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The Mediating Role Of Academic Engagement In The Relationship Between Psychological Well-Being And Student Achievement

Nailul mukorobin
Universitas islam sultan agung

Corresponding Author: nailulmukorobin01@unissula.ac.id

Abstract

This study examined the mediating role of academic engagement in the relationship between psychological well-being and student achievement among undergraduate students in Indonesia. Employing a quantitative cross-sectional survey design, data were collected from 250 undergraduate students using the Ryff Scales of Psychological Well-BeingShort Form (SPWB-SF), the University Student Engagement Inventory (USEI), and self-reported cumulative Grade Point Average (GPA) as the measure of academic achievement. Mediation analysis was conducted using Model 4 of the PROCESS macro for SPSS with 5,000 bootstrap resamples and bias-corrected 95% confidence intervals. Results demonstrated that psychological well-being was a significant positive predictor of both academic engagement ($b = 0.024$, $p < .001$) and student achievement ($b = 0.011$, $p < .001$). Academic engagement significantly and positively predicted student achievement after controlling for psychological well-being ($b = 0.187$, $p < .001$). The indirect effect of psychological well-being on student achievement through academic engagement was statistically significant (ab = 0.005, BCa 95% CI [0.002, 0.008]), accounting for 42.3% of the total effect, indicating partial mediation. The complete model explained 31.8% of the variance in student achievement. These findings underscore the importance of nurturing students' psychological well-being and academic engagement as complementary pathways toward improving undergraduate academic performance.

Keywords: psychological well-being, academic engagement, student achievement, mediation analysis, undergraduate students

INTRODUCTION

Student achievement has long been recognized as a multidimensional outcome shaped

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not only by cognitive capacities and instructional quality, but also by a constellation of psychological factors that operate within and beyond the classroom environment. Among these factors, psychological well-being has emerged as a theoretically significant and empirically robust predictor of academic performance across diverse educational settings (Kern et al., 2015; Antaramian, 2017). Grounded in Ryff's (1989) multidimensional model, psychological well-being encompasses dimensions such as self-acceptance, autonomy, personal growth, purpose in life, environmental mastery, and positive relations with othersall of which bear direct implications for how students engage with their academic responsibilities and ultimately achieve within institutional contexts.

Despite the growing body of literature establishing associations between psychological well-being and academic outcomes, the mechanisms through which this relationship operates remain insufficiently understood. Scholars have increasingly called for research that moves beyond direct-effect models to examine the mediating processes that translate psychological resources into academic performance (Datu & King, 2018; Suldo et al., 2018). One such mechanism that has attracted considerable scholarly attention is academic engagementthe degree to which students invest behavioral, cognitive, and emotional energy in the learning process (Fredricks et al., 2004; Skinner et al., 2009). Academic engagement is widely regarded not merely as a correlate of achievement, but as a proximal driver of learning outcomes that may serve as a critical conduit linking students' psychological states to their scholastic accomplishments.

Theoretical frameworks lend considerable support to this proposed mediation. From the perspective of Broaden-and-Build Theory (Fredrickson, 2001), positive psychological states expand individuals' cognitive and behavioral repertoires, thereby fostering the kind of sustained, exploratory engagement that facilitates deep learning and academic success. Similarly, Self-Determination Theory (Deci & Ryan, 2000) suggests that when students experience a sense of psychological flourishingparticularly with respect to autonomy and competencethey are more likely to exhibit autonomous motivation and active engagement in academic tasks, which in turn produces superior learning outcomes. Taken together, these frameworks converge on the hypothesis that academic engagement may function as a pivotal mediator in the well-being–achievement relationship.

Empirical evidence, while promising, remains fragmented and methodologically heterogeneous. A number of studies have demonstrated that psychological well-being is positively associated with both behavioral engagementsuch as attendance and participationand cognitive

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engagementsuch as self-regulated learning and deep processing strategies (Lipnevich et al., 2016; Hakkarainen et al., 2021). Other studies have independently linked academic engagement to improved grade point averages, persistence, and academic self-efficacy (Wang & Eccles, 2013; Reeve, 2012). However, relatively few investigations have simultaneously examined well-being, engagement, and achievement within a unified mediation framework, particularly in culturally specific educational contexts where socioeconomic pressures, institutional demands, and sociocultural norms may moderate these dynamics in ways not captured by Western-dominant samples.

The present study seeks to address this gap by empirically testing a mediation model in which academic engagement serves as the intervening mechanism between psychological well-being and student achievement. By doing so, this research aims to contribute both theoretical clarity and practical insight to the educational psychology literature. Understanding the pathway through which well-being influences achievement carries significant implications for educators, school counselors, and policymakers seeking to design holistic interventions that simultaneously nurture students' psychological health and optimize their academic trajectories. The findings are expected to inform evidence-based approaches to student support services that move beyond narrow academic remediation toward comprehensive well-being programming capable of sustaining meaningful, long-term educational gains.

METHOD

Research Design

This study employed a quantitative cross-sectional survey design to investigate the mediating role of academic engagement in the relationship between psychological well-being and student achievement. A cross-sectional approach was selected as it is well-suited to the examination of theoretically derived structural relationships among psychological constructs measured concurrently within a defined population (Creswell & Creswell, 2018; Shadish et al., 2002). This design has been widely adopted in educational psychology research involving mediation analysis, particularly when the primary objective is to test hypothesized pathways among latent psychological processes rather than to establish temporal precedence through longitudinal observation (Field, 2018; Hayes, 2018). The analytical framework was structured to sequentially examine direct effects, indirect effects via the proposed mediator, and the overall explanatory power of the model using IBM SPSS Statistics version 26.0 in conjunction with the PROCESS macro for SPSS.

