



Procrastination and Academic Performance in University Students

Procrastinación y rendimiento académico en estudiantes universitarios

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Abstract

Academic procrastination is especially relevant in Higher Education. Its treatment is notable for its complexity due to the multifactorial nature of the reasons or causes that give rise to it. Among the relationships that procrastination establishes with other variables, the present study highlights the one related to academic performance; therefore, considering both variables is interesting regarding the improvement of Higher Education. In this sense, the main aim of this study is to determine whether university students with low levels of procrastination achieve higher academic performance during their education. Thus, the hypothesis focused on examining the relationship between the variables of procrastination and academic performance, assuming that university students with low levels of procrastination would achieve high academic performance, whereas students with high levels of procrastination would demonstrate lower academic achievement. Through a quantitative methodology and accidental non-probability sampling, a validated scale is used to measure these factors, which is applied to 1001 Spanish university students. The results show that students with lower academic performance are the

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ones who mostly postpone the study process, a positively correlated factor and a predictor of their education. The main conclusion highlights the association between the level of procrastination and academic performance. Consequently, guidance interventions are needed in order to reduce the influence of factors such as procrastination on academic performance.

Keywords: higher education; student; achievement.

Resumen

La procrastinación académica alcanza especial relevancia en la Educación Superior, caracterizándose su tratamiento por la gran complejidad que presenta, consecuencia del carácter multifactorial de los motivos o las causas que originan dicho fenómeno. Entre las relaciones que la procrastinación establece o puede establecer con otras variables, destaca, en el presente trabajo, la referida al rendimiento académico, por lo que la toma en consideración de ambas variables resulta de interés y relevancia en lo que respecta a la mejora de la Educación Superior. En este sentido, el objetivo principal del estudio se centra en determinar si los y las estudiantes universitarias con bajos niveles de procrastinación lograban un mayor rendimiento académico en su formación. De este modo, la hipótesis se focalizó en comprobar la incidencia existente entre las variables procrastinación-rendimiento académico, entendiéndose que aquellos estudiantes universitarios con baja procrastinación alcanzarían un rendimiento académico alto, frente al alumnado con altos niveles de procrastinación, quienes lograrían un bajo desempeño formativo. Para ello, a través de una metodología cuantitativa y de un muestreo no aleatorio accidental, se hace uso de una escala validada para medir estos factores, la cual se aplica a 1001 estudiantes universitarios/as, procedentes de dos universidades españolas. Del estudio realizado, se deriva que el alumnado con menor rendimiento académico es el que más pospone el proceso de estudio, relacionando positivamente y siendo un predictor de cara a su formación. Como principal conclusión destaca la asociación entre el nivel de procrastinación y rendimiento académico. En consecuencia, se precisa el desarrollo de intervenciones orientadoras con el propósito de reducir la influencia de factores como la procrastinación en lo que al rendimiento académico se refiere en Educación Superior.

Palabras clave: universidad; alumno; rendimiento.

Introduction

The phenomenon of academic procrastination in higher education has been extensively addressed in the literature and can be understood as a deliberate postponement or delay in academic responsibilities and tasks, even leading to distraction (Garzón-Umerenkova and Gil-Flores, 2017), which, in turn, leads to less time being devoted to tasks, as well as less than optimal preparation for final assessments or examinations. Specifically, Ferrari et al. (2007, p. 459), with regard to this construct, identified three ways of understanding it:

- a) Decision-based procrastination: the inability to make a decision within a specific timeframe.

- b) Avoidance-based procrastination: a tendency to delay the completion of tasks that might reveal potential difficulties.
- c) Excitement-driven procrastination: a tendency to delay tasks as a means of seeking thrills, to avoid boredom and to work better under pressure.

Applying this premise to the educational context, various studies have demonstrated high rates of procrastination amongst university students. In this regard, Goroshit and Hen (2021) estimate that between 70% and 90% of students postpone their academic activities, whilst Martín-Antón et al. (2022) and Hayat et al. (2020) present data on students who are heavy and habitual procrastinators, with these figures ranging between 30% and 50% (Bäulke et al., 2021).

