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# Relationship between procrastination, time management, personality, and psychological distress in higher education

Adrien Faure-Carvallo [a], Sergio Nieto-Fernández [a,b], Caterina Calderon [a,c] and Josep Gustems [d]

[a]Department of Audiovisual Communication, University of Barcelona, Barcelona, Spain; [b]Department of Applied Didactics, University of Barcelona, Barcelona, Spain; [c]Department of Clinical Psychology and Psychobiology, University of Barcelona, Barcelona, Spain; [d]Department of Applied Didactics, Josep Gustems, University of Barcelona, Barcelona, Spain

**ABSTRACT**

Procrastination is increasingly recognised as a significant factor influencing academic performance among university students. The objective of this study was to analyse the procrastination behaviours of a convenience sample of 910 university students from the 2018 to 2020 academic cohorts and to investigate the relationships between procrastination and students' sociodemographic and personality traits, academic time management practices, psychological distress, and academic performance. An exploratory, non-experimental, prospective, and cross-sectional study was conducted. Instruments used included a sociodemographic questionnaire, the Procrastination Assessment Scale-Students (PASS), the Academic Time Management scale (ATM), the Brief Symptom Inventory (BSI-18), and the Big Five Inventory-10 (BFI-10). Descriptive and inferential statistics were applied. Results identified two key dimensions contributing to procrastination: inadequate planning, poor academic performance, and insufficient monitoring of academic progress, as well as higher levels of irresponsibility, emotional exhaustion, and neuroticism. 61% of the variance in procrastination is explained by the variables considered, with significant influence from poor planning and neuroticism. The findings underscore the importance of targeted interventions aimed at reducing procrastination in university settings, emphasising time management and psychological well-being.

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**KEYWORDS**
Procrastination; higher education; academic performance; personality; psychological distress; academic time management

## 1. Introduction

Procrastination, derived from the Latin 'pro crastinus', refers to the habitual delay of academic or life tasks, often resulting in detrimental outcomes for individuals (Solomon and Rothblum 1984), including a decline in academic performance (Karatas 2015). In the 1990s, research by Haycock, McCarthy, and Skay estimated that procrastination affected 30% to 50% of students. Rather than decreasing, this prevalence has remained stable and may have even worsened. Recent international studies indicate that academic procrastination rates among university students in the 21st century range from 50% to 70% (Fentaw et al. 2022; Mahasneh, Bataineh, and Al-Zoubi 2016). Post-COVID-19 pandemic, these figures appear to have escalated further, exceeding 70% (Albursan et al. 2022; Ren et al. 2021; Shi et al. 2021), suggesting a growing concern regarding procrastination's impact on academic performance.

**CONTACT** Josep Gustems jgustems@ub.edu Department of Applied Didactics, Josep Gustems, University of Barcelona, Pg. Vall d'Hebron 171, Barcelona 08035, Spain

Procrastination has well-documented consequences on academic performance (Balkis and Duru 2017), often contributing to increased dropout rates (Garzón Umerenkova and Gil Flores 2017) and reduced attentiveness during lectures (Ying and Lv 2012). However, not all studies confirm this finding; as Özberk and Türk (2021) suggest, it may be low academic performance that triggers low motivation and fear of failure, which in turn would hinder time management and necessary planning (Schunk and Zimmerman 2023).

Even so, other research argues that, on an internal level, lack of productivity increases feelings of discomfort, anxiety (Kim, Fernandez, and Terrier 2017), psychological distress (Balkis and Duru 2016), irritation, and even shame, which often accompanies those who procrastinate (Martinčeková and Enright 2020). Furthermore, procrastination is linked to emotional dysregulation and counterfactual thinking (Diotaiuti, Valente, Mancone, and Bellizzi 2021). This is corroborated by these authors who highlighted the interplay between emotional regulation and procrastination in shaping students' academic outcomes. This phenomenon has been correlated with certain personality traits, as suggested by various researchers (Karatas 2015), reinforcing the importance of addressing procrastination as a multifaceted issue impacting both emotional and academic domains.

