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EDITED BY  
Prisla Ücker Calvetti,  
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Alegre, Brazil

REVIEWED BY  
Luís Sardinha,  
University of Madeira, Portugal  
Amaliyah Amaliyah,  
State University of Jakarta, Indonesia

\*CORRESPONDENCE  
Jovita Vytasek  
✉ [jovita.vytasek@kpu.ca](mailto:jovita.vytasek@kpu.ca)

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# Boosting productivity and wellbeing through time management: evidence-based strategies for higher education and workforce development

Alexandra Patzak<sup>1</sup>, Xiaorong Zhang<sup>1</sup> and Jovita Vytasek<sup>2\*</sup>

<sup>1</sup>College of Education and Human Development, George Mason University, Fairfax, VA, United States,

<sup>2</sup>Faculty of Educational Support and Development, Kwantlen Polytechnic University, Surrey, BC, Canada

**Introduction:** Amid increasing academic and professional pressures, time management is widely acknowledged as essential for supporting students' and professionals' well-being, motivation, and performance. However, despite general agreement on its benefits, there remains limited clarity about which specific time management strategies are most effective, particularly in the context of higher education and workforce development. Compounding this issue are inconsistencies in how time management is defined and measured across the literature.

**Method:** This systematic review synthesizes findings from 107 empirical studies—spanning higher education and workplace settings and including peer-reviewed journal articles and dissertations—to clarify the conceptual landscape of time management, identify high-impact strategies, and assess their influence on key outcomes. Following PRISMA guidelines, we conducted a comprehensive search across PsycINFO, ERIC, ProQuest Dissertations & Theses, and Google Scholar, including studies that employed quantitative, qualitative, and mixed-methods designs to ensure a broad and nuanced understanding of the topic.

**Results:** Planning, goal-setting, prioritization, and task organization emerged as particularly beneficial strategies for enhancing productivity, well-being, and overall performance.

**Discussion:** By addressing definitional inconsistencies and identifying the most effective strategies, this review offers evidence-based guidance for educators, instructional designers, and career development professionals seeking to better equip students and workers for success in an increasingly demanding and competitive environment.

## KEYWORDS

time management, goal-setting, planning, prioritizing, self-regulated learning, systematic review

## 1 Introduction

Time management is widely recognized as a critical factor in helping students achieve academic goals and professionals advance in their careers. As a self-regulated process, it plays a central role in the forethought phase of self-regulated learning, encompassing goal-setting, planning, and strategy selection (Panadero, 2017; Wolters and Brady, 2021). Effective time managers are able to organize, prioritize, and adapt their schedules to meet personal and professional objectives (Aeon et al., 2021), underscoring its importance across educational and professional domains.

Its relevance has grown as both environments become more demanding, with institutions and organizations increasingly investing in training programs to cultivate time management competencies. Strategies such as planning, prioritization, and goal-setting have been shown to enhance academic achievement, job performance, psychological wellbeing, and satisfaction (Bedi and Sass, 2023; Claessens et al., 2007; Kearns and Gardiner, 2007). These structured behaviors are critical for fostering both individual productivity and broader institutional success.

The importance of time management has deep historical roots. Taylor's (1911) *Time Principles of Scientific Management* emphasized time optimization to improve productivity in manufacturing, while Gilbreth and Gilbreth (1912) applied similar principles to domestic labor to enhance household efficiency. By the late 20th century, scholars such as Britton, Macan, and Tesser turned attention to educational contexts, examining time management among students and developing tools to assess related skills—marking a shift from organizational productivity to individual cognitive and behavioral regulation.

Over time, empirical research has consistently demonstrated the benefits of time management. Prior reviews have shown its positive associations with academic performance, workplace productivity, wellbeing, and reduced stress and burnout (Bedi and Sass, 2023; Ahmady et al., 2021; Claessens et al., 2007). These findings hold even under pressure, including in demanding academic programs like medical education and high-stakes professional settings. For example, Ahmady et al. (2021) highlight the role of time management in reducing stress and improving achievement among medical students, while Bedi and Sass (2023) emphasize its relevance for employee performance and job satisfaction. Aeon et al. (2021) also link time management to improved wellbeing. In higher education, systematic reviews have identified effective strategies for teaching time management, offering evidence-based interventions for student development (Patzak et al., 2025; Richards, 1987).

Despite these well-documented benefits, gaps remain. Aeon et al. (2021) underscore the need for greater conceptual clarity and a deeper understanding of the mechanisms linking time management behaviors to outcomes. Much of the existing literature has emphasized results without fully addressing how time management is defined, developed, or enacted—an issue this review seeks to address.

The COVID-19 pandemic further disrupted the field by destabilizing routines and environments that supported effective time regulation. The sudden shift to remote learning and work blurred traditional boundaries between roles and activities, removing external scaffolds such as fixed schedules and face-to-face accountability. These disruptions fundamentally altered how students and workforce professionals perceived and managed time, heightening feelings of fragmentation and diminishing the structure that previously guided daily functioning. Students and workers alike reported widespread difficulties with concentration, communication, and motivation (Podlogar and Jurišević, 2022), alongside increased stress, procrastination, and disengagement. Among students, particularly those from marginalized backgrounds, the pandemic led to increased academic workload, anxiety about future careers, and limited

access to technology and learning environments (Aristovnik et al., 2020; Tsurugano et al., 2021). Many reported poor health, economic insecurity, and a deterioration in overall wellbeing (Tsurugano et al., 2021; Fuse-Nagase et al., 2020; Copeland et al., 2021). Similarly, workforce professionals—particularly in healthcare—experienced heightened levels of stress, anxiety, and burnout, with women and those in high-risk roles most severely affected (Tan et al., 2020; Sun et al., 2021). Structured time management strategies, especially those grounded in goal-setting and planning, were found to buffer against some of these effects by reducing anxiety and enhancing emotional resilience (Alhasani et al., 2022). Still, many individuals struggled to maintain productivity and organization in the face of disrupted routines, blurred work-life boundaries, and persistent uncertainty (Forstervold et al., 2022; Ding et al., 2024).

