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Exploring the Connection Between Academic Competence and Academic Self-Efficacy: Insights from African American College Students

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This study examined the relationships between academic self-efficacy, academic competence, and perceived academic competence among African American college students. This study focused on math, a subject that students have been found to struggle with. Academic self-efficacy refers to students' beliefs in their ability to perform behaviors that lead to academic success. In contrast, academic competence and perceived academic competence refer to students' knowledge and skills, and their perceived ability to succeed academically, respectively. Although academic self-efficacy and perceived academic competence are often used interchangeably, they originate from different theoretical frameworks. Competence stems from self-determination theory, while self-efficacy is rooted in social cognitive theory. All the constructs of interest have been found to be related to other academic outcomes. In line with previous research, this study measured academic competence through current GPA and final grade of a chosen math class. Perceived academic competence was measured using the Competence for Learning scale from the Perceived Competence Scale by Williams and Deci (1998). This study used the Educational Self-Efficacy Scale (Imperial College London 2021) to measure academic self-efficacy. Correlational analysis, simple linear regression, and ordinal regression were used to examine the data. Data analysis revealed that academic self-efficacy and perceived academic competence are closely related but are not the same; however, more research needs to be done to distinguish between them. Analysis also revealed that academic self-efficacy, perceived academic competence, and the final grade in a chosen math class are related to one another but unrelated to GPA. This research has important implications for understanding how academic self-efficacy, academic competence, and perceived academic competence impact the educational outcomes for a population that struggles academically.

Keywords: *Academic Self-Efficacy, Perceived Academic Competence*

Introduction

Americans have been found to have low math skills (National Center for Education Statistics 2025). When compared to students from other nations, Americans score lower on international tests (National Center for Education Statistics 2025). However, the gap in achievement also occurs between American populations. There is a gap in the academic performance between African Americans and European Americans (St. Mary et al. 2018). This gap has been referred to as the "opportunity gap". The

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opportunity gap describes the negative implications of systemic and structural racism that have led to the educational achievement gap amongst Black students and European Americans (Vargas et al. 2023). An example of systemic and structural racism includes the Jim Crow Laws. In the United States, during the 1870s, many southern states adopted and enacted legislation that made it illegal for Black and White students to attend the same schools, use the same forms of public transportation, or use the same drinking fountains (Vargas et al. 2023). These laws prevented Black students from receiving access to quality education, which explains the existing achievement gap between Black and White students today. Segregation still currently exists and continues to have detrimental effects on Black populations (Torres and Massey 2012).

This gap has persisted for decades (Coleman 1986, Wong and Nicotera 2004). According to the Nation's report card, African Americans have scored below Proficient in both math and reading, but students do particularly poorly in math (The Nation's Report Card 2024). The importance of math to academic identity makes this especially concerning (Miller and Wang 2019). Academic identity refers to an individual's relationship to their academics (Butler-Barners et al. 2017). It relates to the view of oneself to the norms and beliefs within academic environments and impacts how students connect to educational spaces (Phillips et al. 2022).

Contextually, most places in the United States follow a Kindergarten through Grade 12 education system. During the Middle and High School years, key developmental conflicts arise, as explained by Erik Erikson in the Identity versus Role Confusion stage. In this stage, adolescents are tasked with understanding their innate desires, preferences, and aspirations whilst navigating the social pressures of their schools. Extant literature suggests that Black students face difficulties maneuvering through this stage due to the conflicting societal messages laced with racist undertones and the promotion of assimilation. Assimilation is the act of diluting one's expression of their cultural group to abide by White supremacist ideals, such as a child refusing to use their country's accent.

Moreover, Black students are double tasked with normative identity development and developing a racial identity or their beliefs regarding their racial group membership (Butler-Barners et al. 2017). They must also cope with limited representations of high-achieving Black professionals due to systemic racism. This perpetuates the academic and opportunity gaps that negatively impact the advancement of the Black community today. However, several attempts have been made to close the gap, including initiatives enacted under President George W. Bush and President Obama (Boykin and Noguera 2011, McGuinn 2016, U.S. Department of Education n.d.) The gap continues.

This gap in educational opportunity has detrimental effects on African American communities. It is related to reduced differences in socioeconomic status (including economic mobility), systemic oppression, and increased stereotypes (Rovai et al. 2005, Olneck 2006, Kellow and Jones 2008, Assari et al. 2021). However, economic inequity is both a cause and a consequence of the difference in academic achievement between African American students and other ethnic groups (Olneck 2006, St. Mary et al. 2018, Cabral-Gouveia et al. 2023).

