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The Relationship Between Growth Mindset, Self-Efficacy, and Academic Resilience Among Master's Students

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Abstract: This study examines the relationships between growth mindset, self-efficacy, and academic resilience among master's students at the Indonesia University of Education (UPI), both partially and simultaneously, and tests whether self-efficacy mediates the relationship between growth mindset and academic resilience. This study employed a quantitative correlational design involving 152 UPI master's students recruited through convenience sampling. Data were collected using self-developed questionnaires with a five-point Likert scale to measure growth mindset, self-efficacy, and academic resilience. The internal structure of the instruments was examined using exploratory factor analysis, and items with factor loadings below 0.50 or communalities below 0.30 were removed. The data were analyzed using Pearson's correlation, multiple linear regression with relative weight analysis, and mediation analysis with 5,000 bootstrap samples. The results indicate that growth mindset is positively and significantly associated with academic resilience ($r = 0.539$; $p < 0.001$), indicating a moderate association. Self-efficacy was also positively and significantly associated with academic resilience ($r = 0.469$; $p < 0.001$), indicating a moderate association. Simultaneously, growth mindset and self-efficacy were significantly associated with academic resilience ($F = 46.250$; $p < 0.001$) and together explained 38.3% of the variance in academic resilience. Self-efficacy partially mediated the association between growth mindset and academic resilience (indirect effect = 0.093; 95% CI [0.036, 0.173]). Thus, growth mindset and self-efficacy are psychological factors that are positively and significantly associated with academic resilience among master's students.

Keywords: growth mindset, self-efficacy, academic resilience, master's students.

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INTRODUCTION

Graduate education is a level of advanced education that students can pursue after completing their undergraduate studies. This level is viewed as the beginning of professional career development and a means of supporting continuous self-development (Balýkçý et al., 2025). Graduate education focuses on development and specialization in specific academic fields through a more in-depth academic process. At this stage, students need to adapt to various academic challenges, a new learning environment, and a learning system that differs from their previous educational experiences (Bagdþiûnienë et al., 2025).

Graduate students face more complex academic responsibilities and life challenges than undergraduate students (Shuo et al., 2022). These include completing coursework, conducting in-depth theoretical analysis, carrying out research, fulfilling the obligation to produce scholarly publications, and writing a thesis (Sastro et al., 2026). In addition to academic responsibilities, graduate students also face life challenges in finances, family, interpersonal relationships, and work (Luo et al., 2015).

The various academic responsibilities and life challenges faced by graduate students are also relevant to the circumstances of students in the Master's Program at the Graduate School of the Indonesia University of Education (UPI). To gain an initial understanding of these conditions, the researcher conducted preliminary interviews with UPI master's students. These interviews were designed to identify the responsibilities students undertake during their studies as well as the challenges they face in fulfilling their academic responsibilities amid various life circumstances.

Based on the results of preliminary interviews with ten students in the Master's Program at the Graduate School of the Indonesia University of Education on July 30–31, 2026, it was found that six informants had responsibilities outside of their studies, such as working and managing household duties, while the other four focused on academic activities. These differing circumstances illustrate the diverse challenges students face while pursuing their master's degrees, particularly in managing their time and fulfilling academic responsibilities, including completing coursework, conducting research, and writing their theses. These circumstances underscore the importance of academic resilience as students' ability to persevere and adapt in the face of various obstacles throughout their educational journey.

Academic resilience refers to an individual's ability to cope effectively with setbacks, challenges, adversities, and pressures that arise during the academic process. It is considered a key component of a student's success in higher education (Martin & Marsh, 2006). According to Cassidy (2016), academic resilience is an individual's ability to continue achieving educational success despite facing difficulties. Educational success is determined not only by an individual's intellectual ability or outcomes but also by their ability to cope with various academic difficulties throughout their studies.

Academic resilience has become a global concern in higher education, as demonstrated by a meta-analysis by Chua et al. (2023) of 41 cross-sectional studies involving 13,931 college students from 18 countries, which found a 36% prevalence of low resilience among college students. This concern has grown, particularly in the wake of the COVID-19 pandemic, which has exacerbated stress and mental health challenges among students across the globe (Abdelrahman et al., 2025). Graduate students have also been identified as a group vulnerable to various mental health issues (Evans et al., 2018). This situation indicates that graduate students require greater attention as they navigate the various responsibilities and challenges during their studies (Shuo et al., 2022). These findings suggest that academic resilience among graduate students is an important issue to examine, including within the context of higher education in Indonesia.

Academic resilience is also a concern in Indonesia. Students at various universities in Indonesia are reported to face high academic pressure, which impacts their psychological well-being (Wardhani et al., 2026). A study of 609 Indonesian students showed that study engagement predicts higher academic resilience, while studyholism predicts lower academic resilience (Nugraha & Loscalzo, 2024). However, neither study specifically focused on master's students, even though master's students face unique demands such as research, publications, and thesis completion. This suggests that a study on academic resilience among master's students in Indonesia remains relevant.

Academic resilience does not develop in isolation but is influenced by various factors originating both within and outside the individual (Durso et al., 2021). One internal factor that plays a significant role in developing academic resilience is a growth mindset. According to Dweck (2016), a growth mindset is the belief that intelligence and abilities can be developed through effort, learning,

and perseverance. Individuals with a growth mindset tend to be more open to challenges, persevere when facing difficulties, and view failure as part of the learning process. In contrast, individuals with a fixed mindset view ability as something fixed and unchangeable, making them more likely to avoid challenges (Yeager & Dweck, 2020).

Various studies have shown a significant association between a growth mindset and academic resilience. A study by Liu and He (2026) demonstrated a positive relationship between a growth mindset and academic resilience among 486 college students in China. The findings indicate that students with a stronger growth mindset tend to exhibit higher academic resilience. This suggests that students' belief in their ability to grow may be related to their ability to cope with various academic challenges. In addition to a growth mindset, another internal factor relevant to understanding academic resilience is self-efficacy, an individual's belief in their ability to take the necessary actions to achieve specific goals.

According to Bandura (1997), self-efficacy influences an individual's choice of actions, effort intensity, and perseverance in the face of obstacles. Individuals with high self-efficacy tend to demonstrate greater commitment and consistency in completing tasks, whereas those with low self-efficacy are more likely to feel uncertain when facing difficulties. Research by Guo et al. (2025) shows that academic self-efficacy directly and positively predicts students' academic resilience. These findings highlight the importance of self-efficacy in enhancing students' academic resilience.