While the pandemic-era literature highlights valuable adaptive strategies, the surrounding conditions introduced a range of confounding variables—emotional stress, abrupt transitions, and environmental instability—that complicate interpretation and comparison. In contrast, pre-pandemic research was conducted under relatively stable conditions, offering greater methodological clarity and stronger insight into the underlying mechanisms of time management. These studies provide a more consistent baseline for understanding how structured behaviors—such as planning, prioritization, and goal-setting—support academic and professional functioning. They also offer transferable strategies for navigating new demands and re-establishing effective routines in the post-pandemic world.

In response, this review focuses on pre-pandemic research, drawing from studies conducted in more stable environments to derive insights that are especially relevant for the post-pandemic world. Pre-pandemic findings offer a clearer baseline for understanding effective time regulation and provide practical strategies for rebuilding routines disrupted by crisis. Structured behaviors such as planning, prioritization, and goal-setting were consistently linked to academic and professional success, as well as improved wellbeing (Aeon et al., 2021; Claessens et al., 2007; Kearns and Gardiner, 2007). These findings remain relevant as students and professionals navigate new demands and seek to regain control over their time and productivity.

The present systematic review builds on this foundation by examining how time management is conceptualized and identifying strategies that support its development among students in higher education and professionals in the workplace. These settings were selected for their emphasis on self-direction. Unlike the highly structured K–12 environment, higher education and workplace contexts offer individuals greater control over how they manage their time and responsibilities. College students and professionals—particularly in knowledge-based or leadership roles—are generally expected to self-manage with limited external oversight. Accordingly, this review focuses on these settings as key contexts where time management is both essential and actively developed for success. In contrast to earlier reviews that primarily emphasized outcomes, we focus on clarifying definitions, exploring underlying mechanisms, and offering practical guidance on how time management can be cultivated to promote academic and professional success. We extend prior reviews by Richards

(1987) and Claessens et al. (2007) by incorporating recent peer-reviewed studies and dissertations, and we contextualize meta-analyses that examine links between time management and academic achievement (Ahmady et al., 2021), job performance and satisfaction (Bedi and Sass, 2023), and wellbeing (Aeon et al., 2021). Through this comprehensive synthesis, we aim to advance theoretical clarity and offer actionable insights through the following research questions:

1. How is time management defined?
2. How do different time management strategies affect students and employees?

## 2 Methods

### 2.1 Search

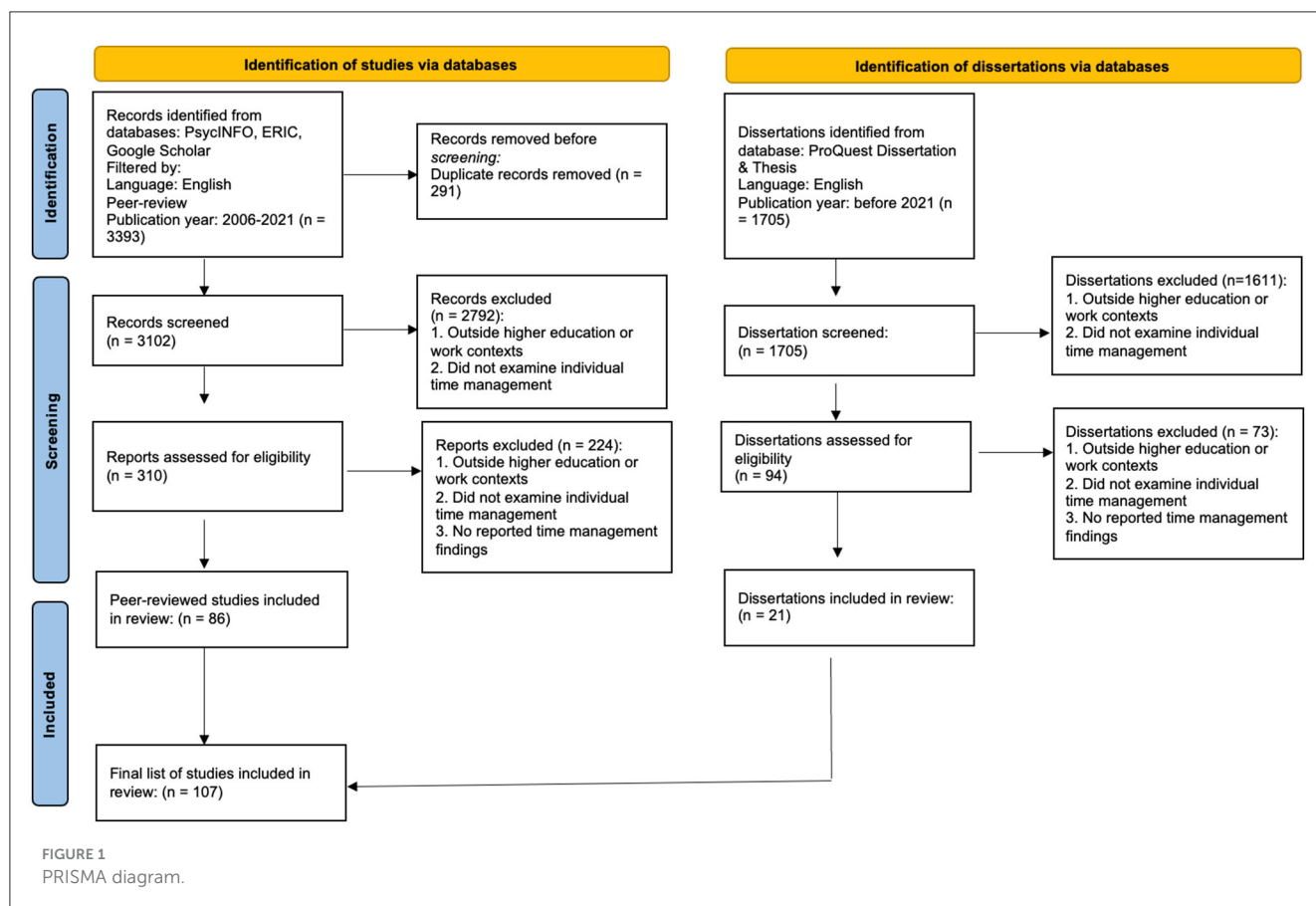
This systematic review of time management research was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Page et al., 2021; see Figure 1). We searched PsycINFO, ERIC, ProQuest Dissertations and Theses, and Google Scholar using combinations of the following terms: *time management*, *time allocation*, *time structuring*, and *time use*. Additional sources were identified through reference list screening. We developed the search strategy collaboratively and piloted it to ensure comprehensive coverage across databases. Search terms were iteratively refined to minimize