With regard to the concept of academic performance, according to Pérez-Cárceles et al. (2014), we take as our starting point the marks obtained in examinations or other types of assessment tests; this is determined by various variables such as the student's own characteristics (gender, previous marks, scores in university entrance exams) or by external factors, such as the type of curriculum design implemented at the university (Avendaño et al., 2016 and Soria-Barreto and Zúñiga-Jara, 2014, cited in Pérez-Villalobos et al., 2018).

With regard to the relationship between procrastination and academic performance, there are numerous studies that focus specifically on the characteristics and variables involved in this association. Thus, when describing how the relationship between these two constructs has been presented, according to various authors, terms such as the following could be used:

- A negative correlation, whereby students who procrastinate the most achieve the poorest academic performance (Kim et al., 2017; Martín-Antón et al., 2022; Martinie et al., 2023; Zumárraga-Espinosa and Cevallos-Pozo, 2022);
- Procrastination as a significant predictor of academic performance. In other words, it is to be expected that those who procrastinate do not perform well academically, as they do not develop systematic study habits nor meet the deadlines set for their academic tasks – both of which are essential for achieving good grades (Balkis and Duru 2017; Hidalgo-Fuentes et al., 2021; Tisocco and Fernández-Liporace, 2023);
- This is a harmful relationship, as the act of procrastinating reduces academic commitment, which in turn compromises students' performance due to an inability to meet assignment deadlines or to maintain effective study time in the run-up to exams or other forms of assessment (Derakhshan et al., 2022; Dike and Emmanuel, 2019; Wei et al., 2023), which can even lead to students having to retake modules or dropping out of their studies (Garzón-Umerenkova and Gil-Flores, 2017).
- The relationship depends on the academic performance indicator selected and the measurement scale used to study procrastination (it may increase or

decrease) (Kim and Seo, 2015; Sagone and Indiana, 2021). , the most commonly used instruments for assessing procrastination include the *Decisional Procrastination Scale* (Mann, 1982), the *Procrastination Assessment Scale for Students* (Solomon and Rothblum, 1984), the *Tuckman Procrastination Scale* (Tuckman, 1991), the *Adult Inventory of Procrastination* (McCown and Johnson, 1991) and the *General Procrastination Scale* (Sirois et al., 2019).

In addition to the properties attributed to the relationship between the two constructs under study, the most recent literature has presented findings that help to explain how this relationship is formed. Martín-Antón et al. (2022), whilst noting that students with higher academic achievement procrastinate significantly less than those with lower academic achievement (a moderate effect size, $g = .51$), also indicate that the reasons for procrastination are associated with the pursuit of excitement, a lack of energy and self-control, as well as low assertiveness and low self-confidence. For their part, Kurtovic et al. (2019) and Limone et al. (2020) draw similar conclusions, as they also identify, as influential factors in this relationship, a mechanism of maladaptive perfectionism in which the student is constantly preoccupied with their mistakes, feelings of inadequacy and guilt. At the same time, Hidalgo-Fuentes et al. (2021) confirm in their study that academic procrastination predicts poorer academic outcomes, a phenomenon that goes beyond mere personality.

With regard to the timing and/or duration underpinning this causal relationship between procrastination and performance, studies such as those by Goroshit and Hen (2021) and Hen and Goroshit (2020) associate it with marks for immediate tasks, such as an exam or assignment, and, to a lesser extent, with average marks for a course or degree; it is, it is, however, a process that develops over time (longitudinal) (Gareau et al., 2019), and is also influenced by academic variables, such as the importance of the task or the length of the course (Garzón-Umerenkova and Gil-Flores, 2017). In contrast to the latter, the longitudinal study conducted by Cormack et al. (2020) analyses the academic records of assignments submitted by students at a UK university over a nine-year period, concluding that the time at which assignments are submitted is not, in itself, a useful predictor of low marks, as there may be other factors at play, such as a lack of time to submit assignments at the last minute; consequently, this relationship varies depending on the student and the context of the assignment.

In another study, Suárez-Perdomo and Feliciano-García (2020) employ a three-level measure of procrastination (active, moderate and passive), similar to those mentioned by Ferrari et al. (2007), and found that those exhibiting a form of active procrastination (intentionally delaying tasks to improve efficiency) achieve similar academic performance to those who do not procrastinate; it is therefore suggested that this form of procrastination has a lesser impact on academic performance. Consequently, it is evident that the ' ' regulation of effort and the pursuit of avoidance goals play a significant role in the tendency to procrastinate. This is demonstrated by

Martinie et al. (2023), who concluded that these variables explain variations in procrastination, accounting for 24 per cent of the explained variance in their study.

