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ABSTRACT

PURPOSE: The objectives of this research are to analyze the sociodemographic and personality profiles most related to good academic time management among 845 students from different faculties at the University de Barcelona, and to identify the explanatory factors of effective academic time management.

DESIGN/METHOD/APPROACH: Poor time management is a common behavior among university students, and an explanatory factor for academic failure. A sociodemographic questionnaire, the Procrastination Assessment Scale-Student (PASS), the Academic Time Management (ATM), the Brief Symptom Inventory (BSI-18), and the Big Five Inventory-10 (BFI-10) were administered.

RESULTS: The results reveal that female students, education majors, and those with high academic performance show better time management than the rest of the student body. Additionally, students who have better academic time management are also more neurotic, more open to experience, more responsible, and less prone to procrastination. The factors established as explanatory of good academic time management are neuroticism, openness to experience, and low procrastination.

ORIGINALITY/VALUE: The implications of the results for promoting academic time management in university studies through specific actions are discussed.

KEYWORDS

Time Management; Procrastination; Academic Performance; Higher Education

INTRODUCTION

The interest in time management among university students began to emerge in the 1970s with the publication of self-help books that emphasized emotional and relationship control as a key element for time organization. In the 1980s, the first research studies based on efficiency models on time management as a strategy against stress were conducted (Macan et al., 1990; Claessens et al., 2007). These studies identified the importance of distinguishing and combining important and urgent tasks, which improved the sense of efficacy and productivity, reduced stress, and made tasks more satisfying as well as engaging. Macan et al. (1990) later claimed that time management would be multidimensional, with various factors such as perceived control of time, goal and priority setting, application of technical strategies and preference for disorganization.

In university, study time is limited and must be managed carefully; therefore, perseverance and good time management are necessary for academic success. Resources on time management should be included in university education since time management strategies improve effectiveness and performance (Nadinloyi et al., 2013). Back in the 1990s, Britton and Tesser (1991) pointed out that there were positive correlations between students' time management and their academic performance. Later, Hortsmanshof and Zimitat (2007) considered self-perception of time as a key factor that affects the relationship between academic performance and commitment to studies. Additionally, a relationship has been demonstrated between perceived control of time and stress reduction in university students (Häfner et al., 2015; von Keyserlingk et al., 2022).

The policies carried out during the last decades aimed at democratizing access to university education and have diversified the type of students pursuing higher education, bringing in a different profile than the so-called "traditional student" (Gilardi & Guglielmetti, 2011). From a student with an average age of 19 at the time of enrollment, just out of high school and a member of an upper-middle-class family, we have moved to a student between 23 and 25 years old who often has to combine studies with part-time job. Currently, these students who combine work and studies (either bachelor's or master's degrees) require greater flexibility in teaching methods from universities, which has caused the latter to adopt different strategies that respond to their student’s new needs. A good example of this is the increase in study grants (Hall, 2010; Flores et al., 2022), the gradual introduction of online teaching modalities in higher education (Sánchez-Gelabert, 2020), or the possibility of combining these new modalities with traditional face-to-face classes. For these part-time students, effective time management is fundamental (MacCann et al., 2012), being, for these authors, a mediating strategy between students' personality and academic performance.

Reading a manual or attending a time management course can have a positive impact on one’s academic performance, as well as other aspects of life (O'Connor & Paunonen, 2007). Similarly, in the previously cited study by Nadinloyi et al. (2013), it is suggested that exercising time management skills in studying, leads to a better academic performance. However, to maintain lasting changes, it is important to consider other variables such as personality, procrastination, psychological distress, and certain sociodemographic characteristics, which require adaptation in time management (Fentaw et al., 2022). Among these, procrastination, a consistent behavioral pattern of delaying responsibilities, could be considered one of the most important factors. According to some authors, constant task postponement increases in individuals with poor time management skills (Lay & Schouwenburg, 1993; Sulistia & Widigdo, 2023).