bias in study retrieval. The search yielded 5,098 records. We focused specifically on dissertations and peer-reviewed journal articles published in English. Extending the review by Claessens et al. (2007), we included journal articles published between 2006 and 2021. Because dissertations were not addressed in earlier reviews, we included all dissertations up to the end of 2021. This timeframe also captures the period prior to the COVID-19 pandemic, which significantly disrupted daily life and altered individuals' perceptions and management of time (e.g., Ding et al., 2024; Forstervold et al., 2022), with a time lag to allow for publication of this work.

### 2.2 Screening

Two authors independently screened all titles, abstracts, and full texts based on predefined inclusion criteria. Included studies were peer-reviewed journal articles or dissertations written in English and published in or before 2021 with no restriction on study type or research design. We excluded studies not situated in higher education or work contexts (e.g., primary/secondary education, informal learning environments or leisure time). Studies that did not examine and report findings on individual time management were also excluded, e.g., studies focusing on collaborative time management.

To assess the methodological quality of included studies, we used the Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018), which is designed to evaluate a wide range of empirical



research, including qualitative, quantitative (randomized, non-randomized, and descriptive), and mixed-methods studies. The MMAT includes two initial screening questions and five criteria specific to each study type. We selected MMAT due to its flexibility in appraising diverse designs within a single review. In line with the developers' guidance, we did not compute overall scores. Instead, we presented the criteria ratings and summarized key quality concerns. A detailed MMAT rating matrix is provided in [Supplementary Table S1](#).

Inter-rater reliability was calculated on 20% of records at each screening phase, showing substantial agreement for title and abstract screening ( $\kappa = 0.76$ ) and full-text screening ( $\kappa = 0.79$ ). Discrepancies were resolved through discussion, with a third author adjudicating when needed. The same process was used during data extraction: one author extracted data using a standardized form, and a second verified a random subset. Any disagreements were discussed and, if unresolved, referred to the third author. These procedures enhanced transparency and minimized bias.

## 2.3 Sample

The systematic review identified 107 relevant sources (86 peer-reviewed articles and 21 dissertations). Of these, 69 focused on higher education, 36 on workplace settings, and 2 addressed both contexts. Our sample includes a total sample size of 32,959, including 24,068 students in higher education and 8891 workforce professionals. These sources investigated time management in educational and work settings using diverse quantitative, qualitative, and mixed-method designs. See [Supplementary Table S2](#) for characteristics of each included study.

Of the included studies, the quality assessment showed that 41 met all five quality criteria. Forty-five studies lacked sufficient information to assess at least one criterion, preventing a clear judgment. Nineteen studies failed to meet one criterion, three studies did not meet two, and one study failed to meet three of the five criteria. The most common concerns involved the sampling process in quantitative descriptive studies ( $n = 11$ ), risk of non-response bias ( $n = 4$ ), and the representativeness of samples in non-randomized trials ( $n = 3$ ). See [Supplementary Table S1](#) for full quality appraisal details.

## 2.4 Data analysis

Thematic analysis (Thomas and Harden, 2008) was used to ensure transparency and identify themes related to the research questions. Definitions and findings were coded line-by-line, generating a codebook to compare codes across studies systematically. Codes were analyzed for underlying meanings and grouped into related categories, which were further refined into higher-level constructs and overarching themes. This iterative process facilitated a comprehensive understanding of time management.

Thematic analysis of the included studies identified six overarching themes that structured the synthesis of findings.

