

## Self-Esteem Matters: Examining its Impact on Academic Achievement in the Context of Gender and Age Diversity in Higher Education

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### ABSTRACT

Self-esteem plays a crucial role in shaping academic achievement among university students. This study investigates how self-esteem, gender, and age influence academic performance, particularly within the Indonesian context. Despite extensive global research, there needs to be more understanding of these dynamics among Indonesian university students. The study explores the relationships between self-esteem, gender, age, and academic achievement, identifying significant predictors and differences. A quantitative survey design was employed to gather data from 309 students across 12 Central Java, Indonesia universities. Data collection was executed through online surveys distributed via WhatsApp and Facebook. Data analysis was performed using Pearson correlation and multiple regression techniques with SPSS. The findings confirm that self-esteem significantly impacts academic achievement, establishing it as a strong predictor of academic success. While gender differences in self-esteem were notable, age did not significantly affect self-esteem. Interestingly, no significant gender gaps in academic performance were observed, though academic achievement varied across age groups. These conclusions suggest that enhancing self-esteem could improve academic outcomes. This research contributes to the global understanding of self-esteem dynamics, emphasizing the need for targeted interventions in educational settings. The insights gained can inform educators and policymakers in developing strategies to support students' academic success in Indonesia.



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## 1. Introduction

Self-esteem pertains to an individual's personal assessment of their inherent value or significance. It involves how people perceive and feel about themselves (Salice, 2020). Academic achievement is vital in shaping a student's future opportunities and prospects. Among the various factors influencing academic achievement, self-esteem emerges as a significant contributor. High self-esteem has been found to correlate strongly with self-reported happiness, emanating from feelings of competence, confidence, goal-directedness, and self-efficacy, which, in turn, can lead to improved exam scores or academic achievement (Nyadanu et al., 2014). Self-esteem has been found to significantly influence academic achievement among university students studied by Kasyoka (2023). Research has indicated a direct association between self-esteem and success in academics. Perveen et al. (2021) found a significant positive association between university students' self-esteem and academic achievement. The research findings confirmed a notable correlation between gender, self-esteem, and students' academic performance. The outcomes highlighted substantial positive connections between the academic success of university students and their levels of life satisfaction and self-esteem.

Positive self-esteem is considered essential for mental health and acts as a shield against adverse impacts. It also promotes improved health and fosters positive social conduct (Khatibi & Fouladchang, 2015). A study by Kariuki et al. (2019) discovered that self-esteem was a connecting element in the correlation between interaction among students and teachers and academic success. In contrast, low self-esteem can be influenced by various factors such as primary narcissism, mirroring needs, and the disparity between one's actual self and ideal self. It can also be influenced by cultural context, particularly in highly competitive and perfectionist societies, and that impacts every aspect of life (Kőszegi et al., 2022). Another study by Huysse-Gaytandjieva et al. (2015) found that low self-esteem is a significant predictor of unemployment that somehow correlates with academic achievement. Utami et al. (2022) study identified a meaningful variance in the self-esteem and motivation levels for achievement across distinct gender groups among fifth-grade students. Another study by Perveen et al. (2021) also showed variance in the level of both gender female and male university students for life satisfaction, with male students having slightly higher scores. Shuja's (2023) research additionally explored variations in academic performance, happiness, and self-esteem concerning gender and institution among orphaned and non-orphaned children. The research highlighted significant differences between orphans and non-orphans, considering gender and their distinct institutional backgrounds.

This research investigates the influence of self-esteem, gender, and age on academic achievement among university students in Indonesia. The importance of self-esteem in educational settings cannot be overstated, as it significantly influences students' motivation, engagement, and, ultimately, their academic achievement. Research has shown that higher self-confidence and belief in personal capabilities correlate with improved academic performance (Christy & Mythili, 2020). Moreover, self-esteem is not uniformly distributed across different demographic groups. Gender and age are critical factors that influence self-esteem levels. Studies have indicated that self-esteem varies between male and female students, with societal expectations and stereotypes often contributing to these differences (Yildirim-Hamurcu & Terzioglu, 2023). Understanding these variations is essential for educators and policymakers to develop targeted interventions that can support students' academic achievement.

