The Moderating Role of Self-Regulation in the Relationship between Social Support and Academic Resilience among Indonesian Students

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Abstract

Academic resilience among Indonesian students remains low to moderate, and social support is widely recognized as an important protective resource. However, the strength of its association with academic resilience may vary depending on students' internal capacities. Prior work has largely cast self-regulation as a mediator, leaving its potential *moderating* role in the social support–academic resilience link underexamined, particularly in Indonesian samples. This study examined that association and tested whether self-regulation moderates it. Using an explanatory correlational design, we surveyed 220 students in Pasuruan, East Java, recruited through purposive sampling, with data collected online via three adapted instruments: the Academic Resilience Scale (ARS-30; $\alpha = .80$), the Multidimensional Scale of Perceived Social Support (MSPSS; $\alpha = .82$), and the Self-Regulated Learning Questionnaire (SRLQ; $\alpha = .85$). Data were analyzed using moderated regression analysis with mean-centered predictors. Social support was a significant positive predictor of academic resilience ($R^2 = .525$, $p < .001$). Self-regulation added a small independent contribution ($\Delta R^2 = .025$, $p = .001$), whereas the social support × self-regulation interaction added a substantially larger one ($\Delta R^2 = .095$, $p < .001$). Simple slopes analysis revealed that the positive association between social support and academic resilience was strongest among students with low self-regulation and became weaker as self-regulation increased. These findings indicate that self-regulation functions as a compensatory internal resource that reduces students' reliance on social support in maintaining academic resilience. The study highlights the importance of strengthening both supportive educational environments and students' self-regulatory capacities to promote academic resilience in higher education.

Keywords: academic resilience; perceived social support; self-regulated learning; moderated regression analysis

Introduction

Post-pandemic higher education faces intensifying pressures on both academic achievement and student mental health. The transformation of the learning system, escalating academic demands, uncertainty about prospects, and the need to adapt socially are factors contributing to the emergence of various psychological issues among students. Low academic resilience has become a central concern. Academic resilience determines whether students sustain their performance, manage stress, and remain enrolled.

Historically, academic resilience has been defined as an individual's ability to bounce back from academic difficulties and maintain optimal performance despite facing stress, challenges, or setbacks in the educational process.[1] Contemporary literature has since it as multidimensional. Through the development of the Academic Resilience Scale (ARS-30), Cassidy[2] Academic resilience is conceptualized here as a cognitive-affective and behavioral response to academic adversity, organized around three components. (1) Perseverance denotes tenacity and sustained effort when facing obstacles. (2) Reflecting and adaptive help-seeking combines self-evaluation with the strategic pursuit of resources and support. (3) Negative affect and emotional response captures how students experience and manage emotions such as anxiety, frustration, and despair in the face of academic setbacks. Rather than a unitary construct, academic resilience is understood as a capacity that emerges from the interaction of cognitive, behavioral, and affective dimensions.

Low academic resilience is not merely a local phenomenon, but a global issue. Recent international studies indicate that students' academic resilience levels generally remain in the mid-range. A study by Taj et al.[3] involving 3,950 pharmacy students across 12 countries found that students in Indonesia and Turkey scored lowest on academic resilience, consistent with Rudd et al.,[4] large-scale assessment data from New Zealand showed that only a small proportion of students in at-risk groups met the criteria for

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[1] Andrew J Martin and Herbert W Marsh, "Academic Resilience and Its Psychological and Educational Correlates: A Construct Validity Approach," *Psychology in the Schools* 43, no. 3 (2006): 267–81, https://doi.org/10.1002/pits.20149.

[2] Simon Cassidy, "The Academic Resilience Scale (ARS-30): A New Multidimensional Construct Measure," *Frontiers in Psychology* 7 (2016): 1787, https://doi.org/10.3389/fpsyg.2016.01787.

[3] J Taj et al., "Academic Resilience Assessment Program for Pharmacy Students: A Cross-Sectional Study," *Cogent Education* 13 (2026), https://doi.org/10.1080/2331186X.2026.2654973.

[4] Georgia Rudd, Kane Meissel, and Frauke Meyer, "Measuring Academic Resilience in Quantitative Research: A Systematic Review of the Literature," *Educational Research Review* 34 (2021): 100402, https://doi.org/10.1016/j.edurev.2021.100402.

academic resilience. This cross-contextual evidence confirms that students' capacity to cope with academic stress remains inadequately understood.

In Indonesia, several studies confirm a similar pattern: students' academic resilience ranges from low to moderate across various educational contexts. Ramadhani and Setiawati found that the level of resilience among Indonesian students is relatively lower than that of their peers in several other countries.[5] Research conducted during the pandemic also shows that many students have struggled to manage online learning, control their emotions, and maintain optimism about their future. These patterns have been documented in both empirical studies and institutional reports such as Dyan Nur Kurniasih.[6] Abdul Raimi Bin Abd Kadir et al.,[7] Nur Eva et al.,[8] These conditions indicate that Indonesian students still face challenges in coping with and adapting to academic pressure.