For master's students, self-efficacy serves as a psychological resource that helps individuals believe in their ability to fulfill various academic responsibilities. This belief encourages students to persevere when facing difficulties, develop problem-solving strategies, and maintain motivation in completing research, theses, and other academic activities (Miao et al., 2025). Consequently, students with high self-efficacy tend to adapt better to various academic challenges and maintain their academic performance, thereby potentially exhibiting higher levels of academic resilience (Cassidy, 2015).

Although research on growth mindset, self-efficacy, and academic resilience has developed separately, integrating these three variables in the context of master's students still reveals a research gap. First, there is a conceptual gap: studies that integrate growth mindset and self-efficacy in relation to academic resilience remain limited. For example, a study by Correa-Rojas et al. (2024) examined growth mindset and academic self-efficacy together in relation to academic achievement; thus, it did not provide insight into the relationship between these two psychological factors and academic resilience.

Second, an empirical gap remains: previous studies have primarily examined the relationship between each variable and academic resilience separately. A study by Sahiron et al. (2026) involving 357 students at the Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST) found that a growth mindset is positively associated with students' academic resilience. Meanwhile, a study by Cassidy (2015) involving 435 college students found that academic self-efficacy is a significant predictor of academic resilience; therefore, the combined relationship between a growth mindset and self-efficacy with academic resilience still requires further investigation.

Third, regarding the population, research on growth mindset and academic resilience has largely been conducted among high school students, such as the study by King et al. (2026), which involved 606,191 students from 79 countries. Meanwhile, master's students have educational characteristics and academic experiences that differ from those of high school

students and undergraduate students. Therefore, research on the relationship between growth mindset, self-efficacy, and academic resilience among master's students is important for expanding our understanding of the psychological factors related to academic resilience at the graduate level.

Thus, this study will examine the relationship between growth mindset, self-efficacy, and academic resilience among master's students at the Indonesia University of Education (UPI). This study is expected to provide an empirical picture of the relationship between these two psychological factors and students' academic resilience in facing various challenges while pursuing their master's degrees.

Based on this background, the research questions in this study are as follows:

1. To what extent is there a relationship between a growth mindset and academic resilience among master's students at the Indonesia University of Education?
2. To what extent is there a relationship between self-efficacy and academic resilience among master's students at the Indonesia University of Education?
3. To what extent do a growth mindset and self-efficacy simultaneously relate to academic resilience among master's students at the Indonesia University of Education?
4. Does self-efficacy mediate the relationship between a growth mindset and academic resilience among master's students at the Indonesia University of Education?

Based on the literature reviewed above, growth mindset and self-efficacy are expected to be positively related to academic resilience, both separately and simultaneously, while remaining distinct but interrelated constructs (Prihandoko et al., 2024). In addition, evidence that a growth mindset is related to self-efficacy (Prihandoko et al., 2024) and that self-efficacy is related to academic resilience (Cassidy, 2015; Guo et al., 2025) suggests that self-efficacy may act as a pathway through which a growth mindset is related to academic resilience. This hypothetical structural model, synthesized from the literature review, is presented in Figure 1 and serves as the basis for the hypotheses formulated below.

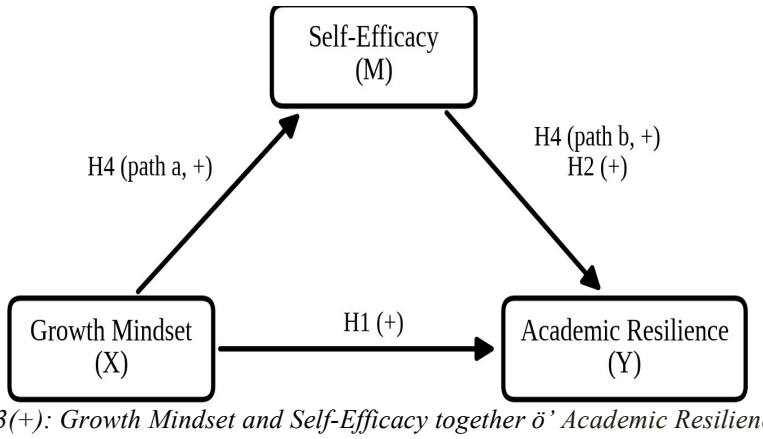


Figure 1. Hypothetical structural model of the relationships of growth mindset and self-efficacy with academic resilience

Based on the research questions and the conceptual framework presented in Figure 1, the following hypotheses are proposed:

1. There is a positive and significant relationship between growth mindset and academic resilience among master's students at the

Indonesia University of Education.
2. There is a positive and significant relationship between self-efficacy and academic resilience among master's students at the Indonesia University of Education.
3. Growth mindset and self-efficacy simultaneously have a positive and significant relationship with academic resilience among master's students at the Indonesia University of Education.
4. Self-efficacy mediates the relationship between growth mindset and academic resilience among master's students at the Indonesia University of Education.

METHOD

Research Design

This study employs a quantitative, correlational design to examine the relationship between growth mindset, self-efficacy, and academic resilience among master's students at the Indonesia University of Education (UPI) through the collection of numerical data and statistical analysis (Creswell, 2014). The population in this study consists of all active master's program students at the Graduate School of the Indonesia University of Education (UPI) for the 2025/2026 academic year. Based on data obtained from the Academic Affairs Office of the UPI Graduate School on August 3, 2026, the number of active students in the study population was 587, drawn from 10 programs: General and Character Education, Physical Education, Arts Education, Technology and Vocational Education, Educational Psychology, Teacher Education, Linguistics, Tourism, Office Management, and Indonesian Language Education for Foreign Speakers.

Data on the number of active students were used to determine the study population. Sampling was conducted using a non-probability sampling technique, specifically convenience sampling, in which questionnaires were distributed openly to students who met the criteria, and participation was voluntary. This technique was chosen due to time constraints and accessibility issues related to the highly mobile master's student population.

The adequacy of the sample size was evaluated with an a priori power analysis in G*Power 3.1 (Faul et al., 2009) for multiple linear regression (F test, fixed model, R^2 deviation from zero) with two predictors. Assuming a medium effect size ($f^2 = 0.15$; Cohen, 1992), a significance level (á) of 0.05, and a statistical power of 0.80, the minimum required sample size was 68 respondents. The final sample of 152 respondents exceeds this minimum (power = 0.99 for $f^2 = 0.15$), and a sensitivity analysis indicated that this sample size could detect effects as small as $f^2 = 0.065$ with 0.80 power. Sample size adequacy was therefore judged by statistical power rather than by a margin of error, which is valid only for probability samples. Data collection was halted after 152 respondents with complete data were obtained. The inclusion criteria for the sample in this study were: (1) active students enrolled in a master's program at the Graduate School of the Indonesia University of Education (UPI) for the 2025/2026 academic year, (2) students who had completed at least one semester of coursework, and (3) students willing to participate in the study by fully completing the questionnaire.

