Study Habits as Mediators of Academic Performance in University Students

Alberto Remaycuna-Vasquez[1], Gilberto Carrión-Barco[2], Luz Angelica Atoche-Silva[3], Oscar Manuel Vela-Miranda[4], Víctor Eduardo Horna-Calderón[5], Fátima Rosalía Espinoza-Porras[6], Fiorela Anaí Fernández-Otoya [7]

Abstract

In recent years, various studies have been developed regarding academic performance related to variables such as self-esteem, cognitive commitment, motivation, among others. However, there is still a limitation to works that analyze to what extent study habits function as mediating factors of academic performance in students. In this sense, this work aimed to determine to what extent study habits explain academic performance in university students from northern Peru. For this purpose, a sample of 287 university students aged 16 to 25 years old was worked with, who were administered two questionnaires that evaluate study habits and perception of academic performance. The results showed highly significant correlations between the variables, and the linear regression process indicated that the proposed model on study habits to improve the conditions of academic performance is significant. It is suggested that the authorities of higher education institutions consider transversally and within teaching strategies, programs aimed at developing positive attitudes towards study that includes habits for fulfilling academic activities that improve the performance of young people in university.

Keywords: *Study habits, academic performance, learning, organization, activity planning.*

Introduction

The university problem related to academic performance is diverse and complex, ranging from psychological aspects related to the learning process to social, cultural, and economic mediators that characterize performance and improvement opportunities. One of the most important elements related to learning processes is study habits, which are a valid predictor of the results that students obtain in their passage through school and subsequently through university.

In this context, study habits are defined as the set of strategies and ways in which students learn and process information, generating adequate performance in academic activities (Chang et al., 2014; Pugatch & Wilson, 2018), which are acquired as people pursue goals in daily life (Carden & Wood, 2018). An important aspect to consider is the way in which study habits are developed, which determines the characteristics of academic performance (Quilez-Robres et al., 2021; Yeh et al., 2013). Analyzing the problem related to low student performance will help to articulate explanatory hypotheses about the risk factors that could influence the outcome of this educational process.

Internationally, research has shown that two out of every five students enrolled in university do not graduate within six years, meaning more than a third of students do not complete their studies within the time frame established by the university (Pugatch & Wilson, 2018). Young people who have problems with academic performance generally use negative study strategies during their formative years, indicating that it is essential to develop effective study skills and modify their attitudes towards

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[1] Universidad Privada Antenor Orrego; aremaycunav1@upao.edu.pe
[2] Universidad Tecnológica del Perú; C14051@utp.edu.pe
[3] Universidad Nacional de Frontera; latoche@unf.edu.pe
[4] Universidad César Vallejo; ovela@ucv.edu.pe
[5] Universidad San Ignacio de Loyola; victor.hornac@usil.pe
[6] Universidad Privada Antenor Orrego; fespinozap1@upao.edu.pe
[7] Universidad Tecnológica del Perú; C21106@utp.edu.pe

studying to achieve learning goals with the corresponding adaptation to the demands of the university context (Carden & Wood, 2018; Felicilda-Reynaldo et al., 2017). A study conducted in Ethiopia, India, Pakistan, Peru, and Vietnam found that children from low socioeconomic backgrounds who score high on performance tests at age 12 report greater interest in entering university (Das et al., 2022).

In a national context, studies by Vargas et al. (2018) showed that an increase in study hours is related to mood states such as anxiety and depression in medical students. On the other hand, a sample of 1620 students found that critical thinking has a positive impact on the average academic performance of students (D'Alessio et al., 2019). Academic performance problems have also been observed in university students due to the impacts of the pandemic and the migration to remote mode (Rodriguez-Alarcon et al., 2022). Another cause of low academic performance in university students has been limited socioeconomic conditions and educational environments (León & Valdivia, 2015).

Given the highlighted problem, it is understood that study habits act as correlates of students' academic performance. Inadequate action-emotion style and study habits explain the responses that students have in their tasks (Beattie et al., 2019; De la Fuente & Cardelle-Elawar, 2009). From this perspective, students who apply better study strategies have better academic performance, while those who do not know how to plan an effective organization of time and schedule management have difficulties in responding favorably to educational demands (Barrientos-Fernández et al., 2019; Quilez-Robres et al., 2021). Following this line, it is reaffirmed that many factors determine academic performance, which is an integral part of the teaching and learning process (Olutola et al., 2016). Studies by Hua (2022) indicate that to avoid failure in the academic context, an appropriate intervention related to promoting effective habits to achieve academic success must be created, as shown by some studies that reflect on self-esteem, self-control, and study habits to predict academic performance. Despite existing studies showing implications of different factors in academic performance that cause variation in students' success, it still remains to be fully understood.

