



Universiteit
Leiden
The Netherlands

Medical doctors taking the lead: transforming workplaces towards sustainable employability

Duijnhoven, A. van

Citation

Duijnhoven, A. van. (2026, September 17). *Medical doctors taking the lead: transforming workplaces towards sustainable employability*. Retrieved from <https://hdl.handle.net/1887/4310019>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/4310019>

Note: To cite this publication please use the final published version (if applicable).

CHAPTER 8

General discussion

“In your opinion, what do you need in order to continue working happily and healthily?”

This question was included in the baseline survey of the organisational-level workplace intervention discussed in this dissertation. Below, several illustrative examples of the responses provided by medical doctors are presented. These examples represent only a small fraction of the input we received, as 223 medical doctors shared their ideas.



At the end of the kickoff meeting of the intervention, we presented each medical doctor group with the full list of ideas they had generated about what they need in order to continue working happily and healthily. Based on one of the central theoretical models of this dissertation - the Job Demands-Resources (JD-R) model, extended with Psycho-social Safety Climate (PSC) (attention and actions towards reducing psychosocial strain and safeguarding employee well-being) (Dollard & Bakker, 2010) - we observed that these lists aligned closely with aspects of the job that influence medical doctors' ability and willingness to keep doing their job well - both now and in the future. In other words, the ideas already provided practical insights into potential drivers of change in job factors (i.e., PSC, job demands, job resources) that could enhance the Sustainable Employability (SE) of medical doctors (AIM 1). Figure 1 illustrates the core idea of this extended JD-R model with PSC, including the variables examined in this dissertation.

By presenting these lists, we aimed to illustrate that many suggestions for improving their work situation - and ultimately their SE - were already present within the groups themselves. Medical doctors are the experts in identifying challenges in their work situation, and they generally already hold concrete ideas about what is needed to address them.

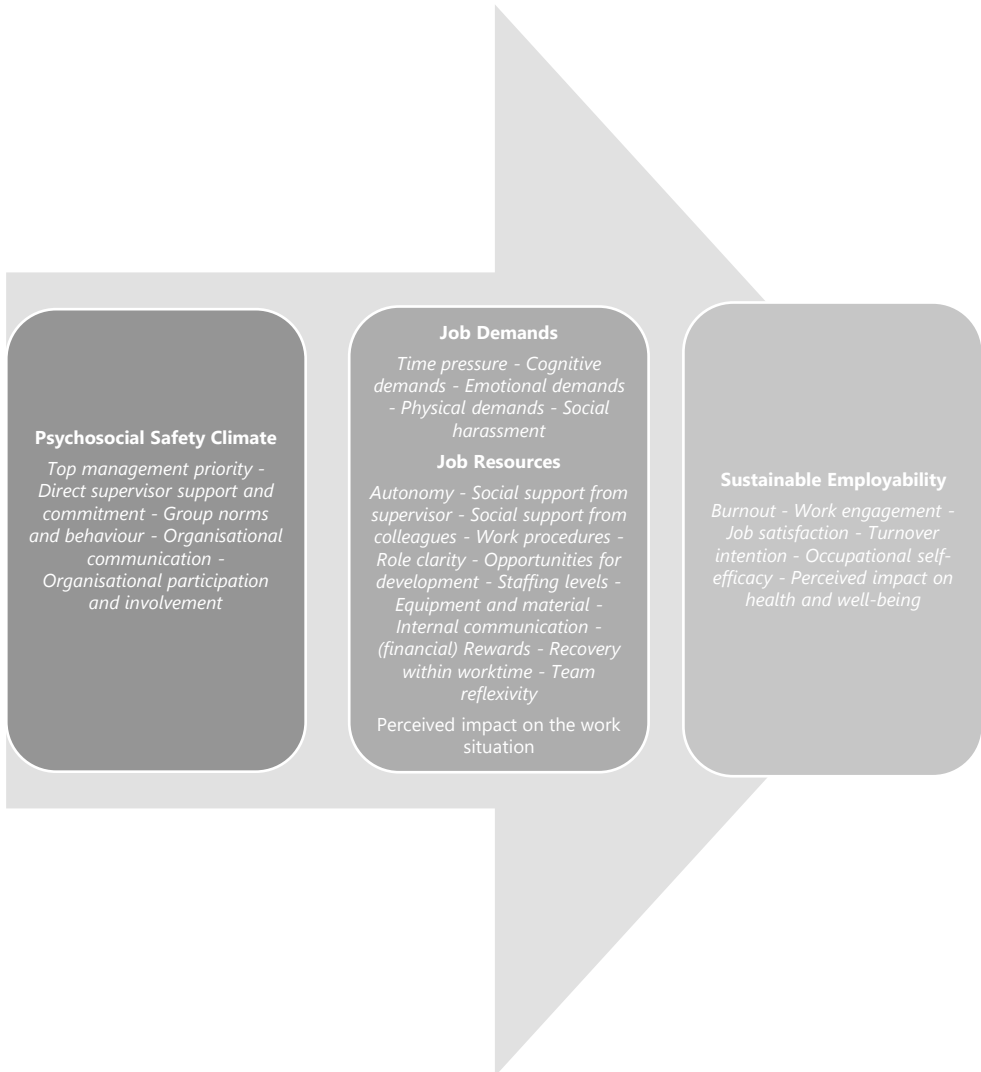


Figure 1. The extended Job Demands-Resources model with psychosocial safety climate, including the variables examined in this dissertation

The baseline survey helped answering the *what*: what requires improvement, and what is already going well in terms of job factors and SE indicators? But it did not answer the *how*: how can medical doctor groups reduce time pressure, strengthen team reflexivity,

or create more opportunities for recovery within worktime? Their own expertise, knowledge, and experience are essential for addressing these questions, as they understand their work situation better than anyone else. The Participatory Action Research (PAR) approach (Nielsen et al., 2007, 2010) supports the use of employees' expertise, knowledge, and experience by actively involving them in shaping the focus and approach of the intervention - an approach central in this dissertation.

The *how* also concerns practical feasibility: how can these organisational changes be developed and implemented? Given the high pressure on medical doctors to deliver high-quality care and meet patient targets, they often lack the time and energy to reflect on improvements or to design organisational changes themselves. This is precisely why guided organisational-level workplace interventions (Nielsen et al., 2010; Nielsen & Randall, 2013) - central in this dissertation - are important. Such interventions provide the structure, knowledge, and skills - supported by the guidance of process facilitators - needed to develop, implement, evaluate, and, when necessary, adapt organisational changes in job factors. These changes support medical doctors' health, engagement, and satisfaction at work, and thereby their SE.

Finally, such interventions need to be evaluated to determine their success in improving job factors and SE. It is important to assess whether a) the targeted job factors improved (AIM 2); b) the targeted SE indicators improved (AIM 2); c) job factors acted as drivers of change in SE indicators (AIM 1); and d) implementation processes - process factors - influenced the intervention's effectiveness (AIM 3). Evaluating both the "*chain of effects*" and "*the influence of process factors*" is therefore essential for understanding what works, for whom, and under which circumstances (Nielsen & Miraglia, 2017; Nielsen & Noblet, 2018; Nielsen & Randall, 2013). Such insights are crucial for optimising future interventions and for scaling up workplace interventions more effectively.

In this general discussion, we first outline the main findings of this dissertation and link them to its three central aims. We then describe the practical implications, limitations, future directions, and conclusions. The three central aims of this dissertation are discussed by reflecting on four discussion points:

AIM 1: *Identifying whether PSC and which job demands and job resources determine medical doctors' SE and act as drivers of change within SE-focused organisational-level workplace interventions:*

(1) Key job demands and job resources in determining medical doctors' SE

(2) The role of Psychosocial Safety Climate in medical doctors' SE

AIM 2: *Evaluating the effectiveness of organisational-level workplace interventions in improving medical doctors' SE:*

(3) Interpreting intervention effectiveness with regard to enhancing medical doctors' SE

AIM 3: *Identifying the process factors that facilitate or hinder the effectiveness of SE-focused organisational-level workplace interventions among medical doctors:*

(4) The role of process evaluations as an integral component of organisational-level workplace interventions and their evaluation

AIM 1: PSC, JOB DEMANDS, AND JOB RESOURCES AS KEY DETERMINANTS AND DRIVERS OF CHANGE IN MEDICAL DOCTORS' SUSTAINABLE EMPLOYABILITY

DISCUSSION POINT 1: KEY JOB DEMANDS AND JOB RESOURCES IN DETERMINING MEDICAL DOCTORS' SE

Our findings indicate that job demands and job resources are key determinants of medical doctors' SE. Manageable job demands and sufficient job resources need to be actively fostered, requiring actions at multiple levels: society at large, work units and the wider organisation, the medical doctor group, and the individual.

Job demands

In line with the health-impairment pathway of the Job Demands-Resources (JD-R) model (Bakker et al., 2023; Bakker & Demerouti, 2017), we found that job demands - those aspects of work that cause strain and deplete energy - were particularly important in determining medical doctors' burnout. Burnout undermines medical doctors' long-term ability to carry out their work (Fleuren et al., 2020). Almost all job demands were positively related to burnout (Chapter 4), and reductions in several demands acted as drivers of change in burnout following the intervention (Chapter 5). This pattern aligns with the systematic review (Chapter 2), which showed that organisational-level workplace interventions targeting job demands - especially reducing workload and work hours - were most successful in reducing burnout.

