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The role of psychological safety and belonging in classroom engagement among first-year undergraduates

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Abstrak

Tujuan penelitian ini adalah mengeksplorasi pengaruh Psychological Safety dan Sense of Belonging terhadap keaktifan mahasiswa baru Program Studi Pendidikan Administrasi Perkantoran Universitas Sebelas Maret Angkatan 2024. Data diperoleh melalui metode kuantitatif dengan teknik simple random sampling yang diterapkan pada 75 responden melalui kuesioner terstruktur dan dianalisis menggunakan teknik regresi berganda. Hasil penelitian menunjukkan bahwa Psychological Safety (t = 3,232, p = 0,002) berpengaruh positif dan signifikan terhadap keaktifan mahasiswa, yang berarti semakin tinggi rasa aman psikologis, semakin besar partisipasi mahasiswa dalam kegiatan akademik maupun nonakademik. Demikian pula, Sense of Belonging (t = 6,703, p < 0,001) secara signifikan meningkatkan keaktifan mahasiswa, menunjukkan bahwa keterikatan sosial yang lebih kuat terhadap komunitas kampus mendorong keterlibatan yang lebih aktif. Analisis simultan (F = 106,370, p < 0,001) mengonfirmasi bahwa kedua variabel tersebut secara bersama-sama memengaruhi keaktifan mahasiswa, dengan nilai R^2 sebesar 0,737 yang berarti 73,7% varians dapat dijelaskan oleh prediktor tersebut. Temuan ini menegaskan pentingnya lingkungan kampus yang suportif dan inklusif dalam mendorong partisipasi aktif mahasiswa. Oleh karena itu, penguatan Psychological Safety dan penumbuhan Sense of Belonging perlu diprioritaskan sebagai upaya strategis untuk meningkatkan keaktifan mahasiswa dan mengoptimalkan hasil belajar.

Kata kunci: interaksi teman sebaya; lingkungan belajar; penyesuaian mahasiswa baru; psikologi pendidikan; transisi akademik

Abstract

This study investigates the influence of Psychological Safety and Sense of Belonging on the engagement of first-year students in the Office Administration Education Program at Universitas Sebelas Maret, Cohort 2024. Using a quantitative methodology with a *simple random sampling*, data were obtained from 75 participants through a structured questionnaire and subsequently analyzed with multiple regression techniques. The results demonstrate that Psychological Safety (t = 3.232, p = 0.002) has a positive and significant effect on student engagement, indicating that higher

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levels of psychological security foster greater participation in academic and non-academic activities. Similarly, Sense of Belonging ($t = 6.703$, $p < 0.001$) significantly enhances student engagement, suggesting that stronger social attachment to the campus community increases active involvement. The simultaneous analysis ($F = 106.370$, $p < 0.001$) confirms that both variables jointly affect student engagement, with an R^2 value of 0.737, meaning that 73.7% of the variance is explained by these predictors. These findings highlight the crucial role of supportive and inclusive campus environments in promoting active student participation. Strengthening Psychological Safety and fostering a Sense of Belonging should therefore be prioritized as strategic efforts to enhance student engagement and optimize learning outcomes.

Keywords: academic transition; educational psychology; freshmen adjustment; learning environment; peer interaction

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Introduction

Student engagement is widely acknowledged as a key indicator of learning quality. This construct encompasses cognitive, affective, and behavioral involvement in the learning process (Bond, 2020). Students who actively participate in discussions, pose questions, and share ideas tend to achieve better academic outcomes and exhibit stronger preparedness for professional careers (Fredricks, 2019). Active participation further contributes to the development of students' academic identities as members of a scholarly community (Kahu & Nelson, 2018). Nevertheless, research in Indonesia indicates that student engagement remains relatively low. For instance, a study conducted at Universitas Jenderal Soedirman revealed that although 75% of students participated actively in small group discussions, only 15% were willing to contribute during class-wide discussions (Martono, 2016). Similar patterns emerged in online learning environments, where participation in discussion forums reached 90% per topic but did not translate into verbal engagement in face-to-face classes (Syahputra, 2020). These findings reinforce the observation that Indonesian students tend to remain passive and reluctant to engage verbally in classroom interactions.