Building on the reviewed background literature on the subject under study, this paper sets out to analyse the impact of procrastination on academic performance, using a scale recognised in scientific research; both variables are therefore considered to be of interest and worthy of study with a view to contributing to the improvement of higher education.

Objectives and hypotheses

The research focused on determining whether university students with low levels of procrastination achieved higher academic performance during their studies. In this regard, the aim was to test the relationship between the variables of procrastination and academic performance, on the basis that university students with low levels of procrastination would achieve high academic performance (H1), whereas those with high levels of procrastination would achieve low academic performance.

Method

Participants

This study focused on students enrolled on official undergraduate degree programmes at the two participating public universities. Based on these criteria and using a non-probabilistic random sampling procedure, the sample comprised a total of 1,001 university students with the characteristics specified in Table 1.

Table 1
Characteristics of the participating sample

Age	M=20.79 SD=3.954
Gender	Male: 25.2% (n=252) Female: 73.7% (n=738) Not specified: 11.1% (n=11)
University	University of Huelva: 62.2% (n=623) University of La Laguna: 37.8% (n=378)
Field of study	Arts and humanities: 4.95% (n=50) Sciences: 8.09% (n=81) Health Sciences: 23.37% (n=234) Social and Legal Sciences: 55.84% (n=559) Engineering and Architecture: 7.69% (n=77)
Year	First year: 25.4% (n=254) Second year: 54.2% (n=543) Third year: 8.9% (n=89)

	Fourth year: 9.8% (n=98)
	Year 5: 0.8% (n=8)
	Sixth: 0.9% (n=9)

In order to identify possible multivariate outliers, an analysis of the sample was carried out using the Mahalanobis distance. In this regard, Muñoz and Amón (2013) note that this distance serves to identify a critical value beyond which study participants deviate significantly from the centre of mass and should therefore be flagged as outliers. In the specific case of this study, the Mahalanobis distance was 49.801, thus suggesting the exclusion of 93 participants. The final sample participating in the study consisted of 908 undergraduate university students.

Instruments

The data collection instrument was a questionnaire designed to address the study’s objective and test the proposed hypothesis. To measure the construct of procrastination, the scale developed by Tuckman (1991) (Table 2) was used; this was translated into Spanish by the study’s researchers, building on the work already undertaken by Furlan et al. (2010). Once this initial translation was complete, a specialist translator carried out a review, whilst simultaneously conducting a comparative analysis between the original version of the scale and the translated version. The aim of this verification was to assess the semantic equivalence of the items included in the translated scale and to confirm that the conceptual meaning and purpose of the original had not been lost.

Table 2

Items from the procrastination scale used

Item	Coding
I unnecessarily delay the completion of academic tasks or activities, even when they are important	p1
I put off starting academic tasks or activities that I do not like doing	p2
When I have a deadline, I wait until the last minute to do academic tasks or activities	p3
I put off having to make difficult decisions	p4
I don’t usually put off starting new tasks or academic activities	p5
I don’t arrive on time for my scheduled appointments (completing assignments, attending classes, going to tutorials, etc.)	p6
I put off improving my study habits	p7
I don’t get round to doing even the academic tasks or activities that I enjoy	p8
I always find an excuse not to do academic tasks or activities	p9
I avoid doing those academic tasks or activities that I think I’ll do badly at	p10
I don’t devote all the necessary time, even to academic tasks or activities that I	p11

