

Original Article

Psychological Predictors of Academic Performance in Research Writing among Undergraduate Students: Evidence from a Philippine Local College

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Abstract

Academic performance in undergraduate research remains a key concern, as students often struggle to translate research experiences into measurable academic outcomes despite exposure to similar learning environments. Psychological factors such as research self-efficacy, scientific identity, and research beliefs are theorized to influence academic success; however, their direct effects on performance remain underexplored, particularly in local higher education contexts. This study examined the predictive influence of research self-efficacy, scientific identity, and research beliefs on the academic performance of undergraduate thesis students in a local Philippine college. Using a descriptive–correlational design, data were collected from 666 undergraduate students through validated survey instruments and analyzed using descriptive statistics and multiple linear regression. Assumptions for regression analysis were tested and satisfied prior to analysis. Findings revealed that research self-efficacy was moderate, while research beliefs and scientific identity were high. The regression model was statistically significant but demonstrated limited explanatory power ($R^2 = 0.014$), indicating that the predictors explained only a small proportion of the variance in academic performance. Among the predictors, only research beliefs significantly predicted academic performance ($\beta = -0.166$, $p = .013$), showing a small negative association. In contrast, research self-efficacy and scientific identity were not significant predictors. The findings suggest that research-related psychological

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factors may function as supplementary rather than primary determinants of academic performance. However, the observed association regarding research beliefs should be interpreted with caution due to the model's limited explanatory power and potential methodological and contextual influences. Future studies are encouraged to examine broader academic, instructional, and well-being factors using more standardized measures of academic performance.

Keywords: academic performance, research beliefs, research self-efficacy, scientific identity

1. Introduction

Academic performance remains a key indicator of student success in higher education, influencing retention rates, employability, and institutional outcomes (Pandita & Kiran, 2023; Setiawan et al., 2020). In the context of undergraduate research, academic outcomes have become increasingly important as institutions emphasize research-based learning as a pathway to developing higher-order skills. However, despite this emphasis, many students struggle to translate research experiences into measurable academic achievement. Globally, approximately half of college students demonstrate only moderate levels of research competence (Tapullima-Mori et al., 2025), with notable weaknesses in advanced literature review, methodological design, and statistical analysis (Ciraso-Calí et al., 2022; Liang et al., 2022). While structured research training (Shen et al., 2024), high-quality mentoring (Cutillas et al., 2024), and effective study skills (Zahra et al., 2024) have been shown to enhance both research competence and academic performance. However, research competence does not always translate into measurable academic performance.

Contemporary theoretical perspectives explain this gap by emphasizing the role of internal psychological processes in shaping academic behavior and performance. Social Cognitive Theory (SCT) posits that individuals' beliefs about their capabilities influence their motivation, persistence, and achievement, highlighting self-efficacy as a central determinant of performance (Bandura, 1986). Similarly, Expectancy-Value Theory (EVT) suggests that students' beliefs about the value and importance of tasks influence their effort and academic choices (Eccles et al., 1983). The Theory of Planned Behavior, in contrast, explains how attitudes, perceived control, and social expectations shape behavior (Ajzen, 1991). Together, these perspectives suggest that academic outcomes are not solely determined by external conditions but are also shaped by internal cognitive and motivational mechanisms. Empirical studies support this view, showing that self-efficacy is a strong predictor of academic success (Basileo et al., 2024; Chen, 2024; Honicke & Broadbent, 2016), task value influences

persistence and achievement (Eccles & Wigfield, 2020; Doménech-Betoret et al., 2017; Urhahne & Wijnia, 2023), and identifying as a “science person” is associated with improved academic performance, stronger belonging, and greater commitment to future careers (Chen et al., 2020; Robinson et al., 2019; Zhu & Luo, 2024).

In undergraduate research contexts, students often encounter similar learning environments, mentoring structures, and academic expectations; yet their academic performance varies considerably. This variation suggests that structural factors alone, such as mentoring conditions, do not fully explain student outcomes. While prior studies have emphasized the role of mentoring and institutional support in shaping research engagement (Alzen et al., 2021; Eather et al., 2022), emerging evidence highlights the importance of internal psychological mechanisms in influencing academic performance. Among these, research self-efficacy, research beliefs, and scientific identity have attracted increasing attention.

