronger goal-setting behaviors having lower GPAs. Further, this relationship is stronger than both the self-efficacy and GPA correlation and the growth mindset and GPA correlation (Table 10).

Table 10. Hypothesis 3

ANOVA – Goal setting and GPA					
	Sum of squares	df	Mean square	F	Sig.
Between groups	11.977	4	2.994	5.755	<0.001
Within groups	118.109	227	0.520		
Total	130.086	231			
Symmetric measures, goal setting, and GPA					
		Value	Asymptotic standard error	Approximate T^b	Approximate significance
Interval by interval	Pearson's R	-0.289	0.066	-4.575	<0.001 ^c
Ordinal by ordinal	Spearman correlation	-0.256	0.065	-4.019	<0.001 ^c
No. of valid cases		232			

Hypothesis 4: There is a relationship between goal setting and self-efficacy

To examine Hypothesis 4, a t -test and symmetric measures testing with Spearman's rank correlations were utilized. According to the t -test, with a 0.999 correlation and $p < 0.001$, there is a near-perfect positive correlation, indicating that goal setting and self-efficacy move together almost identically in the dataset. With respect to the ordinal-by-ordinal Spearman's correlation, there appears to be a strong positive monotonic relationship (0.630) that is statistically significant ($p < 0.001$) (Table 11).

Table 11. Hypothesis 4

Paired samples, correlations, t-test, goal setting, and self-efficacy					
		N	Correlation	Significance	
				One-sided p	Two-sided p
Pair 1	Goal setting and self-efficacy	239	0.999	<0.001	<0.001
Symmetric measures, goal setting, and self-efficacy					
		Value	Asymptotic standard error ^a	Approximate T^b	Approximate significance
Ordinal by ordinal	Spearman correlation	0.630	0.049	12.503	<0.001 ^c
No. of valid cases		239			

Hypothesis 5: There is a relationship between goal setting and growth mindset

When Hypothesis 5 was explored, the t-test resulted in a 0.998 correlation and a p-value less than 0.001. The ordinal-by-ordinal Spearman's correlation showed a moderate monotonic relationship (0.310) that is statistically significant ($p < 0.001$) (Table 12).

Table 12. Hypothesis 5

Paired samples, correlations, t-test, goal setting, and growth mindset					
		N	Correlation	Significance	
				One-sided p	Two-sided p
Pair 1	Goal setting and growth mindset	238	0.998	<0.001	<0.001
Symmetric measures, goal setting,s and growth mindset					
		Value	Asymptotic standard error ^a	Approximate T ^b	Approximate significance
Ordinal by Ordinal	Spearman correlation	0.310	0.065	5.014	<0.001 ^c
No. of valid cases		238			

Hypothesis 6: There is a relationship between self-efficacy and growth mindset

The t-test for Hypothesis 6 resulted in a 0.998 correlation and p less than 0.001. With respect to the ordinal-by-ordinal Spearman's correlation, a monotonic relationship (0.310) that is statistically significant ($p < 0.001$) was found (Table 13).

Table 13. Hypothesis 6

Paired samples, correlations, t-test, self-efficacy, and growth mindset					
		N	Correlation	Significance	
				One-sided p	Two-sided p
Pair 1	Self-efficacy and growth mindset	238	0.998	<0.001	<0.001
Symmetric measures self-efficacy and growth mindset					
		Value	Asymptotic standard error ^a	Approximate T ^b	Approximate significance
Ordinal by ordinal	Spearman correlation	0.310	0.067	5.017	<0.001 ^c
N of Valid Cases		238			

MINDSET INTERVENTION SATISFACTION SURVEY

A sample of 55 students who completed the mindset intervention was administered an anonymous satisfaction survey to get their feedback. The demographics of participants, including first-generation college student status and GPA, are presented in Table 14.