think might be interesting to me	
When I get fed up with an unpleasant academic task or activity, I give up on it	p12
I do not believe in the importance of working hard and consistently (perseverance)	p13
When an academic task or activity isn't worth the effort, I stop	p14
I believe that academic tasks or activities I don't like doing shouldn't exist	p15
I have a negative view of people who force me to do things that are unfair and difficult	p16
When it doesn't matter, I don't enjoy doing academic tasks or activities	p17
I spend my time inappropriately	p18
I feel it is my absolute right for other people to treat me fairly	p19
I believe that other people have no right to set deadlines for me to complete my academic tasks or activities	p20
Studying makes me feel absolutely miserable	p21
It feels as though I'm wasting my time at the moment and there's nothing I can do about it	p22
When an academic task or activity is too difficult to tackle, I put it off	p23
I promise myself that I'll do a particular task or academic activity, and then I end up putting it off	p24
Whenever I make a plan of action, I don't stick to it	p25
I'd like to find an easy way to get started on academic tasks or activities	p26
When I have problems with an academic task or activity, it's usually my own fault	p27
Although I feel bad when I have to do an academic task or activity, this doesn't motivate me to carry it out	p28
I never finish important academic tasks or activities with time to spare	p29
When I finish my homework or academic tasks, I don't check them over	p30
I look for a way out or a shortcut to get through a difficult task or academic activity	p31
Sometimes, I find myself at a standstill when it comes to starting an academic activity or task, even though I know how important it is to do it	p32
I come across academic tasks or activities that I know I cannot complete	p33
I tend to put off the academic tasks or activities I have to do until another day	p34
Generally speaking, I feel that academic activities or tasks are overwhelming me	p35

In addition to the scale mentioned above, the questionnaire included other questions of a socio-demographic nature relating to the students' age, gender, university where they are studying, field of study and year of study in which they were enrolled. A question relating to academic performance at university was also included. The types of measures used for the questions and items in the questionnaire are shown in Table 3.

Table 3

Type of measures used

Item	Measurement used
Gender	Dichotomous
Age	Open-ended
University	Dichotomous
Field of study	Multiple choice
Course enrolled in	Multiple-choice
Academic performance at university	Multiple choice
Procrastination scale	Likert scale (1 [lowest score] – 7 [highest score])

The reliability analysis of the scale used to measure procrastination amongst university students was carried out using Cronbach's alpha and McDonald's omega coefficients. In accordance with the guidelines set out by Raykov and Marcoulides (2017), the use of Cronbach's alpha requires that the scale meets the criteria of tau-equivalence, unidimensionality and continuity of measurement. For their part, Viladrich et al. (2017) argue for the importance of using another type of reliability analysis, such as McDonald's omega, due to its greater robustness and efficiency in social science studies. In the specific case of this study, the scores obtained were $\alpha = .96$ and $\omega = .97$. Thus, in accordance with Taber (2018), the cut-off point established in the literature— $\geq .70$ —was significantly exceeded in both cases.

Procedure

Data collection took place during October and December 2022. To carry out the data collection process, a questionnaire was prepared and designed to be administered online via the *Google Forms* platform. Once this preliminary step had been completed, lecturers teaching official undergraduate degree programmes at the two participating universities were contacted and asked to share the questionnaire with their students. Specifically, an email was sent to them outlining the purpose of the study and requesting their collaboration in the research. This communication stated that student participation was voluntary and that the data would be processed for research purposes. Ethical criteria such as confidentiality, anonymity and the privacy of participants' data were also ensured.

Data analysis

The data was analysed using the database generated via *Google Forms*. The CSV (*Comma Separated Values*) file generated by this application was utilised to carry out the statistical analyses required to address the study's objectives and test the proposed hypotheses. To provide methodological support for carrying out the statistical tests, *R-Studio* software, version *Build 554* (1 July 2022), was used on a *Microsoft Windows 10*

system. Before carrying out the statistical analyses, the database was cleaned. As a starting point, it was confirmed that the data entered into the database corresponded to the coding scheme proposed for the questionnaire. Another aspect that was reviewed was the possible presence of missing data. Furthermore, to determine any potential redundancy among the items, multicollinearity was assessed using a bivariate correlation analysis (item-by-item), which yielded an r -value of ≤ 0.85 for all cases. These scores, in line with the criteria set out by *r* Holgado et al. (2019), suggest that the items included in the measurement scale used to assess procrastination were sufficiently discriminant from one another. Finally, to determine the type of analysis to be carried out in the study (parametric or non-parametric), a normality test was conducted using the Shapiro-Wilks and Kolmogorov-Smirnov (KS) tests. The values obtained for all cases were $p < .000$; therefore, in accordance with George and Mallery (2011), this is interpreted as a lack of normality. Consequently, the contrast analyses carried out were non-parametric (Berlanga and Rubio, 2012).