Research self-efficacy reflects students’ perceived capability to perform research tasks and has consistently been identified as a strong predictor of both research engagement and academic performance (Liviñi et al., 2021; Miao et al., 2025; Rimban, 2025; Tiyuri et al., 2018). Students who believe they can conduct research are more likely to persist with complex tasks and achieve better academic outcomes. Research beliefs, by contrast, capture students’ perceptions of the value and cost of engaging in research. Evidence suggests that students are motivated to engage in research when they find it interesting and useful, even as they recognize the opportunity costs (Ceyhan & Tillotson, 2020). When students perceive research as meaningful and worthwhile despite these costs, they are more likely to sustain effort and perform well academically. Scientific identity further strengthens this process by reflecting the extent to which students identify with the research community. A strong scientific identity has been linked to increased research participation, persistence in academic pathways, and greater confidence in conducting research (Chemers et al., 2011; Syed et al., 2018), suggesting that students who internalize a research-oriented identity are more likely to sustain engagement and achieve academic success.

While well-established relationships exist, most research concentrates on research engagement, motivation, and career goals, with less attention to how psychological factors directly impact academic success. This gap is especially pronounced in local higher education, where students experience similar learning environments but achieve different academic outcomes. In the Philippines, particularly in local colleges, understanding these differences is vital for improving teaching strategies, mentoring, and research training programs.

To address this gap, the present study examines the predictive influence of research self-efficacy, scientific identity, and research beliefs on the academic performance of undergraduate thesis students in a local Philippine college. By linking research-specific psychological constructs to objective academic outcomes, this study extends existing theoretical frameworks to performance-based contexts and provides contextually relevant evidence to enhance undergraduate research and academic

success in developing higher education systems. Specifically, this study seeks to answer the following questions:

Specifically, this study sought to answer the following questions:

1. What are the levels of research self-efficacy, scientific identity, and research beliefs among the respondents?
2. What is the level of academic performance of the respondents based on their research grades?
3. Do research self-efficacy, scientific identity, and research beliefs significantly predict students' academic performance?
4. To what extent do research self-efficacy, scientific identity, and research beliefs collectively explain the variance in students' academic performance?

2. Theoretical Framework

This study is anchored in Social Cognitive Theory (Bandura, 1986), and is further supported by the Theory of Planned Behavior (Ajzen, 1991) and Expectancy-Value Theory (Eccles et al., 1983) to explain how research-related psychological factors influence academic performance.

Social cognitive theory holds that individuals' beliefs about their capabilities strongly shape behavior and performance (Bandura, 1986). Within this framework, research self-efficacy refers to students' perceived ability to successfully complete academic and research tasks, and it directly influences persistence and achievement. Students with higher research self-efficacy are more likely to undertake complex academic work, persist through challenges, and produce higher-quality results. Evidence indicates that factors such as mastery experiences, social persuasion, and mentorship support increase students' confidence in managing academic tasks. Research shows that research self-efficacy predicts higher research engagement (Liviñi et al., 2021) and academic achievement (Miao et al., 2025; Rimban, 2025; Tiyuri et al., 2018). Despite strong links between self-efficacy and academic outcomes, a gap remains in research on research-specific self-efficacy as a predictor of overall academic performance, especially among undergraduate thesis students in local higher education institutions.

The theory of planned behavior (Ajzen, 1991) complements this perspective by explaining how cognitive factors shape behavior. In this study, scientific identity represents internalized social expectations or subjective norms. Scientific identity reflects how much students see themselves as legitimate members of the scientific community, influenced by their skills, performance, and recognition (Carlone & Johnson, 2007). Research consistently indicates that students with a strong scientific identity are more committed to academic and research tasks, persist through challenges, and are more engaged in scholarly activities. Recognition from the academic community is vital in strengthening this identity, as this validation enhances students' sense of belonging and motivation (Pfeifer et al., 2024). Studies consistently

show that a strong scientific identity leads to increased research participation, greater commitment to academic careers, and higher research self-confidence (Chemers et al., 2011; Syed et al., 2018). Students who find research meaningful, enjoyable, and socially valuable tend to develop more positive attitudes toward their academic work and show greater motivation to excel. Favorable beliefs boost willingness to participate in academic tasks, whereas negative perceptions, like high opportunity costs, can diminish effort and performance. Although prior studies have established the role of research beliefs in shaping research engagement and intention, limited research has examined their direct influence on academic performance outcomes, especially in developing and local educational contexts.