Table 14. Satisfaction survey demographics

First-generation college student	%
Yes (1)	60.0
No (2)	28.3
Prefer not to say	11.7
GPA	%

3.6-4.0	11.7
3.1-3.5	10.0
2.6-3.0	45.0
2.1-2.5	13.3
2.0 or below	11.7

Hypothesis 7: Students view the mindset intervention positively

A series of 5-point Likert-scale questions looked at the overall utility of the mindset intervention. Hypothesis 7 was tested by examining the means for the question set, and an overall mean greater than 3.5 was considered evidence of the hypothesis. In contrast, a mean of >4.48 was achieved, with a standard deviation of 0.604 and a 95% confidence interval of 0.222. These results, presented in Table 15, indicate that students perceived the considered mindset intervention positively.

Table 15. Hypothesis 7

	N	Mean	Std. deviation	Confidence @ 95%
As a result of this course, I am now more aware of self-efficacy	55	4.40	0.564	0.213
As a result of this course, I am now more aware of growth mindset	54	4.43	0.601	0.229
As a result of this course, I am now more aware of the importance of goal setting	55	4.57	0.569	0.217
As a result of this course, I will engage in more goal-setting	55	4.62	0.560	0.212
As a result of this course, I now have greater clarity of purpose	55	4.53	0.572	0.216
As a result of this course, I am now more focused on my studies	55	4.29	0.675	0.248
I enjoyed the mindset-related activities in this class	55	4.49	0.690	0.216
The mindset intervention in this course has helped me	55	4.47	0.604	0.228
Summary	55	4.48	0.604	0.222

An ANOVA was conducted to examine whether a relationship exists between being a first-generation college student and positive perceptions of the mindset intervention, and no relationship was found. These results are shown in Table 16.

Table 16. ANOVA first gen and helpfulness

The mindset intervention in this course has been helpful					
	Sum of squares	df	Mean square	F	Sig.
Between groups	0.038	1	0.038	0.112	0.739
Within groups	17.208	51	0.337		
Total	17.245	52			

DISCUSSION

Hypothesis 1 explored whether there is a relationship between self-efficacy and GPA, identifying statistically significant negative relationships between self-efficacy and GPA, in contrast to much of the existing literature, which generally reports positive associations between self-efficacy and academic achievement (Fakhrou & Habib, 2022; Pajares & Miller, 1994; Zimmerman, 2000). Students in this study who scored higher in perceived self-efficacy tended to report lower GPAs. One possible interpretation is the role of overconfidence, in which students may perceive themselves as academically capable despite limited alignment between effort, strategy use, and performance outcomes. Prior research suggests that inflated academic self-beliefs, particularly among less academically successful students, may reflect aspirational confidence rather than accurate self-assessment (Dunning et al., 2003; Kruger & Dunning, 1999). Barder and Robbennolt (2023), who focused on first-year law school students, concluded that students' optimistic confidence/overconfidence can be both an asset and an obstacle; some overconfidence may help students persist, yet it may also prevent them from making objective projections and predicting adverse outcomes.

A different pattern emerged for Hypothesis 2, which explored the relationship between growth mindset and GPA. While growth mindset has been consistently associated with academic resilience and persistence in the research (Dweck, 2018; Yeager & Walton, 2011), the present findings revealed a weak but statistically significant negative relationship between growth mindset and GPA. The findings suggest that students with stronger growth-oriented beliefs were more likely to have higher GPAs; however, the relationship was small in magnitude. This aligns with meta-analytic work suggesting that growth mindset effects on GPA are often modest and context-dependent, particularly when measured cross-sectionally (Sisk et al., 2018). For example, Burnette et al. (2023) conducted a comprehensive systematic review and meta-analysis of growth mindset interventions, noting that the research shows large variations in effectiveness. Nevertheless, they found some positive effects on academic outcomes, mental health, and social function, with the greatest efficacy noticed in at-risk, low-achieving, and/or marginalized populations. The authors further posit that heterogeneity in mindset intervention outcomes can be partially explained by understanding three factors: (a) focal groups, or the desired sample that has the most potential for development; (b) implementation practices; and (c) contextual affordances. Accordingly, it is important for researchers to understand the context in which mindset interventions are implemented (Burnette et al., 2023; Hecht et al., 2021), as this remains an area in which significant additional research is needed, and this study may raise more questions than it answers.