Time pressure and social harassment emerged as the most important determinants of medical doctors' burnout. These job demands showed the strongest relationships with burnout among all tested job demands and resources (Chapter 4), and only reductions in these job demands between baseline and post-intervention were associated with reduced burnout (Chapter 5). Medical doctors' own views on what they need to continue working happily and healthily also centred on these two demands, including sufficient time for patients, a workload within reasonable limits, mutual respect, and a positive work

climate. In interviews, medical doctors noted that when time pressure becomes too high, they are forced to rush from one patient to the next, reducing the depth and meaningfulness of patient interactions.

Although time pressure is often conceptualised as a challenge demand (e.g., Lepine et al., 2005), in this dissertation it showed a hindrance-like pattern: higher time pressure was associated with higher burnout, whereas lower time pressure was associated with higher work engagement and job satisfaction (Chapters 4 and 5). Chronic and uncontrollable time pressure functions as a hindrance demand that depletes energy, restricts recovery, and triggers frustration. When this process accumulates and limits exposure to important job resources, it increases the risk of burnout. Conversely, when time pressure is reduced, it supports goal attainment and contributes to positive outcomes such as work engagement and job satisfaction (Lepine et al., 2005; Van Den Broeck et al., 2010). The importance of manageable time pressure for work outcomes is also highlighted in the Job Characteristic Model (Hackman & Oldham, 1976). Time pressure is linked to experienced meaningfulness of the job, as it is closely connected to task significance - the extent to which medical doctors can see and feel that their work has a meaningful impact on patients' lives.

Social harassment can be considered a job threat: "work-related demands or circumstances that tend to be directly associated with personal harm or loss" (Tuckey et al., 2015, p. 6). Examples include not treating employees with respect, belittling and/or ridiculing them, excluding them, or disadvantaging them in the workplace (as measured in Chapters 4 and 5). Social harassment evokes negative emotions such as fear and anxiety, which may translate into a subjective experience of harm or loss. Job threats need to be specifically prevented, as overcoming them does not necessarily lead to positive outcomes but primarily serves to prevent negative ones (Tuckey et al., 2015).

Job resources

In line with the motivational pathway of the JD-R model (Bakker et al., 2023; Bakker & Demerouti, 2017), our findings showed that job resources - motivational aspects of work that facilitate goal attainment, learning, and development - played a central role in determining medical doctors' work engagement and job satisfaction. These positive SE outcomes reflect medical doctors' long-term willingness to perform their work in a satisfied and engaged manner (Fleuren et al., 2020). Several job resources were positively associated with work engagement and job satisfaction (Chapter 4), and increases in opportunities for development emerged as a particularly strong driver of change in these positive SE outcomes (Chapter 5). The systematic review (Chapter 2) further supported

this motivational pathway, showing that organisational-level workplace interventions targeting job resources - such as staffing adjustments or enhanced colleague support - were the most effective in improving job satisfaction.

Opportunities for development stood out as the most influential job resource for medical doctors' SE. It showed the strongest associations with primary SE indicators (i.e., burnout, work engagement, job satisfaction) (Chapter 4), and improvement in this resource was related to improvements in all primary and secondary (i.e., turnover intention, occupational self-efficacy) SE indicators following the intervention (Chapter 5). This pattern aligns with the systematic review (Chapter 2), in which opportunities for professional development was identified as one of the most promising job factors for improving job satisfaction. Medical doctors' own views on what they need to continue working happily and healthily also centred on opportunities for development, including variety and challenge in their work, and adequate time for innovation and professional development. Interviews further highlighted that excessive workload limits the time medical doctors can devote to their own development, such as leadership training, reading scientific literature, or attending conferences.

The prominent role of opportunities for development is also supported by several theoretical frameworks beyond the JD-R model (Bakker et al., 2023; Bakker & Demerouti, 2017). According to Herzberg's two-factor theory (Herzberg, 1959), opportunities for development function as a "motivator", inherent to the work itself and stimulating higher effort and performance. Within the Job Characteristics Model (Hackman & Oldham, 1976), it relates to the core job dimension skill variety, enhancing the critical psychological state experienced meaningfulness of the job, and thereby fostering work engagement and job satisfaction. Finally, the Self-Determination Theory (Ryan & Deci, 2000) suggests that opportunities for development fulfil the basic psychological need for competence - and, when self-directed, also autonomy - by enabling growth, mastery, and self-initiated professional development.

Shared responsibility at multiple levels

SE among medical doctors is shaped by factors operating at multiple levels: society at large, work units and organisations, medical doctor groups, and individual medical doctors. Therefore, responsibility for improving SE must also be shared across these levels (Shanafelt et al., 2016). Individual skills and coping capacities matter, but they cannot compensate for structural problems in the wider healthcare system, organisations, and teams.

Societal level

Societal factors shape medical doctors' job demands and resources, and therefore influence SE. Improving SE thus requires addressing these societal-level factors. To highlight a few, in the coming years, medical doctors will face increasing care demands due to population ageing and more complex care needs, combined with persistent healthcare staff shortages (Boniol et al., 2022; Ogugua et al., 2024). Recognising this rise in care demands is essential so that medical doctor groups, healthcare organisations, and umbrella organisations can jointly discuss how to prevent excessive demands resulting from these developments, and how the organisation of healthcare should be adapted accordingly. Another example concerns the impact of excessive documentation requirements, which increase workload and can negatively affect SE (Aiken et al., 2023; Shanafelt & Noseworthy, 2017). Reducing these requirements may help limit workload and time pressure, and increase the time available for medical doctors to invest in their own development - a key job demand and job resource for SE (Chapters 4 and 5). A final example emerged in an interview: one medical doctor described a pervasive fear of the Medical Disciplinary Board, which fosters perfectionism and excessive time investment to avoid mistakes at all costs. Although the Disciplinary Board in the Netherlands aims to maintain and improve the quality of care, the literature indicates that disciplinary procedures can have negative side effects on medical doctors' health and well-being, evoking fear, negative emotions, and defensive medicine (Laarman et al., 2019; Seys et al., 2013). This raises the broader societal question of how disciplinary procedures can be designed and implemented in ways that safeguard both quality of care and medical doctors' SE - an issue that remains the subject of ongoing debate.

Work units and organisational level

Job demands and resources at the work units and organisational level are key determinants of medical doctors' SE, and addressing them directly is essential for enhancing SE. Social harassment, opportunities for development, staffing levels, internal communication, and recovery within worktime were related to and/or acted as drivers of change in medical doctors' SE (Chapters 4 and 5). As highlighted in the literature, meaningfully improving such job demands and resources is crucial for strengthening SE. This requires support and organisational changes at work units and the organisational - for example by fostering an organisational culture in which social harassment is not tolerated, creating opportunities for medical doctors to engage in leadership, research, or education, revising policies and procedures, ensuring sufficient and adequately experienced (support) staff, strengthening leadership, and ensuring a workload that allows time for breaks during worktime as well as appropriate day-night shift and holiday

policies (Perreira et al., 2018; Rothenberger, 2017; Shanafelt & Noseworthy, 2017; West et al., 2018).

Medical doctor group level

Job demands and job resources at the medical doctor group level are key determinants of medical doctors' SE, and targeted improvements at this level are essential for enhancing SE. Chapters 4 and 5 showed that task-related and interpersonal factors (Schaufeli & Bakker, 2004) were associated with and/or drivers of change in SE indicators. These factors can be strengthened by streamlining work processes to reduce time pressure, enhancing social support among colleagues, and increasing clarity around roles, tasks, and responsibilities. The broader literature similarly highlights that efficient work processes, supportive team environments, a strong sense of community, and adequate autonomy at the group level contribute to improved SE (Domagała et al., 2018; Perreira et al., 2018; Rothenberger, 2017; Shanafelt & Noseworthy, 2017; West et al., 2018).

High autonomy and strong team reflexivity were not directly linked to more favourable SE outcomes (Chapter 4), nor did they act as drivers of change in SE (Chapter 5). However, favourable levels of autonomy and team reflexivity may be necessary conditions for strengthening other job demands and resources at the group level. Autonomy is a basic psychological need (Ryan & Deci, 2000). When autonomy is supported, medical doctors have greater opportunities to shape their work in ways that align with their personal values, goals, and preferences, enabling them to influence other group-level job demands and resources more effectively. Team reflexivity is closely tied to team learning. The Team Reflexivity Theory (West, 1996, 2000) emphasises that collective reflection on goals, strategies, and processes is a prerequisite for learning, innovation, and adaptation. Teams with strong reflective and adaptive capacities develop more shared mental models, which enhance team functioning (Konradt et al., 2016). In this way, autonomy and team reflexivity may indirectly determine SE through their influence on other job demands and resources.

Individual level

Individual factors were not central in this dissertation. However, previous research shows that medical doctors' SE can improve when stressors at the individual level are addressed (De Simone et al., 2021; Panagioti et al., 2017; West et al., 2016). Non-modifiable individual characteristics such as sex, age, years of experience, marital and parental status, and personality traits can shape how medical doctors perceive job demands and job resources, thereby influencing their SE (Domagała et al., 2018; Perreira et al., 2018; Rothenberger, 2017; Shanafelt & Noseworthy, 2017; West et al., 2018). Because these

characteristics cannot be changed, they are less suitable as intervention targets. Modifiable individual factors, by contrast, offer more promising targets for strengthening SE. Better coping-, resilience-, personal efficacy-, boundary-setting-, prioritisation-, and organisational- capacities, skills, or abilities can reduce perceived distress from job demands and support the creation and use of job resources, ultimately enhancing SE (Domagała et al., 2018; Shanafelt & Noseworthy, 2017).