Research Instruments

Research data were collected using a questionnaire with a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The research instruments consisted of three scales: the growth mindset scale, the self-efficacy scale, and the academic resilience scale. All three instruments were developed by the researcher based on the theoretical framework; they were not adapted from previous studies. The growth mindset scale was developed based on aspects of Dweck's (2016) theory, the self-efficacy scale on

dimensions of Bandura's (1997) theory, and the academic resilience scale on aspects of Cassidy's (2016) theory.

Each scale was developed based on a blueprint of sub-variables and indicators and included both positively and negatively worded statements. The growth mindset scale initially consisted of 24 items, including 16 positively worded and 8 negatively worded items. It covered four sub-variables: beliefs about intelligence; attitudes toward challenges, difficulties, and failure; beliefs about the role of effort; and responses to criticism and feedback, across eight indicators. The self-efficacy scale consisted of 18 items, including 12 positively worded and 6 negatively worded items. It was based on the three dimensions of Bandura's (1997) theory, namely magnitude, strength, and generality, across six indicators. The academic resilience scale consisted of 18 items, including 9 positively worded and 9 negatively worded items. It was based on three sub-variables from Cassidy (2016): perseverance; reflecting and adaptive help-seeking; and negative affect and emotional response, across nine indicators. Negatively worded items were reverse-scored so that higher scores consistently indicated a stronger growth mindset, higher self-efficacy, and higher academic resilience.

Before data collection, all three instruments underwent an expert judgment phase to assess the alignment of the items with the constructs being measured. The assessment was conducted by three faculty members with expertise in psychology and counseling. After the expert judgment phase, the instruments were tested for validity and reliability. Validity testing was conducted using the corrected item-total correlation technique, with items deemed valid if the calculated r value was greater than the table r value at a significance level of 0.05. Reliability testing was conducted using Cronbach's alpha, with the instruments deemed reliable if Cronbach's alpha was e" 0.70.

The instruments were pilot-tested on 50 master's students outside the main research sample. Item validity was tested using the corrected item-total correlation technique, with items deemed valid if the calculated r value was greater than the table r value (0.284 for df = n " 2 = 48). The results showed that 2 of the 24 growth mindset items (items 13 and 22), 1 of the 18 self-efficacy items (item 8), and 1 of the 18 academic resilience items (item 11) were invalid. These items were excluded, so the instruments administered in the main study consisted of 22 growth mindset items (14 positive and 8 negative), 17 self-efficacy items (11 positive and 6 negative), and 17 academic resilience items (8 positive and 9 negative). Reliability in the pilot sample was assessed using Cronbach's alpha; a scale was considered reliable if á e" 0.70, and all three scales met this criterion (Cronbach's á = 0.852 for growth mindset, 0.889 for self-efficacy, and 0.821 for academic resilience).

Because all three scales were newly developed and the corrected item-total correlation only indexes item-level consistency, the internal structure of each scale was examined with exploratory factor analysis (EFA) on the main sample (N = 152). The EFA was run separately for each scale in IBM SPSS Statistics 27 using principal component analysis with Varimax rotation and Kaiser normalization. Sampling adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) measure, with values above 0.50 considered acceptable (Kaiser, 1974), and Bartlett's test of sphericity ($p < 0.05$; Bartlett, 1954). The number of components was fixed at four for growth mindset and at three each for self-efficacy and academic resilience, following the number of sub-variables in each scale's blueprint. An item was retained only if its primary loading was at least 0.50 and its communality at least

0.30 (Hair et al., 2019). Items that failed either criterion were removed one at a time, starting with the weakest item, and the rotation was repeated after each removal until all remaining items met both criteria; Cronbach's alpha was then re-estimated for the purified scales. Four items were removed (GM2, SE14, AR18, and AR1), so the final instruments consisted of 21 growth mindset items (13 positive and 8 negative), 16 self-efficacy items (10 positive and 6 negative), and 15 academic resilience items (7 positive and 8 negative). The results are presented in Table 1.

Table 1. Results of the exploratory factor analysis of the three scales

Statistic	Growth Mindset	Self-Efficacy	Academic Resilience
Items (initial → final)	22 → 21	17 → 16	17 → 15
Items removed	GM2	SE14	AR18, AR1
Components extracted	4	3	3
Components with eigenvalue > 1 (final)	5	4	4
KMO measure (final)	0.791	0.837	0.785
Bartlett's χ^2 (df) (final)	1,607.119 (210)	1,062.292 (120)	805.341 (105)
Bartlett's p (final)	< 0.001	< 0.001	< 0.001
Communalities, range (final)	0.417–0.761	0.392–0.719	0.374–0.706
Primary loadings, range (final)	0.517–0.851	0.502–0.809	0.528–0.809
Items with a second loading ≥ 0.30 (final)	11	9	6
Total variance explained, % (final)	58.00	57.15	55.33
Cronbach's α, main sample (final)	0.879	0.882	0.828

In the initial solution, the KMO values were 0.791 for growth mindset, 0.843 for self-efficacy, and 0.804 for academic resilience, Bartlett's test was significant in each case ($p < 0.001$), and five items fell short of the criteria: GM2 (communality = 0.129; primary loading = 0.350), GM1 (primary loading = 0.469), SE14 (0.490), AR1 (0.452), and AR18 (0.403). Removing the weakest item first changed the picture for two of them: after GM2 was removed, GM1 reached a primary loading of 0.517 and was retained, and after SE14 was removed, SE17, whose initial loading was 0.4998, rose to 0.502. For academic resilience, AR18 and then AR1 were removed. The final solutions (Table 1) explained 58.00%, 57.15%, and 55.33% of the total variance; all communalities were at least 0.374, and the primary loadings ranged from 0.517 to 0.851 for growth mindset, from 0.502 to 0.809 for self-efficacy, and from 0.528 to 0.809 for academic resilience. Cronbach's alpha of the purified scales was 0.879, 0.882, and 0.828, compared with 0.874, 0.889, and 0.845 before item removal, so the removal improved the factor structure without materially changing internal consistency. A second loading of at least 0.30 remained for 11 growth mindset, 9 self-efficacy, and 6 academic resilience items (26 of the 52 retained items), although the primary loading of each exceeded 0.50; the factor structures should therefore be regarded as only moderately clean, and this is acknowledged as a limitation.