When goal setting and GPA were considered, a strong negative relationship was observed. The reasons for the phenomenon whereas stronger goal setting links to lower GPAs cannot be definitively measured; however, the authors postulate that perhaps this phenom is due to compensatory behaviors where students with lower GPAs may engage in more structured goal-setting as a way to improve their academic outcomes; reverse causality whereas high-performing students may rely more on habits, existing competence, or prior knowledge rather than formal goal-setting practices; and measurement interpretation whereas goal-setting scales measure perceived effort or strategic intention, not academic skill or time management directly. The observed relationships between motivational constructs and GPA may also reflect the limitations of GPA as a sole indicator of academic success. GPA captures performance outcomes but may not fully reflect engagement, persistence, or developmental gains, dimensions that self-efficacy, growth mindset, and goal setting are theorized to influence most strongly.

While these findings differ from much of the research, they may share similarities with what was reported by Dobronyi et al. (2019), Oreopoulos et al. (2018), and Islam et al. (2024). In contrast, Dobronyi et al. (2019) found no evidence that goal-setting interventions or activities affected grade point average, course credits, or second-year persistence. Similarly, Oreopoulos et al. (2018) found that participation in goal-setting interventions and scheduling assistance marginally increased student study

time, but these positive changes did not translate into improvements in academic outcomes such as course grades and retention. Additionally, Islam et al. (2024), whose study focused on over 18,000 students from Tanzania, found that goal-setting had a significant positive effect on self-reported student time use, study effort, and self-discipline, but that academic benefits in terms of test scores and grades were insignificant.

Hypotheses 4-6 considered the interrelationships among motivational constructs, with findings revealing very strong relationships among self-efficacy, growth mindset, and goal setting. More specifically, goal setting showed near-perfect correlations with both self-efficacy and growth mindset in paired-sample analyses, while Spearman correlations indicated strong to moderate positive associations. Together, these results suggest substantial conceptual and empirical overlap among the constructs as measured in this study; however, more research and analysis are needed to further explore these results and determine whether they are replicable. One plausible interpretation of these results is that the instruments may capture a broader underlying motivational or self-regulatory orientation rather than distinct constructs. This overlap may be amplified in self-report measures, where students' global academic self-concept influences responses across domains. Although theoretically distinct, self-efficacy, growth mindset, and goal setting are often enacted simultaneously, making them difficult to disentangle in survey-based research (Xu et al., 2025).

Hypothesis 7 explored whether students perceived the mindset intervention positively and was based on survey responses from a randomized sample of participating students, who reported highly positive perceptions of its usefulness, supporting the hypothesis. Participants noted that participating in the intervention led to greater awareness of self-efficacy, a growth mindset, and goal setting, along with increased clarity of purpose and academic focus. These findings align with prior research showing that mindset interventions can positively influence students' beliefs and attitudes, even when effects on GPA are modest or indirect (Yeager et al., 2019).

First-generation status was not significantly associated with differences in perceived helpfulness, and no relationship was found between first-generation college students and positive perceptions of the mindset intervention. Suggesting the intervention maintained consistent efficacy across student backgrounds. This finding is central to advancing equity-focused educational practices. Nevertheless, these findings differ from what has been reported in the literature (Harackiewicz et al., 2014).

LIMITATIONS

The most notable limitation of this study is that it was conducted at a single minority-serving institution located in the United States. At the same time, this represents a population that is all too often missing from the research literature. The limitations inherent in the study presented in this paper should be addressed by future research that expands the scope of this examination to include additional institutions from more parts of the world.

CONCLUSION

This paper focused on a mindset intervention, established after years of longitudinal research, intended to have a positive impact on the outlook, self-efficacy beliefs, and goal-setting behaviors of primarily first-generation and under-prepared students attending an HBCU. More specifically, this paper explored whether growth mindset, self-efficacy, and goal-setting skills impact student performance and whether they are interrelated. It also presented students' perceptions of the intervention program's efficacy. According to analyses of results using ANOVAs and Spearman's rank and Pearson's rho correlations, negative relationships were found between self-efficacy, goal setting, and student GPAs. In contrast, students with lower GPAs were found to have higher perceived self-efficacy and goal-setting scores, which the authors suggested may be linked to strong institutional supports

for low-achieving students, remediations, and compensatory behaviors, potentially resulting in reverse causality.