Therefore, studies in higher education have been interested in describing the development of teaching and learning strategies aimed at improving time management. Among their practical proposals are those collected by Häfner et al. (2015): task prioritization, setting clear, challenging, and proximal goals, daily planning, and monitoring of one's own progress. Other

authors, such as Ruiz et al. (2016), propose the optimization of working time through conscious organization of the different tasks that students have to carry out: information search, group work meetings, individual study, readings, etc. Be that as it may, the aforementioned research coincides in pointing out the need for the university institution itself to provide students with resources and training programs in time management. Nevertheless, despite this being a fundamental factor that directly affects academic performance, there are voices that lament the lack of initiatives to address these issues from university guidance departments (Díaz-Morales, 2019).

In recent decades, social and demographic changes in higher education have diversified the profile of university students. The present study aims, on one hand, to understand the factors contributing to the development of effective time management skills among this new student population and, on the other hand, to analyze their sociodemographic and psychological profiles. These data, in conjunction with the numerous previously cited studies describing the processes for teaching and learning effective time management, could not only significantly enhance course design but also optimize the strategies for disseminating these educational programs, thereby facilitating the inclusion of student groups in greatest need of them.

However, to achieve greater effectiveness, it is necessary to know which personal characteristics can promote good time management and thus develop realistic proposals that promote time management improvement in individuals. There are not many studies focused on analyzing these characteristics in Higher Education, so the objectives of this research are: a) To analyze the sociodemographic and personality profile of students most related to good academic time management, in different academic areas of the University of Barcelona, and b) to identify the factors that contribute to effective academic time management in our sample.

METHOD

Sample

The present study, which was exploratory and prospective in nature, had a sample of 845 students from 6 faculties of Humanities and Social Sciences at the University of Barcelona (UB), Spain. All participants signed informed consent and completed the administered questionnaires. This study was conducted in accordance with the Helsinki Declaration, and the UB ethics committee (ref. 012) approved the protocol.

Instruments

The questionnaires used in the evaluation protocol will be described.

Sociodemographic profile and academic performance

The questionnaire to determine the sociodemographic profiles of the sample and their academic performance included questions about the students (age, gender, current academic year, degree they are studying) and their academic performance (average grades obtained so far at university).

Academic Time Management

The Academic Time Management (ATM) is a questionnaire designed to evaluate student's strategies and effective use of time for learning (Won, Wolters, & Mueller, 2018). Participants answered 14 items that assessed time planning (e.g., "I set deadlines to complete a task"), time monitoring (e.g., "I check a planner, schedule, or calendar every day to see what I have to do"), and procrastination (e.g., "I put off doing class work until the last minute"). The reliability of the

ATM is between .80 and .93 (Won & Shirley, 2018).[1] It is worth mentioning that, in any case, efforts were made to provide the necessary conditions to ensure that questionnaire responses are accessible to the entire sample and are not affected by poor time management.

Practices of Procrastination

Procrastination was evaluated using the Procrastination Assessment Scale-Student (PASS), created by Solomon and Rothblum (1984). It consists of an 18-item measure that assesses the level of procrastination in six academic domains: taking exams, studying for exams, keeping up with weekly readings, completing administrative tasks, attending meetings, and doing academic tasks. Participants were asked to respond on a 5-point Likert scale (1: never, to 5: always). These items measured the tendency of students to postpone their studying and assigned school work (e.g., "I promise myself that I will do my school work, then I postpone it anyway"). The scale has a Cronbach's alpha of .76 (Ozer, Demir, & Ferrari, 2009).

Psychological distress

Psychological distress was assessed using the Brief Symptom Inventory (BSI-18), a widely used brief questionnaire for detecting psychological distress in clinical and community populations (Derogatis, 2001). Participants were asked to respond regarding how they had felt during the last 7 days; each item was rated on a 5-point Likert scale from 0 (not at all) to 4 (extremely). Reliability is between .81 and .90 (Andreu et al., 2008).