The Indonesian context presents a unique opportunity to explore the dynamics of self-esteem, gender, and age about academic achievement. While numerous studies have investigated the relationship between self-esteem and academic achievement globally, a paucity of research focuses on Indonesian university students. Despite the extensive body of literature on self-esteem and academic performance, the specific interplay of these factors

among Indonesian students still needs to be explored. Previous studies in other cultural contexts have shown varying results. For instance, a study in Portugal highlighted a positive correlation between self-esteem and academic achievement (Batista et al., 2022), while research in the United States indicated a negative relationship between self-esteem and learning achievement (Sallee & Tierney., 2007).

This study aims to fill this gap by examining how self-esteem, gender, and age influence academic achievement in this cultural context. The findings will contribute to a broader understanding of these issues and provide valuable insights for educational stakeholders in Indonesia. This research will highlight similarities and differences by comparing its findings with relevant studies from other cultural settings, thereby contributing to a more comprehensive understanding of the global and local factors affecting students' academic success.

### **1.1. Research Objectives**

1. To examine the relationship between self-esteem and academic achievement among university students.
2. To assess the predictive power of self-esteem, gender, and age on academic achievement.
3. To explore gender and age differences in the relationship between self-esteem and academic achievement among university students.

### **1.2. Literature review**

#### *1.2.1. Self-esteem and academic achievement*

Self-esteem is an internal influence or potential outcome that signifies an individual's overall evaluation of their competence about their self-value (Priya et al., 2019). A connection has been identified between academic accomplishment and self-esteem (Kasyoka, 2023). A study by Batista et al. (2022) discovered a meaningful and positive link between self-esteem and academic success among university students. Additionally, it revealed that engaging in physical exercise among middle-school students boosted their self-concept, self-esteem, and academic performance. Perveen et al. (2022) identified a notably positive connection between self-esteem and academic achievement. Regarding self-esteem, gender variations were noted, indicating higher levels among female participants than males. However, gender disparities were deemed insignificant concerning academic achievement.

It is essential to acknowledge that while self-esteem is important, it might not be the exclusive factor determining academic success. Other elements like study habits and physical activity have also influenced academic achievement. Therefore, a comprehensive examination of multiple variables is necessary to understand the relationship between self-esteem and academic performance. Females displayed higher self-esteem, self-efficacy, and academic performance levels than males. Moreover, family income considerably impacted self-esteem, indicating significant differences across income levels. The research established a notable positive association among adolescents between confidence in oneself, belief in personal capabilities, and success in academics, demonstrating that higher levels of confidence in oneself and belief in personal capabilities corresponded to improved academic performance (Christy & Mythili, 2020).

Predictive and descriptive modeling has established evidence of the connection between self-esteem and achievement. The study showcases a favorable connection between self-esteem and academic achievement (Jayanthi et al., 2018).

### *1.2.2. Factors Affecting Academic Achievement*

Several factors have been identified as necessary in predicting academic achievement. These factors include mental health, financial situation, relationships with cohabitants and peers, repeating a course, cumulative average level of achievement (CGPA), and year of admission to the university (Guerrero-López et al., 2023). The study conducted by Musaddiq et al. (2022) found that spatial and behavioral factors, such as students' academic success, are significantly influenced by their location-based characteristics and behavioral patterns across different semesters. Additionally, a study by Razak et al. (2021) uncovered that a prominent cause of low academic performance is a lack of self-confidence, often stemming from the pressure to prove oneself, particularly to family expectations. This lack of confidence impacts concentration and quality study time, both crucial for achieving success in academic pursuits.

Other potential factors that can influence academic achievement include mental health, self-esteem, motivation, engagement, family relationships, and social support (Zhang & Li, 2020). Students with poor mental health may experience difficulties in managing their time, staying motivated, and coping with academic pressures, which can ultimately impact their academic achievement (Yuyao Jiang, 2022).