To explain how academic resilience is formed, this study draws on four complementary theoretical frameworks, integrated specifically to justify a moderation rather than a mediation design. *First*, the *Conservation of Resources Theory*[9] views individuals as agents who strive to acquire, maintain, and protect valuable resources; here, social support serves as an external resource, while self-regulation functions as an internal resource that determines whether external resources can be effectively mobilized in the face of academic pressure. COR theory implies that the return on an external resource depends on the individual's capacity to deploy it. *Second*, *Social Cognitive Theory*[10] positions self-regulation as an agentic mechanism through which individuals monitor, evaluate, and adjust their thoughts, emotions, and behaviors to achieve goals. Although

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[5] Abellita Putri Dika Ramadhani and Denok Setiawati, "Dinamika Resiliensi Mahasiswa Semester Akhir Program Studi Bimbingan Dan Konseling Universitas Negeri Surabaya," *SENTRI: Jurnal Riset Ilmiah* 5, no. 2 (2026): 1480–94, https://doi.org/10.55681/sentri.v5i2.5622.

[6] Dyan Nur Kurniasih and Maman Suryaman, "An Analysis of Students Emotions on Online Learning During Pandemic Covid-19," *Jurnal Ilmiah Mandala Education* 8, no. 2 (2022), https://doi.org/10.58258/jime.v8i2.3208.

[7] Abdul Raimi Bin Abd Kadir et al., "Academic Stressors, Coping Strategies, and Online Learning Challenges among Malaysian Health Science Students during the COVID-19 Pandemic," *International Journal of Research and Innovation in Social Science*, 2025, https://doi.org/10.47772/ijriss.2025.91100609.

[8] Nur Eva et al., "Academic Resilience and Subjective Well-Being amongst College Students Using Online Learning during the COVID-19 Pandemic," *KnE Social Sciences*, 2020, 202–14.

[9] Stevan E Hobfoll, "Conservation of Resources: A New Attempt at Conceptualizing Stress," *American Psychologist* 44, no. 3 (1989): 513–24, https://doi.org/10.1037/0003-066X.44.3.513.

[10] Albert Bandura, "Social Cognitive Theory of Self-Regulation," *Organizational Behavior and Human Decision Processes* 50, no. 2 (1991): 248–87, https://doi.org/10.1016/0749-5978(91)90022-L.

SCT is often invoked to model self-regulation as a process that mediates environmental influences, we draw on it here for a narrower claim: SCT identifies self-regulation as the agentic *gatekeeper* that determines whether environmental support is translated into adaptive action, a function that, when operationalized cross-sectionally, manifests as a boundary condition rather than a process. the Bioecological Model asserts that human development arises from proximal interactions between person characteristics (here, self-regulation) and environmental context (here, social support). Originally developed for child development, the model is increasingly applied to emerging adulthood, including university students still developing their identities and competencies.[11] The model's *Process–Person–Context–Time* logic predicts that the effect of contextual resources on developmental outcomes is non-uniform and varies systematically with individual attributes, a prediction directly tested by a moderation model. *Fourth,* Self-Determination Theory explains that support meeting basic psychological needs fosters autonomous motivation, which in turn enables self-regulated functioning that supports resilience. We invoke SDT not to model self-regulation as an internalization mediator, but as a lens for why high self-regulators benefit more from supportive environments. Collectively, these four frameworks position self-regulation as a *boundary condition* on the effectiveness of social support, that is, as a moderator variable.

Among the various factors influencing academic resilience, social support is one of the most consistently identified. In line with *Conservation of Resources Theory*, social support from family, peers, faculty, and the broader social environment is recognized as an external protective resource that is positively associated with academic resilience.[12] Social support provides students with psychological security, motivation, and coping resources. In Indonesia, social support predicts academic resilience across multiple samples: Danendra Putra,[13] found this among general student populations; Hermawati,[14]

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[11] Urie Bronfenbrenner and Pamela A Morris, "The Bioecological Model of Human Development," in *Handbook of Child Psychology*, ed. William Damon and Richard M Lerner, vol. 1 (Hoboken, NJ: Wiley, 2006), 793–828, https://doi.org/10.1002/9780470147658.chpsy0114.

[12] Fitriah M Suud et al., "The Impact of Family Social Support on Academic Resilience in Indonesian and Turkish Students: The Mediating Role of Self-Regulated Learning," *International Journal of Adolescence and Youth* 29, no. 1 (2024): 2361725, https://doi.org/10.1080/02673843.2024.2361725.

[13] Danendra Putra Hantoro and Dwi Nastiti, "Hubungan Antara Dukungan Sosial Dengan Resiliensi Akademik Mahasiswa," *Jurnal Psikologi* 3, no. 3 (2026): 1–13, https://doi.org/10.47134/pjp.v3i3.5819.

