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REVIEW ARTICLE

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Do time management interventions support wellbeing in the workplace? A systematic review

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Abstract

Although empirical evidence demonstrates the association between time management and wellbeing, it is unclear whether time management interventions (TMIs) effectively support wellbeing in the workplace. Given rising concerns over employee wellbeing and the prevalence of time challenges in the workplace, TMIs may play a critical role in wellbeing promotion. This systematic review aimed to assess the effects of TMIs on workplace wellbeing, investigate the characteristics of these TMIs and evaluate the quality of these studies. Systematic searches of randomised controlled trials and quasi-experiments published on or before 10 August 2025 were conducted in seven databases. The search was conducted for TMIs delivered in a workplace context, measuring at least one wellbeing variable. Seven studies met the inclusion criteria ($n = 442$). A narrative synthesis reported on intervention content, delivery and effectiveness, revealing a limited and inconsistent evidence base to support TMI efficacy. Cochrane risk-of-bias tools were used, finding low quality across the studies. Findings call for more experimental evidence, with evaluation of a broader range of wellbeing

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variables needed. Drawing from the synthesised interventions, the process model of integrated time interventions is presented, providing theoretical advancements in the recognition of time interventions as wellbeing promoters. Finally, the review encourages higher quality intervention reporting practices to enhance the transparency and replicability of TMIs.

KEYWORDS

quasi-experimental, randomised controlled trial, systematic review, time management, time management intervention, workplace wellbeing

INTRODUCTION

Poor employee mental health and wellbeing cost the global economy an estimated $1 trillion each year (WHO, 2022b). Nearly half of respondents in the European Union's 2022 Occupational Safety and Health survey reported increased work stress as a result of severe time pressure and work overload (Leclerc et al., 2022). Trends of work intensification, including perceptions of both increased pace and increased workload, are seen across industries, with detrimental impacts on employee wellbeing, health and productivity (Green, 2001; Mauno et al., 2022; Mazzola & Disselhorst, 2019; Nunes et al., 2023).

Further, a growing body of research demonstrates the consequences of time poverty, which refers to the perception of not having enough time for everything one needs and wants to do (Giurge et al., 2020). For example, perceived time poverty can negatively affect self-assessed mental health and overall health, emotional wellbeing, perceived work performance, concentration at work, turnover intentions, work–family conflict and life satisfaction (Dugan et al., 2012; Gärling et al., 2016; Höge, 2009; Kalenkoski & Hamrick, 2013; Strazdins et al., 2016; Whillans et al., 2017; Zuzanek, 2004). Stress-related symptoms such as headaches, sleep disturbances and musculoskeletal pains can also be exacerbated by time poverty (Gärling et al., 2016; Kleiner, 2014; Zuzanek, 2004).

These patterns of time poverty and work intensification in the literature indicate that how time is experienced can have impacts on wellbeing in the workplace. As recent years have witnessed an increased prioritisation of employee health and wellbeing (Bourke et al., 2023; Kelloway et al., 2023; Rugulies et al., 2023), this relationship between temporal experiences and wellbeing could be especially pertinent to the enhancement of policy decisions and organisational supports. Practically, if time-related interventions could support employees to stay well as they navigate the time pressures of the modern workplace, these interventions would be of substantial use to employers who claim responsibility for supporting their employees' wellbeing (Bourke et al., 2023; Hogg et al., 2022).

Given its popularity (Shipp & Cole, 2015), time management may present as the obvious approach to engage with temporal experiences and employee wellbeing (Bedi & Sass, 2022). Indeed, a recent meta-analysis of the time management literature found that perhaps counter to common belief, time management has a stronger association with wellbeing opposed to

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performance (Aeon et al., 2021). However, there are a number of limitations in the current time management literature. If we are to proceed in using time management to address employee wellbeing, it is important to understand the landscape of the evidence in order to inform best practice. The following section provides an overview of the time management literature and how the current systematic review aims to contribute to literature gaps by investigating whether time management interventions (TMIs) support wellbeing in the workplace.

Overview of the time management literature

Largely introduced into Western mainstream culture starting in the late 1950s–1960s, time management grew in popularity through the dissemination of practical self-help guides such as Drucker's (1967) *The Effective Executive* and Lakein's (1973) *How to Get Control of Your Time and Your Life*, which outlined strategies to optimise time, especially in a work context. Time management's popularity continued with an influx of publications in the late 1980s and again at the turn of the 21st century (Shipp & Cole, 2015). Much of the time management literature has been influenced by the early self-help guides and has produced empirical evidence to support the value of time management. In the last 20 years, three reviews have been published with the aim of synthesising this time management literature (Aeon et al., 2021; Bedi & Sass, 2022; Claessens et al., 2007), including a meta-analysis specifically evaluating time management behaviours in organisational contexts (Bedi & Sass, 2022).

Between 1954 and 2005, Claessens et al. (2007) identified 35 studies that took place across academic and work contexts and involved a measurement of time management behaviours. The authors found that self-reported time management behaviours were positively associated with perceived control of time, job satisfaction and health and negatively associated with emotional exhaustion, role overload and work–family conflict (Claessens et al., 2007). The second review came in the form of a meta-analysis assessing studies that quantitatively measured time management (Aeon et al., 2021). Analysing 158 studies ($n = 53{,}957$), they found that time management increased wellbeing, particularly life satisfaction, more so than academic and job performance outcomes. Another meta-analysis recently reviewed associations between time management behaviour and individual and organisational outcomes in the workplace (Bedi & Sass, 2022). In relation to wellbeing, the review found that time management behaviours are positively associated with job satisfaction and negatively associated with stress and burnout (Bedi & Sass, 2022). These reviews identified defining characteristics of the current time management literature involving participant populations (academic and workplace contexts) and study designs (correlational and experimental). These characteristics are explored in further detail below along with an explanation of how they have informed the decisions for the current systematic review.

Time management across workplace and academic contexts

Fourteen of the 35 studies included in Claessens et al.'s (2007) review evaluated time management in student populations (40%). Meanwhile, 17 studies investigated workplace populations (48.6%), and the remaining four studies used both student and employee populations (11.4%). Of the 158 studies included in Aeon et al.'s (2021) meta-analysis, 76 explored academic performance (48.1%). The authors of both reviews noted a difference in time management between

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academic and workplace contexts. Namely, Claessens et al. (2007) found that time management behaviours appeared to positively affect college grades and study habits while only having a small at best impact on job-related outcomes. These findings are mirrored in Aeon et al.'s (2021) meta-analysis, which reported that time management had a greater effect on performance in academic compared to workplace contexts.

In both cases, these results focused on time management and performance-related outcomes. Although both reviews go on to discuss time management and wellbeing, neither articulates whether the wellbeing association occurs within or across student and employee populations. Furthermore, neither review suggests whether, like performance outcomes, there are notable distinctions in time management's association with wellbeing between these groups.

The relatively small number of studies evaluating time management and wellbeing may be the reason the previous reviews did not report results separately for academic and workplace populations. Indeed, although time management may be more strongly associated with wellbeing compared to performance, it appears the body of evidence that supports the wellbeing association is relatively smaller. In fact, less than a fifth of the studies involved in the meta-analysis measured wellbeing variables (18.9%; Aeon et al., 2021). Given this context, it is important to investigate what we currently know about the relationship between time management and wellbeing. As the previous reviews reported differences in performance outcomes between workplace and academic contexts, it is specifically important that wellbeing is also evaluated separately in these populations.