Data Analysis Technique

The data were analyzed using descriptive analysis, Pearson's correlation, multiple linear regression, relative weight analysis, and mediation analysis with IBM SPSS Statistics 27 and the PROCESS macro (version 5.1). Descriptive analysis was used to describe the distribution characteristics of each variable's scores, including the minimum, maximum, mean, and standard deviation; the distributions were visualized with raincloud plots combined with boxplots that show the median, interquartile range, and outliers. Next, correlation tests were used to determine the direction and strength of the relationship between growth mindset, self-efficacy, and academic resilience, and a scatterplot matrix with fitted regression lines and 95% confidence bands was used to inspect the bivariate relationships. Before conducting the regression analysis, the data were tested using assumption checks, including normality, linearity, multicollinearity, and heteroscedasticity, to ensure the model met the requirements for analysis. Afterward, multiple linear regression analysis was used to test the relationship between growth mindset and self-efficacy and the academic resilience of master's students, both partially via the t-test and simultaneously via the F-test, as well as to determine the extent of the contribution of the two independent variables to dependent variable through the coefficient of determination (R^2).

Because the two predictors are correlated, the relative importance of each predictor was assessed with Johnson's (2000) relative weights, which partition R^2 into non-overlapping portions attributable to each predictor (Tonidandel & LeBreton, 2011; Grömping, 2015), and with dominance analysis (Budescu, 1993; Azen & Budescu, 2003); 95% percentile bootstrap confidence intervals were obtained from 5,000 resamples. The mediating role of self-efficacy in the relationship between growth mindset and academic resilience was tested with PROCESS Model 4 (Hayes, 2022), using 5,000 bootstrap samples (random seed = 12345) and 95% percentile confidence intervals for the indirect effect (Preacher & Hayes, 2008). The relative weights were computed with a Python script that implements Johnson's (2000) procedure.

To describe the distribution of responses, total scores were classified into five categories (very low, low, moderate, high, and very high) using equal-interval classes of the mean item score, with an interval width of (5 " 1) / 5 = 0.80. The classification criteria are presented in Table 2.

Table 2. Score categorization criteria

Category	Mean Item Score	Growth Mindset (21 items)	Self-Efficacy (16 items)	Academic Resilience (15 items)
Very low	1.00–1.80	21–37	16–28	15–27
Low	1.81–2.60	38–54	29–41	28–39
Moderate	2.61–3.40	55–71	42–54	40–51
High	3.41–4.20	72–88	55–67	52–63
Very high	4.21–5.00	89–105	68–80	64–75

■ RESULT AND DISCUSSION

Descriptive Analysis

Before testing the hypotheses, we first provide an overview of the score distributions for the three research variables based on data from 152 active students in the 2025/2026 academic year in the Master's Program at the Graduate School of the Indonesia University of Education (UPI), who served as respondents. A summary of the descriptive statistics is presented in Table 3 below.

Figure 2 shows the distribution of the total scores of each variable. All three distributions were located in the upper part of the scale: 97.4%

Table 3. Descriptive statistics of research variables

Variable	N	Min	Max	Mean	SD	Mean Per Item
Growth Mindset	152	55	105	88.17	9.529	4.20
Self-Efficacy	152	38	80	64.70	8.340	4.04
Academic Resilience	152	33	75	56.72	8.079	3.78

of the respondents for growth mindset, 96.1% for self-efficacy, and 92.1% for academic resilience had a mean item score above the scale midpoint (3.0), so the distributions are shifted toward the favorable end. The shift was strongest for growth mindset, whose distribution was negatively skewed (skewness = "0.65; median = 89.0; interquartile range = 14.5) and contained two low-scoring outliers. Self-efficacy was almost symmetrical (skewness = "0.14; median = 64.0; interquartile range = 10.0) with two low-scoring outliers, whereas academic resilience was slightly positively skewed (skewness = 0.19; median = 55.0; interquartile range = 11.0) and had a single low-scoring outlier. Relative variability increased in the same order as the mean per item decreased (coefficient of variation = 10.8% for growth mindset, 12.9% for self-efficacy, and 14.2% for academic resilience), indicating that students differed most in academic resilience and least in growth mindset. The comparatively restricted spread at the upper end of growth mindset suggests that the correlations reported below describe associations in a relatively favorable sample and may be conservative relative to a more heterogeneous population.

Based on total scores classified with the criteria in Table 2, most respondents were in the

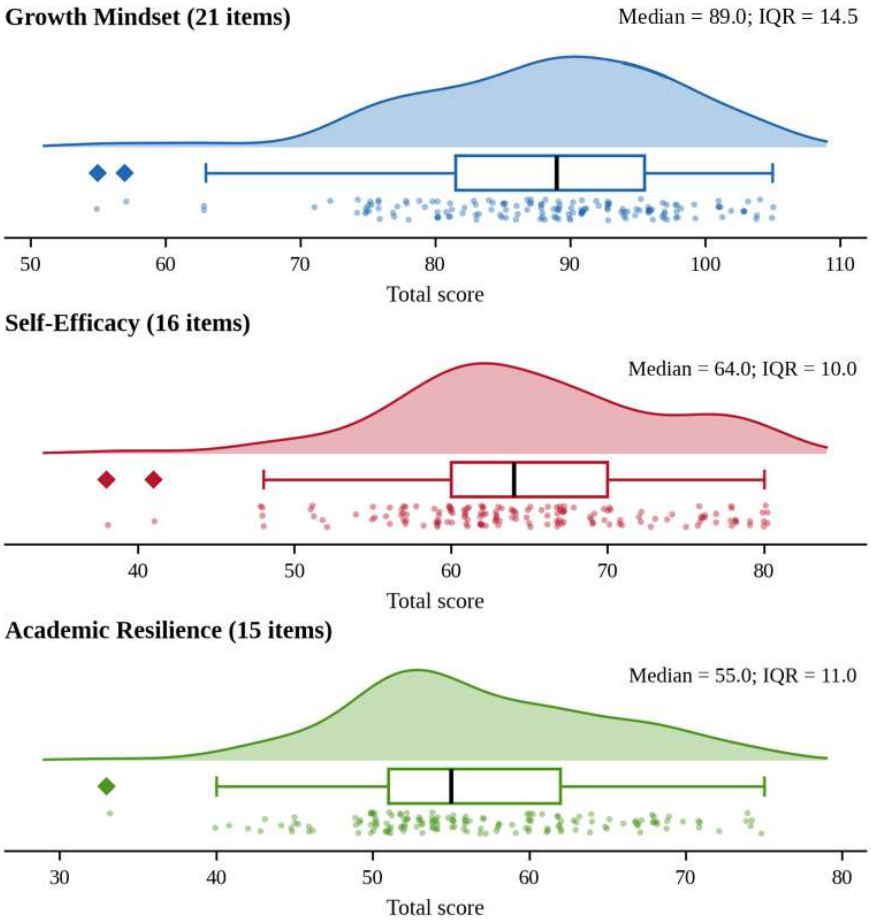


Figure 2. Distribution of total scores for each variable (raincloud plots with boxplots)

high or very high categories on all three variables: 96.7% for growth mindset (high = 43.4%; very high = 53.3%), 92.1% for self-efficacy (61.2% and 30.9%), and 73.0% for academic resilience (52.0% and 21.1%). Academic resilience also had the largest share of respondents in the moderate category (26.3%), whereas no respondent was in the very low category on any variable.