Yet, as Card (2018) argues, strengthening individual resilience is only one part of the solution. It may help medical doctors cope with unavoidable suffering inherent in their medical profession - such as emotional demands arising from confrontation with patients' difficult situations - which was related to burnout in Chapter 4. However, preventable suffering caused by system failures cannot be resolved at the individual level (Card, 2018). Addressing these issues in job demands and job resources requires changes at the medical doctor group-, work units and organisational-, and the broader societal level.

DISCUSSION POINT 2: THE ROLE OF PSYCHOSOCIAL SAFETY CLIMATE IN MEDICAL DOCTORS' SE

Our findings indicate that Psychosocial Safety Climate (PSC), in addition to job demands and resources, is a key determinant of medical doctors' SE. Therefore, a favourable PSC should be actively fostered across multiple levels - top management, direct supervisors, the medical doctor group, and other key stakeholders - to strengthen medical doctors' SE.

Our findings support the Job Demands-Resources (JD-R) model extended with PSC (Dollard & Bakker, 2010). PSC is conceptualised as a "cause of causes": the policies, practices, and procedures intended to protect employees' psychological health and safety by manageable job demands and sufficient job resources (Dollard & Bakker, 2010). PSC was more strongly related to job resources than to job demands (Chapter 4). An exception was social harassment, which showed a stronger association with PSC than other job demands. This aligns with the work environment hypothesis (Nielsen & Einarsen, 2018), which argues that social harassment is shaped primarily by the work environment, whereas cognitive and emotional demands are more inherent to the medical profession.

Our findings further supported PSC as a "cause of causes" that is indirectly, rather than directly, related to SE indicators. PSC was only indirectly related to SE indicators through social harassment and job resources (Chapter 4), and did not directly drive change in SE indicators (Chapter 5). Although not explicitly tested, PSC may have functioned indirectly as a driver of change in SE in the intervention by influencing social harassment and/or

job resources. This full meso-mediation pathway in which PSC influences work, health, and well-being outcomes through job demands and resources, is widely supported in the literature (e.g., Amoade et al., 2023; Dollard & Bakker, 2010; Hu et al., 2022; Karatuna et al., 2025).

The importance of a favourable PSC is embedded in the Dutch Working Conditions Act (Arbowet), which requires employers to implement policies that prevent or reduce employees' psychosocial stress and strain. However, Chapter 4 showed that baseline group-level PSC among medical doctor groups was relatively low ($M = 2.94$ on a 1-5 scale, $SD = 0.23$), with almost all groups scoring below the favourable PSC threshold (Bailey et al., 2015). This indicated that psychological health and safety were not yet sufficiently prioritised in the participating groups. These findings underscored the need for more effective - or more rigorously enforced - policies, practices, and procedures to prevent and reduce their psychosocial stress and strain. The implementation of the organisational-level workplace intervention was a strategy to achieve this (Loh et al., 2024). The unfavourable PSC levels, and the potential of the organisational-level work-place intervention may also have motivated groups to participate in the intervention (Chapters 3, 5, and 6).

Achieving a truly favourable PSC requires priority, commitment, participation, effort, action, and communication from all organisational parties to prevent and reduce psychosocial stress and strain, and ultimately improve psychological health and safety (Bronkhorst, 2015; Bronkhorst & Vermeeren, 2016; Dollard & Bakker, 2010; Loh et al., 2024). Medical doctor groups themselves can influence their own group norms and behaviour regarding PSC. Previous research also emphasises the importance of group norms and behaviours related to PSC for team learning and, ultimately for positive SE outcomes. According to the Team Learning model (Edmondson, 1999), team psychological safety is characterised by mutual respect and trust. When team psychological safety is favourable, medical doctors feel more secure, concerns are shared more openly, and feedback is exchanged more constructively, all of which facilitate team learning and functioning, and ultimately SE outcomes. However, creating a favourable PSC is not only the responsibility of medical doctor groups but a shared responsibility of medical doctors, top management, direct supervisors, and other stakeholders. Across all organisational layers, it is essential not only that policies, practices, and procedures exist, but that all parties actively participate in and communicate about them, ensuring that espoused PSC becomes enacted PSC (Bronkhorst, 2015; Bronkhorst & Vermeeren, 2016; Dollard & Bakker, 2010; Yulita et al., 2017).

AIM 2: EFFECTIVENESS OF ORGANISATIONAL-LEVEL WORKPLACE INTERVENTIONS IN IMPROVING MEDICAL DOCTORS' SE

DISCUSSION POINT 3: INTERPRETING INTERVENTION EFFECTIVENESS WITH REGARD TO ENHANCING MEDICAL DOCTORS' SE

The PAR-based organisational-level workplace intervention was not (yet) effective in achieving significant improvements in SE (Chapter 5). This finding contrasted with previous research on the effectiveness of organisational-level workplace interventions on medical doctors' SE outcomes (e.g., De Simone et al., 2021; DeChant et al., 2019; Panagioti et al., 2017) and with the findings of the systematic review (Chapter 2). Although the intervention incorporated several characteristics that were previously found to result in higher effectiveness - such as an intervention duration of more than six months, long-term follow-ups (≥ 6 months), a primary focus on senior medical doctors, and the integration of PAR (Chapter 2) - it did not lead to significantly improved SE indicators (Chapter 5). The present findings, together with previous literature, provide several valuable insights into a better understanding of - and ultimately to strengthening - the effectiveness of the intervention in improving medical doctors' SE:

- Further strengthening improvements in PSC and job resources
- Intensifying efforts to reduce job demands
- Reinforcing organisational changes that lie beyond medical doctors' direct sphere of influence
- Strengthening the focus on medical doctors experiencing burnout
- Ensuring more time for organisational change

Further strengthening improvements in PSC and job resources

The intervention was successful in improving PSC and job resources - factors theoretically linked to SE indicators (Bakker et al., 2023; Bakker & Demerouti, 2017). However, these improvements did not translate into improved SE following the intervention: burnout, job satisfaction, and work engagement remained stable (Chapter 5). Although the work engagement levels at baseline were already quite high, there was still room for improvement in burnout and job satisfaction. A possible explanation for the lack of significant effects is that the small to medium improvements in PSC and job resources may have been insufficient to produce meaningful changes in SE. For instance, although role clarity was improved after the intervention and was a determinant of SE indicators (Chapter 4), this improvement may require more substantial gains to realise its potential to enhance SE.

Another explanation is that PSC and most improved job resources were neither determinants nor drivers of change in SE indicators (Chapters 4 and 5). Therefore, it is not surprising that these improvements did not translate directly into improved SE, consistent with the “chain of effects” (Nielsen & Abildgaard, 2013; Nielsen & Miraglia, 2017; Nielsen & Noblet, 2018). However, this does not mean that the achieved improvements in PSC and job resources were not valuable. Favourable group norms and behaviour regarding PSC, high autonomy, and strong team reflexivity appear in the literature as important prerequisites for achieving improvements in other job demands and resources (Edmondson, 1999; Konradt et al., 2016; West, 1996, 2000). Improvements in these job factors may represent the first important step of the intervention, stimulating the implementation of organisational changes and thereby contributing to subsequent improvements in other job demands and resources that are essential for the intervention’s success in enhancing SE. Our findings support this interpretation: higher baseline autonomy was associated with a greater degree of implemented changes after 14 months; and stronger team reflexivity and more favourable group norms and behaviour regarding PSC at baseline were related to more positive mental models regarding intervention focus and approach after 14 months (Chapter 6). The chain of effects may therefore need to be extended: intervention --> PSC group norms and behaviour, autonomy, and team reflexivity --> other job demands and resources --> SE indicators.

PSC was the overarching theme of the intervention, providing the foundation for improving job demands and resources, and ultimately SE, among medical doctor groups. The intervention’s focus on PSC signalled that medical doctors’ health and well-being genuinely matter, and the baseline survey made their experienced psychosocial stress and strain visible, increasing awareness of the potential risks these factors pose for their SE. The intervention also conveyed that these stressors could be reduced - and SE enhanced - through the intervention process. Working together as a team, supported by process facilitators, medical doctor groups were encouraged to lower job demands and increase job resources through organisational changes.

That the intervention successfully improved medical doctors’ group norms and behaviour regarding PSC (Chapter 5) is therefore not surprising, as fostering a positive group culture and stimulating each other’s SE formed the foundation of the intervention. More favourable group norms and behaviour regarding PSC may have been a prerequisite for the effective implementation of changes. Medical doctors were encouraged to speak up about their SE and to discuss, within their teams, which actions could reduce psychosocial stress and strain. The improvements in autonomy and team reflexivity following the intervention (Chapter 5) may reflect this strengthened group norms and behaviours regarding

PSC, as both job resources were linked to PSC (Chapter 4) and medical doctor groups have (to some extent) direct influence over such task-related and interpersonal job resources (Schaufeli & Bakker, 2004). In line with the JD-R model extended with PSC (Dollard & Bakker, 2010), the already proposed extended chain of effects may therefore require an additional refinement, placing PSC group norms and behaviour before autonomy and team reflexivity: intervention --> PSC group norms and behaviour --> autonomy and team reflexivity --> other job demands and resources --> SE indicators.

However, the intervention also aimed to reach higher organisational levels - top management and direct supervisors - to ensure that these actors would likewise strengthen PSC and thereby protect medical doctors' SE. The intervention increased PSC priority at the top management level, but not among direct supervisors (Chapter 5). This uneven and limited improvement was insufficient to enhance SE, as awareness without concrete organisational action may even have adverse effects (Chapter 4). Meaningful and sustainable impact requires shared responsibility, with strong and early top management commitment that enables direct supervisors through adequate support, resources, and decision-making authority (Nielsen, 2013).