[14] Nisa Hermawati et al., "Peran Dukungan Sosial Dan Resiliensi Akademik Dalam Menjelaskan Burnout Akademik Pada Mahasiswa," *Jurnal Penelitian Psikologi* 16, no. 2 (2025): 89–97, https://doi.org/10.29080/jpp.v16i2.1587.

and Alfath.[15] among burnout-prone students; and Gunawan among students from underdeveloped, frontier, and outermost (3T) regions.[16] At the international level, a study assessing the academic resilience of pharmacy students across 12 countries identified family and friends as one external factor influencing academic resilience.[17]

Despite this consistent main effect, the magnitude of the social-support–resilience link varies substantially across studies, suggesting the presence of internal moderating factors. Suud et al. reported a strong family-support effect on resilience among Indonesian and Turkish students only when self-regulated learning was modeled as an intervening variable; the direct path was substantially weaker than the total effect.[18] Wen and Li similarly found that the effect of social support on academic outcomes varied by dispositional variables such as grit, with the social support–outcome path being significant for some subgroups but attenuated for others.[19] In the Indonesian context, Nasution et al. found that social support partially predicted resilience, even after accounting for self-efficacy. These divergent effect sizes and the conditional patterns that emerge when individual-difference variables are modeled indicate that the social-support–resilience link is not uniform across students.[20] They motivate the search for variables that moderate its strength.

One internal factor considered significant is self-regulation. Referring to *Social Cognitive Theory*[21] and Zimmerman's self-regulated learning model,[22] Self-regulation is the capacity to manage thoughts, emotions, and behavior toward goals via monitoring, evaluation, and strategic adjustment. Students with strong self-regulation skills tend to

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[15] Esa Arsyiatul Alfath, Ninik Setiyowati, and Tutut Chusniyah, "Dukungan Sosial Dan Resiliensi Akademik Mahasiswa Terlambat Lulus: Systematic Literature Review," *Psikobuletin: Buletin Ilmiah Psikologi* 6, no. 1 (2025): 12–22, https://doi.org/10.24014/pib.v6i1.27816.
[16] Erik Gunawan and Arthur Huwae, "Peer Social Support and Academic Resilience for Students from 3T Regions at SWCU," *Eduvest – Journal of Universal Studies* 2, no. 12 (2022): 2701–16, https://doi.org/10.59188/eduvest.v2i12.694.
[17] Taj et al., "Academic Resilience Assessment Program for Pharmacy Students: A Cross-Sectional Study."
[18] Suud et al., "The Impact of Family Social Support on Academic Resilience in Indonesian and Turkish Students: The Mediating Role of Self-Regulated Learning."
[19] Xiaoqiong Wen and Zhihua Li, "Impact of Social Support Ecosystem on Academic Performance of Children from Low-Income Families: A Moderated Mediation Model," *Frontiers in Psychology* 13 (2022): 710441, https://doi.org/10.3389/fpsyg.2022.710441.
[20] Muhammad Faisal Ramadhan Nasution, Salamiah Sari Dewi, and Risydah Fadilah, "The Influence of Social Support on Students' Academic Resilience through Self-Efficacy," *Jurnal Psikologi Terapan Dan Pendidikan* 6, no. 2 (2024): 161–70, https://doi.org/10.26555/jptp.v6i2.29415.
[21] Bandura, "Social Cognitive Theory of Self-Regulation."
[22] Barry J Zimmerman, "Becoming a Self-Regulated Learner: An Overview," *Theory into Practice* 41, no. 2 (2002): 64–70.

control their learning behavior, regulate their emotions, and apply adaptive strategies when facing academic pressure.

Various studies confirm the close relationship between self-regulation and students' psychological and academic resilience. Nakhostin-Khayyat et al.[23] found that self-regulation has a direct positive effect on resilience and an indirect effect through cognitive flexibility. Nasution et al.[24] demonstrated that self-regulation, along with self-efficacy, influences students' academic resilience. In a study using weekly diary entries, Li et al. examined how resilience enhances academic achievement through self-regulatory behaviors, grit, and social support; these findings confirm the interconnections among these three constructs while underscoring the central role of self-regulation in the resilience process.[25] Furthermore, in the literature on social support and academic outcomes, dispositional factors such as *grit* have been shown to moderate the pathway from social support to achievement.[26] Students with high self-regulation leverage social support more effectively; those with low self-regulation cannot fully convert available support into adaptive action.