These themes reflect recurring patterns in how time management is conceptualized, studied, and applied across contexts. First, definitions of time management varied widely, ranging from a narrow focus on productivity behaviors to broader interpretations involving self-regulation and multidimensional processes. Second, common behavioral strategies emerged, including goal setting, prioritization, planning, and scheduling, often adapted to specific academic or professional settings. Third, individual differences such as personality traits (e.g., conscientiousness), self-regulated learning skills, and motivational factors were frequently reported as influencing time management practices. Fourth, studies linked time management to a range of outcomes, including academic achievement, job performance, wellbeing, and reduced stress, though effect sizes and consistency varied. Fifth, contextual and cultural influences were increasingly recognized, highlighting how environmental factors and even task characteristics shape time management practices. Finally, intervention studies suggested that time management skills can be improved through training, although evidence for long-term behavioral change remains limited. These themes informed the organization and interpretation of findings presented in the results section.

These six themes directly address the review's research questions by offering a structured synthesis of how time management is both conceptualized and operationalized. Themes related to varying definitions of time management respond to Research Question 1 by illustrating the conceptual diversity across studies, from narrow behavioral models to comprehensive self-regulatory frameworks. Themes involving behavioral strategies, individual differences, contextual influences, outcomes, and interventions collectively inform Research Question 2, revealing how time management practices are employed and how they influence performance, wellbeing, and stress among students and employees. This thematic organization enhances the review's contribution by aligning empirical patterns with the conceptual aims of the research.

While the quality appraisal informed our analytic perspective, we did not observe consistent patterns linking study quality to the themes or findings that emerged. Regardless of methodological rigor, studies contributed meaningfully to the synthesis, suggesting that the identified themes reflect robust trends across diverse research contexts.

## 3 Results

### 3.1 Time management definitions

Time management lacks a universal definition. Since dissertations often present overviews rather than a single conceptual definition, we analyzed the 86 articles.

Most articles (24 out of 86) used or adapted Claessens et al.'s (2007) conceptualization, which views time as a limited resource, with key actions including goal setting, prioritizing, planning, and self-assessing time use. Work studies emphasized efficient planning to boost productivity, but monitoring progress was less emphasized.

TABLE 1 Methods for operationalizing time management.

Method	<i>N</i>	<i>n</i> <sub>Education</sub>	<i>n</i> <sub>Work</sub>
Survey	100	68	21
Interview	7	3	4
Diary	5	0	5
Trace data	5	3	2

TABLE 2 Popular time management surveys.

Survey	Sub-scales	<i>n</i> <sub>item</sub>	Sample item
Time Management Questionnaire (Britton and Tesser, 1991)	Short-range planning	7	Do you set and honor priorities?
	Long-range planning	5	Do you have a set of goals for the entire quarter?
	Time attitude	6	Do you continue unprofitable routines or activities? 3
Time Management Behavioral Scale (Macan et al., 1990; Macan, 1994)	Goal-setting and prioritizing	10	I set deadlines.
	Time management mechanics	11	I schedule time daily.
	Preference for organization	8	I organize paperwork.
	Control of time	5	I feel in control of my time.

Macan et al. (1990) and Macan (1994) proposed another widely used framework, categorizing time management behavior into goal-setting and prioritization, scheduling and planning, organizing, and perceived control over time. Fifteen studies in our sample (7 in education, 8 in work) used this model. Five articles focused on the objectives of time management, defining it as efficient time allocation to enhance productivity (e.g., Crnjar et al., 2019).

Forty-two articles lacked a clear conceptual definition of time management, with many offering no ( $n = 30$ ), multiple ( $n = 6$ ), or merely operational definitions ( $n = 6$ ). Of operational definitions, surveys were the most common method, followed by interviews, diaries, and trace data (see Table 1).

The most used surveys were the Time Management Behavior Scale (TMBS; Macan et al., 1990; Macan, 1994) in 39 studies and the Time Management Questionnaire (TMQ; Britton and Tesser, 1991) in 25 studies (see Table 2). Both showed high reliability, with Cronbach's alpha ranging from 0.76–0.97 for the TMBS (e.g., Douglas et al., 2016; Wolters et al., 2017) and 0.75–0.88 for the TMQ (e.g., Ghiasvand et al., 2017; Gravley, 2020).

Twenty-two surveys, mostly self-developed, some outdated (e.g., “managing postal correspondence”) (Macan et al., 1990), were each used in one study. Diaries were employed in five work-based studies as interventions and data collection tools, tracking planning, task completion, time management strategies, and multitasking over 2–5 weeks (Claessens, 2004; Häfner et al., 2014a; Kirchberg et al., 2015).

TABLE 3 Key Time Management Benefits and Evidence-Based Strategies.

Key findings	Specific strategies
<b>Wellbeing</b> reduces stress, burnout, and anxiety.	Goal-setting, planning, prioritizing
<b>Performance</b> enhances job performance and academic achievement.	Goal-setting, planning, prioritizing
<b>Motivation</b> boosts engagement, persistence and self-efficacy.	Goal-setting, scheduling
<b>Procrastination</b> reduces procrastination, especially in higher education.	Goal-setting, scheduling
<b>Learning strategies</b> encourage cognitive and metacognitive strategies.	Organizing, goal-setting, planning
<b>Task characteristics:</b> autonomy and interruptions require planning.	Contingency planning, scheduling
<b>Individual differences:</b> gender, age, and conscientiousness affect time management.	Goal-setting, planning
<b>Training</b> improves time management effectiveness, wellbeing and performance.	Planning, goal-setting, prioritizing

Seven studies involved interviews with students ( $n = 3$ ) and employees ( $n = 4$ ) about time management strategies. Student interviews focused on first-year university students (Van der Meer et al., 2010), nursing students (Mirzaei et al., 2012), and ESL college students (Liu, 2019). Workplace studies explored tools and strategies used by program designers (Wajcman, 2019), managers, school administrators (Naparan and Tulod, 2021; Wong and Waldner, 2021) and employees across sectors (Claessens, 2004).