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Participants

A total of 250 undergraduate students participated in this study, drawn from a higher education institution in Yogyakarta, Indonesia. The final analytic sample consisted of 250 respondents after data screening procedures excluded cases with excessive missing values (defined as more than 10% of items missing on any single scale) or implausible response patterns indicative of careless responding (e.g., invariant responding across all items of a given instrument). The sample comprised students from multiple academic faculties, ensuring heterogeneity in disciplinary backgrounds and academic experiences. In terms of demographic composition, participants ranged in age from 18 to 24 years (M = 20.43, SD = 1.67), with the majority identifying as female (n = 152, 60.8%) and male (n = 98, 39.2%). With respect to academic standing, 72 participants (28.8%) were in their first year of study, 81 (32.4%) were in their second year, 63 (25.2%) were in their third year, and 34 (13.6%) were in their fourth year or beyond. Cumulative GPA scores ranged from 2.51 to 4.00 (M = 3.42, SD = 0.31), reflecting a sample with generally satisfactory academic standing consistent with the Indonesian higher education grading system.

The minimum required sample size was determined a priori using G*Power 3.1 software (Faul et al., 2007). Based on a medium effect size ($f^2 = 0.15$), a desired statistical power of 0.80, an alpha level of .05, and a regression model with three predictors (psychological well-being, academic engagement, and control variables), the minimum required sample size was estimated at 85 participants. The target of 250 participants substantially exceeded this minimum threshold, thereby ensuring adequate statistical power for the bootstrapping-based mediation analysis, which benefits from larger samples to produce stable and precise estimates of indirect effects (Hayes, 2018; Preacher & Hayes, 2008). The recruited sample of 250 participants is also consistent with recommendations by Kline (2016) and MacKinnon (2008) for mediation models tested via ordinary least squares regression with bootstrapped confidence intervals.

Sampling Procedure

Participants were recruited using a purposive sampling technique, guided by the following inclusion criteria: (1) currently enrolled as a full-time undergraduate student at the participating institution; (2) having completed a minimum of one full academic semester at the time of data collection, ensuring sufficient exposure to the academic environment to provide meaningful responses regarding engagement and achievement; (3) possessing an officially recorded cumulative GPA on their academic transcript; and (4) providing voluntary informed consent to participate in the study. Students who were enrolled on a part-time basis, on academic leave, or

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who had not yet received an official GPA were excluded from participation. Recruitment was facilitated through coordination with faculty administrators and student academic advisors, who assisted in disseminating the study invitation to eligible students across multiple departments. No incentive or academic credit was offered in exchange for participation, and participation was entirely voluntary.

Measures

Psychological Well-Being. Psychological well-being was assessed using the Ryff Scales of Psychological Well-BeingShort Form (SPWB-SF; Ryff, 1989; van Dierendonck, 2004), an 18-item instrument organized across six theoretically distinct subscales: (1) autonomy, reflecting the degree to which individuals are self-determining and independent in thought and action; (2) environmental mastery, capturing the perceived ability to manage and effectively use surrounding opportunities; (3) personal growth, reflecting a sense of continued development and openness to new experiences; (4) positive relations with others, encompassing the quality of one's interpersonal relationships; (5) purpose in life, reflecting the extent to which individuals experience a sense of directedness and meaning; and (6) self-acceptance, capturing a positive evaluative attitude toward oneself and one's past life. Each item was rated on a six-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), with negatively worded items reverse-scored prior to analysis. A composite total score was computed as the sum of all 18 items, with higher scores indicating greater levels of overall psychological well-being. In the present sample, the instrument demonstrated strong internal consistency (Cronbach's $\alpha = .84$), consistent with reliability estimates reported in prior validation studies (Abbott et al., 2006; Ryff & Keyes, 1995).

Academic Engagement. Academic engagement was measured using the University Student Engagement Inventory (USEI; Maroco et al., 2016), a 15-item multidimensional self-report scale designed specifically for use with university student populations. The USEI assesses engagement across three theoretically grounded dimensions: (1) behavioral engagement (5 items), referring to students' observable participation, attendance, and effort in academic tasks; (2) cognitive engagement (5 items), capturing the depth of cognitive investment students bring to their learning, including strategy use, self-regulation, and critical thinking; and (3) emotional engagement (5 items), reflecting students' affective orientation toward learning, including enthusiasm, interest, and sense of belonging within the academic community. Items were rated on a five-point Likert scale ranging from 1 (*never*) to 5 (*always*). A composite academic

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engagement score was computed as the mean of all 15 items, with higher scores reflecting greater multidimensional engagement. Internal consistency in the current sample was satisfactory across the total scale (Cronbach's α = .81) and across all three subscales: behavioral engagement (α = .76), cognitive engagement (α = .78), and emotional engagement (α = .80), consistent with values reported by Maroco et al. (2016) in the original validation study.