Differences in achievement cannot only be attributed to external factors. There have been opposing results on the relationships among academic outcomes. For example, Chemers et al. (2001) found a link between academic performance and academic persistence. However, Sharma (2020) did not find a relationship between academic self-efficacy and academic persistence. This study proposes that students' self-perception impacts academic performance in school. This study refers to academic performance as academic competence to reference the importance of skills in academic performance. Subsequently, perceived academic competence refers to students' belief that they have attained academic skill, whereas academic self-efficacy refers to students' beliefs in their ability to behave in ways necessary to achieve academic goals. Therefore, this study aims to explore the relationships among academic self-efficacy, academic competence, and perceived academic competence in hopes of better understanding factors that contribute to achievement gaps. Olneck (2006) suggested that even a marginal increase in academic achievement can lead to economic gains for African Americans; therefore, efforts to increase academic achievement for African Americans are of importance. The United States needs skilled populations that can assist in meeting current economic needs (Olszewski-Kubilius and Clarenbach 2014). Academic achievement plays a crucial role in preparing citizens for future employment opportunities and growth.

Literature Review

Self-Determination Theory and Perceived Academic Competence

Self-Determination Theory was developed to examine the interaction between inherent growth tendencies and innate psychological needs to understand the multifaceted construct of human motivation (Ryan and Desi 1985). Ryan and Desi (1985) concluded that there are three subcategories of SDT: the need for competence, relatedness, and autonomy. Ryan and Desi (1985) suggested that these subcategories are grounded in the Cognitive Evaluation Theory (CET), a sub theory within SDT, that aims to explain variability in intrinsic motivation to underscore the social and environmental factors that permit successful human motivation and advancement through the educational system.

Cognitive Evaluation Theory

CET suggests that perceived competence alone will not enhance intrinsic motivation unless it is accompanied by a sense of autonomy through self-efficacious assessments centered around perceived locus of causality (Ryan and Desi 1985). Simply, students not only need to have the belief that they can demonstrate skills (perceived competence), but they must also perform satisfactorily on objective skills assessments to obtain confidence in their ability to succeed (self-efficacy). Subsequently, educational psychologists commonly utilize SDT to conceptualize the motivational experiences of students. Thus, this paper will utilize SDT to highlight the implications of perceived academic competence and distinguish this concept from academic self-efficacy.

Perceived Academic Competence

While both constructs fall under the umbrella of human motivation, perceived academic competence and academic self-efficacy are not interchangeable terms. Perceived academic competence focuses on the students' subjective perception of their objective skills. Existing literature suggests that self-perceptions of academic competence play a pivotal role in promoting students' psychological functioning; self-perceptions of academic competence within educational settings may protect against negative mental health outcomes (Worley et al. 2023).

Empirical research examining the relationship between college students and perceived academic competence suggests that higher self-perceptions of academic competence predicted decreased depressive symptoms (Urhlass et al. 2009). Using the Self-Perception Profile for College Students (Neemann and Harter 1986), Urhlass et al. (2009) exemplified a measure of perceived academic competence in a collegiate setting. Results suggest depressive symptoms have been related to deficits in perceived self-competence and that self-perceived scholastic competence independently predicted residual changes in depressive symptoms (Urhlass et al. 2009). In conclusion, low reports of perceived academic competence have mental health implications, which presumably lead to decreased academic outcomes and motivation to complete assignments.

Academic Self-Efficacy

Academic self-efficacy concerns the belief system and intrinsic motivations of students (Repo and Salmivalli 2025). Existing literature investigated perceived academic self-efficacy through the lens of affective well-being, self-acceptance, and academic performance in undergraduate college students (Cobo-Rendon et al. 2020). Using the Academic Situations Specific Perceived Self-Efficacy Scale, the results suggested that psychosocial well-being predicts positive emotions, which then influences academic achievement and predicts academic performance. In terms of self-efficacy directly, there was no statistically significant relationship with academic performance (Cobo-Rendon et al. 2020). The lack of statistical significance prompts researchers to call for more research aimed at investigating the effects of perceived self-efficacy on academic performance directly, as opposed to the combined self-acceptance and well-being variables used. For example, recent literature operationalized academic self-efficacy as "an individual's judgement about their ability to successfully attain educational goals" (Repo and Salmivalli 2025). However, researchers consistently emphasize the critical role both academic self-efficacy and competence in academic achievement (Reno and Salmivalli 2025).

Gap in Literature

Current research investigating human motivation and academic performance examines academic self-efficacy and perceived academic competence independently, but studies them using similar methodology. Thus, suggesting the terms are used interchangeably. Additionally, academic competence research is often accompanied by variables that examine the social influence on learning, such as social competence and social acceptance, and the influence of social interaction. For example, a study on the changes in children's well-being and mental health aimed to investigate not just academic competence but also social competence (Devine et al. 2025). Participants completed two measures of competence: the Competence and Coping Questionnaire which solely measures academic competence, rating performance as "Not as strong as most peers" to "Much stronger than most peers" (Devine et al. 2025). This demonstrates a scale that measures student competence and performance through peer comparison, as opposed to an introspective analysis of perceived academic competence alone.

In summary, the distinction between perceived academic competence and academic self-efficacy on academic performance needs further investigation. This study theorized that this is a result of the presumed overlap of the constructs. A goal of this study is to distinguish between the two constructs and advocate for the intentional promotion of both perceived academic competence and self-efficacy within the student population. The study also aimed to explore the relationships among academic self-efficacy, academic competence, and perceived academic competence to further indicate that self-perception impacts academic behaviors and abilities.