Lay and Schouwenburg, as early as 1993, had noted that procrastination increases in individuals with poorer time management skills, a trend that has been significantly intensified by the use of smartphones and social media platforms like TikTok (Klimenko and Varela 2022). As some recent studies demonstrate, the use of these devices often acts as a distracting element, which increases procrastinatory behaviours among university students and frequently raises their levels of stress and anxiety (Jin et al. 2024). Students with better time management skills tend to control these distractions more effectively and, therefore, are less affected by procrastination.

With regard to time management, this may be related to personal organisation, deadlines, opportunities, and task planning (Pereira and Ramos 2021). Furthermore, evidence has demonstrated a correlation between perceived time control and stress reduction among university students (Häfner, Stock, and Oberst 2015), especially in situations influenced by the COVID-19 pandemic (von Keyserlingk et al. 2022). In the university setting, the time available for studying is limited and demands efficient management. For this reason, perseverance and effective time management are essential for academic success. It is crucial to incorporate time management resources into university education, as strategies related to this skill enhance both efficiency and academic performance (da Costa Júnior et al. 2024). However, to sustain profound changes, it is important to consider other variables such as personality, procrastination, psychological distress, and certain sociodemographic characteristics, which require an adaptation of time management strategies (Fentaw et al. 2022).

There are numerous cognitive, emotional, and behavioural elements involved in procrastination behaviours, as outlined in the works ofÖzberk and Türk (2021), and Pereira and Ramos (2021). In our case, we will focus only on some of these elements, which we consider fundamental. Entering university is often accompanied by significant psychological distress, as it coincides with major life transitions such as leaving one's family, and adapting to a new environment (Huda et al. 2021). These pressures can result in such elevated stress levels that students may feel physically and emotionally overwhelmed, leading them to question their abilities and resort to avoidance behaviours, such as procrastination, in response to academic demands (Gustems-Carnicer, Calderón, and Calderón-Garrido 2019). Regarding sociodemographic variables, some studies have linked procrastination practices to factors such as gender and age (Vilca 2022). Personality traits also play a critical role in this context, with certain traits being associated with academic fields that require higher levels of achievement (Chamorro-Premuzic and Furnham 2003). These traits facilitate the use of self-regulated learning strategies, particularly those related to time management (Douglas, Bore, and Munro 2016). The research by MacCann, Fogarty, and Roberts (2012) highlights time management as a key mediating factor between personality traits and academic performance. Notably, several studies (Hidalgo-Fuentes, Martínez-Álvarez, and Sospedra-Baeza 2021) have linked academic performance

to specific personality traits, particularly those measured by the Big Five model (Wang et al. 2023), one of the assessment tools employed in this study.

Given all these considerations, and in line with the proposal by Fentaw et al. (2022), this study aimed to assess the prevalence of procrastination within the academic environment of our university and identify some psychological variables associated with this behaviour in university students.

To achieve greater effectiveness, it is essential to understand which personal characteristics can enhance effective time management. This understanding will allow for the development of realistic proposals aimed at improving time management among individuals, especially in the context of increasing competitiveness and the critical importance of completing studies with strong personal and academic outcomes (Pluut, Curşeu, and Ilies 2015). Furthermore, the relationship between procrastination and psychological variables among university students remains underexplored, making this study particularly valuable in advancing knowledge in this area. Understanding these factors is crucial for determining the elements that influence and promote academic success.

The objective of this study was to analyse the procrastination habits of a sample of university students enrolled in human and social sciences programmes, with a focus on determining the relationships between these habits and various psychological variables, as well as identifying the factors contributing to procrastination. It is anticipated that the findings will enable the development of targeted guidelines for improving students' academic performance, potentially through the implementation of university tutoring initiatives.