### *1.2.3. Gender and Self-Esteem*

Variances in self-esteem levels among university students based on gender have been observed. A study highlighted a general decline in the average self-esteem levels of college students over time. Additionally, notable negative associations between self-esteem and depression were evident in both male and female student groups (Ling & Ee, 2023). An additional research investigation explored the levels of self-esteem within Psychology Program students and concluded that gender did not yield significant differences in their self-esteem levels (Gao et al., 2022). Moreover, no distinctions based on gender were identified in the average scores across the three assessments measuring self-efficacy concerning fundamental gymnastic skills (Milosis & Siatras, 2022). Furthermore, the research indicated that among university students, social media addiction was significantly predicted by life satisfaction, self-esteem, and gender (Xuan & Amat, 2021). For women, attitudes toward gender roles and self-esteem levels predict their views on dating violence, whereas, in men, their attitudes toward gender roles play a more prominent role in predicting their stance on dating violence (Yildirim-Hamurcu & Terzioglu, 2023).

Lower socio-economic status was associated with lower self-esteem among Vietnamese university students (Quynh & Hai, 2021). According to Kendler et al. (1998), the study found that self-esteem and gender significantly contributed to the prediction of goal choice. Self-esteem was linked to goal commitment, and individuals with high self-esteem were likelier to choose more difficult goals (Levy & Baumgardner, 1991).

### *1.2.4. The Role of Family and Self-Esteem*

Family and self-esteem play essential roles in various aspects of individuals' lives. Research has shown that family atmosphere significantly predicts internet addiction in adolescents, with self-esteem and negative emotions mediating this relationship (Shi et al., 2023). The upbringing methods employed by parents, including levels of acceptance and involvement as well as strictness and imposition, can impact adolescent adjustment by affecting the overall family self-esteem (Martínez et al., 2021). The family environment in which an individual grows up can affect their self-esteem, which impacts their mental health (Fang et al., 2023). Moreover, factors related to the family, including family background and dynamics, were identified as influential in shaping the self-esteem of college students (Kim & Lee, 2020). The family structure and parents' educational background significantly contribute to the development of a child's self-esteem (Pavlova, 2019).

### *1.2.5. The Impact of Technology and Social Media on Self-Esteem*

Different types of technology and social media have been found to impact self-esteem. Social networking sites like Instagram and Facebook have been associated with negative effects on self-esteem, including feelings of inferiority, emotional loneliness, and a drop in self-esteem (Martínez-Cardama & Gómez-López, 2023). A study by Ja et al. (2022) found that overexposure to social media can lead to a drop in self-esteem and contribute to anxiety disorders in adolescents. The findings indicated that spending one hour daily on Facebook correlates with a 5.574 decrease in an individual's self-esteem score (Jan et al., 2017). Another study highlights the differences in perception and usage of Facebook and Instagram among mothers, with Facebook being seen as more informative and supportive (Djafarova & Trofimenko, 2017).

The time invested in social media can impact individuals positively and negatively, with negative experiences contributing to decreased self-esteem and unfavorable self-perception. Instagram can contribute to feelings of inferiority and displacement of daily activities, which may negatively impact self-esteem (Nene & Olayemi, 2023). Conversely, technology and social media offer avenues for enhancing self-esteem. For example, peer-to-peer social support through social platforms can promote inclusion and aid individuals with lower self-esteem (Rosenthal & Tobin, 2022).