The engagement of first-year students presents unique challenges. Transitioning from secondary to higher education is often accompanied by academic pressure, differences in learning culture, and heightened social demands (Nelson, 2018; Korhonen et al., 2019). The first year is regarded as a critical period that strongly determines subsequent academic involvement (van Rooij et al., 2018). In the Indonesian context, first-year students often display hesitancy, reluctance to express opinions, and limited participation in discussions—factors that ultimately hinder learning quality (Sutarto, 2020; Raharjo & Pramudibyanto, 2021).

Psychological safety, defined as the belief that expressing ideas, asking questions, or making mistakes will not result in embarrassment or penalties, helps explain why first-year students often exhibit low participation (Edmondson, 2018). Recent studies highlight that psychologically safe learning environments encourage students to take intellectual risks, explore ideas, and participate actively (Newman et al., 2017; Newman et al., 2020). Thus, psychological safety serves as a crucial foundation for fostering a conducive classroom atmosphere for first-year students.

In addition to psychological safety, sense of belonging plays a key role in fostering student engagement. This concept refers to the experience of being accepted, valued, and recognized as an integral part of the academic community (Hagerty & Patusky, 1995; Kahu & Nelson, 2018). Research demonstrates that a strong sense of belonging enhances motivation, persistence, and academic achievement (Gopalan & Brady, 2019; Thomas, 2021). For first-year students, developing a sense of belonging toward their institution and learning community provides essential psychosocial

resources that mitigate feelings of alienation and enhance classroom participation (Walton & Brady, 2017).

Previous empirical studies have confirmed the relevance of these two factors. Newman et al. (2017) and Frazier et al. (2017) demonstrated that psychological safety positively contributes to creativity, collaboration, and engagement, although their studies were predominantly situated within organizational contexts rather than classroom settings. Similarly, Strayhorn (2019) emphasized that sense of belonging is a strong predictor of motivation and academic persistence, but his research largely addressed the general student population without focusing on the critical transitional phase of first-year students. Furthermore, limited research in Indonesia has fully examined the influence of hierarchical academic culture on student engagement (Raharjo & Pramudibyanto, 2021).

These research gaps underscore the need for further investigation. Few studies have simultaneously assessed how psychological safety and sense of belonging shape first-year student engagement, particularly within the Indonesian higher education context. Given that the early stages of university life are critical in determining sustained academic involvement, the challenges of hierarchical academic culture, students' passive tendencies, and the lack of psychosocial support highlight the importance of context-sensitive analysis. Accordingly, this study addresses the following research questions: (1) whether psychological safety significantly influences first-year students' engagement, (2) whether sense of belonging significantly influences their engagement, and (3) whether both variables together exert a simultaneous effect on students' engagement levels.

The present study aims to examine the influence of psychological safety and sense of belonging on the classroom engagement of first-year students. Based on the theoretical framework and previous empirical findings, this study hypothesizes that: (H1) psychological safety positively and significantly affects student engagement; (H2) sense of belonging positively and significantly influences student engagement; and (H3) both variables jointly contribute to enhancing first-year students' classroom engagement. Theoretically, this research seeks to enrich the educational psychology literature by emphasizing the role of psychosocial factors in student engagement.

Reasearch Methods

This study employed a quantitative approach with an associative research design to assess the role of psychological safety and sense of belonging on the classroom engagement of the 2024 cohort after completing their first year of study in the Office Administration Education Program at Universitas Sebelas Maret. The study focused on testing causal relationships among variables that could be empirically measured using numerical data.

The study population consisted of 93 students. The sample size was calculated using Slovin's formula with a 5% margin of error, yielding a minimum of 75 participants. Simple random sampling was employed to give each member of the population an equal opportunity to be selected, thereby enhancing representativeness and minimizing bias.