Experimental and non-experimental literature

The previous reviews of the time management literature cast wide nets across both experimental and non-experimental evidence. In doing so, they acknowledged that a majority of studies employed cross-sectional designs and that issues of causality have not been widely addressed (Aeon et al., 2021; Bedi & Sass, 2022; Claessens et al., 2007). For example, only eight of the 35 studies (22.86%) included in Claessens et al.'s (2007) review involved a pre/post design measuring the effects of a time management training. The authors reported the effectiveness of these trainings were mixed, though generally appeared to increase self-reported time management skills (Claessens et al., 2007). Three studies found a positive relationship between time management training and performance; however, two studies did not find a significant relationship. Other than van Eerde's (2003) training decreasing worry, Claessens et al. (2007) did not report whether these trainings related to wellbeing outcomes.

Aeon et al.'s (2021) meta-analysis also emphasised the lack of experimental studies that have been conducted to evaluate the effectiveness of TMIs. They further highlighted the lack of clarity, consistency and generalisability across the interventions that were conducted. However, they did not go into further detail regarding the number of experimental studies or their findings. Bedi and Sass (2022) noted a limitation of their meta-analysis was the failure to assess the effectiveness of TMIs in the workplace. However, they then proceeded to suggest that organisations should provide more TMIs to their employees. Aeon et al. (2021) warned that although we see promising associations between time management and wellbeing in the literature, we cannot assume that these associations will translate into causal relationships when facilitating TMIs. Although the correlates between time management and wellbeing have been demonstrated in the previous reviews, it is unclear whether there is a robust evidence base that demonstrates TMIs can effectively enhance wellbeing. This distinction of experimental evidence is

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critical when considering the practical implications of TMIs to support workplace wellbeing, thus warranting specific investigation of TMIs conducted in experimental and quasi-experimental contexts to synthesis the evidence base for such interventions.

Wellbeing and time management

In order to evaluate TMIs' effectiveness on workplace wellbeing, it is crucial to consider the ways in which wellbeing is defined and evaluated. 'Positive mental health' is a term synonymised with 'wellbeing' in the literature (Ruggeri et al., 2020). The World Health Organization (2022a) has defined mental health as 'a state of mental well-being that enables people to cope with the stresses of life, realise their abilities, learn well and work well, and contribute to their community'. This definition exemplifies a conceptual shift which recognises health and wellbeing as more than simply the absence of illness (WHO, 1948). Indeed, growing evidence supports the dual continua model, which posits that mental illness and positive mental health are distinct constructs opposed to opposite ends of a singular spectrum (Iasiello et al., 2020; Keyes, 2005).

A recent systematic review demonstrated differences in occurrence, features and consequences of positive and negative wellbeing ('ill-being') in the workplace (Nunes et al., 2023). In concurrence with wider wellbeing literature, the review found that a variety of constructs and measures (predominantly validated self-report scales) were used to evaluate positive and negative wellbeing (Nunes et al., 2023). Positive wellbeing encompassed variables such as work engagement, job satisfaction, happiness and self-realisation, whereas negative wellbeing was evaluated using variables such as work-related stress, burnout, emotional exhaustion, negative affect, depression and somatic burden.

Rugulies et al.'s (2023) umbrella review of workplace mental health interventions identified three intervention categories: protection from harm, promotion of health and wellbeing and addressing those at risk. Interventions focused on the promotion of health and wellbeing include those aimed at enhancing positive wellbeing and those aimed at preventing or reducing negative wellbeing. Self-report measures were largely used in the evaluation of positive and negative wellbeing across the studies synthesised (Rugulies et al., 2023). Positive wellbeing was identified to include positive feelings, positive social and psychological functioning, and actualisation and thriving (Keyes, 2005; Rugulies et al., 2023). The review emphasised that positive wellbeing is 'not framed in terms of deficits or limitations' (Rugulies et al., 2023, p. 1368). In contrast, negative wellbeing was identified as mental health problems or conditions such as psychological distress, stress and burnout.

The recognition of both positive and negative wellbeing is reflected in the time management literature. For example, in their meta-analysis, Aeon et al. (2021) found that time management has been evaluated across a range of both positive and negative wellbeing variables. Common positive wellbeing variables included job satisfaction, life satisfaction and positive affect. Meanwhile, variables such as stress, worry and work–family conflict were evaluated as negative wellbeing (Aeon et al., 2021). Similarly, Bedi and Sass' (2022) meta-analysis found that time management related positively with variables such as job satisfaction and negatively with variables such as stress, burnout and work–family conflict. Accordingly, an investigation of both positive and negative wellbeing is necessary to gain a comprehensive understanding of TMI effectiveness on workplace wellbeing.

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Current aims

The high rates and widespread consequences of poor workplace mental health and wellbeing make the need for effective interventions particularly pertinent (Kelloway et al., 2023; Rugulies et al., 2023). Given that time management is already an established and valued skill in the workplace, it is worth investigating its potential role in supporting workplace wellbeing. Although previous time management literature shows promising links between time management and wellbeing, further investigation into the experimental evidence is necessary to understand whether and how time management interventions (TMIs) might be effectively incorporated into impactful solutions to the workplace mental health crisis. The current systematic review aimed to evaluate the effectiveness of TMIs on wellbeing in the workplace. Secondary aims were to investigate the characteristics of TMIs that have been conducted in experimental settings and to evaluate the quality of the studies.

METHODS

This systematic review adhered to the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA; Page et al., 2021) and the Cochrane Handbook for Systematic Reviews of Interventions (Higgins et al., 2022) guidelines. The systematic review protocol was registered with the International Prospective Register of Systematic Reviews (PROSPERO; CRD42021257157) and published in *PLoS ONE* (Young et al., 2024).

Search strategy

Search terms related to 'time management' and both positive and negative 'wellbeing' were used (see Supporting Information S1 for complete search terms). The search was conducted across seven specialised and general electronic databases: Medical Literature Analysis and Retrieval System Online (MEDLINE) via PubMed, PsycInfo, Web of Science, Scopus, Academic Search Complete, Cochrane Library Central and BASE (Bielefeld Academic Search Engine). The search aimed to capture studies published on or before 10 August 2025.

Reference lists of studies assessed for inclusion in the review were manually searched in attempts to identify additional eligible studies. Reference lists of previous reviews of the time management literature were also searched (Aeon et al., 2021; Bedi & Sass, 2022; Claessens et al., 2007).

Criteria for inclusion

The inclusion and exclusion criteria for the systematic review were determined using the PICO acronym (population, intervention, comparison and outcomes; McKenzie et al., 2019). The review included randomised controlled trials and quasi-experiments (controlled, non-randomised and pre-/post-intervention studies). Studies needed to include a TMI that was administered in a workplace context among a nonclinical employee population. Studies were included if they measured and reported at least one pre/post wellbeing-related outcome measure and included a control group that did not complete the TMI. Only studies written in the English language were included due to the capacities of the review team. See Supporting Information S2 for an overview of the review's inclusion criteria.

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Data extraction and quality assessment

A data extraction form was created by ANY. Extracted information included author(s), year of publication, study design, participant population, number of participants, setting of intervention, recruitment methods, details of the intervention, delivery form, deliverer of intervention, intervention duration, control group, outcomes measured and main findings. ANY, AB, SC, AD and JF independently screened titles and abstracts and then full articles. To ensure screening efficiency (Edwards et al., 2002; Waffenschmidt et al., 2019), 24% of full articles were double screened by the review team for interrater reliability, and consensus was reached. Due to the heterogeneity of TMIs and wellbeing measures used across the included studies, a meta-analysis was deemed inappropriate and a narrative synthesis was undertaken (McKenzie & Brennan, 2024; Ryan, 2013). Completed data extraction forms for each included study were reviewed and compared to investigate similarities and differences across the studies, including study design, intervention characteristics, time management definitions, intervention implementation, outcomes measures and reported results (Ryan, 2013). Full manuscripts of included studies were further reviewed to ensure a detailed and accurate synthesis. Tables were developed and presented in the review's findings to serve as visual representations of patterns synthesised across the data (McKenzie & Brennan, 2024; Ryan, 2013).