Classical Assumption Tests

Before the regression analysis, the assumptions of normality, linearity, multicollinearity, and heteroscedasticity were tested. The Kolmogorov–Smirnov test indicated that the regression residuals were normally distributed (D = 0.034; Asymp. Sig. = 0.200; Monte Carlo Sig. = 0.943), with both significance values exceeding 0.05, and the residuals were nearly symmetrical (skewness = 0.13). The relationships of growth mindset and self-efficacy with academic resilience were linear, as indicated by the Deviation from Linearity significance values of 0.632 and 0.113, respectively (both > 0.05). No multicollinearity was detected, with Tolerance values of 0.884 (> 0.10) and VIF values of 1.132 (< 10) for both predictors. The Glejser test was not significant for either predictor (p = 0.774 and 0.854), indicating that the assumption of homoscedasticity was met. Overall, the assumptions for the Pearson correlation and multiple linear regression analyses were satisfied.

Correlation Test

A correlation test was used to determine whether there was a relationship between growth mindset, self-efficacy, and academic resilience. This study used Pearson's product-moment correlation because the data met the assumptions of normality and linearity. Decisions were made based on the significance value (Sig.), with the criterion that if Sig. < 0.05, a significant relationship exists, whereas if Sig. > 0.05, no significant relationship exists. Furthermore, the direction and strength of the relationship were determined based on the correlation coefficient (r). The correlation test results are presented in Table 4.

Table 4. Pearson correlation test results

Variable Relationships	r	Sig. (2-tailed)	N	Description
Growth Mindset – Academic Resilience	0.539	< 0.001	152	Positive, significant, moderate
Self-Efficacy – Academic Resilience	0.469	< 0.001	152	Positive, significant, moderate
Growth Mindset – Self-Efficacy	0.341	< 0.001	152	Positive, significant, low

Based on Table 4, a growth mindset is positively and significantly associated with academic resilience (r = 0.539; Sig. < 0.001) with a moderate strength of association. Self-efficacy is also positively and significantly associated with academic resilience (r = 0.469; Sig. < 0.001) with a moderate strength of association. This means that the higher the growth mindset and self-efficacy of master's students, the higher their academic resilience. Meanwhile, growth mindset and self-efficacy are positively correlated with low strength (r = 0.341; Sig. < 0.001), indicating that the two independent variables do not overlap excessively, consistent with the multicollinearity test results. The strength of the relationship is interpreted based on the

correlation coefficient guidelines: 0.20–0.399 = low, 0.40–0.599 = moderate, 0.60–0.799 = strong.

Figure 3 presents the scatterplot matrix with the fitted regression lines and 95% confidence bands. The scores were spread roughly linearly around the fitted lines without marked curvature, in line with the deviation-from-linearity tests, and the confidence bands widened toward the extremes of each predictor, where few respondents were located.

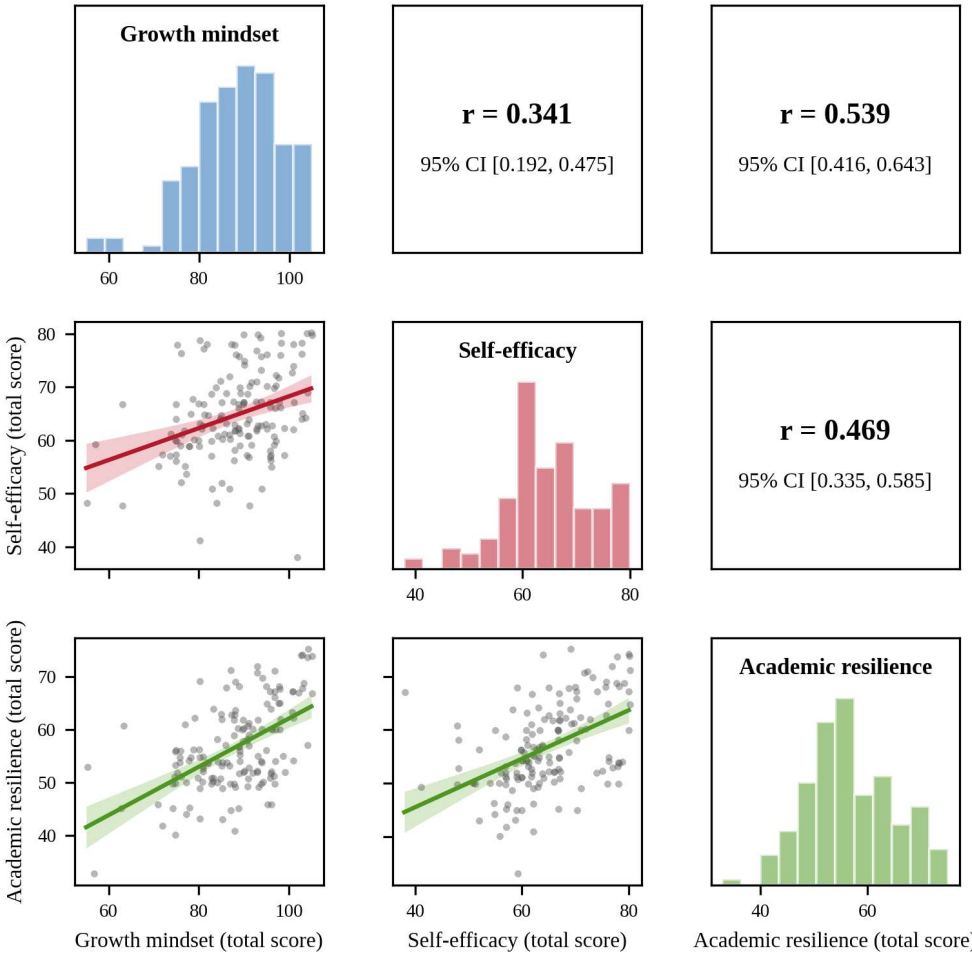


Figure 3. Scatterplot matrix of the study variables with linear regression lines and 95% confidence bands

Multiple Linear Regression Test

A multiple linear regression analysis was conducted to examine the relationship of growth mindset (X) and self-efficacy (X,) with academic resilience (Y) among master's students at the Indonesia University of Education, both partially and simultaneously. To keep the report concise, the coefficient estimates (t-test), relative weights, model significance (F-test), and model summary (R, R^2, and adjusted R^2) are presented together in Table 5, followed by the interpretation of each hypothesis.

