Valente, S., Afonso Lourenço, A., Olímpia Paiva, M., Dominguez-Lara, S., Oliveira, H., Carvalho, L., & Rebola, F. (2025). Self-regulated learning in basic school students: The impact of time management planning and procrastination. *RELIEVE, 31*(2), art 4. http://doi.org/10.30827/relieve.v31i2.33497

Revista ELectrónica de Investigación y EValuación Educativa

RELIEVE

ISSN: 1134-4032

e-Journal of Educational Research, Assessment and Evaluation

Self-regulated learning in basic school students: The impact of time management planning and procrastination

Aprendizaje autorregulado en alumnos de educación básica: El impacto de la planificación de la gestión del tiempo y la procrastinación

Aprendizagem autorregulada em alunos do ensino básico: O impacto do planeamento da gestão do tempo e da procrastinação

基础教育学生的自我调节学习：时间管理规划与拖延行为的影响

التعلم الذاتي المنظم لدى طلاب التعليم الأساسي: تأثير تخطيط إدارة الوقت والتسويف

Valente, Sabina [1,2]; Afonso Lourenço, Abílio[3]; Olímpia Paiva, Maria[3]; Dominguez-Lara, Sergio[4]; Oliveira, Hugo[1,5]; Carvalho, Luísa[1,2]; Rebola, Fernando[1]

[1] Portalegre Polytechnic University, CARE - Research Center on Health and Social Sciences (Portugal), [2] University of Évora, Research Center in Education and Psychology (Portugal), [3] University of Minho (Portugal), [4] Universidad de San Martín de Porres (Perú), [5] Portalegre Polytechnic University

Abstract

Self-regulated learning is crucial to academic success, as it involves students' capacity to plan, manage their time, and control procrastination. This study aimed to analyse the influence of academic time management and procrastination on students' self-regulated learning in the Portuguese context. A total of 690 students (M_{age}= 12.9) in basic education (third cycle) from public schools participated in the study. Questionnaires were administered to assess perceptions of self-regulated learning, academic time management planning, and procrastination. Structural equation modelling was used, and the main results showed that better planning of academic time management is correlated with improved self-regulated learning. In turn, procrastination is associated with a decreased capacity for self-regulated learning. The study's results highlight the importance of gaining a better understanding of the factors affecting students' self-regulated learning to enhance instruction and help them become more capable and independent learners. Ultimately, prospective directions are outlined to facilitate self-regulated learning in the educational setting.

Keywords: self-regulated learning, time management planning, procrastination, students, school

Resumen

El aprendizaje autorregulado es crucial para el éxito académico, ya que implica la capacidad de los alumnos para planificar, gestionar su tiempo y controlar la procrastinación. Este estudio tiene como objetivo analizar la influencia de la gestión del tiempo académico y de la procrastinación en el aprendizaje autorregulado de los alumnos en el contexto portugués. En el estudio participaron un total de 690 alumnos (M_{edad}= 12,9) de educación básica (tercer ciclo) de escuelas públicas. Se administraron cuestionarios para evaluar las percepciones sobre el aprendizaje autorregulado, la planificación de la gestión del tiempo académico y la procrastinación. Se utilizaron modelos de ecuaciones estructurales. Los principales resultados mostraron que una mejor planificación de la gestión del tiempo académico se correlaciona con una mejora del aprendizaje autorregulado. A su vez, la procrastinación se asocia con una menor capacidad de aprendizaje autorregulado. Los resultados del estudio destacan la importancia de comprender mejor los factores que inciden en el aprendizaje autorregulado de los alumnos para optimizar la instrucción y ayudarlos a convertirse en estudiantes más capaces e independientes. Por último, se esbozan orientaciones para facilitar el aprendizaje autorregulado en el entorno educativo.

Palabras clave: aprendizaje autorregulado, planificación de la gestión del tiempo, procrastinación, alumnos, escuela

Received/*Recibido*	Apr 09, 2025	**Approved/*Aprobado***	Dec 05, 2025	**Published/*Publicado***	Dec 30, 2025

Corresponding author / Autor de contacto: Sabina Valente. Praça da República n.º 23-25. 7300-109 - Portalegre. E-mail: svalente@ipportalegre.pt .

Resumo

A aprendizagem autorregulada é crucial para o sucesso académico, pois implica a capacidade dos alunos para planear, gerir o seu tempo e controlar a procrastinação. Este estudo tem como objetivo analisar a influência da gestão do tempo académico e da procrastinação na aprendizagem autorregulada dos alunos no contexto português. Participaram no estudo 690 alunos (M_{idade}= 12,9) do ensino básico (terceiro ciclo) de escolas públicas no total. Foram aplicados questionários para avaliar as perceções sobre a aprendizagem autorregulada, o planeamento da gestão do tempo académico e a procrastinação. Foram utilizados modelos de equações estruturais. Os principais resultados mostraram que um melhor planeamento da gestão do tempo académico está correlacionado com uma melhoria da aprendizagem autorregulada. Por sua vez, a procrastinação está associada a uma menor capacidade de aprendizagem autorregulada. Os resultados do estudo sublinham a importância de compreender melhor os fatores que influenciam a aprendizagem autorregulada dos estudantes, para otimizar a instrução e ajudá-los a tornarem-se estudantes mais capazes e independentes. Por último, esboçam-se diretrizes para facilitar a aprendizagem autorregulada no ambiente educativo.

Palavras-chave: aprendizagem autorregulada, planeamento da gestão do tempo, procrastinação, alunos, escola.

摘要

自我调节学习是学业成功的关键因素之一，其核心在于学生规划学习活动、有效管理时间并控制拖延行为的能力。本研究旨在分析学业时间管理规划与拖延行为对葡萄牙基础教育阶段学生自我调节学习的影响。研究对象为 690 名葡萄牙公立学校基础教育第三学段学生（平均年龄为 12.9 岁）。研究通过问卷测量学生对自我调节学习、学业时间管理规划及拖延行为的感知，并采用结构方程模型进行分析。研究结果表明，较好的学业时间管理规划与更高水平的自我调节学习显著相关；相反，拖延行为与较低的自我调节学习能力显著相关。研究结果强调，有必要更深入地理解影响学生自我调节学习的关键因素，以优化教学实践，并帮助学生发展为更加自主且高效的学习者。最后，研究提出了在教育情境中促进自我调节学习的若干实践建议。