### *1.2.6. Interventions for Enhancing Self-Esteem*

Enhancing self-esteem is a valuable goal for personal well-being and mental health. In the case of adolescents, a behavioral intervention program effectively enhanced both self-esteem and collective self-esteem (Sharma & Agarwala, 2015). A study by Kadian (2023) found that Self-affirmation and self-expansion can be effective strategies to boost self-esteem. An alternative approach involves selective attention, wherein individuals redirect their focus from negative thoughts and emotions toward positive aspects, encompassing aspirations, achievements, success, and joy (Hamada, 2020). Positive affirmations can help individuals reinforce positive beliefs about themselves and boost their self-esteem (Rani & Hemavathy, 2020). Findings suggest that intervention strategies can enhance self-esteem among engineering students, which could aid in their achievements within the fiercely competitive global job market (Seetha, 2012). Self-affirmation can be a valuable strategy for boosting self-esteem by affirming one's self-worth in different domains of life. It helps individuals reduce defensiveness, cope with stress, and improve their achievement. By affirming important values, individuals can enhance their self-esteem and counteract the negative effects of threats or challenges they may face (Sherman, 2013).

### *1.2.7. Peer Influences on Self-Esteem and Academic Success*

In education, peer effects denote how individual behaviors and attitudes can be shaped by the influence of friends, associates, and the broader social surroundings. The impact of peers has been identified as crucial in shaping self-esteem and academic accomplishments. Research has shown that peer groups contribute to students' self-esteem, with peer interactions among adolescents uniquely shaping self-esteem (Pratschke & Abbiati, 2020). The research identified a direct and notable adverse correlation between peer influence and body image perception among university students in Hong Kong (Tsang, 2017). It found that peer groups significantly influenced student self-esteem, contributing 34.9% to their self-esteem levels (Mujiyati & Adiputra, 2018).

In Wardhani and Mamnu'ah's (2014) study, adolescent students in Yogyakarta found that peer groups positively influenced self-esteem. However, Sallee and Tierney's (2007) study showed a different result, indicating a negative relationship between self-esteem, attitudes toward intimate relationships, and learning achievement. Different types of peer groups, with varying structures and purposes, can affect students' school experiences and academic futures.

## 2. Methods

The research methodology involved a carefully structured respondent selection process targeting university students from 12 different universities in Central Java, Indonesia. A simple random sampling method with stratification ensured representation from all involved faculties, resulting in a sample size of 309 students. The inclusion criteria specified that participants must be currently enrolled as university students in Central Java, include both undergraduate and graduate students, demonstrate willingness to participate, and be available to complete the survey. The faculties involved in the study encompassed Humanities, Social Sciences, Natural Sciences, Engineering, and Health Sciences. Data collection was executed through online survey distribution, leveraging the advantages of online questionnaires for obtaining reliable information from Internet users and reducing research costs, as Demuyakor (2020) noted. This approach also facilitated data collection from a dispersed population, as highlighted by Kuila et al. (2019). The online survey was conducted between October and November 2023 and was distributed via WhatsApp and Facebook. Respondents answered through an electronic Google Form link, with a reminder sent two days after the initial request to ensure participation.

The instruments used in the survey included the Rosenberg Self-Esteem Scale (RSES), a well-established 10-item self-report questionnaire developed by Rosenberg in 1965 to measure self-esteem levels, and the Subjective Academic Achievement Scale (SAAS) developed by Stadler et al. (2021), a validated scale ranging from 1 to 5 to gauge participants' satisfaction with their academic achievements. The RSES was chosen for its widespread use and robust psychometric properties, while the SAAS was selected for its relevance in assessing academic satisfaction. Additionally, demographic information such as current GPA or percentage, gender, and other relevant factors were collected to facilitate further analysis and subgroup comparisons. Ethical considerations were rigorously adhered to, with ethical approval from the head of each faculty involved in the research for physical visits. Detailed informed consent processes were implemented, and participant confidentiality was maintained through secure data handling and storage procedures.

The Statistical Package for the Social Sciences (SPSS) version 21 was employed for data analysis. A Pearson correlation analysis was conducted to examine the relationship between self-esteem scores and academic achievement, chosen for its ability to assess the strength and direction of linear relationships. Multiple regression analysis was utilized to investigate the predictive power of self-esteem, gender, and age on academic achievement, providing insights into how these variables collectively influence academic outcomes. Additionally, Analysis of Variance (ANOVA) was used to explore gender and age differences in the relationship between self-esteem and academic achievement, offering a means to identify significant variations across groups.

