



The  
University  
Of  
Sheffield.

**Thesis Title:** What Works for Whom in Which Circumstances? Evaluating Organisational Interventions Using Realist Evaluation

**Name of student:** Hamid Roodbari

A thesis submitted in partial fulfilment of the requirements for the degree of  
Doctor of Philosophy

The University of Sheffield  
Faculty of Social Sciences  
Management School

**Submission Date:** 17/03/2022

## SUMMARY

Organisational interventions that aim to improve working conditions are the recommended approach for improving employees' health and wellbeing. This thesis tries to advance the knowledge of how to design, implement, and evaluate organisational interventions. To achieve this, this thesis seeks to improve the understanding of 'how to' apply realist evaluation in organisational interventions, and to explore 'what *worked/might work/works* for whom in which circumstances' in organisational interventions. Chapter 2 is a realist synthesis, it identifies and synthesises empirical evidence from 28 organisational intervention studies into six Context-Mechanism-Outcome (CMO) configurations based on the mechanisms of implementation adherence, communication, employees' participation, senior management support, middle management support, and external consultants/researchers support. Chapter 3 uses the qualitative evidence from the planning phase of a participatory organisational intervention in the US food service industry and develops four initial CMO configurations based on the mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context. Chapter 4 uses the qualitative evidence from the implementation and evaluation phases of the same participatory organisational intervention and tests of these initial CMO configurations, participation. Finally, based on the lessons learned from using realist evaluation in the participatory organisational intervention in the US food service industry (chapters 3 and 4), and by using the contexts, mechanisms, and outcomes identified in chapter 2, chapter 5 proposes an evaluation model. The proposed model provides guidance on when, why, and how to develop and test CMO configurations for a comprehensive list of crucial intervention mechanisms. Overall, the knowledge generated on 'how to' apply realist evaluation and on 'what *worked/might work/works* for whom in which circumstances' in this thesis can be used to design, implement, and evaluate future organisational interventions.

## **ACKNOWLEDGEMENTS**

I would first like to thank my supervisors, Professor Karina Nielsen and Professor Carolyn Axtell. Without your help and support, this thesis would not have existed. I am very grateful for your encouragement, support, and your patience with me. Professor Karina Nielsen, I am more than grateful to have you as my supervisor, you are in my mind a great leader. Professor Carolyn Axtell, I cannot thank you enough for sharing your knowledge and experience with me, you are an expert in more ways than one. I learned a lot from both of you.

I would like to thank all the research team members at Harvard T.H. Chan School of Public Health for their help and support. Professor Glorian Sorensen, thank you for letting me be a part of your project. Many ideas and thoughts presented in this thesis are born from working with you. Doctor Susan Peters, working with you is always a pleasure, thank you for all the help. Lorraine Wallace, Lisa Burke, Melissa Karapanos, and Eve Nagler, thank you for your collaboration and support.

I would also like to thank the large, multinational food service company and the site managers, district managers, and frontline workers who participated in the intervention project, for without their participation this study would not have been possible.

To my family, without you, my life would not be the same. I am forever grateful for your unconditional love and support.

The present thesis was funded by Sheffield University Management School.

## **DECLARATION**

I, the author, confirm that the Thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means ([www.sheffield.ac.uk/ssid/unfair-means](http://www.sheffield.ac.uk/ssid/unfair-means)). This work has not been previously presented for an award at this, or any other, university. This Thesis is a Publication Format Thesis, it comprises of four scientific papers which are published or under review in academic journals.

## LIST OF SCIENTIFIC PAPERS AND MY CONTRIBUTIONS

- I. **Roodbari, H.**, Axtell, C., Nielsen, K., and Sorensen, G. (2021). “Organisational interventions to improve employees' health and wellbeing: A realist synthesis”, *Applied Psychology*, pp. 1–24. <https://doi.org/10.1111/apps.12346>.

**My Contribution:** I conducted the search in the databases, screened and included studies, extracted, analysed, and synthesised data in an iterative process with the co-authors. I led the conceptualisation and the drafting of the manuscript and improved it by incorporating inputs from the co-authors.

- II. **Roodbari, H.**, Nielsen, K., Axtell, C., Peters, S.E., Sorensen, G. (2021). “Developing Initial Middle Range Theories in Realist Evaluation: A Case of an Organisational Intervention”. *International Journal of Environmental Research and Public Health*, VOL. 18, p. 8360. <https://doi.org/10.3390/ijerph18168360>.

**My Contribution:** The research team members at Harvard University conducted formative research and collected and coded data. I analysed data based on realist evaluation, wrote the original draft, and improved it by incorporating inputs from the co-authors.

- III. **Roodbari, H.**, Nielsen, K., Axtell, C., Sorensen, G., Peters, P. “Testing Middle Range Theories in Realist Evaluation: A Case of an Organisational Intervention”. Submitted the revised manuscript with minor revisions to *International Journal of Workplace Health Management*.

**My Contribution:** The research team members at Harvard University collected data. I contributed to the data collection, analysed and synthesised data based on realist evaluation, wrote the original draft, and improved it by incorporating inputs from the co-authors.

- IV. **Roodbari, H.**, Nielsen, K. Axtell, C. (2021). “An integrated realist evaluation model to evaluate organisational interventions”, *Academy of Management Proceedings*, VOL. 2021 NO. 1, p. 10830. <https://doi.org/10.5465/AMBPP.2021.10830abstract>.

- **Roodbari, H.**, Nielsen, K., Axtell, C. “What Works for Whom in Which Circumstances? An Integrated Realist Evaluation Model for Organisational Interventions”.

Submitted to *Scandinavian Journal of Work and Organizational Psychology*

**My Contribution:** I led the conceptualisation and the drafting of the manuscript and improved it by incorporating inputs from the co-authors.

## TABLE OF CONTENTS

<b>Chapter 1.</b> General Introduction	<i>p.1</i>
<i>Introduction</i>	
<i>Aims of the Thesis</i>	
<i>Scientific Importance and Contribution</i>	
<i>References</i>	
<b>Chapter 2.</b> Organisational Interventions to Improve Employees' Health and Wellbeing: A Realist Synthesis	<i>p.30</i>
<i>Introduction</i>	
<i>Methods</i>	
<i>Results</i>	
<i>Discussion</i>	
<i>Conclusion</i>	
<i>References</i>	
<b>Chapter 3.</b> Developing Initial Middle Range Theories in Realist Evaluation	<i>p.75</i>
<i>Introduction</i>	
<i>Materials and Methods</i>	
<i>Results</i>	
<i>Discussion</i>	
<i>Conclusion</i>	
<i>References</i>	
<b>Chapter 4.</b> Testing Initial Middle Range Theories in Realist Evaluation	<i>p.112</i>
<i>Introduction</i>	
<i>Methods</i>	
<i>Results</i>	
<i>Discussion</i>	
<i>Conclusion</i>	
<i>References</i>	

**Chapter 5. The Integrated Realist Evaluation Model for Organisational Interventions  
(The IREMOI)** *p.154*

*Introduction*

*Integrating the Contents of RE-AIM into the Five-phase Model*

*The Integrated Realist Evaluation Model for Organisational Interventions (IREMOI)*

*Discussion*

*Conclusion*

*References*

**Chapter 6. General Discussion** *p.192*

*Overview of the Thesis and Links between Chapters*

*Theoretical Contribution of the Thesis and Chapters*

*Reflections on CMO Configurations in Organisational Interventions*

*Practical Contribution of the Thesis*

*Future Research and Conclusion*

*References*

**Appendices** *p.234*

*Appendix A*

*Appendix B*

*Appendix C*

## **CHAPTER 1**

### **General Introduction**



## INTRODUCTION

Changes in working conditions have increased work-related stress (ILO, 2021).

Organisational interventions that aim to improve working conditions (Nielsen, 2013) are the key recommended approach for improving employees' health and wellbeing (EU-OSHA, 2016; ILO, 2001; UK Health and Safety Executive, 2007). Organisational interventions are complex (Nielsen and Miraglia, 2017) and have produced mixed outcomes (Fox *et al.*, 2021; Richardson and Rothstein, 2008). As such, both policy and research require using evaluation frameworks to improve our understanding of what organisational interventions work, for whom, and in which circumstances (Nielsen and Noblet, 2018). Realist evaluation is a promising evaluation approach that aims to answer the questions of 'what works for whom in which circumstances?' (Nielsen and Miraglia, 2017). Considering our limited knowledge on the application of realist evaluation in organisational interventions (Nielsen and Miraglia, 2017), this thesis focuses on the 'how to' apply realist evaluation in organisational intervention research and improves the understanding of 'what works for whom in which circumstances' in organisational interventions.

Working conditions are changing rapidly (Grant and Parker, 2009; Knight and Parker, 2021). Working conditions include task characteristics, social relationships, ergonomic aspects of work, and role clarification (Semmer, 2006). Changes in working conditions are the results of rapid advancement of technology, changes in workforce demographics, globalisation, new legal requirements, rapid transformation of the labour market, and other political and economic factors (Schulte *et al.*, 2019). More recently, the COVID-19 pandemic has disrupted the social-political-economic environment, employment and labour patterns, and organisations' policies and practices, and has changed working conditions (Peters *et al.*, 2022). With changes in working conditions, work-related psychosocial risks particularly

work-related stress have increased (ILO, 2021). Work-related psychosocial risks are the risks in workplaces that arise from poor work design, organisation, and management, as well as poor social and organisational context of work that have potential for psychological and physical harm (Leka *et al.*, 2003). Work-related stress is “the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope” (WHO, 2020). A recent global survey by the Regus Group (2018) revealed that six in ten employees in major economies felt that work-related stress increased over the last two years. In Europe, a recent survey in 15 European countries showed that work-related stress increased from 1995 to 2015 (Rigó *et al.*, 2021). Similarly, almost 80% of employees in the US felt stress in their workplaces, 37% of them stated that their level of stress increased over the past year (Batson, 2018).

The increase in work-related stress brings about negative outcomes. At the individual level, employees who experience work-related stress face problems in their mental health (e.g., anxiety, depression), behaviour (e.g., aggressive, isolation), thinking (e.g., lack of concentration), and physical health (e.g., cardiovascular disease, musculoskeletal problems) (Burman and Goswami, 2018; Michie, 2002). At the organisational level, the negative effects of work-related stress include costs associated with increased absenteeism, increased turnover, and reduced performance (EU-OSHA, 2014). At the society level, the negative outcomes of work-related stress include costs associated with increased expenses of national health care, social welfare, and health insurance, as well as reduced tax income and gross domestic product (EU-OSHA, 2014). For instance, in 2013, the cost to Europe of work-related stress was estimated to be €617 billion annually (EU-OSHA, 2014) and, in 2016, the cost to the US of work-related stress was about \$300 billion annually (Smith, 2016).

As a result of increasing work-related stress and its negative outcomes, effort has been put into understanding the relationship between work and employees' health and

wellbeing (Bonde, 2008; Danna and Griffin, 1999; Nijp *et al.*, 2012; Skakon *et al.*, 2010; Wilson *et al.*, 2004). Consequently, over the last two decades, researchers in the area of occupational health psychology have tried to examine the antecedents of employees' health and wellbeing: numerous theories and models have been developed, different psychosocial risks factors in different contexts have been identified, and mechanisms involved with work-related stress have been empirically examined (Nielsen, Taris, *et al.*, 2010). Following the exploration of the antecedents of employees' health and wellbeing, it has been argued that the priority should be given to the design, implementation, and evaluation of workplace interventions that use the findings to systematically and effectively improve employees' health and wellbeing (Nielsen, Taris, *et al.*, 2010). In recent years, there has been an increasing interest in workplace interventions that target the way work is designed, organised, and managed, referred to as organisational interventions (Nielsen, 2013; von Thiele Schwarz *et al.*, 2021).

Organisational interventions can be defined as “planned, behavioural, and theory-based actions that aim to improve employees' health and wellbeing by changing the way work is designed, organised, and managed” (Nielsen, 2013, p. 1030). Organisational interventions target adverse psychosocial working conditions to remove or modify the causes of work-related stress to improve employees' health and wellbeing (Nielsen and Randall, 2013). These interventions are the key recommended approach for improving psychosocial working conditions and employees' health and wellbeing (EU-OSHA, 2016; ILO, 2001; UK Health and Safety Executive, 2007). However, meta-analyses and reviews of organisational interventions have shown that these interventions produce mixed results (Bambra *et al.*, 2007; Daniels *et al.*, 2017; Egan *et al.*, 2007, 2009; Fox *et al.*, 2021; Lamontagne *et al.*, 2007; Richardson and Rothstein, 2008; Ruotsalainen *et al.*, 2006; Semmer, 2006; Taris *et al.*, 2003). Considering the mixed results of organisational interventions, to inform future

organisational interventions that are more likely to succeed in improving psychosocial working conditions and employees' health and wellbeing, it has been recommended to evaluate organisational interventions to understand what works for whom, why, how, and under which circumstances (Nielsen and Miraglia, 2017).