The Cochrane risk-of-bias tools were used to evaluate study quality. The ROB-II tool was used to assess randomised controlled trials based on five domains: (1) randomisation process; (2) deviations from intended intervention; (3) missing outcome data; (4) measurement of outcomes; and (5) selection of reported result (Sterne et al., 2019). Study quality was determined to be 'low,' 'some concerns' or 'high' risk of bias. The guidelines for conducting risk of bias assessments using the ROB-II tool were adhered to (Sterne et al., 2019). The ROBINS-I tool was used to assess quasi-experimental studies across seven domains: (1) confounding; (2) selection of participants; (3) classification of interventions; (4) deviations from intended interventions; (5) missing data; (6) measurement of outcomes; and (7) selection of reported result (Sterne, Hernán, et al., 2016). Study quality was determined to be 'low,' 'moderate,' 'serious' or 'critical' risk of bias or 'no information.' The guidelines for conducting risk of bias assessments using the ROBINS-I tool were adhered to (Sterne et al., 2016). ANY, AB, SC, AD and JF independently conducted risk of bias assessments. ANY and AB reviewed the assessments, and the review team then discussed and resolved any disagreements.

The initial search resulted in 7599 hits, which was reduced to 4906 after duplicates were removed. Titles and abstracts were screened, and relevant reference lists were searched for additional studies. A total of 90 studies were identified as eligible for full-text screening. After full-text screening, a total of seven studies met the inclusion criteria and were included in the review. Figure 1 outlines the search process. The following section will discuss the seven studies by presenting contextual and participant characteristics, the definitions of time management used, characteristics of the TMIs as well as topics included in each intervention, the outcomes of the TMIs and the results of risk of bias assessments conducted for each study.

RESULTS

Overall, the seven studies included in this review were conducted across four countries. The earliest two studies took place in the United States (King et al., 1986; Macan, 1996). One study took place in the Netherlands (van Eerde, 2003), one in Germany (Häfner & Stock, 2010) and

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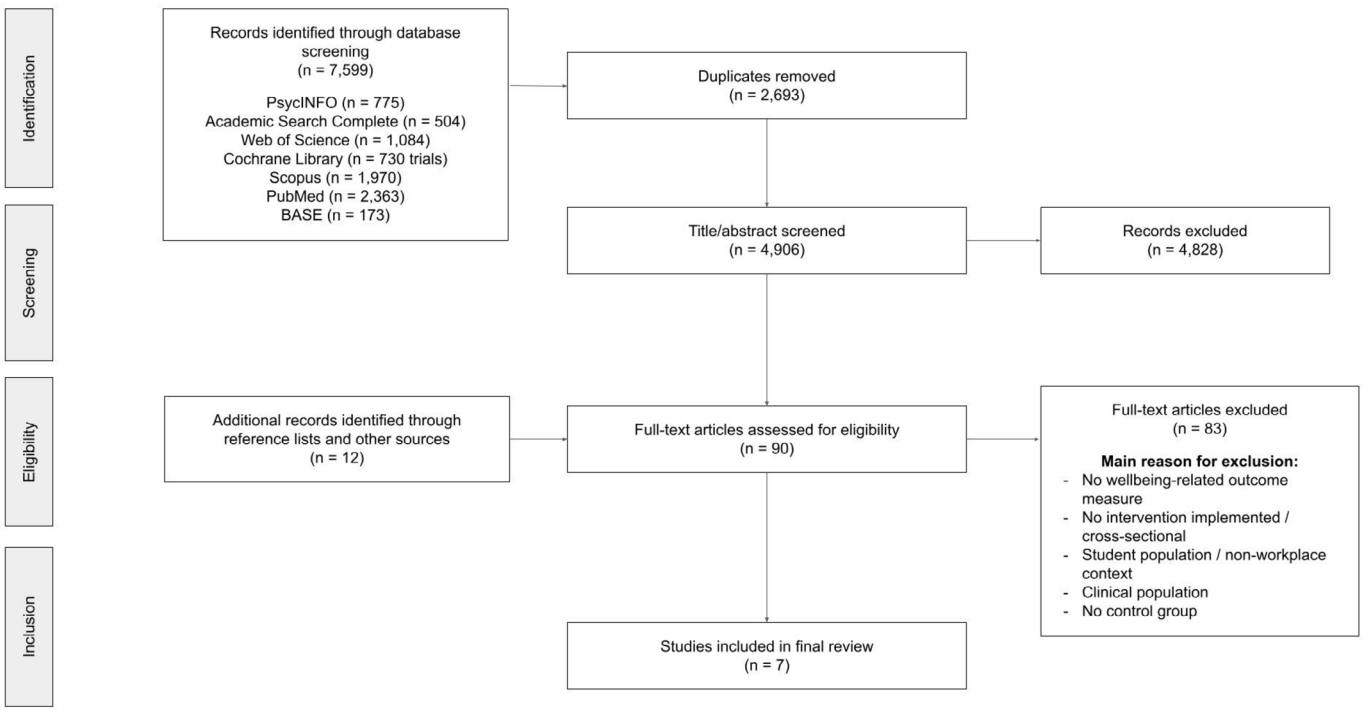


FIGURE 1 PRISMA flow used to identify included studies.

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three in Iran (Ghorbanshiroudi et al., 2011; Peykar et al., 2023; Ravari et al., 2020). Two studies adopted quasi-experimental designs and five were randomised controlled trials (see Table 1).

Participant characteristics

The studies involved a total of 442 participants at post-assessment, with 192 in the TMI groups. Five studies reported mean age, with a collective mean age of 34.49 (see Table 1). Five studies reported sex distribution, with two studies entirely female (King et al., 1986; Peykar et al., 2023), one study having 80% female (Macan, 1996) and two studies having 59% and 75% male, respectively (Häfner & Stock, 2010; van Eerde, 2003).

Definitions and characteristics of time management

Of the seven studies, three do not give explicit definitions of time management (King et al., 1986; Macan, 1996; Peykar et al., 2023). The remaining four studies each provide different definitions (see Table 2). The two studies that lacked an explicit definition of time management may imply an assumption that time management operates as a generally accepted and universal concept. Indeed, Aeon et al. (2021) suggest that time management (and its effectiveness) are often taken for granted without further enquiry. Furthermore, the four studies that do provide definitions of time management display patterns that are worth consideration. These definitions can be identified as either behaviour or purpose oriented. For example, the definitions used by

TABLE 1 Overview of included studies.

	Country	Industry	Study design	Participants	Gender	Mean age
King et al. (1986)	United States	Clerical positions	Experimental	Women in dual-earner households	100% female	35.4
Macan (1996)	United States	Social services agency	Quasi-experimental	Employees	80% female	36
Van Eerde (2003)	The Netherlands	Trading company	Quasi-experimental	Company trainees	25% female	37
Häfner and Stock (2010)	Germany	Trading company	Experimental	Employees	41% female	31.11
Ghorbanshiroudi et al. (2011)	Iran	Healthcare	Experimental	Emergency department nurses	N/A	N/A
Ravari et al. (2020)	Iran	Healthcare	Experimental	Emergency department nurses	83.75% female	61.25% 22–33 years of age
Peykar et al. (2023)	Iran	Healthcare	Experimental	Female nurses working in hospitals	100% female	32.94

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TABLE 2 Time management definitions.