According to expectancy-value theory, a key factor influencing motivation to perform a behavior is the task's perceived values, including its importance, usefulness, and enjoyment (Eccles et al., 1983). This theory explains how students' valuation of research tasks shapes their motivation and academic engagement. In this study, research beliefs include students' views on the importance, relevance, and costs of participating in research activities, including intrinsic and communal value and perceived opportunity cost. This means that research beliefs measures the sacrifices students perceive they must make to engage in research (opportunity costs), the potential benefits research can bring to a larger community or society (communal value), and how interesting or enjoyable research is (intrinsic value) (Barron & Hulleman, 2015; Brown et al., 2015). When students perceive research as valuable, meaningful, and worth the effort, they are more likely to sustain academic effort and achieve better outcomes.

Integrating these theoretical perspectives, the study posits that research self-efficacy, scientific identity, and research beliefs are key psychological predictors of academic performance. These internal mechanisms shape how students interpret their academic experiences and determine the level of effort and persistence they apply to a research writing task.

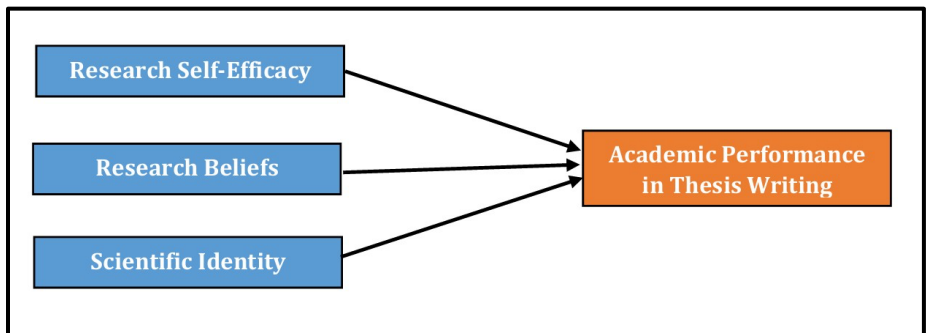


Figure 1. Schematic diagram on the interplay of variables.

3. Methodology

This study used a descriptive-correlational design to examine how psychological factors related to research influence students' academic performance. This approach is appropriate for examining relationships among naturally occurring variables without manipulation, making it suitable for educational and behavioral research (Creswell & Creswell, 2018). The study initially targeted 1,432 undergraduate students enrolled in Thesis 2 or who had completed their thesis during the first semester of Academic Year 2025–2026 at a local college in Misamis Occidental, Philippines, using total enumeration sampling. Of the target population, 920 students participated in the online survey.

After data screening and validation, 666 respondents remained for the final analysis. The decrease in sample size was due to the exclusion of cases with incomplete, missing, or non-numeric academic grades, such as responses marked "Pass." Since multiple regression analysis requires continuous numeric data for the dependent variable, these cases could not be included in the analysis. The non-numeric grades were partly due to the institution's previous grading system for research courses, which used "Passed" and "Failed" remarks before switching to a numerical format. Consequently, some respondents were still graded under the older system during the study. While the final sample size was still statistically adequate for regression analysis and capable of identifying meaningful effects (Tabachnick & Fidell, 2019), excluding respondents without numerical grades could introduce selection bias. Therefore, the results should be interpreted with caution, especially regarding their representativeness and generalizability to all undergraduate research students at the institution.

Data were gathered using structured surveys assessing research beliefs, scientific identity, and research self-efficacy. The Research Beliefs (RB) Scale, adapted from Gaspard et al. (2015), evaluated intrinsic value, communal value, and opportunity cost on a 5-point Likert scale. After pilot testing, two items were removed due to low item–total correlations, resulting in a refined measure with reliable psychometric properties. The Scientific Identity (SI) Scale, a researcher-developed instrument based on identity literature (Carlone & Johnson, 2007; Chemers et al., 2011), measured normative beliefs and motivation to comply, reflecting students' internalization of a research-oriented identity within the Theory of Planned Behavior framework. The Research Self-Efficacy (RSE) Scale, adapted from Agatep and Villalobos (2020), included 18 items across conceptual, methodological, and writing domains, capturing students' perceived ability to perform research tasks. All instruments used 5-point Likert scales, with higher scores indicating stronger psychological attributes.