Personality profile

Personality was analyzed using the Big Five Inventory-10 (BFI-10). The BFI-10, developed by Rammstedt and John (2007), is a shortened version of the widely used Big Five Inventory (BFI), and consists of 10 of the 44 items in the standard BFI. The BFI-10, introduced due to its high acceptance and the short time needed for individuals to complete it, evaluates the following personality traits: neuroticism, extraversion, openness, conscientiousness, and agreeableness. Procrastination may be related to the Big Five model (Ferrari & Pychyl, 2012; Karatas, 2015), which is very common in psychological assessment practice, and therefore we found it convenient to apply it in this research.

Procedure

Data collection was carried out during the academic years 2018-2020. The project researchers from the different degree programs were contacted, the questionnaire protocol to be administered was presented to them and a sheet with the project introduction, a copy of the protocol, and a participation consent form were sent to them via email. They were asked to explain and encourage the students in their degree programs to complete the protocol for this study. The estimated time for completing the protocol ranged from 10 to 30 minutes. Participation of the subjects was entirely voluntary, and they could express the possibility of interrupting it at any time without any negative consequences. All students were informed about the study, anonymous data collection, and processing.

Statistical analysis

[1] Regarding the analysis of academic performance, in this study, the Spanish academic grading system has been followed, where a rating from 1 to 10 is considered equivalent to the following letter scale in the American system:

- 10 (excellent) is equivalent to an A+
- 9 (excellent) is equivalent to an A
- 7-8 (notable) is equivalent to a B
- 5-6 (satisfactory) is equivalent to a C
- Less than 5 (fail) is equivalent to an F

Descriptive statistics and frequency distributions were calculated for demographic and clinical characteristics using SPSS version 23 (IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp). To identify students with similar time management patterns, a cluster analysis was conducted. Clustering variables comprised the ATM items. Since clustering requires valid values for all variables, subjects with missing ATM values were eliminated. A final sample of n= 845 was used for the cluster analysis. We carried out a k-means method using Euclidean distances between observations to estimate clusters and Ward's hierarchical clustering method (Ward, 1963), where the distance between two clusters is defined as the squared error criterion. In all instances, the distances were computed from the raw data to incorporate the elevation, scatter, and shape of the subject's profiles (Cronbach & Gleser, 1953; Jaccard et al., 2019). A two-cluster solution was found to distinguish between low and high time management. Analyses of variance (ANOVA), as well as Chi-square analyses were carried out to evaluate differences in demographic, and psychological characteristics among the time management profiles. Bonferroni correction was used for post-hoc contrast. Eta squared (η2) was applied to assess effect size in continuous variables. Eta-squared ranges between 0 and 1, with η2 ~ .01 for a small, η2 ~ .06 for a medium and η2>.14 for a large effect size (Pierce et al., 2004). The psychological variables that were significantly related to time management in the univariate analysis were introduced into the logistic regression analysis using the forward conditional method for logistic regression. We applied Nagelkerke's R-squared to determine the goodness of fit of the logistic regression model. A p-value of < .05 was deemed statistically significant.

RESULTS

Sociodemographic Characteristics

The sample consisted of 845 university students (82% women and 17% men), with a mean age (M) of 22.4 years (SD = 6.5). 58% of them were not working, 55% were in their first or second year of study, and 45% were in their third or fourth year. The students were mainly from the Faculty of Education (47%) and Information and Audiovisual Media (25%). The average academic performance was 7.1 (SD = 1.0) out of 10.

Two groups of students were found to distinguish between low and high time management scores, using a k-means method by means of Euclidean distances between observations. The students were classified as high time management (67%, n= 568) or low time management (33%, n= 277). Analyzing the relationship between time management and sociodemographic characteristics, we found that women manage time better than men (X2= 44.620, p= .001), and teacher education students manage time better than pedagogy or psychology students (X2= 30.277, p= .001). Also, students with a notable-excellent academic performance manage time better than those who pass (X2= 5.586, p=.018), see Table 1.