Study	Time management definition	Definition orientation
King et al. (1986)	No specific definition given	N/A
Macan (1996)	No specific definition given	N/A
Van Eerde (2003)	'Time management is based on the assumption that recording, managing, and consolidating time may help a person deal efficiently with his or her time (Drucker, 1967)' (p. 423)	Behaviour and output
Häfner and Stock (2010)	'Time management behavior can be characterized as a combination of goal setting, planning, and monitoring activities (Claessens et al., 2007)' (p. 430)	Behaviour
Ghorbanshiroudi et al. (2011)	'... time management involves a set of skills for controlling and a better use of time' (p. 462)	Behaviour and output
Ravari et al. (2020)	'Time management refers to a combination of time assessment, goal setting, planning, and performance monitoring' (p. 548.e2), citing Häfner and Stock (2011)	Behaviour
Peykar et al. (2023)	No specific definition given	N/A

Häfner and Stock (2010) and Ravari et al. (2020) emphasise behaviours or activities as the epitome of time management. Meanwhile, van Eerde's (2003) and Ghorbanshiroudi et al.'s (2011) definitions expand the behaviour-focus to also emphasise the purpose or result of these behaviours as a core component of time management (see Table 2). These patterns will be further addressed in the discussion section of this paper.

Time management interventions

Format and duration

TMIs took one of two forms: (1) consecutive hours of training (e.g. one 8-h workshop; Ravari et al., 2020) or (2) incremental hours of training (e.g. seven 1-h sessions across 4 weeks; King et al., 1986; see Table 3). All interventions took place in a group format. Peykar et al.'s (2023) intervention took place virtually, whereas all other interventions were facilitated in-person. Intervention group size ranged from six participants (Häfner & Stock, 2010) to 40 participants (Macan, 1996). Four studies reported dividing experimental groups into smaller group sizes with the aim of increasing the effectiveness of the intervention (6–11 participants, Häfner & Stock, 2010; 16 participants, Peykar et al., 2023; 20 participants, Ravari et al., 2020; 8–11 participants, van Eerde, 2003).

Intervention facilitator

The authors of four of the studies also delivered the TMI (Häfner & Stock, 2010; King et al., 1986; Peykar et al., 2023; Ravari et al., 2020). Macan's (1996, p. 231) intervention was delivered by an

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TABLE 3 Study intervention details.

	Total participants[a]	Control group	Retention	Intervention format	Intervention group size	Intervention deliverer	Post measures
King et al. (1986)	56	17	N/A	Seven 1-h sessions across 4 weeks	12–14	Study authors	After final session
Macan (1996)	45	25	53–64%	Two-day seminar	40[b]	In-house instructor in organisation	4–5 months
Van Eerde (2003)	51	14	N/A	1.5-day workshop	8–11	Not stated	1 month
Häfner and Stock (2010)	55	36[c]	77%	One-day workshop	6–11	Study authors	6 weeks
Ghorbanshiroudi et al. (2011)	48	24	100%	Six 90-min weekly sessions	24	Not stated	1 month
Ravari et al. (2020)	80	40	100%	One 8-h workshop	20	Study authors, management professor and educational supervisor	1 month
Peykar et al. (2023)	107	44	81%	10 weekly online sessions (1 h and 45 min each)	15–16	Study authors (backgrounds in nursing and clinical psychology)	After final session and 1 month follow up

[a]Total reported having completed pre- and post-measures.
[b]Macan (1996) reported 40 participants completed training; however, only 38 completed pre-training measures, and only 20 completed post-training measures (53% retention rate; p. 231).
[c]Control group size only reported as total recruited, not how many completed all pre- and post-measures.

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'in-house instructor' at the organisation participating in the study. Ravari et al.'s (2020) intervention was also designed and delivered by a management professor and educational supervisor, alongside the researchers. Van Eerde (2003) and Ghorbanshiroudi et al. (2011) do not clearly state who delivered the TMIs used in their studies (see Table 3).

Intervention content

Interventions were described with varying levels of detail from a few sentences (e.g. King et al., 1986; Macan, 1996) to multiple paragraphs and full training itineraries (e.g. Häfner & Stock, 2010; Peykar et al., 2023; Ravari et al., 2020). Every TMI included topics of identifying and setting goals and priorities (see Table 4). Five studies included topics of planning and scheduling (Ghorbanshiroudi et al., 2011; Häfner & Stock, 2010; Peykar et al., 2023; Ravari et al., 2020; van Eerde, 2003) and topics of organisation and structure (Ghorbanshiroudi et al., 2011; Häfner & Stock, 2010; Macan, 1996; Peykar et al., 2023; Ravari et al., 2020). Four interventions addressed dealing with interruptions in their TMIs (Häfner & Stock, 2010; Macan, 1996; Ravari et al., 2020; van Eerde, 2003). Furthermore, three studies included topics of control of time (Ghorbanshiroudi et al., 2011; Häfner & Stock, 2010; Ravari et al., 2020) and the use of to do lists (Peykar et al., 2023; Ravari et al., 2020; Van Eerde, 2003). Meanwhile, Häfner and Stock (2010) and Macan (1996) discussed procrastination.

Macan (1996) and Ravari et al. (2020) integrated discussions of stress into their TMIs. Macan (1996) included relaxation and stress reduction techniques, whereas Ravari et al. (2020) discussed the positive effects of time management on stress, health and work. Van Eerde's (2003) time management training was designed around two phases of goal setting and goal striving. The training introduced participants to the important-urgent decision-making process (commonly referred to as the Eisenhower Matrix). Van Eerde's (2003) intervention also discussed how to say no to others, whereas Häfner and Stock's (2010) intervention discussed how to navigate unexpected additional tasks that arise during work.

Five studies took personalised approaches in their TMIs (Häfner & Stock, 2010; King et al., 1986; Peykar et al., 2023; Ravari et al., 2020; Van Eerde, 2003; see Table 4). Three interventions involved group discussions of personal time management problems. Van Eerde's (2003) intervention also included topics of personal preferences, biorhythms and creating awareness around the times of day when one is most alert. Ravari et al. (2020) took an industry-specific approach and discussed the realities and benefits of time management within the nursing context. King et al. (1986) asked participants to select activities they wished to spend more time on, which became a core component of the intervention. Furthermore, Häfner and Stock (2010) instructed their participants to complete time diaries pre- and post-intervention to aid their awareness and evaluation of daily time use and the application of time management techniques. Peykar et al. (2023) facilitated 'assignments' after each training session. These assignments prompted participants to apply learning from each session through personal application. Participants were encouraged to discuss their experiences in a shared WhatsApp group.

Häfner and Stock (2010), Ravari et al. (2020) and Peykar et al. (2023) provided the most detailed descriptions of their TMIs. Häfner and Stock (2010) outlined the theories and empirical findings they drew on to prepare the content of their TMI (see Table 4). They used the self-regulatory process of the Rubicon Model, integrating specific time management topics into the four predecisional, postdecisional, actional and postactional phases to structure the training. Along with the aforementioned topics, Häfner and Stock's (2010) intervention also included

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TABLE 4 Overview of content covered in time management interventions.