Growth mindset was found to have a weak relationship with student achievement, whereas higher growth mindset scores did correlate to higher GPA; however, the relationship was modest. Nevertheless, students reported highly positive perceptions of the value, usefulness, and impact of the mindset intervention, citing increased awareness and clarity of purpose.

The results of this paper make a valuable contribution to a body of literature that has yielded mixed results regarding the efficacy of mindset interventions; however, more research across more environments is needed, especially at minority-serving institutions. The self-assessment instruments used in this study have been validated and are freely available for adoption, provided attribution is given. The counterintuitive findings indicated in this paper were surprising; however, they are not completely anomalous. Nevertheless, they suggest that significant gaps remain in the literature and that significantly more research is needed to explore this topic.

REFERENCES

- Akin, A., & Arslan, S. (2014). The relationships between achievement goal orientations and grit. *Education and Science*, 39(175), 267-274. <https://doi.org/10.15390/EB.2014.2125>
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (Ed.). (1995). *Self-efficacy in changing societies*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511527692>
- Barder, S., & Robbenolt, J. (2023). *Optimistic overconfidence: A study of law student academic predictions*. University of Illinois College of Law Legal Studies Research Paper No. 23-16. <https://ssrn.com/abstract=4524497>
- Burnette, J. L., Billingsley, J., Banks, G. C., Knouse, L. E., Hoyt, C. L., Pollack, J. M., & Simon, S. (2023). A systematic review and meta-analysis of growth mindset interventions: For whom, how, and why might such interventions work? *Psychological Bulletin*, 149(3-4), 174-205. <https://doi.org/10.1037/bul0000368>
- Burnette, J. L., O'Boyle, E. H., VanEpps, E. M., Pollack, J. M., & Finkel, E. J. (2013). Mind-sets matter: A meta-analytic review of implicit theories and self-regulation. *Psychological Bulletin*, 139(3), 655-701. <https://doi.org/10.1037/a0029531>
- Buzzetto-Hollywood, N. (2023). Decolonization and culturally responsive teaching practices and the role of Historically Black Colleges and Universities. *Journal of Education and Human Development*, 12(1), 1-15. <https://doi.org/10.15640/jehd.v12n1a1>
- Buzzetto-Hollywood, N., Banks, T., & Hill, A. (2024). Informing academia through understanding of the technology use, information gathering behaviors, and social concerns of Gen Z. *Informing Science: The International Journal of an Emerging Transdiscipline*, 27, Article 12. <https://doi.org/10.28945/5388>
- Buzzetto-Hollywood, N., & Mitchell, B. C. (2019). Grit and persistence: Findings from a longitudinal study of student performance. *Issues in Informing Science and Information Technology*, 16, 377-391. <https://doi.org/10.28945/4375>
- Buzzetto-Hollywood, N., & Mitchell, B. C., & Hill, A. (2019). Introducing a Mindset interventions to improve student success. *Interdisciplinary Journal of e-Skills and Lifelong Learning*, 15, 135-155. <https://doi.org/10.28945/4465>
- Buzzetto-Hollywood, N., & Quinn, K. (2025). DEI research in higher education: Results from a study at an American Minority-Serving Institution. *Trends in Higher Education*, 4(3), 49. <https://doi.org/10.3390/higheredu4030049>
- Buzzetto-Hollywood, N., Thomas-Banks, L., West, L., & Richerson, R. (2025). Validating scales for measuring self-efficacy, growth mindset, and goal setting. *Social Sciences*, 14(12), 726. <https://doi.org/10.3390/socsci14120726>