Based on existing research and identified gaps in literature, the hypotheses are as follows:

H1. Academic competence and perceived academic competence positively correlate with academic self-efficacy.
- H1a. Perceived academic competence positively correlates with academic self-efficacy.
- H1b. The final grade in a chosen math class positively correlates with academic self-efficacy.
- H1c. GPA positively correlates with academic self-efficacy.

H2. Academic competence and perceived academic competence positively correlate with one another.
- H2a. Perceived academic competence positively correlates with the final grade in a chosen math class.
- H2b. Perceived academic competence positively correlates with GPA.
- H2c. The final grade in a chosen math class positively correlates with GPA.

H3. Combining items from academic self-efficacy and perceived academic competence improves reliability.

H4. Academic self-efficacy predicts academic competence and perceived academic competence.
- H4a. Academic self-efficacy predicts perceived academic competence.
- H4b. Academic self-efficacy predicts the final grade in a chosen math class.
- H4c. Academic self-efficacy predicts GPA

H5. Perceived academic competence predicts academic competence.
- H5a. Perceived academic competence predicts the final grade in a chosen math class.
- H5b. Perceived academic competence predicts GPA.

H6. The final grade in a chosen math class predicts GPA.

Method

Participants

This study included 82 participants from a Historically Black College and University (HBCU) to collect data in a metropolitan city in the United States. Participants identified as being African American between the ages of 18 and 22, with an African American primary caregiver. Approximately 40.2% of participants identified as 18 years old, 30.5% identified as 19 years old, 22% identified as 20 years old, 3.7% identified as 21 years old, and 3.7% identified as 22 years old. Although all participants identified as either male (N=16) or female (N=66), the option for identifying as non-binary/ third gender or preferred not to say was available. The self-identified socioeconomic status of the participants ranged from low income to high income. Approximately 6.1% of participants identified as low income, 13.4% of participants identified as middle-low income, and 47.6% of participants identified as middle income, 29.3% of participants identified as middle-high income, and 3.7% of participants identified as high income.

Measures

Academic Competence

This study measured academic competence in two ways. The final grade in a math class of participants' choice was collected, along with the overall Grade-Point Average (GPA) of the participants. The grades were measured as follows: 90-100 (typically an A) was coded as 5, 80-89 (typically a B) was coded as 4, 70-79 (typically a C) was coded 3, 60-69 (typically a D) was coded as 2, and scores under 60 (typically an F) were coded as 1.

Perceived Academic Competence

This study also collected data using the Perceived Competence for Learning scale from the Perceived Competence Scale by Williams and Deci (1998). The participant responses for this scale were based on the same chosen math class as the final grade collected. This scale used a 7-point Likert scale ranging from 1 (not at all true) to 7 (very true). An example of an item is "I feel able to meet the challenge of performing well in this course." There were a total of four items in this scale. The Cronbach's alpha was found to be .88.

Academic Self-Efficacy

This study used an adapted version of The Educational Self-Efficacy Scale (Imperial College London 2021) to measure academic self-efficacy for the chosen math class. This scale used a 5-point Likert scale ranging from (not at all confident) to 5 (extremely confident). An example item included, "When complicated ideas were presented in your modules, how confident were you that you could understand them?" Finally, there were a total of five items in this scale. The Cronbach's alpha was found to be .91.

Procedure

Before collecting data, the researchers obtained approval from the university's Institutional Review Board and the Psychology department of the university to collect data from Introduction to Psychology students. Qualtrics was used to collect data. The Qualtrics link and QR code were distributed to the students of the Psychology department via email by the course professors. Students were eligible to receive course credit at the discretion of their professors. The Qualtrics link included a consent preamble and collected responses to demographic questions, the final grade in the chosen math class, GPA, the Perceived Competence for Learning scale, the Educational Self-Efficacy Scale, and scales that measured cultural socialization and warm demander pedagogy. The data for this study were collected as part of a doctoral dissertation, however, this study solely concerns the analysis of the relationships among academic self-efficacy, academic competence, and perceived academic competence. The total time to complete the entire survey was approximately 15 minutes. IBM SPSS Statistics Version 29.0 was used for all data analysis.

Results

Descriptive Statistics

This study explored the relationships among academic self-efficacy, academic competence, and perceived academic competence among 82 African American Students from an HBCU in an American metropolitan area. Descriptive statistics and demographic statistics are reflected in Tables 1.

Table 1. *Descriptive Statistics for Major Variables of Interest*

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Academic Self-Efficacy	82	5.00	25.00	15.84	4.57
Perceived Academic Competence	82	10.00	28.00	22.83	4.38
Final Grade in a Chosen Math Class	82	1.00	4.00	3.40	.81
GPA	82	2.00	4.00	3.54	.63

The average score for academic self-efficacy was 15.84 (SD=4.57). The 18-year-old participants had an average score of 15.93 (SD=4.60). This was slightly lower than the mean score for 19-year-old participants (M=16.72, SD=3.46). The 21 and 22-year-old participants had the same average score (M=15.3, SD=10.02). The 20-year-old participants had the lowest average score of (M=14.89, SD=4.89). However, a one-way ANOVA was conducted to assess whether there was a difference in academic self-efficacy across ages, and there was no statistically significant difference among ages, $F(4, 77) = 0.60, p > .05$.