The demand for evaluating organisational interventions to understand what works for whom in which circumstances has arisen both from policy and from research. From a policy perspective, the evaluation of organisational interventions and resultant understanding of what works for whom in which circumstances help policymakers to develop policies based on scientific findings and to provide guidance and tools to the organisations to successfully improve psychosocial working conditions and employees' health and wellbeing (Nielsen and Noblet, 2018). According to the 89/391/EEC – OSH Framework Directive (EU-OSHA, 2008), organisations in the European Union have a legal obligation to ensure the safety and health of employees in every aspect related to work, this includes psychosocial aspects of work. In response to the Framework Directive, several European countries developed national policies and guidelines for how organisations should manage employees' health and wellbeing. These include the Management Standards in the UK, Work Positive in Ireland, the SOBANE methods in Belgium, the START method in Germany, and the INAIL approach to psychosocial risk management in Italy (Nielsen and Noblet, 2018). Outside of Europe, Canada has its national standard for psychological health and safety in the workplace (Mental Health Commission of Canada, 2013), Australia developed a set of recommendations about steps to create mentally healthy workplaces (Australian National Mental Health Commission, 2012), and in the US, the Centre for Disease Control and Prevention's National Institute for Occupational Safety and Health (CDC/NIOSH) introduced the Total Worker Health (TWH) programme which provides policies, programmes, and practices to advance employees' wellbeing (Tamers *et al.*, 2019). These policies, standards, and programmes, however, have

been validated scientifically to a limited extent, so there is uncertainty about whether they are fit for purpose (Nielsen and Noblet, 2018). Also, they provide little concrete guidance and offer tools to be used by the organisations to improve employees' health and wellbeing (Nielsen and Noblet, 2018).

From a research perspective, there is a need to apply theory-informed evaluation frameworks to understand what works for whom in which circumstances. Such understanding helps to inform future organisational interventions that are more likely to succeed in improving psychosocial working conditions and employees' health and wellbeing. It has been suggested that to understand what works for whom in which circumstances, the evaluation of organisational interventions should reflect the complexities of organisational interventions (Nielsen and Miraglia, 2017). Organisational interventions are complex. First, they work through various emerging process mechanisms (e.g., participatory action planning, implementation of action plans) and content mechanisms (e.g., the contents of action plans, for example action plans can focus on work intensity, job enrichment, or other working conditions) (Nielsen and Miraglia, 2017). Second, they are implemented in complex organisational contexts where various contextual factors may either facilitate or hinder intervention mechanisms resulting in different outcomes in different contexts (Nielsen and Randall, 2013). In recognition of the need for a new evaluation approach that reflects on the complexities of organisational interventions, several models and frameworks have been suggested (for example, Nielsen *et al.*, 2010; Nielsen and Abildgaard, 2013; Nielsen and Randall, 2013; von Thiele Schwarz *et al.*, 2021).

In a recent critical essay, Nielsen and Miraglia (2017) argued for a need to move beyond the Randomised Control Trial (RCT) question of 'what works' to ask 'what interventions work, for whom, and in which circumstances' based on realist evaluation (Pawson and Tilley,

1997). Realist evaluation seeks to answer the question of ‘what works from whom in which circumstances?’ by studying the underlying Mechanisms of an intervention (what makes the intervention work?), the Contexts under which the mechanisms operate (what are the conditions that influence the operation of these mechanisms?), and the patterns of Outcomes produced (what are the observed patterns of outcomes?) in CMO configurations (Contexts + Mechanisms = Outcomes) (Pawson and Tilley, 1997). CMO configurations are also known as realist programme theories and middle range theories (MRT). Realist evaluation involves an iterative cycle that has four steps of developing initial CMO configurations, collecting empirical data, analysing and synthesising empirical data, and testing initial CMO configurations (Pawson and Tilley, 1997, 2004). The current literature, however, shows that a few organisational intervention studies have employed realist evaluation (for example, Abildgaard *et al.*, 2020; Busch *et al.*, 2017; Nielsen *et al.*, 2014; von Thiele Schwarz *et al.*, 2017). As such, we only know a little about how to apply realist evaluation in the evaluation of organisational interventions, and consequently have limited knowledge of the causal links between mechanisms of organisational interventions, the contextual factors that influence the operation of such mechanisms, and the outcomes the mechanisms produce (Nielsen and Miraglia, 2017; Nielsen and Noblet, 2018).

In summary, to reduce work-related psychosocial risks particularly work-related stress, both policy and research require conducting organisational interventions and using evaluation frameworks that improve our understanding of what organisational interventions work, for whom, and in which circumstances. Realist evaluation is a promising evaluation approach as it helps to open the black box of what interventions work, for whom, and in which circumstances through developing and testing CMO configurations. However, we have limited knowledge about how to apply realist evaluation in the evaluation of organisational interventions and what works from whom in which circumstances.

## AIMS OF THE THESIS

This thesis tries to advance the knowledge of how to design, implement, and evaluate organisational interventions. To achieve this, this thesis seeks to improve the understanding of ‘how to’ apply realist evaluation in organisational interventions, and to explore ‘what *worked/might work/works* for whom in which circumstances’ in organisational interventions.

The exploration of ‘what *worked/might work/works* for whom in which circumstances’ follows a realist evaluation cycle (Pawson and Tilley, 2004). Chapter 2 develops six CMO configurations based on evidence from previous organisational intervention studies, as such, this chapter explores ‘what *worked* for whom in which circumstances’. Chapter 3 develops four initial CMO configurations based on empirical evidence from a participatory organisational intervention in the US food service industry, hence, it explores ‘what *might work* for whom in which circumstances’. Chapter 4 tests one of these CMO configurations based on empirical evidence from the participatory organisational intervention in the US food service industry, therefore, it explores ‘what *works* for whom in which circumstances’. Based on the lessons learned from using realist evaluation in the participatory organisational intervention in the US food service industry (chapters 3 and 4), and by utilising the contexts, mechanisms, and outcomes identified in chapter 2, chapter 5 proposes a model for evaluating future organisational interventions. This chapter, first, integrates the contents of the RE-AIM framework (containing dimensions of Reach, Effectiveness, Adoption, Implementation, and Maintenance, Glasgow *et al.*, 1999) into the five-phase model (containing five phases of preparation, screening, action planning, implementation, and evaluation, Nielsen and Abildgaard, 2013) to include crucial intervention mechanisms (components). Then, it uses chapters 3 and 4 to explain how to follow a realist evaluation cycle in an organisational intervention, and uses chapter 2 to develop examples of CMO configurations for the included intervention mechanisms. Chapter

5 develops a number of CMO configurations based on evidence from previous organisational intervention studies, as such, it explores ‘what *worked* for whom in which circumstances’.

This thesis has four specific aims, each aim is achieved in a chapter. The first aim of this thesis is to show how realist evaluation can be used to synthesise empirical evidence in the organisational intervention research, and to explore ‘what *worked* for whom in which circumstances’ in previous organisational interventions (chapter 2). The second aim is to show how realist evaluation can be used in the planning phase of organisational interventions, and to determine ‘what *might work* for whom in which circumstances’ in a participatory organisational intervention in the US food service industry (chapter 3). The third aim is to describe how realist evaluation can be used in the implementation and evaluation phases of organisational interventions, and to identify ‘what *works* for whom in which circumstances’ in the participatory organisational intervention in the US food service industry (chapter 4). The fourth aim is to propose an evaluation model based on realist evaluation that provides guidance on when, why, and how to develop and test CMO configurations for a comprehensive list of crucial intervention mechanisms, and to identify ‘what *worked* for whom in which circumstances’ in relation to these mechanisms in previous organisational interventions (chapter 5). Chapters 2, 3, and 4 are used in developing the model in chapter 5: chapters 3 and 4 are used in developing the model (by providing insights on how to follow a realist evaluation cycle) and chapter 2 is used to support the model (by providing evidence from previous organisational intervention studies to develop examples of CMO configurations).

Overall, this thesis seeks to improve the understanding of ‘how to’ apply realist evaluation in organisational interventions, and the understating of ‘what *worked/might work/works* for whom in which circumstances’ in organisational interventions. These understandings help design, implement, and evaluate future organisational interventions and



increase their likelihood of success in improving psychosocial working conditions and employees' health and wellbeing (Nielsen and Miraglia, 2017).

In the next section, the importance and contribution of this research in this thesis are explained (per chapter), highlighting the research questions that stimulated each study.

## **SCIENTIFIC IMPORTANCE AND CONTRIBUTION**

### **Synthesising Existing Evidence from the Empirical Studies of Organisational**

#### **Interventions**

The organisational intervention literature shows that empirical evidence demonstrating the effectiveness of organisational interventions is inconsistent (Bambra *et al.*, 2007; Egan *et al.*, 2007; Montano *et al.*, 2014; Murta *et al.*, 2007; Nielsen, Randall, *et al.*, 2010; Nielsen and Abildgaard, 2013; Semmer, 2006). The lack of consistency in empirical evidence of organisational interventions may be due to the heterogeneity of their designs, implementation strategies, contexts, and outcomes. Regarding designs, organisational interventions have used different risk assessments to identify and address the problems in the organisations, various approaches to develop action plans, and numerous methods to monitor the actual implementation of intervention activities (Nielsen, Randall, *et al.*, 2010; Nielsen and Noblet, 2018; Semmer, 2006). Concerning implementation strategies, organisational interventions with many stakeholders have used various drivers of change including employees, senior managers, middle managers, and consultants whose mental models of working conditions and interventions have been different (Nielsen, Randall, *et al.*, 2010; Nielsen and Abildgaard, 2013; Nielsen and Noblet, 2018). Regarding contexts, since organisational interventions operate within changing complex social systems, wide-ranging multi-level contextual factors have facilitated or impaired intervention activities resulting in different outcomes in different contexts (Bambra *et al.*, 2007; Nielsen and Abildgaard, 2013). Finally, concerning outcomes, some organisational interventions have resulted in improvements in working conditions and

employees' health and wellbeing, others have resulted in no effect, and a few even resulted in a deterioration in working conditions and employees' health and wellbeing (Bambra *et al.*, 2007; Montano *et al.*, 2014; Semmer, 2006). To reflect on the heterogeneity of results in the organisational interventions literature, it has been suggested that reviews should synthesise which specific elements of the intervention worked, how, why, and under which circumstances (Nielsen and Miraglia, 2017).

In organisational intervention research, systematic reviews and meta-analyses are the dominant methods of reviewing the findings of the field (Bhui *et al.*, 2012). These methods, however, do not disentangle the complexities of organisational interventions as they do not examine intervention mechanisms, contexts, and outcomes (Nielsen and Miraglia, 2017). In contrast, realist synthesis, which is based on realist evaluation, is suitable for dealing with the heterogeneity of results in the organisational interventions literature as it allows reflection on the intervention mechanisms, contexts, and outcomes that underlie this variation (Pawson *et al.*, 2005). Realist synthesis is a theory-driven, evidence-based, qualitative method of literature review (Pawson *et al.*, 2005). Realist synthesis seeks to understand 'what *worked* for whom in which circumstances?' by identifying the underlying Mechanisms associated with the implemented organisational interventions in the literature, the Contexts under which the mechanisms operated, the patterns of Outcomes produced, and synthesising these into CMO configurations (realist programme theories) (Nielsen and Miraglia, 2017; Pawson *et al.*, 2005).

Chapter 2 conducts a realist synthesis to identify and synthesise empirical evidence from the organisational intervention literature into CMO configurations. To achieve this aim, the objectives of the realist synthesis are to: identify empirical studies of organisational interventions; explore the research aims and methodologies of these studies; extract themes

of contexts, mechanisms, and outcomes; and, develop CMO configurations. Given the aim and objectives, the research question of the realist synthesis in chapter 2 is:

***Research Question 1: Which CMO configurations can be developed based on the empirical evidence from the organisational intervention literature?***

Based on the empirical evidence from the organisational intervention literature, chapter 2 develops six CMO configurations based on the process mechanisms of implementation adherence, communication, employees' participation, senior management support, middle management support, and external consultants/researchers support. To the best of our knowledge, this realist synthesis is the first study to synthesise empirical evidence from the organisational intervention literature into CMO configurations. These CMO configurations will be highly beneficial for researchers, practitioners, and policymakers for designing, implementing, and evaluating future organisational interventions as they facilitate the understanding of what works for which group of employees, why, how, and under which circumstances. In addition, these CMO configurations help to make sense of the inconsistency of the evidence demonstrating the effectiveness of organisational interventions.