- Cherry, K. (2024). *What is a mindset and why it matters*. Verywell Mind. <https://www.verywellmind.com/what-is-a-mindset-2795025>
- Claro, S., Paunesku, D., & Dweck, C. S. (2016). Growth mindset tempers the effects of poverty on academic achievement. *Proceedings of the National Academy of Sciences*, 113(31), 8664-8668. <https://doi.org/10.1073/pnas.1608207113>
- Clay, G. (2016, September 14). *New tactics needed to fix low HBCU graduation rates*. ESPN Enterprises. <https://the-undefeated.com/features/new-tactics-needed-fix-low-hbcu-graduation-rates/>
- Daumiller, M., Rinas, R., & Dresel, M. (2023). Relevance of students' goals for learning engagement and knowledge gains in an online learning course. *Behavioral Sciences*, 13(2), 161. <https://doi.org/10.3390/bs13020161>
- DeBacker, T. K., Heddy, B. C., Kershen, J. L., Crowson, H. M., Looney, K., & Goldman, J. A. (2016). Effects of a one-shot growth mindset intervention on beliefs about intelligence and achievement goals. *Educational Psychology*, 38(6), 711-733. <https://doi.org/10.1080/01443410.2018.1426833>
- Diaconu-Gherasim, L. R., Elliot, A. J., Zancu, A. S., Brumariu, L. E., Măirean, C., Opariuc-Dan, C., & Crumpei-Tanasă, I. (2024). A meta-analysis of the relations between achievement goals and internalizing problems. *Education Psychology Review*, 36, Article 109. <https://doi.org/10.1007/s10648-024-09943-5>
- Dobronyi, C. R., Oreopoulos, P., & Petronijevic, U. (2019). Goal setting, academic reminders, and college success: A large-scale field experiment. *Journal of Research on Educational Effectiveness*, 12(1), 38-66. <https://doi.org/10.1080/19345747.2018.1517849>
- Dunning, D., Johnson, K., Ehrlinger, J., & Kruger, J. (2003). Why people fail to recognize their own incompetence. *Current Directions in Psychological Science*, 12(3), 83-87. <https://doi.org/10.1111/1467-8721.01235>
- Dweck, C. S. (1986). Motivational processes affecting learning, *American Psychologist*, 41(10), 1040-48. <https://doi.org/10.1037/0003-066X.41.10.1040>
- Dweck, C. (2018). *Growth mindset interventions yield impressive results*. The Conversation. <https://doi.org/10.64628/AAI.apnnnxxe5>
- Dweck, C. (2019). The choice to make a difference. *Perspectives on Psychological Science*, 14(1), 21-25. <https://doi.org/10.1177/1745691618804180>
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256-273. <https://doi.org/10.1037/0033-295X.95.2.256>
- Dweck, C. S., & Yeager, D. S. (2019). Mindsets: A view from two eras. *Perspectives on Psychological Science*, 14(3), 481-496. <https://doi.org/10.1177/1745691618804166>
- Elliot, A. J., & McGregor, H. A. (2001). A 2 × 2 achievement goal framework. *Journal of Personality and Social Psychology*, 80(3), 501-519. <https://doi.org/10.1037/0022-3514.80.3.501>
- Fakhrou, A., & Habib, L. H. (2022). The relationship between academic self-efficacy and academic achievement in students of the Department of Special Education. *International Journal of Higher Education*, 11(2), 1-12. <https://doi.org/10.5430/ijhe.v11n2p1>
- Han, T., Xu, G., & Lu, W. (2025). Examining the effects of different types of achievement goal orientation on undergraduate students' engagement in distance learning: The mediating effect of self-efficacy. *Behavioral Sciences*, 15(1), 39. <https://doi.org/10.3390/bs15010039>
- Harackiewicz, J. M., Canning, E. A., Tibbetts, Y., Giffen, C. J., Blair, S. S., & Hyde, J. S. (2014). Closing the social class achievement gap for first-generation students in undergraduate biology. *Journal of Educational Psychology*, 106(2), 275-289. <https://doi.org/10.1037/a0034679>
- Hecht, C. A., Yeager, D. S., Dweck, C. S., & Murphy, M. C. (2021). Beliefs, affordances, and adolescent development: Lessons from a decade of growth mindset interventions. *Advances in Child Development and Behavior*, 61, 169-197. <https://doi.org/10.1016/bs.acdb.2021.04.004>