## 3. Results and Discussion

### 3.1. Results

#### 3.1.1. Relationship between Self-Esteem and Academic Achievement among University Students

The analysis of Table 1 revealed a statistically significant positive correlation ( $r = 0.361$ ,  $p < 0.01$ , two-tailed,  $N = 309$ ) between self-esteem and academic achievement among university students in Central Java. This suggests that higher levels of self-esteem are associated with increased academic performance. In simpler terms, students with greater self-esteem tend to achieve higher academic success. These findings underscore the importance of

fostering self-esteem as a potential factor in enhancing academic outcomes among university students at Central Java University.

Table 1 Pearson correlation

	Self-Esteem	Academic Achievement
	Pearson Correlation	Pearson Correlation
Self-Esteem	1	.361**
	Sig. (2-tailed)	Sig. (2-tailed)
		.000
N	309	309
	.361**	1
	Sig. (2-tailed)	Sig. (2-tailed)
		.000
N	309	309

Note. \*\* Correlation is significant at the 0.01 level (2-tailed).

### 3.1.2. Predictive power of self-esteem, gender, and age on academic achievement

Table 2 Regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
1	(Constant)	5.646	1.650	3.422	.001
	Self-Esteem	.314	.047	.372	.000
	Age	.056	.220	.014	.799
	Gender	.642	.427	.083	.134

a. Dependent Variable: Academic Achievement

The coefficients table offers a comprehensive insight into the predictors of academic achievement. Notably, "Self-Esteem" emerges as a significant predictor, with a coefficient (B) of 0.314 and a highly significant p-value ( $p < .001$ ). This signifies that for every one-unit increase in self-esteem, there is an associated increase of 0.314 units in academic achievement, highlighting the positive impact of self-esteem on academic performance. The "Constant" term provides the baseline for academic achievement when all predictor variables are zero, with a coefficient of 5.646, suggesting the expected academic achievement without other factors. However, "Age" ( $B = 0.056$ ,  $p = 0.799$ ) and "Gender" ( $B = 0.642$ ,  $p = 0.134$ ) do not significantly predict academic achievement. While age demonstrates a very weak positive relationship and gender shows a similar weak positive trend, neither achieves statistical significance, implying that factors beyond age and gender play a more substantial role in determining academic success within the studied population.

3.1.3. Gender and Age Differences in Academic Achievement and Self-Esteem

Table 3 Analysis of variance

		Sum Squares	ofdf	Mean Square	F	Sig.
Academic Achievement score	Between Groups	177.848	4	44.462	3.314	.011
	Within Groups	4078.003	304	13.414		
	Total	4255.851	308			
Self-Esteem Score	Between Groups	147.949	4	36.987	1.940	.104
	Within Groups	5797.203	304	19.070		
	Total	5945.152	308			

The findings presented in Table 3 shed light on the relationship between age and academic achievement among university students. It indicates that grades vary significantly with age ( $F(4, 304) = 3.314, p = 0.011$ ), highlighting notable differences in academic performance across various age groups. The statistically significant p-value suggests that these differences are not due to random variation but reflect meaningful achievement-level disparities. Moreover, the higher mean square value (44.462) indicates that the variations observed between age groups are more substantial than those within each age group. In essence, age emerges as a significant factor influencing academic achievement, with the differences between age groups being more pronounced than the variations within them.

The results in Table 3 indicate no significant differences observed based on age regarding self-esteem ( $F(4, 304) = 1.940, p = 0.104$ ). The p-value exceeding 0.05 suggests that the variations observed in self-esteem among different age groups may likely be attributed to random chance rather than meaningful differences. Additionally, the mean square value (36.987) suggests that there isn't a consistent pattern of difference between age groups concerning self-esteem. In other words, the fluctuations in self-esteem levels across various age groups do not follow a clear and consistent trend, further supporting the notion that these differences may not be substantial or systematic.