Table 1. Differences in demographic among the Time management profiles (n= 845)

Variables	Total sample n (%) 845 (100%)	High Time Management n (%) 568 (67%)	Low Time Management n (%) 277 (33%)	X^2	*P* value
Sex					
Men	150 (18)	66 (44)	84 (56)	**44.620**	**.001**
Women	695 (82)	502 (72)	193 (28)		
Age					
<21y	503 (60)	340 (68)	163 (32)	.080	.778
≥21.1y	342 (40)	228 (67)	114 (33)		
Employment Status					
Works	355 (42)	229 (64)	170 (48)	.110	.740
Does not work	490 (58)	261 (53)	229 (47)		
Academic year					
1st and 2nd	468 (55)	306 (64)	162 (35)	1.602	.206
3rd and 4th	377 (45)	262 (69)	115 (31)		
Studies					
Teacher	397 (47)	294 (74)	103 (26)	**30.277**	**.001**
Communication	213 (25)	139 (65)	74 (35)		
Arts	76 (9)	48 (63)	28 (37)		
Pedagogy	46 (5)	17 (37)	29 (63)		
Psychology	46 (5)	27 (59)	19 (41)		
Others	67 (8)	43 (64)	24 (36)		
Academic Performance					
Passed	204 (33)	127 (62)	77 (38)	**5.586**	**.018**
Good-Excellent	406 (67)	291 (72)	115 (28)		

Abbreviations. M= Mean; SD= Standard Deviation.
Bold values indicate the significant at 5% level.

Regarding gender differences, men who solely dedicate themselves to studying show better time management skills than those who work (33% vs 67%, X^2= 4.618, *p*= .032). For women, no differences were found in time organization based on age, employment, academic year, or academic performance, see figure 1.