The instrument validation process was comprehensive and involved multiple stages. Expert review verified face validity, while content validity was assessed using item-level and scale-level Content Validity Indices (I-CVI and S-CVI) over two review rounds with panels of experts. Furthermore, pilot testing with 30 students evaluated reliability and helped clarify items. These procedures adhere to best

practices for establishing content validity and measurement reliability in educational research (Polit & Beck, 2006). Data collection was carried out via an online survey, approved by the institution and coordinated with academic administrators, including deans, research coordinators, and course instructors. Participation was voluntary, with students completing the survey during scheduled academic activities to ensure higher response rates.

Data analysis utilized descriptive statistics, such as mean and standard deviation, to summarize the study variables. Multiple linear regression was employed to explore how research self-efficacy, scientific identity, and research beliefs predict academic performance. Regression is suitable for assessing the strength and direction of the effects of multiple predictors on a continuous outcome (Field, 2018). The initial dataset consisted of 920 respondents; however, only 666 participants provided valid numerical grades required for the dependent variable. Cases with missing or non-numeric responses (e.g., "Pass") were excluded from the analysis, as they could not be used in regression modeling. This approach is consistent with standard data-screening procedures, in which complete data on the dependent variable are required for valid estimation. While the exclusion of incomplete cases may introduce potential non-response bias, the final sample size remained adequate for statistical analysis and interpretation.

Before running the model, the assumptions of linearity, homoscedasticity, normality, and the absence of multicollinearity were checked to ensure valid results. Assumption testing confirmed that the data met the requirements for multiple regression. Relationships between variables were linear, residuals were approximately normally distributed, and homoscedasticity was observed. Multicollinearity was not detected, with VIF values below the acceptable threshold.

Ethical standards were rigorously followed throughout the study. All participants provided informed consent before data collection, confirming voluntary participation and understanding of the study's aims. Confidentiality and anonymity were preserved by removing identifying information and securing data. These procedures adhere to key ethical principles in social science research, including respect for persons, beneficence, and data privacy (American Psychological Association, 2017).

4. Results

Table 1 presents the descriptive statistics of the study variables. Research self-efficacy yielded a mean score of 3.48 (SD = 0.917), indicating a moderate level, while research beliefs (M = 3.75, SD = 0.806) and scientific identity (M = 3.62, SD = 0.838) were interpreted as high. Academic performance showed a mean of 88.95 (SD = 4.883), suggesting generally high achievement among respondents.

Table 1. Descriptive statistics of variables.

Variable	Mean	SD	Interpretation
Research Self-Efficacy	3.48	.917	Moderate
Research Beliefs	3.75	.806	High
Scientific Identity	3.62	.838	High
Academic Performance	88.95	4.883	-

Note: 4.50-5.00 –Very High; 3.50-4.49 – High; 2.50-3.49– Moderate;
1.50-2.49 – Low; 1.00-1.49 – Very Low

A multiple linear regression analysis was conducted to examine whether research self-efficacy, research beliefs, and scientific identity significantly predict academic performance. As shown in Table 2, the overall model was statistically significant, $F(3, 662) = 3.13$, $p = .025$, indicating that the set of predictors collectively explains variation in academic performance. However, the model explains only a small proportion of the variance ($R^2 = 0.014$; Adjusted $R^2 = 0.0095$), suggesting that these psychological factors have limited explanatory power in predicting students' grades.

Table 2. Model summary.

Model	R	R ²	Adjusted R ²	F	p-value
1	0.118	0.0140	0.00950	3.13	0.025

Table 3 displays the results of a multiple regression analysis forecasting academic performance in research. The analysis showed that research beliefs were the only significant predictor, with a β of -0.166 and $p = .013$. Interestingly, the findings revealed a small negative association between research beliefs and academic performance. However, given the model's limited explanatory power, this relationship should be interpreted with caution and treated as preliminary, warranting further investigation in future studies. In contrast, research self-efficacy had a marginal impact ($\beta = 0.118$, $p = .051$), failing to reach typical levels of statistical significance. Similarly, scientific identity was not significant ($\beta = 0.093$, $p = .191$), indicating that identifying as a "researcher" does not directly lead to better academic performance in this sample. However, given the model's overall low explanatory power, the practical significance of these predictors remains limited.