To understand the behavior of these variables, several investigations have been developed, mostly using high school and early university students as samples. A study by Ortega-Ruipérez (2022) in Spain with students from various disciplines of higher education in the context of blended learning was able to determine that the use of metacognitive strategies has been significantly effective. Therefore, the inclusion of metacognitive strategies in the use of blended learning is suggested to improve study habits and reading comprehension in students, and thus improve their learning outcomes. Similarly, another study conducted in China explored the mediating role of cognitive engagement in the relationship between emotional intelligence and study habits in health science students enrolled under the blended learning mode, concluding that students face greater than usual challenges in building study habits in blended learning environments during the COVID-19 pandemic, and that emotional intelligence helps develop their study habits more effectively (Iqbal et al., 2022).In the Peruvian context, a study conducted on students at a public university analyzed study habits, academic stress, and the relationship between these variables. 77% of the students showed a moderate to deep level of stress; as for study habits, a total of 13% have negative habits ranging from very negative to negative. This means that young people state that their usual strategies and techniques for obtaining information and performing their tasks do not allow them to obtain optimal results (Solano-Dávila et al., 2022). On the other hand, Chilca-Alva (2017) conducted a study aimed at establishing whether self-esteem and study habits correlate with academic performance in university students, applying Coopersmith's Self-Esteem Inventory, Vicuña Peri's Study Habits Inventory, and the average grades obtained by students. The results showed that self-esteem does not significantly impact academic performance, but study habits do.

There is consensus among most researchers that study habits are related to metacognitive strategies, learning, cognitive commitment, and emotional intelligence, as well as being associated with stress and self-esteem (Chilca-Alva, 2017; Iqbal et al., 2022; Solano-Dávila et al., 2022). What is not well defined is how a model based on study habits determines an improvement in the academic performance of university students. Therefore, this constitutes an area to be explored, and it deserves urgent attention due to the problems that universities face. Under these considerations and limitations, this research seeks, on the one hand, to describe the positive characteristics of study habits and academic performance, which will ultimately allow for the promotion of an explanatory model that ensures academic success in university students.

METHOD

Research Design

This is a technological type of work where theoretical knowledge is used to propose intervention strategies (Sánchez et al., 2018) based on study habits that improve academic performance of students. It is also a causal correlational design because it was determined to what extent study habits behavior can explain academic functioning of students (Hernández-Sampieri & Mendoza, 2018).

Participants

The present investigative study was composed of 287 higher education students from private universities in northern Peru, with 55% female and 45% male participants who voluntarily participated in this study. The inclusion criteria were students from engineering and business and accounting sciences specialties of private universities in northern Peru. The exclusion criteria were students from public universities, other regions of Peru and students who did not agree to participate.

Instruments

The first instrument was the Study Habits Perception Questionnaire developed by Madrid et al. (2017) which consisted of 19 items with a Likert-type design with five response alternatives ranging from completely disagree to completely agree. Its purpose was to measure the perception of study habits in higher education students, from three factors: learning orientation, organization and time management. The original psychometric properties were: construct validity with a KMO value of 0.984, the Bartlett's sphericity test was significant, and reliability of the three dimensions with a Cronbach's alpha value above 0.750. For this research, adequate psychometric properties were also found. Regarding validity, comparative fit indices were found to be higher than 0.90, with factor loadings above 0.40, confirming the factors proposed in the original model. The reliability of the study habits perception scale had a reliability of 0.90 obtained through Cronbach's alpha. The second instrument was the University Academic Performance Questionnaire developed by Preciado-Serrano et al. (2021) consisting of 20 items using a seven-point Likert scale from 0 (never) to 6 (always) and organized into three dimensions: contribution to academic activities, study dedication, and lack of organization of didactic resources. Its purpose was to measure academic performance in university students. Regarding the psychometric properties, the authors of the instrument determined that the confirmatory factorial analysis fit indices were within the established parameters and the Cronbach's alpha reliability of the dimensions was acceptable. Similarly, in this research, construct validity was found to have comparative fit indices higher than 0.95, and reliability had a value of 0.80.

Procedure

The research had as its first step the development of the instruments using the Google Forms tool, which included sociodemographic data such as gender, age range, study center, place of origin, among others. Subsequently, coordinations were made with university officials to request support for the application of virtual instruments along with informed consent, which were sent via email provided by the authorities. After completing this phase, the data was collected and tabulated using the Microsoft

Excel software. Finally, the tabulated data was transferred to the statistical software SPSSv26 to perform descriptive and inferential analysis of the information.

Data Analysis

Measures of central tendency and deviation were obtained, such as mean and standard deviation. Skewness and kurtosis were used to assess data normality. Since the data did not follow a normal distribution, the Spearman's statistic was used to determine relationships between variables. Finally, linear regression was used to establish predictions between study habits and academic performance.