Regarding the link between chapter 2 and the next chapters, chapter 2 identifies and disentangles the most recent organisational intervention studies into mechanisms, contexts, and outcomes and then synthesises them into CMO configurations. As such, chapter 2 provides the latest evidence in the organisational intervention literature. Chapter 3 uses the mechanisms, contexts, and outcomes identified in chapter 2 as its initial template and develops initial CMO configurations based on empirical evidence from a participatory organisational intervention in the US food service industry. Chapter 4 tests one of these initial CMO configurations based on empirical evidence from the participatory organisational intervention in the US food service industry. Chapter 3 and 4, together, show how the four

steps of a realist evaluation cycle are taken in the participatory organisational intervention in the US food service industry. Based on the lessons learned from using realist evaluation in the participatory organisational intervention in the US food service industry (chapters 3 and 4), and by utilising the contexts, mechanisms, and outcomes identified in chapter 2, chapter 5 proposes a model for evaluating future organisational interventions. The proposed model is based on realist evaluation; it explains how to follow a realist evaluation cycle, provides guidance on when, why, and how to develop and test CMO configurations for a comprehensive list of crucial intervention mechanisms, and develops examples of CMO configurations for these intervention mechanisms based on evidence from the literature.

### **Developing Initial Middle Range Theories in Realist Evaluation: A Case of an Organisational Intervention**

Realist evaluation involves an iterative cycle that starts with developing initial CMO configurations (Pawson and Tilley, 1997, 2004). Realist evaluation considers an intervention as a collective of CMO configurations, as such, developing initial CMO configurations helps planning and implementing the intervention (Pawson and Tilley, 1997, 2004). Despite the emerging application of realist evaluation in organisational intervention studies (Abildgaard *et al.*, 2020; Busch *et al.*, 2017; Nielsen *et al.*, 2014; von Thiele Schwarz *et al.*, 2017), to the best of our knowledge, no organisational intervention study has developed initial CMO configurations. Chapter 3 performs the first step of the realist evaluation cycle: the development of initial CMO configurations (Pawson and Tilley, 2004). There are few practical examples of how to develop initial CMO configurations (Alvarado *et al.*, 2017; Fick and Muhajarine, 2019; Jack and Linsley, 2021; Linsley *et al.*, 2015; Mukumbang *et al.*, 2018; Shearn *et al.*, 2017), and none of them are in the field of organisational intervention. As such, we know a little about how to develop initial CMO configurations as the first step of realist

evaluation in organisational interventions. Therefore, to provide insights into how initial CMO configurations can be developed, chapter 3 answers the following research question:

***Research Question 2: How can initial CMO configurations be developed in an organisational intervention?***

To develop initial CMO configurations, realist evaluation requires the identification of the most relevant mechanisms in each intervention study (Pawson and Tilley, 1997, 2004). This chapter develops four initial CMO configurations based on four process mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context. These mechanisms are selected as they have been considered as critical mechanisms that influence the success or failure of organisational interventions (Nielsen and Noblet, 2018; Peters *et al.*, 2020; Schelvis *et al.*, 2016).

To develop initial CMO configurations, realist evaluation also requires the exploration of contextual factors that can influence triggering the mechanisms in a specific work setting (Pawson and Tilley, 1997, 2004). Chapter 3 develops initial CMO configurations based on empirical data from a participatory organisational intervention in a large multi-national organisation in the US food service industry that aimed to improve working conditions and safety, health, and wellbeing of low-wage food service workers (Sorensen *et al.*, 2019). Food service workers face psychosocial demands from high workload, limited rest breaks from producing meals, uncertainty around working hours, job insecurity, and low job decision latitude that result in work-related stress (Alamgir *et al.*, 2007; Cocci *et al.*, 2005; Matsuzuki *et al.*, 2013). Considering their potential impacts, organisational interventions that target adverse working conditions to improve employees' health and wellbeing, are of particular importance for low-wage food service workers (Baron *et al.*, 2014; Steege *et al.*, 2014). The literature, however, shows that few organisational interventions have been offered to low-

wage food service workers and evaluated (Busch *et al.*, 2017; Haukka *et al.*, 2008, 2010; Siukola *et al.*, 2011).

Using qualitative data from the planning phase of the participatory intervention in the US food service industry, chapter 3 explores how the four process mechanisms may be operated in the intervention, what contextual factors in the food service industry may influence the operation of such mechanisms, and what outcomes these mechanisms may produce. Based on such findings, chapter 3 develops four initial CMO configurations. The initial CMO configurations are important as they improve the understanding of what *might work* for whom under which circumstances (Nielsen and Miraglia, 2017). Hence, the second research question in chapter 3 is:

***Research Question 3: Which initial CMO configurations can be developed in an organisational intervention?***

Regarding the links between chapter 3 and the next study, chapter 3 develops four initial CMO configurations, and chapter 4 empirically tests one of these initial CMO configurations, participation.

### **Testing Middle Range Theories in Realist Evaluation: A Case of an Organisational Intervention**

Based on realist evaluation, after developing initial CMO configurations representing ‘what *might work* for whom in which circumstances?’, the empirical evidence should be collected and analysed to develop the empirical CMO configurations representing ‘what *worked* for whom in which circumstances?’, then initial CMO configurations should be tested against empirical CMO configurations to understand ‘what *works* for whom in which circumstances?’ (Pawson and Tilley, 2004). Chapter 4 collects, analyses, and synthesises empirical evidence from the participatory organisational intervention in the US food service

industry to develop an empirical CMO configuration about participation to test the initial CMO configuration about participation (developed in chapter 3). Chapter 4 explores how the mechanism of participation was operationalised in the participatory organisational intervention, what contextual factors facilitated or impaired the operation of this mechanism, and what proximal outcomes this mechanism contributed to produce.

Chapter 4 focuses on the critical mechanism of participation. Participation is the central mechanism of participatory organisational interventions that can shape outcomes in two ways: (1) by making use of middle managers' and employees' expertise and engaging them in decision-making about what changes in working conditions can be made (i.e., content mechanisms) and (2) by making use of middle managers' and employees' expertise and engaging them in decision-making about how the changes in working conditions can be developed and implemented (i.e., process mechanisms)(Nielsen, 2013; Tafvelin *et al.*, 2019). Participation of middle managers and employees in determining content and process mechanisms: (1) allows targeting working condition problems at source (Busch *et al.*, 2017), targeting the right problem in the workplace (Schelvis *et al.*, 2016), and targeting changes in the working conditions at multiple organisational levels (Gupta *et al.*, 2018), (2) allows tailoring the intervention to fit with the organisational contexts and the individuals within the organisation (Abildgaard *et al.*, 2020), and (3) triggers co-learning processes which empower middle managers and employees to solve the working condition problems (Nielsen and Randall, 2012). Consequently, participation improves employees' feeling of ownership for the intervention, psychosocial risk management, perceived autonomy, perceived social support, and health and wellbeing (Abildgaard *et al.*, 2020; Busch *et al.*, 2017; Nielsen and Randall, 2012; Tafvelin *et al.*, 2019; von Thiele Schwarz *et al.*, 2017). Although the literature highlights the importance of participation for intervention outcomes, still little is known

about how participation interacts with prevalent contextual factors to produce intervention outcomes (Nielsen, 2013). Considering these, the research question in chapter 4 is:

***Research Question 4: What works for whom in which circumstances regarding participation in an organisational intervention?***

Chapter 4 uses qualitative data to empirically test the initial CMO configuration about participation for two reasons. First, although using quantitative data is advantageous in causally linking participation measures to contextual factors and intervention outcomes, qualitative data may better capture the complex nature of and interactions between mechanisms and contextual factors that result in outcomes (Pawson, 2013). Second, the targeted organisation provides food services to its corporate clients through its small-sized worksites (with employees ranging from 5-22). In quantitative studies with small sample size, the results may not have sufficient statistical power to detect a significant difference or effect (Cohen, 1988). As such, to provide insights into how qualitative data can be used to test initial CMO configurations, chapter 4 answers the following research question:

***Research Question 5: How can initial CMO configurations be tested in an organisational intervention using qualitative data?***

### **An Integrated Realist Evaluation Model for Organisational Interventions (IREMOI)**

Some reviews and meta-analyses of organisational interventions have concluded that the effectiveness of organisational interventions is inconsistent (Fox *et al.*, 2021; Richardson and Rothstein, 2008). For instance, Fox *et al.* (2021) found that among 83 intervention studies, 39 studies (47.0%) reported improved wellbeing, 23 studies (27.7%) reported a mix of null and positive results, 15 studies (18.1%) reported solely null results, one study (1.2%) reported a mix of null and negative results, and five studies (6%) reported negative impacts on employees' wellbeing. Other reviews have concluded that there is evidence of the



effectiveness of organisational interventions, but few studies have examined why and how organisational interventions have succeeded or failed (Egan *et al.*, 2009; Murta *et al.*, 2007; Semmer, 2006). A reason for insufficient examination of why and how organisational interventions succeeded or failed and consequently inconsistency of empirical evidence of organisational interventions may be that researchers and occupational practitioners are uncertain about what intervention mechanisms should be evaluated and why, and what theoretical frameworks they should be drawn from (Nielsen, 2013; Nielsen and Randall, 2013). As such, to improve existing organisational interventions and inform future interventions, there is a need for models that examine what works for whom, why, how, and under which circumstances (Nielsen and Miraglia, 2017).

Inspired by the CMO configuration of realist evaluation, Nielsen and Abildgaard (2013) proposed a five-phase model with five phases of preparation, screening, action planning, implementation, and evaluation. This model, however, has two limitations. First, it does not include all of the crucial intervention mechanisms that should be evaluated in each intervention phase (e.g., the recruitment process of organisational units in the preparation phase). To include the missed intervention mechanisms in the evaluation, the contents of the RE-AIM framework (Glasgow *et al.*, 1999) can be integrated into the five-phase model. Including more intervention mechanisms in the five-phase model and evaluating how and why such mechanisms affected the intervention outcomes improve the understanding of what works for whom in which circumstances (Nielsen, Randall, *et al.*, 2010; Nielsen and Miraglia, 2017). Second, the five-phase model does not follow the full realist evaluation cycle, including developing initial CMO configurations, collecting empirical data, analysing and synthesising empirical data, and testing initial CMO configurations (Pawson and Tilley, 1997, 2004). Following the four steps of the realist evaluation cycle helps accumulate valid,

consistent empirical evidence (Pawson and Tilley, 2004) that can inform future organisational interventions.

Chapter 5 integrates the contents of the RE-AIM framework into the five-phase model to include more crucial intervention mechanisms in the evaluation and then explains how to follow a realist evaluation cycle by providing guidance on when, why, and how to develop and test CMO configurations for intervention mechanisms. Therefore, the first research question in chapter 5 is:

***Research Question 6:*** *How can organisational interventions be evaluated based on realist evaluation?*

Chapter 5, based on the empirical evidence identified through the realist synthesis (chapter 2) develops examples of CMO configurations for the intervention mechanisms. Hence, the second research question in chapter 5 is:

***Research Question 7:*** *What works for whom in which circumstances regarding organisational interventions?*

Through answering Research Questions 6 and 7, chapter 5 develops an Integrated Realist Evaluation Model for Organisational Interventions (IREMOI).

Regarding the link between chapter 5 and previous chapters, chapters 2, 3, and 4 are used in developing the IREMOI in chapter 5. Chapters 3 and 4 show how to take the four steps of a realist evaluation cycle in a participatory organisational intervention: chapter 3 provides insights on how to take the first step of a realist evaluation cycle, that is developing initial CMO configurations, and chapter 4 shows how to take further steps of the realist evaluation cycle, that are collecting, analysing, and synthesising empirical data to test the initial CMO configurations. As such, chapters 3 and 4 are used to propose how to follow a realist evaluation cycle in the IREMOI. Besides, chapter 2 provides evidence on contexts,

mechanisms, and outcomes of previous organisational intervention studies, these evidences are used in developing examples of CMO configurations in the IREMOI. While the proposal of the IREMOI is to address the limitations of the five-phase model, previous chapters are used to inform the model. Chapters 3 and 4 are used in developing the IREMOI (by providing insights on how to follow a realist evaluation cycle) and chapter 2 is used to support the IREMOI (by providing evidence from previous organisational intervention studies to develop examples of CMO configurations). Following the IREMOI model helps to consider crucial intervention mechanisms upfront, develop initial CMO configurations, design and implement the intervention based on the initial CMO configurations, collect empirical data, analyse and synthesise empirical data, and test and refine the initial CMO configurations. Following this process will enhance the quality of evaluation, which will ultimately help design and implement organisational interventions that are more likely to be effective.