Table 3. Multiple regression analysis predicting academic performance.

Predictor	B	SE	β	t	p-value
(Constant)	87.424	0.931	-	93.94	< .001
Research Self-Efficacy	0.687	0.351	0.1179	1.96	0.051
Research Beliefs	-0.886	0.357	-0.1664	-2.48	0.013
Scientific Identity	0.563	0.430	0.0929	1.31	0.191

Table 4 shows the collinearity statistics among variables. Results indicate that all predictors fall within acceptable thresholds, with VIF values ranging from 2.44 to 3.38. This suggests that there is no serious multicollinearity issue, and each predictor contributes independently to the model.

Table 4. Collinearity diagnostics.

Predictor	Tolerance	VIF
Research Self-Efficacy	0.410	2.44
Research Beliefs	0.330	3.03
Scientific Identity	0.296	3.38

5. Discussion

This study examined the influence of research self-efficacy, scientific identity, and research beliefs on the academic performance of undergraduate thesis students. The findings revealed that, although the regression model was statistically significant, its overall explanatory power was weak ($R^2 = 0.014$), indicating that research-related psychological factors account for only a small proportion of the variance in students' academic performance. Among the predictors, only research beliefs emerged as a significant factor and, notably, showed a negative relationship with academic performance.

From the perspective of SCT, research self-efficacy is expected to play a central role in influencing performance outcomes, as individuals who believe in their capabilities are more likely to persist in challenging tasks and achieve higher levels of success (Khatony et al., 2021; Miao et al., 2025; Rimban, 2025; Tiyuri et al., 2018). In the present study, research self-efficacy showed a positive but non-significant effect on academic performance. This suggests that while confidence in conducting research may support engagement in research-related activities, it does not necessarily translate into higher academic grades (Pratiwi et al., 2021). One possible explanation is that academic performance, particularly in structured coursework, may depend more on cognitive ability, assessment strategies, and compliance with academic requirements than on perceived research capability alone. This finding aligns with emerging evidence that self-efficacy may exert stronger effects on research productivity and identity rather than direct performance outcomes (Livinti et al., 2021).

Similarly, scientific identity did not significantly predict academic performance, despite its theoretical importance. Drawing on TPB, scientific identity refers to internalized social expectations, or subjective norms, that shape behavioral intentions. While prior studies have linked strong scientific identity to increased research participation and persistence (Chemers et al., 2011; Pfeifer et al., 2024; Syed et al., 2018), the present findings suggest that identity alone may not directly influence measurable academic outcomes such as grades. This indicates that identifying as a "researcher" may enhance motivation and long-term academic orientation, but its

effect on short-term performance indicators may be indirect or mediated by other variables such as study habits or task management.

In contrast, research beliefs emerged as a significant predictor, but were negatively associated with academic performance. Among the theoretical perspectives utilized in this study, EVT provided the most direct explanatory lens for interpreting the observed association involving research beliefs. While EVT posits that higher task value should increase motivation and performance (Barron & Hulleman, 2015; Brown et al., 2015), the present findings revealed a small negative association between research beliefs and academic performance. One possible interpretation is that students with stronger research beliefs may also become more aware of the demands, time investment, and opportunity costs associated with research activities (Du et al., 2022; Stadler et al., 2024). However, this explanation remains tentative, particularly given the model's limited explanatory power and the possibility that other unmeasured factors, such as grading variations, omitted variables, or the use of research grades as the sole indicator of academic performance, may have influenced the results.

The negative association observed in this study suggests that stronger research beliefs may not necessarily correspond with higher academic performance. Although this pattern may reflect trade-offs between research-related demands and other academic responsibilities, this interpretation should be approached with caution. Previous findings may have shown that higher perceived costs are consistently associated with weaker motivation and, often, lower achievement among students (Ceyhan & Tillotson, 2020; Christiaans et al., 2024; Jiang et al., 2018).