Male participants had an average score of 18.50 (SD=4.55) for academic self-efficacy, which is higher than the average score for female participants (M=15.19, SD=4.37). An independent samples t-test was conducted to determine if there was a difference in academic self-efficacy between genders, and there was a statistically significant difference between genders, $t(80)=2.69$, $p<.05$.

Low-income participants had the lowest average for academic self-efficacy (M=13.2, SD=6.46). Participants with middle-low income had the highest average score (M=17.36, SD=3.59). Participants with middle income had slightly more variable scores (M=15.46, SD=3.80). Participants with high income (M=16.00, SD=6.00) had a similar average score to participants with middle-high income (M=16.29, SD=5.54). However, a one-way ANOVA was conducted to assess whether there was a difference in academic self-efficacy across SES, and there was no statistically significant difference among SES, $F(4, 77) = 0.84$, $p > .05$.

The average score for perceived academic competence was 22.83 (SD=4.38). This was slightly higher than the average school for the 18-year-old participants (M=22.60, SD=4.18). The 19-year-old participants had the highest average score (M=23.76, SD=3.70). The 20-year-old participants had the most variable scores and the lowest average score (M=21.83, SD=577). The 21-year-old participants and the 22-year-old participants had the same average score and were equally variable (M=23.33, SD=5.03). However, a one-way ANOVA was conducted to assess whether there was a difference in perceived academic competence across ages, and there was no statistically significant difference among ages, $F(4, 77) = 0.53$, $p > .05$.

Male participants had an average score of 23.13 for perceived academic competence (SD=5.54) for perceived academic competence. Females had a lower average score and less variable scores (M=22.76, SD=4.10). However, an independent samples t-test was conducted to determine if there was a difference in perceived academic competence between genders, and there was no statistically significant difference between genders, $t(80)=.30$, $p>.05$

Participants with high income had the lowest average score (M=22.00, SD= 5.29). This was consistent with the average score for participants with middle-low income (M=22.10, SD=5.10). Participants with middle income had a slightly higher average score, but the scores were less variable (M=22.67, SD=4.61). Participants with low income had the lowest score variability (M=22.80, SD=3.70). Participants with middle-high income had the highest average score M=23.54, SD=3.91). However, a one-way ANOVA was conducted to assess whether there was a difference in perceived academic competence across SES, and there was no statistically significant difference among ages, $F(4, 77) = 0.27$, $p > .05$.

Testing the Hypotheses

<u>H1. Academic competence and perceived academic competence positively correlate with academic self-efficacy</u>

To test this hypothesis, correlational analyses were used. For the correlational relationship between perceived academic competence and academic self-efficacy, Pearson's *r* was analyzed, while the correlational relationships among academic self-efficacy, perceived academic competence, final grade, and GPA were analyzed using Spearman's ρ. Analysis supported H1a and H1b but did not support H1c. There was a moderate, positive, and statistically significant correlation between perceived academic competence and academic self-efficacy, $r(80)=.49$, $p<.05$. There was also a small, positive, and statistically significant relationship between academic self-efficacy and the final grade in a chosen math class, $\rho(80)=.25$, $p<.05$. The correlational relationship between academic self-efficacy and GPA was not significant, $\rho(80)=.09$, $p>.05$. See Table 2 for the correlational analysis.

H2. Academic competence and perceived academic competence positively correlate with one another

The correlational relationships among perceived academic competence, final grade, and GPA were analyzed using Spearman's ρ. Analysis supported H2a and H2c but did not support H2b. The correlational relationship between perceived academic competence and the final grade in a chosen math class was small, positive, and statistically significant, $\rho(80)=.28$, $p<.05$. However, the correlational relationship between perceived academic competence and GPA was not significant, $\rho(80)=.18$, $p>.05$, but it was close to significance. The correlational relationship between the final grade in a chosen math class and GPA was moderate, positive, and statistically significant, $r(80)=.49$, $p<.05$. See Table 2 for correlational analyses.

Table 2. *Correlations Among Major Variables of Interest*

Variables	1.	2.	3.	4.
1. Academic Self-Efficacy	1	-	-	-
2. Perceived Academic Competence	**.49**a*	1	-	-
3. Final Grade in a Chosen Math Class	**.25**^{b}*	**.28**^{b}*	1	-
4.GPA	.09^{b}	.18^{b}	**.49**^{b}*	**1**

[a]Pearson's r reported
[b] Spearman's ρ reported
*p < .05(2-tailed)

H3. Combining items from academic self-efficacy and perceived academic competence improves reliability.

Analysis partially supported this. Combining items from academic self-efficacy and perceived academic competence improved reliability for academic self efficacy, but not for perceived academic competence. When combining the items from both academic self-efficacy and perceived academic competence, Cronbach's alpha is 0.89. However, the individual Cronbach's alpha for academic self-efficacy is 0.91, which is higher than the Cronbach's alpha for the combination of the scales. The individual Cronbach's alpha for perceived academic competence is 0.88, which is slightly lower than the Cronbach's alpha for the combination of the scales.