## REFERENCES

- Abildgaard, J.S., Nielsen, K., Wåhlin-Jacobsen, C.D., Maltesen, T., Christensen, K.B. and Holtermann, A. (2020), “‘Same, but different’: A mixed-methods realist evaluation of a cluster-randomized controlled participatory organizational intervention”, *Human Relations*, Vol. 73 No. 10, pp. 1339–1365.
- Alamgir, H., Swinkels, H., Yu, S. and Yassi, A. (2007), “Occupational injury among cooks and food service workers in the healthcare sector”, *American Journal of Industrial Medicine*, Vol. 50 No. 7, pp. 528–535.
- Alvarado, N., Honey, S., Greenhalgh, J., Pearman, A., Dowding, D., Cope, A., Long, A., *et al.* (2017), “Eliciting Context-Mechanism-Outcome configurations: Experiences from a realist evaluation investigating the impact of robotic surgery on teamwork in the operating theatre”, *Evaluation*, Vol. 23 No. 4, pp. 444–462.
- Australian National Mental Health Commission. (2012), “Mentally Healthy Workplace Alliance”, available at: <https://www.mentalhealthcommission.gov.au/mental-health-reform/mentally-healthy-workplace-alliance> (accessed 10 January 2022).
- Bambra, C., Egan, M., Thomas, S., Petticrew, M. and Whitehead, M. (2007), “The psychosocial and health effects of workplace reorganisation. 2. A systematic review of task restructuring interventions”, *Journal of Epidemiology & Community Health*, Vol. 61 No. 12, pp. 1028–1037.
- Baron, S.L., Beard, S., Davis, L.K., Delp, L., Forst, L., Kidd-Taylor, A., Liebman, A.K., *et al.* (2014), “Promoting integrated approaches to reducing health inequities among low-income workers: Applying a social ecological framework”, *American Journal of Industrial Medicine*, Vol. 57 No. 5, pp. 539–556.
- Batson, J. (2018), “Workplace Stress”, *The American Institute of Stress*, available at: <https://www.stress.org/workplace-stress/> (accessed 5 November 2018).
- Bhui, K.S., Dinos, S., Stansfeld, S.A. and White, P.D. (2012), “A Synthesis of the Evidence for Managing Stress at Work: A Review of the Reviews Reporting on Anxiety, Depression, and Absenteeism”, *Journal of Environmental and Public Health*, pp. 515–874.

- Bonde, J.P.E. (2008), “Psychosocial factors at work and risk of depression: a systematic review of the epidemiological evidence”, *Occupational and Environmental Medicine*, Vol. 65 No. 7, pp. 438–445.
- Burman, R. and Goswami, T.G. (2018), “A Systematic Literature Review of Work Stress”, *International Journal of Management Studies*, Vol. 3 No. 9, p. 112.
- Busch, C., Koch, T., Clasen, J., Winkler, E. and Vowinkel, J. (2017), “Evaluation of an organizational health intervention for low-skilled workers and immigrants”, *Human Relations*, Vol. 70 No. 8, pp. 994–1016.
- Cocci, S., Namasivayam, K. and Bordi, P. (2005), “An investigation of ergonomic design and productivity improvements in foodservice production tables”, *Foodservice Research International*, Vol. 16 No. 3–4, pp. 53–59.
- Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., Routledge, New York.
- Daniels, K., Gedikli, C., Watson, D., Semkina, A. and Vaughn, O. (2017), “Job design, employment practices and well-being: a systematic review of intervention studies”, *Ergonomics*, Vol. 60 No. 9, pp. 1177–1196.
- Danna, K. and Griffin, R.W. (1999), “Health and Well-Being in the Workplace: A Review and Synthesis of the Literature”, *Journal of Management*, Vol. 25 No. 3, pp. 357–384.
- Egan, M., Bambra, C., Petticrew, M. and Whitehead, M. (2009), “Reviewing evidence on complex social interventions: appraising implementation in systematic reviews of the health effects of organisational-level workplace interventions”, *Journal of Epidemiology & Community Health*, Vol. 63 No. 1, pp. 4–11.
- Egan, M., Bambra, C., Thomas, S., Petticrew, M., Whitehead, M. and Thomson, H. (2007), “The psychosocial and health effects of workplace reorganisation. 1. A systematic review of organisational-level interventions that aim to increase employee control”, *Journal of Epidemiology & Community Health*, Vol. 61 No. 11, pp. 945–954.
- EU-OSHA. (2008), “89/391/EEC – OSH Framework Directive”, *EUR-Lex*, available at: <http://data.europa.eu/eli/dir/1989/391/2008-12-11> (accessed 17 September 2020).
- EU-OSHA. (2014), “Calculating the Cost of Work-Related Stress and Psychosocial Risks:

- European Risk Observatory: Literature Review”, *Office for Official Publication of the European Communities*, available at: <https://osha.europa.eu/en/publications/calculating-cost-work-related-stress-and-psychosocial-risks/view> (accessed 8 November 2021).
- EU-OSHA. (2016), “Second European Survey of Enterprises on New and Emerging Risks (ESENER-2). Overview Report: Managing Safety and Health at Work”, *Publications Office of the European Union*, available at: <https://op.europa.eu/s/n7Wt> (accessed 10 June 2020).
- Fick, F. and Muhajarine, N. (2019), “First steps: creating an initial program theory for a realist evaluation of Healthy Start-Départ Santé intervention in childcare centres”, *International Journal of Social Research Methodology*, Vol. 22 No. 6, pp. 545–556.
- Fox, K.E., Johnson, S.T., Berkman, L.F., Sianoja, M., Soh, Y., Kubzansky, L.D. and Kelly, E.L. (2021), “Organisational- and group-level workplace interventions and their effect on multiple domains of worker well-being: A systematic review”, *Work & Stress*, pp. 1–30.
- Glasgow, R.E., Vogt, T.M. and Boles, S.M. (1999), “Evaluating the public health impact of health promotion interventions: the RE-AIM framework.”, *American Journal of Public Health*, Vol. 89 No. 9, pp. 1322–1327.
- Grant, A.M. and Parker, S.K. (2009), “7 Redesigning Work Design Theories: The Rise of Relational and Proactive Perspectives”, *The Academy of Management Annals*, Vol. 3 No. 1, pp. 317–375.
- Gupta, N., Wåhlin-Jacobsen, C.D., Abildgaard, J.S., Henriksen, L.N., Nielsen, K. and Holtermann, A. (2018), “Effectiveness of a participatory physical and psychosocial intervention to balance the demands and resources of industrial workers: A cluster-randomized controlled trial”, *Scandinavian Journal of Work, Environment & Health*, Vol. 44 No. 1, pp. 58–68.
- Haukka, E., Leino-Arjas, P., Viikari-Juntura, E., Takala, E.-P., Malmivaara, A., Hopsu, L., Mutanen, P., *et al.* (2008), “A randomised controlled trial on whether a participatory ergonomics intervention could prevent musculoskeletal disorders”, *Occupational and Environmental Medicine*, Vol. 65 No. 12, pp. 849–856.
- Haukka, E., Pehkonen, I., Leino-Arjas, P., Viikari-Juntura, E., Takala, E.-P., Malmivaara, A.,

- Hopsu, L., *et al.* (2010), “Effect of a participatory ergonomics intervention on psychosocial factors at work in a randomised controlled trial”, *Occupational and Environmental Medicine*, Vol. 67 No. 3, pp. 170–177.
- ILO. (2001), *Guidelines on Occupational Safety and Health Management Systems, ILO-OSH*, International Labor Office, Geneva.
- ILO. (2021), “Psychosocial risks and work-related stress”, available at: [https://www.ilo.org/global/topics/safety-and-health-at-work/areasofwork/workplace-health-promotion-and-well-being/WCMS\\_108557/lang--en/index.htm](https://www.ilo.org/global/topics/safety-and-health-at-work/areasofwork/workplace-health-promotion-and-well-being/WCMS_108557/lang--en/index.htm) (accessed 15 November 2021).
- Jack, K. and Linsley, P. (2021), “Constructing a middle-range theory to explain the uptake of hepatitis C tests in prison”, *Nurse Researcher*, Vol. 29 No. 2, pp. 33–40.
- Knight, C. and Parker, S.K. (2021), “How work redesign interventions affect performance: An evidence-based model from a systematic review”, *Human Relations*, Vol. 74 No. 1, pp. 69–104.
- Lamontagne, A.D., Keegel, T., Louie, A.M., Ostry, A. and Landsbergis, P.A. (2007), “A Systematic Review of the Job-stress Intervention Evaluation Literature, 1990–2005”, *International Journal of Occupational and Environmental Health*, Vol. 13 No. 3, pp. 268–280.
- Leka, S., Griffiths, A. and Cox, T. (2003), *Work Organisation and Stress: Systematic Problem Approaches for Employers, Managers and Trade Union Representatives, Protecting Workers Health Series*, Geneva.
- Linsley, P., Howard, D. and Owen, S. (2015), “The construction of context-mechanisms-outcomes in realistic evaluation.”, *Nurse Researcher*, RCNi, Principal lecturer in nursing, Department of health and social sciences, University of Lincoln, UK, Vol. 22 No. 3, pp. 28–34.
- Matsuzuki, H., Haruyama, Y., Muto, T., Aikawa, K., Ito, A. and Katamoto, S. (2013), “Workers’ load and job-related stress after a reform and work system change in a hospital kitchen in Japan”, *Environmental Health and Preventive Medicine*, Vol. 18 No. 2, pp. 171–176.
- Mental Health Commission of Canada. (2013), “CAN/CSA-Z1003-13/BNQ 9700-803/2013

– Psychological Health and Safety in the Workplace”, available at:  
<https://mentalhealthcommission.ca/national-standard/> (accessed 7 January 2022).

- Michie, S. (2002), “Causes and management of stress at work”, *Occupational and Environmental Medicine*, Vol. 59 No. 1, pp. 67–72.
- Montano, D., Hoven, H. and Siegrist, J. (2014), “Effects of organisational-level interventions at work on employees’ health: a systematic review”, *BMC Public Health*, BioMed Central, Vol. 14 No. 1, p. 135.
- Mukumbang, F.C., Marchal, B., Van Belle, S. and van Wyk, B. (2018), “A realist approach to eliciting the initial programme theory of the antiretroviral treatment adherence club intervention in the Western Cape Province, South Africa”, *BMC Medical Research Methodology*, Vol. 18 No. 1, p. 47.
- Murta, S.G., Sanderson, K. and Oldenburg, B. (2007), “Process Evaluation in Occupational Stress Management Programs: A Systematic Review”, *American Journal of Health Promotion*, Vol. 21 No. 4, pp. 248–254.
- Nielsen, K. (2013), “Review Article: How can we make organizational interventions work? Employees and line managers as actively crafting interventions”, *Human Relations*, Vol. 66 No. 8, pp. 1029–1050.
- Nielsen, K. and Abildgaard, J.S. (2013), “Organizational interventions: A research-based framework for the evaluation of both process and effects”, *Work & Stress*, Vol. 27 No. 3, pp. 278–297.
- Nielsen, K., Abildgaard, J.S. and Daniels, K. (2014), “Putting context into organizational intervention design: Using tailored questionnaires to measure initiatives for worker well-being”, *Human Relations*, Vol. 67 No. 12, pp. 1537–1560.
- Nielsen, K. and 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*, Vol. 70 No. 1, pp. 40–62.
- Nielsen, K. and Noblet, A. (2018), “Organizational interventions: Where are we, where do we go from here?”, in Nielsen, K. and Noblet, A. (Eds.), *Organizational Interventions for Health and Well-Being: A Handbook for Evidence-Based Practice*, Routledge, Oxon, pp. 1–23.