Once these preliminary checks had been completed, the following statistical tests were carried out : frequencies and percentages, measures of central tendency, reliability calculations and contrast analysis. In line with APA guidelines, the contrast analysis was supplemented with an effect size calculation. To this end, the epsilon-squared coefficient (E_R^2) was used, the mathematical expression for which is as follows (where H is the score obtained in the Kruskal-Wallis test and n is the number of participants):

$$E_R^2 = \frac{H}{(n^2 - 1)/(n + 1)}$$

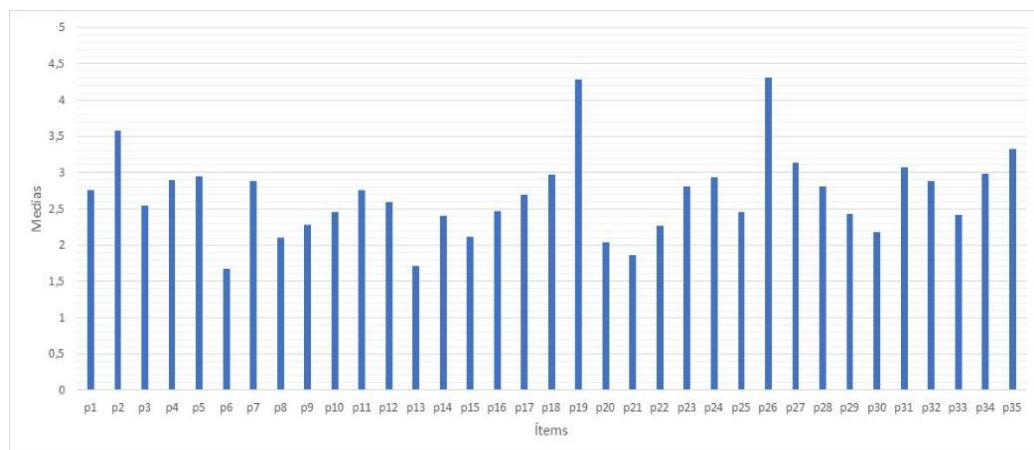
This coefficient was calculated using *Microsoft Excel (Office 365 version)* on the *Microsoft Windows 10* operating system. The scores resulting from this analysis were interpreted in accordance with the critical values established by Faul et al. (2007) and Tomczak and Tomczak (2014). The significance level (α) was set at .05 for the various analyses carried out in this study.

Results

Of the participants in the study, 60.2% of the students achieved a 'good' grade, 31.7% achieved a 'pass', 4.3% achieved an 'excellent', 2.6% failed and 1.1% were awarded a 'First Class Honours'. In terms of averages, the level of procrastination amongst the study participants stood at 2.68 points ($\bar{x} = 2.68$; $sd = 1.164$). According to the information shown in Figure 1, the students gave relatively low ratings ($\bar{x} \leq 2$) on certain aspects. Specifically, they indicated that they felt miserable about studying ($\bar{x} = 1.86$; $sd = 1.377$), that hard work and perseverance made no sense to them ($\bar{x} = 1.71$; $sd = 1.291$) and that they failed to meet deadlines for assignments, attend classes and attend tutorials ($\bar{x} = 1.67$; $sd = 1.275$). In contrast, relatively higher scores were identified on other items. For example, students indicated that they would like to find an easy way to carry out academic activities ($\bar{x} =$

4.31; sd = 2.163), to feel they were treated fairly by teaching staff ($\bar{x}$ = 4.29; sd = 2.287), and to delay starting learning tasks they did not enjoy ($\bar{x}$ = 3.58; sd = 1.987).

Figure 1. Analysis of central tendency for the procrastination scale



Statistical tests carried out using the Kruskal-Wallis H test revealed that, in general terms, the students who scored highest on the procrastination scale were those who achieved failing grades ($H=52.064$; $R=586.54$; $p=.000$; $E_R^2=.057$). Consequently, statistically significant differences were found for most of the items included in the procrastination scale used, demonstrating that students with the lowest academic performance (failing grades) were those who put off studying the most (Table 4). Thus, this group of students did not devote all the necessary time to educational activities ($H=62.311$; $R=655.88$; $p=.000$; $E_R^2=.069$), postponed academic tasks ($H=50.722$; $R=569.88$; $p=.000$; $E_R^2=.056$) and did not feel motivated to carry out tasks related to their learning process ($H=51.533$; $R=581.10$; $p=.000$; $E_R^2=.057$).