The improvement in top management priority regarding PSC may reflect increased contact between some medical doctor groups and top management during the intervention, as well as initial conversations about organisational changes to enhance SE. In several groups, presenting baseline survey results to top management likely heightened awareness of psychosocial risks and SE problems, making the need for action more visible. This increased attention may have contributed to improved perceptions of top management priority regarding PSC. However, medical doctors also reported that conversations with top management were not always successful: although they shared ideas on reducing psychosocial stress and strain, top management often listened without following up with concrete actions and took limited initiative themselves. Achieving genuinely positive top management priority regarding PSC requires that top management prioritise medical doctors' SE alongside production goals and actively implement policies, practices, and procedures that reduce psychosocial stress and strain. The apparent lack of such changes may also explain why direct supervisor support and commitment regarding PSC did not improve (Chapter 5). Direct supervisors are more closely connected to medical doctors' daily workflow but depend, at least in part, on top management to initiate and authorise organisational changes.

Intensifying efforts to reduce job demands

A stronger reduction in job demands may be needed to make the organisational-level workplace intervention more effective in improving medical doctors' SE. Job demands - particularly time pressure and social harassment - were among the strongest determinants and drivers of change in burnout (Chapters 4 and 5), yet these did not improve as a result of the intervention (Chapter 5). This lack of improvement likely explains the absence of change in burnout following the intervention, as previous research highlights the key role of job demands in determining burnout (Bakker et al., 2023; Bakker & Demerouti, 2017). This explanation is also supported by the systematic review, which showed that organisational-level workplace interventions focusing on reducing job demands were particularly effective in reducing burnout (Chapter 2).

Workload was one of the most frequently selected intervention targets, however, time pressure remained stable post-intervention (Chapter 5), and was therefore unlikely to meaningfully affect SE. The intervention was successful in improving the efficiency of work processes and, to some extent, autonomy - both of which can help alleviate time pressure. However, achieving a genuine reduction in workload requires changes in the quantitative aspects of time and workload, as well as structural changes at work units and organisational levels. This is widely supported in the literature, which emphasises that reducing workload typically involves decreasing the amount of work assigned to medical doctors, lowering productivity expectations and targets, ensuring a more realistic workload, providing appropriate resources, improving the efficiency of Electronic Health Record (EHR) systems to reduce documentation time, limiting computerised order-entry tasks, or increasing support staff (Perreira et al., 2018; Rothenberger, 2017; Shanafelt & Noseworthy, 2017; West et al., 2018). The systematic review (Chapter 2) further supports this, showing that reductions in quantitative workload - such as workhour restrictions or decreased administrative documentation through the use of scribes - were effective in reducing burnout. Such changes cannot be decided upon or implemented by the medical doctor group alone; rather, they require shared responsibility and coordinated action across the medical doctor group, work units, the wider organisation, and society at large.

Reinforcing organisational changes that lie beyond medical doctors' direct sphere of influence

With support from process facilitators, medical doctors identified organisational changes they could implement independently, or at least partially, without requiring collaboration from management or other stakeholders. The medical doctor groups also successfully improved several job factors within their - or at least partially - own sphere of influence,

such as group norms and behaviour regarding PSC, team reflexivity, role clarity, and autonomy. Although these improvements were meaningful, most of these factors were not determinants or drivers of change in SE indicators (Chapters 4 and 5).

To enhance the effectiveness of the organisational-level workplace intervention in improving SE, organisational changes that do not lie entirely within medical doctors' own sphere of influence are likely needed. For instance, social harassment, opportunities for development, staffing levels, internal communication, and recovery within worktime are important determinants and drivers of change in medical doctors' SE (Chapters 4 and 5), yet they did not improve as a result of the intervention (Chapter 5). As highlighted in the literature, these factors require support and organisational changes at both work units and organisational levels (Perreira et al., 2018; Rothenberger, 2017; Shanafelt & Noseworthy, 2017; West et al., 2018).

Medical doctor groups attempted to implement such higher-level organisational changes during the intervention. However, these changes - lying not entirely within their direct sphere of influence - proved more difficult to complete because they required collaboration with other stakeholders (other medical doctor groups and the wider organisation) and more time. Several groups, for example, sought to improve their contact with management (the board of directors). They succeeded in initiating conversations about bottlenecks in SE and job factors, as well as potential organisational changes.

Municipal public health services specifically aimed to strengthen their positioning - medical doctors' voice and influence within the organisation - by establishing a Medical Advisory Board, which they successfully established. For municipal public health services, the Medical Advisory Board appears to be a prerequisite for implementing future changes, given that medical doctors' work across multiple units and locations. Because most time and energy were devoted to establishing this Board, fewer improvements were achieved in other job factors (Chapter 6). Other higher-level organisational changes implemented by some medical doctor groups concerned improvements in internal communication, such as better support services and enhanced communication with other sections. Even though these attempts resulted in some successful organisational changes that do not lie entirely within medical doctors' sphere of influence, more substantial improvements may be needed to meaningfully strengthen related job factors and ultimately SE.

Taken together, these findings illustrate the complexity of organisational-level workplace interventions and raise important questions: should groups be guided to address the job factors that are prerequisites for improvements in other job factors, those most strongly

related to SE, and/or those they can influence most? And should management and direct supervisors participate more explicitly in the intervention?

Strengthening the focus on medical doctors experiencing burnout

A stronger focus on medical doctors already at (high) burnout risk may be needed to enhance the intervention's effectiveness in reducing burnout. Burnout risk was present in nearly all groups: only one of the 23 groups consisted entirely of medical doctors with a low burnout risk (Schaufeli et al., 2020), and baseline burnout risk prevalence ranged from 8% to 50%. The intervention functioned primarily as a primary intervention, targeting job stressors at the group level and reducing risk factors across the entire team (Ahola et al., 2017; Schaufeli & Enzmann, 1998). The group-based intervention therefore did thus not specifically address medical doctors who were already experiencing burnout symptoms, which may have limited its ability to reduce burnout overall. Medical doctors at (high) burnout risk may have required different or more intensive support than the group-level approach could provide. Secondary and tertiary interventions, for instance, focus on employees at elevated burnout risk or those already experiencing burnout to minimise further negative consequences (Ahola et al., 2017; Schaufeli & Enzmann, 1998). Additionally, some medical doctors experiencing burnout were absent from work during the intervention period. Although they were invited to complete the surveys, their absence meant they were not exposed to changes in the work environment and therefore could not benefit from them, reducing the likelihood of observable intervention effects on their burnout levels. Burnout remained stable over the course of the intervention (Chapter 5), suggesting that it may have prevented (further) increases rather than reduced existing symptoms.

Ensuring more time for organisational change

Finally, substantial improvements in medical doctors' SE may simply require more time. Organisational-level workplace interventions are inherently complex: they unfold in dynamic organisational contexts, require collaboration between multiple stakeholders, depend on agreement about goals and approaches, and need time for organisational changes to be developed, implemented, and to influence job factors - and ultimately SE (e.g., Nielsen, 2013; Nielsen et al., 2010; Nielsen & Noblet, 2018).

This time-intensive process was also evident in the implemented intervention (Chapters 3, 5, 6). The first eight months primarily served as a preparation phase, during which work-groups were established, and agreement was reached on goals, actions, timelines, and dependencies. Medical doctors frequently reported increased awareness, motivation to take action, and improved team cohesion at this stage, but also noted that actual imple-

mentation of changes had barely begun. Consistent with this, almost no changes in job factors were observed in the first eight months (Chapter 5).

During the second six-month phase, most groups began implementing smaller and less complex changes. After 14 months, medical doctors reported the first subtle improvements, while also emphasising that process changes take considerable time before effects become visible in the work environment and in health and well-being. The first measurable intervention effects also emerged after 14 months (Chapter 5). Nevertheless, most groups required the full intervention period to complete (more complex) organisational changes.

This raises the question of whether groups were exposed to organisational changes for a sufficient duration to achieve meaningful improvement in job factors and SE, or whether additional time is needed. Organisational changes at higher organisational levels typically require extended timeframes. Achieving substantial improvements in SE may therefore demand a longer period than the two-year intervention allowed.

AIM 3: PROCESS FACTORS THAT FACILITATE OR HINDER THE EFFECTIVENESS OF SE-FOCUSED ORGANISATIONAL-LEVEL WORKPLACE INTERVENTIONS AMONG MEDICAL DOCTORS

DISCUSSION POINT 4: THE ROLE OF PROCESS EVALUATIONS AS AN INTEGRAL COMPONENT OF ORGANISATIONAL-LEVEL WORKPLACE INTERVENTIONS AND THEIR EVALUATION

Process evaluations are crucial for the success of PAR-based organisational-level workplace interventions, and continuous, theory-driven process evaluations with interim feedback are essential for identifying and addressing barriers in a timely manner, thereby enhancing intervention effectiveness.

Interim feedback (after 8 and 14 months) helps medical groups to identify and address barriers in a timely manner and to strengthen facilitators. In the intervention, quantitative feedback on process factors visualised barriers and facilitators, while qualitative feedback from interviews and open-ended questions (Chapter 3) provided concrete examples. Commonly reported barriers included the time-intensive nature of the intervention, difficulty making time to work on the intervention, low involvement of part of the group, insufficiently concrete goals and approaches, limited recognition of successes by the group, passive rather than active management involvement, and the implementation of only small changes. These examples illustrate the complexity of organisational-level workplace interventions and show how barriers in implementation processes can under-

mine their ability to achieve intended effects (Havermans et al., 2016; Kompier & Aust, 2016; Nielsen & Noblet, 2018; Nielsen & Randall, 2013). Providing groups with feedback on these barriers enables them to address these issues and strengthen facilitators during implementation, thereby increasing the likelihood of post-intervention success.