- Nielsen, K. and Randall, R. (2012), “The importance of employee participation and perceptions of changes in procedures in a teamworking intervention”, *Work & Stress*, Vol. 26 No. 2, pp. 91–111.
- Nielsen, K. and Randall, R. (2013), “Opening the black box: Presenting a model for evaluating organizational-level interventions”, *European Journal of Work and Organizational Psychology*, Vol. 22 No. 5, pp. 601–617.
- Nielsen, K., Randall, R., Holten, A.-L. and González, E.R. (2010), “Conducting organizational-level occupational health interventions: What works?”, *Work & Stress*, Vol. 24 No. 3, pp. 234–259.
- Nielsen, K., Taris, T.W. and Cox, T. (2010), “The future of organizational interventions: Addressing the challenges of today’s organizations”, *Work & Stress*, Vol. 24 No. 3, pp. 219–233.
- Nijp, H.H., Beckers, D.G.J., Geurts, S.A.E., Tucker, P. and Kompier, M.A.J. (2012), “Systematic review on the association between employee worktime control and work–non-work balance, health and well-being, and job-related outcomes”, *Scandinavian Journal of Work, Environment & Health*, Vol. 38 No. 4, pp. 299–313.
- Pawson, R. (2013), *The Science of Evaluation: A Realist Manifesto*, 1st ed., SAGE, London.
- Pawson, R., Greenhalgh, T., Harvey, G. and Walshe, K. (2005), “Realist review - a new method of systematic review designed for complex policy interventions”, *Journal of Health Services Research & Policy*, Vol. 10 No. 1\_suppl, pp. 21–34.
- Pawson, R. and Tilley, N. (1997), *Realistic Evaluation*, 1st ed., Sage Publications Ltd, London.
- Pawson, R. and Tilley, N. (2004), *Realist Evaluation*, available at: [http://www.communitymatters.com.au/RE\\_chapter.pdf](http://www.communitymatters.com.au/RE_chapter.pdf) (accessed 10 January 2019).
- Peters, S.E., Dennerlein, J.T., Wagner, G.R. and Sorensen, G. (2022), “Work and worker health in the post-pandemic world: a public health perspective”, *The Lancet Public Health*, Vol. 7 No. 2, pp. e188–e194.
- Peters, S.E., Nielsen, K.M., Nagler, E.M., Revette, A.C., Madden, J. and Sorensen, G. (2020), “Ensuring Organization-Intervention Fit for a Participatory Organizational

- Intervention to Improve Food Service Workers' Health and Wellbeing", *Journal of Occupational & Environmental Medicine*, Vol. 62 No. 2, pp. e33–e45.
- Richardson, K.M. and Rothstein, H.R. (2008), "Effects of occupational stress management intervention programs: A meta-analysis.", *Journal of Occupational Health Psychology*, Vol. 13 No. 1, pp. 69–93.
- Rigó, M., Dragano, N., Wahrendorf, M., Siegrist, J. and Lunau, T. (2021), "Work stress on rise? Comparative analysis of trends in work stressors using the European working conditions survey", *International Archives of Occupational and Environmental Health*, Vol. 94 No. 3, pp. 459–474.
- Ruotsalainen, J.H., Verbeek, J.H., Salmi, J.A., Jauhiainen, M., Laamanen, I., Pasternack, I. and Husman, K. (2006), "Evidence on the effectiveness of occupational health interventions", *American Journal of Industrial Medicine*, Vol. 49 No. 10, pp. 865–872.
- Schelvis, R.M.C., Wiezer, N.M., Blatter, B.M., van Genabeek, J.A.G.M., Oude Hengel, K.M., Bohlmeijer, E.T. and van der Beek, A.J. (2016), "Evaluating the implementation process of a participatory organizational level occupational health intervention in schools", *BMC Public Health*, Vol. 16 No. 1, p. 1212.
- Schulte, P.A., Delclos, G., Felknor, S.A. and Chosewood, L.C. (2019), "Toward an Expanded Focus for Occupational Safety and Health: A Commentary", *International Journal of Environmental Research and Public Health*, Vol. 16 No. 24, p. 4946.
- Semmer, N.K. (2006), "Job stress interventions and the organization of work", *Scandinavian Journal of Work, Environment & Health*, Vol. 32 No. 6, pp. 515–527.
- Shearn, K., Allmark, P., Piercy, H. and Hirst, J. (2017), "Building Realist Program Theory for Large Complex and Messy Interventions", *International Journal of Qualitative Methods*, Vol. 16 No. 1, pp. 1–11.
- Siukola, A., Virtanen, P., Huhtala, H. and Nygard, C.-H. (2011), "Absenteeism following a workplace intervention for older food industry workers", *Occupational Medicine*, Vol. 61 No. 8, pp. 583–585.
- Skakon, J., Nielsen, K., Borg, V. and Guzman, J. (2010), "Are leaders' well-being, behaviours and style associated with the affective well-being of their employees? A systematic review of three decades of research", *Work & Stress*, Vol. 24 No. 2, pp. 107–

139.

- Smith, J. (2016), “Here’s why workplace stress is costing employers \$300 billion a year”, *Business Insider*, available at: <http://uk.businessinsider.com/how-stress-at-work-is-costing-employers-300-billion-a-year-2016-6?r=US&IR=T> (accessed 14 January 2019).
- Sorensen, G., Peters, S., Nielsen, K., Nagler, E., Karapanos, M., Wallace, L., Burke, L., *et al.* (2019), “Improving Working Conditions to Promote Worker Safety, Health, and Wellbeing for Low-Wage Workers: The Workplace Organizational Health Study”, *International Journal of Environmental Research and Public Health*, Vol. 16 No. 8, p. 1449.
- Steege, A.L., Baron, S.L., Marsh, S.M., Menéndez, C.C. and Myers, J.R. (2014), “Examining occupational health and safety disparities using national data: A cause for continuing concern”, *American Journal of Industrial Medicine*, Vol. 57 No. 5, pp. 527–538.
- Tafvelin, S., von Thiele Schwarz, U., Nielsen, K. and Hasson, H. (2019), “Employees’ and line managers’ active involvement in participatory organizational interventions: Examining direct, reversed, and reciprocal effects on well-being”, *Stress and Health*, Vol. 35 No. 1, pp. 69–80.
- Tamers, S., Chosewood, L., Childress, A., Hudson, H., Nigam, J. and Chang, C.-C. (2019), “Total Worker Health® 2014–2018: The Novel Approach to Worker Safety, Health, and Well-Being Evolves”, *International Journal of Environmental Research and Public Health*, Vol. 16 No. 3, p. 321.
- Taris, T.W., Kompier, M.A.J., Geurts, S.A.E., Schreurs, P.J.G., Schaufeli, W.B., de Boer, E., Sepmeijer, K.J., *et al.* (2003), “Stress management interventions in the Dutch domiciliary care sector: Findings from 81 organizations.”, *International Journal of Stress Management*, Vol. 10 No. 4, pp. 297–325.
- The Regus Group. (2018), “STRESS LEVELS ARE RISING WORLDWIDE”, *Global Organization for Stress*, available at: <http://www.gostress.com/stress-levels-are-rising-worldwide/> (accessed 10 January 2019).
- von Thiele Schwarz, U., Nielsen, K., Edwards, K., Hasson, H., Ipsen, C., Savage, C., Simonsen Abildgaard, J., *et al.* (2021), “How to design, implement and evaluate organizational interventions for maximum impact: the Sigtuna Principles”, *European*

*Journal of Work and Organizational Psychology*, available at:<https://doi.org/10.1080/1359432X.2020.1803960>.

von Thiele Schwarz, U., Nielsen, K.M., Stenfors-Hayes, T. and Hasson, H. (2017), “Using kaizen to improve employee well-being: Results from two organizational intervention studies”, *Human Relations*, Vol. 70 No. 8, pp. 966–993.

UK Health and Safety Executive. (2007), *Managing the Causes of Work-Related Stress : A Step-by-Step Approach Using the Management Standards*, 2nd ed., Health and Safety Executive, Surrey, UK.

WHO. (2020), “Occupational health: Stress at the workplace”, available at:  
[http://www.who.int/occupational\\_health/topics/stressatwp/en](http://www.who.int/occupational_health/topics/stressatwp/en) (accessed 8 January 2022).

Wilson, M.G., Dejoy, D.M., Vandenberg, R.J., Richardson, H.A. and Mcgrath, A.L. (2004), “Work characteristics and employee health and well-being: Test of a model of healthy work organization”, *Journal of Occupational and Organizational Psychology*, Vol. 77 No. 4, pp. 565–588.

## CHAPTER 2

### **Organisational Interventions to Improve Employees' Health and Wellbeing: A Realist Synthesis**

Hamid Roodbari<sup>1\*</sup>, Carolyn Axtell<sup>1</sup>, Karina Nielsen<sup>1</sup>, Glorian Sorensen<sup>2</sup>

<sup>1</sup> Institute for Work Psychology, Sheffield University Management School, University of Sheffield, Sheffield, UK

<sup>2</sup> Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, Boston, Massachusetts

\*Corresponding author

Manuscript published online first, *Journal of Applied Psychology: An International Review*

**Roodbari, H.**, Axtell, C., Nielsen, K., and Sorensen, G. (2021). "Organisational interventions to improve employees' health and wellbeing: A realist synthesis", *Applied Psychology*, pp. 1–24. <https://doi.org/10.1111/apps.12346>.

**Abstract**

Although organisational interventions have shown promising results in improving employees' health and wellbeing, reviews of the effectiveness of such interventions conclude results are inconsistent. Realist synthesis is considered an appropriate method of literature review to improve the consistency of empirical evidence by developing generalisable statements of 'what works for whom in which circumstances'. In this article, to identify and synthesise existing evidence from the empirical studies of organisational interventions, we conducted a realist synthesis according to the RAMESES publication standards. We reviewed 28 articles. Six realist programme theories were developed that explain how different mechanisms of organisational interventions may bring about different outcomes in different contexts. These realist programme theories are based on the process mechanisms of implementation adherence, communication, employees' participation, senior management support, middle management support, and external consultants/researchers support. This realist synthesis enhances the understanding of how organisational interventions may improve employees' health and wellbeing, in which contexts, and for which group of employees. As such, it makes an important potential contribution to designing, implementing, and evaluating future organisational interventions.

**Keywords:** Realist synthesis, organisational intervention, Context-Mechanism-Outcome configurations, realist programme theories, mechanisms

## INTRODUCTION

Organisational interventions are “planned, behavioural, and theory-based actions that aim to improve employees’ health and wellbeing by changing the way work is designed, organised, and managed” (Nielsen, 2013, p. 1030). Organisational interventions are the key recommended approach for improving psychosocial working conditions and employees’ health and wellbeing (EU-OSHA, 2016; ILO, 2001; UK Health and Safety Executive, 2007). The literature, however, shows that empirical evidence demonstrating the effectiveness of organisational interventions is inconsistent (Montano, Hoven, & Siegrist, 2014; Semmer, 2006). To inform future organisational interventions, it has therefore been recommended to synthesise the inconsistent empirical evidence of organisational interventions to understand what works for whom, why, how, and under which circumstances (Nielsen & Miraglia, 2017).

The lack of consistency in the evidence of organisational interventions may be due to the heterogeneity in their designs, implementation strategies, contexts, and outcomes. First, regarding design, organisational interventions have used different risk assessment methods to identify the working condition problems within the organisations, various approaches to develop action plans, and numerous methods to monitor the actual implementation of intervention activities (Nielsen & Noblet, 2018; Nielsen, Randall, Holten, & Rial-González, 2010). Second, regarding implementation strategy, organisational interventions have used various drivers of change including employees, senior managers, middle managers, and consultants/researchers whose mental models of working conditions and interventions have been different (Nielsen & Noblet, 2018; Nielsen & Abildgaard, 2013). Third, regarding context, since organisational interventions operate within changing complex social systems, wide-ranging multi-level contextual factors have facilitated or impaired intervention activities

resulting in different outcomes in different contexts (Nielsen & Randall, 2013). Finally, regarding outcome, different organisational interventions have measured different intervention outcomes (e.g., work engagement, job satisfaction, stress, burnout), some organisational interventions have resulted in improvements in working conditions and employees' health and wellbeing, others have resulted in no effect, and a few even resulted in a deterioration in working conditions and employees' health and wellbeing (Montano et al., 2014; Semmer, 2006). These issues illustrate the inconsistency in evidence relating to the effectiveness of organisational interventions.

To address these issues, it has been recommended that organisational intervention studies should explore and report whether the intervention works, what makes it work, for whom, and in which circumstances (Nielsen & Miraglia, 2017). In line with this suggestion, this review aims to answer the question of 'what works for whom in which circumstances?' regarding organisational interventions. To answer this question, we synthesise empirical evidence from the organisational interventions based on realist synthesis.

Realist synthesis is a theory-driven, evidence-based, qualitative method of literature review (Pawson, Greenhalgh, Harvey, & Walshe, 2005). Realist synthesis seeks to answer the question of 'what works for whom in which circumstances?' by identifying the underlying Mechanisms associated with the implemented organisational interventions in the literature (i.e., what made the interventions work), the Contexts under which the mechanisms operated (i.e., the conditions in which the interventions were effective), and the patterns of Outcomes produced (i.e., the observed improvements in working conditions and employees' health and wellbeing) (Nielsen & Miraglia, 2017). These form Context-Mechanism-Outcome (CMO) configurations (where Context + Mechanisms = Outcomes) (Nielsen & Miraglia, 2017; Pawson et al., 2005). Based on these CMO configurations, this method synthesises empirical



evidence into realist programme theories. Realist programme theories are theories based on CMO configurations that hypothesise how and why interventions work, taking into consideration the causal links between the mechanisms triggered by the interventions, the contexts in which the interventions are implemented, and the outcomes produced (Pawson et al., 2005). As a result, realist synthesis is suitable for dealing with the heterogeneity of results in the organisational interventions literature as it allows reflection on the contexts, mechanisms, and outcomes that underlie this variation (Pawson et al., 2005).