## 2. Methodology

### 2.1. Design

This study adopts a prospective exploratory approach of a cross-sectional nature, integrating descriptive and correlational methodologies (Cohen, Manion, and Morrison 2002). Its design is non-experimental, in line with the objectives.

### 2.2. Sample

This study examined a convenience sample of 910 students from four faculties of human and social sciences at the University of Authors. All participants provided informed consent and completed the administered questionnaires. The inclusion criteria were that students were enrolled, had access to their academic records, provided informed consent, and were fluent in Spanish. The study adhered to the principles outlined in the Declaration of Helsinki, and the research protocol received approval from the UB Ethics Committee (ref. 012). The use of a convenience sample might limit the generalisability of the results; therefore, we suggest using stratified sampling in future studies.

### 2.3. Tools

The questionnaires used in the assessment protocol are described below.

#### 2.3.1. Sociodemographic profile and academic performance

The questionnaire designed to assess the sociodemographic profiles and academic performance of the participants included items regarding students' age, sex, current academic year, and degree programme. Additionally, it solicited information on their academic performance, specifically focusing on the average grades achieved throughout their university students.

#### 2.3.2. Procrastination habits

Procrastination habits were evaluated using the Procrastination Assessment Scale-Students (PASS), developed by Solomon and Rothblum (1984). This 18-item instrument assesses procrastination levels

across six academic domains: writing term papers, studying for exams, completing weekly reading assignments, performing administrative tasks, attending meetings, and engaging in other academic activities. Participants rated their responses on a five-point Likert scale, ranging from 1 (never) to 5 (always). The items specifically measured the tendency of students to delay studying and completing assignments (e.g. 'I promise myself that I'll do my work, then I postpone it anyway'). The scale demonstrated adequate reliability, with a Cronbach's alpha of .76 (Ozer, Demir, and Ferrari 2009).

#### 2.3.3. Academic time management

The Academic Time Management (ATM) scale is designed to evaluate students' strategies for effectively utilising their time for learning purposes (Won, Wolters, and Mueller 2018). Participants responded to a total of 14 items, which included five items assessing time planning (e.g. 'I set deadlines to complete a task'), four items related to time monitoring (e.g. 'I check a planner, timetable, or calendar daily to determine my tasks'), and five items measuring procrastination tendencies (e.g. 'I leave my classwork until the last minute'). The scale demonstrated high reliability, with coefficients ranging from .80 to .93 (Won and Shirley 2018).

#### 2.3.4. Psychological distress

Psychological distress was evaluated using the Brief Symptom Inventory (BSI-18), a concise questionnaire designed to assess psychological distress in both clinical and community populations (Derogatis 2001). Participants responded to items regarding their feelings over the past seven days, with each item rated on a five-point Likert scale ranging from 0 (not at all) to 4 (extremely). The BSI-18 demonstrated strong reliability, with coefficients ranging from .81 to .90 (Andreu et al. 2008)

#### 2.3.5. Personality profile

Personality was assessed using the Big Five Inventory-10 (BFI-10), a concise measure developed by Rammstedt and John (2007) that is derived from the well-established Big Five Inventory (BFI). The BFI-10 includes 10 items selected from the original 44 items of the BFI. Given the relevance of the Big Five model to procrastination (Ferrari and Pychyl 2012; Karatas 2015), and its widespread application in psychological assessments, we chose to employ it for this study. The BFI-10 evaluates the following personality traits: neuroticism, extraversion, openness to experience, conscientiousness, and agreeableness, and was selected for its brevity and greater acceptability among respondents. The Cronbach's alpha for this test ranges between .61 and .81 (Renau et al. 2013)

### 2.4. Procedure

Data collection occurred during the 2018–2020 academic years. In September of each academic year, researchers from eight degree programmes were contacted to present the protocol for administering the questionnaires. Participants received an introductory email detailing the project, along with a copy of the protocol and a consent form for participation. Faculty members were asked to explain the study protocol to their students and to encourage their participation. Participants were allotted 10 to 30 minutes to complete the protocol. Participation was entirely voluntary, and students were free to withdraw at any point without facing any negative consequences. All participants were informed about the study, including the collection and anonymous processing of the data.