H4. Academic self-efficacy predicts academic competence and perceived academic competence

To test this hypothesis, different regression analyses were used. H4a and H4b were supported, but H4c was not supported. For the predictive relationship between academic self-efficacy and perceived academic competence, simple linear regression was used. Academic self-efficacy significantly predicted perceived academic competence (β =.49, SE=.09, p<.05). The regression model was significant, F(1,80)= 24.99, p<.05).

To assess a predictive relationship between academic self-efficacy and the final grade in a chosen math class, an ordinal logistic regression was used. The Test of Parallel Lines was not significant for the predictive relationship between academic self-efficacy and the final grade in a chosen math class ($\chi^2(2)$ = 1.80, p >.05), indicating that the ordinal logistic regression was appropriate. Academic self-efficacy predicted the final grade in a chosen math class (b = 0.12, SE=.05, p<.05, OR=1.13). The regression model was significant ($\chi^2(1)$ = 5.53, p<.05, Nagelkerke R^2 =.08). For the predictive relationship between academic self-efficacy and GPA, the Test of Parallel lines was significant, ($\chi^2(1)$ = 3.85, p =.05), indicating that an ordinal logistic regression may not be appropriate. Instead, a multinomial logistic regression was used. Academic self-efficacy did not predict GPA; the regression model was not significant ($\chi^2(2)$ = 4.46, p<.05, Nagelkerke R^2 =.07).

H5. Perceived academic competence predicts academic competence

Ordinal logistic regression was used to determine whether perceived academic competence predicted either the final grade in a chosen math class or GPA. H5a was supported, but H5b was not supported. The Test of Parallel Lines was not significant for either the predictive relationship between perceived academic competence and the final grade in a chosen math class ($\chi^2(2)$ = .69, p >.05) or the predictive relationship between perceived academic competence and GPA ($\chi^2(1)$ = .009, p>.05), indicating that the ordinal logistic regression was appropriate. Perceived academic competence predicted the final grade in a chosen math class (b = 0.12, SE=.05, p<.05, OR=1.13). The regression model was significant ($\chi^2(1)$ = 5.60, p>.05, Nagelkerke R^2 =.08). Perceived academic competence did not predict GPA; the regression model was not significant ($\chi^2(15)$ = 21.68, p>.05, Nagelkerke R^2 =.05). Through the comparison of the Odds Ratio, academic self-efficacy and perceived academic competence predict the final grade in a chosen math class with equal strengths.

H6. The final grade in a chosen math class predicts GPA

Ordinal logistic regression was used to determine if the final grade in a chosen math class would predict GPA. H6 was supported. The Test of Parallel Lines was not significant for the predictive relationship between the final grade in a chosen math class and GPA ($\chi^2(3)$ = 5.69, p >.05), indicating that the ordinal logistic regression was appropriate. The regression model was significant ($\chi^2(3)$=25.57, p<.05, Nagelkerke R^2 =.34). The following predictor levels showed significant differences in odds of being in a lower category of GPA compared to the reference category (90–100 [typically an A]): 80–89 (Typically a B), (b=-1.10, SE=.54, p<.05, OR=.33); 70-79 (Typically a C), (b = -3.11, SE=.88, p<.05, OR=.05); 60-69) Typically a D), (b = -4.97, SE=1.4, p<.05, OR=.01).

Post Hoc Analyses

Post-hoc analyses were conducted to determine if there were gender differences in the results for the different hypotheses.

H1. Academic competence and perceived academic competence positively correlate with academic self-efficacy.

For males, H1a was supported ($r(14)=.78$, $p<.05$). H1b and H1c were not supported ($\rho(14)=.34$, $p>.05$; $\rho(14)=.25$, $p>.05$). For females, H1a was supported ($r(64)=.41$, $p<.05$). H1b and H1c were not supported ($\rho(64)=.23$, $p>.05$; $\rho(64)=.02$, $p>.05$).

H2. Academic competence and perceived academic competence positively correlate with one another

For males, H2a, H2b, and H2c were not supported ($\rho(14)=.39$, $p>.05$; $\rho(14)=.43$, $p>.05$; $\rho(14)=.29$, $p>.05$). For females, H2a and H2c were supported ($\rho64)=.27$, $p<.05$; $\rho(64)=.54$, $p<.05$). H2b was not supported ($\rho(64)=.15$, $p>.05$).