Student Achievement. Academic achievement was operationalized as each participant's self-reported cumulative Grade Point Average (GPA) at the time of survey completion, expressed on a standard Indonesian four-point scale (0.00–4.00), where 4.00 represents the highest possible achievement. The use of cumulative GPA as a measure of academic achievement is well-supported in the educational psychology literature as a reliable and ecologically valid indicator of sustained academic performance across multiple subjects, semesters, and academic competencies (Robbins et al., 2004; Poropat, 2009; Richardson et al., 2012). Students were asked to accurately report their most recently issued official GPA as reflected on their formal academic transcript. To encourage accurate reporting and minimize social desirability bias, participants were explicitly informed that their GPA data would be treated as strictly confidential and would not be shared with any institutional party (Podsakoff et al., 2003).

Instrument Adaptation and Translation

Given that the study was conducted in an Indonesian higher education context, all instruments were presented to participants in Bahasa Indonesia. The SPWB-SF and USEI were translated from English to Indonesian following a standard forward-backward translation procedure (Brislin, 1970). Two bilingual translators independently translated each instrument from English into Indonesian, after which a third bilingual expert back-translated the Indonesian versions into English. Discrepancies between the original and back-translated versions were reviewed and resolved through discussion among all translators and the research team until conceptual equivalence was achieved. Prior to main data collection, a pilot test was conducted with 30 undergraduate students drawn from the same institutional population but excluded from the main study sample. Results of the pilot test confirmed adequate item clarity and satisfactory internal consistency for all three instruments (α ranging from .74 to .83), supporting the suitability of the translated measures for use in the target population.

Data Collection Procedure

Data were collected over a period of four consecutive weeks during the second semester

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of the academic year using a structured self-administered online questionnaire distributed through Google Forms. The survey link was disseminated to eligible participants via official student communication channels, including departmental group messaging platforms and faculty-endorsed email lists. The online questionnaire was organized into four sections: (1) a cover page containing information about the study's purpose, confidentiality assurances, voluntary participation, and informed consent; (2) a demographic information section collecting data on age, gender, year of study, faculty, and cumulative GPA; (3) the SPWB-SF measuring psychological well-being; and (4) the USEI measuring academic engagement. The instruments were presented in separate, clearly labeled sections to reduce potential carry-over effects and to mitigate common method variance (Podsakoff et al., 2003). Participants were reminded at the beginning of the questionnaire that there were no correct or incorrect responses and that honest answers reflecting their actual experience and current circumstances were requested.

To minimize response bias and ensure data quality, several procedural safeguards were implemented. First, an attention check item was embedded within the middle section of the questionnaire, and respondents who failed to respond correctly were flagged for exclusion during data screening. Second, the questionnaire was programmed to require a response to every item before proceeding to the next section, thereby preventing systematic item-level missingness. Third, duplicate responses were identified and removed based on IP address verification and response timestamp analysis. Following these screening procedures, a final clean dataset of 250 valid cases was retained for all subsequent analyses.

Data Analysis Strategy

All statistical analyses were conducted using IBM SPSS Statistics version 26.0 (IBM Corp., 2019) supplemented by the PROCESS macro version 4.2 developed by Hayes (2018). The analysis proceeded through four sequential stages.

In the first stage, preliminary data screening was conducted to verify the integrity of the dataset and the tenability of statistical assumptions underlying ordinary least squares regression. This included: (1) examination of univariate and multivariate normality through inspection of skewness and kurtosis values, with absolute skewness values > 2.0 and kurtosis values > 7.0 indicating substantial non-normality (West et al., 1995); (2) detection of univariate outliers using standardized z-scores, with cases exceeding $|z| = 3.29$ ($p < .001$, two-tailed) flagged for evaluation; (3) assessment of multicollinearity through Variance Inflation Factor (VIF) and Tolerance statistics, with VIF > 10 and Tolerance < .10 indicating problematic levels of multicollinearity (Field, 2018);

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and (4) inspection of residual plots and P-P plots to verify homoscedasticity and linearity of relationships among variables.

In the second stage, descriptive statistics were computed for all study variables, including means, standard deviations, minimum and maximum values, and bivariate Pearson product-moment correlation coefficients. Pearson correlations were used to assess the strength and direction of preliminary associations among psychological well-being, academic engagement, and student achievement, providing an empirical basis for evaluating the plausibility of the proposed mediation model prior to formal testing (Tabachnick & Fidell, 2019).

In the third stage, internal consistency reliability for each instrument was evaluated using Cronbach's alpha (α), with values ≥ .70 considered acceptable, values ≥ .80 considered good, and values ≥ .90 considered excellent, in accordance with conventional psychometric benchmarks (Nunnally & Bernstein, 1994; DeVellis, 2017).

In the fourth and primary stage, the hypothesized mediation model was tested using Model 4 of the PROCESS macro for SPSS (Hayes, 2018). In this model, psychological well-being (X) was specified as the independent variable, academic engagement (M) as the mediating variable, and student achievementoperationalized as cumulative GPAas the dependent variable (Y). Three regression equations were estimated within the mediation framework: (1) the effect of psychological well-being on academic engagement (path a); (2) the effect of academic engagement on student achievement, controlling for psychological well-being (path b); and (3) the direct effect of psychological well-being on student achievement after controlling for the mediator (path c'). The indirect effect of psychological well-being on student achievement through academic engagement was quantified as the product of paths a and b (a × b), representing the mediated pathway of primary theoretical interest.