### 2.5. Data analysis

Sociodemographic and clinical characteristics of the participants were reported as means and standard deviations for continuous variables, and as frequencies and percentages for categorical variables. Independent sample t-tests and one-way analysis of variance (ANOVA) were conducted to assess variations in procrastination related to sociodemographic factors. In instances where the one-way ANOVA indicated significant differences, post hoc tests were performed for paired comparisons.

The Pearson correlation coefficient was utilised to determine the level of association between procrastination and the variables of interest. Additionally, linear regression analysis was employed to evaluate the effects of academic time management, psychological factors, and personality traits on students' procrastination habits, while controlling for sociodemographic variables (age, sex, and academic progress). Psychological and sociodemographic variables that showed significant correlations with procrastination in univariate analyses were included in the linear regression model as covariates. Assumptions underlying the regression analysis, such as linearity, multivariate normality, low multicollinearity, and homoscedasticity, were carefully assessed. However, the relatively small sample size and the specific context of the research may limit the generalisability of the findings. Statistical significance was set at $\alpha < .05$ for all analyses, limiting the probability of a Type I error to less than 5%, balancing the detection of true effects and the control of false positives (Benjamin et al. 2018). Data were analysed using the Statistical Package for Social Sciences (SPSS) software, version 25.0 (IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp).

## 3. Results

### 3.1. Sociodemographic profile, academic performance, and procrastination

The sample comprised 910 university students, of whom 82.7% were female and 17.3% were male, with a mean age of 22.6 years (SD = 6.8). Among the participants, 31.1% were first-year students, 25.6% were in their second year, 14.7% in their third year, 20.4% in their fourth year, and 8.1% in their fifth year. The majority of students were enrolled in the Faculty of Education (46.5%), followed by the Faculty of Information and Audiovisual Media (24.9%) and History of Art (9.7%). The average academic performance of the participants was 7.1 (SD = 1.0) on a scale of 0 to 10.

Male students exhibited higher levels of procrastination compared to female students, with means of 20.8 and 18.9, respectively (F = 5.941, $p = .001$, effect size $\eta^2 = .007$). Additionally, students from the Faculty of Information and Audiovisual Media reported greater procrastination than their counterparts from the Faculty of Education, with means of 21.7 and 18.1, respectively (F = 5.189, $p = .001$, effect size $\eta^2 = .030$). Furthermore, students with an academic average classified as 'pass' procrastinated more than those with an average categorised as 'good', with means of 20.6 and 18.5, respectively (F = 3.970, $p = .019$, effect size $\eta^2 = .013$). Table 1 presents all this information: the number of participants and percentages, the scores obtained in the PASS along with their standard deviations, the ANOVA results,

Table 1. Comparison of Procrastination Scores by Demographic and Academic Variables ($n = 910$).

| Variables | n | % | PASS M ± SD | F | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|
| **Sex** | | | | | | |
| Males | 157 | 17.3 | 20.8 ± 9.3 | **5.941** | **.001** | **.007** |
| Females | 753 | 82.7 | 18.9 ± 8.6 | | | |
| **Age** | | | | 3.300 | .070 | – |
| Under 23 years | 706 | 77.6 | 19.0 ± 8.3 | | | – |
| Over 23.1 years | 204 | 22.4 | 20.3 ± 9.9 | | | |
| **Academic year** | | | | | | |
| 1st | 283 | 31.1 | 19.5 ± 8.3 | .765 | .548 | – |
| 2nd | 233 | 25.6 | 18.5 ± 8.7 | | | |
| 3rd | 134 | 14.7 | 19.3 ± 9.1 | | | |
| 4th | 186 | 20.4 | 19.9 ± 8.8 | | | |
| 5th | 74 | 8.1 | 18.9 ± 9.2 | | | |
| **Employment status** | | | | .030 | .863 | – |
| Does not work | 393 | 43.2 | 19.2 ± 8.5 | | | |
| Works | 517 | 56.8 | 19.3 ± 8.9 | | | |
| **Academic performance** | | | | | | |
| Pass | 293 | 34.1 | 20.6 ± 9.3 | 3.970 | .019 | .013 |
| Good | 589 | 62.7 | 18.5 ± 8.7 | | | |
| Excellent | 28 | 3.2 | 18.8 ± 8.7 | | | |