Although the relationship between social support, self-regulation, and academic resilience has been extensively studied, most prior research has treated self-regulation as a mediating rather than a moderating variable. Suud et al.[27] modeled self-regulated learning as a mediator in the relationship between family social support and academic resilience among Indonesian and Turkish university students; Nasution et al.[28] placed self-efficacy as a mediator, while Nakhostin-Khayyat et al.[29] modeled cognitive flexibility as an indirect pathway. Our review found that existing moderation models test

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[23] Mohammad Nakhostin-Khayyat et al., "The Relationship between Self-Regulation, Cognitive Flexibility, and Resilience among Students: A Structural Equation Modeling," *BMC Psychology* 12, no. 1 (2024): 337, https://doi.org/10.1186/s40359-024-01843-1.
[24] Nasution, Dewi, and Fadilah, "The Influence of Social Support on Students' Academic Resilience through Self-Efficacy."
[25] Kongqi Li et al., "How and When Resilience Can Boost Student Academic Performance: A Weekly Diary Study on the Roles of Self-Regulation Behaviors, Grit, and Social Support," *Journal of Happiness Studies* 25, no. 4 (2024): 36, https://doi.org/10.1007/s10902-024-00749-4.
[26] Wen and Li, "Impact of Social Support Ecosystem on Academic Performance of Children from Low-Income Families: A Moderated Mediation Model."
[27] Suud et al., "The Impact of Family Social Support on Academic Resilience in Indonesian and Turkish Students: The Mediating Role of Self-Regulated Learning."
[28] Nasution, Dewi, and Fadilah, "The Influence of Social Support on Students' Academic Resilience through Self-Efficacy."
[29] Nakhostin-Khayyat et al., "The Relationship between Self-Regulation, Cognitive Flexibility, and Resilience among Students: A Structural Equation Modeling."

other dispositional variables, such as grit,[30] but rarely examine self-regulation as a moderator, particularly among university student populations in Indonesia.

We argue, however, that a moderation design is theoretically more defensible than the prevailing mediation approach for three reasons. *First*, mediation requires temporal precedence: social support must produce changes in self-regulation, which then produce changes in resilience. Yet most existing studies use cross-sectional designs that cannot establish such ordering, making the mediation claim methodologically weak. *Second*, both COR theory and the Bioecological Model frame the relevant question as: for whom and under what conditions does social support translate into resilience, which is fundamentally a moderation question, not a mediation one. *Third*, self-regulation is conceptualized in the literature as a relatively stable dispositional capacity rather than a state outcome of receiving support, which makes its theoretical role closer to a boundary condition than to an intermediate process. Empirical testing of this moderation hypothesis remains very limited, particularly among Indonesian university students.

Given this gap, this study aims to: (1) examine the relationship between social support and students' academic resilience; and (2) examine the role of self-regulation as a moderator in that relationship. In line with the theoretical framework outlined, two hypotheses are formulated: H1, social support is positively related to academic resilience; and H2, self-regulation moderates the relationship between social support and academic resilience, such that the relationship strengthens as self-regulation increases. Theoretically, this study advances educational psychology by explaining how internal and external resources interact to build academic resilience. The enhancement of self-regulation skills and the optimization of social support by educational institutions are not presented as research objectives but rather as practical implications expected to be drawn from the research findings.

Research Methods

This study employs a quantitative, explanatory correlational design to examine the relationship between social support (predictor) and academic resilience (criterion), with self-regulation as the moderator. We positioned self-regulation as a moderator rather than a mediator, grounded in the theoretical framework outlined in the introduction,

[30] Wen and Li, "Impact of Social Support Ecosystem on Academic Performance of Children from Low-Income Families: A Moderated Mediation Model."

specifically Conservation of Resources Theory,[31] which views social support as an external resource and self-regulation as an internal resource that determines the extent to which external resources can be effectively mobilized. Thus, the tested model predicts that the strength of the relationship between social support and academic resilience is conditional, that is, dependent on the individual's level of self-regulation.

Participants were 220 college students from several universities in the Pasuruan region, East Java, selected through purposive sampling. Three inclusion criteria applied: (1) enrolled as active students in at least their third semester; (2) aged 18–25 years; and (3) willing to participate voluntarily and provide informed consent before completing the questionnaire.

The first criterion restricting participation to students in their third semester or above reflects a content-validity consideration rather than an assumption about students' general readiness: several ARS-30 and SRLQ items ask respondents to reflect on recurring academic demands (e.g., examinations, assignment deadlines, and learning evaluations across semesters), so participants needed at least one complete academic cycle to respond meaningfully to these items. Consequently, the target population for this study excludes first- and second-year students navigating the initial transition to university, a period the literature identifies as particularly critical for the formation of resilience profiles.[32] This scope restriction is revisited in the Limitations subsection of the Discussion.

Because all participants were drawn from a limited number of universities in the Pasuruan region, the findings should be interpreted within this regional context; generalizing to the broader Indonesian student population requires caution and replication across multiple regions and institutions. This constraint is revisited in the Limitations subsection of the Discussion.

A sample of 220 provided sufficient power for moderated regression analysis with two predictors and one interaction term with two predictors and one interaction term.

[31] Hobfoll, "Conservation of Resources: A New Attempt at Conceptualizing Stress."
[32] Lili Gao et al., "First-year Students' Psychological Resilience and College Adjustment: A Person-oriented Approach," *Psychology in the Schools* 61 (June 25, 2024): 3770–84, https://doi.org/10.1002/pits.23253.