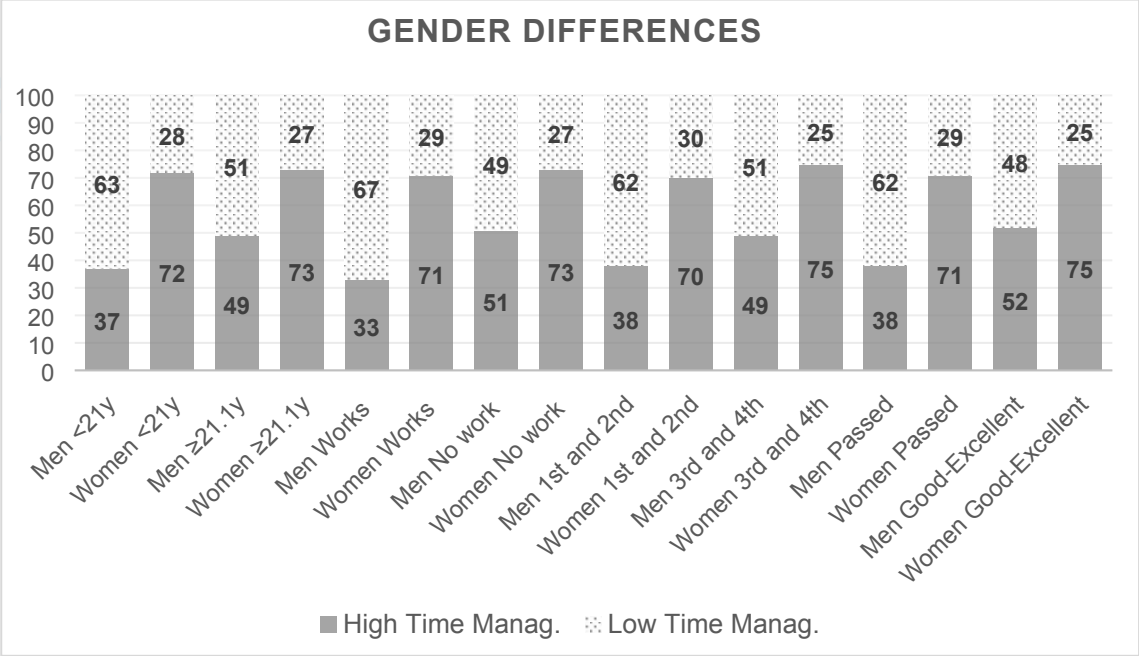

Figure 1. Gender differences on Time management profiles

Time management profiles and psychosocial characteristics

When searching for connections between time management profiles and psychosocial characteristics assessed by the BSI, BFI, and PASS scales, we found that students with higher scores in time management were also more neurotic (M= 6.5 vs M= 6.1; F= 8.029, p= .004, η 2 = .009), more open to experience (M= 7.1.5 vs M= 6.7; F= 4.987, p= .026, η 2 = .006) and more responsible (M= 6.0 vs M= 5.5; F= 13.535, p= .001, η 2 = .016). Students with lower scores in time management also showed lower levels in voluntarily delaying tasks (M = 15.5 vs M = 18.3; F= 30.362, p= .001, η 2 = .039) and in procrastinating (M = 2.6 vs. M = 3.2; F= 12.396, p= .001, η 2= .014), see Table 2.

Table 2. Differences in baseline psychosocial characteristics and Time management profiles

	High Time Management n (%) 568 (67%)		**Low Time Management n (%) 277 (33%)**				
	Mean	**SD**	**Mean**	**SD**	**F**	**p**	**Eta-squared**
Psychological distress (BSI)	68.9	6.7	69.0	6.9	.028	.867	--
Anxiety	65.8	6.6	68.2	6.3	.698	.404	--
Depression	66.4	6.2	66.8	6.0	.881	.348	--
Somatization	62.8	7.9	62.3	7.9	.611	.435	--
Big Five Inventory (BFI)							
Neuroticism	6.5	1.9	6.1	2.0	**8.029**	**.005**	**.009**

Extraversion	6.5	1.8	6.5	1.9	.003	.957	---
Openness to experience	7.1	2.1	6.7	2.1	**4.987**	**.026**	**.006**
Conscientiousness	6.0	1.8	5.5	1.7	**13.535**	**.001**	**.016**
Agreeableness	6.7	1.3	6.8	1.3	.932	.335	--
Procrastination (PASS)							
Voluntary task delay	14.0	6.3	16.7	6.1	**30.362**	**.001**	**.039**
Laziness	2.6	2.5	3.2	2.8	**12.396**	**.001**	**.014**

Abbreviations: BSI, Brief Symptom Inventory; BFI, Big Five Inventory. PASS, Procrastination Assessment Scale-Student; Bold values indicate the significant at 5% level.

Psychological factors that explain high scores in time management

Neuroticism, openness, conscientiousness, procrastination and laziness (which are significant between students with high and low time management scores) were introduced into the logistic regression analysis. Neuroticism (p=.002), openness to experience (p=.014), and lower voluntary task delay (p=.001) were associated with higher scores in time management (Nagelkerke's R2=8.3), see Table 3.

Table 3. Logistic regression analysis to determine explicative factors for time management profiles

Variables	β	Wald test (z ratio)	Sig.	Odds ratio	Lower 95%IC	Higher 95%IC
First Step						
Sex	.107	.061	.805	1.113	.477	2.597
Academic progress	.113	.311	.577	1.119	.753	1.664
Studies	.278	.334	.405	1.321	.686	2.543
Second Step						
BFI. Neuroticism	.118	9.636	.002	.889	.825	.957
BFI. Openness	.086	6.035	.014	.917	.856	.983
BFI. Conscientnousness	.055	1.360	.243	.947	.864	1.038
PASS. Delay	-.060	16.936	.001	1.062	1.032	1.093
PASS. Laziness	-.025	.686	.407	1.026	.966	1.090
Constant	.066	.017	.895	.936		

Abbreviations: Big Five Inventory. PASS, Procrastination Assessment Scale-Student

DISCUSSION

Firstly, the data obtained in our research shows that the majority (67%) of the participating students consider themselves to have good academic time management skills. This trend has been verified in later studies, such as Carrasco Dioses' (2022), where only 7.03% of surveyed university students reported a low self-perception of their time control. However, the fact that most students in higher education tend to consider themselves good at managing their time does not mean that poor time management is not a current problem in universities (Alvarez Sainz et al., 2019).