*Note.* **n** = number of participants; **%** = percentage; **M** = mean; **SD** = standard deviation; **F** = F statistic from ANOVA; **p** = significance value; $\eta^2$ = eta squared, measure of effect size.

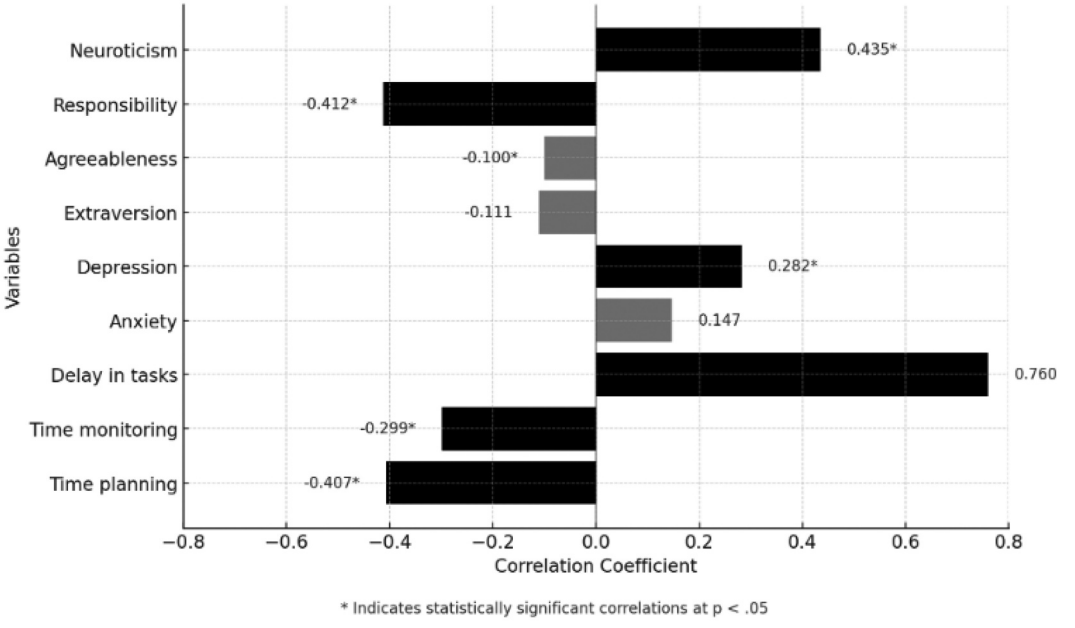


Figure 1. Correlations between procrastination and psychological, personality and time management variables.

and the effect size. All these outcomes are related to sociodemographic variables such as gender, age, academic year, employment status, and academic performance.

### 3.2. Correlations between procrastination and the rest of the variables

Pearson correlation analyses indicated that procrastination was positively and significantly associated with late assignment submissions ($r = .760$, $p = .001$), neuroticism ($r = .435$, $p = .001$), depression ($r = .282$, $p = .001$), and anxiety ($r = .147$, $p = .001$). Conversely, procrastination demonstrated negative correlations with conscientiousness ($r = -.412$, $p = .028$), planning time ($r = -.407$, $p = .001$), monitoring time ($r = -.299$, $p = .001$), academic performance ($r = -.142$, $p = .001$), extraversion ($r = -.111$, $p = .028$), and agreeableness ($r = -.100$, $p = .011$). Figure 1 graphically shows these correlations: the highest ones in black, the lower ones in grey, with positive values to the right and negative values to the left.