关键词: 自我调节学习；时间管理规划；拖延行为；学生；学校。

ملخص

لتعلم الذاتي التنظيمي أمر بالغ الأهمية للنجاح الأكاديمي، لأنه ينطوي على قدرة الطلاب على التخطيط وإدارة وقتهم والتحكم في .التسويف. تهدف هذه الدراسة إلى تحليل تأثير إدارة الوقت الأكاديمي والتسويف على التعلم الذاتي للطلاب في السياق البرتغالي شارك في الدراسة ما مجموعه 690 طالبًا (متوسط العمر = 12.9) من التعليم الأساسي (المرحلة الثالثة) في المدارس العامة. تم توزيع استبيانات لتقييم التصورات حول التعلم الذاتي، وتخطيط إدارة الوقت الأكاديمي، والتسويف. تم استخدام نماذج المعادلات الهيكلية. أظهرت النتائج الرئيسية أن تحسين تخطيط إدارة الوقت الأكاديمي يرتبط بتحسين التعلم الذاتي. في المقابل، يرتبط التسويف بانخفاض القدرة على التعلم الذاتي. تسلط نتائج الدراسة الضوء على أهمية فهم العوامل التي تؤثر على التعلم الذاتي للطلاب بشكل أفضل من أجل تحسين التعليم ومساعدتهم على أن يصبحوا طلابًا أكثر كفاءة واستقلالية. أخيرًا، تم وضع إرشادات لتسهيل التعلم الذاتي في البيئة التعليمية

الكلمات المفتاحية :التعلم الذاتي، تخطيط إدارة الوقت، التسويف، الطلاب، المدرسة

Introduction

Self-regulated learning among school-aged students stands out as a fundamental developmental process, enabling them to anticipate the outcomes of their educational journey over time and across various areas of knowledge (e.g., Lee et al., 2023; Matulaitienė, et al., 2025). So, self-regulated learning skills naturally develop as students mature and are exposed to diverse environmental variables (Won & Yu, 2018).

One of the primary objectives of self-regulated learning is to enable students to take an active role in their education, directing and managing their cognition, motivation, and behaviour towards predetermined objectives

(Schunk & Zimmerman, 1994). This guideline highlights the importance of involving students in managing their learning process from a socio-cognitive perspective, emphasising the importance of integrating strategies that promote effective self-regulation of learning. In this context, the literature review emphasises the importance of self-regulated learning, focusing on the individual and contextual factors that facilitate academic achievement (e.g., Wolters & Brady, 2020; Won & Yu, 2018; Li, 2024). The emphasis is placed on essential factors such as academic time management strategies and attitudes and behaviours associated with procrastination, with these complex constructs identified as key determinants for attaining mastery in learning processes. The literature analysis on these variables underscores the significance of these constructs in providing a comprehensive understanding of the factors that influence educational performance (Thibodeaux et al., 2016; Valente et al., 2024).

Considering the sociocognitive framework, self-regulation in learning is fundamentally connected to the cognitive, emotional, and behavioural processes that students intentionally produce and manage to attain their objectives (Zimmerman, 2008). Therefore, for students to be self-regulated, they must view themselves as metacognitive, motivational, and behavioural actors in their learning endeavours (Li, 2024; Schunk & Zimmerman, 1994).

Academic time management planning is essential for students' self-regulated learning; it directly influences the quality of the learning process and promotes a more systematic and organised approach to studying (Lourenço & Paiva, 2024; Valente et al., 2024; Wolters & Brady, 2020). In turn, procrastination, when managed through effective time management (Valente et al., 2024), has a positive impact on self-regulation of learning (Thibodeaux et al., 2016), which in turn contributes to students' successful learning outcomes (Lourenço & Paiva, 2024).

Despite the benefits of self-regulated learning (Tao et al., 2025), many students still struggle to manage their time effectively and reduce procrastination (Valente et al., 2024). Therefore, it is essential to investigate the relationship between time management planning, procrastination, and self-regulated learning in greater detail (Wolters & Brady, 2020; Won & Yu, 2018). Considering that the European Commission emphasises that the Portuguese education system needs improvements in student performance (European Commission, 2024) and that Goal 4 of the 17 Sustainable Development Goals underscores the importance of quality education (UNRIC, 2018), the need for this study's theme arose. To bridge this knowledge gap, this study was inspired by the research question: "What is the influence of students' academic time management planning on procrastination and self-regulated learning?". Therefore, given the importance of self-regulation in educational environments, it is crucial to understand how academic time management planning, when combined with procrastination, affects students' self-regulated learning.

Literature Review

Three decades of research on self-regulation in learning have demonstrated that it is essential to learning processes and significantly impacts students' academic performance (Lee et al., 2023; Schunk & Zimmerman, 1994). Self-regulated learning refers to the process by which individuals direct and manage their cognitions, emotions, motivations, and behaviours to achieve objectives and adapt to environmental demands (Efklides et al., 2017; Tao et al., 2025; Won & Yu, 2018).

According to theoretical models, self-regulated learning has a set of main objectives (Schunk & Zimmerman, 1994; Zimmerman, 2008): i) Defining specific and challenging goals: students should outline clear and ambitious goals to guide their learning efforts; ii) Monitoring progress toward goals: it is essential for students to consistently monitor

their progress towards established goals, evaluate their performance, and modify their techniques as necessary; iii) Applying effective self-regulation strategies: students must identify and use effective methods to achieve their learning goals (e.g., study organization, memorization techniques, self-reflection); iv) Managing time and resources effectively: students should learn to manage their time and resources efficiently, prioritizing tasks, know how to organise study times and use available resources efficiently; and v) Controlling and regulating emotions: self-regulated learning also involves controlling and regulating emotions, including managing stress, anxiety, and motivation to face school challenges.

Although research suggests that self-regulated learning is an evolving process that becomes more coordinated over time (Hoyle & Dent, 2017; Usher & Schunk, 2017) and that it predicts academic outcomes from preschool to university (Zachariou & Whitebread, 2019), doubts persist about how different aspects of self-regulated learning develop together to support student learning. In particular, the relationship between self-regulated learning, academic time management planning, and procrastination in basic and secondary students, both in the classroom and over time, requires further clarification (Lourenço & Paiva, 2024).

Research on study abilities regards academic time management planning as a fundamental component of learning methodologies (Trentepohl et al., 2022; Wolters & Brady, 2021). Academic time management is defined as a behavioural planning mechanism (Casiraghi et al., 2020) associated with the perceived effort required to address diverse learning challenges, including motivation and goal-setting (Makiah & Nusron, 2025).

Time management is a goal-oriented process that encompasses evaluating time utilisation, establishing objectives, strategising, overseeing progress, and prioritising activities to attain desired outcomes (Marcilio et al., 2021). The authors outline procedures for effective personal time management, encompassing assessing time utilisation, formulating strategies to tackle obstacles, establishing goals and targets, and executing and appraising modifications. These initiatives enhance individual competence, thereby improving academic performance. So, students who excel academically often set explicit objectives, efficiently allocate their time to complete tasks, and maintain a productive study regimen (Thibodeaux et al., 2016). Several studies underscore the beneficial impact of time management skills on student learning and performance (e.g., Khan et al., 2020; Trentepohl et al., 2022; Wolters & Brady, 2021). Other studies have identified variables that may hinder effective study time management, including procrastination, study organisation, study environment, and motivational problems (e.g., Koudela-Hamila et al., 2019; Teles et al., 2020; Tao et al., 2025). Challenges in concentration, stress, self-efficacy, lack of a suitable home study environment, and insufficient planning and preparation of activities to achieve educational goals are equally significant (Song et al., 2020; Yeo et al., 2020).