Based on general guidelines for detecting small-to-moderate interaction effects with 0.80 power and $\alpha = 0.05$, this sample exceeds the recommended minimum threshold.[33]

We collected data online via Google Forms. The questionnaire link was distributed to students who met the eligibility criteria, and the first page presented an informed consent form that participants had to accept before proceeding to the survey items. To ensure data quality, all items were marked as required to prevent missing responses, and we screened responses indicating careless completion before analysis. Participation was voluntary and anonymous, and participants could withdraw at any time without consequences.

The three variables were measured using psychological scales adapted into Indonesian. The adaptation followed a translation–back-translation procedure to ensure equivalence of meaning with the original instruments, and we piloted each scale to verify reliability and item clarity before the main data collection. All scales met acceptable reliability standards ($\alpha > 0.70$). Each item was rated on a Likert scale, and the total score for each variable was the sum of its item scores, with higher scores indicating a higher level of the construct.

Academic resilience was measured using the Academic Resilience Scale (ARS-30) developed.[34] This 30-item scale measures three dimensions of academic resilience: perseverance, reflecting and adaptive help-seeking, and negative affect and emotional response. The ARS-30 directly operationalizes the multidimensional conceptualization of academic resilience underlying this study, so that scores reflect cognitive, behavioral, and affective responses to academic difficulties rather than a general attitude. In this study, the ARS-30 demonstrated a Cronbach's alpha of 0.803.

Social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet et al.,[35] This 12-item scale measures perceived support from three sources: family, friends, and significant others. It is important to note that the MSPSS captures perceived support, an individual's subjective evaluation of the availability and adequacy of support from their social environment, rather than objective

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[33] Leona S Aiken and Stephen G West, *Multiple Regression: Testing and Interpreting Interactions* (Newbury Park, CA: Sage, 1991).
[34] Cassidy, "The Academic Resilience Scale (ARS-30): A New Multidimensional Construct Measure."
[35] Gregory D Zimet et al., "The Multidimensional Scale of Perceived Social Support," *Journal of Personality Assessment* 52, no. 1 (1988): 30–41, https://doi.org/10.1207/s15327752jpa5201_2.

or received support, which refers to the frequency or amount of assistance actually provided. This distinction matters conceptually because the moderation effect tested in this study concerns the individual's perception of available external resources rather than their objective availability. The selection of this instrument is consistent with the conceptualization of social support as an external resource drawn from multiple sources. In this study, the MSPSS demonstrated a Cronbach's alpha of 0.818.

Self-regulation was measured using the Self-Regulated Learning Questionnaire (SRLQ), a 30-item instrument assessing two dimensions of academic self-regulation: self-monitoring and self-evaluation. Responses were recorded on a four-point scale (1 = *never*; 4 = *always*). The scale demonstrated adequate internal consistency in the present sample ($\alpha = 0.846$).

We analyzed the data using moderated regression analysis (MRA) to test the significance of the interaction effect between social support and self-regulation on academic resilience, consistent with the study's second objective: verifying the moderating role of self-regulation (H2). Before forming the interaction term, we mean-centered the predictor (social support) and moderator (self-regulation) variables to reduce nonessential multicollinearity between the interaction term and its main effects and to facilitate interpretation of the coefficients (20). The interaction term was the product of the mean-centered social support and self-regulation scores.

The analysis proceeded in three hierarchical steps. In the first step, social support was entered as the sole predictor (Model 1) to test H1. In the second step, self-regulation was added (Model 2) to evaluate its independent contribution. In the third step, the product of the mean-centered social support and self-regulation scores was entered (Model 3) to test the interaction effect (H2). We defined moderation as significant when adding the interaction term produced a significant increase in the coefficient of determination (ΔR^2) and the interaction coefficient differed significantly from zero. Where the interaction effect was significant, we further characterized the form of moderation through a simple slopes analysis at three levels of self-regulation: one standard deviation below the mean, at the mean, and one standard deviation above the

mean.[36] The entire interaction analysis followed a regression-based conditional process analysis approach.[37]

Before the main analysis, we conducted a series of classical assumption tests to ensure the validity of the regression model, including tests of residual normality, linearity, multicollinearity (tolerance > 0.10 and Variance Inflation Factor (VIF) < 10), and heteroscedasticity. All statistical analyses were performed at a significance level of 0.05.

Results and Discussion

Based on the descriptive analysis in Table 1, the social support variable had a mean of 57.97 and a standard deviation of 7.064. The self-regulation variable had a mean of 55.67 with a standard deviation of 7.974, while the academic resilience variable had a mean of 63.30 with a standard deviation of 7.857. Students' social support, self-regulation, and academic resilience scores fell in the moderate-to-high range. These findings suggest that most students possess adequate social and psychological resources to cope with academic stress.