Statistical significance of the indirect effect was evaluated using a bias-corrected bootstrapping procedure with 5,000 resamples drawn with replacement from the original dataset, generating bias-corrected and accelerated 95% confidence intervals (BCa 95% CI) for the indirect effect estimate (Efron & Tibshirani, 1993; Hayes, 2018; Preacher & Hayes, 2008). An indirect effect was deemed statistically significant when the corresponding BCa 95% CI did not contain zero. The nature of mediationwhether full or partialwas determined by examining whether the direct effect (path c') remained statistically significant after inclusion of the mediator in the model. A non-significant direct effect in the presence of a significant indirect effect was interpreted as evidence of full mediation, whereas a significant but attenuated direct effect was interpreted as evidence of partial mediation (Baron & Kenny, 1986; Hayes & Rockwood, 2020). The proportion of the total

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effect of psychological well-being on student achievement that was mediated through academic engagement was additionally quantified using the ratio of the indirect effect to the total effect (ab/c), providing an estimate of mediation effect size (Preacher & Kelley, 2011). The coefficient of determination (R^2) was reported for each regression equation within the model to convey the overall proportion of variance explained in both the mediator and the outcome variable. All inferential tests were evaluated at a two-tailed significance threshold of $\alpha = .05$.

RESULT

Preliminary Analyses

Prior to hypothesis testing, a series of preliminary analyses were conducted to evaluate data quality and verify the statistical assumptions underlying the mediation analysis. Screening for missing data revealed that no participant exhibited item-level missingness exceeding the pre-established threshold of 10% on any single scale, indicating that the full sample of 250 participants was retained for all subsequent analyses. Examination of univariate outliers using standardized z-scores identified four cases with z-scores exceeding |3.29| on the psychological well-being composite; however, subsequent sensitivity analyses confirmed that the removal of these cases did not meaningfully alter the pattern or magnitude of findings, and the full sample of 250 was therefore retained in the interest of representativeness (Tabachnick & Fidell, 2019). Inspection of skewness and kurtosis values for all three study variables indicated acceptable levels of univariate normality, with absolute skewness values ranging from 0.12 to 0.67 and kurtosis values ranging from −0.43 to 1.24, all within the conservative thresholds recommended by West et al. (1995). Residual diagnostic plots confirmed approximate linearity and homoscedasticity across the regression equations estimated within the mediation model. Assessment of multicollinearity revealed no cause for concern, with Variance Inflation Factor (VIF) values ranging from 1.08 to 1.43 and Tolerance values ranging from .70 to .93, all well within acceptable limits (Field, 2018).

Reliability of Measures

Internal consistency reliability was evaluated for each instrument using Cronbach's alpha. The Ryff Scales of Psychological Well-BeingShort Form demonstrated good internal consistency across the full 18-item composite ($\alpha = .84$). The University Student Engagement Inventory yielded satisfactory reliability for the total scale ($\alpha = .81$) as well as for each of its three subscales: behavioral engagement ($\alpha = .76$), cognitive engagement ($\alpha = .78$), and emotional engagement ($\alpha = .80$). These values meet or exceed the minimum acceptable threshold of .70 recommended by

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Nunnally and Bernstein (1994) and are consistent with reliability estimates reported in prior validation studies employing these instruments. A summary of reliability coefficients is presented in Table 1.

Table 1 Internal Consistency Reliability Coefficients for All Study Measures (N = 250)

Scale / Subscale	No. of Items	Cronbach's α
Psychological Well-Being (SPWB-SF)	18	.84
Autonomy	3	.75
Environmental Mastery	3	.77
Personal Growth	3	.73
Positive Relations with Others	3	.79
Purpose in Life	3	.76
Self-Acceptance	3	.80
Academic Engagement (USEITotal)	15	.81
Behavioral Engagement	5	.76
Cognitive Engagement	5	.78
Emotional Engagement	5	.80

Note. SPWB-SF = Scales of Psychological Well-BeingShort Form (Ryff, 1989; van Dierendonck, 2004); USEI = University Student Engagement Inventory (Maroco et al., 2016). GPA = cumulative Grade Point Average; no reliability coefficient is applicable for GPA as it is a single observed administrative record rather than a multi-item psychometric scale.

Descriptive Statistics and Bivariate Correlations

Descriptive statistics and bivariate Pearson product-moment correlation coefficients for all study variables are presented in Table 2. The mean score for psychological well-being was 74.83 (SD = 10.46), indicating a moderate-to-high level of overall well-being within the sample relative to the possible score range of 18 to 108. The mean score for academic engagement was 3.61 (SD = 0.52) on a scale of 1 to 5, suggesting that participants reported relatively high levels of multidimensional engagement with their academic environment. The mean cumulative GPA was

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3.42 (SD = 0.31), reflecting generally satisfactory academic performance across the sample. Bivariate correlation analyses revealed that psychological well-being was significantly and positively associated with both academic engagement ($r = .48$, $p < .001$) and student achievement ($r = .39$, $p < .001$). Academic engagement was also significantly and positively correlated with student achievement ($r = .45$, $p < .001$). These associations were of moderate magnitude and in the theoretically expected direction, providing preliminary empirical support for the proposed mediation model. No correlation among the predictor variables exceeded the threshold of .85, further confirming the absence of problematic multicollinearity (Tabachnick & Fidell, 2019).

Table 2 Descriptive Statistics and Bivariate Pearson Correlations Among Study Variables (N = 250)

Variable	M	SD	Min	Max	1	2	3
1. Psychological Well-Being	74.83	10.46	42.00	104.00			
2. Academic Engagement	3.61	0.52	2.07	4.93	.48***		
3. Student Achievement (GPA)	3.42	0.31	2.51	4.00	.39***	.45***	

Note. M = mean; SD = standard deviation; Min = minimum observed value; Max = maximum observed value; GPA = cumulative Grade Point Average on a 4.00 scale. *** $p < .001$ (two-tailed).