- Islam, A., Kwon, S., Masood, E., Prakash, N., Sabarwal, S., & Saraswat, D. (2024). All pain and no gain: When goal setting leads to more effort but no gains in test scores, *Economics of Education Review*, 103, Article 102594. <https://doi.org/10.1016/j.econedurev.2024.102594>
- Jury, M., Smeding, A., Stephens, N. M., Nelson, J. E., Aelenei, C., & Darnon, C. (2017). The experience of low-SES students in higher education: Psychological barriers to success and interventions to reduce social-class inequality. *Journal of Social Issues*, 73(1), 23-41. <https://doi.org/10.1111/josi.12202>
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, 77(6), 1121-1134. <https://doi.org/10.1037/0022-3514.77.6.1121>
- Kyler, E. N., & Moscicki, M. K. (2024). Measuring many mindsets: A systematic review of growth mindset domains, and discussion of domain relationships, with implications for growth mindset interventions. *Social and Personality Psychology Compass*, 18(11), Article e70015. <https://doi.org/10.1111/spc3.70015>
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *The American Psychologist*, 57(9), 705-717. <https://doi.org/10.1037/0003-066X.57.9.705>
- Memari, M., Gavinski, K., & Norman, M. K. (2024). Beware false growth mindset: Building growth mindset in medical education is essential but complicated. *Academic Medicine*, 99(3), 261-265. <https://doi.org/10.1097/ACM.0000000000005448>
- Miller, A. L., Fassett, K. T., & Palmer, D. L. (2021). Achievement goal orientation: A predictor of student engagement in higher education. *Motivation and Emotion*, 45(3), 327-344. <https://doi.org/10.1007/s11031-021-09881-7>
- Noordzij, G., Giel, L., & van Mierlo, H. (2021). A meta-analysis of induced achievement goals: The moderating effects of goal standard and goal framing. *Social Psychology of Education*, 24, 195-245. <https://doi.org/10.1007/s11218-021-09606-1>
- O'Keefe, P. A., Dweck, C. S., & Walton, G. M. (2018). Implicit theories of interest: Finding your passion or developing it? *Psychological Science*, 29(10), 1653-1664. <https://doi.org/10.1177/0956797618780643>
- Oreopoulos, P., Patterson, R. W., Petronijevic, U., & Pope, N. G. (2018). *When studying and nudging don't go as planned: Unsuccessful attempts to help traditional and online college students*. National Bureau of Economic Research Working Paper No. 25036. <https://doi.org/10.3386/w25036>
- Pajares, F., & Miller, M. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: A path analysis. *Journal of Educational Psychology*, 86(2), 193-203. <https://doi.org/10.1006/ceps.1996.0025>
- Park, B.-M. (2021). Effects of nurse-led intervention programs based on goal attainment theory: A systematic review and meta-analysis. *Healthcare*, 9(6), 699. <https://doi.org/10.3390/healthcare9060699>
- Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. *Psychological Science*, 26(6), 784-793. <https://doi.org/10.1177/0956797615571017>
- Porter, T., Catalán Molina, D., Cimpian, A., Roberts, S., Fredericks, A., Blackwell, L. S., & Trzesniewski, K. (2022). Growth-mindset intervention delivered by teachers boosts achievement in early adolescence. *Psychological Science*, 33(7), 1086-1096. <https://doi.org/10.1177/09567976211061109>
- Primeau, M. (2021, September 15). *Your powerful, changeable mindset*. Stanford University. <https://news.stanford.edu/stories/2021/09/mindsets-clearing-lens-life>
- Schexnider, A. (2017). *Governance and the future of Black colleges*. Inside Higher Education. <https://www.insidehighered.com/views/2017/12/20/struggling-hbcus-must-consider-new-options-survival-opinion>
- Senko, C. (2019). When do mastery and performance goals facilitate academic achievement? *Contemporary Educational Psychology*, 59, Article 101795. <https://doi.org/10.1016/j.cedpsych.2019.101795>
- Seymour, S., & Ray, J. (2015). *Grads of Historically Black Colleges have well-being edge*. Gallup. <https://news.gallup.com/poll/186362/grads-historically-black-colleges-edge.aspx>