Table 1.
Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
Social Support	220	37	73	57.97	7.064
Self-Regulation	220	34	70	55.67	7.974
Academic Resilience	220	41	80	63.30	7.857
N valid (listwise)	220				

Students who receive adequate social support and possess strong self-regulation tend to demonstrate higher academic resilience. These results are consistent with the study by Suud et al.,[38] which found that social support functions as an external protective resource, helping students reduce academic stress and increase resilience in the learning process. In addition, effective self-regulation allows students to manage emotions, set learning goals, and develop adaptive coping strategies in facing academic demands.

[36] Aiken and West, *Multiple Regression: Testing and Interpreting Interactions*.
[37] Andrew F Hayes, *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, 3rd ed. (New York: Guilford Press, 2022).
[38] Suud et al., "The Impact of Family Social Support on Academic Resilience in Indonesian and Turkish Students: The Mediating Role of Self-Regulated Learning."

Before conducting the moderated regression analysis (MRA), classical assumption tests were performed to ensure the data met the requirements for linear regression. We tested each scale's psychometric properties in a pilot study before the main data collection. The normality test using the Kolmogorov–Smirnov test showed an Asymp. Sig. (2-tailed) value of 0.200, which is greater than $\alpha = 0.05$, indicating that the data residuals are normally distributed. Furthermore, the multicollinearity test indicated Tolerance values of 0.697 and VIF values of 1.434 for the social support and self-regulation variables. These values meet the criteria of Tolerance > 0.10 and VIF < 10, indicating no multicollinearity among the independent variables. Thus, the regression model is deemed suitable for further analysis.

Table 2.
Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	Change in R^2	Change in F	df1	df2	Sig. Change in F
1	0.724[a]	0.525	0.522	5.430	0.525	240.627	1	218	0.000
2	0.742[b]	0.550	0.546	5.295	0.025	12.198	1	217	0.001
3	0.803[c]	0.645	0.640	4.714	0.095	57.782	1	216	0.000

[a] Predictors: (Constant), Social Support.
[b] Predictors: (Constant), Social Support, Self-Regulation.
[c] Predictors: (Constant), Social Support, Self-Regulation, Interaction (Social Support × Self-Regulation).

In Model 1, social support alone explained 52.5% of the variance in academic resilience ($R^2 = 0.525$; $p < 0.001$). Social support from family, peers, and the campus environment provides a sense of psychological security, motivation, and emotional support that helps students cope with academic stress more adaptively. These results align with those of Chen et al.,[39] who found that students with high social support demonstrated better problem-solving skills and academic resilience. Granziera et al.,[40] also explain that social support helps students view academic challenges as opportunities for growth rather than psychological threats. This effect size warrants scrutiny, however: the help-seeking dimension of the ARS-30 may overlap conceptually with the MSPSS social-support items, potentially inflating the correlation.

[39] Chunmei Chen, Fei Bian, and Yujie Zhu, "The Relationship between Social Support and Academic Engagement among University Students: The Chain Mediating Effects of Life Satisfaction and Academic Motivation," *BMC Public Health* 23, no. 1 (2023): 2368, https://doi.org/10.1186/s12889-023-17301-3.
[40] Helena Granziera et al., "The Role of Teachers' Instrumental and Emotional Support in Students' Academic Buoyancy, Engagement, and Academic Skills: A Study of High School and Elementary School Students in Different National Contexts," *Learning and Instruction* 80 (2022): 101619, https://doi.org/10.1016/j.learninstruc.2022.101619.

In Model 2, after the self-regulation variable was included, R^2 increased to 0.550 ($\Delta R^2 = 0.025$; $p = 0.001$). Although the incremental contribution of self-regulation as a direct predictor is modest, this pattern is interpretively meaningful: it suggests that self-regulation operates primarily as a conditional variable rather than as an independent predictor of resilience. This is consistent with Zimmerman's[41] argument that self-regulation enables individuals to transform external resources into adaptive strategies, an effect better captured through moderation than through direct prediction. Students with high self-regulation do not merely passively receive social support but also effectively utilize it to maintain motivation and academic performance.

Model 3 produced the strongest results: adding the interaction term increased R^2 to 0.645 ($\Delta R^2 = 0.095$; $p < 0.001$), indicating that self-regulation significantly moderates the relationship between social support and academic resilience. The effect of social support on academic resilience is stronger among students with high self-regulation compared to those with low self-regulation. The unstandardized coefficients for the final model are reported in Table 3.