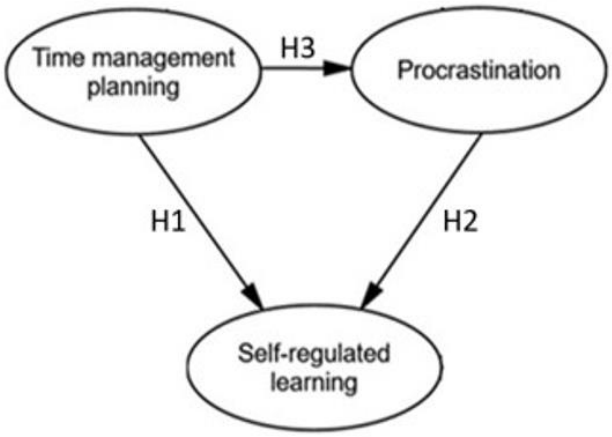
Procrastination, defined as the deferment of tasks, is associated with insufficient academic time management and deficiencies in students' self-regulatory mechanisms (Steel & Kligsieck, 2016). This behaviour can result from anxiety, perfectionism and fear of failure, thus damaging performance and inducing academic discontent (Júnior et al., 2024). Students frequently engage in behaviours such as procrastinating on assignment preparation and submission, disregarding activities, and postponing exam study until the last moment (Machado & Schwartz, 2018). The authors suggest that procrastination is more prevalent in contexts where the quantity and complexity of demands increase. Some causes of procrastination include inadequate time management for academic tasks (Valente et al., 2024), environmental factors, concentration difficulties, assessment-related anxiety, dysfunctional beliefs and thoughts, challenges

in overcoming obstacles, fear of failure, low frustration tolerance, and problems with task execution (Fior et al., 2022; Svartdal et al., 2020). Consequently, procrastination is closely associated with behaviours in assessment contexts, including adaptive behaviours (e.g., being able to concentrate during an exam) and ineffective behaviours (e.g., avoidance or deferral of tasks).

Procrastination is, therefore, a maladaptive behaviour, i.e., a failure of self-regulation that results in deregulatory behaviour. With this behaviour, students postpone or avoid school tasks that are considered aversive (Silva et al., 2022). Several studies conducted in different educational contexts indicate a significant negative correlation between procrastination and self-regulated learning. Students who procrastinate more tend to exhibit lower self-regulated learning skills (Fajri et al., 2023; Limone et al., 2020; Tao et al., 2025). Several studies also show a significant negative correlation between effective time management, especially planning, and academic procrastination. These studies indicate that students who plan, prioritise, and structure their academic tasks are less likely to postpone or avoid work (Elviona et al., 2025; Fentaw et al., 2020; Limone et al., 2020; Valente et al., 2024).

The implication of time management has been duly acknowledged within the principal theoretical frameworks of self-regulated learning (Wolters & Brady, 2021). In turn, planning for school time management also influences procrastination (Valente et al., 2024). Since several studies indicate that most research on self-regulated learning does not simultaneously address study time planning and procrastination, and that time management is recognised as a key process in self-regulated learning, studies often show a gap in relating these variables to procrastination (e.g., Tao et al., 2025; Valente et al., 2024; Wolters & Brady, 2021). So, this study aims to analyse how academic time management planning and procrastination influence students' self-regulated learning. Consequently, a hypothetical model was constructed for testing, in which the hypotheses under study are indicated (Figure 1).

Figure 1. Study hypotheses



Hypothesis 1 (H1): Students who tend to have more planning of academic time management show higher levels of self-regulated learning; Hypothesis 2 (H2): Students who tend to have a greater tendency to procrastinate show lower levels of self-regulated learning; and Hypothesis 3 (H3): Students who tend to have more planning of academic time management show lower levels of procrastination.

Method

Participants

The study comprised 690 students from basic education (third cycle), with 48.7% in 7th grade, 29.9% in 8th grade, and 21.4% in 9th grade. The sample included 365 girls and 325 boys from public schools in northern Portugal. The participants were between 12 and 15 years old (M_{age}= 12.9). Convenience sampling, a non-probabilistic technique, was used to gather the sample.

Instruments

Self-Regulated Learning Processes Inventory (SRLPI; Rosário et al., 2011): assesses students' perception of their self-regulated learning processes through planning, execution, and evaluation. Therefore, it was selected for this study to meet the defined objective. Below are examples of items that comprise each dimension. The SRLPI includes nine items, organised into three dimensions: Planning, α= .80 (3 items; e.g., I like to understand the meaning of the subjects I am learning); Execution, α= .87 (3 items; e.g., I stick to the study schedule I created. If I don't follow it, I reflect on why that happened and draw conclusions to evaluate my study later); and Evaluation, α= .84 (3 items; e.g., When I receive a grade, I think about specific things I need to do to improve). A five-point Likert scale was used, ranging from 1 (*never*) to 5 (*always*).

Time Management Planning Inventory (TMPI; Lourenço, 2008): assesses students' perceptions of their time management planning for studying across two dimensions: short-term and long-term. Therefore, it was selected for this study to meet the defined objective. The TMPI includes 12 items, distributed across two dimensions of equal number: Short-term, α= .89 (6 items; e.g., I spend time organizing my study schedule for each day) and Long-term, α = .90 (6 items; e.g., What I do today in my life is important for what will happen to me "tomorrow"). A five-point Likert scale was used, ranging from 1 (*never*) to 5 (*always*).

Student Perceived Academic Procrastination (SPAP; Rosário et al., 2009): It assesses students' perception of their academic procrastination. Therefore, it was selected for this study to meet the defined objective. The SPAP includes 10 items divided into two dimensions: Daily study procrastination, α= .80 (5 items; e.g., I keep up with the subjects because I study every day); and Test study procrastination, α= .82 (5 items; e.g., I get lost in so many things/activities that I have no time left to study for tests). A five-point Likert scale was used, ranging from 1 (*never*) to 5 (*always*).

The questionnaires have been validated in Portuguese students (in previous studies), and the Cronbach's alpha coefficient values presented correspond to the present study. Additionally, to ensure reliability, evidence of the instruments' validity was considered. In previous studies conducted with Portuguese students, the three questionnaires (SRLPI, TMPI, and SPAP) have shown a stable factorial structure consistent with the underlying theoretical model, providing evidence of construct validity. In the present study, the Kaiser-Meyer-Olkin (KMO) indices and Bartlett's sphericity tests confirmed the adequacy of the data for factorial analysis, which further supports the validity of the instruments in this sample.