	Goals	Prioritising	Planning	Organising	Procrastination	Interruptions	To-do lists	Personalised	Control	Other
King et al. (1986)	X	X						X[a]		
Macan (1996)	X	X		X (desk and papers)	X	X				Relaxation and stress-reduction techniques
Van Eerde (2003)	X	X	X			X	X	X[b]		Saying no to others
Häfner and Stock (2010)	X	X	X	X	X	X		X[c]	X	Time discounting[d]
Ghorbanshiroudi et al. (2011)	X	X	X	X					X	Maintaining discipline
Ravari et al. (2020)	X	X	X	X		X	X	X[e]	X	Awareness of time spent on different tasks
Peykar et al. (2023)	X	X	X	X			X	X[f]		Importance of professional inclusiveness and unique talents[g]

[a]Selection of desired activity to spend more time on.
[b]Group sharing, personal preferences, biorhythms and time of day.
[c]Time tracking, discussion of personal TM problems.
[d]Häfner and Stock (2010) also included topics of monitoring behaviours and behaviour analysis, strategy development, implementation intentions, reward, interpretation of time-related demands, cognitive restructuring and commonality of increased efforts shortly before a deadline. They also integrated the Rubicon Model to organise the order in which time management topics were addressed during the intervention.
[e]TM in nursing context, practical exercises and group work.
[f]After each training session, Peykar et al. (2023) provided participants with 'assignments' to promote personal engagement with and reflection on topics and techniques covered during training. They were encouraged to share their experiences with one another in a WhatsApp group.
[g]Peykar et al. (2023) also included topics of controlling thoughts and benefits of positive internal conversations, identifying unique and positive aspects of your existence, and constructive laziness.

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topics such as monitoring behaviours and behaviour analysis, strategy development, implementation intentions, reward, interpretation of time-related demands, cognitive restructuring, time discounting and the commonality of increased efforts shortly before a deadline. Ravari et al. (2020) provided the full training itinerary, including the main topics and subtopics addressed. Ravari et al.'s (2020) training also discussed the history of time management. Finally, Peykar et al. (2023) situated their TMI within the conservation of resources (COR) theory and outlined their use of the ADDIE model to design, facilitate and evaluate the TMI. Peykar et al. (2023) also provided a full training itinerary, including main topics addressed in each session, and 'assignments' provided to participants after each session.

Outcomes of time management interventions

The studies included in this review all took pre- and post-measurements of their selected outcome measures. Post-intervention measurement took place either directly after the intervention (King et al., 1986; Peykar et al., 2023), one-month post-intervention (Ghorbanshiroudi et al., 2011; Peykar et al., 2023; Ravari et al., 2020; van Eerde, 2003), 6-week post-intervention (Häfner & Stock, 2010) or 4- to 5-month post-intervention (Macan, 1996; see Table 3).

The studies investigated the effectiveness of TMIs in relation to wellbeing, performance and time-related outcomes. Overall, there was strong heterogeneity in outcomes measured within this sample (see Table 5). As the aim of the current review was to examine the effects of TMIs on wellbeing in the workplace, the following section focuses exclusively on the wellbeing outcomes reported across the included studies.

The wellbeing outcomes assessed across the included studies were predominantly stress related. Only two studies measured an additional wellbeing variable (Macan, 1996; Peykar et al., 2023). Macan (1996) measured job satisfaction among employees of a social service agency but did not find a statistically significant difference between the experimental and control groups. Meanwhile, Peykar et al. (2023) assessed work–family conflict across TMI, resilience training and control groups, finding similar decreases in work–family conflict across the TMI and resilience training groups, with smaller changes observed in the control group (effect sizes not reported).

Six studies included some type of stress-related outcome measure; however, different measures were used across the sample (see Table 5). Stress-related outcomes included perceived stress (Häfner & Stock, 2010; King et al., 1986), worry (van Eerde, 2003), job-induced and somatic tension (Macan, 1996) and occupational stress (Ghorbanshiroudi et al., 2011; Ravari et al., 2020).

Three studies did not find statistically significant changes in stress outcomes (King et al., 1986; Macan, 1996; Ravari et al., 2020), whereas four studies reported significant changes in experimental groups (Ghorbanshiroudi et al., 2011; Häfner & Stock, 2010; Macan, 1996; van Eerde, 2003). King et al. (1986) did not find statistically significant changes or differences in stress between group conditions or pre-post intervention. Macan (1996) found a significant interaction effect (effect size not reported), indicating that TMI participants reported less somatic tension post-intervention, whereas the control group reported similar somatic tension over time. No significant differences were observed in job-induced tensions (Macan, 1996). Van Eerde (2003) found a significant interaction effect of training over time ($\eta^2 = 0.37$), reporting a statistically significant decrease in worry in the TMI group post-intervention ($\eta^2 = 0.08$), but not the control group. Häfner and Stock (2010) found a significant interaction between time of measurement and group membership ($\eta^2 = 0.18$), with the TMI group reporting lower stress

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TABLE 5 Wellbeing outcomes of time management interventions.

	Wellbeing outcome	Measure(s) used	Type of measurement
King et al. (1986)	Perceived stress	25-item Stress/Mood/Productivity (SMP) Inventory (Frederiksen et al., 1979) 41-item Stressful Conditions Questionnaire (Steinmetz et al., 1982)	Self-report Self-report
Macan (1996)	Job-induced tension	6-item Job-Induced Tension Scale (House & Rizzo, 1972)	Self-report
	Somatic tension[a]	5-item Somatic Tension Scale (House & Rizzo, 1972)	Self-report
	Job satisfaction	3-item Job Satisfaction Scale (Hackman & Oldham, 1975)	Self-report
Van Eerde (2003)	Worry[a]	4-item subscale of the Experience and Judgment of Work Questionnaire (VBBA; Van Veldhoven & Meijman, 1994)	Self-report
Häfner and Stock (2010)	Perceived stress[a]	20-item Perceived Stress Questionnaire (Fliege et al., 2001; Levenstein et al., 1993)	Self-report
Ghorbanshiroudi et al. (2011)	Occupational stress[a]	60-item Osipow Occupational Stress Inventory (Osipow & Spokane, 1997)	Self-report
Ravari et al. (2020)	Occupational stress	60-item Osipow Occupational Stress Inventory (Osipow & Spokane, 1997)	Self-report
Peykar et al. (2023)	Work–family conflict[a]	37-item Work–Family Conflict Questionnaire for Iranian Married Women (Bagherzadeh et al., 2016)	Self-report

[a]Statistically significant change was observed in the experimental group.

post-intervention ($\epsilon^1 = 0.48$). No changes in perceived stress were observed in the control group (Häfner & Stock, 2010). Perceived workload was strongly related to perceived stress (Häfner & Stock, 2010).

There were conflicting results among the nursing studies. Ravari et al. (2020) reported that time management training did not significantly reduce the moderate-high levels of occupational stress in emergency room nurses in Iran. Meanwhile, Ghorbanshiroudi et al. (2011) found a significant interaction effect ($\eta^2 = 0.42$), indicating the TMI-group-reported decreases in occupational stress post-intervention.

Risk of bias assessment

Overall, five randomised controlled trials (RCTs) were assessed to be at high risk of bias using the RoB II tool (see Supporting Information S3). The RCTs were ranked as having a high risk of bias in the measurement of outcomes, and some concerns arising in the randomisation process. For example, Ravari et al. (2020) and Peykar et al. (2023) were the only studies to explicitly describe the randomisation process (coin flip and randomisation software, respectively). Three studies were also ranked as having some concerns in the selection of reported results. One study also ranked as having a high risk of bias due to missing outcome data.

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Two quasi-experimental studies were assessed to be at serious risk of bias using the ROBINS-I tool (Sterne et al., 2016; see Supporting Infomation S4). Both studies ranked as having serious risk due to selection of participants and measurement of outcomes and moderate risk due to confounding and selection of the reported results. One study also ranked as having moderate risk of bias due to missing data.

It is worth noting that a degree of risk of bias is present across the studies given the nature of the TMIs and self-reported outcomes. For instance, the RoB tools assess for bias based on whether outcomes were measured under blinded circumstances (Sterne et al., 2019). As TMI outcomes were evaluated using self-report measures, participants, as the outcome assessors, were aware of the intervention they received. Although this would indicate a high risk of bias, this type of bias would be widely observed across the social sciences, including wellbeing interventions, where self-report measures are predominantly used to collect outcome data (e.g. Nunes et al., 2023; Rugulies et al., 2023).