The present realist synthesis aims to identify and synthesise empirical evidence from the organisational interventions literature into CMO configurations and realist programme theories. To achieve this aim, the objectives of this realist synthesis are to: identify empirical studies of organisational interventions; explore the research aims and methodologies of these studies; extract themes of contexts, mechanisms, and outcomes; develop CMO configurations; and, develop realist programme theories. Given the aim and objectives, the overall research question of this realist synthesis is '*Which realist programme theories can be developed based on the empirical evidence from the organisational interventions literature?*'.

To the best of our knowledge, this is the first realist synthesis to translate empirical evidence from the organisational interventions literature into realist programme theories. These theories will be highly beneficial for practitioners and policy-makers for designing, implementing, and evaluating future organisational interventions as they facilitate the understanding of what works for which group of employees, why, how, and under which circumstances. In addition, these generalisable theories that are based on such understanding, ultimately improve the consistency of evidence demonstrating the effectiveness of organisational interventions.

## **METHODS**

Realist synthesis entails the six steps of: defining a research question; formulating an initial realist programme theory; searching for primary studies; selecting the studies and appraising their quality; extracting, analysing, and synthesising relevant data; and, refining the realist programme theories (Nielsen & Miraglia, 2017; Pawson, 2006). The results are reported according to the Realist And Meta-narrative Evidence Syntheses: Evolving Standards (RAMESES) publication standards (Wong, Greenhalgh, Westhorp, Buckingham, & Pawson, 2013). The RAMESES publication standards consist of a set of 19 publication standards covering abstract, introduction, methods, results, and discussion of realist syntheses with the aim of improving transparency, consistency, and rigour of reporting of realist syntheses (Wong et al., 2013).

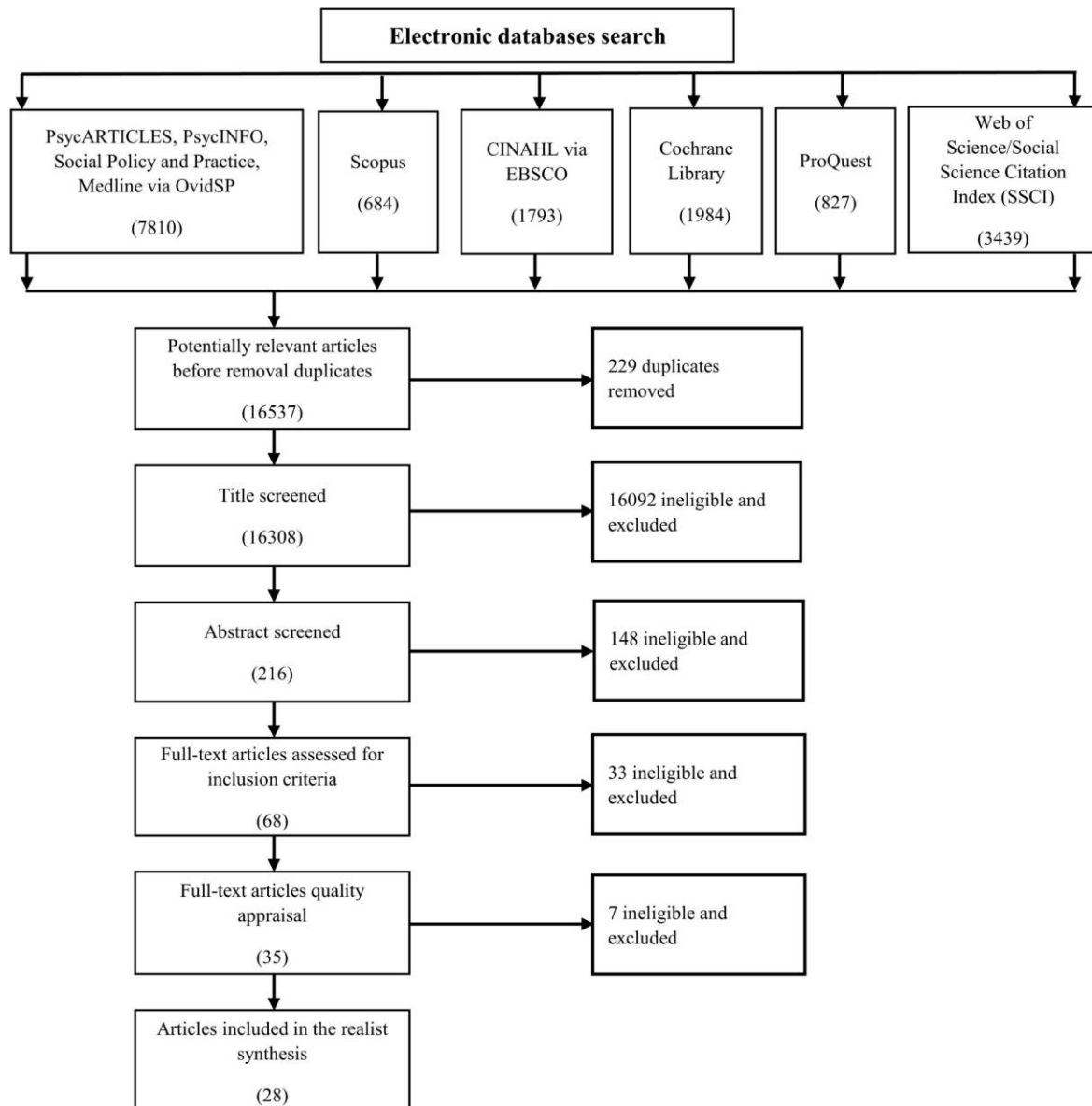
### **Formulating the Initial Realist Programme Theory**

As mentioned above, the research question of this realist synthesis is '*Which realist programme theories can be developed based on the empirical evidence from the organisational interventions literature?*'. To answer this research question, the first author formulated an initial realist programme theory. This process included a scoping literature search in parallel to discussing findings and insights with the co-authors to iteratively formulate the initial realist programme theory. The first author started with searching for literature reviews on interventions aiming to improve employees' health and wellbeing (Corbière, Shen, Rouleau, & Dewa, 2009; Czabala & Charzynska, 2014; Havermans et al., 2016; Ivandic, Freeman, Birner, Nowak, & Sabariego, 2017; Williams et al., 2018). These reviews were read to explore the implementation elements of interventions and how these elements may improve employees' health and wellbeing. These reviews were also used to extract search terms. Discussion among the authors led to the decision that the search should

not be limited to any specific mechanism. Hence, the initial realist programme theory, at a high level, hypothesised that ‘organisational interventions improve employees’ health and wellbeing through various mechanisms which produce different patterns of outcomes in different contexts’.

### **Searching for Primary Studies**

We conducted a systematic literature search to identify mechanisms and their causally related outcomes and contextual factors with primary evidence regarding organisational interventions. We used systematic searches in order to structure and limit the search process. The first author conducted the search in PsycARTICLES, PsycINFO, Social Policy and Practice, Medline via OvidSP, Scopus, CINAHL via EBSCO, Web of Science/Social Science Citation Index (SSCI), Cochrane Library, and ProQuest in June, 2019. The search was limited to articles published in English language journals and between January, 2009 and June, 2019. Three generic terms of “Intervention Setting”, “Intervention”, and “Outcomes” were used to search in the databases. The search term “Intervention Setting” contained 13 relevant phrases (e.g., occupation, organisation, workplace), “Intervention” contained nine relevant phrases (e.g., intervention, programme, promotion), and “Outcomes” contained 21 relevant phrases (e.g., occupational health, wellbeing, stress). Search terms included both MeSH terms and free text words (truncated as required) in combination with Boolean operators “AND” and “OR”. Appendix A shows the details of the search strategies in the databases. Figure 1 shows the search process in a flow diagram.

**FIGURE 1** Flowchart of Search

### Selecting Studies and Appraising Their Quality

The search identified 16537 potentially relevant articles. The first author screened duplicates and removed 229 duplicated studies. Then, by following the RAMESES publication standards, first, we applied the inclusion and exclusion criteria to select possibly relevant articles and, second, we assessed the relevance and rigour of the remained articles.

In the first stage, we considered four inclusion criteria. First, type of data: we limited our search strategy to academic literature in peer-reviewed, English language journals; we included both qualitative and quantitative intervention studies and we accepted any type of data collection method including interviews, questionnaires, focus groups, and observations. Second, study design: we accepted any study design including Cluster Randomised Control Trials (RCTs) and quasi-experiments (see the results section for descriptions of these study designs). Third, study focus: each article had to focus on organisational interventions as per the above definition; (a) if the study provided a rich and detailed description of contexts, mechanisms, and outcomes (CMOs), it was classified as ‘thick’ and was prioritised for the synthesis, (b) if the study provided a limited description of CMOs, it was included as a ‘thin’ paper, we mainly extracted implicit CMOs (where the studies’ authors did not label CMOs) from ‘thin’ papers. Fourth, outcome measures: the observed outcomes should be related to psychosocial risk management, psychosocial working conditions, employees’ health and wellbeing, and organisational outcomes. In addition, we considered two further exclusion criteria, non-English language papers and intervention studies pre-2009 were excluded during the search in the databases. The assessment of articles against inclusion and exclusion criteria was conducted during the search in the databases, title screening, abstract screening, and full-text screening by the first author. The second author then independently conducted full-text screening of the initially included articles to ensure that both inclusion and exclusion criteria were met. Next, the first and second authors discussed their disagreements on ten included articles in two meetings with the third author. After re-assessing the disputed articles by the first, second, and third authors, it was agreed to exclude seven articles and include 35 articles. As a post-hoc check, the second author independently conducted title and abstract screening of random 10% (n=1654) sample of the initially identified articles from the initial searches in the databases. The second author agreed with the articles included and excluded by the first

author, except for an additional two articles she was unsure of for which she checked the full text. After discussing it with the first author, it was agreed these two articles should be excluded from the review.

In the second stage, we assessed the relevance and rigour of the 35 articles. First, the relevance was assessed by examining whether an article included information about CMOs which enabled us to extract CMO configurations in order to refine the initial realist programme theory (Wong et al., 2013). Second, the rigour was assessed by examining whether the methods of data collection and data analysis were credible and trustworthy (Wong et al., 2013). The assessment of articles against the relevance and rigour was done by the first and third authors who conducted full-text screening of the 35 articles independently. Then, the first and third authors discussed the quality of the included articles in two meetings with the second author. After re-assessing nine disputed articles by the first, second, and third authors, it was agreed to exclude seven articles and include 28 articles.

### **Extracting, Analysing, and Synthesising Relevant Data**

Based on the synthesis objectives, the first author extracted data about where the intervention study was implemented, when the study was published, the study aim, the study design, and the evaluation methods. Appendix B shows these details of the reviewed studies.

To answer the research question, that is, ‘*Which realist programme theories can be developed based on the empirical evidence from the organisational interventions literature?*’, data were extracted, analysed, and synthesised as follows. To extract data, the first author extracted data to identify how mechanisms produced outcomes being triggered in specific contexts. To achieve this, mechanisms were categorised into process, content, and perception mechanisms. Process mechanisms are the processes of designing and implementing the interventions, content mechanisms are the nature of changes focused on in the interventions

including the content of action plans, and perception mechanisms are the intervention participants' perceptions of the process and content mechanisms (Nielsen & Miraglia, 2017; Pawson & Tilley, 1997). These mechanisms were either explicitly proposed by the studies' authors or implicitly addressed in the studies. In addition, as suggested by Nielsen and Randall (2013), contexts were categorised into omnibus and discrete contexts. Omnibus contexts refer to the general intervention setting including the 'maturity' of the organisation in terms of organisational culture, pre-intervention working conditions, pre-intervention employees' health and wellbeing, and pre-intervention organisational and individual resources. Discrete contexts refer to the concurrent changes taking place during the intervention such as organisational restructuring, downsizing, and budget cuts, considered as possible reasons for unexpected outcomes due to their effects on the operation of specific mechanisms.