The research instruments covered three main variables. The validity and reliability of these instruments were not retested in this study because each scale had already been formally validated and widely used in prior research. Psychological safety was measured using the Psychological Safety Scale developed by Edmondson (1999), which contains seven items and has demonstrated good reliability (Cronbach's $\alpha = 0.82$). Sense of belonging was assessed with the Sense of Belonging Instrument (Hagerty & Patusky, 1995), consisting of 13 items and showing acceptable validity and reliability ($F = 5.69$, $p = 0.01$). Student engagement was measured using the Indonesian version of the University Student Engagement Inventory (USEI) adapted and validated by Maroco et al. (2016) and Prananto (2025), with 15 items across cognitive, affective, and behavioral dimensions (Cronbach's $\alpha > 0.82$). All items were rated on a five-point Likert scale.

Data were collected via an online questionnaire distributed through Google Forms, ensuring confidentiality and voluntary participation. The analysis was conducted using JASP with multiple linear regression. Preliminary assumption tests included checking residual normality (Q-Q plot), multicollinearity (collinearity diagnostics), and autocorrelation (Durbin–Watson test). Additionally, heteroscedasticity and linearity tests were conducted as essential prerequisites for multiple regression analysis. The heteroscedasticity test determined whether the variance of residuals remained constant across observations, while the linearity test examined whether the relationship

between independent variables and the dependent variable followed a linear pattern.

The analysis focused exclusively on multiple regression, consistent with the study's objective of assessing direct and simultaneous effects of predictor variables on engagement. The F-test was employed as part of the regression model to evaluate overall model fit, not as an ANOVA test for group mean differences. This methodological approach ensures the analysis remains aligned with the study's quantitative objectives and enhances the validity of the results.

Results and Discussion

Research Result

Describing respondent characteristics is essential in quantitative research because it provides context for the data, ensures representativeness, and aids in interpreting findings accurately (Saunders et al., 2019). In this study, respondent characteristics are presented based on age, gender, admission pathway, and program study preference.

Table 1
Distribution of Respondents by Age

Age (Years)	Frequency	Percentage (%)
19	63	84
20	12	16
Total	75	100

As shown in Table 1, the majority of respondents were 19 years old (84%), while only a small proportion were 20 years old (16%), indicating that most participants were first-year students within the typical age range for undergraduates.

Table 2
Distribution of Respondents by Gender

Gender	Frequency	Percentage (%)
Female	68	91.2
Male	7	8.8
Total	75	100

Table 2 presents the gender distribution of respondents, showing that most participants were female (91.2%) compared to only 8.8% male, reflecting the gender composition commonly found in education-related programs.

Table 3
Distribution of Respondents by Admission Pathway

Admission Pathway	Frequency	Percentage (%)
Mandiri	32	42.7
SNBT	26	34.7
SNBP	17	22.6
Total	75	100

As indicated in Table 3, 42.7% of students entered through the Mandiri pathway, followed by 34.7% via SNBT and 22.6% through SNBP, suggesting a relatively diverse admission background among respondents.

Table 4 shows that the majority of respondents (69.3%) selected the Office Administration Education Program as their first choice, implying a high level of initial interest and commitment toward the study program.

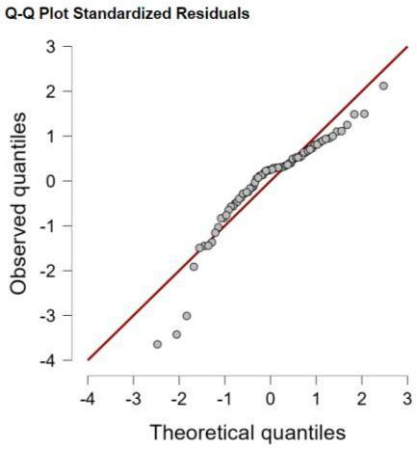
Table 4
Distribution of Respondents by Program Study Preference

Program Study Preference	Frequency	Percentage (%)
First choice	52	69.3
Second choice	20	26.7
Third choice	3	4.0
Total	75	100

In regression analysis, the accuracy and validity of parameter estimation depend on the extent to which the underlying statistical assumptions are satisfied. Classical assumption tests evaluate whether the regression model fulfills the requirements of homoscedasticity, normality, and the absence of multicollinearity (Wooldridge, 2016).