Table 4

Contrast analysis between university academic performance and procrastination

Items	Groups	n	Average rank	H	p	E_R^2
p1	Suspense	24	585.23	20,429	.000	.023
	Approved	288	490.95			
	Good	547	437.35			
	Outstanding	39	362.86			
	First Class Honours	10	386.50			
p2	Fail	24	484.42	14,984	.005	.017
	Approved	288	498.90			
	Good	547	434.85			
	Outstanding	39	382.10			

p3	First Class Honours	10	461.10	35,602	,000	.039
	Fail	24	595.42			
	Approved	288	511.91			
	Notable	547	425.49			
	Outstanding	39	363.63			
p4	First Class Honours	10	404.25	21,084	,000	.023
	Fail	24	528.98			
	Approved	288	504.36			
	Good	547	429.32			
	Outstanding	39	386.37			
p5	First Class Honours	10	482.75	8,280		.082
	Fail	24	495.69			
	Pass	288	486.32			
	Good	547	437.63			
	Outstanding	39	450.42			
p6	First Class Honours	10	378.00	34,136	,000	.038
	Fail	24	585.88			
	Approved	288	499.84			
	Good	547	430.61			
	Outstanding	39	411.54			
p7	First Class Honours	10	308.00	40,694	,000	.045
	Fail	24	609.54			
	Approved	288	515.04			
	Good	547	423.86			
	Outstanding	39	339.35			
p8	First Class Honours	10	463.60	50,627	,000	.056
	Fail	24	664.56			
	Approved	288	513.19			
	Good	547	417.67			
	Outstanding	39	401.53			
p9	First Class Honours	10	481.30	25,683	,000	.028
	Fail	24	568.08			
	Approved	288	501.36			
	Good	547	429.49			
	Outstanding	39	374.42			
p10	First Class Honours	10	512.60	35,736	,000	.039
	Fail	24	609.98			
	Approved	288	511.30			
	Good	547	423.98			
	Outstanding	39	391.45			

	First Class Honours	10	360.80			
p11	Fail	24	655.88	62,311	,000	.069
	Approved	288	528.89			
	Good	547	415.40			
	Outstanding	39	325.28			
	First Class Honours	10	471.10			
p12	Fail	24	560.90	32,385	,000	.036
	Approved	288	516.45			
	Good	547	421.20			
	Outstanding	39	415.36			
	First Class Honours	10	388.95			
p13	Fail	24	502.02	24,044	,000	.027
	Approved	288	503.77			
	Good	547	431.25			
	Outstanding	39	409.46			
	First Class Honours	10	369.00			
p14	Fail	24	565.08	29,731	,000	.033
	Approved	288	512.02			
	Good	547	420.76			
	Outstanding	39	442.21			
	First Class Honours	10	426.05			
p15	Suspense	24	476.13	9,908	.042	.011
	Approved	288	489.80			
	Good	547	435.26			
	Outstanding	39	444.67			
	First Class Honours	10	476.60			
p16	Fail	24	450.63	1,853	.763	
	Pass	288	459.12			
	Good	547	452.55			
	Outstanding	39	474.74			
	First Class Honours	10	358.40			
p17	Fail	24	494.08	15,183	.004	.017
	Approved	288	499.16			
	Good	547	433.52			
	Outstanding	39	396.23			
	First Class Honours	10	447.85			
p18	Fail	24	595.31	33,655	,000	.037
	Approved	288	509.71			
	Good	547	426.88			

	Outstanding	39	347.33			
	First Class Honours	10	455.20			
p19	Fail	24	419.56	2,121	.713	
	Pass	288	441.85			
	Good	547	459.92			
	Outstanding	39	482.19			
	First Class Honours	10	498.10			
p20	Fail	24	540.81	8,818	.066	
	Pass	288	475.30			
	Good	547	440.36			
	Outstanding	39	470.83			
	First Class Honours	10	357.95			
p21	Fail	24	600.21	48,139	,000	.053
	Approved	288	518.98			
	Good	547	420.20			
	Outstanding	39	395.14			
	First Class Honours	10	355.20			
p22	Fail	24	555.17	35,827	,000	.040
	Approved	288	518.16			
	Good	547	420.63			
	Outstanding	39	414.94			
	First Class Honours	10	386.60			
p23	Fail	24	569.88	50,722	,000	.056
	Approved	288	534.39			
	Good	547	410.90			
	Outstanding	39	400.92			
	First Class Honours	10	470.40			
p24	Fail	24	563.17	29,584	,000	.033
	Approved	288	511.06			
	Good	547	426.12			
	Outstanding	39	367.64			
	First Class Honours	10	456.15			
p25	Fail	24	581.50	28,212	,000	.031
	Approved	288	506.30			
	Good	547	426.60			
	Outstanding	39	381.67			
	First Class Honours	10	468.45			
p26	Fail	24	434.06	13,482	,000	.015