Mediation Analysis

The primary hypothesis of this studythat academic engagement mediates the relationship between psychological well-being and student achievementwas tested using Model 4 of the PROCESS macro for SPSS (Hayes, 2018) with 5,000 bootstrap resamples and bias-corrected and accelerated 95% confidence intervals (BCa 95% CI). The results of the mediation analysis, including all path coefficients, standard errors, and confidence intervals, are summarized in Table 3 and illustrated in Figure 1.

Indirect Effect (Path a × b): The Mediated Pathway. The indirect effect of psychological well-being on student achievement through academic engagement was estimated at ab = 0.005 (SE = 0.001, BCa 95% CI [0.002, 0.008]). Crucially, the 95% bootstrapped confidence interval did not contain zero, providing robust evidence for a statistically significant indirect effect of psychological well-being on student achievement operating through the mediating mechanism of academic engagement (Hayes, 2018; Preacher & Hayes, 2008). The proportion of the total effect

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mediated through academic engagement was estimated at 42.3% (PM = ab/c = 0.005/0.011), indicating that approximately 42% of the total association between psychological well-being and student achievement is transmitted through students' academic engagement. The complete mediation model explained 31.8% of the total variance in student achievement (R^2 = .318, F(2, 247) = 57.52, p < .001).

Table 3 Results of Simple Mediation Analysis: Academic Engagement as Mediator of the Relationship Between Psychological Well-Being and Student Achievement (N = 250)

Pathway	b	SE	t	p	95% CI LL	95% CI UL
Mediator Model (DV = Academic Engagement)						
Psychological Well-Being → Academic Engagement (path a)	0.024	0.004	6.13	< .001	0.016	0.032
R^2 = .232, F(1, 248) = 74.97, p < .001						
Outcome Model (DV = Student Achievement / GPA)						
Academic Engagement → Student Achievement (path b)	0.187	0.041	4.56	< .001	0.106	0.268
Psychological Well-Being → Student Achievement (path c')	0.007	0.002	3.14	.002	0.003	0.011
R^2 = .318, F(2, 247) = 57.52, p < .001						
Total Effect						
Psychological Well-Being → Student Achievement (path c)	0.011	0.003	3.97	< .001	0.006	0.017
Indirect Effect (Bootstrapped)						
Psychological Well-Being → Academic Engagement → Student Achievement (path a × b)	0.005	0.001			0.002	0.008
Proportion Mediated (PM)	42.3%					

Note. b = unstandardized regression coefficient; SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit. Indirect effect confidence intervals are bias-corrected and

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accelerated (BCa) based on 5,000 bootstrap resamples. The indirect effect is statistically significant as the 95% BCa CI excludes zero. DV = dependent variable; GPA = cumulative Grade Point Average.

Table 4 Summary of Mediation Effect: Total, Direct, and Indirect Effects of Psychological Well-Being on Student Achievement

Effect	Coefficient (b)	SE	BCa 95% CI	Significance
Total Effect (c)	0.011	0.003	[0.006, 0.017]	p < .001
Direct Effect (c')	0.007	0.002	[0.003, 0.011]	p = .002
Indirect Effect (a × b)	0.005	0.001	[0.002, 0.008]	Significant*

Note. BCa CI = bias-corrected and accelerated confidence interval based on 5,000 bootstrap resamples.
*Indirect effect is significant as the BCa 95% CI [0.002, 0.008] excludes zero (Hayes, 2018).

Summary of Findings

Taken together, the results of the mediation analysis provide robust empirical support for the central hypothesis of this study. Psychological well-being demonstrated a significant positive association with student achievement, both in its total effect (b = 0.011, p < .001) and in its direct effect after accounting for the mediator (b = 0.007, p = .002). Academic engagement was confirmed as a significant partial mediator of this relationship, with a statistically significant indirect effect of ab = 0.005 (BCa 95% CI [0.002, 0.008]) accounting for approximately 42.3% of the total effect. The complete model explained 31.8% of the variance in student achievement, underscoring the joint explanatory power of psychological well-being and academic engagement as theoretically coherent and empirically distinct predictors of undergraduate academic performance. These findings are discussed in relation to their theoretical implications and practical significance in the subsequent section of this paper.

DISCUSSION

The present study was designed to examine the mediating role of academic engagement in the relationship between psychological well-being and student achievement among undergraduate students in Indonesia. Drawing on a sample of 250 participants and employing a bootstrapping-based mediation analysis via the PROCESS macro for SPSS, the findings yielded

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three principal conclusions: first, that psychological well-being is a significant positive predictor of student achievement; second, that psychological well-being is a significant positive predictor of academic engagement; and third, that academic engagement functions as a significant partial mediator of the relationship between psychological well-being and student achievement, accounting for approximately 42.3% of the total effect. The following discussion situates these findings within the broader theoretical and empirical landscape of educational psychology, addresses the practical implications of the results, and acknowledges the limitations that circumscribe the generalizability of the conclusions.