H4. Academic self-efficacy predicts academic competence and perceived academic competence

For males, H4a was supported ($\beta=.78$, SE=.20 $p<.05$); the regression model was significant, $F(1,14)=22.34$, $p<.05$). For H4b, the Test of Parallel lines was significant, ($\chi^2(1) = 4.6$, $p<.05$), indicating that an ordinal logistic regression may not be appropriate. Instead, a multinomial logistic regression was used. H4b was not supported; the regression model was not significant ($\chi^2(2) = 5.12$, $p>.05$, Nagelkerke $R^2=.10$). For H4c, the Test of Parallel lines was significant ($\chi^2(1) = 4.3$, $p<.05$), indicating that an ordinal logistic regression may not be appropriate. Instead, a multinomial logistic regression was used. H4c was not supported, but the regression model was significant ($\chi^2(2) = 8.88$, $p<.05$, Nagelkerke $R^2=.52$). This indicated that academic self-efficacy did not change the likelihood of receiving a 80-89(Typically a B) ($b=-.16$, SE=.14, $p>.05$) R=.85) or 70-79(Typically a C) ($b=-38.58$, SE=907, $p>.05$, OR1.43×10^{-17}) relative to receiving a 90-100 (Typically an A) for GPA.

For females, H4a was supported ($\beta=.41$, SE=.11, $p<.05$); the regression model was significant, $F(1,64)=13.07$, $p<.05$). The Test of Parallel Lines was not significant for H4b ($\chi^2(2) = 3.82$, $p>.05$), indicating that the ordinal logistic regression was appropriate. H4b was supported ($b = .11$, SE=.06, $p<.05$, OR=1.12). The regression model was significant ($\chi^2(1) = 3.9$, $p<.05$, Nagelkerke $R^2=.07$). The Test of Parallel Lines was not significant for H4c ($\chi^2(1) = 2.57$, $p>.05$), indicating that the ordinal logistic regression was appropriate. H4c was not supported; the regression model was not significant ($\chi^2(1) = .20$, $p>.05$, Nagelkerke $R^2=.004$)

H5. Perceived academic competence predicts academic competence.

For males, the Test of Parallel Lines was not significant for H5a ($\chi^2(1) = 1.75$, $p>.05$), indicating that the ordinal logistic regression was appropriate. H5a was not supported; the regression model was not significant ($\chi^2(1) = .43$, $p>.05$, Nagelkerke $R^2=.03$). The Test of Parallel Lines was not significant for H5b ($\chi^2(1) = 2.50$, $p>.05$), indicating that the ordinal logistic regression was appropriate. H5b was not supported; the regression model was not significant ($\chi^2(1) = 2.35$, p>.05, Nagelkerke R^2 =.17).

For females, the Test of Parallel Lines was not significant for H5a ($\chi^2(2) = .08$, p >.05), indicating that the ordinal logistic regression was appropriate. H5a was supported (b = .14, SE=.06, p<.05, OR=1.15). The regression model was significant ($\chi^2(1) = 5.69$, p<.05, Nagelkerke R^2 =.10). The Test of Parallel Lines was not significant for H5b ($\chi^2(1)$ = 1.03, p>.05), indicating that the ordinal logistic regression was appropriate. H5b was not supported; the regression model was not significant ($\chi^2(1) = 1.78$, p>.05, Nagelkerke R^2 =.03).

<u>H6. The final grade in a chosen math class predicts GPA</u>

For males, the Test of Parallel Lines was significant for H6 ($\chi^2(2) = 10.49$, p <.05), indicating that an ordinal logistic regression may not be appropriate. Instead, a multinomial logistic regression was used. H6 was not supported; the model was not significant ($\chi^2(4) = 7.90$, p>.05, Nagelkerke R^2 =.47). For females, the Test of Parallel Lines was not significant for H6 ($\chi^2(3) = 2.3$, p >.05), indicating that the ordinal logistic regression was appropriate. The regression model was significant ($\chi^2(3) = 25.19$, p<.05, Nagelkerke R^2 =.39). The following predictor levels showed significant differences in odds of being in a lower category of GPA compared to the reference category (90–100 [typically an A]): 80–89 (Typically a B), (b = -1.48, SE=.61, p<.05, OR=.23); 70-79 (Typically a C), (b = -3.59, SE=1.12, p<.05, OR=.03); 60-69)Typically a D), (b = -5.23, SE=1.48, p<.05, OR=.01).

Discussion

This study explored the relationships between academic self-efficacy, academic competence, and perceived academic competence. For this study, academic competence was measured as the final grade in a chosen math class and GPA. This study aimed to determine if perceived academic self-efficacy and academic competence measured the same construct and could be used interchangeably. This study also explored whether academic self-efficacy, academic competence, and perceived academic competence had correlational and predictive relationships.

Through correlational analysis, this study examined the relationships between academic self-efficacy, academic competence, and perceived academic competence. GPA was only correlated with the final grade in a chosen math class; however, academic self-efficacy, perceived academic competence, and the final grade in a chosen math class were significantly related. It can be concluded that the level of success in one course may not be related to the level of success in other courses. Also, students may understand the concepts from one course but not understand the concepts in other classes. Finally, the differences in skill that students acquire across classes may affect GPA.

Additionally, teachers may grade their classes differently, and different aspects of the course (homework, quizzes, attendance) may be weighed differently across courses. These, in turn, may affect how students perform in different courses. Furthermore, the lack of continuity across grading practices can affect GPA, such that a teacher who makes it more difficult to pass their class would have the ability to negatively impact students' GPAs. Thus, GPA may not be significantly related to other ways of measuring academic competence. However, research has indicated that for undergraduate students in particular, GPA suggests a relationship with overall mental ability, motivation, and academic achievement (Imose and Barber 2015). Therefore, GPA is seen as a useful tool to measure academic competence. However, due to the differences in grading policies across courses and teachers, some researchers recommend that GPA be viewed cautiously as an indicator of competence (Wittman 2022).

