



The Paradox of Academic Stress in the Digital Age: A Comparative Analysis of Academic Social Comparison and Digital Self-Regulation in University Students

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Abstract

Academic stress is commonly experienced by university students and is increasingly influenced by the dynamics of campus digitalization. This study aims to analyze the effect of academic social comparison and digital self-regulation on academic stress. The method used is a correlational quantitative approach with multiple regression on 256 university students selected through cluster random sampling. The instruments used are three five-point Likert scales. Data were collected online and analyzed through classical assumption tests and multiple regression. The results showed that the regression model was not significant ($R^2 = 0.000$; $p = 0.975$), with academic social comparison ($p = 0.912$) and digital self-regulation ($p = 0.847$) having no effect on academic stress. These findings differ from previous studies and suggest that other factors may be more dominant. The implications of this study emphasize the need for a multidimensional approach in understanding student stress and the development of more comprehensive and contextual counseling services.

Keywords: Academic stress, academic social comparison, digital self-regulation, university students, multiple regression.



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Introduction

In an ideal context, university students are described as individuals who possess high psychological resilience in facing academic challenges (Putra & Hariko, 2023; Putra, 2022; Putra & Fauziah, 2022). They are able to manage their study time well, plan effective academic achievement strategies, and maintain social relationships that support their academic success (Lovin & Bernardeau-Moreau, 2022; Wolters & Brady, 2021). In this situation, academic pressure serves as a trigger for growth and development (Chemagosi, 2024). Moderate stress provides motivational drive that helps university students achieve optimal performance (Travis et al., 2020). This condition reflects adaptive stress, where academic demands are viewed as challenges rather than threats (Putra et al., 2025; Ross et al., 2024). University students with balanced psychological conditions are able to face exams, coursework, and other study loads without losing focus or enthusiasm for

learning (Hagedorn et al., 2021; Son et al., 2020; Yang et al., 2021; Falma & Putra, 2025; Putra & Mudjiran, 2023).

In reality, this condition is often not achieved. Various recent studies show an increase in academic stress levels among students in various countries, including Indonesia (Astutik et al., 2020; Khatimah & Putriana, 2025; Putra, 2023). This high pressure stems from heavy workloads, busy class schedules, competitive evaluation systems, and excessive self-expectations (Camacho-Zuñiga et al., 2021; Samaratunga & Kamardeen, 2025; Putra et al., 2025). High academic stress affects students' mental health, including emotional exhaustion, decreased motivation to study, and increased anxiety (Putra & Ardi, 2024). These effects also often result in decreased academic achievement and disrupted social relationships (Rohmah & Mahrus, 2024). In some extreme cases, academic stress can lead to symptoms of depression and despair among students (Zhang et al., 2022). This phenomenon is a serious concern in higher education because it is directly related to the quality of learning and student retention.

One important factor that has emerged in the contemporary higher education landscape is the use of digital technology in the learning process (Leal Filho et al., 2024). The shift towards a digital learning environment has created new dynamics for students (Gorina et al., 2023). Access to information has become very fast, but on the other hand, challenges have emerged in the form of digital distractions, multitasking demands, and social pressures that arise through digital platforms (Carabregu-Vokshi et al., 2024). In this context, two psychosocial variables are considered relevant in explaining academic stress: academic social comparison and digital self-regulation (Ibrahim et al., 2024).

Academic social comparison is a process in which students compare their academic achievements with those of their peers (Kiuru et al., 2020; Lalot & Houston, 2025; Syukur et al., 2024). This process can occur in the classroom or in digital environments (Jansen et al., 2022). Exposure to the academic achievements of peers can trigger self-evaluation, increase psychological pressure, and amplify feelings of insecurity (Zeb et al., 2025). Recent research shows that academic social comparison is closely related to increased emotional tension, anxiety about evaluation, and feelings of falling behind in the learning environment (Bennett & Folley, 2021). High intensity of social comparison has the potential to increase students' cognitive load as they constantly compare their abilities with others (Saiphoo & Want, 2018; Yan et al., 2024). In the digital context, this phenomenon is amplified because academic social media and learning platforms provide constant exposure to others' academic achievements (Xu et al., 2025).