The battery of instruments also included a questionnaire to characterise the sample (age, gender, and school year).

Procedures

With the consent of the school administrators and the students' guardians, all procedures were in accordance with the ethical standards of education research (Oates et al., 2021). The data were collected from March to May 2024, and the battery of instruments took the students approximately 20 minutes to complete. Researchers gathered data in a single session at each school. They communicated the study's aims to students, ensuring them of the ethical protocols, including anonymity, confidentiality of responses, and voluntary participation. It was also explained to the students that the collected data would be used

solely for statistical analysis in this study. Thus, the sample collection adhered to all the ethical principles of research involving minors, including informed consent, confidentiality, anonymity, and voluntariness. No sensitive data were collected, in accordance with the Declaration of Helsinki (World Medical Association, 2013). To qualify for inclusion in this study, participants had to be in the third cycle (7th, 8th, and 9th grades) of public schools. Only questionnaires that were completed in full were deemed suitable for analysis.

Data Analysis

The validity and reliability of the instruments were assessed using the KMO index and Bartlett's test of sphericity. Given the Likert nature of the items, the reliability of scores and construct was assessed respectively with Cronbach's alpha coefficient (α) and its confidence intervals, where values above .70 at the lower limit are considered acceptable. Pearson's linear correlation (r) was employed to evaluate the strength of relationships among constructs, and values below .200 show a very low association, values between .200 - .399 a low association, values between .400 - .699 a moderate association, values between .700 .899 a high association, and values between .900 - 1 a very high association.

Data analysis was performed using Structural Equation Modelling (SEM) with SPSS/AMOS 29 (Arbuckle, 2022). The preliminary evaluation involved analysing univariate normality using skewness coefficients (< 2) and kurtosis (< 7). SEM are considered well-fitting when GFI ≥ .90; AGFI ≥ .90; TLI ≥ .90; Critical N > 200; CFI > .90; and RMSEA between 0.05 and 0.08 with a lower limit of the 90% confidence interval less than .05. Factor loadings ≥ 0.40 were considered significant.

Results

The SRLPI had a KMO value of .818, Bartlett's test of sphericity ($\chi^2_{(36)}$ = 3317.214; p < .001), and an explained variance of approximately 76.7%. The TMPI had a KMO index of .883, Bartlett's test of sphericity ($\chi^2_{(66)}$ = 5322.362; p < .001), and an explained variance of approximately 67.3%. The SPAP had a KMO index of .789, Bartlett's test of sphericity ($\chi^2_{(45)}$ = 2527.678; p < .001), and an explained variance of approximately 58.3%.

Table 1 presents the descriptive statistics of the variables of the SEM model. This sample demonstrates that no variable satisfies extreme conditions, hence validating the appropriateness of the suggested model fit estimation.

Table 1. Descriptive statistics

Variable	Min.	Max.	M	SD	Skewness	Kurtosis
Planning	3	15	10.91	2.889	-0.523	.114
Execution	3	15	10.92	3.222	-0.956	.519
Evaluation	3	15	11.79	3.008	-1.064	.991
daily study procrastination	5	25	11.88	4.812	0.723	.322
tests study procrastination	5	25	12.71	4.919	0.341	-.146
short-term planning	6	30	19.56	6.344	-0.030	-.649
long-term planning	6	30	22.34	5.975	-0.617	-.218

Note. Min.= Minimum; Max. = Maximum; M = Mean; SD = Standard Deviation

The comprehensive fit indices of the proposed SEM model indicate its strength [$\chi^2_{(11)}$ = 17.772; p = .087; χ^2/df = 1.616; GFI = .993; AGFI = .982; TLI = .985; CFI = .992; RMSEA = .030 (90% CI: .000 - .054); CN (.05/763;.01/959)]. The results corroborate the premise that the proposed model accurately depicts the relationships among the variables in

the empirical matrix, affirming its theoretical foundation.

Analysis of Figure 2 and Table 2 confirms the formulated hypotheses at the statistical significance level. Consequently, students who invest additional time in organising and overseeing their academic activities exhibit greater self-regulation in their learning processes (β = .38; p < .001) and tend to show reduced procrastination in daily study and test preparation (β = -0.68; p < .001). In contrast, students with a greater tendency to procrastinate are less self-regulated in their learning (β = -.53; p < .001).

Figure 2. SEM model of the study (n= 690 students)

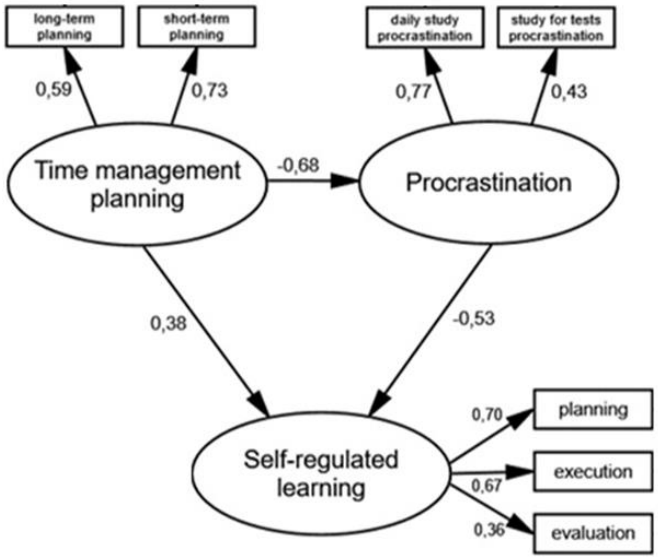


Table 2. Results of the study hypotheses

Hypotheses	Result	Test used	Test Interpretation
H1	β = .38; p < .001	SEM	Accepting H1 means that better academic time-management planning is associated with greater self-regulated learning. In practical terms, students who organise their time, set goals, and plan their activities demonstrate greater control over their learning processes.
H2	β = -.53; p < .001	SEM	Accepting H2 implies that procrastination negatively affects self-regulated learning. That is, the more students procrastinate, both in daily study and in exam preparation, the lower their ability to manage, monitor, and evaluate their own learning.
H3	β = -.68; p < .001	SEM	Accepting H3 indicates that greater academic time-management planning reduces procrastination. Consequently, students who organise their time effectively tend to complete their school tasks more consistently, which promotes more consistent study habits.