### 3.3. Predictors of procrastination

Linear regression analyses indicated that variations in planning time, depression, monitoring time, and personality factors (neuroticism and conscientiousness), along with academic progress, accounted additively for 61% of the variance in procrastination ($F = 102.099$, $p < .001$). Notably, age and sex were not significant predictors in this model (see Table 2). In summary, the identified factors contributing to procrastination included poor task planning, insufficient progress monitoring, emotional depression, high levels of neuroticism, low conscientiousness, and poorer academic performance.

## 4. Discussion

In summary, the findings of this research provide significant insights into the procrastination habits of university students in the fields of social sciences and humanities at the University of Authors.

Table 2. Linear Regression Analysis to Determine Procrastination Score (PASS).

| | Unstandardized coefficients | | Standardised coefficients | | | | |
|---|---|---|---|---|---|---|---|
| Variable | β | Standard error | Beta | *t* | *p* | 95% CI | |
| (constant) | −.888 | 3.821 | | −.232 | .816 | −8.39 | 6.61 |
| ATM. Delay | 1.370 | .064 | .680 | 21.448 | **.000** | 1.24 | 1.49 |
| BSI. Depression | .133 | .044 | .091 | 3.034 | **.003** | .04 | .21 |
| ATM. Calendar | −.220 | .061 | −.108 | −3.599 | **.000** | −.34 | −.10 |
| BFI. Neuroticism | .341 | .129 | .078 | 2.642 | **.009** | .08 | .59 |
| BFI. Conscientiousness | −.347 | .156 | −.071 | −2.229 | **.026** | −.65 | −.04 |
| Age | .054 | .035 | .045 | 1.546 | .123 | −.01 | .12 |
| Grade | −.521 | .238 | −.062 | −2.186 | **.029** | −.98 | −.05 |
| Sex | −.116 | .683 | −.005 | −.170 | .865 | −1.45 | 1.22 |
| Adj $R^2$ | .426 | | | | | | |

*Note*. ATM = Academic Time Management; BSI = Brief Symptom Inventory; BFI = Big Five Inventory. Values in bold are significant at the 5% level.

First, the results indicate that male students exhibit higher levels of procrastination compared to their female counterparts. This observation aligns with the findings of Balkis and Duru, who noted that women tend to procrastinate less than men (Balkis and Duru 2017), although some studies, such as that of Asio (2020), do not find such differences. Balkis and Duru suggest that this difference may be attributed to the greater anxiety women experience regarding unfinished tasks, which could account for their reduced levels of procrastination. Additionally, the higher levels of procrastination observed among students in Information and Communication degrees, as opposed to those in education, may reflect the larger proportion of women in education programmes. This trend could potentially enhance women's opportunities for securing certain jobs, thereby mitigating existing inequalities and job discrimination in specific fields. Furthermore, it is noteworthy that male students are statistically less likely to complete their studies compared to female students (Awadalla, Davies, and Glazebrook 2020), and women generally demonstrate superior academic performance (Dezcallar et al. 2015). Interestingly, these disparities tend to diminish with age, suggesting that sex-related differences in procrastination and academic outcomes may converge as individuals mature and gain experience (Dominguez-Lara, Prada-Chapoñan, and Moreta-Herrera 2019; Khan et al. 2014). In this regard, we align with Asio's (2020) study, which found no differences in procrastination related to age.