Results

This section presents the main findings of the research, which are aligned with the set objectives. It begins with a descriptive analysis of the variables and their dimensions, followed by an exploration of the correlations between variables, and finally, a summary of the model based on linear regressions is presented.

Table 1 Descriptive analysis of variables at a general level and by dimensions

	N	Min	Max	Average	SD	Asymmetry	Kurtosis
Perception of study habits	287	25	95	76,75	8,904	-,648	3,405
Learning orientation	287	12	50	41,91	4,589	-1,098	5,478
Organization	287	6	25	19,56	3,020	-,700	2,608
Time management	287	7	20	15,28	2,392	-,265	,536
Academic performance	287	37	120	69,92	14,945	,172	-,044
Contribution to academic activities	287	15	60	38,29	10,190	,033	-,550
Dedication to study	287	8	30	22,29	5,340	-,426	-,729
Organization of teaching resources	287	0	30	9,33	5,116	1,427	3,151

In the descriptive analysis of variables, the following results were observed: the total sample was 287 students, the study habits variable had a minimum score of 25 and a maximum of 95, the mean was 76.75 with a standard deviation of 8.904. When analyzing the academic performance variable, the minimum score was 37 and the maximum was 120, the arithmetic mean was 69.92 with a standard deviation of 14.945. Regarding the analysis of normality, it is observed that both variables, along with their dimensions, do not have a normal distribution because not all values are within -1.5 and 1.5, which is the standard test value. Therefore, non-parametric tests were used to carry out the corresponding analyses.

Table 2 Relationship between study habits and academic performance

			Contribution to academic activities	Dedication to study	Organization of teaching resources	Academic performance
Spearman's Rho	Study habits	Correlation coefficient	,662**	,675**	-,202**	,663**
		Sig. (bilateral)	,000	,000	,001	,000
		N	287	287	287	287

According to the results of Table 2, there is a significant relationship (0.663**, sig. 0.000) between study habits and perception. This relationship is also confirmed in the analysis by dimensions. The organization of activities has a relationship of 0.675**, dedication to study 0.675**, and organization of didactic resources -0.202**.

Therefore, good study habits are associated with adequate academic performance in this community of students.

Table 3 Relationship between academic performance perception and study habits

			Learning orientation	Organization	Time management	Study habits
Spearman's Rho	Academic performance	Correlation coefficient	,600**	,595**	,565**	,663**
		Sig. (bilateral)	,000	,000	,000	,000
		N	287	287	287	287

Table 3 presents the findings of the correlations between academic performance and study habits. Here, it is evident that academic performance and study habits have a direct and significant relationship of 0.663**, learning orientation obtains an association of 0.600**, organization 0.595**, and time management 0.565**, that is, a general and dimensional level of significance of 0.000 has been found. These results help to understand better academic performance for this studied population, which is associated with the practice of good study habits, helping to generate successful learning.

Table 4 Summary of the proposed model

Model	R	R square	Adjusted R-squared	Standard error of the estimate
1	,613ᵃ	,376	,374	11,827
a. Predictors: (Constant), Study Habits.				

Table 4 shows that there is a relationship of 0.613 between study habits and the perception of academic performance, with an R-squared of 0.37. This indicates that study habits explain 37% of the dynamics in how academic performance conditions are developed.

Table 5 Significance of observed data

	Model	Sum of squares	Gl	Root mean square	F	Sig.
1	Regression	24007,704	1	24007,704	171,620	,000ᵇ
	Waste	39868,289	285	139,889		
	Total	63875,993	286			
a. Dependent variable: Academic performance.						
b. Predictors: (Constant), Study Habits, Study Habits.						

According to the results of Table 5, it is observed that study habits significantly explain the behavior of student perception about academic performance. That is, the proposed model is highly significant.

Table 6 Description of coefficients of the proposed model on study habits and academic performance

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Desv Error	Beta		
1 (Constant)	-9,059	6,069		-1,493	,137
Study habits	1,029	,079	,613	13,100	,000
a. Dependent variable: Academic performance.					

According to the results of Table 6, in the description of the coefficients of the proposed model, there is a significance of 0.000 between study habits and academic performance. According to this table, study habits are the independent variable that substantially explains the way in which academic performance develops. Therefore, the equation is y = -9.06 + 1.03*x. This means that a program based on study habits would improve the levels of academic performance of the university students who participated in this research.

Discussion

Due to the limitations in accessing jobs where the relationships between study habits and decision-making on what and how to learn during everyday learning processes are established (Anthenien et al., 2018; Zhou & Wang, 2022) and their link with academic learning, understood as the abilities that students have to respond favorably in activities within an educational context where their progress is related to various sociodemographic variables (Rienties et al., 2012; Yamamoto & Holloway, 2010) the first objective of this research has been to determine the relationships between study habits and academic performance perception in a sample of university students. A direct and significant association of 0.663** with a significance of 0.000 (Table 2) has been found, and likewise, the dimensions of academic performance have a direct relationship with study habits. This means that if positive study habits are developed, students will demonstrate successful academic performance. Conversely, if positive study habits are not promoted, the characteristics of academic performance will be deficient. When the relationships between academic performance perception and study habits are cross-referenced, highly significant relationships were found (Table 3), indicating that good academic performance is associated with good study habits.