This study focused on African American students. Previous research suggested that how African American students perceive discrimination in schools may have negative effects on performance (Assari and Caldwell 2018). As a result, this may affect their academic self-efficacy, such that African American students do not believe that they can do well in their courses. They may feel this way regardless of whether they have mastered the skills taught in their courses. Subsequently, the students' belief in their ability to succeed in a chosen math class may be independent of their overall academic performance. Thus, this would support that academic self-efficacy is correlated with the final grade in a chosen math class but not GPA.

The positive and statistically significant relationships between academic self-efficacy, perceived academic competence, and the final grade in a chosen math class suggest that students who believe they can behave in ways to do well in a course may also believe they have the skills to do well in the course. Although different aspects may be weighted differently, many aspects of a course assess skill in the course. Many components of a course, including exams, quizzes, and homework, give students the opportunity to display their mastery of the skill. Students who believe they have mastered the skills in a course may believe they can behave in ways necessary to do well in a course because the mastery of a skill is an important factor in doing well in a course. Simply, receiving a good grade in a course is often dependent on being able to display mastery of a skill.

This study also found that academic self-efficacy and perceived academic competence predicted the final grade of a chosen math class with the same strength. This further supports the fact that they are similar constructs. Their similar relationship with demographic variables further proves their similarity. Neither construct had differences in SES or age. However, there were gender differences in academic self-efficacy, but there were no gender differences in perceived academic competence. This is unsurprising due to the similarity in the scale items. For example, an item for academic self-efficacy was: "How confident were you that you could learn all of the material presented in your modules?" An item for perceived academic competence was: "I feel confident in my ability to learn this material." This study found that combining the items from the two scales improved reliability for academic self-efficacy but not perceived academic competence, suggesting conceptual overlap. However, the items relate more closely with academic self-efficacy than competence, differentiating the two constructs.

This study also suggests that there is a relationship between students' beliefs they have mastered the skill in a course and their ability to display the skill needed to get good grades in the course. Harter (1983) found that competent students sought out less rigorous accomplishments than was expected based on their ability. This suggests that students who have high perceived academic competence may not seek out courses that they find personally difficult. Thus, they receive good grades because they take courses that do not provide them with academic challenges, which they can pass more easily.

The current finding of academic self-efficacy and perceived academic competence correlation with and prediction of final grade in a chosen math class is consistent with previous research that found that grades relate to how students perceive themselves (Ghazvini2011). The current finding that GPA did not correlate with academic self-efficacy is inconsistent with previous research (Khan 2023, Travis and Bunde 2022). Khan (2023) found that academic self-efficacy was positively correlated with GPA. However, only 2% (N=1) identified as Black/African American. Additionally, Travis and Bunde (2022) found that academic self-efficacy positively predicted GPA in a study with college students, with 28% (N=1,680) of participants being African American.

Additionally, Awad (2007) suggested that students with positive beliefs about their educational abilities were more likely to have higher overall academic performance. The participants who believed they could behave in ways needed to succeed in courses may have performed the tasks needed to succeed in the course. Their belief could have encouraged them to do activities, such as studying or seeking tutoring, that would lead to good scores. On the other hand, students who did not believe they could behave in ways needed to succeed in a course did not perform the tasks needed to succeed in the course. Since they did not hold this belief, they may not have done the activities because they did not believe that these tasks could help improve their grades or that they would succeed at the tasks.

Post-hoc analyses revealed some gender differences in the relationships among academic self-efficacy, academic competence, and perceived academic competence. Data from male and female participants indicated similar trends for H1. For H2b, there was a gender difference, but H2a and H2c did not have gender differences. Subsequently, for H4b, there was a gender difference, but for H4a and H4c, there were no gender differences. H5a had gender differences, but H5b did not have gender difference. Finally, there were gender differences for H6. This indicated that there were gender differences for data involving the final grade in a chosen math class. Gender differences are consistent with previous research, such that previous research has found a gender gap in math that exists by ninth grade and then widens over time (Ellison and Swanson 2023).

The data supported that perceived academic competence predicted the final grade in a chosen math class. This corroborates previous research that found that perceived academic ability predicted actual ability (Axler 2008, Kinard 2001). This is inconsistent with the current finding that perceived competence does not correlate with GPA. The participants may have the belief of mastery of a skill for one course, but they may not have presented the mastery of skills for all their courses.

Limitations and Future Directions

Although this study provides insight into the relationships among academic self-efficacy, academic competence and perceived academic competence, some limitations can be improved upon in future research. An important limitation is that this study only used 82 participants. The lack of participants could explain why there were no correlational or predictive relationships between GPA and academic self-efficacy or academic competence. Future studies should collect data from more participants to avoid Type II errors.

