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Self-Efficacy and Academic Achievement among College Students

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Abstract

Self-efficacy refers to an individual's belief in their capability to organize and perform actions required to achieve desired outcomes. In education, students' beliefs about their academic capabilities may influence persistence, effort, learning strategies, and achievement. The present illustrative study examines the relationship between self-efficacy and academic achievement among college students using a synthetic dataset of 120 hypothetical participants. Self-efficacy was represented by a standardized score, while academic achievement was represented by percentage marks. Descriptive statistics, Pearson correlation, and simple linear regression were used to demonstrate a possible empirical analysis. The synthetic results show a positive association between self-efficacy and academic achievement. The findings are presented only as an example of how an empirical research paper may report results and should not be generalized to an actual student population.

Keywords: self-efficacy, academic achievement, college students, motivation, educational psychology, higher education

1. Introduction

Academic achievement is influenced by a combination of cognitive, motivational, behavioural, and contextual factors. Students differ not only in their knowledge and skills but also in their beliefs about whether they can successfully complete academic tasks. These beliefs can affect the amount of effort students invest, the strategies they use, and their persistence when they encounter difficulty.

Bandura's social cognitive theory places self-efficacy at the centre of motivated behaviour. Self-efficacy is concerned with perceived capability rather than objective ability. A student who believes that they can master a difficult subject may be more willing to attempt challenging tasks, persist after setbacks, and regulate their learning. Conversely, low self-efficacy may be associated with avoidance, reduced effort, and negative expectations.

The present paper demonstrates an empirical research format for examining the relationship between self-efficacy and academic achievement. Because the user requested dummy data, all numerical results are explicitly synthetic and are included only for demonstration.

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2. Objectives

- To examine the level of self-efficacy among the hypothetical college-student sample.
- To examine the level of academic achievement in the hypothetical sample.
- To determine the relationship between self-efficacy and academic achievement.
- To illustrate whether self-efficacy statistically predicts academic achievement using simple linear regression.

3. Hypotheses

H_0: There is no statistically significant relationship between self-efficacy and academic achievement among college students.

H_1: There is a statistically significant positive relationship between self-efficacy and academic achievement among college students.

4. Methodology

4.1 Research Design

The study is presented in a quantitative, correlational research format. The numerical dataset is entirely synthetic and was generated solely to demonstrate an appropriate research-paper analysis.

4.2 Hypothetical Participants

The illustrative sample consists of 120 hypothetical college students. No real participants were recruited for the data presented in this paper.

4.3 Variables and Measures

Self-efficacy is represented by a hypothetical composite score ranging approximately from 35 to 95, with higher scores indicating stronger perceived academic self-efficacy. Academic achievement is represented by a hypothetical percentage score. In a real study, the self-efficacy measure should be a validated instrument with documented reliability and validity, and academic achievement should be obtained through an appropriate institutional or examination record with participant consent.

4.4 Statistical Techniques

Descriptive statistics were calculated for the two variables. Pearson's product-moment correlation was used to examine the association between self-efficacy and academic achievement. Simple linear regression was used to demonstrate whether self-efficacy predicts academic achievement.

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5. Results

5.1 Descriptive Statistics

Variable	N	Mean	SD	Minimum	Maximum
Self-efficacy	120	64.21	9.25	38.8	89.6
Academic achievement	120	90.14	8.27	69.0	98.0

The hypothetical sample had a mean self-efficacy score of 64.21 (SD = 9.25) and a mean academic achievement score of 90.14% (SD = 8.27).

5.2 Relationship between Self-Efficacy and Academic Achievement

Variables		N	Pearson r	Interpretation
Self-efficacy Academic achievement	↔	120	0.597	Positive association

Evidence from previous research provides a basis for interpreting the direction of this synthetic result. Honicke and Broadbent (2016), in a systematic review of 59 studies involving university students, reported a moderate positive relationship between academic self-efficacy and academic performance. Talsma et al. (2018) likewise found reciprocal longitudinal effects between self-efficacy and academic performance in adults. These studies support the plausibility of a positive association in the present illustrative dataset, but they do not validate the synthetic numerical result itself.