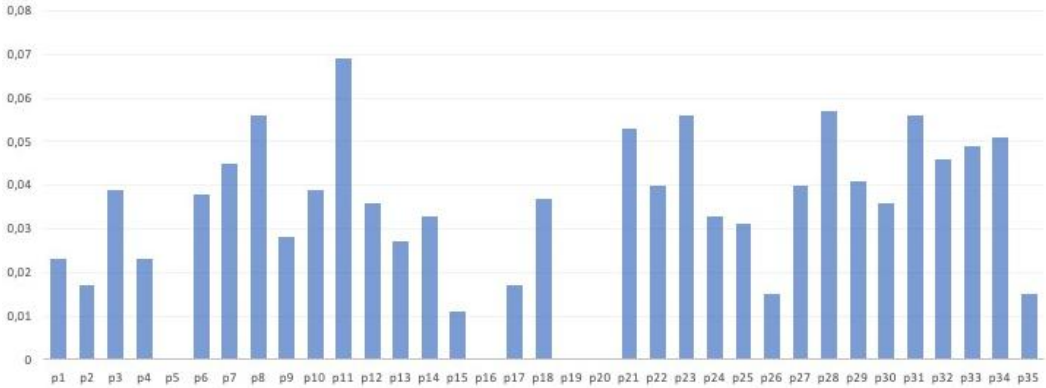
	Approved	288	499.44			
	Good	547	434.52			
	Outstanding	39	408.38			
	First Class Honours	10	482.20			
	Fail	24	576.73			
p27	Approved	288	513.36	36,121	,000	.040
	Good	547	422.82			
	Outstanding	39	358.86			
	First Class Honours	10	571.65			
	Fail	24	581.10			
p28	Approved	288	531.90	51,533	,000	.057
	Good	547	414.85			
	Outstanding	39	354.62			
	First Class Honours	10	479.80			
	Fail	24	514.98			
p29	Approved	288	522.57	36,983	,000	.041
	Good	547	423.47			
	Outstanding	39	376.45			
	First Class Honours	10	350.75			
	Fail	24	523.73			
p30	Approved	288	511.91	32,481	,000	.036
	Good	547	432.79			
	Outstanding	39	317.03			
	First Class Honours	10	358.80			
	Fail	24	602.21			
p31	Approved	288	520.22	50,612	,000	.056
	Good	547	423.82			
	Outstanding	39	347.76			
	First Class Honours	10	301.50			
	Fail	24	562.69			
p32	Approved	288	524.38	41,291	,000	.046
	Good	547	420.93			
	Outstanding	39	374.79			
	First Class Honours	10	329.45			
	Fail	24	538.69			
p33	Approved	288	530.88	44,339	,000	.049
	Good	547	413.21			
	Outstanding	39	423.86			
	First Class Honours	10	430.90			
	Fail	24	607.40			
p34				46,472	,000	.051

p35	Approved	288	521.98	14,033	.007	.015
	Good	547	421.33			
	Outstanding	39	332.82			
	First Class Honours	10	433.25			
	Fail	24	397.79			
	Approved	288	498.40			
	Good	547	437.02			
	Outstanding	39	399.53			
	First Class Honours	10	496.75			

With regard to the items where no substantive discrepancies were found, it is noted that these related to a lack of initiative to undertake other academic activities ($p=.082$), the students' negative view of people who forced them to carry out unfair or difficult activities ($p=.763$), feeling that they were entitled to fair academic treatment ($p=.713$) and perceiving it as unfair treatment when others were granted extended deadlines for completing learning tasks ($p=.066$).

Figure 2 visually illustrates the effect sizes of the items studied.