To analyse data, we focused on identifying process mechanisms and their causally relevant contextual factors and outcomes. Process mechanisms were analysed based on different stakeholders' roles in designing, implementing, and evaluating organisational interventions. This means we analysed different roles of employees, senior management, middle management, and external consultants/researchers in designing, implementing, and evaluating organisational interventions. This was done because realist approaches (including realist synthesis) consider the role and knowledge of interventions stakeholders to be paramount in understanding why interventions succeeded or failed to achieve their intended outcomes (Pawson & Tilley, 2004).

To synthesise data, we explained how each process mechanism operated, what pre-conditions (i.e., contextual factors) were necessary for the operation of each mechanism, and what outcomes were produced. More specifically, we categorised outcomes into proximal

outcomes (i.e., changes in psychosocial risk management such as changes in employees' and/or managers' knowledge, reasonings, attitudes, and behaviours in relation to psychosocial working conditions and in their capacity to manage psychosocial working conditions), intermediate outcomes (i.e., changes in psychosocial working conditions such as changes in job autonomy), and distal outcomes (i.e., changes in employees' health and wellbeing such as job satisfaction and organisational outcomes such as performance) (Fridrich, Jenny, & Bauer, 2015). In our realist synthesis, health and wellbeing comprised of mental/psychological indicators such as affect, frustration, and anxiety and physical/physiological indicators such as blood pressure, body mass index, and general physical health (Danna & Griffin, 1999). During the synthesis process, we tried to relate a specific mechanism to a specific outcome in each intervention study, however, the majority of intervention studies did not report a tested path (i.e., causal link) between a specific mechanism to a specific outcome. In this case, we highlighted that a group of mechanisms, in interaction with each other, produced the outcomes (Lacouture, Breton, Guichard, & Ridde, 2015; Pawson & Tilley, 2004). Based on such elements, we developed CMO configurations and realist programme theories.

Data extraction, analysis, and synthesis processes were conducted manually and were iterative. To ensure an objective and transparent data extraction, analysis, and synthesis, a data matrix (a Microsoft Excel spreadsheet) was developed and saved in a shared Google Drive accessible to all authors. Regarding data extraction, establishing the search strategy was iterative as the first author extracted search terms and relevant databases from other relevant literature reviews and discussed them with the second and third authors. They provided feedback on whether or not the search strategy was appropriate for refining the initial realist programme theory. After three iterations, the first, second, and third authors agreed on the final search strategy. During the search, the first, second, and third authors in



an iterative process narrowed down the number of articles based on the inclusion and exclusion criteria and quality appraisal. Regarding data analysis, first, the first author extracted data from the included studies and analysed them based on themes of contexts, mechanisms, and outcomes and their relevant sub-themes (e.g., sub-themes of omnibus and discrete for the theme of contexts). Then, the second and third authors, independently, analysed all included studies against the suggested themes and sub-themes. The iterative discussions among the first, second, and third authors led to the finalised contexts, mechanisms, and outcomes in each intervention study. Regarding data synthesis, the first author synthesised the analysed data into seven realist programme theories. After several meetings, these realist programme theories were refined and finalised by all authors, resulting in six realist programme theories. These ongoing, iterative processes of data extraction, analysis, and synthesis were conducted by the involvement of all authors to ensure the coherence, plausibility, and appropriateness of the processes as required by the RAMESES publication standards (Wong et al., 2013).

## **RESULTS**

### **Document Characteristics**

The search strategies resulted in 28 rigorous and relevant studies covering various organisational interventions in different organisations. There were four intervention studies published in more than one article: the intervention in two Danish postal regions reported in articles 1 and 27 (study 1); the intervention in a regional hospital in Sweden reported in articles 24 and 27 (study 2); the intervention in two schools in the Netherlands reported in articles 20 and 21; and, the teamwork intervention in two elderly care centres in Denmark reported in articles 15 and 16. Table 1 shows the authors and publication year of the included studies.

**TABLE 1** Authors and Publication Year of the Included Studies with a Number as the Identifier

[1]: Abildgaard et al. (2018)	[12]: Jenny et al. (2015)	[23]: Sørensen & Holman (2014)
[2]: Arapovic-Johansson et al. (2018)	[13]: Lundmark et al. (2017)	[24]: Tafvelin et al. (2019)
[3]: Bourbonnais et al. (2011)	[14]: Nabe-Nielsen et al. (2011)	[25]: Tsutsumi et al. (2009)
[4]: Busch et al. (2017)	[15]: Nielsen & Randall (2012)	[26]: Uchiyama et al. (2013)
[5]: DeJoy et al. (2010)	[16]: Nielsen & Randall (2009)	[27]: von Thiele Schwarz et al. (2017)
[6]: Dollard & Gordon (2014)	[17]: Niks et al. (2018)	[28]: Yoshikawa et al. (2013)
[7]: Eklof & Ahlborg Jr (2016)	[18]: Nylén et al. (2017)	
[8]: Framke et al. (2016)	[19]: Oude Hengel et al. (2012)	
[9]: Gupta et al. (2018)	[20]: Schelvis et al. (2016)	
[10]: Hasson et al. (2014)	[21]: Schelvis et al. (2017)	
[11]: Holman & Axtell (2016)	[22]: Schneider et al. (2019)	

Nine studies used a Cluster RCT design [1, 2, 7, 8, 9, 19, 24, 25, 26]. In Cluster RCTs, groups of participants, either worksites, organisational departments, or working teams, are recruited and randomly assigned to intervention groups or control groups, which allows for the comparison of outcomes from these two groups to draw conclusions of the effectiveness of the intervention. Ten studies used a quasi-experimental design [3, 5, 6, 11, 14, 17, 20, 21, 22, 28]. In a quasi-experimental design, participants are not randomly assigned to intervention groups or control groups. Six studies used a longitudinal design [10, 13, 15, 16, 18, 23]. Three studies used explicit evaluation frameworks; one study combined realist evaluation with a quasi-experimental design and process evaluation [4], one study used realist evaluation in two cluster randomised controlled interventions [27], and one study utilised the RE-AIM evaluation framework and applied an adapted research design by retrospectively assigning study participants to comparison groups [12]. The RE-AIM framework through its five dimensions of Reach, Effectiveness, Adoption, Implementation, Maintenance provides a practical means of evaluating interventions (Glasgow, Vogt, & Boles, 1999).

In terms of study methods, 15 studies used quantitative methods [6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 21, 27, 28] and 13 studies used mixed methods (i.e., both quantitative and qualitative methods) [1, 2, 3, 4, 5, 12, 18, 20, 22, 23, 24, 25, 26].

### **Main Findings (Synthesised Realist Programme Theories)**

We extracted contextual factors, mechanisms, and outcomes from each intervention study in the 28 articles. Appendix C shows these contextual factors, mechanisms, and outcomes in each intervention study. Then, we analysed and synthesised data focusing on the process mechanisms of implementation adherence, communication, employees' participation, senior management support, middle management support, and external consultants/researchers support. In the following, we identified process mechanisms, contextual factors associated with such mechanisms and their outcomes, and synthesised our findings into six realist programme theories by using the statements of: '***If*** there are specific contextual factors, ***then*** specific mechanisms produce specific proximal, intermediate, and distal outcomes'.

**Implementation adherence.** The implementation adherence was a mechanism to ensure the success of organisational interventions. In the reviewed organisational interventions studies, the implementation adherence was reported in terms of intervention fidelity (i.e., the extent to which the intervention was delivered consistent with its protocol) [2, 20], dose delivered to intervention participants (i.e., the extent to which the number or amount of planned activities was delivered), and dose received by intervention participants (i.e., the extent to which intervention participants received and participated in the intervention activities) [9, 19, 20, 21, 23].

Five studies revealed four pre-conditions (i.e., contextual factors) for operating the implementation adherence and achieving desired outcomes [2, 9, 19, 20, 23]. First, the rationale behind the implementation process should be clear and have a strong theoretical

basis [19]. Second, there should be sufficient resources in the organisation in terms of time, skills, budget, and infrastructure that facilitate the implementation process [2, 9]. Third, there should be a supportive culture and a lack of adverse internal events (e.g., changes in the management team during the intervention) that facilitate the implementation process [20]. Fourth, there should be senior management and middle management support of the implementation process [23].

Two studies reported that the implementation adherence, in interaction with other process mechanisms, resulted in positive outcomes [21, 23]. As a proximal outcome, the implementation adherence improved psychosocial risk management by increasing employees' occupational self-efficacy [21]. In terms of intermediate outcomes, this mechanism improved psychosocial working conditions by improving relational job characteristics [23]. As for distal outcomes, this mechanism improved employees' health and wellbeing by reducing employees' burnout [23]. The above evidence can be synthesised into the following realist programme theory.

Realist programme theory 1: ***If*** the rationale behind the implementation process is clear and has a strong theoretical basis, there are sufficient resources in the organisation, there is a supportive culture and a lack of adverse internal events, and both senior and middle management support the implementation process (*contextual factors*); ***then*** the implementation adherence with high levels of fidelity and dose delivered and received (*mechanisms*) improves psychosocial risk management by increasing employees' occupational self-efficacy (*a proximal outcome*); improves psychosocial working conditions by improving relational job characteristics (*an intermediate outcome*); and, ultimately, improves employees' health and wellbeing by reducing their burnout (*a distal outcome*).

**Communication.** Communication was an important mechanism of change identified in our included studies. Two different aspects of communication were identified. First, regarding the process (i.e., ‘how to’), communication was between the steering group and employees [8] and among organisational sub-units (e.g., teams) [2]. Second, regarding the content (i.e., ‘what to’), communication was about the aims, objectives, and progress of the intervention [2, 5, 8, 20].

Two studies revealed two pre-conditions for triggering communication and achieving desired outcomes [5, 20]. First, there should be a climate of trust, openness, and support in the organisation encouraging intervention stakeholders to communicate with each other about the intervention and not be afraid of retaliation for their communications (particularly for employees) [5]. Second, there should be sufficient resources in terms of time, energy, confidence, and infrastructure in the organisation to establish effective communication about the intervention [20].

Two studies reported that communication, in interaction with other process mechanisms, produced positive outcomes [5, 8]. As for distal outcomes, communication improved employees’ health and wellbeing by increasing employees’ health and safety and protecting them from increased stress and worsened job satisfaction [5]. In addition, communication improved organisational outcomes by decreasing the incidence of short-term sickness absence and the risk of long-term sickness absence [8], increasing sales [5], and protecting employees from worsened organisational commitment and turnover [5]. This evidence leads to the following realist programme theory.

Realist programme theory 2: ***If*** there is a climate of trust, openness, and support in the organisation and there are sufficient resources in the organisation (*contextual factors*); ***then*** effective communication across the organisation about the intervention (a *mechanism*)

improves employees' health and wellbeing by increasing their health and safety and protecting them from increased stress and worsened job satisfaction (*distal outcomes*); and, improves organisational outcomes by reducing organisational sickness absence incidences, increasing sales, and protecting employees from worsened organisational commitment and turnover (*distal outcomes*).

**Employees' Participation.** Employees' participation was the central mechanism of many organisational interventions. In the reviewed organisational intervention studies, employees' participation had two aspects. First, regarding the process (i.e., 'how to'), employees engaged in organisational interventions by following structured intervention process (e.g., attending regular meetings, workshops, focus groups, training sessions, brainstorm sessions) [1, 2, 3, 6, 7, 9, 10, 12, 15, 17, 18, 19, 22, 23, 26, 28] and using Kaizen related tools to manage the problem-solving approach [24, 27]. Second, regarding the content (i.e., 'what to'), employees engaged in: identifying the working condition problems they perceived to be most important to address in the workplace [3, 7, 11, 20, 22, 24, 25]; making decisions about what changes in working conditions can be made and how these changes can be implemented [1, 2, 3, 4, 5, 6, 8, 9, 11, 14, 15, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28]; and, tailoring the whole or a part of the intervention to fit with the organisational contexts and individuals within the organisation [1, 5, 8, 10, 22, 28].

Nine studies revealed that there were eight pre-conditions for triggering employees' participation and producing desired outcomes [1, 2, 4, 5, 12, 15, 20, 24, 27]. First, there should be a climate of trust, openness, and support in the organisation that facilitates participation in the intervention [20]. Second, there should be a reasonable existing job design that provides employees with the prerequisite resources to engage in the intervention [15]. Third, there should be a good level of employees' health and wellbeing that provides

them with energy and resources to engage in the intervention [2, 15, 27]. Fourth, employees should have a high outcome expectancy in order to voluntarily participate in the intervention [12]. Fifth, middle managers should support the intervention [24]. Sixth, when employees' participation is initiated and supported by peer-mentoring, there should be training and participatory recruitment processes for employees who are supposed to provide peer-mentoring [4]. Seventh, there should be a positive economic environment surrounding the organisation and a lack of unfavourable internal events (e.g., abrupt transition in top corporate leadership) in the organisation [5]. Eighth, there should be structural resources in place (e.g., existing practices and meetings among managers and employees) that facilitate participation [1, 27].