Five studies utilized trace data, including 7-day time logs (Hensley et al., 2018) and software tracking work activities (Pammer and Bratic, 2013). Other research analyzed task completion during simulations (DiGregorio, 2020) and students' learning management system engagement, focusing on behaviors such as studying on time, ahead, or catching up (Ahmad Uzir et al., 2020; Li et al., 2020). These studies emphasized task timing and behavioral indicators of time management.

### 3.2 Impact of time management

Researchers investigated how time management can be facilitated through training ( $n = 26$ ) and its association with individual differences ( $n = 25$ ), wellbeing ( $n = 26$ ), performance ( $n = 22$ ), motivation ( $n = 14$ ), procrastination ( $n = 10$ ), task characteristics ( $n = 8$ ), and learning strategies ( $n = 6$ ). See Table 3 for key findings and best practices.

#### 3.2.1 Training

Training improved time management effectiveness and strategy use in 26 studies (18 education, 8 work). Trainees showed better planning (Oettingen et al., 2015; Vanderberg, 2008; Solanto and Scheres, 2021), goal setting (Vanderberg, 2008; Mai et al., 2020), and prioritizing (DiGregorio, 2020), along with greater control over time ( $\eta^2 = 0.29$ – $0.35$ ; Häfner and Stock, 2010; Häfner et al., 2014b). Training increased wellbeing and productivity (Canfield,



2021; Emmanuel Chidiadi, 2020; Ming, 1981; Nuwan et al., 2021; Pangburn, 2020), with participants reporting less stress, greater satisfaction (Häfner and Stock, 2010; Krefetz, 2015), earlier task completion, more effective practice distribution (Glick and Orsillo, 2015), and higher task completion rates (Khiat, 2019). Five studies also found improved academic performance post-training (Baker et al., 2019; Häfner et al., 2015; Canfield, 2021; Wilson et al., 2021; Waldron, 2020).

Planning and prioritizing reduced stress ( $r = -0.16$ ), job pressure ( $r = -0.43$ ), and psychosomatic symptoms after training ( $r = -0.35$ ; Claessens, 2004; Lambert et al., 2012). Employees trained in time management reported higher job satisfaction ( $\eta^2 = 0.31$ ; Krefetz, 2015) and engaged more in planning ( $r = 0.17$ – $0.35$ ; Khan et al., 2020). University students experienced better health from setting goals ( $r = 0.21$ ), organizing tasks ( $r = 0.15$ ), and gaining control over time ( $r = 0.40$ ; Chang and Nguyen, 2011). University staff reported positive emotions after scheduling and organizing instruction ( $r = 0.17$ – $0.30$ ; Kearns and Gardiner, 2007).

### 3.2.2 Individual differences

Twenty-five studies (11 education, 14 work) examined how gender, age, and personality traits relate to time management.

For gender, nine studies found no differences (Abbasnejad et al., 2013; Ahlvers, 1990; Bajec, 2019; Krefetz, 2015; Pellegrino, 2003; Mukhtar et al., 2020; Ocak and Boyraz, 2016; Rostami et al., 2019; Sipos et al., 2019). Four studies favored females, while five favored males in time management performance. Disagreements persist on whether females or males excel in planning, scheduling, or strategy use (Burrus, 2019; Moore, 1994; Price, 1996). However, females tend to be more adaptable with strategies and feel greater control over their time (Burrus, 2019; Moore, 1994; Reyna et al., 2021).

Ten studies (4 education, 6 work) explored generational differences, with six finding none (Ahlvers, 1990; Kaya et al., 2012; Krefetz, 2015), while others showed small advantages for older workers in planning and goal-setting (Abbasnejad et al., 2013; Lapierre and Allen, 2012). Younger employees favored short-term planning (Burrus, 2019), and medical students' time management declined over time (Mukhtar et al., 2020).

Personality traits, particularly the Big Five, influence time management. Conscientiousness correlates positively with time control ( $r = 0.44$ ), task completion, and goal-setting (Bajec, 2019; Claessens et al., 2010; MacCann et al., 2012), while neuroticism correlates negatively ( $r = -0.31$ ). Extraverted and open individuals are more likely to employ strategies like planning and scheduling (Bajec, 2019).

### 3.2.3 Wellbeing

Twenty-six studies (11 education, 15 work) examined time management's impact on wellbeing. In work contexts, it reduced psychological distress in IT professionals ( $r = -0.22$ ; Ma et al., 2020), public/private employees (Yener et al., 2020), and lowered burnout ( $r = -0.41$ ) and anxiety ( $r = -0.36$ ) in financial managers and teachers (Abbasnejad et al., 2013; Hu et al., 2020; Mahmoodi-Shahrehabaki, 2015). For students, it buffered distress ( $r = 0.16$ ) (Al Khatib, 2014; Stewart et al., 2020), increased goal-setting ( $r = 0.80$ ), and improved task organization ( $r = 0.49$ ; Galindo-Domínguez and Bezanilla, 2020), reducing depression

( $r = -0.11$ ; Fatima and Malik, 2019) and burnout ( $r = -0.17$ ; Sipos et al., 2019), but not anxiety (Bolden, 2019; Pinxten et al., 2019; Sipos et al., 2019).