- Sisk, V. F., Burgoyne, A. P., Sun, J., Butler, J. L., & Macnamara, B. N. (2018). To what extent and under which circumstances are growth mind-sets important to academic achievement? Two meta-analyses. *Psychological Science*, 29(4), 549-571. <https://doi.org/10.1177/0956797617739704>
- Vuong, M., Brown-Welty, S., & Tracz, S. (2010). The effects of self-efficacy on academic success of first-generation college sophomore students. *Journal of College Student Development*, 51(1), 50-64. <https://doi.org/10.1353/csd.0.0109>
- Xu, K. M., Leferink, J., & Wiinia, L. (2025). A review of the relationship between student growth mindset and self-regulated learning. *Frontiers in Education*, 10, 1539639. <https://doi.org/10.3389/feduc.2025.1539639>
- Yeager, D. S., Bryan, C. J., Gross, J. J., Murray, J. S., Krettek Cobb, D., Santos, P. H. F., Gravelding, H., Johnson, M., & Jamieson, J. P. (2022). A synergistic mindsets intervention protects adolescents from stress. *Nature*, 607, 512-520. <https://doi.org/10.1038/s41586-022-04907-7>
- Yeager, D. S., & Dweck, C. S. (2020). What can be learned from growth mindset controversies? *American Psychologist*, 75(9), 1269-1284. <https://doi.org/10.1037/amp0000794>
- Yeager, D. S., Hanselman, P., Walton, G. M., Murray, J. S., Crosnoe, R., Muller, C., Tipton, E., Schneider, B., Hulleman, C. S., Hinojosa, C. P., Paunesku, D., Romero, C., Flint, K., Roberts, A., Trott, J., Iachan, R., Buontempo, J., Yang, S. M., Carvalho, C. M., ... Dweck, C. S. (2019). A national experiment reveals where a growth mindset improves achievement. *Nature*, 573, 364-369. <https://doi.org/10.1038/s41586-019-1466-y>
- Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research*, 81, 267-301. <https://doi.org/10.3102/0034654311405999>
- Zhao, S., Chen, P., Jin, L., Yu, C., Zhang, H., & Lin, D. (2025). Unlocking emotional well-being: Evaluation of a stress mindset intervention with a metacognitive approach. *Emotion*, 25(5), 1169-1184. <https://doi.org/10.1037/emo0001474>
- Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology*, 25(1), 82-91. <https://doi.org/10.1006/ceps.1999.1016>
- Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, 41(2), 64-70. https://doi.org/10.1207/s15430421tip4102_2

AUTHORS



Dr. Nicole A. Buzzetto-Hollywood is the Interim Director of Assessment and a Professor of Management at the University of Maryland Eastern Shore. She received a doctorate and a master's degree from Columbia University and a postdoctoral degree from Tulane University. She has authored over 40 peer-reviewed journal articles, as well as books and book chapters, and currently serves as Editor-in-Chief of the *International Journal of Doctoral Studies*. In 2023, she was appointed by the Governor of Maryland to the Maryland Commission for LGBTQIA+ Affairs and also serves on the boards of Shore Pride Alliance, Salisbury Pride, and the Informing Science Institute.



Leesa Thomas-Banks is an Associate Vice Provost and Department Chair at the University of Maryland Eastern Shore. Her areas of specialization include educational equity, international education, management education, business law, business ethics, curriculum development, risk management, program evaluation, and community engagement and social responsibility. She earned her Juris Doctorate from Loyola University New Orleans School of Law in 2000. Before joining the faculty at UMES in 2010, she worked in corporate America, and she practices law. She is a member of the Texas Bar and the United States Supreme Court Bar.



Dr. Leslie West is an Assistant Department Chair and Assistant Professor of Accounting in the Department of Business, Management, and Accounting at the University of Maryland Eastern Shore. She also serves as the faculty advisor for the student chapter of the National Association of Black Accountants (NABA, Inc.). She earned her doctorate from Hampton University and her master's from Old Dominion University. She brings a blend of academic expertise and industry experience to the classroom, with a professional background in auditing and accounting across government, financial, healthcare, and manufacturing industries. Her research interests include financial accounting and sustainability, internal

controls, and growth mindset.