Figure 2. Effect size of procrastination according to academic performance



Discussion

The results of this study support the need and importance of continuing research into academic performance, as well as the multiple factors and variables that influence it, as noted by Pérez-Villalobos et al. (2018). Among the factors that help to explain academic performance, as discussed in this study, is the phenomenon of academic procrastination, which, at the higher education level, according to Garzón-Umerenkova and Gil-Flores (2017), involves a voluntary and intentional delay in carrying out academic tasks, with corresponding repercussions on the preparation of assignments and assessment tests. In any case, this relationship between procrastination and academic performance must be

assessed as a preliminary step prior to incorporating mediating variables that might explain this association.

However, despite the existence of certain studies focusing on investigating the correlation and impact between procrastination and academic performance (Cormack et al., 2020; Zumárraga-Espinoza and Cevallos-Pozo, 2022; amongst others), studies such as the present one are needed to clarify the possible effect between these two variables and others, such as motivation (Tisocco and Fernández-Liporace, 2023), perceived self-efficacy (Shaked and Altarac, 2022) and commitment (Aspée et al., 2021), all of which are constructs that influence academic performance. Thus, procrastination could be understood as a construct that influences performance either directly or indirectly through other variables that regulate the levels of task postponement.

Furthermore, with regard to levels of procrastination in higher education, according to the results of this study, these were moderately low, in contrast to the findings of other studies which report intermediate rates (around 30%–50%) (Hayat et al., 2020 and Martín-Antón et al., 2022) or higher, specifically between 70% and 90% (Goroshit and Hen, 2021).

Furthermore, the study also suggests that the students who scored highest on the procrastination scale were those with the lowest academic performance and, consequently, failed their exams; these findings are consistent with other studies, such as those conducted by Hidalgo-Fuentes et al. (2021), Limone et al. (2020), Martín-Antón et al. (2022), Martinie et al. (2023) and Zumárraga-Espinoza and Cevallos-Pozo (2022). Consequently, there is a need for further research into the relationship between these two constructs, which influence the teaching and learning process in higher education; it is necessary to assess the influence of other variables which, taken together, may help to explain and understand the relationship between academic performance and procrastination, considering the latter to be a multifactorial phenomenon (Urbina-Nájera et al., 2020).

With regard to the group comparisons carried out, significant differences were found in most of the items analysed, with the exception of those relating to students not hesitating to start new academic tasks or activities; holding a negative view of those who force them to do things they consider unfair and difficult; feel that it is their right to be treated fairly; believe that other people have no right to set deadlines for the completion of their academic tasks or activities; and postpone starting those academic tasks or activities that they do not like doing. Therefore, confirming that academic procrastination predicts poorer academic outcomes independent of personality would support the relevance of implementing programmes or interventions that have been shown to be effective in reducing the tendency to delay academic obligations and tasks amongst university students (Krispenz et al., 2019; Van Eerde and Klingsieck, 2018).

As a general conclusion, the initial hypothesis is corroborated, thereby confirming that the level of academic procrastination amongst university students is directly related to academic performance, as demonstrated by previous studies, which found negative associations between the variables of procrastination and academic performance

(Goroshit, 2018; Kim et al., 2017; Kim and Seo, 2015). Furthermore, as other studies suggest, the level of procrastination may also be a predictor of other factors, such as a lack of systematic study habits (Balkis and Duru, 2017) and reduced academic engagement (Derakhshan et al., 2022), which in turn affects academic performance and may even lead to students dropping out (Garzón-Umerenkova and Gil-Flores, 2017). These findings confirm that procrastination forms part of a broader explanatory framework within a model in which a variety of variables interact.

Looking ahead, this study points to the need to focus future educational and guidance intervention proposals on reducing students' procrastination, with the primary aim of improving their academic performance.

The findings of this study must be assessed in light of a number of limitations. Firstly, there are limitations related to sample size. In this regard, it would be advisable, for future research, to design a methodological approach incorporating random and statistically representative sampling procedures, whilst including a larger number of participants and other higher education institutions, so that the results can be generalised to any higher education institution. Furthermore, another particularly relevant aspect for complementing the present study would be the inclusion of other stakeholders involved in university teaching and learning processes; this would consequently provide a broader and more holistic view of the phenomenon under study, whilst seeking to identify other factors or variables that might be linked to procrastination and academic performance.

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