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In line with previous research (Bonsaksen et al., 2017; Bonsaksen et al., 2021; Sultana & Shakur, 2022), it has been found that being a woman and achieving high academic performance is associated with better time management. In our study, men with less efficient time management were those who had to alternate between study and work. This trend may be attributed to various reasons, such as concurrent demands of time and energy in balancing study and work, the possible presence of stress or fatigue, the need to prioritize external commitments, among other factors.

It is noteworthy that fields in the realm of education sciences and/or social sciences have a significant representation of women (Bonsaksen et al., 2017; Bonsaksen et al., 2021). It has been suggested that this female predominance could contribute to the success of students within the established academic culture. However, this study underscores the need for further research focusing on the male minority of students, addressing their specific needs in the educational environment, and exploring their perspectives on factors that could facilitate their academic success.

The results provided by this research also allow for the socio-demographic and personality profile of the students who are more prone to good academic time management, in different faculties of the University of Barcelona to be identified.

Regarding the sociodemographic data, it has been observed that women who study Education, and have a high academic performance, show better time management than the rest of the students; that is, better than men, students from other areas of knowledge as well as students with lower academic performance. Previous research has shown that males have a greater tendency towards disorganization and show poorer management of tools and strategies for academic time management than females (Suárez Riveiro et al., 2004; Amida et al., 2021; Klimenko & Varela, 2022). These results are not exclusive to university education; even in high school, girls show better time management than boys due to a greater use of organization strategies for learning (Suárez Valenzuela & Suárez Riveiro, 2018). According to previous research, these assertions are possibly explained by the greater self-control that women generally possess compared to men (van Eerde, 2003; Else-Quest et al., 2006), and by the fact that, compared to women, men have deficient time management skills and metacognitive strategies, making them more prone to procrastination (Limone et al., 2020).

Likewise, the relationship established by our study between high academic performance and good time management has also been demonstrated on several occasions. For example,

according to Umerenkova and Flores, students who achieve higher grades tend to show better self-regulatory behaviors in time management and a more positive self-perception of their time control (Umerenkova & Flores, 2018). Applied in the opposite sense, this type of result has allowed several studies, such as those of Ross et al. (2008) or Cotrina Carrera and Sánchez Cabanillas (2020), to create prediction instruments for academic performance based on the time management skills of newly admitted university students.

It is noteworthy to mention the dual relationship that can be established between time management and academic performance. On one hand, we can estimate the academic performance of students by understanding their time management skills. On the other hand, we can consider that a student with low academic performance may be experiencing time management issues, possibly due to the absence of self-regulatory behaviors, difficulties in goal setting, and so on. This could serve as a valuable tool for identifying students with time management deficits and could be of significant assistance to both universities and other educational institutions. Furthermore, as asserted by Häfner et al. (2015), the implementation of programs that promote students' self-perception of their academic life and help them develop self-regulation tools through goal setting, planning, and monitoring would have an impact on their time management and, consequently, improve their academic performance.

On the other hand, the results obtained in this research do not confirm the role that previous studies have attributed to demographic variables such as age or academic year in explaining time management (Rozental & Carlbring, 2014; Steel, 2007). Among the participants in this study, no significant relationship was found between their academic time management habits and their age, the academic year they were in or their employment status. However, previous research has stated that combining work with studies can be a determining factor in student's academic time management. For example, according to Forbus et al. (2010), combining work and studies leads to an increase in time management skills as it requires the development of strategies necessary to combine both activities. Conversely, the research of Robotham (2012) and Garzón Umerenkova and Gil Flores (2017) suggests that those who combine work and study have less time to complete academic tasks, which leads them to procrastinate in their studies.