Other areas where bias arose, including the randomisation process and reporting of results, can inform the improved development and reporting of future TMIs, which will be considered in the next section.

DISCUSSION

The current systematic review aimed to synthesise the effectiveness of time management interventions (TMIs) on wellbeing in the workplace. The review identified seven experimental and quasi-experimental studies that met the inclusion criteria. A total of nine wellbeing variables were assessed across included studies, with statistically significant changes occurring in half across intervention groups. In general, the review revealed a limited and inconsistent evidence base to support the efficacy of TMIs to support workplace wellbeing. However, these findings contribute to the literature in four important ways and provide vital insights for future research and practice.

Limited experimental research

The review's first contribution is to highlight the limited experimental research that evaluates TMIs in relation to workplace wellbeing. This may be surprising considering the popularity of time management training across workplaces. It may further indicate generally accepted assumptions of TMI effectiveness that are not actually supported by robust evidence. The current review adhered to strict inclusion criteria, limiting studies to only those that used an experimental or quasi-experimental design. This was done to assess available evidence that extended beyond correlational claims. As a result, only seven studies ($n = 442$) were identified and included in this review. This is a surprisingly small number of studies, especially when compared to the 35 (Claessens et al., 2007), 158 ($n = 53{,}957$; Aeon et al., 2021) and 53 studies (Bedi & Sass, 2022) identified in previous time management reviews. The two key differences here are the narrowed focus on experimental designs and workplace wellbeing, highlighting that issues of causality have not been widely addressed in these areas.

In 2007, Claessens et al.'s review identified eight studies that involved time management training conducted between 1954 and 2005. Three of those studies were included in the current review; the remaining five did not meet our inclusion criteria because the sample did not consist of workplace participants or did not execute an experimental or quasi-experimental design

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(Green & Skinner, 2005; Hall & Hursch, 1982; Macan, 1994; Orpen, 1994; Slaven & Totterdell, 1993). This means that in the last nearly 20 years since the previous review, only four additional experimental or quasi-experimental studies have tested the effectiveness of TMIs on workplace wellbeing. Furthermore, these studies tended to be under powered with small sample sizes, which limits our ability to assess intervention effectiveness (e.g. Brysbaert, 2019). This small pool of evidence limits our ability to answer the current review's research question of whether TMIs support wellbeing in the workplace.

The small number of studies included in this review serves as a critical contribution of this work. Scholars argue that systematic reviews with small numbers of studies can offer crucial insights, in part by exposing gaps in current literature (Shaheen et al., 2023). Although a larger sample of studies would have been needed to investigate and establish statistically reliable results pertaining to the effectiveness of TMIs to support workplace wellbeing, the current findings both highlight the limited evidence base and offer valuable insights into the nature of the limited literature. These findings provide valuable considerations to inform the need for and design of future research. These considerations are detailed below, further highlighting the contributions of this study.

Measuring positive and negative wellbeing in relation to TMIs

The current review makes another important contribution by observing that experimental evidence to date has focused primarily on TMIs' impact on negative wellbeing variables ('ill-being') in workplace contexts, while almost entirely lacking consideration for TMIs' impact on positive wellbeing. The mental health and wellbeing literature has long supported the conceptualisation of wellbeing and ill-being as two distinct constructs that should be studied independently for their predictors, correlates and consequences (e.g. Diener & Emmons, 1984; Headey et al., 1984; Huppert, 2009; Huta & Hawley, 2008; Ryff & Singer, 2006). As Huppert and Whittington (2003, p. 119) explained, 'practitioners may reach incorrect conclusions about quality of life if they only focus on the negative'.

Only one study included in the current review investigated positive wellbeing (job satisfaction), whereas all seven studies investigated negative wellbeing (stress and work–family conflict). This trend of negative over positive wellbeing appraisal is mirrored, though perhaps less distinctly, across the broader workplace wellbeing literature (e.g. Nunes et al., 2023; Rugulies et al., 2023) and time management literature. Aeon et al.'s (2021) meta-analysis of 158 time management studies identified 58 studies (36.7%) that measured negative wellbeing variables (e.g. stress, worry, work–family conflict and emotional exhaustion). They further identified 30 studies (18.9%) that measured positive wellbeing variables. In their review, the most commonly measured variables were job satisfaction (11 studies), life satisfaction (9 studies) and positive affect (5 studies; Aeon et al., 2021). This would indicate that less than a fifth of time management literature has looked, even cross-sectionally, at positive wellbeing. However, when compared, the authors found that time management had a stronger impact on positive opposed to negative wellbeing (Aeon et al., 2021). Because this result stems largely from correlational work, it further prompts the need for additional experimental enquiry to understand whether TMIs can actually enhance positive wellbeing.

In the current systematic review, six studies included at least one stress-related measure. In fact, with the exception of Macan (1996) who measured job satisfaction, the remaining six studies only fit the review's inclusion criteria of measuring wellbeing because of their measurement

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of negative wellbeing. If this is truly an exhaustive synthesis, and to our best knowledge and attempts it is, the current systematic review would indicate that there is currently only one study from the 1990s that provides experimental evidence investigating the effects of TMIs on positive wellbeing variables in the workplace. Furthermore, Macan (1996) did not find a statistically significant effect of the TMI on job satisfaction. These findings serve as an important contribution because they expose a gap in how TMI effectiveness has been measured in relation to workplace wellbeing. Consequently, further research is needed to investigate TMIs in relation to both positive and negative wellbeing outcomes.

Furthermore, as previous literature has highlighted the diverse variables used to evaluate positive and negative wellbeing (e.g. Aeon et al., 2021; Nunes et al., 2023), those developing future TMIs might take particular care in considering and selecting wellbeing variables and validated measurement tools that are relevant to their interventional context and aims. Intervention developers might consider which characteristics of the TMI, including the topics addressed, could be customised to the outcome variables of interest. Further consideration for such intervention-outcome customisation is presenting in the following section.

Process model for integrated time interventions

Alongside evaluating the effectiveness of TMIs to support workplace wellbeing, the systematic review aimed to describe the characteristics of these TMIs. By synthesising these characteristics, specifically, the topics covered in the TMIs, the review contributes insights into the theoretical relationship between TMIs and wellbeing outcomes. This is a unique contribution as other time management reviews have not reviewed or provided substantial detail regarding intervention literature (Aeon et al., 2021; Bedi & Sass, 2022; Claessens et al., 2007). As an additional contribution, we synthesise these findings and present an integrated process model of time interventions to contribute to the time management literature and provide guidance for future research and practice (Figure 2).

The integrated process model proposes that TMIs will most effectively impact wellbeing outcomes when the intervention addresses both objective and subjective time. The TMIs in the current review covered an impressive range of topics in their interventions. These topics highlight the importance of taking an integrated approach that encompasses both objective and subjective time to support participants' wellbeing through both how they spend and experience their time. Time management has traditionally taken an objective approach by focusing on how people use their time (Boniwell, 2006). Objectively, time management is conceived as a behavioural construct (Claessens et al., 2007). This is reflected in the definitions used in the included studies, identifying time management as the execution of specific behaviours. The topics addressed in the TMIs (e.g. goal setting, prioritisation and planning) reflect this behavioural definition and suggest the TMIs aimed to increase the uptake of these behaviours.