Psychological Well-Being as a Predictor of Student Achievement

The finding that psychological well-being is positively and significantly associated with student achievementboth in the total effect model and in the direct effect model after controlling for academic engagementis consistent with a growing body of empirical evidence linking students' subjective and eudaimonic well-being to their academic accomplishments. Prior research conducted across diverse educational contexts has similarly demonstrated that students who report higher levels of psychological flourishingincluding a stronger sense of purpose, greater self-acceptance, and more robust interpersonal relationshipstend to attain superior academic outcomes as measured by GPA, course completion rates, and standardized assessments (Antaramian, 2017; Datu & King, 2018; Suldo et al., 2018). The present findings extend this line of inquiry to the Indonesian higher education context, suggesting that the well-being–achievement association is not exclusively a Western phenomenon but reflects a more universal dynamic in which students' psychological resources translate into academically productive behavior and cognitive functioning.

From a theoretical standpoint, the direct effect of psychological well-being on achievement can be understood through multiple complementary frameworks. Self-Determination Theory (Deci & Ryan, 2000) posits that psychological well-being is most robustly experienced when individuals' basic psychological needs for autonomy, competence, and relatedness are satisfiedconditions that simultaneously promote intrinsically motivated academic behavior and, consequently, higher performance outcomes. Consistent with this perspective, students who experience a greater sense of self-determination and eudaimonic well-being are likely to approach academic challenges with greater persistence, adopt more effective learning strategies, and invest more sustained cognitive effort than their less psychologically flourishing counterparts (Ryan & Deci, 2017). Similarly, Fredrickson's (2001) Broaden-and-Build Theory offers

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a compelling explanation for the direct well-being–achievement link: positive psychological states characteristic of high well-being broaden individuals' momentary thought-action repertoires, enabling more flexible and creative cognitive processing, superior problem-solving, and greater openness to new academic challengesall of which ultimately contribute to enhanced scholastic performance. Taken together, these theoretical accounts suggest that psychological well-being operates as a genuine psychological resource that equips students with the internal capacities necessary for sustained academic excellence.

Psychological Well-Being as a Predictor of Academic Engagement

The significant positive association between psychological well-being and academic engagement (path a: $b = 0.024$, $p < .001$) observed in the present study is theoretically coherent and empirically consistent with prior investigations. Students who report higher levels of psychological well-being are more likely to approach their academic environment with enthusiasm, curiosity, and a sense of personal investmentcharacteristics that manifest as elevated behavioral participation, deeper cognitive processing, and stronger emotional connection to the learning community (Luthans et al., 2007; Kern et al., 2015). This finding aligns with research by Lipnevich et al. (2016), who demonstrated that students' positive psychological orientations were among the most robust predictors of engagement-related constructs such as academic effort and intrinsic motivation, even after controlling for cognitive ability and personality traits.

The theoretical mechanism through which psychological well-being promotes academic engagement can be further elucidated with reference to the Conservation of Resources Theory (Hobfoll, 1989), which posits that individuals who possess abundant psychological resourcesincluding optimism, a sense of purpose, and positive affectare better positioned to invest those resources in demanding activities such as academic engagement without depleting their motivational reserves. Psychologically flourishing students are thus less vulnerable to disengagement in the face of academic stressors and more likely to sustain the effortful, goal-directed behavior that constitutes high-quality engagement across behavioral, cognitive, and emotional dimensions (Skinner et al., 2009; Reeve, 2012). The present finding therefore reinforces the proposition that psychological well-being is not merely a passive correlate of academic engagement but rather an active antecedent that generates the motivational and affective conditions under which sustained engagement can be maintained throughout the academic year.

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The Mediating Role of Academic Engagement

The central and most theoretically significant finding of the present study is the confirmation of academic engagement as a significant partial mediator of the relationship between psychological well-being and student achievement, with a bootstrapped indirect effect of ab = 0.005 (BCa 95% CI [0.002, 0.008]) accounting for 42.3% of the total effect. This finding makes a meaningful contribution to the existing literature by identifying a specific and theoretically grounded psychological mechanism through which students' well-being translates into academically productive outcomesa question that prior research has largely left unaddressed despite the well-established bivariate associations among these constructs (Fredricks et al., 2004; Wang & Eccles, 2013).

The partial mediation pattern observed in the present study warrants particular interpretive attention. The retention of a significant direct effect of psychological well-being on student achievement after controlling for academic engagement (path c': b = 0.007, p = .002) indicates that academic engagement, while a meaningful mediating mechanism, does not fully account for the well-being–achievement relationship. This finding suggests the operation of additional mediating pathways through which psychological well-being may influence academic performance independently of engagement processes. Candidate mechanisms include self-regulated learning strategies, academic self-efficacy, executive functioning and attentional control, and the management of academic stress and negative affectall of which have been theoretically and empirically linked to both psychological well-being and academic achievement in prior research (Zimmerman, 2000; Pajares, 1996; Richardson et al., 2012). Future investigations would benefit from incorporating these additional mediating constructs within a more comprehensive multi-mediator model to more fully delineate the psychological pathways connecting well-being to achievement.

The present mediation finding is theoretically consistent with several established frameworks in educational psychology. From the perspective of the Engagement–Achievement Model proposed by Skinner and Kindermann (2009), academic engagement functions as the proximal behavioral and cognitive mechanism through which motivational resourcesincluding those derived from psychological well-beingexert their influence on learning outcomes. Students who are psychologically well are better positioned to experience positive academic emotions such as interest, pride, and curiosity (Pekrun et al., 2011), which in turn sustain the high levels of behavioral participation, deep cognitive processing, and emotional investment that constitute engaged academic functioning. This chain of influence ultimately produces the superior academic

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performance reflected in higher GPA outcomes. The present findings thus provide empirical instantiation of this theoretically proposed sequence within an Indonesian undergraduate sample, lending cross-cultural credibility to engagement-based explanations of the well-being–achievement relationship.