Table 3.
Regression Coefficients for the Final Model (Model 3)

Predictor	b	SE	β	t	p	95% CI
Constant	(63.305)	(0.337)	—	(172.933)	(<.000)	(62.968, 64.295)
Social support (centered)	(0.806)	(0.052)	(0.724)	(10.104)	(<.000)	(0.425, 0.631)
Self-regulation (centered)	(0.419)	(0.047)	(0.426)	(8.993)	(<.000)	(0.327, 0.511)
Social support × Self-regulation	(-0.011)	(0.004)	(-0.095)	(-2.370)	(0.019)	(0.002, 0.019)

To probe the significant interaction ($\Delta R^2 = 0.095$, $\Delta F(1, 216) = 57.78$, $p < 0.001$), we conducted a simple slopes analysis estimating the conditional effect of social support on academic resilience at three levels of self-regulation (Table 4). At high self-regulation (+1 SD), social support significantly predicted academic resilience, b = (0.440), SE = (0.065), t(216) = (6.78), p = (<0.001), 95% CI (0.313, 0.568). At the mean level of self-regulation, the effect remained significant, b = (0.528), SE = (0.052), t(216) = (10.15), p = (<0.001), 95% CI (0.426, 0.630). At low self-regulation (−1 SD), the effect was significant but substantially weaker, b = (0.616), SE = (0.061), t(216) = (10.07), p = (<0.001), 95% CI (0.495, 0.736). The progressively flatter slope as self-regulation increased indicates that self-regulation weakens the positive association between social

[41] Zimmerman, "Becoming a Self-Regulated Learner: An Overview."

support and academic resilience. Thus, social support appears to be particularly important for students with lower levels of self-regulation. Thus, H2, which states that self-regulation moderates the relationship between social support and academic resilience, is accepted, but its role is weakening.

Table 4.
Conditional Effects of Social Support on Academic Resilience at Values of Self-Regulation

Self-regulation level	Simple slope (b)	SE	t	p	95% CI
Low (−1 SD)	(0.616)	(0.061)	(10.06)	(<.001)	(0.495, 0.736)
Mean	(0.528)	(0.052)	(10.15)	(<.001)	(0.426, 0.630)
High (+1 SD)	(0.440)	(0.065)	(6.78)	(<.001)	(0.313, 0.568)

Moderation plots support these findings, showing different slopes across levels of self-regulation. In the low self-regulation group (−1 SD), the regression line is steepest, indicating that increases in social support are associated with relatively large gains in academic resilience. At the mean level of self-regulation, the positive relationship between social support and academic resilience remains substantial. In the high self-regulation group (+1 SD), the regression line becomes less steep, indicating that the effect of social support on academic resilience is weaker. This pattern is consistent with the negative interaction effect observed in the regression analysis.

These findings suggest that self-regulation functions as a significant moderator of the relationship between social support and academic resilience. However, rather than strengthening this relationship, higher levels of self-regulation appear to reduce the extent to which students rely on social support to maintain academic resilience. Students with strong self-regulatory abilities may be better able to manage academic challenges independently through effective goal setting, self-monitoring, emotional regulation, and adaptive coping strategies. Consequently, social support plays a particularly important role for students with lower levels of self-regulation, whereas students with higher self-regulation remain resilient even when external support is less pronounced.

Self-regulation thus helps explain why the impact of social support on academic resilience varies across students. Although social support positively predicts academic resilience at all levels of self-regulation, its effect is strongest among students with lower self-regulatory capacity and weaker among those with higher self-regulation. This pattern suggests that students with strong self-regulation are better able to maintain academic resilience through internal resources, such as goal setting, self-monitoring, strategic

learning behaviors, and adaptive emotion regulation. Consequently, they are less dependent on external support to cope with academic challenges.

In contrast, students with lower self-regulation appear to rely more heavily on social support as a compensatory resource. For these students, encouragement, guidance, and assistance from family, peers, or lecturers may play a particularly important role in sustaining academic resilience. Thus, while social support remains beneficial for all students, its contribution is substantially greater when self-regulatory resources are limited. These findings support the research by Akeren et al.,[42] which explains that self-regulation functions as a fundamental psychological resource that enhances individuals' capacity to adapt to challenges and reduces reliance on external forms of assistance. Cassidy,[43] as well as Martin and Marsh,[44] Also emphasize that that self-regulated learning is a core component of academic resilience because it enables students to maintain effective functioning and persistence when facing academic difficulties. The present findings extend this literature by demonstrating that self-regulation not only contributes directly to academic resilience but also changes the extent to which social support is needed to foster resilient academic outcomes.

For students with low self-regulation, increases in social support are associated with the largest gains in academic resilience, as reflected by the steeper regression slope. This finding suggests that external support serves as an important compensatory resource for students who may have greater difficulty managing their emotions, time, and learning strategies independently. In contrast, the regression slope becomes less steep among students with high self-regulation, indicating that the positive effect of social support on academic resilience is weaker for these students. Because they possess stronger self-regulatory skills, they are more capable of coping with academic challenges through internal resources and therefore rely less on external support to maintain resilience. These results are consistent with the research by Li et al.,[45] who found that self-regulation

[42] İhsan Akeren et al., "The Effect of Self-Regulation on the Need for Psychological Help through Happiness, Resilience, Problem Solving, Self-Efficacy, and Adjustment: A Parallel Mediation Study in Adolescent Groups," *Children (Basel)* 12, no. 4 (2025): 445, https://doi.org/10.3390/children12040445.
[43] Cassidy, "The Academic Resilience Scale (ARS-30): A New Multidimensional Construct Measure."
[44] Martin and Marsh, "Academic Resilience and Its Psychological and Educational Correlates: A Construct Validity Approach."
[45] Li et al., "How and When Resilience Can Boost Student Academic Performance: A Weekly Diary Study on the Roles of Self-Regulation Behaviors, Grit, and Social Support."

functions as a protective psychological resource that helps students cope effectively with academic stress and maintain positive academic functioning. The present study extends this evidence by showing that self-regulation not only contributes directly to academic resilience but also reduces students' dependence on social support in achieving resilient academic outcomes. Thus, social support appears to be particularly beneficial for students with lower levels of self-regulation, whereas students with stronger self-regulatory capacities are able to sustain academic resilience even when external support is less pronounced.