Action-oriented process factors - such as the implementation of changes, information provision, medical doctors' involvement, and management support - appear to be decisive for intervention success. Chapter 6 showed that process factors at mid-intervention (after 14 months) influenced intervention outcomes at post-intervention (after 24 months). Specifically, groups with low implementation of changes, limited information provision on changes and actions, low involvement of medical doctors in the intervention, and insufficient management support for the intervention at 14 months experienced less positive effects on job factors at 24 months. Feedback on barriers in these action-oriented process factors - and how to address them - is therefore essential, as they directly determine the extent to which the intervention is implemented and, ultimately, its effectiveness.

Medical doctors' mental models also play a role in intervention success and can become more positive through targeted feedback, which contributes to better intervention outcomes. Chapter 6 showed that less positive mental models regarding the intervention's focus and approach were more likely to appear in highly motivated groups pursuing ambitious goals; targeted feedback may have helped these groups shift from less positive appraisals at 14 months to more positive appraisals in the final phase, ultimately contributing to greater post-intervention success at 24 months.

Feedback on process factors is particularly important in PAR interventions because medical doctors themselves are the driving force behind the changes (Nielsen, 2013; Nielsen et al., 2010; Nielsen & Randall, 2013). Without feedback on implementation processes (from process facilitators and/or surveys), groups would likely continue along the same trajectory, limiting opportunities to strengthen implementation processes and reducing the likelihood of intervention success.

Yet process evaluations are rarely conducted systematically and repeatedly in organisational-level workplace interventions, meaning that opportunities to adjust or refine interventions are often missed. The literature shows that only few studies assess process factors in such interventions, and when they do, they typically measure them only post-intervention, without a theoretical framework, without extensive evaluation, and most often focusing on participants' mental models (Havermans et al., 2016) - a pattern also confirmed in the systematic review specifically among medical doctors (Chapter 2). Post-

intervention assessments can indicate whether process factors influenced outcomes; but they cannot be used to adjust the intervention during implementation. Moreover, process factors can fluctuate over time, as shown in Chapter 6 and previous research (Nielsen & Randall, 2013; von Thiele Schwarz et al., 2021), meaning that barriers and facilitators identified at the end of the intervention do not necessarily reflect those present during implementation. Finally, a broad range of process factors beyond mental models should be measured, as findings from Chapter 6 showed that process factors related to intervention design and implementation and to the intervention context were more influential than mental models in determining intervention success at that stage. The findings therefore underscore that extensive, repeated, and theoretically grounded process evaluations are necessary for organisational-level workplace interventions to be effective.

Practical implications

The findings of this dissertation yield several important practical implications. To improve medical doctors' SE, it is essential to strengthen PSC, reduce job demands, and enhance job resources. To strengthen PSC, medical doctor groups, direct supervisors, top management, and other stakeholders must work together - sharing responsibility. Medical doctor groups should create a team climate characterised by mutual respect, trust, and psychological safety. Such a climate can be fostered by open discussion of job-related concerns and psychological stress and strain, joint problem-solving and the constructive giving and receiving of feedback. Direct supervisors, top management, and other stakeholders should prioritise the protection of medical doctors' psychological health and well-being, fostering both a broad positive organisational climate and an operational approach in which policies, practices, and procedures actively prevent and reduce psychosocial stress and strain. Some examples include paying attention to medical doctors' mental health alongside production figures, taking active steps when problems in medical doctors' mental health are identified within the organisation, and initiating conversations with medical doctors about how to prevent excessive job demands and insufficient job resources.

To create more manageable job demands, healthcare organisations should focus on the demands they can influence most and that matter most for SE - especially reducing social harassment and time pressure. Organisational climate plays a central role in preventing and reducing social harassment. This includes establishing a clear stance that social harassment will not be tolerated, implementing preventive strategies such as training on the consequences of harassment for both victims and bystanders, and ensuring active policies, practices, and procedures are in place to address incidents when they occur. Reducing time pressure requires changes at multiple levels, for instance: setting workload

boundaries and prioritising tasks within the work day (individual level); streamlining work processes, increasing procedural efficiency, adjusting schedules, and strengthening team cohesion and teamwork (medical doctor group level); implementing scribes to reduce administrative burden, using AI-based speech-to-text tools, lowering productivity targets, and increasing staffing support (work units and organisational level); and work-hour regulations, reducing excessive documentation requirements, and Disciplinary Board regulations that safeguard quality of care without increasing fear among medical doctors (societal level). Job demands inherent to the medical profession - such as perceived emotional demands - can be addressed through individual resilience-building, but also require systemic organisational changes, including access to appropriate psychological support to help medical doctors deal with these demands.

In enhancing job resources, several resources need to be strengthened, requiring action at multiple levels. Medical doctors would benefit from supporting one another, expressing appreciation, and fostering effective collaboration. Teams should also regularly reflect on their functioning: how they can work more effectively, whether actions lead to the intended (long-term) results, whether outcomes are in line with expectations, and what may explain when actions do not work as planned. Autonomy needs to be strengthened to ensure that medical doctors have influence not only over their daily work, but also more broadly within the organisation: by increasing influence over schedules and shifts, greater choice in task allocation, and expanding decision-making authority in decisions that directly affect their daily work. Closer collaboration between medical doctors, direct supervisors, and management in shaping healthcare policy and work processes can facilitate organisational changes that are more aligned with medical doctors' SE. Ensuring sufficient job variety - by limiting excessive administrative workload and production targets - and creating time and space for professional development are essential. Staffing of both medical doctors and support staff must be maintained at an appropriate level. Although this is challenging during shortages, creating favourable work environments is crucial for attracting and retaining staff. Direct supervisors play a key role by showing appreciation, supporting medical doctors in performing their work effectively, actively protecting them from psychosocial stress and strain, and advocating for their interests. High-quality support services are also important, ensuring that questions are answered promptly, information is easily accessible, and communication across departments is streamlined. Finally, sufficient recovery within worktime requires manageable workloads, protected time for breaks and collegial interaction, and effective scheduling. These are only a few examples of how job factors can be enhanced. However, medical doctors themselves are experts on what they need to strengthen their SE.

Therefore, organisational-level workplace interventions that use PAR approaches hold strong potential to enhance PSC, reduce job demands, and improve job resources.

Our findings indicate that several preconditions are necessary for effective organisational-level workplace interventions aimed at improving medical doctors' SE. Interventions should address both the reduction of negative outcomes and the enhancement of positive outcomes. A PAR approach is recommended, positioning medical doctors as experts and active contributors in developing, implementing, and evaluating organisational changes, while allowing for continuous refinement. Interventions should run long enough to meaningfully change the work situation and ensure adequate exposure to these changes. A two-year timeframe appears appropriate for achieving changes within medical doctors' direct sphere of influence and for initiating collaboration with higher organisational levels, whereas changes beyond this sphere may require longer-term efforts. Strong and sustained support from higher management is crucial, including providing medical doctors with the time and space to participate and implement changes, while also taking responsibility themselves for organisational changes - particularly those outside medical doctors' immediate control. Finally, embedding the intervention in routine work processes is recommended to ensure lasting impact. As teams and organisations continuously evolve, ongoing organisational adjustments are needed.

During implementation, medical doctors should focus on a combination of low effort-low reward and high effort-high reward changes to generate early improvements - boosting motivation, confidence that the work situation can indeed be changed, and positive mental models - and to substantially improve key job factors. Targeted job factors may include areas where bottlenecks are most strongly experienced, as well as more positive factors that are closely linked to SE, such as opportunities for development. Adequate support from process facilitators is essential as a driver for maintaining focus on the intervention. Furthermore, process facilitators help medical doctors develop the knowledge and skills needed to design, implement, and evaluate organisational changes, as required in PAR. This support can gradually be reduced over time to strengthen medical doctors' ability to initiate and sustain organisational changes independently once the intervention ends. Clear expectations and transparent communication about this phased reduction are essential to ensure that, within a PAR approach, reduced support is experienced as an intentional and empowering element of the intervention rather than as a lack of support that undermines medical doctors' intervention perceptions. However, the intervention will be more effective when support is not withdrawn too early, as this may lead to intervention failure. Process facilitator support can be scaled back once the

intervention is sufficiently embedded in organisational structures, routines, workflows and everyday practices, with process facilitators then focusing on supporting groups in turning new behaviours into habits and maintaining these routines. Embedding can be strengthened through regular reflection on working conditions and groups sessions dedicated to developing organisational changes, supported by periodic booster sessions to maintain progress. Only through such sustained efforts can durable improvements in medical doctors' SE be achieved. Embedding also requires actively involving new hires and medical doctors returning to work after prolonged burnout absences, ensuring that knowledge and skills for organisational change are transferred within the team. A positive framing - focused on continuous improvement rather than problems - is important. Finally, feedback on implementation processes is crucial for reducing barriers and strengthening facilitators, thereby ensuring a high level of implementation of changes, sustained medical doctors' involvement, adequate information provision about actions and changes, and continued management support - all of which enhance intervention success.