Table 5. Multiple linear regression predicting academic resilience

Predictor	*B*	*SE*	β	*t*	*p*	RW	RW (%)
(Constant)	4.398	5.467	–	0.804	0.422	–	–
Growth Mindset	0.364	0.058	0.429	6.266	< 0.001	0.227	59.2
Self-Efficacy	0.313	0.066	0.323	4.721	< 0.001	0.156	40.8
R = 0.619; R^2 = 0.383; Adjusted R^2 = 0.375; *SE* of the estimate = 6.389							
$F(2, 149) = 46.250$; $p < 0.001$							

Note. B = unstandardized coefficient; SE = standard error; â = standardized coefficient; RW = Johnson's relative weight (in R^2 units; sums to $R^2 = 0.383$); RW (%) = RW/R^2 × 100. 95% bootstrap CIs (5,000 resamples) for RW: growth mindset [0.116, 0.357]; self-efficacy [0.070, 0.272]. Dependent variable: academic resilience, N = 152.

t-Test (Partial)

The partial relationship of each predictor with academic resilience was tested using the t-test, with a critical t-value of 1.976 at á = 0.05 and df = 149 (n " k = 152 " 3). The coefficients are shown in the upper part of Table 5.

Hypothesis 1 (H1): A growth mindset is partially and significantly associated with academic resilience.

The t-test results for the growth mindset variable showed a calculated t-value of 6.266 and a significance level of < 0.001. Since the calculated t-value (6.266) is greater than the critical t-value (1.976) and the significance level (< 0.001) is less than 0.05, H1 is accepted. Thus, growth mindset is partially, positively, and significantly associated with the academic resilience of master's students. The positive regression coefficients (B = 0.364; â = 0.429) indicate a positive direction of association, meaning that the higher a student's growth mindset, the higher their academic resilience.

Hypothesis 2 (H2): Self-efficacy is partially and significantly associated with academic resilience.

The results of the t-test for the self-efficacy variable show a calculated t-value of 4.721 and a significance level of < 0.001. Since the calculated t-value (4.721) is greater than the critical t-value (1.976) and the significance level (< 0.001) is less than 0.05, H2 is accepted. Thus, self-efficacy is partially, positively, and significantly associated with the academic resilience of master's students (B = 0.313; â = 0.323). The standardized coefficient of self-efficacy (0.323) is smaller than that of growth mindset (0.429); the relative importance of the two predictors is examined in the relative importance analysis below.

F-Test (Simultaneous)

The simultaneous relationship of the two predictors with academic resilience was tested using the F-test, with a critical F-value of 3.06 at á = 0.05, df = 2, and df, = 149. The result is shown in the lower part of Table 5.

Hypothesis 3 (H3): Growth mindset and self-efficacy are simultaneously and significantly related to academic resilience.

The F-test results show a calculated F-value of 46.250, which is greater than the table F-value (3.06) with a significance level (Sig.) < 0.001 (< 0.05); therefore, H3 is accepted. Thus, growth mindset and self-efficacy are simultaneously and significantly positively associated with the academic resilience of UPI master's students. These results also confirm that the regression model fits well and is suitable for explaining academic resilience in the studied population.

Coefficient of Determination (R^2)

The coefficient of determination indicates the proportion of variance in the dependent

variable explained by the independent variables in the model. The results are presented in the lower part of Table 5.

The analysis shows a correlation coefficient (R) of 0.619 and a coefficient of determination (R-squared) of 0.383. These values indicate that a growth mindset and self-efficacy together account for 38.3% of the variance in master's students' academic resilience (explained variance). In comparison, the remaining 61.7% represents variance not explained by the two predictor variables in this model. The adjusted R^2 value of 0.375 indicates that this contribution remains relatively stable after accounting for the number of independent variables in the model.

Based on the multiple linear regression results, the following regression equation was obtained: Y = 4.398 + 0.364 X + 0.313 X, . This equation indicates that a one-unit higher growth mindset score is associated with a 0.364-unit higher academic resilience score, and a one-unit higher self-efficacy score is associated with a 0.313-unit higher academic resilience score, holding the other predictor constant.

Relative Importance of the Predictors

Because the two predictors are correlated (r = 0.341), the share of the explained variance that belongs to each predictor cannot be obtained from the product of the standardized coefficient and the zero-order correlation, which does not allocate the variance they share. Johnson's (2000) relative weights, which transform the correlated predictors into orthogonal counterparts before allocating R^2 (Tonidandel & LeBreton, 2011), were therefore computed (Table 5). The raw relative weights were 0.227 for growth mindset and 0.156 for self-efficacy, which sum to R^2 (0.383); growth mindset thus accounted for 59.2% and self-efficacy for 40.8% of the explained variance. Dominance analysis gave the same general dominance weights, as expected with two predictors, and growth mindset showed complete dominance: it contributed more than self-efficacy in the single-predictor models (R^2 = 0.291 versus 0.220) and after controlling for the other predictor (ÄR^2 = 0.163 versus 0.092) (Budescu, 1993; Azen & Budescu, 2003). However, the 95% bootstrap confidence intervals of the two raw weights overlapped, and the interval for their difference included zero (difference = 0.070, 95% CI [-0.112, 0.243]); the larger contribution of growth mindset is therefore a descriptive pattern in this sample and was not statistically established.

Mediation Analysis

Hypothesis 4 (H4): Self-efficacy mediates the relationship between growth mindset and academic resilience.