3.1.4. Gender Differences in Academic Achievement and Self-Esteem

Table 3 Analysis of variance

		Sum Squares	ofdf	Mean Square	F	Sig.
Self-Esteem Score	Between Groups	162.970	1	162.970	8.653	.004
	Within Groups	5782.183	307	18.834		
	Total	5945.152	308			
Academic Achievement score	Between Groups	1.349	1	1.349	.097	.755
	Within Groups	4254.503	307	13.858		
	Total	4255.851	308			

The findings presented in Table 4 unveil significant disparities in self-esteem ratings between men and women ( $F(1, 307) = 8.653, p = 0.004$ ) among university students. This



indicates that, on average, a noticeable gap exists in self-esteem levels between genders within the studied population. The statistically significant p-value suggests that these differences are unlikely to have occurred by random chance, highlighting the meaningfulness of the observed gender-based variations in self-esteem.

The analysis in Table 4 indicates no significant differences in academic achievement between men and women ( $F(1, 307) = 0.097, p = 0.755$ ). This suggests that, on average, men and women perform comparably in terms of academic achievement within the studied population. The non-significant p-value of 0.755 suggests that any observed differences in academic performance between genders are likely due to random chance rather than meaningful disparities. Consequently, these findings imply a level playing field in academic achievement irrespective of gender among the university students examined.

## 3.2. Discussion

### 3.2.1. Relationship between self-esteem and academic achievement among university students

Table 1 displays a significant positive correlation ( $r = 0.361, p < 0.01$ ) between self-esteem and academic achievement among university students. This moderate correlation aligns with previous research by Batista et al. (2022), who similarly discovered a noteworthy positive link between self-esteem and academic achievement among university students. This consistency across studies suggests that individuals with higher self-esteem tend to exhibit greater academic performance, emphasizing the influential role of self-perceptions in shaping educational outcomes. Expanding on this correlation, it becomes evident that higher self-esteem facilitates various cognitive and behavioral attributes conducive to academic success. Specifically, individuals with greater self-esteem are more likely to demonstrate heightened confidence, enabling them to approach academic challenges with a positive mindset and navigate setbacks with resilience (Christy & Mythili, 2020).

Perveen et al. (2021) also reinforced these findings, providing empirical evidence of a significant positive correlation between self-esteem and academic achievement. Their study reaffirmed that individuals with positive self-perceptions tend to confront academic challenges with increased confidence and resilience, thus enhancing their likelihood of success. Conversely, low self-esteem may engender feelings of inadequacy and self-doubt, as a barrier to academic progress. Moreover, proactive engagement in seeking academic support and employing effective study strategies further amplifies the academic performance of individuals with higher self-esteem. This correlation underscores the complex interplay between psychological factors and educational outcomes. Recognizing the pivotal role of self-esteem in fostering academic success, educators and policymakers can implement targeted interventions to nurture students' self-esteem and enhance their overall academic performance.

However, it's essential to acknowledge that while self-esteem significantly contributes to academic achievement, it's not the sole determinant. Studies have consistently shown that various other factors, such as study habits and physical exercise, also shape academic outcomes. Therefore, thoroughly understanding the relationship between self-esteem and academic achievement requires considering multiple variables. Research has indicated that family income can significantly influence self-esteem, with notable variations observed across different income levels. Additionally, studies have demonstrated a significant positive relationship between self-esteem, self-efficacy, and adolescent academic achievement. For instance, Christy and Mythili (2020) found that higher levels of self-esteem and self-efficacy were associated with improved academic performance, emphasizing the interconnectedness of these psychological constructs.

Furthermore, predictive and descriptive modeling research has consistently provided empirical evidence supporting the link between self-esteem and academic achievement. For

example, Jayanthi et al. (2018) revealed a consistent positive association between self-esteem and academic performance, underscoring the robustness of this relationship across diverse populations and methodologies. Incorporating these findings into the broader discussion reinforces that while self-esteem is a crucial factor, it operates within a larger framework of influences on academic achievement. Researchers and educators can develop more comprehensive strategies to support students' holistic development and academic success by considering multiple variables.