This study focuses on the final grade in a chosen math class from the students' past. Since the participants selected their math classes, there were a variety of math classes that could have been chosen. Although this study gives a general overview of math experience, the lack of continuity across math classes limits the interpretability of the results due to the possible variety of difficulty of the math courses. The difficulty of the course may impact the relationship between academic competence and academic self-efficacy. Future research should collect data from participants who are in the same math class.

Positive memories may hold less of an impact than negative memories (Baumeister et al. 2001). Therefore, future participants may choose classes they had negative memories of, affecting their academic self-efficacy, perceived academic competence, and final grade in the chosen math class. However, for this study, participants chose classes that they did well, such that 57.3% received an A in the final grade of a chosen math class. Future studies should choose the class for the participant, which could help to eliminate possible recall bias.

Future studies should also consider asking students about a current class and tracking the responses multiple times. This provides valuable insight into how academic self-efficacy and academic competence may change over time. Studies may find that results change as difficulty in the course increases or decreases over time, or how results change as the relationship between the student and teacher changes over time. Thus, the relationship the student has with the teacher may be found to be a moderator of the relationship between academic self-efficacy and academic competence.

This study also focuses on African American students. Future studies should also consider other ethnic groups, particularly other Black ethnic groups. Different ethnic groups have different relationships with their educational systems. For other groups, academic self-efficacy and academic competence may be more dissimilar because their belief in their abilities is closely linked to their belief that they can do well in their courses. Other ethnic groups may not face the same type or level of discrimination, so they may not be discouraged from believing they can succeed in their courses due to reasons that are not related to their actual ability. Due to past societal inequities, African Americans often did not believe that their academic achievement would be rewarded (Olneck,2006). Hence, the academic self-efficacy of African American participants may have been decreased due to their identities as members of a marginalized population.

This study focused on math. Students struggle with math, particularly within marginalized populations (Walkington et al. 2023). The difficulty of math may affect the likelihood that students believe they can behave in ways to do well in a course and the likelihood that they believe they have acquired the skill to do well in the course. Thus, the chosen subject matter may have also impacted the relationship between academic self-efficacy and academic competence. However, the lack of low grades in the final grade in the chosen math class may suggest that difficulty may not have had a profound effect on grades or may have led students to choose less difficult math classes. Future studies should investigate the relationship between academic self-efficacy, academic competence, and perceived academic competence for other subjects. Different subjects require different skills and cognitive abilities. Therefore, future explorations may help to determine the relationships among academic self-efficacy, academic competence, perceived academic competence, and cognitive abilities.

This study provided important insight into the academic experiences of African Americans. It demonstrated that African American students who believe they have knowledge and skills also believe they can behave in ways to display the knowledge and skills required to succeed. However, this study demonstrates a disconnect between overall academic experience and self-perception of this population. The dilemma of poor academic outcomes for African American students may not be due to a disconnect between belief in attained knowledge and belief in behavior. Therefore, this research supports the need for applied research that can bridge the gap between performance and self-perception for African American students.

There may be other factors that contribute to the lack of academic achievement. Research has shown that there is an incongruence between the culture at home and the culture at school for African American students, and the cultural incongruence leads students to perform poorly (Marryshow et al. 2005). Culturally relevant pedagogy, a teaching pedagogy that centers students' backgrounds and academic needs in the educational experience, has been linked to increased academic outcomes for African American students (Ladson-Billings, 1995). Research should continue to explore how this teaching style may impact the relationships between academic self-efficacy, perceived academic competence, and academic competence.

Conclusions

When researching academic outcomes, investigators encourage future studies to distinguish between perceived academic competence and self-efficacy. Research investigating perceived academic competence should not be accompanied by social competence or social acceptance, as this overshadows and dilutes the effects of perceived academic competence alone.

Finally, research investigating perceived academic competence typically investigates the implications for mental health symptomatology (Cole 1990). This is exemplified in the research on the impact of perceived academic competence on depressive symptomatology in college students (Urhlass et al. 2009). While the effects of perceived academic competence on mental health are of paramount importance, future research should examine how perceived academic competence moderates the relationship between mental health outcomes and academic competence (measured as academic performance). High levels of perceived academic competence may serve as a buffer against the negative relationship between mental health outcomes and academic performance. If students believe they have acquired the necessary skills for a course, then poor mental health conditions may have a reduced effect on academic performance. However, if students do not believe that they have the necessary skills for a course, then poor mental health conditions may have an increased effect on academic performance.

This study investigated whether students' belief in their ability to succeed in a course is related to their belief in their mastery of a course and their presented skill. Academic self-efficacy was found to correlate with and predict academic competence and the final grade in a chosen class but was not found to have a correlational or predictive relationship with GPA. Although the data does not concretely support or disprove the notion that academic self-efficacy and perceived academic competence are separate constructs, it still provides valuable insight into the relationships among academic self-efficacy, academic competence, and perceived academic competence. Understanding the differences among academic self-efficacy, academic competence, and perceived academic competence may lead to a better grasp of the gap in achievement between American populations. This understanding gives scholars the opportunity to increase academic outcomes of African American students through initiatives that encourage increased confidence and performance in educational settings.

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