These findings suggest that self-regulation functions as a compensatory resource in academic resilience. Although social support remains beneficial, its impact is strongest among students with lower self-regulation and weaker among those with higher self-regulation. This pattern indicates that strong self-regulatory capacities reduce students' dependence on external support, whereas social support becomes especially important when internal regulatory resources are limited.

In the post-COVID-19 higher education context, both social support and self-regulation contribute to academic resilience. However, the present findings indicate that students with strong self-regulation are less dependent on external support, whereas social support plays a more critical role for those with lower self-regulatory capacities. This suggests that academic resilience is shaped by the balance between internal and external resources rather than by either factor alone.

Implications for the Field of Education

These findings have important theoretical and practical implications. Theoretically, they extend the academic resilience literature by demonstrating that self-regulation functions not only as a direct predictor of academic resilience but also as a moderating factor that shapes students' reliance on social support. The negative interaction effect suggests that students with stronger self-regulatory capacities are less dependent on external support to maintain academic resilience.

In practical terms, these findings highlight the importance of strengthening both external and internal resources in higher education. Given the substantial contribution of social support to academic resilience ($R^2 = .525$), universities should continue to foster supportive learning environments through peer networks, academic communities, mentoring programs, and counseling services. At the same time, institutions should invest

in developing students' self-regulation skills, including goal setting, time management, self-monitoring, and emotional regulation.

These findings suggest that different forms of support may be needed for different students. Social support appears to be particularly important for students with lower levels of self-regulation, whereas students with stronger self-regulatory capacities may be better able to maintain resilience independently. Therefore, efforts to enhance academic resilience should focus on balancing external support systems with the development of students' internal regulatory resources.

Social support remains a significant contributor to academic resilience ($R^2 = .525$ in Model 1), highlighting the importance of creating supportive academic environments through peer networks, mentoring, counseling, and academic communities. At the same time, universities should strengthen students' self-regulation skills, as students with higher self-regulation are better able to sustain resilience independently, whereas those with lower self-regulation benefit more strongly from social support. Together, these findings underscore the importance of balancing external support systems with the development of internal regulatory capacities to foster academic resilience.

Limitations of the Study

This study has several limitations that should be acknowledged. *First*, the cross-sectional correlational design precludes causal inferences regarding the relationships among social support, self-regulation, and academic resilience. *Second*, the sample was drawn exclusively from university students in the Pasuruan region, which may limit the generalizability of the findings to other educational contexts. *Third*, all variables were measured using self-report instruments, increasing the possibility of common-method bias and social desirability effects. Fourth, although self-regulation was found to moderate the relationship between social support and academic resilience, the mechanisms underlying this negative moderating effect were not examined. Future studies should investigate potential explanatory factors, such as academic self-efficacy, coping strategies, learning autonomy, and emotional regulation. Fifth, the study did not control for several contextual variables that may influence academic resilience, including socioeconomic status, gender, year of study, academic achievement, and prior adversity experiences. Future research employing longitudinal designs, more diverse samples, and

additional control variables is recommended to provide a more comprehensive understanding of how internal and external resources contribute to academic resilience.

Conclusion

This study examined whether self-regulation moderates the relationship between social support and academic resilience among Indonesian university students. The findings showed that social support was a strong positive predictor of academic resilience, explaining 52.5% of its variance. Self-regulation also contributed directly to academic resilience, accounting for an additional 2.5% of the variance. Furthermore, the interaction between social support and self-regulation explained an additional 9.5% of the variance, indicating a significant moderating effect.

However, the moderating effect was negative. The positive association between social support and academic resilience was strongest among students with low self-regulation and became weaker as self-regulation increased. These findings suggest that self-regulation functions as a compensatory internal resource that reduces students' dependence on external support. Students with strong self-regulatory capacities are better able to maintain academic resilience independently, whereas social support plays a particularly important role for those with lower levels of self-regulation.

The findings refine current understanding of the social support–resilience relationship by demonstrating that the benefits of social support are not uniform across students. Rather, the contribution of social support depends on the availability of internal regulatory resources. Consistent with Conservation of Resources Theory and the Bioecological Model, academic resilience appears to be shaped by the dynamic interplay between external resources and individual capacities, with self-regulation serving as a protective factor that can compensate for lower levels of social support.

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