The second variable is digital self-regulation. Digital self-regulation is the ability of students to manage their attention, time, emotions, and behavior in the use of digital technology during the learning process (Ibrahim et al., 2024; Junaštková, 2024). In a digital learning environment full of distractions, self-regulation is an important competency for maintaining focus and productivity (Alt & Naamati-Schneider, 2021; Wang et al., 2022). Research shows that students with good digital self-regulation tend to be better at managing their academic workload, more focused on academic tasks, and less prone to digital fatigue (Brady et al., 2022). Conversely, students who lack adequate digital self-regulation tend to experience increased stress, difficulty completing tasks on time, and are easily distracted by notifications or entertainment media.

These two variables are highly relevant to test because they reflect the dynamics of contemporary learning. Academic social comparison reflects the external pressure felt by students due to exposure to the achievements of others (Fleur et al., 2023). Digital self-regulation reflects the internal capacity

to manage complex digital learning environments (Bylieva et al., 2021; Sharma et al., 2024; Zheng & Xiao, 2024). The relationship between the two and academic stress is important to understand, especially in the context of Indonesian students who are facing major transformations in the learning system.

A significant research gap exists because most previous studies have only examined academic social comparison in relation to anxiety or learning motivation, rather than academic stress directly. Similarly, research on digital self-regulation has focused more on academic achievement or learning performance rather than the psychological pressure that accompanies it. In addition, the integration of these two variables in a multiple regression analysis model is still rarely done, especially in the student population in Indonesia. This study has novelty value because it tests both variables simultaneously to see their contribution to academic stress.

The originality of this study lies in the analytical approach used to understand academic stress in the context of digital learning. This study not only describes simple relationships, but also measures the predictive power of academic social comparison and digital self-regulation on students' academic stress. The results are expected to provide a more comprehensive understanding of the factors that contribute to student stress.

The findings of this study have direct implications for the development of the counseling profession in higher education. Information about the influence of academic social comparison can be used by counselors in designing group counseling programs aimed at helping students manage self-evaluation in a healthier and more adaptive manner. Meanwhile, findings on digital self-regulation can form the basis for learning skills training programs in the digital age, including screen time management, notification control, and strategies for maintaining focus while studying online. Thus, the results of this study are expected to strengthen the role of campus counselors in providing services that are responsive to the psychosocial dynamics of today's students.

In the long term, a deeper understanding of these two important factors will enrich evidence-based counseling interventions. Counselors can help students not only in overcoming symptoms of stress, but also in building stronger psychological resilience. These efforts will contribute to improving the quality of learning in higher education, the psychological well-being of students, and the development of the counseling profession as an integral part of the higher education ecosystem.

Method

This research method was designed to provide a deeper understanding of the relationship between academic social comparison and digital self-regulation on student academic stress. The approach used was a quantitative approach with a correlational design. This design was chosen because the purpose of the study was not to intervene, but rather to analyze the relationship and contribution of two psychosocial variables to students' academic stress levels. The analysis model used was multiple regression, as this study tested two predictors against one dependent variable. This approach allowed researchers to see the contribution of each independent variable and its predictive power simultaneously.

The research population included active students at a state university in Indonesia. Sample selection was conducted using cluster random sampling to ensure representation from various study programs and semesters. The number of respondents in this study was 256. This number is considered adequate for multiple regression analysis with two predictors, so that the analysis results

have good stability. Respondents consisted of male and female students, with varying academic backgrounds and varying intensities of learning activities, thus providing a fairly broad picture of the conditions of students in higher education. The following table presents the demographics of the research respondents, which provides an overview of the characteristics of the participants.