Additionally, the model's limited capacity to explain variance highlights that academic performance is a complex, multidimensional construct influenced by numerous factors beyond psychological readiness. Since the predictors explained only 1.4% of the variance in academic performance, the remaining variance may be attributed to other academic, contextual, instructional, and personal factors not included in the present study.

Although earlier research shows that self-efficacy positively correlates with achievement, this relationship often depends on active engagement in academic activities such as presenting and publishing research (Lindgreen et al., 2021; Martínez et al., 2019). Likewise, academic adjustment, the ability of students to cope with college demands, serves as a mediator between psychological, motivational, and behavioral factors and academic success (Alqalah et al., 2025; Costa et al., 2024). Moreover, overall well-being, including stress, anxiety, and mental health, significantly impacts academic results (Casiraghi et al., 2022; Kassaw et al., 2024; Mehta, 2022; Rožman et al., 2025), and supportive social and learning environments further promote academic achievement (Khawwaf et al., 2024; Rožman et al., 2025).

In summary, the findings suggest that although research self-efficacy, scientific identity, and research beliefs are theoretically relevant constructs, their direct associations with academic performance in the present study were relatively modest and of limited explanatory power.

6. Conclusion

This study examined the influence of research self-efficacy, scientific identity, and research beliefs on the academic performance of undergraduate thesis students. The findings indicate that, although the regression model was statistically significant, its explanatory power was minimal, suggesting that these psychological factors account for only a small portion of students' academic outcomes. Among the predictors, only research beliefs significantly influenced academic performance, and notably in a negative direction. The findings revealed a small negative association between research beliefs and academic performance. While this pattern may indicate trade-offs between research demands and opportunity costs, the interpretation should be approached with caution given the model's limited explanatory power and the potential influence of unmeasured academic, contextual, or measurement-related factors. In contrast, research self-efficacy and scientific identity, while theoretically important, did not directly predict academic performance, suggesting that their influence may operate indirectly through engagement, persistence, or other mediating factors.

In summary, the findings affirm that academic performance is a multidimensional construct shaped by a broader set of cognitive, behavioral, and contextual factors, not solely by psychological readiness. Thus, research-related psychological constructs should be viewed as supplementary rather than primary determinants of academic success.

7. Recommendations

The following recommendations should be interpreted cautiously given the model's limited explanatory power. Higher education institutions may consider providing balanced academic and research support systems to help students manage research-related demands alongside other academic responsibilities. In addition, instructors and research advisers may incorporate structured support, such as time-management tips and phased research milestones, to help students manage competing academic responsibilities effectively. Concurrently, programs may align assessment methods with research involvement to ensure that students' research efforts are accurately reflected in their grades.

8. Limitations of the Study

Consequently, this study is limited by its reliance on research grades as the sole indicator of academic performance, rather than on broader academic measures such as cumulative grade-point average. In addition, research grading in higher education may involve variations in rubrics, adviser expectations, and panel evaluations across departments, which could introduce subjectivity and measurement variability into the dependent variable. Consequently, the observed relationships should be interpreted

with caution, as these factors may have contributed to the regression model's low explanatory power. Academic performance is naturally multidimensional and can encompass motivation, satisfaction, skill development, and the achievement of personal goals. Future studies might include alternative indicators of success and examine other factors, such as academic adjustment, well-being, and instructional quality, to gain a more comprehensive view of student performance.

Another key limitation involves the reduction of the final analytical sample. While 920 students participated in the survey, only 666 respondents had valid numerical grades suitable for regression analysis, as cases with missing or non-numeric grades, such as "Pass," could not be treated as continuous variables. Since students with incomplete or non-numeric grades might systematically differ from those in the final sample, selection bias is possible, which could explain the relatively high average academic grade and affect the external validity and generalizability of the results. Additionally, the shift from a "Passed/Failed" grading system to numerical grading in research courses may have caused inconsistencies in measuring academic performance. Therefore, these methodological and institutional limitations should be considered when interpreting the findings, and future research should aim to use more standardized and comprehensive indicators of academic success across departments and programs.

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Conflict of Interest Statement

The authors declare no conflicts of interest regarding the publication of this study.

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