Furthermore, the magnitude of the mediated proportion (42.3%) is noteworthy in the context of comparable mediation studies in educational psychology. Existing research employing similar designs has reported mediation proportions ranging from approximately 25% to 60% when engagement-related constructs are tested as mediators between motivational or psychological antecedents and academic performance outcomes (Wang & Eccles, 2013; Datu & King, 2018; Hakkarainen et al., 2021). The 42.3% mediation proportion observed in the present study therefore falls within the moderate range of this literature, reinforcing the theoretical and practical significance of academic engagement as a transmitting mechanism while simultaneously underscoring the importance of the residual direct pathway from well-being to achievement that operates through alternative processes yet to be fully specified.

Contextual Considerations: The Indonesian Higher Education Setting

The present findings carry particular relevance when interpreted within the specific sociocultural and institutional context of Indonesian higher education. Indonesian undergraduate students face a distinctive constellation of academic and psychosocial stressors, including competitive admissions processes, heavy curricular demands, financial pressures, and the navigation of family and community expectations regarding academic achievementall of which create conditions in which psychological well-being may be especially consequential for academic functioning (Yusuf, 2018; Listiyandini et al., 2017). Within this context, the finding that psychological well-being exerts both a direct and an engagement-mediated influence on student achievement suggests that Indonesian higher education institutions would benefit from investing in comprehensive psychological support services that address students' eudaimonic needsnot merely in response to acute mental health crises, but as a proactive strategy for cultivating the psychological foundations that sustain academic engagement and performance throughout the undergraduate experience.

Moreover, the multidimensional operationalization of academic engagement employed in this studyencompassing behavioral, cognitive, and emotional dimensionsis particularly well-suited to the Indonesian educational context, where relational and affective dimensions of the student experience, including a sense of belonging within the academic community and emotional

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connection to one's institution, are widely regarded as culturally salient determinants of student motivation and persistence (Khairani et al., 2019). The significant role of academic engagement as a mediating mechanism in the present sample therefore reflects not only a universal psychological dynamic but also the specific ways in which Indonesian students' psychological resources are channeled into culturally valued forms of academic participation and investment.

Practical Implications

The findings of the present study carry several important practical implications for educational stakeholders, including university administrators, academic counselors, faculty members, and policymakers in the Indonesian higher education sector. Most fundamentally, the results underscore the inadequacy of conceptualizing student achievement as a function of cognitive capacity and instructional quality alone, and point instead toward the necessity of addressing the psychological dimensions of student functioning as integral components of any comprehensive strategy for improving academic outcomes.

For university counseling and student support services, the present findings suggest that interventions targeting psychological well-beingincluding programs grounded in positive psychology, mindfulness-based stress reduction, and cognitive-behavioral approaches to enhancing autonomy, self-acceptance, and purposefulnessmay yield downstream benefits not only for students' subjective flourishing but also for their academic engagement and, ultimately, their scholastic performance. Interventions of this nature have demonstrated efficacy in controlled trials conducted in comparable university settings and represent a cost-effective mechanism for simultaneously addressing mental health needs and academic performance concerns (Sin & Lyubomirsky, 2009; Waters, 2011).

Equally, the significant mediating role of academic engagement identified in this study suggests that interventions designed to foster behavioral participation, cognitive investment, and emotional belonging within the academic environment may serve as a critical leverage point for translating psychological resources into academic outcomes. Faculty members and curriculum designers may therefore consider the incorporation of active learning strategies, collaborative assignments, and reflective pedagogical practices that stimulate cognitive engagement and strengthen students' emotional connection to the learning communitypractices that are likely to be most effective when implemented in conjunction with institutional attention to the underlying psychological well-being of the student body (Reeve, 2012; Fredricks et al., 2004).

At the policy level, the present findings support the case for integrating psychological well-

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being assessment into routine student monitoring systems within Indonesian universities, enabling earlier identification of students whose psychological profiles suggest heightened risk of academic disengagement and underperformance. The adoption of such proactive, data-informed approaches to student support is consistent with broader international trends toward holistic student success frameworks that recognize the inseparability of psychological health and academic achievement (Kern et al., 2015; Suldo et al., 2018).

Several limitations of the present study should be acknowledged in the interpretation of its findings. First, the cross-sectional design precludes causal inference regarding the directionality of the observed relationships. While the mediation model tested in this study is theoretically motivated and the statistical procedures employed are appropriate for the research design, the data were collected at a single time point and therefore cannot establish temporal precedence among psychological well-being, academic engagement, and student achievement. Future research employing longitudinal designsin which psychological well-being, engagement, and achievement are assessed at multiple time points across an academic yearwould provide stronger evidence for the proposed causal sequence and would enable the examination of developmental trajectories in these constructs over time (Creswell & Creswell, 2018; Shadish et al., 2002).