A more detailed analysis (Table 3) reveals that planning (β = 1.00), execution (β = .67, p < .001), and evaluation (β = .36, p < .001) are positively correlated with self-regulated learning. The results also indicate that procrastination significantly affects daily study habits (β = 1.00) and test preparation (β = .43, p < .001). These results reinforce that effective academic time management strategies reduce procrastination tendencies and improve self-regulation of learning

Table 3. Results of the sample's predicted covariance structure

Variables			**EnSV**	**ESV**	**EE**	***p***
Procrastination	←	TMP	-0.670	-.682	.072	***
SRL	←	TMP	0.201	.380	.059	***
SRL	←	procrastination	-0.287	-.526	.071	***
planning	←	SRL	1.000			
Execution	←	SRL	1.071	.668	.084	***
evaluation	←	SRL	0.546	.364	.069	***
short-term planning	←	TMP	1.000			
long-term planning	←	TMP	1.160	.730	.111	***
tests study procrastination	←	procrastination	0.579	.434	.071	***
daily study procrastination	←	procrastination	1.000			

Note: TMP= Time management planning; SRL= Self-regulated learning; EnSV= Estimated non-Standardized values; ESV= Estimated standardized values; EE= Estimated errors; p= Significance level; ***= < .001.

About the variances described by the constructs, the squared multiple correlations (η^2) expose that self-regulated learning is directly explained by academic time management planning and indirectly by procrastination in about 70% (η^2 = .689). In turn, procrastination is explained by academic time management planning to the extent of approximately 47% (η^2 = .466). The values show the explanatory capacity of the proposed model.

An extra analysis was conducted to evaluate the magnitude and orientation of the linear correlation between the variables (Table 4). A relationship between two variables exists when a change in one variable results in a corresponding change in the other, and this relationship can be quantified using Pearson's linear correlation coefficient (r). All variables in the model exhibited statistically significant relationships. However, these can range from very low (r < .200), low (r = .200 to .399), and moderate (r = .400 to .699). This suggests an evident cohesion among the variables studied. The most relevant and moderate associations are found between the dimensions of self-regulated learning, planning and execution (r = .463; p < .01), between the short- and long-term dimensions of academic time management planning (r = .433; p < .01), and between the planning dimension of self-regulated learning and daily study procrastination (r = -.420; p < .01), the latter being negative.

Table 4. Pearson's linear correlations

Variables	1	2	3	4	5	6	7
1. Planning	1						
2. Execution	.463**	1					
3. Evaluation	.227**	.278**	1				
4. Time management planning (short-term)	.314**	.276**	.163**	1			
5. Time management planning (long-term)	.370**	.378**	.155**	.433**	1		
6. Procrastination (daily study)	-.420**	-.395**	-.225**	-.308**	-.385**	1	
7. Procrastination (test study)	-.278**	-.169**	-.174**	-.190**	-.202**	.333**	1

Note. **= Correlation is significant at the .01 level

Discussion

Regarding H1, the results demonstrate that students who tend to plan their academic time management more effectively, both in the short and long term, exhibit higher levels of self-regulated learning. Thus, this study's results indicate that effective academic time management planning positively influences students' self-regulated learning processes. This result aligns with previous studies (Lourenço & Paiva, 2024; Wolters & Brady, 2021).

We can interpret the results of this study as indicating that academic time management is a purpose-oriented process that involves students' ability to evaluate their time use, set goals, plan their studies, and thereby achieve the proposed objectives. Consequently, students develop greater self-regulation in their learning processes. Therefore, effective time management between school tasks and subjects is crucial for promoting efficient learning.

In the present study, the items with the highest scores on this scale reflect perceptions such as "what I do today determines what will happen to me tomorrow" and "I am clear about the grades I want to achieve in the next term," underscoring the importance of this connection. However, the question with the lowest score, "I make a daily list of the things I need to do," reveals that self-regulated learning strategies for managing school time need a more guiding role in school activities. Consequently, it is essential to understand students and employ methodologies and strategies tailored to their unique needs to help them organise their studies and plan their academic time effectively. So, the differentiation between successful and unsuccessful students is associated with factors such as the organisation of academic time management, study techniques, and the relationship between performance and effort.

Similarly, Thibodeaux et al. (2016) suggest that high-performing students set explicit objectives, assess the time required to complete tasks, and adhere to a disciplined study regimen in the short and long term. They frequently evaluate their learning progress, which reduces the negative impact of continually delaying their school activities. Consequently, time management encompasses the distribution of study hours and the quality and depth of engagement in academic activities. Meticulous planning enables students to focus on meeting deadlines and thoroughly understanding topics, thereby fostering significant self-regulated learning.

This study's results indicate that procrastination negatively affects students' self-regulation of the learning process. The results align with previous studies (Júnior et al., 2024; Svartdal et al., 2020) and corroborate H2. This detrimental effect manifests in the decreased capacity for self-discipline and efficient time management, intensifying students' challenges in achieving academic excellence (Fajri et al., 2023; Limone et al., 2020). So, procrastination poses an obstacle to

students' self-regulated learning, impairing their academic performance. This can occur when students experience an excessive fear of error or failure, preventing them from completing their work and leading to increased procrastination, which directly impacts their learning behaviour. In this study, the items "not keeping up with the material because I don't study daily" and "interrupting study to engage in other activities (such as watching TV, listening to music, talking on the phone)" are particularly noteworthy. Procrastination is evident in various daily tasks and environments, with the continual postponement of school tasks being particularly significant. Although the item "when the teacher assigns a task in the classroom, I don't start it immediately" was the least scored by students, this suggests that academic procrastination may hinder self-regulated learning, impairing their capacity to manage performance and fulfil academic obligations. Such procrastinatory behaviours tend to manifest more frequently when the severity and complexity of demands escalate (Machado & Scwartz, 2018).

Considering the results obtained, we can affirm that procrastination impairs students' ability to define clear objectives, organise themselves efficiently, and maintain focus on academic activities, negatively affecting their self-regulation of learning. Therefore, it is crucial to implement effective intervention strategies that emphasise awareness of procrastination and promote more productive work habits.

Regarding H3, students who tend to plan their academic time management more effectively, both in the short and long term, exhibit lower levels of procrastination; the results support H3, aligning with other studies (Elviona et al., 2025; Fentaw et al., 2020; Valente et al., 2024). So, time management planning is a significant predictor of procrastination. Academic time management planning for school activities aligns with students' ability to evaluate their time use, set goals, plan their studies, and thus achieve the proposed objectives. Procrastination is often associated with difficulties in concentration and an unfavourable study environment, leading to frequent interruptions and task deferral. This, in turn, causes attention dispersion and neglect of necessary preparation to meet learning objectives. So, the results show that students who engage in more effective time management planning are likely to exhibit less procrastination in their academic tasks. Consequently, by adhering to appropriate approaches, students cultivate effective study habits characterised by efficient organisation and careful preparation, reducing their tendency towards academic procrastination.