However, by synthesising the TMIs, this review also identified other topics and techniques that have been applied in these interventions. Personalised approaches were used in five of the seven studies. These person-centred approaches involved selection of desired activities to spend more time on (King et al., 1986), discussions of biorhythms and time of day preferences (van Eerde, 2003), time tracking (Häfner & Stock, 2010) and discussions of time management within specific industry contexts (Ravari et al., 2020). Additionally, other approaches such as relaxation techniques (Macan, 1996), implementation intentions (Häfner & Stock, 2010) and positive internal conversations (Peykar et al., 2023) were included in the TMIs. Opposed to traditional

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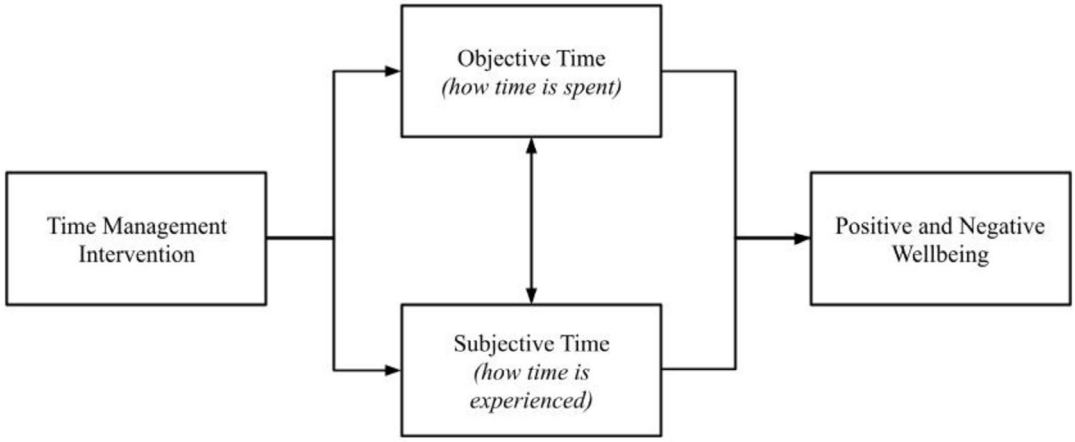


FIGURE 2 Process model of integrated time interventions.

objective time management, these approaches focused more on how time was subjectively experienced.

Though behaviourally focused, previous time management models and measures have inadvertently highlighted the importance of the subjective approach (e.g. Adams & Jex, 1999; Claessens et al., 2004; Macan, 1994; Macan et al., 1990). Macan's (1994) process model suggests that TMIs impact time management behaviours (TMBs) that then impact outcome variables through their influence on perceived control of time. The TMBs themselves are seen as neutral; their impact comes through the ways they influence a person's subjective experiences of time (SETs). However, we cannot assume that TMBs are always positively associated with subjective experiences (Adams & Jex, 1999; Macan, 1994). For example, if list-making and scheduling behaviours make a person feel that they are behind in their work or have missed meetings or deadlines, these TMBs may decrease perceived control (Adams & Jex, 1999). Thus, further direct emphasis should be given to addressing subjective experiences in TMIs.

Rather than relying on TMBs to indirectly influence subjective experiences, we propose an integrated process model where TMIs directly aim to address both objective and subjective time. Alongside traditional behavioural topics, the integrated approach may include strategies that help participants build awareness of and agency over their subjective experiences. Macan (1994) originally proposed a unidirectional relationship between TMBs and perceived control of time, suggesting that behaviours influence perceptions, but not the other way around. In the current model, we suggest that those designing and facilitating TMIs need to pay attention to the bidirectional relationship between behaviours and perceptions. For example, when people feel more in control of their time, or more capable of using it efficiently, how might this influence their time use? The person-centred approaches seen in the current review, where there is emphasis on participants reflecting on their own habits, experiences and challenges, may serve as a starting point to the development of further integrated TMIs.

Further integration and emphasis on subjective time may enable TMIs to more effectively address common time challenges observed in today's workplace. Beyond perceived control of time, challenges such as work intensification and time poverty suggest that how people perceive the pace of time and amount of time available are also important features of subjective time. These subjective experiences have widespread impacts on health and wellbeing outcomes

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(e.g. Giurge et al., 2020; Mauno et al., 2022; Mazzola & Disselhorst, 2019), which further suggests that TMIs should directly address these experiences when aiming to support wellbeing.

A TMI informed by the integrated process model might, for example, instruct participants to track their time as a way to identify current time habits and reflect on subjective experiences associated with particular habits. For example, a participant might recognise a habit of multitasking that occurs when they frequently check email notifications, leading to feeling stressed and less satisfied and productive (Orhan et al., 2021). The TMI may support participants in identifying desired shifts in how they spend and experience their time and further learn and adopt TMBs that will support these changes.

Establishing best practices for TMI reporting

Finally, the current systematic review makes an important contribution by highlighting the lack of consistency and standardisation across the TMIs and intervention reporting. This reveals a need to establish best practices in both the development and reporting of TMIs. This contribution echoes larger movements across intervention research, which aim to promote greater quality and consistency in how intervention development, delivery and adaptation are documented (e.g. Duncan et al., 2020; Hoffmann et al., 2014; Wiltsey Stirman et al., 2019). The following section provides some best practice recommendations based on the TMI research included in this review.

Reporting intervention development

First, we recommend that TMI studies provide detailed reporting on intervention development. A framework such as GUIDED (Duncan et al., 2020) can guide researchers and practitioners to systematically document the contextual, theoretical and practical factors that inform intervention development. The current studies provide basic demographic details regarding the intervention location and participants. However, they do not clearly report how these factors inform decisions regarding intervention content and implementation strategies.

Further discussion of theoretical considerations could contextualise the development of TMIs. Specifically, transparent discussion of how time management is operationalised, and how this operationalisation informs the TMI, would provide clarity on the foundational purpose of the intervention. One of the difficulties across time management literature is the challenge of measuring time management (Green & Skinner, 2005). As a result, the operationalisation of time management is critical to the transparent reporting of research findings. Four of the seven studies included in this review presented a definition of time management. Some of these definitions conceptualised time management as behaviour-oriented (e.g. Häfner & Stock, 2010), whereas others looked at the implementation of certain behaviours for a specific purpose (Van Eerde, 2003). The difference between a behaviour- and purpose-oriented definition is a subtle but important distinction, especially when considering how a time management definition may inform the conceptualisation and aims of a TMI. If time management is defined solely based on behaviours, then a TMI's main aim may be to increase those behaviours. However, if time management is defined based on the intention or purpose of implementing behaviours, then a TMI's aim may understandably be to affect not just the behaviours themselves but also to instigate awareness of and movement towards the underlying purpose. This is a distinction noted by other scholars who have suggested that time management is about.

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> The self-controlled attempt to use time in a subjectively efficient way to achieve outcomes ... time management is not about what people do with their time in general; time management is about what people do with their time in order to achieve something.
>
> (Koch & Kleinmann, 2002, p. 201)

The aims and conceptualisation of the TMI may crucially inform the core elements of the intervention and implementation strategy. A purpose-oriented TMI, for example, may rely on personalised approaches such as individual time tracking and reflection on personal time challenges to prompt participants to engage with the intervention in ways that are personally meaningful and relevant. The integrated process model may also be considered in future research and practice to inform the development of TMIs. Duncan et al. (2020) suggest the comprehensive reporting of the intervention development process and the contextual factors, underlying theories and approaches, and research aims that informed the intervention. This transparent reporting then allows other researchers and practitioners to make informed decisions about the replication or adaptation of an intervention based on their specific contexts.