The mediation analysis (PROCESS Model 4; 5,000 bootstrap samples) used growth mindset as the predictor, self-efficacy as the mediator, and academic resilience as the outcome (Figure 4). Growth mindset was positively related to self-efficacy (a = 0.298, SE = 0.067, $p < 0.001$, 95% CI [0.166, 0.431]; $R^2 = 0.116$), and self-efficacy was positively related to academic resilience when growth mindset was held constant (b = 0.313, SE = 0.066, $p < 0.001$, 95% CI [0.182, 0.444]). The total effect of growth mindset on academic resilience was c = 0.457 (SE = 0.058, $p < 0.001$, 95% CI [0.342, 0.572]), and the direct effect remained significant after self-efficacy was included (c2 = 0.364, SE = 0.058, $p < 0.001$, 95% CI [0.249, 0.478]). The indirect effect through self-efficacy was ab = 0.093 (bootstrap SE = 0.036; 95% CI [0.036, 0.173]; standardized = 0.110), and the confidence interval did not include zero. Therefore, H4 is accepted: self-efficacy partially mediated the association between growth mindset and academic resilience, with the indirect effect accounting for 20.4% of the total effect. Because the data are cross-sectional, this result describes statistical mediation and does not establish the temporal order of the variables.

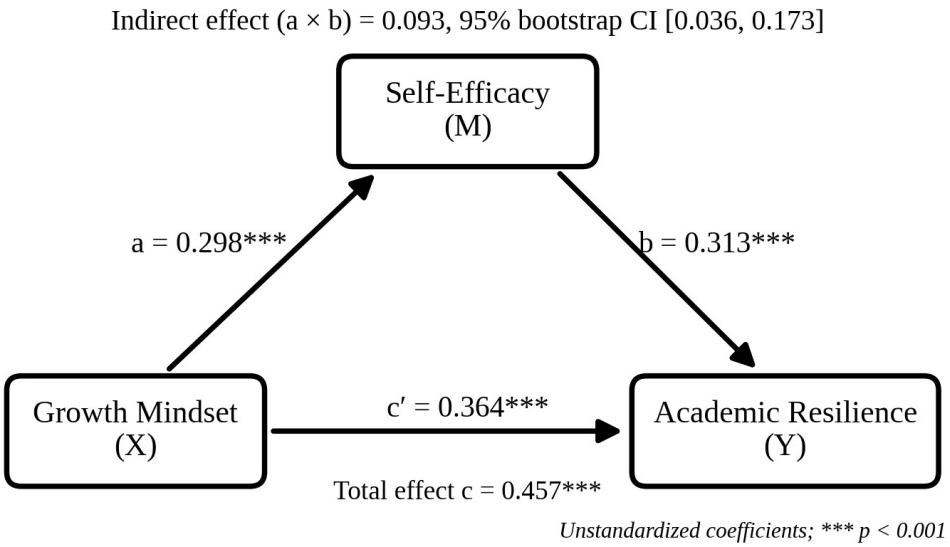


Figure 4. Mediation model of growth mindset, self-efficacy, and academic resilience (PROCESS model 4)

Based on these results, the research questions are answered as follows: Growth mindset is associated with academic resilience with a moderate strength of association (r = 0.539), self-efficacy is associated with academic resilience with a moderate strength of association (r = 0.469), both are simultaneously associated with academic resilience with a strong strength of association (R = 0.619) and explain 38.3% of the variance in academic resilience, and self-efficacy partially mediates the association between growth mindset and academic resilience (indirect effect = 0.093; 95% CI [0.036, 0.173]).

The results indicate that all four hypotheses were supported: growth mindset (H1) and self-efficacy (H2) are each positively and significantly associated with academic resilience; together (H3), they are significantly associated with academic resilience and explain 38.3% of its variance. Self-efficacy partially mediates the association between growth mindset and academic resilience (H4). These findings complement previous studies, which generally examined the two variables separately and at other educational levels, thereby addressing the conceptual, empirical, and population gaps outlined in the introduction.

Growth Mindset and Academic Resilience

The results of the t-test indicate that a growth mindset is positively and significantly correlated with academic resilience (t = 6.266; p < 0.001; r = 0.539). This correlation coefficient is classified as moderate according to the guidelines used in the results section; however, it exceeds 0.30, which Gignac and Szodorai (2016) consider relatively large in research on individual differences so that this relationship can be viewed as practically meaningful. This finding is consistent with a study by Liu (2025) involving 381 undergraduate students at a university in China, which showed that a growth mindset significantly predicts academic resilience. Similar results were also reported by Xiao and Liu (2025), who included a growth mindset alongside psychological capital and social support in a model that explained 51% of the variance in academic buoyancy, a construct closely related to academic resilience, among 516 college students. Furthermore, Liu's (2025) qualitative

findings indicate that students utilize a growth mindset and emotional regulation when facing various academic setbacks. Conceptually, this pattern may also be relevant to master's students when facing challenges such as repeated revisions, article rejections, or difficulties in completing their theses. However, this possibility remains interpretive and requires further testing, such as through a qualitative approach.

Self-Efficacy and Academic Resilience

Self-efficacy is also positively and significantly associated with academic resilience ($t = 4.721$; $p < 0.001$; $r = 0.469$). These findings are consistent with those of Guo et al. (2025), who demonstrated that academic self-efficacy plays a direct, positive role in predicting students' academic resilience; similar results were also reported by Shengyao et al. (2024), who found self-efficacy to be the most effective mediator in the relationship between parenting style and academic resilience. Stronger support comes from Yu et al. (2026), who conducted a three-wave study involving 2,609 undergraduate and graduate students. In that study, self-efficacy emerged as the strongest predictor of academic resilience (â = 0.672), contributing more than motivation and social support.

Relative Contribution of Growth Mindset and Self-Efficacy

The relative weights indicate that growth mindset accounted for 59.2% of the explained variance in academic resilience (raw weight = 0.227) and self-efficacy for 40.8% (raw weight = 0.156). Unlike the product of the standardized coefficient and the zero-order correlation, which ignores the variance that the two predictors share, relative weights allocate this shared variance between the predictors (Johnson, 2000; Tonidandel & LeBreton, 2011), and dominance analysis confirmed that growth mindset contributed more than self-efficacy in every subset model. However, the bootstrap confidence intervals for the two weights overlapped, and the interval for their difference included zero, so the larger contribution of growth mindset is a descriptive pattern in this sample and should not be overinterpreted. This finding differs from that of Yu et al. (2026), who identified self-efficacy as the strongest predictor; however, their model did not include growth mindset, so the two findings cannot be directly compared. One plausible explanation is that a growth mindset reflects a more fundamental belief about the nature of ability, whereas self-efficacy is more closely tied to a specific task. At the master's level, academic demands such as writing a thesis, responding to repeated revisions from advisors, and submitting articles are long-term and open-ended, and setbacks in these tasks are common. Under such conditions, a growth mindset may shape how students interpret and respond to setbacks, namely as feedback for learning rather than as evidence of inability (Yeager & Dweck, 2020), which is closely related to the persistence and recovery aspects of academic resilience. In contrast, self-efficacy beliefs are tied to specific tasks and may fluctuate from one task to another (Bandura, 1997). This explanation is interpretive because these mechanisms were not measured in the present study.