An integrated analysis of the three dimensions reveals that students' self-regulated learning is intricately connected to proficient academic time management planning and the avoidance of procrastination. Consequently, it is essential to determine the factors that delineate the framework of knowledge within which self-regulated learning occurs, as this is vital for achieving more profound and significant learning methodologies. This finding suggests that students who engage in self-regulated learning are aware of learning strategies and utilise them effectively, thereby circumventing procrastination. Consequently, these students reflect on their learning process and employ strategies to monitor, regulate, and adjust their behaviour to achieve academic success (Limone et al., 2020).

Limitations and Future Studies

The suggested model identifies critical elements affecting students' self-regulation in the learning process; however, subsequent research should aim to increase the sample size and adopt a multilevel study design. Additionally, the data was gathered through self-report questionnaires, which may not yield sufficient real-time replies regarding teaching and learning processes. Consequently, subsequent research should employ qualitative approaches, such as interviews or focus groups, to investigate self-regulated learning among students with a history of success and failure and to identify potential inequalities.

The results of this study reveal a significant explanatory variance. However, other variables should be analysed in future studies. For instance, individual characteristics (e.g., motivation, anxiety, stress) and contextual variables (e.g., social environment, physical environment). Additional constraints are the sample size and the exclusivity of participants originating from public schools in northern Portugal. It is recommended that future studies employ a larger sample and include students from diverse countries and regions, encompassing both private and public schools.

Theoretical and Practical Implications

Regarding theoretical implications, this study supports socio-cognitive theories that view self-regulated learning as a process that integrates cognition, emotion, and behaviour. These findings emphasise the crucial importance of structuring academic time to promote self-regulation processes. This study further validates the conceptualisation of procrastination as a maladaptive behaviour that negatively affects students' self-regulation and underscores the need for interventions to reduce its prevalence. About practical implications, based on the results, the following are emphasised: Schools should integrate time management training programs to enhance self-regulation and reduce procrastination; Students should be instructed in specific strategies for both short-term and long-term task planning to assist them in organising their academic objectives; Teachers should receive training to identify signs of procrastination and implement instructional strategies that foster student initiative; additionally, educational policies should underscore the importance of effective academic time management and establish measures to mitigate the impact of procrastination, thereby emphasising practical approaches to enhance students' self-regulation of learning.

Conclusions

A thorough examination of the literature underscores the need to investigate predictive factors that influence students' self-regulated learning. Thus, the current study examined the impact of academic time management planning and procrastination on self-regulated learning. Results indicate that students who plan their academic time management more effectively tend to exhibit higher levels of self-regulated learning. Conversely, those who tend to procrastinate show lower levels of self-regulated learning. Additionally, students who plan their academic time management more effectively tend to exhibit lower levels of procrastination. Therefore, assessing how students manage their time in school activities presents significant challenges, directly affecting their learning. Moreover, it is essential to tackle procrastination in school, as it is harmful and can set off a dangerous cycle with significant repercussions, including lower academic performance.

Understanding the variables that influence students' learning is essential for achieving academic success (Valente et al., 2024). Thus, this study indicates how academic time management planning and procrastination influence self-regulated learning. The connection between these variables is essential for accomplishing Goal 4 of the 17 Sustainable Development Goals "Quality Education: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all", thus promoting quality education.

The results of this study emphasise that a deeper understanding of the factors influencing students' self-regulated learning is crucial for improving the quality of teaching and developing more autonomous and competent students.

Acknowledgements

This research was funded by Fundação para a Ciência e a Tecnologia (grant UID/06173/2025 - CARE https://doi.org/10.54499/UID/06173/2025).

References

Arbuckle, J. L. (2022). *IBM®, SPSS®, Amos™ 29 User's Guide*. IBM. https://www.ibm.com/docs/en/SSLVMB_29.0.0/pdf/IBM_SPSS_Amos_User_Guide.pdf

Casiraghi, B., Boruchovitch, E., & Almeida, L. S. (2020). Crenças de autoeficácia, estratégias de aprendizagem e o sucesso acadêmico no Ensino Superior. *Revista E-Psi, 9*(1), 27–38. https://revistaepsi.com/artigo/2020-ano9-volume1-artigo2/

Efklides, A., Schwartz, B. L., & Brown, V. (2017). Motivation and affect in self-regulated learning: does metacognition play a role? In D. Schunk, & J. Greene (Eds.), *Handbook of self-regulation of learning and performance* (pp. 64-82). Routledge. https://doi.org/10.4324/9781315697048-5

Elviona, J., Putri, N. O., Mala Sari, Y., & Erliant, D. (2025). Analysis of the Effect of Time Management on Students' Academic Procrastination (Case Study: STIA Lancang Kuning Dumai). *Global Education Journal, 3*(2), 327–334. https://doi.org/10.59525/gej.v3i2.737

European Commission. (2024, November 16). *European Education Area: Removing barriers to learning and improving access to quality education for all*. European Education Area. https://education.ec.europa.eu/

Fajri, N., Syahputra, Y., Karisma, S., & Ifdil, I. (2023). Navigating academic challenges: self-regulated learning analysis of academic procrastination students. *Konselor, 12*(2), 65-73. https://doi.org/10.24036/0202312244-0-86

Fentaw, Y., Moges, B., & Ismail, S. (2022). Academic procrastination behavior among public university students. *Education Research International,* (1), 1-8. https://doi.org/10.1155/2022/1277866

Fior, C. A., Sampaio, R. K. N., Reis, C. A. C., & Polydoro, S. A. J. (2022). Autoeficácia e procrastinação acadêmica em estudantes do ensino superior: um estudo correlacional. *Psico*, *53*(1), e38943. https://doi.org/10.15448/1980-8623.2022.1.38943

Hoyle, R. H., & Dent, A. L. (2017). Developmental trajectories of skills and abilities relevant for self-regulation of learning and performance. In D. Schunk, & J. Greene (Eds.), *Handbook of self-regulation of learning and performance* (pp. 49-63). Routledge. https://doi.org/10.4324/9781315697048

Júnior, J. F. C., Bezerra, D. D. M. C., Araújo, A. G., & Ramos, A. S. M. (2024). Anti-procrastination strategies, techniques and tools and their interrelation with self-regulation and self-efficacy. *Journal of Education and Learning, 7*(1), 72–91. https://doi.org/10.5539/jel.v13n1p72

Khan, I., Zeb, A., Ahmad, S., & Ullah, R. (2020). Relationship between university students time management skills and their academic performance. *Review of Economics and Development Studies, 5*(4), 853-858. https://doi.org/10.26710/reads.v5i4.900

Koudela-Hamila, S., Grund, A., Santangelo, P., & Ebner-Priemer, U. (2019). Valence and motivation as predictors of student time use in everyday life: an experience sampling study. *Frontiers in Psychology, 10,* 1-13. https://doi.org/10.3389/fpsyg.2019.01430