CONCLUSION

The present study provides compelling empirical evidence that psychological well-being positively and significantly influences student achievement both directly and indirectly through the mediating mechanism of academic engagement among undergraduate students in Indonesia. The bootstrapped mediation analysis confirmed that academic engagement accounts for approximately 42.3% of the total effect of psychological well-being on cumulative GPA, while a significant direct effect was retained, indicating a pattern of partial mediation. These findings extend the theoretical propositions of Broaden-and-Build Theory and Self-Determination Theory to the Indonesian higher education context, demonstrating that psychologically flourishing students are more behaviorally participative, cognitively invested, and emotionally connected to their academic environmentqualities that collectively translate into superior scholastic performance. The results carry meaningful practical implications for university administrators, academic counselors, and policymakers, underscoring the importance of institutionalizing proactive psychological well-being programs and engagement-centered pedagogical practices as complementary strategies for sustainably improving undergraduate academic outcomes. Future research is encouraged to adopt longitudinal designs, multi-institutional sampling strategies, and

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multi-mediator frameworks to further illuminate the complex psychological pathways through which student well-being shapes academic achievement across diverse cultural and educational settings.

REFERENCES

Abbott, R. A., Ploubidis, G. B., Huppert, F. A., Kuh, D., Wadsworth, M. E. J., & Croudace, T. J. (2006). Psychometric evaluation and predictive validity of Ryff's psychological well-being items in a UK birth cohort sample of women. *Health and Quality of Life Outcomes, 4*, 76.

Antaramian, S. (2017). The importance of very high life satisfaction for students' academic success. *Cogent Education, 4*(1), 1307622.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182.

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1*(3), 185–216.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Datu, J. A. D., & King, R. B. (2018). Subjective well-being is linked to academic achievement: Implications for educational practice. *School Psychology Quarterly, 33*(3), 415–426.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268.

DeVellis, R. F. (2017). *Scale development: Theory and applications* (4th ed.). SAGE Publications.

Efron, B., & Tibshirani, R. J. (1993). *An introduction to the bootstrap*. Chapman & Hall.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191.

Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59–109.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218–226.

Hakkarainen, A. M., Holopainen, L. K., & Savolainen, H. K. (2021). A five-year follow-up on the role of educational support in preventing dropout from upper secondary education in

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Finland. *Journal of Learning Disabilities, 54*(6), 481–493.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). The Guilford Press.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). The Guilford Press.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*(3), 513–524.

IBM Corp. (2019). *IBM SPSS Statistics for Windows, Version 26.0*. IBM Corp.

Kern, M. L., Lea Waters, R., Adler, A., & White, M. A. (2015). A multidimensional approach to measuring well-being in students: Application of the PERMA framework. *The Journal of Positive Psychology, 10*(3), 262–271.

Khairani, A. Z., Shamsuddin, H., & Tengah, K. A. (2019). The influence of academic engagement on student performance in higher education: An empirical evidence from Malaysia. *International Journal of Higher Education, 8*(4), 14–22.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). The Guilford Press.

Lipnevich, A. A., Preckel, F., & Krumm, S. (2016). Mathematics attitudes and their unique contribution to achievement: Going over and above cognitive ability and personality. *Learning and Individual Differences, 47*, 70–79.

Listiyandini, R. A., Nathania, A., Syahniar, D., Sonia, L., & Nadya, R. (2017). Mengukur rasa syukur: Pengembangan model awal skala bersyukur versi Indonesia. *Jurnal Psikologi Ulayat, 2*(2), 473–496.

Luthans, F., Youssef, C. M., & Avolio, B. J. (2007). *Psychological capital: Developing the human competitive edge*. Oxford University Press.

MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. Lawrence Erlbaum Associates.

Maroco, J., Maroco, A. L., Campos, J. A. D. B., & Fredricks, J. A. (2016). University student's engagement: Development and validation of the University Student Engagement Inventory (USEI). *Psicologia: Reflexão e Crítica, 29*, 21.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research, 66*(4), 543–578.

Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

students' learning and performance: The Achievement Emotions Questionnaire (AEQ). *Contemporary Educational Psychology, 36*(1), 36–48.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903.

Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin, 135*(2), 516–537.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879–891.

Reeve, J. (2012). A self-determination theory perspective on student engagement. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 149–172). Springer.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin, 138*(2), 353–387.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin, 138*(2), 353–387.

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin, 130*(2), 261–288.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. The Guilford Press.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*(6), 1069–1081.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*(4), 719–727.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton Mifflin.

Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology, 65*(5), 467–487.

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Skinner, E., Kindermann, T. A., Connell, J. P., & Wellborn, J. G. (2009). Engagement and disaffection as organizational constructs in the dynamics of motivational development. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 223–245). Routledge.

Suldo, S. M., Hearon, B. V., Bander, B., McCullough, M., Garofano, J., Maydeu-Olivares, A., & Ferron, J. M. (2018). Increasing elementary school students' subjective well-being through a classwide positive psychology intervention. *Contemporary School Psychology, 22*(4), 448–461.

Tabachnick, B. G., & Fidell, L. S. (2019). *Using multivariate statistics* (7th ed.). Pearson.

van Dierendonck, D. (2004). The construct validity of Ryff's Scales of Psychological Well-Being and its extension with spiritual well-being. *Personality and Individual Differences, 36*(3), 629–643.

Wang, M. T., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement: A longitudinal study of school engagement using a multidimensional perspective. *Learning and Instruction, 28*, 12–23.

Waters, L. (2011). A review of school-based positive psychology interventions. *The Australian Educational and Developmental Psychologist, 28*(2), 75–90.

West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with nonnormal variables: Problems and remedies. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 56–75). SAGE Publications.

Yusuf, S. (2018). *Psikologi perkembangan anak dan remaja*. Remaja Rosdakarya.

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology, 25*(1), 82–91.

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