To evaluate organisational-level workplace interventions, it is important to assess the chain of effects - whether improvements in specific job factors lead to improvements in other job factors, and ultimately to increases in SE. In addition, a process evaluation is required to identify which process factors facilitated or hindered intervention effectiveness. Process factors should be measured at multiple time points - at the onset, during, and after the intervention - to gain a comprehensive understanding of when and which process factors matter most. Beyond assessing effects on specific job factors, it is also valuable to include a general measure of the perceived impact of organisational changes on the work situation and on health and well-being. Because PAR-based interventions allow medical doctor groups to target different job factors, such a general measure can capture broader improvements that are less dependent on the main intervention effects - reflecting overall changes in the work situation and well-being as perceived by medical doctors. Finally, long-term measurement is essential for assessing the durability of the intervention and whether it has become embedded in organisational structures and daily routines. Including long-term follow-up assessments - for instance six months or one-year post-intervention - can examine sustained effects, whether improvements observed between baseline and post-intervention persist or even continue to grow.

Limitations

The research in this dissertation has several limitations. First, all studies relied on self-report data, which is susceptible to common method bias (CMB). CMB can distort results, obscure the true relationships between constructs, and ultimately weaken the validity of the study's conclusions (Podsakoff et al., 2012; Polas, 2025). We attempted to minimise CMB by ensuring anonymity and confidentiality, and by using validated questionnaires at multiple measurement points. In addition, we applied structural equation modelling to analyse the cross-sectional data in Chapter 4, which helps reduce bias by modelling measurement errors (Polas, 2025). Despite its limitations, self-report remains an appropriate method for assessing medical doctors' experiences of job factors and SE indicators. For example, quantitative workload may be objectively similar across individuals, yet experienced very differently depending on skills, experience, or interests. These subjective experiences are relevant for outcomes such as burnout, which depend on how work is appraised as energy-draining. Future research could complement self-report data with additional sources, such as peer evaluations, supervisor or manager evaluations, archival records (e.g., turnover rates, absenteeism records, performance evaluations) or objective indicators (Podsakoff et al., 2012; Polas, 2025).

Second, the organisational-level workplace intervention used a pre-post design without control groups (Chapters 3, 5, 6), and the methodological quality of the studies included in the systematic review was relatively low (Chapter 2). Therefore, we cannot be certain whether improvements in burnout and job satisfaction (Chapter 2), and the observed changes in job factors (Chapter 5) were attributable to the intervention(s) or reflected ongoing changes already present within or outside the organisation (e.g., national policies). We therefore evaluated whether changes occurred only in targeted job factors and not in untargeted ones, and we evaluated chain of effects and process factors to understand whether observed changes can be attributed to the intervention, and how the intervention works, for whom, and under which circumstances (Nielsen & Miraglia, 2017; Nielsen & Randall, 2013; Roodbari et al., 2021). Although a randomised controlled trial (RCT) - the gold standard for intervention research - was theoretically possible for the organisational-level workplace intervention central to this dissertation, it was not selected due to practical and contextual constraints, some of which are also common in organisational-level intervention research more broadly (Nielsen & Miraglia, 2017). For instance, it was difficult to identify comparable control groups across different organisational settings, organisations, and specialties, and there was a substantial risk of contamination if multiple groups within the same organisation participated. Moreover, given the time frame of the study and the load on medical doctors, it was unrealistic to

expect them to complete four rounds of surveys without receiving the intervention or waiting for long periods. Finally, it was not feasible to keep the organisational context stable, and the context was inherently part of the intervention and influenced its success (Chapter 6). Future research can however build on these insights by comparing medical doctor groups who receive an organisational-level workplace intervention, groups who receive an individual-level intervention, and groups who receive a combination of both. Such comparative designs would allow researchers to disentangle the unique effects of each approach, provide feasible control groups, and determine the added value of integrating organisational- and individual-level strategies. Furthermore, a stepped-wedge design could be considered, in which all participating medical doctor groups receive the organisational-level workplace intervention, but the timing of when each group starts is randomly assigned.

Third, the participating groups were likely not fully representative of all medical doctors, as they self-enrolled into the intervention due to existing problems in their work situation and/or SE. As a result, the sample may have scored less favourably on PSC, job demands, job resources, and SE than the average Dutch medical doctor population. At the same time, both the literature and the “Loopbaanmonitor” (career monitor (2024) for Dutch medical specialists) show that problems in job factors and SE are widespread among medical doctors, also beyond this specific sample. It is also encouraging that medical doctors who experience problems in job factors and/or SE appear to be motivated to improve their work situation, as demonstrated by their self-enrolment in the intervention and their completion of it. Organisational-level workplace interventions therefore remain relevant for the profession as a whole - both to address serious bottlenecks and to further optimise relatively favourable working conditions - ultimately to improve SE. To contextualise this limitation, it is important to note that a precise comparison between our sample and the broader population of medical doctors is difficult, as studies differ substantially in measurement instruments, countries, and specialties. Nevertheless, the literature consistently shows high job demands, shortages in key job resources, and compromised SE among medical doctors (e.g., Domagała et al., 2018; Shanafelt et al., 2016; West et al., 2018). The “Loopbaanmonitor Medisch Specialisten 2024” - a large, recurring study that tracks the career development of all current medical specialists in the Netherlands - further illustrates this pattern: although our sample reported more unfavourable job factors overall, several indicators - such as medical specialists applying for another position due to dissatisfaction with working conditions, or expecting to be able to continue working shifts until the end of their career only under certain conditions or not at all - suggest that improvements in work situations and SE are broadly relevant.

Differences in organisational settings may partly explain the less favourable scores in our sample, as municipal public health services, which were included in our study but not in the career monitor, scored lowest on PSC, job resources, and SE indicators. Burnout risk in the career monitor (30%) was comparable to the range observed in our studies (8% to 50% across groups at baseline).

Future directions

The findings of this dissertation point to several important directions for future research. First, more research is needed on chain of effects of organisational-level workplace interventions. Although the importance of examining chain of effects has been emphasised in previous organisational-level workplace intervention research (e.g., Nielsen & Abildgaard, 2013; Nielsen & Miraglia, 2017; Nielsen & Noblet, 2018) and in theoretical models such as the JD-R model (Bakker et al., 2023; Bakker & Demerouti, 2017), it is still rarely applied in interventions targeting medical doctors (Chapter 2). More insight is needed into which changes in job factors lead to SE improvements. This dissertation contributes to this knowledge, but given the substantial variation across organisational-level workplace interventions (Chapter 2), further research is essential. It would be also valuable to extend the “chain of effects” framework. In this dissertation, we applied a relatively simple chain of effects in which changes in job factors (proximal outcomes) lead to changes in SE indicators (distal outcomes). However, research suggests that this chain can be expanded. For example, Nielsen and Abildgaard (2013) propose a sequence in which interventions influence: (1) attitudes and values (i.e., broader job-related mental models that shape how employees act and carry out their tasks); (2) individual resources (e.g., empowerment, occupational self-efficacy, job crafting); (3) procedures (work practices and values); (4) job characteristics; (5) health and well-being; and even (6) quality and performance. Job crafting is also highlighted in recent JD-R model literature, defined as: “employees’ personal initiative to change their job demands and job resources in order to better align the design of the job with their own abilities and preferences” (Bakker et al., 2023, p. 33). It would be valuable to examine the extent to which medical doctors participating in organisational-level workplace interventions perceive that they have crafted their job, whether levels of job crafting differ across medical doctors and groups, and how these differences relate to intervention effects.

Second, more research is needed on process evaluations of organisational-level workplace interventions among medical doctor groups. The use of process evaluations remains limited, both in organisational-level workplace interventions in general (Havermans et al., 2016) and particularly among medical doctor groups (Chapter 2). When process evaluations are implemented, they should be extensive, conducted repeatedly

throughout the intervention, and guided by a clear theoretical framework - such as Nielsen and Randall's (2013) model of intervention contexts, intervention design and implementation, and employees' mental models. Such an approach would enable cumulative knowledge building, for example by identifying which process factors most strongly influence intervention effectiveness and whether the timing of process measurement matters. This dissertation contributes to this knowledge, but further research is essential. In addition, it would be valuable to examine whether process factors assessed at the start of an intervention predict post-intervention outcomes. For example, Nielsen (2024) developed the Intervention Preparedness Tool, which assesses key precursors of successful implementation processes in organisational-level workplace interventions. The tool measures readiness for change, communication (i.e., clarity about expectations and intervention goals), and intervention-context fit (alignment with organisational goals and relevance for solving existing problems). In Chapter 6, positive expectations assessed at 14 months did not influence post-intervention effects - likely because these expectations were already shaped by intervention experiences. It may be therefore particularly informative to examine whether expectations and preparedness assessed at the start of the intervention, and grounded in prior experiences, do predict later intervention outcomes.

Third, future research could examine the importance of autonomy, strong group norms and behaviour related to PSC, and team reflexivity in determining intervention success. Their relevance is emphasised in several theoretical frameworks (Edmondson, 1999; Ryan & Deci, 2000; West, 1996, 2000). This line of future research can be pursued in two ways. First, in line with the chain of effects perspective, it would be valuable to investigate whether increases in group norms and behaviour regarding PSC, autonomy, and team reflexivity function as prerequisites for improvements in other job factors and, ultimately SE. Second, from a process-evaluation perspective, it would be informative to examine whether groups that score higher on these job factors at the start of the intervention achieve more favourable implementation processes and greater intervention success than groups that do not. Together, these questions highlight that such conditions may need to be present - or actively strengthened - before targeting other job factors to maximise intervention effectiveness.

Fourth, it may be valuable to distinguish more explicitly between the types of goals that groups choose to work on in organisational-level workplace interventions, particularly high effort-high gain goals versus low effort-low gain goals, and to examine how these goals influence implementation processes, medical doctors' mental models, and the overall effectiveness. Our findings in Chapter 6 suggest that medical doctors differed in

the extent to which they selected high effort-high gain goals or low effort-low gain goals, reflecting in more or less positive appraisals of the intervention's focus and approach. For instance, developing and implementing a staff photo directory or organising a weekly coffee break may be easier to realise than changing work processes to reduce time pressure or establishing a medical advisory board. Future research could therefore investigate whether the type of goals chosen shapes how groups engage with the intervention, how their mental models evolve, and whether certain types of goals are more strongly associated with successful outcomes. Such insights could help determine whether specific goal profiles should be encouraged - or supported more intensively - to maximise intervention impact.