Lee, M., Lee, S., Kim, J., & Lee, H. (2023). Domain-specific self-regulated learning interventions for elementary school students. *Learning and Instruction, 88,* 101810. https://doi.org/10.1016/j.learninstruc.2023.101810

Li, Y. (2024). The mechanism of self-regulated learning among rural primary middle school students: academic delay of gratification and resilience. *Learning and Motivation*, *87,*102013. https://doi.org/10.1016/j.lmot.2024.102013

Limone, P., Sinatra, M., Ceglie, F., & Monacis, L. (2020). Examining procrastination among university students through the lens of the self-regulated learning model. *Behavioral Sciences, 10*(12), 184. https://doi.org/10.3390/bs10120184

Lourenço, A. A. (2008). *Processos auto-regulatórios em alunos do 3.º Ciclo do Ensino Básico: Contributo da auto-eficácia e da instrumentalidade.* [Doctoral dissertation, University of Minho]. Institutional Repository of the University of Minho. https://repositorium.sdum.uminho.pt/handle/1822/7631

Lourenço, A. A., & Paiva, M. O. (2024). Academic performance of excellence: the impact of self-regulated learning and academic time management planning. *Knowledge*, *4*(2), 289–301. https://doi.org/10.3390/knowledge4020016

Machado, B. A. B., & Schwartz, S. (2018). Procrastinação e aprendizagem acadêmica. *Revista Eletrônica Científica da UERGS*, *4*(1), 119–135. https://doi.org/10.21674/2448-0479.41.119-135

Makiah, M., & Nusron, A. (2025). The interplay between time management, motivation, and academic performance among university students. *Klabat Journal of Management, 6*(1), 18–27. https://doi.org/10.60090/kjm.v6i1.1225.18-27

Marcilio, F. C. P., Blando, A., Rocha, R. Z., & Dias, A. C. G. (2021). Guia de técnicas para a gestão do tempo de estudos: relato da construção. *Psicologia: Ciência e Profissão, 41*, 1–13. https://doi.org/10.1590/1982-3703003218325

Matulaitienė, J., Kaminskienė, L., Monkevičienė, O., & Lehtinen, E. (2025). Teacher-and student-related factors supporting primary school students' self-regulated learning. *Frontiers in Education*, *10,* 1503867. https://doi.org/10.3389/feduc.2025.1503867

Oates, J., Carpenter, D., Fisher, M., Goodson, S., Hannah, B., Kwiatkowski, R., Prutton, K., Reeves, D., & Wainwright, T. (2021). *BPS Code of Human Research Ethics*. The British Psychological Society. https://doi.org/10.53841/bpsrep.2021.inf180

Rosário, P., Costa, M., Núñez, J. C., González-Pienda, J., Solano, P., & Valle, A. (2009). Academic procrastination: associations with personal, school, and family variables. *The Spanish Journal of Psychology*, *12*(1), 118–127. https://doi.org/10.1017/S1138741600001530

Rosário, P., Lourenço, A., Paiva, M. O., Núñez, J. C., González-Pienda, J., & Valle, A. (2011). Inventário de processos de autorregulação da aprendizagem (IPAA). In C. Machado, M. Gonçalves, L. Almeida, & M. Simões (Eds.), *Instrumentos e contextos de avaliação Psicológica* (pp. 159-174). Almedina.

Schunk, D. H., & Zimmerman, B. J. (1994). *Self-regulation of Learning and Performance: Issues and Educational Applications*. Routledge. https://doi.org/10.4324/9780203763353

Silva, L. S., Bernardes, J. R., Nascimento, J. C. H. B. do, Veras, S. L. L., & Castro, M. M. B. (2022). As relações entre o desempenho acadêmico e a procrastinação: um estudo exploratório com acadêmicos dos cursos de graduação em ciências contábeis e administração do piauí. *Contabilidade Vista & Revista*, *33*(1), 115–143. https://doi.org/10.22561/cvr.v33i1.6441

Song, X., Ding, N., Jiang, N., Li, H., & Wen, D. (2020). Time use in out-of-class activities and its association with self-efficacy and perceived stress: data from second-year medical students in China. *Medical Education Online*, *25*(1). https://doi.org/10.1080/10872981.2020.1759868

Steel, P., & Klingsieck, K. B. (2016). Academic Procrastination: psychological antecedents revisited. *Australian Psychologist*, *51*(1), 36–46. https://doi.org/10.1111/ap.12173

Svartdal, F., Dahl, T., Gamst-Klaussen, T., Koppenborg, M., & Klingsieck, K. (2020). How study environments foster academic procrastination: overview and recommendations. *Frontiers in*

Psychology, 11. https://doi.org/10.3389/fpsyg.2020.540910

Tao, X., Hanif, H., & Wang, L. (2025). The effects of self-regulated learning strategies on academic procrastination and academic success among college EFL students in China. *Frontiers in Psychology, 16,* 1562980. https://doi.org/10.3389/fpsyg.2025.1562980

Teles, E. C., Campana, A., Costa, S., & Nascimento, F. (2020). O ensino remoto e os impactos nas aprendizagens. *Revista ComSertões: Revista de Comunicação e Cultura no Semiárido, 9*(2), 72–90. https://doi.org/10.36943/comsertoes.v9i2.10091

Thibodeaux, J., Deutsch, A., Kitsantas, A., & Winsler, A. (2016). First-year college students' time use: relations with self-regulation and GPA. *Journal of Advanced Academics*, *28*(1), 5–27. https://doi.org/10.1177/1932202X16676860

Trentepohl, S., Waldeyer, J., Fleischer, J., Roelle, J., Leutner, D., & Wirth, J. (2022). How did it get so late so soon? The effects of time management knowledge and practice on students' time management skills and academic performance. *Sustainability, 14*(9), 5097. https://doi.org/10.3390/su14095097

UNRIC. (2018). *Guia Sobre Desenvolvimento Sustentável: 17 Objetivos Para Transformar o Nosso Mundo*. https://e4k4c4x9.delivery.rocketcdn.me/pt/wp-content/uploads/sites/9/2019/01/SDG_brochure_PT-web.pdf

Usher, E. L., & Schunk, D. H. (2017). Social cognitive theoretical perspective of self-regulation. In D. Shunk, & J. Greene (Eds), *Handbook of self-regulation of learning and performance* (pp. 19-35). Routledge. https://doi.org/10.4324/9781315697048-2

Valente, S., Dominguez-Lara, S., & Lourenço, A. (2024). Planning time management in school activities and relation to procrastination: a study for educational sustainability. *Sustainability*, *16*(16), 6883. https://doi.org/10.3390/su16166883

Wolters, C. A., & Brady, A. C. (2021). College students' time management: a self-regulated learning perspective. *Educational Psychology Review*, *33*(4), 1319–1351. https://doi.org/10.1007/s10648-020-09519-z