### *3.2.2. The Predictive Power of Self-Esteem, Gender, and Age on Academic Achievement*

#### *a. Predictive Power of Self-Esteem on Academic Achievement*

Turning to Table 2, the coefficients table provides valuable insights into the predictive power of self-esteem regarding academic achievement. Consistent with prior research by Kasyoka (2023), which highlighted the significant influence of self-esteem on academic achievement among university students, the analysis reveals a highly significant relationship between self-esteem and academic performance ( $B = 0.314, p < .001$ ). While Kasyoka's study relied on secondary data from online journals and library resources, our study employed a quantitative cross-sectional correlational design. A representative sample of 309 different university students from various faculties in Java Island, Indonesia, was selected using simple random sampling. For data collection, we used the well-established Rosenberg Self-Esteem Scale (RSES) to measure participants' self-esteem. This underscores the substantial impact of self-esteem as a predictor among university students, emphasizing its role in shaping academic trajectories. The findings suggest that variations in self-esteem levels can significantly influence academic outcomes, with each one-unit increase in the self-esteem score corresponding to a 0.314 unit increase in academic achievement. This quantification elucidates the magnitude of self-esteem's effect on academic success, highlighting its importance as a critical determinant in students' educational journeys. Moreover, this robust association underscores the need for interventions and support systems to enhance students' self-esteem to optimize their academic performance and overall well-being. Recognizing the influential role of self-esteem in shaping academic outcomes can inform targeted strategies to empower students and foster a positive learning environment conducive to their success.

#### *b. Predictive Power of Age and Gender on Academic Achievement*

Our data analysis revealed that age ( $B = 0.056, p = 0.799$ ) and gender ( $B = 0.642, p = 0.134$ ) did not significantly predict academic achievement. Age shows a very weak positive relationship but is not statistically significant. Gender shows a weak positive relationship but does not hold statistical significance as a predictor of academic achievement in this model. These findings are consistent with the research conducted by Perveen et al. (2021), who similarly found gender differences insignificant in academic achievement.

Our study suggests that other factors may be more significant in determining university students' academic achievement. Mental health emerges as a crucial determinant, with students' psychological well-being impacting their ability to concentrate, retain information, and perform academically. Similarly, the financial situation profoundly affects students' access to resources, such as textbooks, technology, and necessities like food and housing, which can significantly impact their academic success. Interpersonal dynamics, including relationships with cohabitants and peers, also play a pivotal role in shaping students' emotional support systems and social networks, which, in turn, can influence their motivation, engagement, and overall academic performance. Musaddiq et al. (2022) elucidate the intricate interplay between individual attributes and external contexts in shaping academic outcomes by expanding on this multifaceted framework. Their research underscores the dynamic nature of academic achievement, highlighting how students' psychological well-being, financial circumstances,

and interpersonal relationships intersect to influence their overall performance. This holistic perspective emphasizes the need for comprehensive interventions that address not only demographic variables but also the broader socio-environmental factors impacting students' academic success. By recognizing the complex interplay of these factors, educators and policymakers can develop targeted strategies to support students' holistic well-being and enhance their academic achievement across diverse backgrounds and experiences.

### *3.2.3. Gender and Age Differences in the Relationship between Self-Esteem and Academic Achievement*

#### *a. Age and gender differences in academic achievement*

The examination of academic achievement among different age groups revealed notable variations ( $F(4, 304) = 3.314, p = 0.011$ ), as illustrated in Table 3. This highlights clear distinctions in academic performance among university students of varying ages. This suggests that age-related factors play a crucial role in shaping academic success. The higher mean square value (44.462) emphasizes the substantial differences between age groups, implying that maturity levels, learning approaches, or developmental stages might significantly influence academic achievement. It's essential to note that while this analysis looked at overall differences across age groups, the previous examination focused on the predictive power of age and gender individually. These differing perspectives can lead to varying interpretations of the data.