The relatively low positive correlation between the two ($r = 0.341$) and a VIF value of 1.132 indicate that while they are interrelated, they are distinct constructs. This relationship aligns with the findings of Prihandoko et al. (2024), who found that, among 464 undergraduate students in Indonesia working on their theses, a growth mindset significantly influenced self-efficacy in generating ideas and metacognition, which in turn mediated the relationship between a growth mindset and academic writing performance.

The Mediating Role of Self-Efficacy

Consistent with this pattern, the mediation analysis showed that growth mindset was positively related to self-efficacy ($a = 0.298$) and

that self-efficacy was positively related to academic resilience when growth mindset was held constant (b = 0.313), yielding a significant indirect effect (ab = 0.093; 95% bootstrap CI [0.036, 0.173]). Because the direct effect of growth mindset remained significant (c2 = 0.364), self-efficacy was a partial mediator, accounting for about 20.4% of the total effect (c = 0.457). In other words, students with a stronger growth mindset tended to report higher self-efficacy, which in turn was associated with higher academic resilience. In contrast, self-efficacy did not account for most of the association between growth mindset and academic resilience. These results are statistically consistent with the pathway suggested in the literature. However, the cross-sectional, single-time-point design cannot establish the temporal order of the variables, and mediation estimates from cross-sectional data may be biased relative to the underlying longitudinal process (Maxwell & Cole, 2007). Reversed or reciprocal paths therefore remain plausible, and the mediation should be read as an association pattern to be tested with longitudinal or experimental designs.

Simultaneous Association and Practical Implications

Simultaneously, growth mindset and self-efficacy were significantly associated with academic resilience ($F(2, 149) = 46.250$; $p < 0.001$), with $R = 0.619$ and $R^2 = 0.383$, meaning that these two beliefs together explain 38.3% of the variation in academic resilience. This proportion is considered substantial for a model containing only two intrapersonal factors. However, it is lower than that of models that include environmental factors; for example, Xiao and Liu (2025) reported 51% for a model involving psychological capital and social support. This comparison is indicative because the outcome constructs and analytical techniques differ. This pattern suggests that the remaining 61.7% of variance is likely related to environmental factors, such as social support (Xiao & Liu, 2025; Yu et al., 2026) and emotional support from instructors (Guo et al., 2025), as well as other personal factors such as motivation (Yu et al., 2026). For master's students, situational factors such as relationships with advisors and off-campus demands, particularly part-time or full-time employment, may also be relevant. A qualitative study of master's graduates found that support from academic advisors strongly shaped students' experiences of the study process and that combining study with work was a major source of difficulty (Balýkçý et al., 2025). Such factors could plausibly moderate the associations observed here; for example, the association of self-efficacy or growth mindset with academic resilience might differ between students who receive regular, supportive supervision and those who do not, or between students who work and those who do not. However, these variables were not measured or tested in this study, and future research should examine them, for example through moderation analysis.

These findings have practical implications for graduate program administrators designing interventions to strengthen students' growth mindset and self-efficacy, for example, through growth mindset training, academic mentoring that builds self-confidence, and opportunities for incremental success in the research and thesis-writing process. In addition, mindfulness-based approaches, such as the program evaluated by Galante et al. (2018), can strengthen students' resilience to stress, which may support the development of academic resilience. Strengthening these psychological aspects is expected to help master's students manage their academic, professional, and family responsibilities more effectively, thereby minimizing the risk of psychological stress and optimizing their academic success.

Limitations and Future Research

This study has several limitations. First, the sample was drawn from a single institution; thus, generalizations to master's students at other

institutions should be made with caution. Second, participants were recruited through convenience sampling with voluntary participation, so self-selection bias cannot be ruled out. In addition, respondents came from only nine of the ten study programs, which may limit the representativeness of the sample. Third, all data were collected through self-report questionnaires, which may introduce response bias. Furthermore, the instruments were developed by the researchers. Although exploratory factor analysis (EFA) supported the suitability of the data for factor analysis, five items did not meet the loading or communality criteria in the initial solution, and the purified scales were evaluated on the same sample used to select the items, so the reported structure may be optimistic; moreover, a second loading of at least 0.30 remained for 26 of the 52 retained items. Therefore, confirmatory factor analysis (CFA) using an independent sample is needed to further establish construct validity. Fourth, the mediation model is based on cross-sectional data, so temporal precedence cannot be inferred (Maxwell & Cole, 2007), and the relative weights were estimated with wide confidence intervals, which limits conclusions about which predictor is more important. Future research is encouraged to include additional variables, such as social support, support from faculty members or academic advisors, and motivation, to test the mediation model with longitudinal data, and to employ mixed-methods approaches, as demonstrated by Liu (2025) and Xiao and Liu (2025), to capture students' experiences in greater depth.

■ CONCLUSION

Based on the analysis results, growth mindset and self-efficacy are positively and significantly associated with the academic resilience of master's students at the Indonesia University of Education, both partially and simultaneously. Growth mindset (r = 0.539) and self-efficacy (r = 0.469) each show a moderate correlation, and together they explain 38.3% of the variance in academic resilience (R = 0.619). In terms of relative weights, growth mindset accounted for 59.2% and self-efficacy for 40.8% of the explained variance, although this difference was not statistically significant. Self-efficacy also partially mediated the association between growth mindset and academic resilience (indirect effect = 0.093; 95% CI [0.036, 0.173]). Thus, all four research questions were answered, and all four hypotheses were accepted. This study adds to the evidence that, at the master's level, beliefs about the development of abilities and beliefs in one's own capabilities need to be considered together in understanding academic resilience.

Recommendations

Graduate programs may consider strengthening both of these beliefs through process-oriented academic guidance, experiences of incremental success in research and thesis writing, and peer mentoring. These suggestions are not derived directly from the regression results; their effectiveness has not been tested in this correlational study and needs empirical evaluation. Future research is recommended to use a longitudinal design to test the temporal order of the growth mindset–self-efficacy–academic resilience pathway, involve more institutions, and include social support factors, given that 61.7% of the variance in academic resilience remains unexplained by this model.

■ DECLARATION OF GENERATIVE AI USAGE IN THE WRITING PROCESS

During the preparation of this manuscript, the author used Claude AI and ChatGPT to assist with writing refinement, improve sentence structure, and enhance the manuscript's clarity. DeepL was used to assist with English translation.

Following the use of these tools, the author reviewed and revised the content as necessary and accepts full responsibility for the final content of the article.

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