Won, S., & Yu, S. L. (2018). Relations of perceived parental autonomy support and control with adolescents' academic time management and procrastination. *Learning and Individual Differences*, *61*, 205–215. https://doi.org/10.1016/j.lindif.2017.12.001

World Medical Association. (2013). World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA*, *310*(20), 2191–2194. https://doi.org/10.1001/jama.2013.281053

Yeo, S., Tan, J., Lo, J., Chee, M., & Gooley, J. (2020). Associations of time spent on homework or studying with nocturnal sleep behavior and depression symptoms in adolescents from Singapore. *Sleep Health 6*(6), 758–766. https://doi.org/10.1016/j.sleh.2020.04.011

Zachariou, A., & Whitebread, D. (2019). Developmental differences in young children's self- regulation. *Journal of Applied Developmental Psychology, 62*, 282–293. https://doi.org/10.1016/j.appdev.2019.02.002

Zimmerman, B. J. (2008). Investigating Self-regulation and motivation: historical background, methodological developments, and future prospects. *American Educational Research Journal*, *45*(1), 166–183. https://doi.org/10.3102/0002831207312909

Authors / Autores

Valente, Sabina (svalente@ipportalegre.pt) 0000-0003-2314-3744

PhD in Educational Sciences: Educational Psychology from the University of Trás-os-Montes and Alto Douro. Adjunct professor at the Portalegre Polytechnic University, Portugal. Integrated researcher at CARE - Center for Research in Health and Social Sciences (Portalegre Polytechnic University), collaborator at the Center for Research in Education and Psychology (CIEP, University of Évora) and invited researcher at the Faculty of Education (University of Murcia) in the areas of educational sciences/educational psychology.

Author Contribution (SV): Preparation and structure; Writing; Methodology; and Study edition.

Conflict of interest statement (SV): The author declares that there are no conflicts of interest in the writing of this article.

Afonso Lourenço, Abílio (privadoxy@gmail.com) 0000-0001-6920-0412

PhD in Education (Educational Psychology) from the University of Minho (Braga), and a postdoctoral in Psychology at Fernando Pessoa University (Porto), Portugal. His research focuses on applied psychology at all levels of education, with a particular emphasis on self-regulated learning, self-efficacy, teaching and learning approaches, motivation, emotional intelligence, conflict management, and quantitative methodology (SEM). He is the author of 70 scientific articles, 20 book chapters, and 1 book, in collaboration with over 50 researchers. He serves as a reviewer and associate editor for several national and international scientific journals in education and psychology.

Author Contribution (AAL): Development and structure; Writing; Methodology (application of research instruments, sample collection and statistical analysis of data).

Conflict of interest statement (AAL): The author declares that there are no conflicts of interest in the writing of this article.

Olímpia Paiva, Maria (olimpiapaiva0212@gmail.com) 0000-0001-6740-9108

PhD in Education (Educational Psychology) from the University of Minho (Braga) and completed postdoctoral studies in Psychology at the Fernando Pessoa University (Porto), Portugal. Her research focuses on applied psychology at all levels of education, encompassing topics such as self-regulated learning, self-efficacy, teaching and learning approaches, motivation, conflict management, and quantitative methodology. She is the author of 35 scientific articles and 9 book chapters. She is a reviewer for several national and international scientific journals in education and psychology.

Author Contribution (MOP): Methodology (application of research instruments and sample collection).

Conflict of interest statement (MOP): The author declares that there are no conflicts of interest in the writing of this article.

Dominguez-Lara, Sergio (sdominguezmpcs@gmail.com) 0000-0002-2083-4278

PhD in Psychology from the University of San Martín de Porres (Peru). He is a researcher at the same university. His areas of expertise in university teaching include statistics applied to psychology, psychological assessment, and measurement. His research focuses on psychometrics and methodological developments in the field, as well as issues related to the academic behaviour of university students (procrastination, self-efficacy, personality, etc.). He has published in indexed journals, both nationally and internationally.

Author Contribution (SDL): Methodology (statistical analysis of the data).

Conflict of interest statement (SDL): The author declares that there are no conflicts of interest in the writing of this article.

Oliveira, Hugo (hugo.oliveira@ipportalegre.pt) 0000-0002-6802-1604

PhD student in Educational Sciences at the University of Évora. Master's degree in Pedagogical Supervision and Bachelor's degree in Biology and Geology Teaching. He is an assistant professor at the School of Education and Social Sciences of the Portalegre Polytechnic University, Portugal. He has experience teaching science in Portugal and the United Kingdom. Member of the Research Center in Education and Psychology (CIEP, University of Évora).

Author Contribution (HO): Writing and editing.

Conflict of interest statement (HO): The author declares that there are no conflicts of interest in the writing of this article.

Carvalho, Luísa (luisacarvalho@ipportalegre.pt) 0000-0001-6095-6010

PhD in Educational Sciences and a Master's degree in Education from the University of Évora, and a Bachelor's degree in Primary Education (First Cycle) from the Polytechnic Institute of Portalegre. Adjunct Professor, member of the Scientific-Technical Council and the Pedagogical Council of the Higher School of Education and Social Sciences at the Portalegre Polytechnic University. She was formerly the Deputy Director of the School of Education and Social Sciences at the Portalegre Polytechnic University. Research fellow at CARE - Center for Research in Health and Social Sciences (Polytechnic Institute of Portalegre) and a collaborator at the Center for Research in Education and Psychology (CIEP, University of Évora). Member of research project teams in the field of educational sciences. She has published in journals and book chapters as both author and co-author. She supervises Master's and Doctoral research projects and serves as a reviewer for several scientific journals.

Author Contribution (LC): Writing and editing.

Conflict of interest statement (LC): The author declares that there are no conflicts of interest in the writing of this article.

Rebola, Fernando (fernando.rebola@ipportalegre.pt) 0000-0002-1545-7877

Professor Coordinator at the Portalegre Polytechnic University. PhD in Education, specializing in Science Education, from the Institute of Education at the University of Lisbon. He is currently Vice President of the Portalegre Polytechnic University, having previously served as Director of the School of Education and Social Sciences. He is a research fellow at CARE – Center for Research in Health and Social Sciences, with a particular focus on education, especially science didactics, teacher training and professional development, and pedagogy in higher education. He also coordinates the Master's Program in Pedagogical Innovation in Digital Environments and the Office of Pedagogical Innovation at the Portalegre Polytechnic University.

Author Contribution (FR): Supervision and editing.

Conflict of interest statement (FR): The author declares that there are no conflicts of interest in the writing of this article.

RELIEVE

Revista **EL**ectrónica de **I**nvestigación y **EV**aluación **E**ducativa

E-Journal of Educational Research, Assessment and Evaluation

[ISSN: 1134-4032]