Table 1. Demographics of Research Respondent

Characteristics	Category	Number	Percentage
Gender	Male	94	36.7
	Female	162	63.3
Semester	Early Semester (1–3)	82	32.0
	Middle Semester (4–6)	115	44.9
	Final Semester (7 and above)	59	23.0
Program	Education	148	57.8
	Non-Education	108	42.2
Daily Study Time	< 2 hours	69	27.0
	2–4 hours	123	48.0%
	> 4 hours	64	25.0

The research instruments were developed based on a review of the latest literature on academic stress, academic social comparison, and digital self-regulation. These three constructs were measured using a five-point Likert scale ranging from strongly disagree to strongly agree. Academic stress was measured using nine statements that revealed the pressure of assignments, cognitive symptoms, emotional responses, and physical symptoms experienced by students in facing their coursework. The academic social comparison instrument consisted of nine items that captured the frequency of self-comparison with peers, the emotional impact, and the tendency to continue thinking about the results of the comparison. Meanwhile, digital self-regulation was measured using nine items covering students' ability to manage their attention, study time, and impulse control against digital distractions such as social media notifications or online entertainment. The three instruments were validated in terms of content by experts and declared suitable for use after undergoing a process of assessing language appropriateness, clarity of meaning, and relevance of indicators to theoretical constructs.

Data collection was conducted online using a digital survey platform to facilitate respondent participation from various locations. Before completing the questionnaire, respondents were provided with information about the purpose of the study, their rights as participants, and the guarantee of confidentiality. Participation was voluntary and required prior consent. The questionnaire was completed independently within a specified time frame. After the collection process was completed, the data was checked to ensure the completeness and validity of the answers. Incomplete or inconsistent responses were excluded from the analysis.

The data analysis technique used in this study is multiple regression analysis. Before testing the main model, classical assumptions are tested to ensure that the data meets the criteria for regression analysis. These tests include residual normality, linearity of the relationship between variables, and homoscedasticity. These three assumptions are important to ensure that the regression model provides valid and reliable estimates. Once all assumptions were met, multiple regression analysis was conducted to examine the contribution of academic social comparison and digital self-regulation to students' academic stress. The coefficient of determination was used to determine the

proportion of academic stress variance explained by the two independent variables, while the standard beta coefficient was used to compare the relative strength of each predictor in influencing the dependent variable.

Results and Discussion

The first analysis was conducted to examine the magnitude of the contribution of academic social comparison and digital self-regulation variables to student academic stress through a multiple regression model. The following table presents the coefficient of determination values, which indicate the proportion of academic stress variation that can be explained by the two predictors in the tested model.

Table 2. Model Summary – Academic Stress

Model	R	R	Adjusted R ²	RMSE
M ₀	0.000	0.000	0.000	2.418
M ₁	0.014	0.000	-0.008	2.427

Based on Table 2, it is known that the R² value of 0.000 indicates that there is no significant contribution from academic social comparison and digital self-regulation to academic stress. The negative Adjusted R² value reinforces the finding that this model is unable to explain the variance in academic stress in the research sample. Thus, the two predictor variables do not have a significant effect on students' academic stress.

After determining the contribution size through the coefficient of determination, the next step is to test the significance of the regression model as a whole. This test is performed using analysis of variance (ANOVA) to determine whether the multiple regression model constructed has statistical significance.

Table 3. ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M ₁	Regression	0.301	2	0.151	0.026	0.975
	Residual	1490.136	253	5,890		
	Total	1,490,438	255			

The results in Table 3 show that the F value is 0.026 with a p value of 0.975, which means that the regression model is not statistically significant. This means that, simultaneously, academic social comparison and digital self-regulation do not have a significant effect on academic stress. This regression model cannot yet be used as a basis for predicting the level of academic stress in students.