Reporting intervention descriptions and implementation

Alongside the reporting of intervention development, we also recommend documentation of interventions using guidelines such as TIDieR (Hoffmann et al., 2014) to improve the transparency and feasible replication of TMIs. Based on how the TMIs are reported in the included studies, it would be challenging to replicate these interventions. This is problematic because it restricts further research from building on or replicating research findings (Hoffmann et al., 2014) and hinders practitioners from adopting best practices into their work. Further, a lack of robust intervention reporting perpetuates intervention heterogeneity, making it difficult to synthesise and compare results from different studies. This heterogeneity is a characteristic of the TMI literature that has been previously criticised (Aeon et al., 2021). Without greater transparency and improved reporting, it will continue to be difficult to answer the current systematic review's main question of whether TMIs improve workplace wellbeing.

For example, although commonalities exist across the TMIs involved in the included studies, a lack of detailed reporting makes it difficult to compare interventions and ascertain essential elements that influence effectiveness. Based on the studies included in the current review, some of the core content of a TMI may include goals, prioritising, planning, organising, handling interruptions and personalised approaches. However, limited reporting restricts our understanding of how these topics were addressed in each study. For example, all seven studies included topics of goal setting and prioritisation in their TMIs, and four studies reported statistically significant decreases in stress variables post-intervention (Ghorbanshiroudi et al., 2011; Häfner & Stock, 2010; Macan, 1996; van Eerde, 2003). However, due to limited reporting on intervention description and materials, we are unable to determine if those which found significant changes addressed goal setting and prioritisation differently than those studies which did not find significant changes. Full reporting of intervention materials, facilitator preparation and intervention delivery would improve our ability to compare interventions and determine effective elements to replicate in future TMIs (Hoffmann et al., 2014).

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Reporting intervention modifications

Finally, we can improve the quality of TMI reporting by providing robust documentation of any intervention or implementation modifications that occur during planning and delivery stages. Best practices may follow frameworks such as TIDieR (Hoffmann et al., 2014), FRAME (Wiltsey Stirman et al., 2019) and FRAME-IS (Miller et al., 2021). Interventions are often altered to improve the probability of their effectiveness within a specific context or with a specific target population (Wiltsey Stirman et al., 2019). Ravari et al.'s (2020) TMI, for example, was implemented for emergency room nurses experiencing moderate-high levels of stress. Considerations of this specific population and context may have informed decisions regarding the development and implementation of the TMI, though these decisional processes are not reported. Additional reporting of intervention and implementation tailoring, along with transparency regarding who is directing these modifications, can enhance the critical discourse informing TMI research and application (Wiltsey Stirman et al., 2019). The availability of this information can, for example, support other researchers and practitioners to make informed decisions when developing, adopting and implementing their own TMIs to promote the application of evidence-based practices (Hoffmann et al., 2014).

Addressing dominant temporalities

Researchers and practitioners may also increase the probability of a TMI's effectiveness by adapting the intervention to address the dominant temporalities present in the environment of administration. The temporal norms created within a workplace may significantly influence both how employees experience their time and how relevant and applicable certain time management topics may be. For example, in a company culture where polychronicity is the established norm, employees could be expected to multitask, frequently shift their attention across responsibilities and expect common changes to their schedules (Bluedorn et al., 1992; Hecht & Allen, 2005). Within these temporal norms, time management topics such as handling interruptions and distractions might be most useful.

When adapting TMIs to address dominant temporalities, it is also important to consider how these temporal norms may impact employee mental health and wellbeing. For example, experiences of work intensification, which accelerate the pace at which work is expected to occur, can impair wellbeing and motivation (Mauno et al., 2022; Mazzola & Disselhorst, 2019). Notably, these types of temporal norms disproportionately affect health and mental health among women and minority groups who have been commonly disadvantaged by social temporal inequities (e.g. Dinh et al., 2017; Sharma, 2022). Although a TMI may aim to support individual participants, it is important to note that the TMI is not necessarily altering the larger dominant temporalities at play in their environment. As a result, individual-led changes may have limited feasibility and impact when the individuals themselves are still operating within these larger temporal norms (Giurge et al., 2020; Sharma, 2022). As such, the main aim of a TMI may be to support participants to feel more resourced and capable of working well and being well within their current environment.

Strengths and limitations

The strengths of the study are driven by the efforts taken to produce robust and reliable findings to inform future research and practice. The review adhered to gold-standard guidelines for

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review studies, including the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA; Page et al., 2021) and the Cochrane Handbook for Systematic Reviews of Interventions (Higgins et al., 2022). The research question and inclusion criteria were driven by gaps revealed in previous time management literature, thus contributing to ongoing knowledge and discussions within the field (Shaheen et al., 2023). To the best of our knowledge, this led to the first narrative systematic review of experimental literature that evaluated the effectiveness of TMIs on workplace wellbeing. The review's specific focus on randomised controlled trials aimed to reduce biases from individual studies and contribute to previous knowledge established by reviews of the broader time management literature (Aeon et al., 2021; Claessens et al., 2007). In addition, the study's inclusion criteria ensured that a wide variety of wellbeing variables were included. The review's execution also ensured robust and reliable findings. For example, a team of raters individually screened records for inclusion and conducted data extraction and quality appraisals. This approach minimised risk of bias and ensured confidence in the review's results (Higgins et al., 2022; Shaheen et al., 2023).

Although efforts were taken to ensure robust findings, limitations may have impacted the results. Though the review included a grey literature search alongside the search of peer-reviewed, published work, it is possible that relevant work was omitted. Additionally, the search was limited to literature written in the English language, which may have omitted relevant studies from being included in the review. Furthermore, the review focused specifically on interventions that were referred to as 'time management'. This may have excluded similar time-related interventions (e.g. procrastination; van Eerde & Klingsieck, 2018). However, these inclusion criteria decisions were made to maintain the review's quality, clarity and robustness (Meline, 2006).

As discussed above, the small sample of studies included in the review serves as an important contribution of the work. However, the small sample does mean that reliable statistical findings could not be produced. Although this does not negate the important contributions of the current findings, it does mean that the review's main research question of whether TMIs effectively support workplace wellbeing is left inconclusive. Furthermore, the small sample of studies and the specific focus on workplace wellbeing means the findings may not be generalizable to other populations. As the time management literature has highlighted, different populations (e.g. employees vs. students) may engage with and benefit from time management in different ways (Aeon et al., 2021). Thus, further investigation of TMI effectiveness in supporting wellbeing in different contexts and among different populations is warranted.

Future implications

The current review reveals the sparse evidence base to support TMIs as effective workplace wellbeing interventions. These findings demonstrate the need for further research to investigate TMI effectiveness. The findings also provide important considerations to inform the design, implementation and reporting of future TMI studies, including the types of wellbeing variables assessed, the conceptual development of the TMI and the robust development and reporting of research. The current synthesis of TMI content supports the use of integrated interventions that incorporate both objective and subjective time. Future research may expand on this integrated approach and aim to provide further experimental evidence to improve our understanding of whether TMIs enhance positive wellbeing and decrease negative wellbeing in the workplace. Additional experimental research of this nature is necessary to establish TMIs as evidence-based practice.

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Future research should also adhere to robust development and reporting practices. Frameworks such as GUIDED (Duncan et al., 2020), TIDieR (Hoffmann et al., 2014), FRAME (Wiltsey Stirman et al., 2019) and FRAME-IS (Miller et al., 2021) could be used to document intervention development, delivery and modifications, respectively. As Hoffmann et al. (2014) concede, due to word count limitations, it is often not possible to provide the level of detailed reporting necessary to ensure high-quality intervention reporting. However, moving forward, best practices for conducting and reporting TMIs should include the public dissemination of supplementary materials (whether attached to a main publication or published as independent items) that provide detailed documentation of intervention development, delivery and implementation. This practice will promote greater transparency and clarity regarding the development and delivery of TMIs, in turn providing greater scope for replicability of interventions and ensuring that effective interventions are accessible to support wellbeing in the workplace.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, ANY, upon reasonable request.

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