Regarding the personality profile, the data from our study indicates that the students who have better academic time management skills are also the most neurotic, the most open to experience, the most responsible and the least prone to procrastination - specifically, those who are less likely to procrastinate and delay tasks voluntarily-. It's important to note, with respect to the directionality of these results, that both the time management index and personality traits have been analyzed independently of each other, and what is being discussed here is the relationship between these two sets of results. The results obtained in this study are consistent with previous research, such as Steel (2007) and Calderón et al. (2020), where it corroborated that openness to experience and responsibility are personality traits associated with optimal time management and therefore, low procrastination.

On the other hand, regarding neuroticism, our research establishes a positive relationship between this personality trait and a good academic time management. This data is a novel contribution that presents neuroticism as a protective factor against poor time management, which allows us to discuss previous research, such as Steel et al. (2001), where this link did not seem to be relevant. However, although neuroticism may be considered as a preventive agent against a lack of time organization, it should be noted that if it reaches very high levels, it could also be associated with procrastination (Ocansey et al., 2022); in other words, neuroticism can facilitate time management as long as it does not exceed certain limits. Although openness to experience is an explanatory factor of good time management, its excess could cause to be more changing than others, due to their concerns, which would negatively affect their time management skills (Ocansey et al., 2022). In short, some personality traits such as neuroticism

and openness to experience can explain a good time management as long as they are kept within prudent limits.

The findings of this study have significant implications for practical action in the educational field. Identifying the sociodemographic profile of students who excel in academic time management, as conducted in this research, can be valuable for guiding the development of time management training programs in universities. For instance, the data indicate that variables such as gender and choice of major are linked to time management, potentially leading universities to create specific programs for student groups in need of additional support in this regard. Furthermore, understanding the psychological profile of students who effectively manage their time can inform the design of programs that target the development of specific metacognitive skills to enhance time management among students. This deeper understanding of the psychological processes involved in time management could also lead to the selection of more suitable teaching methods, such as the inclusion of stimulating and challenging activities to foster student curiosity.

In summary, this study reveals the potential to identify students who excel in academic time management, despite the common issue of poor time management in higher education. Furthermore, it suggests that time management training can help prevent or substantially mitigate procrastination behaviors. These findings lay the foundation for a more inclusive and diversity-conscious approach in higher education. This approach may encompass teaching skills like prioritization, setting specific goals, and effective planning, as well as providing appropriate technical and psychological support for online learning. Understanding the strengths and weaknesses of students will contribute to more meaningful guidance throughout their education and ultimately lead to improved academic performance.

This research shows that, poor time management is a key factor that explains the academic failure of a significant number of students, although there is currently a profile of individuals who are prone to showing good academic time management. Several studies, such as those cited from O'Connor and Paunonen (2007) or Nadinloyi et al. (2013), show how procrastinating behaviors can be avoided or at least largely mitigated through time management training programs. Based on this and taking into account the evidence shown in this study, there is the possibility of orienting higher education towards a more precise and conscious view of diversity among students; for example, teaching students to prioritize, establish concrete, challenging goals, visualize mentally the path towards achieving these goals, plan their academic day or monitor their progress in achieving their goals (Häfner et al., 2015); or promoting strategies to increase self-efficacy and improve psychological distress, such as adequate training for online learning, technical assistance, and psychological support (Fitriawan et al., 2023). However, we must take into account some limitations, such as the fact that the entire sample belongs to the same university and to a group of disciplines related to humanities and social sciences. Knowing people's limitations and strengths will contribute to an inclusive and meaningful support during their education.

This study has some limitations, such as the typical gender-biased profile of students' sample in the humanities and social sciences. The sample collection was conducted prior to the COVID-19 pandemic. It would be interesting to understand time management behavior during the pandemic and adaptation to virtual learning. In this regard, it would be valuable to examine time management among students studying in online universities and compare it with our current academic reality.

DISCLOSURE STATEMENT

The authors confirm that there are no relevant financial or non-financial competing interests to report.

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