Second, the findings indicate that students with an average grade classified as 'pass' exhibit higher levels of procrastination compared to those with a 'good' average. In other words, poorer academic performance correlates with a greater tendency to procrastinate, while increased procrastination is associated with lower academic performance. This relationship has been corroborated by numerous studies conducted across various regions (Hidalgo-Fuentes, Martínez-Álvarez, and Sospedra-Baeza 2021; Martín-Antón et al. 2022; Suárez and Feliciano-García 2020). The multilevel study conducted by Kljajic and Gaudreau (2018) is noteworthy, as it confirms these findings and compares procrastination behaviours with the grades achieved by students, not only across different courses but also during various semesters within the same course. The study further concludes that a student's grades over different semesters or courses fluctuate based on their levels of procrastination. However, studies such as that of Özberk and Türk (2021) reveal that, in some cases, there is no positive relationship between performance and procrastination, possibly due to a lack of perspective regarding different types and domains of procrastination and life circumstances that have not always been considered.

This leads us to our third finding: the obtained correlations demonstrate that procrastination practices are related to academic time management, both positively and negatively. This finding aligns with the study by Garzón Umerenkova and Gil Flores (2017), leading us to consider the need to

cultivate an awareness among university students that both procrastination and time management are important elements to address in academic tutoring (Faure-Carvallo et al. 2024).

Prior research indicates that academic performance is influenced by a variety of academic, cognitive, demographic, and psychological factors (Hidalgo-Fuentes, Martínez-Álvarez, and Sospedra-Baeza 2021). In relation to our fourth finding, the correlations identified between procrastination, personality traits, and psychological distress are particularly significant: higher levels of procrastination are associated with a greater tendency towards neuroticism, depression, and anxiety, and vice versa. Moreover, Manchado Porras and Hervías Ortega (2021) suggest that procrastination behaviours have an indirect impact on academic outcomes due to their association with cognitive manifestations of exam anxiety. Importantly, the data obtained in our study corroborate findings from other countries. For instance, a study conducted by Dominguez-Lara, Prada-Chapoñan, and Moreta-Herrera (2019) at two universities in Lima, Peru, revealed that personality traits are linked to dimensions of academic procrastination. In any case, if we compare academic procrastination in an international context, it is important to consider that cultural differences, or even the specific characteristics of each country's educational systems, could influence students' procrastination behaviours.

Lastly, regarding our fifth finding, it is essential to emphasise the variables contributing to procrastination. Our linear regression analyses reveal that the underlying factors of procrastination include, on one hand, a lack of planning, suboptimal academic performance, and insufficient monitoring of academic progress; and on the other hand, traits such as irresponsibility, emotional exhaustion, and neuroticism. These data align with the existing literature (Balkis and Duru 2017; Kim, Fernandez, and Terrier 2017; Pereira and Ramos 2021; Trentepohl et al. 2022) and underscore the need to introduce time management workshops or techniques in university tutoring programmes.

These would help reduce students' procrastinating behaviours, thereby improving their academic performance. Based on the results obtained in this research, courses or workshops could be structured around factors such as motivation, self-assessment, stress management or control, task planning, work monitoring, role-playing simulations, the use of learning strategies, or the development of metacognitive and self-regulation skills. Ultimately, the results of this study show a close relationship between students' psychological distress (depression, anxiety, etc.) and procrastinating behaviours. Therefore, from our perspective, it would be essential that, in addition to providing practical resources on time management and academic planning, these workshops address aspects related to students' psychological well-being: emotional regulation, stress control, etc.

Regarding academic performance, its influence on procrastinatory behaviours is justified by the prior emotional state, which intensifies negative emotions that prevent engagement with academic tasks, thus fostering recurrent procrastination. These findings align with a substantial body of literature dedicated to analysing the causes of procrastination (Mejia et al. 2018; Moreta Herrera, Durán Rodríguez, and Villegas Villacrés 2018; Özberk and Türk 2021). The role of emotional regulation, as emphasised by Diotaiuti, Valente, Mancone, Grambone, et al. (2021), is particularly relevant in understanding how students manage academic pressures and avoid procrastination.