Finally, as the organisational-level workplace intervention was (not yet) successful in improving medical doctors' SE, it may be valuable to examine whether combining it with individual-level strategies increases its effectiveness (De Simone et al., 2021; Panagioti et al., 2017; West et al., 2016) or whether a longer intervention period is required to achieve meaningful improvements in SE. Individual-level interventions - such as stress management programmes or mindfulness-based approaches - have been shown to enhance medical doctors' ability to cope with work-related stressors, and, in turn, reduce burnout (Panagioti et al., 2017; West et al., 2016). Individual-level strategies are especially helpful in enhancing resilience to cope with unavailable suffering - such as emotional demands - that organisational-level strategies cannot change (Card, 2018). Combining organisational-level strategies that reduce job stressors and address preventable system-level failures (Nielsen et al., 2010) with strategies that strengthen medical doctors' capacity to manage stress and demands inherent to the medical profession may therefore be particularly effective (Card, 2018; Golisch et al., 2023; West et al., 2016). Future research could therefore compare the effects of an organisational-level workplace intervention alone, an individual-level intervention alone, and a combined approach. Moreover, future research could examine whether implementing such intervention over a longer period than two years enhances their success in achieving higher-level organisational changes, extends their influence beyond the immediate sphere of medical doctors, and strengthens intervention effects on SE over time.

Conclusion

This dissertation examined (1) whether (and which) PSC, job demands, and job resources determine medical doctors' SE and act as drivers of change within SE-focused organisational-level workplace interventions; (2) the effectiveness of such interventions in improving SE; and (3) the process factors that facilitate or hinder their effectiveness. PSC, job demands, and job resources emerged as key determinants and drivers of change in medical doctors' SE, with time pressure and opportunities for development being particularly influential. Improving these job factors requires shared responsibility among society at large, work units and the organisation, the medical doctor group, and the individual medical doctors. Existing organisational-level workplace interventions were effective in reducing burnout and increasing job satisfaction among medical doctors. The newly implemented PAR-based organisational-level workplace intervention improved PSC and job resources, demonstrating that when medical doctors take the lead in transforming their workplaces, they can successfully implement organisational changes - particularly in areas within their own sphere of influence. These improvements represent meaningful steps toward medical doctors' SE. However, these improvements alone were insufficient to significantly enhance SE. Achieving stronger and lasting impact requires greater improvements in PSC and job resources, reductions in job demands, organisational changes beyond medical doctors' direct control, targeted support for medical doctors experiencing burnout, and longer intervention timeframes. Optimal implementation processes are also essential for intervention success. High levels of implemented changes, strong involvement of medical doctors in the intervention, clear information provision about actions and changes, and strong management support for the intervention all contribute to this success. Both medical doctors and management must therefore be actively engaged and share responsibility for the intervention. Further research is needed to strengthen intervention effectiveness, systematically examine chain of effects mechanisms and process factors, and explore combinations with individual-level strategies. In conclusion, when medical doctors take the lead in transforming their workplaces, they can take meaningful steps toward strengthening their sustainable employability. However, achieving truly sustainable workplaces requires stronger shared responsibility among medical doctors, work units, organisations, and society at large - to ensure that those who safeguard our health can function in a healthy, satisfied, and engaged manner over the long term, and ultimately protect the quality of care.

References

- Ahola, K., Toppinen-Tanner, S., & Seppänen, J. (2017). Interventions to alleviate burnout symptoms and to support return to work among employees with burnout: Systematic review and meta-analysis. *Burnout Research*, 4, 1–11. <https://doi.org/10.1016/j.burn.-2017.02.001>
- Aiken, L. H., Lasater, K. B., Sloane, D. M., Pogue, C. A., Fitzpatrick Rosenbaum, K. E., Muir, K. J., McHugh, M. D., & US Clinician Wellbeing Study Consortium (2023). Physician and nurse well-being and preferred interventions to address burnout in hospital practice: Factors associated with turnover, outcomes, and patient safety. *JAMA Health Forum*, 4(7), e231809. <https://doi.org/10.1001/jamahealthforum.2023.1809>
- Amoadu, M., Ansah, E. W., & Sarfo, J. O. (2023). Influence of psychosocial safety climate on occupational health and safety: A scoping review. *BMC Public Health*, 23(1), 1344. <https://doi.org/10.1186/s12889-023-16246-x>
- Bailey, T. S., Dollard, M. F., & Richards, P. A. M. (2015). A national standard for psychosocial safety climate (PSC): PSC 41 as the benchmark for low risk of job strain and depressive symptoms. *Journal of Occupational Health Psychology*, 20(1), 15–26. <https://doi.org/10.1037/a0038166>
- Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273–285. <https://doi.org/10.1037/ocp0000056>
- Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. (2023). Job demands-resources theory: Ten years later. *Annual Review of Organizational Psychology and Organizational Behavior*, 10(1), 25–53. <https://doi.org/10.1146/annurev-orgpsych-120920-053933>
- Boniol, M., Kunjumen, T., Nair, T. S., Siyam, A., Campbell, J., & Diallo, K. (2022). The global health workforce stock and distribution in 2020 and 2030: A threat to equity and ‘universal’ health coverage? *BMJ Global Health*, 7(6), e009316. <https://doi.org/10.1136/bmjgh-2022-009316>
- Bronkhorst, B. (2015). Behaving safely under pressure: The effects of job demands, resources, and safety climate on employee physical and psychosocial safety behavior. *Journal of Safety Research*, 55, 63–72. <https://doi.org/10.1016/j.jsr.2015.09.002>
- Bronkhorst, B., & Vermeeren, B. (2016). Safety climate, worker health and organizational health performance: Testing a physical, psychosocial and combined pathway. *International Journal of Workplace Health Management*, 9(3), 270–289. <https://doi.org/10.1108/IJWHM-12-2015-0081>
- Card, A. J. (2018). Physician burnout: resilience training is only part of the solution. *Annals of Family Medicine*, 16(3), 267–270. <https://doi.org/10.1370/afm.2223>
- DeChant, P. F., Acs, A., Rhee, K. B., Boulanger, T. S., Snowdon, J. L., Tutty, M. A., Sinsky, C. A., & Thomas Craig, K. J. (2019). Effect of organization-directed workplace interventions on physician burnout: A systematic review. *Mayo Clinic Proceedings: Innovations, Quality & Outcomes*, 3(4), 384–408. <https://doi.org/10.1016/j.mayocpiqo.2019.07.006>
- De Simone, S., Vargas, M., & Servillo, G. (2021). Organizational strategies to reduce physician burnout: A systematic review and meta-analysis. *Aging Clinical and Experimental Research*, 33(4), 883–894. <https://doi.org/10.1007/s40520-019-01368-3>

- Dollard, M. F., & Bakker, A. B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. *Journal of Occupational and Organizational Psychology*, 83(3), 579–599. <https://doi.org/10.1348/096317909X470690>
- Domagała, A., Bała, M. M., Storman, D., Peña-Sánchez, J. N., Świerz, M. J., Kaczmarczyk, M., & Storman, M. (2018). Factors associated with satisfaction of hospital physicians: A systematic review on European data. *International Journal of Environmental Research and Public Health*, 15(11), 2546. <https://doi.org/10.3390/ijerph15112546>
- Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2), 350–383. <https://doi.org/10.2307/2666999>
- Federatie Medisch Specialisten, De Jonge Specialist, & Landelijke Vereniging van Artsen in Dienstverband. (2022). Loopbaanmonitor Medisch Specialisten. <https://www.dejongespecialist.nl/wp-content/uploads/2024/10/Rapport-Loopbaanmonitor-2022.pdf>
- Federatie Medisch Specialisten, De Jonge Specialist, & Landelijke Vereniging van Artsen in Dienstverband. (2024). Loopbaanmonitor Medisch Specialisten. <https://loopbaanmonitormedischspecialisten.nl/resultaten/>
- Fleuren, B. P. I., de Grip, A., Jansen, N. W. H., Kant, IJ., & Zijlstra, F. R. H. (2020). Unshrouding the sphere from the clouds: Towards a comprehensive conceptual framework for sustainable employability. *Sustainability*, 12(16), 6366. <https://doi.org/10.3390/su12166366>
- Golisch, K. B., Sanders, J. M., Rzhetsky, A., & Tatebe, L. C. (2023). Addressing surgeon burnout through a multi-level approach: A national call to action. *Current Trauma Reports*, 9(2), 28–39. <https://doi.org/10.1007/s40719-022-00249-x>
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16(2), 250–279. [https://doi.org/10.1016/0030-5073\(76\)90016-7](https://doi.org/10.1016/0030-5073(76)90016-7)
- Havermans, B. M., Schelvis, R. M., Boot, C. R., Brouwers, E. P., Anema, J. R., & van der Beek, A. J. (2016). Process variables in organizational stress management intervention evaluation research: A systematic review. *Scandinavian Journal of Work, Environment & Health*, 42(5), 371–381. <https://www.jstor.org/stable/43999305>
- Herzberg, F., Mausner, B., & Snyderman, B. (1959). *The motivation to work*. Wiley
- Hu, Q., Dollard, M. F., & Taris, T. W. (2022). Organizational context matters: Psychosocial safety climate as a precursor to team and individual motivational functioning. *Safety Science*, 145, 105524. <https://doi.org/10.1016/j.ssci.2021.105524>
- Karatuna, I., Jönsson, S., Dollard, M., & Muhonen, T. (2025). The associations of the psychosocial safety climate with human service workers' job demands, resources, and work-and health-related outcomes: A scoping review. *Safety Science*, 191, 106949. <https://doi.org/10.1016/j.ssci.2025.106949>
- Kompier, M., & Aust, B. (2016). Organizational stress management interventions: Is it the singer not the song? *Scandinavian Journal of Work, Environment & Health*, 42(5), 355–358. <https://www.jstor.org/stable/43999303>
- Konradt, U., Otte, K. P., Schippers, M. C., & Steenfatt, C. (2016). Reflexivity in teams: A review and new perspectives. *The Journal of Psychology*, 150(2), 153–174. <https://doi.org/10.1080/00223980.2015.1050977>