Planning and prioritizing reduced work stress, lowering job pressure ( $r = -0.43$ ), stress ( $r = -0.16$ ), and psychosomatic symptoms ( $r = -0.35$ ; Claessens, 2004; Lambert et al., 2012; Anand, 2020). Time management also boosted job satisfaction ( $\eta^2 = 0.31$ ; Krefetz, 2015; Sehrish and Zubair, 2020) and planning behaviors ( $r = [0.17, 0.35]$ ; Khan et al., 2020). University students reported better health when setting goals ( $r = 0.21$ ), organizing tasks ( $r = 0.15$ ), and gaining time control ( $r = 0.40$ ; Chang and Nguyen, 2011), while staff felt more positive about scheduling and organizing ( $r = 0.17$ – $0.30$ ; Kearns and Gardiner, 2007).

### 3.2.4 Performance

Twenty-two studies (15 education, 7 work) show time management enhances performance. In the workplace, it improved performance for IT professionals ( $r = 0.24$ ; Ma et al., 2020), public employees ( $r = 0.56$ ; Yener et al., 2020), and teachers ( $r = 0.17$  supervisors' rating,  $r = 0.10$  colleagues' rating; Grissom et al., 2015). In higher education, time management correlated with higher grades ( $r = 0.11$  to  $0.49$ ; Ahmad Uzir et al., 2020; Khan et al., 2019), GPA ( $r = 0.24$  to  $0.46$ ; Sallehuddin et al., 2019; Pinxten et al., 2019; Cemaloglu and Filiz, 2010; Herndon, 2019), and academic success ( $r = 0.43$ ; Amida et al., 2020; Gray, 2015; Jo et al., 2016), though not for online (Basila, 2014), engineering (Adams and Blair, 2019), or military students (Sipos et al., 2019).

Goal setting and planning boost performance. Undergraduates with clear goals had higher GPAs ( $r = 0.37$ ; Khan et al., 2019), and students who planned short- and long-term also performed better ( $r = 0.15$  to  $0.26$ ; Hamdan et al., 2014; Li et al., 2020). In the workplace, goal setting ( $r = 0.46$  to  $0.57$ ; Radhakrishna, 1990), prioritizing ( $r = 0.46$ ; Islam et al., 2021), and contingency planning ( $r = 0.12$  to  $0.26$ ; Claessens, 2004; Parke et al., 2018) improved performance. High achievers control their time. Students with high GPAs felt more in control of their time ( $r = 0.24$ ; Lambert et al., 2012;  $r = 0.32$ ; Goodwin and Califf, 2007;  $r = 0.43$ ; Khan et al., 2019), and employees who felt in control were perceived as more productive ( $r = 0.42$ ; Claessens, 2004; Al-Marri, 2019; Rapp et al., 2013).

### 3.2.5 Motivation

Fourteen studies (12 education, 2 work) show a positive link between motivation and time management ( $r = 0.18$  to  $0.64$ ). In education, motivation correlated with better time management, including organization ( $r = 0.24$ ; Wolters et al., 2017), deadline adherence ( $r = 0.33$ ; Wolters et al., 2017), and time control ( $r = 0.57$ ; Liu et al., 2014). Motivated students used goal-setting ( $r = 0.15$ ; Wolters et al., 2017) and scheduling ( $r = 0.46$ ; Wolters et al., 2017), while demotivated students struggled ( $r = -0.22$ ; Amida et al., 2020;  $r = -0.32$ ; Bolden, 2019).

In online learning, motivated students managed time better ( $r = 0.49$ ; Papamitsiou and Economides, 2019) and valued tasks more (Romero et al., 2021; Wolters and Hussain, 2015). Motivated students were also more persistent ( $r = 0.18$  to  $0.19$ ; Amida et al., 2020).

Self-efficacy boosts time management. Self-efficacious students used scheduling ( $r = 0.25$ ; Moore, 1994) and organizing ( $r = 0.17$  to  $0.32$ ; Moore, 1994; Wolters and Hussain, 2015), enhancing their control ( $r = 0.15$ ; Moore, 1994). Self-efficacious employees used more time management strategies ( $r = 0.51$ ; Yener et al., 2020).

Motivated students maintained engagement ( $r = 0.16$ ; Wolters and Hussain, 2015;  $r = 0.64$ ; Pinxten et al., 2019), preferred orderliness ( $r = 0.21$  to  $0.24$ ; Douglas et al., 2016), and used strategies like goal-setting ( $r = 0.27$  to  $0.34$ ; Douglas et al., 2016). Similarly, employees who planned and prioritized ( $r = 0.15$ ; Parke et al., 2018) were more engaged.

### 3.2.6 Procrastination and learning

Ten studies (8 education, 2 work) explored procrastinators' time management. Time management negatively correlated with academic procrastination ( $r = [-0.17, -0.49]$ ; Hensley et al., 2018; Limone et al., 2020; Ocak and Boyraz, 2016; Roshanisehat et al., 2021; Wolters and Hussain, 2015; Lebedeva et al., 2016; Martinez, 2021; Sainz et al., 2019; Zhao et al., 2021). Procrastinators set fewer goals ( $r = [-0.38, -0.48]$ ), rarely created schedules ( $r = [-0.35, -0.47]$ ; Hensley et al., 2018; Wolters et al., 2017), and organized less ( $r = [-0.35, -0.48]$ ). Procrastination also hindered follow-through on tasks, such as completing readings (Glick and Orsillo, 2015; Chitiga et al., 2019).