A normality test was conducted to determine whether the variables' data were normally distributed. According to Sujarweni (2015), data are considered normally distributed when the significance value exceeds 0.05.

Figure 1
Q-Q Plot Standardized Chart



Based on the Q-Q plot of standardized residuals in Figure 1, most data points closely followed the diagonal reference line, with only minor deviations at the extremes. This pattern indicates that the regression residuals were approximately normally distributed, thereby satisfying the normality assumption. Consequently, the application of parametric tests, including t-tests and F-tests, was deemed valid.

Multicollinearity refers to a condition in regression analysis where two or more independent variables exhibit high linear intercorrelations, complicating the isolation of their individual effects on the dependent variable. Gujarati (2016) notes that multicollinearity can inflate variance estimates, destabilize regression coefficients, and hinder interpretability.

Table 5
Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	X1	X2
M1	1	2.980	1.000	0.001	0.001
	2	0.014	14.682	0.169	0.086
	3	0.006	22.564	0.830	0.913

Table 5 shows the results of the collinearity diagnostics, which indicated that the highest condition index was 22.564, below the threshold value of 30, suggesting no severe multicollinearity. However, both X1 (0.830) and X2 (0.913) showed relatively high variance proportions in the third dimension, indicating the presence of moderate multicollinearity.

Heteroscedasticity is present when residuals exhibit non-constant variance across observations, leading to less precise regression estimates and questionable statistical significance (Wooldridge, 2016; Asteriou & Hall, 2015). According to Nachrowi and Usman (2015), non-constant residual variance violates classical regression assumptions and may bias coefficient interpretation.

Figure 2
Heteroskedasticity Chart

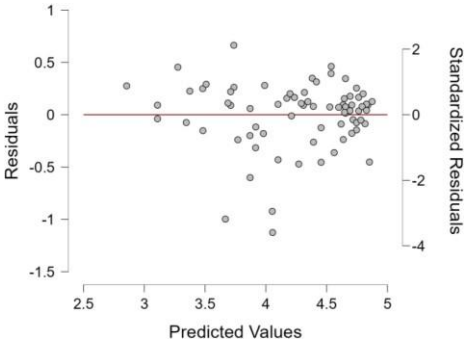


Figure 2 presents the scatterplot of predicted values against residuals, which revealed a random distribution of points around the horizontal axis without forming a discernible pattern. This indicates the absence of heteroscedasticity, thereby confirming homoscedasticity of residuals in the regression model.

The autocorrelation test was employed to determine whether residuals from one observation were correlated with residuals from another. Autocorrelation is typically a concern in time-series data, where successive observations are naturally dependent (Brooks, 2019).

Table 6
Durbin-Watson Autocorrelation Test Results

Autocorrelation	Statistic	p
-0.029	1.993	0.974
0.144	1.587	0.070

According to the Durbin-Watson analysis presented in Table 6, the statistic of 1.587 and p-value of 0.070 indicate that the residuals did not exhibit significant autocorrelation, as the value is close to the ideal reference of 2 and the p-value exceeds the 0.05 threshold.

Multiple Linear Regression Analysis

Regression analysis serves as a statistical tool to determine the strength and direction of relationships among variables (Ghozali, 2018). Multiple linear regression, in particular, examines how a single dependent variable (Y) is linearly related to multiple independent variables (X).