- Laarman, B. S., Bouwman, R. J., De Veer, A. J., Hendriks, M., & Friele, R. D. (2019). How do doctors in the Netherlands perceive the impact of disciplinary procedures and disclosure of disciplinary measures on their professional practice, health and career opportunities? A questionnaire among medical doctors who received a disciplinary measure. *BMJ Open*, 9(3), e023576. <https://doi.org/10.1136/bmjopen-2018-023576>
- Loh, M. Y., Dollard, M. F., McLinton, S. S., & Brough, P. (2024). Translating psychosocial safety climate (PSC) into real-world practice: Two PSC intervention case studies. *Journal of Occupational Health*, 66(1), uiae051. <https://doi.org/10.1093/joccu/uiae051>
- Nielsen, K. (2013). How can we make organizational interventions work? Employees and line managers as actively crafting interventions. *Human Relations*, 66(8), 1029–1050. <https://doi.org/10.1177/0018726713477164>
- Nielsen, K. (2024). Improving employee well-being through improving working conditions: A review on how we can make participatory organizational interventions work. In L. E. Tetrick, G. G. Fisher, M. T. Ford, & J. C. Quick (Eds.), *Handbook of occupational health psychology* (3rd ed., pp. 449–466). American Psychological Association. <https://doi.org/10.1037/0000331-022>
- Nielsen, K., & Abildgaard, J. S. (2013). Organizational interventions: A research-based framework for the evaluation of both process and effects. *Work & Stress*, 27(3), 278–297. <https://doi.org/10.1080/02678373.2013.812358>
- Nielsen, K., & Miraglia, M. (2017). What works for whom in which circumstances? On the need to move beyond the ‘what works?’ question in organizational intervention research. *Human Relations*, 70(1), 40–62. <https://doi.org/10.1177/0018726716670226>
- Nielsen, K., & Noblet, A. (2018). Introduction: Organizational interventions: Where we are, where we go from here? In *Organizational interventions for health and well-being* (pp. 1–21). Routledge.
- Nielsen, K., & Randall, R. (2013). Opening the black box: Presenting a model for evaluating organizational-level interventions. *European Journal of Work and Organizational Psychology*, 22(5), 601–617. <https://doi.org/10.1080/1359432X.2012.690556>
- Nielsen, K., Randall, R., & Albertsen, K. (2007). Participants’ appraisals of process issues and the effects of stress management interventions. *Journal of Organizational Behavior*, 28(6), 793–810. <https://doi.org/10.1002/job.450>
- Nielsen, K., Randall, R., Holten, A.-L., & González, E. R. (2010). Conducting organizational-level occupational health interventions: What works? *Work & Stress*, 24(3), 234–259. <https://doi.org/10.1080/02678373.2010.515393>
- Nielsen, M. B., & Einarsen, S. V. (2018). What we know, what we do not know, and what we should and could have known about workplace bullying: An overview of the literature and agenda for future research. *Aggression and Violent Behavior*, 42, 71–83. <https://doi.org/10.1016/j.avb.2018.06.007>
- Ogugua, J. O., Muonde, M., Maduka, C. P., Olorunsogo, T. O., & Omotayo, O. (2024). Demographic shifts and healthcare: A review of aging populations and systemic challenges. *International Journal of Science and Research Archive*, 11(1), 383–395. <https://doi.org/10.30574/ijrsra.2024.11.1.0067>
- Panagioti, M., Panagopoulou, E., Bower, P., Lewith, G., Kontopantelis, E., Chew-Graham, C., Dawson, S., van Marwijk, H., Geraghty, K., & Esmail, A. (2017). Controlled interventions to reduce burnout in physicians: A systematic review and meta-analysis. *JAMA Internal Medicine*, 177(2), 195–205. <https://doi.org/10.1001/jamainternmed.2016.7674>

- Perreira, T. A., Perrier, L., & Prokopy, M. (2018). Hospital physician engagement: A scoping review. *Medical Care*, 56(12), 969–975. <https://doi.org/10.1097/MLR.0000000000000983>
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63(1), 539–569. <https://doi.org/10.1146/annurev-psych-120710-100452>
- Polas, M. R. H. (2025). Common method bias in social and behavioral research: Strategic solutions for quantitative research in the doctoral research. *Journal of Comprehensive Business Administration Research*. <https://doi.org/10.47852/bonviewJCBAR52024285>
- Roodbari, H., Nielsen, K., & Axtell, C. (2021). An integrated realist evaluation model to evaluate organisational interventions. *Academy of Management Proceedings*, 2021(1), 10830. <https://doi.org/10.5465/AMBPP.2021.10830abstract>
- Rothenberg, D. A. (2017). Physician burnout and well-being: A systematic review and framework for action. *Diseases of the Colon & Rectum*, 60(6), 567–576. <https://doi.org/10.1097/DCR.0000000000000844>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25(3), 293–315. <https://doi.org/10.1002/job.248>
- Schaufeli, W. B., Desart, S., & De Witte, H. (2020). Burnout Assessment Tool (BAT) - development, validity, and reliability. *International Journal of Environmental Research and Public Health*, 17(24), 9495. <https://doi.org/10.3390/ijerph17249495>
- Schaufeli, W. B., & Enzmann, D. (1998). The burnout companion to study and practice: A critical analysis. Taylor & Francis.
- Seys, D., Wu, A. W., Gerven, E. V., Vleugels, A., Euwema, M., Panella, M., Scott, S. D., Conway, J., Sermeus, W., & Vanhaecht, K. (2013). Health care professionals as second victims after adverse events: A systematic review. *Evaluation & the Health Professions*, 36(2), 135–162. <https://doi.org/10.1177/0163278712458918>
- Shanafelt, T. D., Dyrbye, L. N., Sinsky, C., Hasan, O., Satele, D., Sloan, J., & West, C. P. (2016). Relationship between clerical burden and characteristics of the electronic environment with physician burnout and professional satisfaction. *Mayo Clinic Proceedings*, 91(7), 836–848. <https://doi.org/10.1016/j.mayocp.2016.05.007>
- Shanafelt, T. D., & Noseworthy, J. H. (2017). Executive leadership and physician well-being. *Mayo Clinic Proceedings*, 92(1), 129–146. <https://doi.org/10.1016/j.mayocp.2016.10.004>
- Tuckey, M. R., Searle, B. J., Boyd, C. M., Winefield, A. H., & Winefield, H. R. (2015). Hindrances are not threats: Advancing the multidimensionality of work stress. *Journal of Occupational Health Psychology*, 20(2), 131–147. <https://doi.org/10.1037/a0038280>
- Van Den Broeck, A., De Cuyper, N., De Witte, H., & Vansteenkiste, M. (2010). Not all job demands are equal: Differentiating job hindrances and job challenges in the Job Demands–Resources model. *European Journal of Work and Organizational Psychology*, 19(6), 735–759. <https://doi.org/10.1080/13594320903223839>
- Von Thiele Schwarz, U., Nielsen, K., Edwards, K., Hasson, H., Ipsen, C., Savage, C., Simonsen Abildgaard, J., Richter, A., Lornudd, C., Mazzocato, P., & Reed, J. E. (2021). How to design, implement and evaluate organizational interventions for maximum impact:

- The Sigtuna Principles. *European Journal of Work and Organizational Psychology*, 30(3), 415–427. <https://doi.org/10.1080/1359432X.2020.1803960>
- West, M. A. (1996). Reflexivity and work group effectiveness: A conceptual integration. In M. A. West (Ed.), *Handbook of work group psychology* (pp. 555–579). Wiley.
- West, M. A. (2000). Reflexivity, revolution, and innovation in work teams. In M. M. Beyerlein, D. Johnson, & S. T. Beyerlein (Eds.), *Product development teams* (pp. 1–29). JAI Press.
- West, C. P., Dyrbye, L. N., Erwin, P. J., & Shanafelt, T. D. (2016). Interventions to prevent and reduce physician burnout: A systematic review and meta-analysis. *The Lancet*, 388(10057), 2272–2281. [https://doi.org/10.1016/S0140-6736\(16\)31279-X](https://doi.org/10.1016/S0140-6736(16)31279-X)
- West, C. P., Dyrbye, L. N., & Shanafelt, T. D. (2018). Physician burnout: Contributors, consequences and solutions. *Journal of Internal Medicine*, 283(6), 516–529. <https://doi.org/10.1111/joim.12752>
- Yulita, Y., Dollard, M. F., & Idris, M. A. (2017). Climate congruence: How espoused psychosocial safety climate and enacted managerial support affect emotional exhaustion and work engagement. *Safety Science*, 96, 132–142. <https://doi.org/10.1016/j.ssci.2017.03.023>