The next test was conducted to examine the contribution of each predictor variable to academic stress partially. This analysis is important to understand the individual influence of academic social comparison and digital self-regulation on the dependent variable.

Table 4. Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M ₀	(Intercept)	8.922	0.151		59.046	<.001
M ₁	(Intercept)	8.757	0.768		11.399	<.001
	Academic					
	Social	0.007	0.062	0.007	0.111	0.912
	Compassion					
	Digital Self-Regulation	0.011	0.059	0.012	0.193	0.847

Table 3 shows that academic social comparison has a p-value of 0.912 and digital self-regulation has a p-value of 0.847, both of which are well above the significance threshold of 0.05. This indicates that neither variable has a significant partial effect on students' academic stress. Thus, both simultaneously and partially, this prediction model is not significant.

In addition to testing the significance of the model and predictor coefficients, this study also examined the classical assumptions of regression, including residual normality. This examination aims to ensure the validity of the model used in the analysis.

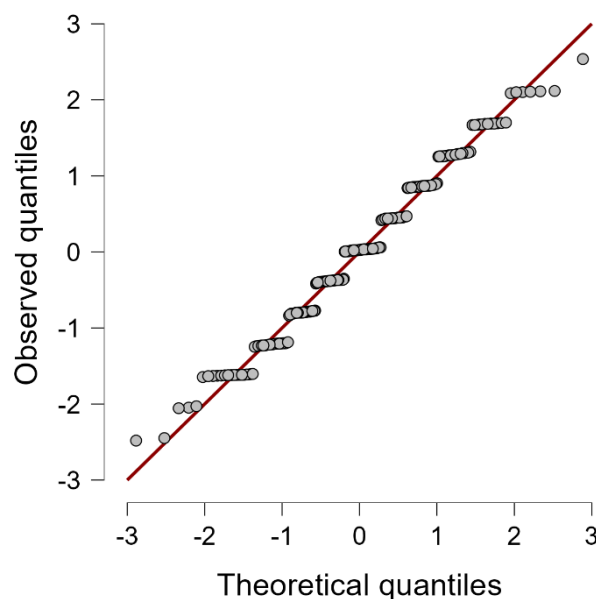
**Figure 1. Q-Q Plot Standardized Residuals**

Figure 1 shows that the residual points are scattered along the diagonal line. This pattern indicates that the assumption of residual normality is satisfied, so that the regression model has been tested on data that meets the prerequisite of normal distribution. Thus, even though the model is not significant, the analysis results are still statistically valid and accountable.

The results of this study indicate that academic social comparison and digital self-regulation do not have a significant effect on students' academic stress. This finding marks an important point in the psychological dynamics of university students, especially in the context of digital learning, which is increasingly embedded in academic life. Although both variables are theoretically

mentioned in the literature as factors that have the potential to trigger or reduce psychological pressure, empirical data from this study shows that their contribution in explaining the variance in academic stress is very small and not statistically significant.

These results differ from a number of previous studies that showed a positive relationship between social comparison and increased psychological pressure among students. Several studies describe that individuals who often compare themselves with their peers tend to experience feelings of inferiority, fear of negative evaluation, and increased anxiety about academic performance (Pigart et al., 2024; Pulford et al., 2018). In digital environments, exposure to information about peers' academic achievements displayed openly has also been reported to exacerbate feelings of inadequacy and increase academic pressure (Park et al., 2023). Such findings are largely explained by social comparison theory, which emphasizes that humans naturally evaluate themselves by comparing themselves to social standards around them (Matthews & Kelemen, 2025). In the context of students, these standards are often the academic achievements of peers, which can create pressure if perceived as higher than one's own (Jansen et al., 2022).