In the workplace, limited research suggests time management reduces procrastination. Bilginoglu and Yalçintaş (2020), Öksüz et al. (2018), and Ötken et al. (2020) found tax officers' procrastination was negatively related to time efficiency ( $r = -0.36$ ) and time wasting ( $r = -0.46$ ), but this was not replicated in hospital employees (Chanie et al., 2020), likely due to differing work conditions.

Time management correlates with learning strategies in higher education (Macan et al., 2010; Peker Ünal, 2021). Time managers used cognitive ( $r = 0.16$ ) and metacognitive strategies ( $r = 0.16$ ; Wolters and Hussain, 2015), such as organizing ( $r = 0.79$ ), note-taking ( $r = 0.73$ ), and test-taking ( $r = 0.71$ ; Bolden, 2019;  $r = 0.33$ ; Pinxten et al., 2019). They also practiced goal-setting, prioritizing ( $r = 0.16$ ), and scheduling ( $r = 0.45$ ). Despite recognizing time management as critical for success, many students report insufficient guidance, highlighting the need for support services (Van der Meer et al., 2010; Rudne, 2021).

### 3.2.7 Task characteristics

Eight studies (1 education, 7 work) explored time management during interruptions and autonomy. Interruptions and autonomy can overwhelm individuals, with engineers feeling less in control when interrupted ( $r = -0.22$ ) or working autonomously ( $r = -0.21$ ; Kirchberg et al., 2015). Planning helps, as employees plan more with autonomy ( $r = 0.37$  to  $0.39$ ; Claessens, 2004; Claessens et al., 2010; Lapierre and Allen, 2012; Azar, 2017) and use contingency planning for interruptions (Parke et al., 2018). Students adjust based on motivation (König and Kleinmann, 2007).

## 4 Discussion

Our systematic review aimed to highlight time management nuances, facilitating its productive use and advancing research.

We found considerable variations in definitions and how different strategies impact students and employees. This focus is especially critical in light of the COVID-19 pandemic, which disrupted routines and blurred boundaries between academic, personal, and professional life—destabilizing the external structures that once supported effective time regulation (Ding et al., 2024; Forstervold et al., 2022; Podlogar and Jurišević, 2022). While pandemic studies offer valuable insights into adaptive responses, the surrounding emotional and environmental instability complicates interpretation and comparison. By drawing from pre-pandemic literature, our review provides a clearer baseline for understanding the core components of time management and offers stable, transferable strategies to help students and workforce professionals rebuild structure, maintain productivity, and enhance wellbeing in a post-crisis world.

## 4.1 What is time management

Definitions of time management vary widely, encompassing processes such as goal setting and planning, as well as broader aims like enhancing productivity. However, many studies fail to offer clear or consistent definitions, making it difficult to generalize findings across contexts (Claessens et al., 2007). A clear conceptualization of time management is essential for advancing research and practice in both higher education and professional learning environments. Drawing on the work of Aeon and Aguinis (2017), Aeon et al. (2021), we define time management as the allocation of time toward goal achievement through organization and adaptation. This definition emphasizes the role of metacognitive monitoring in adjusting strategies to meet goals effectively (Claessens et al., 2007; Wolters and Brady, 2021).

Sardinha et al.'s (2020) flexible time management model also integrates self-awareness—a key metacognitive component—with time management and temporal perspectives. Temporal orientation shapes—and is shaped by—time-related behaviors (Keough et al., 1999; Holman and Zimbardo, 2009), offering insight into individual differences in how time management is understood and supported (Sardinha et al., 2021a,b, 2023).

Time management is typically assessed through interviews, diaries, and survey instruments such as the Time Management Questionnaire (TMQ; Britton and Tesser, 1991) and the Time Management Behavior Scale (TMBS; Macan et al., 1990), which are often adapted or abbreviated in subsequent research (Parke et al., 2018; Zampetakis et al., 2010). The variability in definitions and measurement approaches presents challenges for comparing findings and for designing effective time management interventions within higher education and the workplace.

## 4.2 How do time management strategies impact students and professionals

To capture the multifaceted nature of time management, we examined how different strategies impact individuals in both higher education and professional contexts. Our findings contribute to a growing body of research on self-regulated learning and time use by highlighting the nuanced ways in which individual differences

and strategic behaviors shape outcomes related to academic and professional functioning.

**Individual differences.** In line with [Aeon et al. \(2021\)](#), we found a weak gender effect favoring women, who tended to report greater adaptability and control over their time. While consistent with previous findings, this result should be interpreted cautiously, as gender was measured dichotomously. More inclusive and multidimensional approaches to studying gender may provide richer insight into how time management manifests across populations. Age-related patterns also emerged, with younger individuals more likely to engage in short-term planning and older individuals demonstrating stronger goal-setting skills. These findings suggest that time management evolves over time and with experience, though further longitudinal research is needed. Additionally, personality traits—particularly conscientiousness, openness, and extraversion—were positively associated with time management, aligning with earlier research ([Claessens et al., 2007](#); [Aeon et al., 2021](#)). These traits may underpin individual propensities to engage in organized, goal-directed behaviors, which are beneficial in both academic and professional contexts.