The examination of gender differences in academic performance revealed no statistically significant differences ( $F(1, 307) = 0.097, p = 0.755$ ), as depicted in Table 4. This finding suggests that despite potential variation in self-esteem among male and female students, gender does not appear to be a prominent factor influencing academic performance in this university setting. These findings align with the research conducted by Perveen et al. (2021), who similarly found gender differences insignificant in academic achievement. The consistency in academic achievement between genders implies that other variables beyond gender might exert more substantial influences on academic success among students. One plausible explanation for the lack of significant gender differences in academic performance could be the shifting dynamics in educational systems toward gender equality and equity. Over recent decades, efforts to promote gender parity in education have increased access to educational opportunities for both male and female students, potentially mitigating traditional gender disparities in academic achievement.

Additionally, societal changes in gender roles and expectations may have contributed to a more level playing field in academic settings, allowing students to pursue their educational goals irrespective of gender. The insignificance of gender differences underscores the need for a nuanced understanding of the complex interplay of various factors influencing academic success. While gender may not emerge as a significant predictor in this context, other individual and contextual variables such as socio-economic status, family support, and access to educational resources may substantially influence academic outcomes.

#### *b. Age and gender differences in self-esteem*

The examination of self-esteem across different age groups did not reveal statistically significant differences ( $F(4, 304) = 1.940, p = 0.104$ ), as indicated in Table 3. This absence of statistical significance contrasts with the observed variations in academic achievement concerning age. The absence of significant differences in self-esteem among different age cohorts suggests that the discrepancies noted may be attributed to chance rather than age-related factors. This implies a potential consistency in self-esteem levels across diverse age groups among university students, regardless of age-linked fluctuations in academic performance.

In contrast, significant disparities surfaced in self-esteem between male and female university students ( $F(1, 307) = 8.653, p = 0.004$ ), as outlined in Table 4, aligning with the prior research findings of Perveen et al. (2021). They reported gender differences in self-esteem, further highlighting the substantial difference observed in this study. This variance underscores the impactful role of gender in shaping perceptions of self-esteem within the university milieu. Recognizing such disparities implies that male and female students might undergo and perceive their self-esteem differently, reinforcing the influential role of gender in shaping self-perception within academic settings. Moreover, a study on Vietnamese university students by Quynh and Hai (2021) revealed that lower socio-economic status was linked to decreased self-esteem, adding cultural insight into factors influencing self-esteem. Additionally, research by Xuan and Amat (2021) demonstrated that life satisfaction, self-esteem, and gender significantly predicted social media addiction among university students, emphasizing the intricate relationship between psychological factors and behavior in the digital age.

These findings contribute to the global body of research by emphasizing that while age might not significantly impact self-esteem levels among university students, gender plays a pivotal role in influencing and delineating their self-esteem perceptions within the academic environment. This study uniquely highlights the importance of gender as a critical factor in understanding self-esteem dynamics, offering new insights that can inform educational policies and support systems worldwide.

#### **4. Conclusion**

This study examined the relationship between self-esteem and academic achievement among university students, assessed the predictive power of self-esteem, gender, and age on academic achievement, and explored gender and age differences. Our research revealed a significant positive correlation between self-esteem and academic achievement, highlighting self-esteem as a strong predictor of academic success. Interventions focusing on enhancing self-esteem could lead to improved academic outcomes. The analysis showed that while age does not significantly impact self-esteem levels among university students, gender differences are significant, with males and females exhibiting substantial variations in self-esteem levels. However, no statistically significant gender gaps in academic performance were observed.

These findings contribute to the global body of research by emphasizing that gender is pivotal in influencing and delineating self-esteem perceptions within the academic environment, while age does not. This study uniquely highlights the importance of gender as a critical factor in understanding self-esteem dynamics, offering new insights that can inform educational policies and support systems worldwide. Although the study acknowledges the presence of unaccounted factors, targeted interventions on self-esteem enhancement may benefit university students' academic success. Future research should explore these unaccounted factors to develop comprehensive approaches to understanding and improving academic outcomes.

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