Theoretically, it has been proven that when appropriate study strategies are developed, optimal learning is promoted because all academic responsibilities are met (Hora & Oleson, 2017; Williams et al., 2002). Likewise, employing different learning resources and encouraging appropriate study habits help university students improve their cognitive functions. Therefore, it is important to strengthen this behavior since it helps to generate an adequate learning process (Jameel et al., 2019; Tobar et al., 2021). Research conducted by authors in different countries has found similar results. Thus, Ortega-Ruipérez (2022) in Spain determined that the use of metacognitive strategies has been significantly effective, suggesting the inclusion of these strategies during semi-presential learning to improve study habits and reading comprehension in students and, therefore, improve their learning outcomes. Meanwhile, Iqbal et al. (2022) in China found that cognitive engagement and emotional intelligence substantially improve study habits, being associated variables where the presence of one is related to the other.

The results found have the following practical implications. First, during the pandemic, students' learning has been affected, not because their cognitive abilities are deficient, but because they had to enter the virtual system, a completely new environment to explore for students. In this context, study habits that respond to the most pressing needs required by the circumstances were not encouraged. Second, based on the previous idea, finding a direct and significant association between study habits and academic performance allows establishing a baseline to carry out other types of regression analysis in order to understand to what extent one variable explains the other, making a timely intervention in the independent variable.

As a second objective of the research, a linear regression analysis was planned between study habits and perception of academic performance, which was developed once the bivariate correlations in the first objective were observed. An R squared of 0.37 was found (Table 4), which means that study habits would improve academic performance in students by 37%. Similarly, attention was paid to the proposed model, which was significant, and in the description of the coefficients, study habits, an independent variable, and academic performance, the dependent variable, were found to be significant at 0.000, which implies that a program based on improving study habits would substantially improve the conditions of academic performance. Theoretically, these data mean that the strategies employed by each person help to build better learning since they start from the characteristics of personality (Anthenien et al., 2018; D'Souza & Broeseker, 2022) consequently improving their levels of academic performance to continue their studies and achieve their life projects.

These results are related to recent works that have also analyzed these issues. For example, in the Netherlands, it has been found that small study groups improve academic performance conditions in

medical students (Brouwer et al., 2022). Other research in Portugal has found that academic performance has predictors such as educational commitment, study skills, motivation, and the conditions of the environment where classes are held, variables that explain the development of the learning of the educational community (Moreira et al., 2013). In another study in Belgium, it has been found that divergent thinking improves the academic performance of engineering students as it acts as a mediating function (Taylor & Zaghi, 2022). In Peru, no studies have been found that explain the mediating role of study habits and academic performance. Study habits have been correlated with academic stress, finding that students state that their usual strategies and techniques for obtaining information and the way they do their tasks do not allow them to obtain an optimal result (Solano-Dávila et al., 2022). Another study on study habits and self-esteem has concluded that self-esteem does not significantly impact academic performance, but study habits do (Chilca-Alva, 2017).

By analyzing the results found with those provided by recent research, the following implications can be made. First, the academic performance of university students has always been evaluated based on aptitude, that is, based on grade records, so the highest grades indicated that the students had adequate academic performance. This study evaluates academic performance, but from the student's perception, so it is essential to consider the attitudes and perceptions they have to improve learning dynamics. Second, the research accessed has analyzed academic performance, but in relation to other variables. Very few studies have established predictions between study skills and success in their performance, so this research at the national and regional level constitutes a precedent for promoting studies by other researchers on the behavior of these variables. Finally, these findings represent a basis for developing programs and workshops on study habits that allow students to achieve significant learning that responds to professional competencies.

Conclusions

Considering the results of empirical research on the correlations between study habits and academic performance, this study has determined that the way in which students develop their study habits is an explanatory factor for the quality of their academic performance. These significant relationships have also been confirmed at the level of dimensions, which means that organization and planning are strategies that help students achieve a higher level of academic performance.

The proposed model is highly significant, with study habits being the independent variable that substantially explains the way academic performance develops. This suggests that a program based on study habits would improve the levels of academic performance of university students who participated in this research. It would help them build meaningful learning and meet their expectations related to the academic part for better professional development in the future.

In order to continue generalizing these findings, it is suggested to apply the instruments to other universities and educational institutions of regular basic education, with the purpose of reaffirming these theoretical relationships. It would also be important to analyze the characteristics of study habits and performance considering various sociodemographic variables such as gender, age, origin, among others.

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