## 5. Conclusions

The results of this research have addressed the proposed objectives, describing the presence of procrastination in a sample of university students, and identifying the variables that best explain it. The findings suggest that, to comprehensively understand and elucidate the academic performance of university students – an essential element in assessing the quality of higher education – procrastination must be examined in conjunction with various other factors. These include academic pressure, excessive workload, financial concerns, technology management, and the role of emotional regulation strategies in academic settings (Diotaiuti, Valente, Mancone, Grambone, et al. 2021). Therefore, the integration of educational resources, such as a digital portfolio, into university

curricula in a cross-cutting manner may serve as an effective strategy for monitoring academic progress and enhancing time management skills (Calderón-Garrido, Gil-Fernández, and Martín-Piñol 2023). However, we must be cautious in the use of smartphones or social media, as they can act as a distraction that increases procrastinating behaviours (Jin et al. 2024; Klimenko and Varela 2022).

Furthermore, our research aligns with previous studies, such as that conducted by Nordby, Klingsieck, and Svartdal (2017), which emphasise that certain environments can either facilitate or reduce procrastination habits, thereby minimising their impact on the academic population. For instance, incorporating tutorship as a pedagogical role – an essential component within the framework of the European Higher Education Area – could embed specific responsibilities within the Tutorial Action Plan to enhance students' academic and social integration, addressing both personal and social dimensions. Consequently, these tutors would play a pivotal role in fostering a holistic educational experience that supports students' comprehensive development across intellectual, emotional, personal, and social domains (Castell-Villanueva, Martín-Piñol, and Calderón-Garrido 2018). This support would be instrumental in helping students articulate and refine their academic, professional, and personal aspirations throughout their university journey. Ultimately, the presence of a supportive and encouraging figure significantly fosters ethical and personal commitment. Therefore, we contend that preserving opportunities for face-to-face interactions is essential, as these encounters promote professional interests and facilitate communication between educators and students (Flores and Niklasson 2014).

Additionally, the findings provide valuable insights into the procrastination habits of university students. The use of validated tools, such as the Temporal Focus Scale (Diotaiuti, Valente, Mancone, Grambone, et al. 2021), supports a reliable assessment of time-related tendencies and their impact on procrastination and emotional outcomes, even in young adults.

### 5.1. Limitations

It is important to note that the sample size and the lack of control for certain socio-demographic variables and contextual factors (economic or cultural) that could potentially influence the generalisability of the results. A key limitation of this study is its cross-sectional design, which prevents causal inferences, as well as uncontrolled sociodemographic variables that could influence the results. Additionally, the absence of cultural or contextual variables could affect the interpretation of procrastination behaviours. Furthermore, since it is a convenience sample, it may limit the generalisation of the findings. We suggest that future studies consider using random sampling methods to improve representativeness.

### 5.2. Future directions

For future research, it would be important to include longitudinal studies and explore the impact of other variables not considered in this study, such as coping strategies or self-esteem, to deepen the understanding of the identified dynamics and verify the replicability of the results on larger and more diverse samples. It would also be relevant to consider cultural or geographical factors that could influence procrastination responses due to contextual elements specific to the students.

It would also be valuable to analyse how the increasingly widespread use of smartphones affects procrastination and performance, as some authors note that the relationship between these elements is not well understood (Hayat, Kojuri, and Amini 2020), while others confirm their influence, either negatively or positively (Rozgonjuk, Kattago, and Täht 2018). This analysis would be of great interest to the university community, especially given the growing integration of technology in academic environments as a consequence of the COVID-19 pandemic.

As we have observed, academic procrastination and time management among university students are a complex phenomenon, so the use of mixed methods in future research could be advantageous. Combining quantitative and qualitative results would provide a richer perspective on the phenomenon under study, allowing researchers to explore the context in which

procrastination and academic time management practices occur from various angles, as well as assess the effectiveness of educational programmes focused on these issues.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## ORCID

Adrien Faure-Carvallo http://orcid.org/0000-0002-6065-5186
Sergio Nieto-Fernández http://orcid.org/0000-0001-7497-0139
Caterina Calderon http://orcid.org/0000-0002-6956-9321
Josep Gustems http://orcid.org/0000-0002-6442-9805

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