Table 7
Multiple Linear Regression Model Summary

Model	R	R^2	Adjusted R^2	df1	df2
M0	0.000	0.000	0.000	0	74
M1	0.858	0.737	0.730	2	72

The regression analysis presented in Table 7 revealed an R value of 0.858, indicating a very strong association between psychological safety (X1) and sense of belonging (X2) with student engagement (Y). The R^2 of 0.737 suggests that 73.7% of the variance in student engagement can be accounted for by X1 and X2, with the remaining 26.3% attributable to other factors not included in the model. The adjusted R^2 of 0.730 further supports the reliability and stability of the regression model.

In quantitative research, hypotheses serve as tentative statements that predict relationships between variables and guide statistical testing. Hypothesis testing is a fundamental procedure for determining whether empirical evidence supports or rejects the assumptions proposed in a study. According to Saunders et al. (2019), hypotheses provide a logical framework that connects theoretical concepts with empirical data, enabling researchers to test causal relationships systematically.

The t-test in regression analysis examines whether each independent variable significantly influences the dependent variable. Specifically, it tests whether the estimated regression coefficient is statistically distinct from zero. According to Hair et al. (2019), the t-test allows researchers to identify the unique impact of each predictor on the outcome variable.

Table 8
Results of t-test

Variable	B	SE	Beta	t	p
(Intercept)	0.791	0.256	—	3.087	0.003
X1	0.257	0.084	0.286	3.048	0.003
X2	0.580	0.088	0.615	6.559	< 0.001

According to the t-test results presented in Table 8, both predictors exerted statistically significant effects on the dependent variable. Specifically, psychological safety (X1: B = 0.257, t = 3.048, p = 0.003) positively and significantly affected student engagement. Sense of belonging (X2: B = 0.580, t = 6.559, p < 0.001) demonstrated a stronger and highly significant influence, indicating that X2 plays a more dominant role in explaining variations in student engagement.

The F-test evaluates whether the predictors jointly explain a significant proportion of variance in the dependent variable. According to Montgomery (2017), this test assesses the overall significance of the regression model.

Table 9
Result of ANOVA Test

Source	SS	df	MS	F	p
Regression	18.888	2	9.444	93.753	< 0.001
Residual	7.253	72	0.101	—	—
Total	26.141	74	—	—	—

The ANOVA results presented in Table 9 indicate that the model containing X1 and X2 significantly predicted the dependent variable, F(2, 72) = 93.753, p < 0.001. The regression sum of squares (18.888) relative to the residual sum of squares (7.253) indicates that most of the total variance (26.141) was captured by the independent variables. These findings provide robust evidence that the inclusion of psychological safety and sense of belonging significantly improves prediction compared to an intercept-only model.

In multiple regression, the coefficients table reveals the effect of each explanatory variable on the dependent variable. Unstandardized coefficients (B) indicate how much the dependent variable changes for a one-unit increase in the predictor, while standardized coefficients (Beta) allow comparison of the relative importance of predictors. Hair et al. (2019) note that coefficients are central to interpreting regression results.

Table 10
Result of Coefficient Test

Predictor	B	SE	Beta	t	p
Constant	0.890	0.167	—	5.323	< 0.001
X1 (Psychological Safety)	0.257	0.084	0.257	3.048	0.003
X2 (Sense of Belonging)	0.580	0.088	0.580	6.559	< 0.001

The regression coefficient results presented in Table 10 reveal that both X1 and X2 exerted significant effects on the dependent variable. The intercept (B = 0.890, p < 0.001) indicates the baseline level of Y in the absence of predictors. Psychological safety coefficient of 0.257 (t = 3.048, p = 0.003) confirms a significant positive contribution, meaning that a unit increase in psychological safety corresponds to a 0.257 increase in student engagement, ceteris paribus. Sense of belonging exhibited a larger coefficient of 0.580 (t = 6.559, p < 0.001), suggesting a stronger contribution to the variation of Y. Collectively, these findings affirm that both predictors are crucial determinants of student engagement, with sense of belonging emerging as the dominant explanatory factor.