**Productivity.** Our findings support prior evidence that time management is positively associated with productivity and academic achievement ([Aeon et al., 2021](#)). Goal-setting, prioritization, and both short- and long-term planning consistently predicted higher performance. This aligns with [Ahmady et al. \(2021\)](#), who found that effective time management among medical students led to increased academic achievement. Similarly, [Bedi and Sass \(2023\)](#), in a meta-analysis of workforce professionals, reported that time management significantly enhances work productivity. These converging findings highlight the importance of supporting time management development in higher education, not only to enhance student performance but also to prepare learners for productive engagement in professional environments.

**Wellbeing.** Time management also contributes meaningfully to wellbeing. [Aeon et al. \(2021\)](#) found a moderate positive link between time management and wellbeing, which our study confirms. Planning, goal-setting, and scheduling reduce stress, burnout, and depression, thereby improving mental health and satisfaction with academic or professional responsibilities ([Claessens et al., 2007](#)). These findings are further supported by [Ahmady et al. \(2021\)](#), who showed that time management among medical students significantly reduced stress. Additionally, [Bedi and Sass \(2023\)](#) found that time management is associated with greater job satisfaction among professionals. Together, these findings emphasize the role of time management as a key factor not only in performance, but also in sustaining mental health, emotional resilience, and satisfaction—critical components of success in both academic and professional settings.

**Motivation.** Consistent with [Aeon et al. \(2021\)](#), our findings indicate that time management and motivation are closely linked. Individuals who manage their time effectively tend to feel more competent and engaged, and place greater value on their tasks. These motivational benefits are likely reinforced through strategic behaviors like scheduling, prioritization, and goal-setting, which can help individuals experience a sense of control and progress—key drivers of intrinsic motivation. In higher education, supporting

students' time management skills may thus serve as a pathway to improved engagement and persistence.

**Procrastination and learning.** Our study also aligns with [Wolters and Brady's \(2021\)](#) self-regulated learning framework, highlighting the role of time management in reducing procrastination and enhancing metacognitive and cognitive learning strategies. By fostering skills such as task organization and scheduling, educators can help students not only manage their time more effectively but also engage more deeply in learning processes that are essential for academic success.

**Training.** Like [Claessens et al. \(2007\)](#), we found that time management training can enhance individuals' wellbeing and sense of control while boosting productivity. Programs that incorporate explicit instruction in goal-setting, prioritization, and planning appear especially promising. However, our findings also highlight variability in outcomes based on differences in training design and delivery. Future research should explore how time management interventions can be tailored to different populations and educational contexts, with attention to intensity, content, and integration into existing curricula.

Overall, our findings suggest that time management is a critical skill that supports performance, wellbeing, motivation, and learning in both academic and professional settings. For educators, researchers, organizational leaders, and professional development practitioners, this underscores the importance of developing evidence-based strategies for supporting time management across contexts. Future work should continue to explore how these strategies can be embedded within educational curricula and co-curricular initiatives, as well as within workplace training and professional development programs, and how they can be adapted to meet the needs of diverse learners and professionals across developmental and contextual boundaries.

## 5 Limitations and future directions

This review offers important insights into time management in higher education and workplace contexts, but several limitations should be noted. First, we included only studies published in English, which may limit the global applicability of our findings. Future reviews should incorporate non-English studies to capture a broader international perspective.

Second, to focus on time management practices that emerged before the onset of the COVID-19 pandemic, we limited our review to studies published in or before 2021. This decision was intended to reduce confounding effects introduced by the pandemic; however, due to the variability in publication timelines, some early pandemic studies may have been included if they were published rapidly, while slower-to-publish pre-pandemic research may have been inadvertently excluded. This overlap introduces some ambiguity in distinguishing pre- and post-pandemic time management behaviors. Given growing evidence that the pandemic has reshaped individuals' perceptions and practices related to time ([Ding et al., 2024](#); [Forstervold et al., 2022](#)), future research should explicitly examine how these shifts have continued to evolve across different phases of the pandemic and into the post-pandemic period.



Third, our review centered on higher education and workplace settings, where individuals often have greater autonomy in managing their time. Other contexts—such as K–12 education or informal learning environments—may involve different time-related constraints and behaviors. Further research is needed to understand time management in these diverse settings.

## 6 Conclusions

Time management definitions vary widely across the literature, underscoring the need for clear and consistent conceptual and operational definitions. Despite advancements in theory and strategy, we echo Claessens et al. (2007) in emphasizing the ongoing importance of developing valid, reliable measures, using triangulated data sources, and accounting for contextual influences. Time management remains a critical skill for both students in higher education and professionals in the workforce. Effective time management supports wellbeing and performance across contexts (Aeon et al., 2021; Ahmady et al., 2021; Bedi and Sass, 2023). Our synthesis offers evidence-based recommendations to help individuals manage their time more effectively and reap these benefits. Strategies such as planning, goal-setting, prioritizing, and organizing consistently yield positive outcomes. Embedding these practices into educational and professional development programs can support individuals in meeting the demands of academic life and ongoing career development.

## Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

## Author contributions

AP: Investigation, Writing – original draft, Conceptualization, Writing – review & editing, Formal analysis. XZ: Writing – review

& editing, Investigation, Writing – original draft, Visualization. JV: Investigation, Writing – review & editing, Writing – original draft, Conceptualization, Funding acquisition.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Generative AI statement

The author(s) declare that no Gen AI was used in the creation of this manuscript.

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## Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/feduc.2025.1623228/full#supplementary-material>

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