However, in this study, academic social comparison did not have a significant effect. There are several possible explanations. First, the students in the sample may have had a homogeneous or relatively stable level of academic stress, so that the variation in academic social comparison scores was not strong enough to explain the differences in stress levels. Second, social comparison in the context of digital learning does not always have a negative impact. Several studies show that upward social comparison can generate motivation and encouragement to improve oneself, especially among students with high academic self-efficacy. In such conditions, exposure to the achievements of peers does not cause pressure, but rather becomes a source of inspiration to increase effort. This phenomenon may explain why the relationship found in this study tends to be weak.

Similar findings also emerged in studies related to digital self-regulation. Previous studies have shown that digital self-regulation skills are related to learning focus, reduced distractions, and improved academic performance (Wang et al., 2022). Digital self-regulation helps students manage their interactions with learning technology more efficiently and productively (Bylieva et al., 2021). However, in this study, digital self-regulation did not have a significant effect on academic stress. A possible explanation is that digital self-regulation has a greater effect on cognitive and behavioral aspects of learning, such as time management and task completion, than on affective aspects such as psychological pressure or stress. In other words, students who are able to regulate their digital activities may become more structured in their learning, but that does not necessarily make them feel more free from academic pressure.

Another factor that may explain this weak influence is the possibility of other variables that are more dominant in explaining student academic stress. Previous studies have shown that workload, time pressure, academic self-efficacy, social support, and coping styles play a major role in shaping academic stress (Putra & Ahmad, 2020). If these variables are stronger, then the contribution of social comparison and digital self-regulation becomes insignificant. In the Indonesian context, curriculum load, strict evaluation systems, and family expectations may also be more decisive factors in determining student stress levels.

These results provide important lessons for the development of theory and practice in the field of educational psychology and counseling. From a theoretical perspective, these findings indicate that the relationship between academic social comparison, digital self-regulation, and academic stress is not linear or simple. Both variables may act as contextual factors or moderators that influence academic stress only in certain situations. From a practical standpoint, college counselors need to be more sensitive to the complexity of factors that trigger academic stress in students

(Syukur et al., 2023). Guidance and counseling programs should not only focus on social comparison and digital self-regulation skills, but also take into account other academic and psychological environmental factors.

Although the results of this study differ from some previous findings, this does not mean that the two variables are unimportant. Rather, these results show that the effects are not universal and are highly dependent on context, student characteristics, and academic conditions. These findings also open up opportunities for further research to explore the role of social comparison and digital self-regulation as mediating or moderating variables, rather than just as direct predictors of academic stress. In addition, future research could involve other variables such as social support, workload, and coping strategies to make the academic stress prediction model more comprehensive.

Practically speaking, the implication of these findings for college counseling services is the importance of developing more comprehensive interventions. Counselors can help students develop digital self-regulation, but these interventions should be combined with stress management programs and social support reinforcement (Syukur & Putra, 2024). Similarly, in dealing with social comparison, counselors can help students develop a healthier perspective on their peers' achievements and foster intrinsic motivation. With a more holistic approach, counseling services can help students deal with academic pressure in a more adaptive and productive manner.

Thus, this study expands our understanding of academic stress in the context of digital learning and confirms that not all variables that are often assumed to be influential will show a significant relationship in all contexts. This is an important area for further research and the development of more contextual, evidence-based counseling interventions that are oriented toward the real needs of students.

Conclusion

This study concludes that academic social comparison and digital self-regulation do not have a significant effect on students' academic stress. These findings provide an important insight that academic pressure is not always influenced by psychosocial factors, which have been widely assumed to be strong in the context of digital learning. Although these two variables are often considered to play a role in students' stress experiences, the results of this study show that other factors such as workload, time pressure, social support, academic self-efficacy, and coping styles are likely to be more dominant. This emphasizes the importance of a multidimensional approach in understanding academic stress, rather than looking solely at social comparison and digital self-regulation factors. These findings also have practical implications for the development of counseling services in higher education, namely the need for more comprehensive and contextual intervention programs to help students manage academic pressure. Further research needs to expand the scope of variables to obtain a more comprehensive picture of the determinants of academic stress in the higher education ecosystem.

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