The synthetic Pearson correlation was r = 0.597, indicating a positive association between self-efficacy and academic achievement in the illustrative dataset. The coefficient of determination was $R^2 = 0.357$, meaning that approximately 35.7% of the variance in academic achievement is statistically associated with self-efficacy in this synthetic dataset. This is an illustrative statistical result and is not evidence about real students.

5.3 Regression Analysis

Predictor	B	SE B	t	p	R^2
Self-efficacy	0.534	0.066	8.088	0.0000	0.357

The illustrative regression equation is: Academic Achievement = 55.87 + (0.534 × Self-Efficacy). The synthetic slope is positive, indicating that higher self-efficacy scores are associated with higher predicted achievement scores in this demonstration dataset.

5.4 Academic Achievement by Self-Efficacy Level

Self-Efficacy Level	N	Mean Academic Achievement	SD
Low	40	84.46	9.02
Moderate	41	90.94	7.10

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High	39	95.12	4.19

The grouped illustration shows a general upward pattern in academic achievement across low, moderate, and high self-efficacy groups. The grouping is used only to make the synthetic pattern easier to interpret and does not constitute an independent inferential test.

The synthetic results demonstrate the type of relationship that educational psychology research may investigate between self-efficacy and academic achievement. The positive correlation suggests that students with stronger perceived academic capability tend to have higher achievement scores in the hypothetical dataset. This pattern is consistent with the theoretical proposition that self-efficacy can influence effort, persistence, goal setting, and self-regulated learning.

Bandura's social cognitive theory proposes that self-efficacy influences how individuals approach tasks and respond to obstacles. Students with stronger efficacy beliefs may be more likely to persist after receiving poor feedback, seek strategies for improvement, and regulate their learning. However, self-efficacy should not be interpreted as the sole explanation for academic achievement. Prior knowledge, teaching quality, study habits, socioeconomic conditions, motivation, learning resources, and assessment conditions may also contribute.

The magnitude of the illustrative association should be interpreted cautiously. Published evidence generally indicates a positive but non-deterministic relationship between self-efficacy and achievement. Honicke and Broadbent (2016) identified moderate associations and noted that effort regulation, deep-processing strategies, and goal orientations can influence the relationship. Talsma et al. (2018) further indicated that the relationship can operate in both directions over time. Therefore, the present synthetic finding is consistent in direction with established literature, while its exact coefficient should be treated only as an example.

Importantly, the statistical values in this paper are not real research findings. They demonstrate how results can be presented when an actual dataset is available. A real study would require participant recruitment, informed consent, a validated instrument, ethical approval where applicable, secure data management, and appropriate statistical analysis.

7. Educational Implications

- Teachers can provide achievable but challenging tasks that allow students to experience mastery.
- Constructive feedback can help students identify specific ways to improve rather than viewing ability as fixed.
- Peer modelling and examples of successful learning strategies may strengthen students' confidence.
- Students can be taught self-regulated learning strategies, including goal setting, planning, monitoring, and reflection.

- Counselling and academic-support services can help students who have persistently low academic confidence.

8. Limitations

The principal limitation is that the dataset is synthetic. Therefore, the numerical results have no empirical validity and cannot be generalized to college students. The paper also uses a simple bivariate model and does not control for potentially important confounding variables.

8.1 Comparison with Previous Studies

The illustrative results are directionally consistent with established research. Honicke and Broadbent (2016) synthesized 59 studies of university students and concluded that academic self-efficacy is moderately associated with academic performance. Talsma et al. (2018) extended this evidence by showing reciprocal longitudinal effects between self-efficacy and performance in adults. Earlier work by Schunk (1991) and Zimmerman (2000) explains how efficacy beliefs can influence motivation, persistence, self-regulation, and learning behaviour. Taken together, these studies provide theoretical and empirical support for expecting a positive relationship, although they do not support treating self-efficacy as the sole cause of academic achievement.

9. Conclusion

Self-efficacy is an important psychological construct in educational research because students' beliefs about their capabilities can influence their motivation, persistence, and learning behaviour. The illustrative analysis presented here demonstrates how a positive relationship between self-efficacy and academic achievement can be statistically examined. For an actual journal submission as an empirical paper, the synthetic dataset must be replaced with genuine, ethically collected data and the statistical results must be recalculated from those observations.

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