Discussion

The classical assumption tests confirmed that the regression model met the required statistical criteria. The multicollinearity test revealed no serious collinearity among the predictors, as indicated by condition index values below the critical threshold, ensuring that each independent variable contributed unique explanatory power. Similarly, the autocorrelation test produced a coefficient close to zero, suggesting the absence of serial correlation in the residuals. These findings validate the appropriateness of the regression model for hypothesis testing.

The analysis indicates that the predictors jointly exerted a significant influence on the dependent variable. The ANOVA results demonstrate that the model explains a significant proportion of variance, F(2, 72) = 93.753, p < 0.001, with a regression sum of squares of 18.888 compared to a residual sum of squares of 7.253, demonstrating substantial explanatory power.

The coefficients table provided detailed insights into the individual contributions of each predictor. Both predictors significantly affected the dependent variable, with psychological safety (B = 0.257, p = 0.003) exerting a positive influence, while sense of belonging (B = 0.580, p < 0.001) emerged as the dominant predictor with a stronger and highly significant effect. These findings highlight that while both factors are important, sense of belonging contributes more substantially to variations in student engagement.

The t-test results aligned with these observations, confirming that each predictor independently demonstrated a statistically significant relationship with student engagement. The consistent significance across both t-test and ANOVA strengthens the robustness of the findings, thereby supporting the rejection of the null hypotheses. The empirical evidence underscores the theoretical expectation that psychological safety and sense of belonging jointly and individually play crucial roles in shaping student engagement.

These findings are consistent with Newman et al. (2017), who found that psychological safety enhances learners' willingness to take intellectual risks and actively participate in discussions. This alignment suggests that when students perceive their classroom as a safe space for expression, they are more likely to engage cognitively and behaviorally. Similarly, Frazier et al. (2017) confirmed that psychological safety is a strong determinant of engagement and innovation, although their research focused primarily on workplace contexts. The present study extends this finding into the educational setting of Indonesian first-year students.

Furthermore, the significant effect of sense of belonging supports Strayhorn's (2019) argument that belongingness serves as a fundamental motivator of persistence and academic involvement. Thomas (2021) also emphasized that feeling valued and connected within the learning community strengthens students' motivation to participate. In contrast, Raharjo and Pramudibyanto (2021) highlighted that hierarchical academic culture in Indonesia often limits students' voice and confidence to engage. The present study adds new insight by demonstrating that both psychological safety and sense of belonging can counteract this passivity and foster a more inclusive learning environment.

Based on both partial and simultaneous analyses, psychological safety and sense of belonging make substantial contributions to enhancing first-year student engagement. Therefore, efforts to strengthen students' sense of psychological safety and belonging within the campus environment constitute important strategies for promoting student participation and involvement.

Conclusion

This study demonstrates that psychological safety and sense of belonging significantly influence the engagement of first-year students in the Office Administration Education Program, Cohort 2024. Students who perceive a higher degree of psychological security and experience stronger belonging within the academic community tend to participate more actively in both academic and non-academic activities. These findings highlight that engagement is not solely an individual disposition but is strongly shaped by the psychosocial context of the learning environment. The results carry both theoretical and practical implications. Theoretically, the study contributes to the refinement of student engagement frameworks by integrating psychosocial dimensions into the analysis of learning involvement, thereby underscoring the relational and contextual nature of engagement. Practically, the findings suggest that higher education institutions should foster inclusive and supportive classroom climates where students feel safe to express ideas and develop a sense of community. Such efforts can enhance motivation, participation, and academic adjustment, particularly during the critical transition period of the first year. Despite these contributions, the study has limitations that must be acknowledged. The sample was limited to a single program and relied on self-reported measures, which may affect the generalizability and objectivity of the findings. Future research should expand the scope by including more diverse student populations, employing longitudinal or mixed-method approaches, and further examining the mechanisms linking psychological safety and sense of belonging to engagement. In sum, this study advances theoretical discourse by affirming that engagement is shaped not only by individual agency but also by the broader psychosocial environment, offering both scholarly and practical insights for strengthening student participation in higher education.

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