Twenty-two intervention studies reported the positive effects of employees' participation [1, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14, 15, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28]. We synthesised eight studies that reported employees' participation, on its own, produced positive outcomes [3, 4, 14, 15, 22, 25, 27, 28]. As for proximal outcomes, employees' participation improved psychosocial risk management by enhancing employees' awareness of their psychosocial working conditions and their capacity to manage psychosocial working conditions [27]. In terms of intermediate outcomes, this mechanism improved psychosocial working conditions by: improving employees' perceived autonomy [15]; improving employees' perceived social support [14, 15, 28]; and, reducing targeted adverse psychosocial factors [3]. As for distal outcomes, this mechanism improved employees' health and wellbeing by: decreasing employees' blood pressure and protecting them against increased psychosomatic complaints [4]; improving employees' job satisfaction, affective wellbeing, and mental health [15, 25, 27]; decreasing employees' discomfort [27]; and, significantly reducing employees' burnout [3]. In addition, this mechanism improved organisational outcomes by improving employees' productivity [25] and customers'

perceived quality of services [22]. This evidence can be synthesised into the following realist programme theory.

Realist programme theory 3: *If* there is a climate of trust, openness, and support in the organisation, existing job design and employee existing level of health and wellbeing are reasonably good, employees have a high outcome expectancy, middle managers support the intervention, there are training and participatory recruitment process for employees who provide co-workers' support, there is a positive economic environment and a lack of unfavourable internal events, and there are structural resources in the organisation (*contextual factors*); *then* employees' participation in the process of changing the way work is designed, organised, and managed (a *participatory mechanism*) improves psychosocial risk management by enhancing employees' awareness of their psychosocial working conditions and their capacity to manage psychosocial working conditions (*proximal outcomes*); improves psychosocial working conditions by improving employees' perceived autonomy and perceived social support and reducing adverse psychosocial working conditions (*intermediate outcomes*); improves employees' health and wellbeing by improving their job satisfaction, affective wellbeing, and mental health, reducing their blood pressure, discomfort, and burnout, and protecting them against increased psychosomatic complaints (*distal outcomes*); and, ultimately, improves organisational outcomes by improving employees' productivity and customers' perceived quality of services (*distal outcomes*).

**Senior Management Support.** Senior management support was an important mechanism in developing and implementing organisational interventions. In the reviewed organisational intervention studies, senior management support had two aspects. First, in terms of process (i.e., 'how to'), senior managers supported organisational interventions by committing to the intervention at the start of the intervention [6, 20] and allocating resources



to the intervention [4, 6]. Second, in terms of content (i.e., ‘what to’), senior managers supported organisational interventions by engaging in the development and implementation of the intervention activities [17] and tailoring the intervention to fit with the organisational contexts and individuals within the organisation [17].

Two studies revealed two pre-conditions for triggering senior management support and achieving desired outcomes [4, 20]. First, there should be no conflict between the mission and objectives of the organisation and the aims and objectives of the intervention [20]. Second, there should be sufficient resources in the organisation in terms of finance, human resources, time, and infrastructure to conduct the intervention [4].

Three intervention studies reported that senior management support, in interaction with other mechanisms, produced positive outcomes [4, 6, 17]. As for intermediate outcomes, senior management support improved psychosocial working conditions by improving job design (e.g., demand and control) [6] and work-related characteristics (e.g., emotional resources, teamwork, training and development, co-workers’ support) [4, 6, 17]. In terms of distal outcomes, this mechanism improved employees’ health and wellbeing by improving employees’ job satisfaction [17], reducing their concentration problems [17], and increasing their morale [6]. Besides, this mechanism improved organisational outcomes by improving team performance [17], improving quality and positive performance management [6], and decreasing organisational sickness absence duration [6]. This evidence can be synthesised into the following realist programme theory.

Realist programme theory 4: ***If*** there is alignment between the mission and objectives of the organisation and the aims and objectives of the intervention and there are sufficient resources in the organisation (*contextual factors*); ***then*** senior management support of the intervention (a *mechanism*) improves psychosocial working conditions by improving job

design and work-related characteristics (*intermediate outcomes*); improves employees' health and wellbeing by improving their job satisfaction and morale and reducing their concentration problems (*distal outcomes*); and, ultimately, improves organisational outcomes by improving team performance and performance management and decreasing organisational sickness absence duration (*distal outcomes*).

**Middle Management Support.** Middle management support was a vital mechanism for the success of organisational interventions. In the reviewed organisational intervention studies, middle management support had two components. First, in terms of process (i.e., 'how to'), middle managers supported organisational interventions by: committing to the intervention at the start of the intervention [20]; demonstrating positive attitudes and actions towards the intervention [13]; and, following structured intervention processes (e.g., attending regular meetings, workshops, training sessions, focus groups, and brainstorm sessions) [1, 7, 12, 18]. Second, in terms of content (i.e., 'what to'), middle managers supported organisational interventions by: engaging in the development and implementation of the intervention activities [1, 10, 11, 16, 18, 20, 21]; tailoring the intervention to fit with the organisational contexts and individuals within the organisation [1, 7, 10]; enacting transformational leadership [13]; and, enacting Kaizen leadership (i.e., using Kaizen tools in the intervention activities) [24].

Four studies revealed five pre-conditions for triggering middle management support and achieving desired outcomes [4, 12, 16, 24]. First, there should be a strong commitment by senior management in terms of developing a vision and strategy for the intervention and allocating the necessary resources for developing and implementing the intervention activities [12]. Second, the pre-intervention working conditions should be at a moderate to a good level [16]. Third, middle managers should be in good mental and physical health to

support the intervention [4]. Fourth, there should be training for middle managers on how to conduct the intervention [4]. Fifth, employees should participate in the intervention as it influences middle managers' support of the intervention [24].

Ten intervention studies reported that middle management support, either on its own [13, 16] or with other mechanisms [1, 7, 10, 11, 12, 18, 21, 24], produced positive outcomes. As for proximal outcomes, middle management support improved psychosocial risk management by enhancing employees' awareness of the links between psychosocial working conditions and health [12] and their occupational self-efficacy [21]. In terms of intermediate outcomes, this mechanism improved psychosocial working conditions by improving job design (e.g., demands, resources), psychosocial working conditions (e.g., participative safety, decision latitude, social support from middle managers) [7, 10, 12, 18], and employees' psychological contract fulfilment regarding job characteristics [11]. As for distal outcomes, this mechanism improved employees' health and wellbeing by improving employees' self-rated health, wellbeing, and job satisfaction [11, 13, 16, 24] and protecting employees against increased qualitative job insecurity [1]. In addition, this mechanism improved organisational outcomes by increasing employees' work ability [13, 24] and job performance [11]. This evidence can be synthesised into the following realist programme theory.

Realist programme theory 5: **If** senior managers are committed to the intervention, existing working conditions and middle managers' existing level of health and wellbeing are reasonably good, there is training for middle managers on how to conduct the intervention, and employees participate in the intervention (*contextual factors*); **then** middle management support of the intervention (*a mechanism*) improves psychosocial risk management by enhancing employees' awareness of healthy psychosocial working conditions and their occupational self-efficacy (*proximal outcomes*); improves psychosocial working conditions

by improving job design, psychosocial working conditions, and employees' psychological contract fulfilment regarding job characteristics (*intermediate outcomes*); improves employees' health and wellbeing by improving their self-rated health, job satisfaction, and wellbeing, and protecting them against increased job insecurity (*distal outcomes*); and, ultimately, improves organisational outcomes by increasing employees' work ability and performance (*distal outcomes*).

**External Consultants/Researchers Support.** External consultants/researchers support was a mechanism to ensure the desired outcomes of organisational interventions. In the reviewed organisational intervention studies, external consultants/researchers supported the interventions by providing training to employees and/or managers [7, 12, 19] and supervising, supporting, and facilitating the whole or a part of intervention process [2, 6, 8, 10, 11, 17, 18, 21, 23, 26].

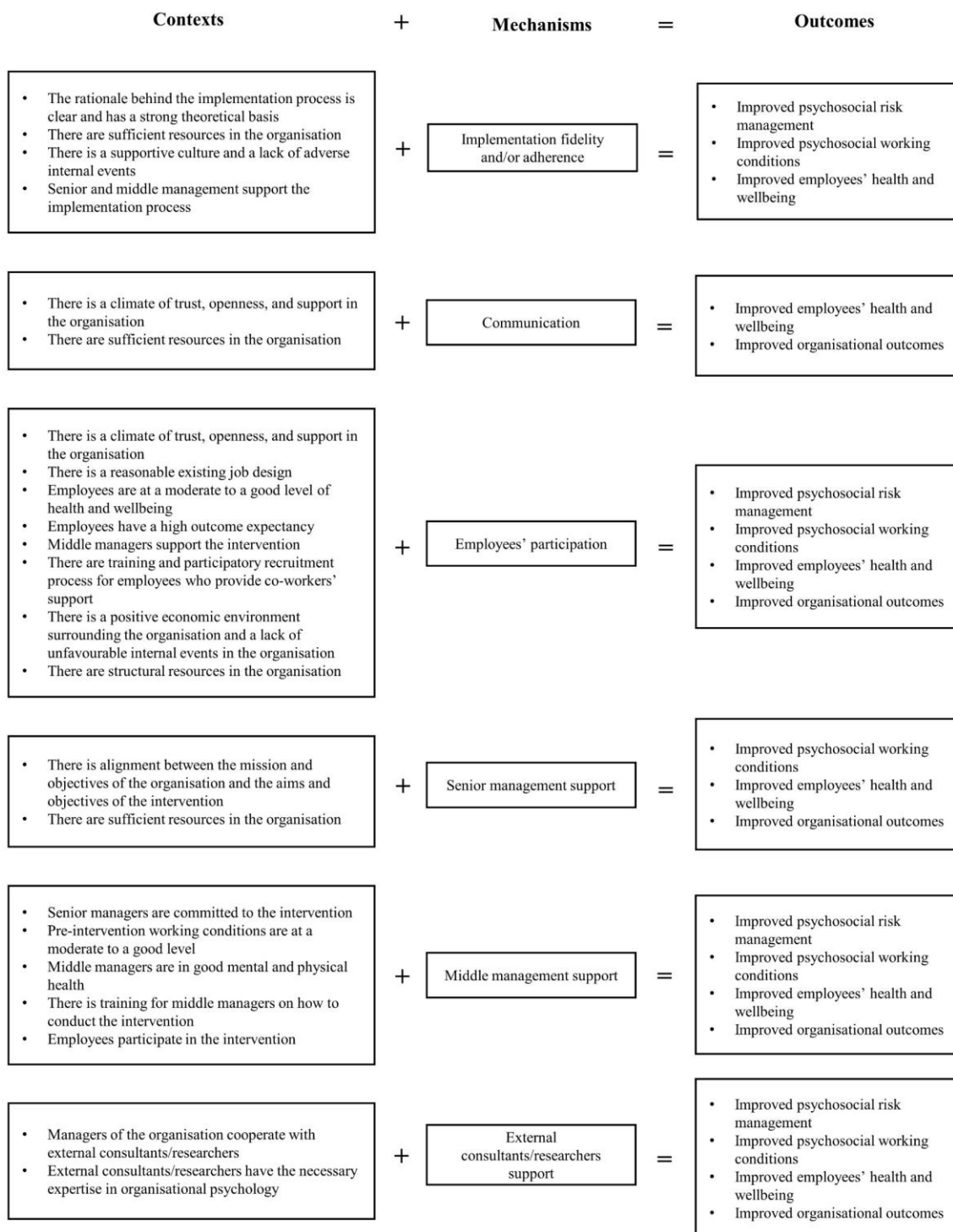
Two studies revealed two pre-conditions for enabling external consultants/researchers to have a positive effect on outcomes [6,7]. First, managers of the organisation need to cooperate with external consultants/researchers [7]. Second, external consultants/researchers should have the necessary expertise in organisational psychology [6].

Eleven intervention studies reported that external consultants/researchers support, interacting with other mechanisms, produced positive outcomes [6, 7, 8, 10, 11, 12, 17, 18, 21, 23, 26]. As for proximal outcomes, external consultants/researchers support improved psychosocial risk management by increasing employees' awareness of the links between psychosocial working conditions and health [12] and their occupational self-efficacy [21]. In terms of intermediate outcomes, this mechanism improved psychosocial working conditions by improving job design (e.g., demands, control, resources), psychosocial work factors (e.g., participatory management, teamwork, co-workers' support) [6, 7, 10, 12, 17, 18, 23, 26], and

employees' psychological contract fulfilment regarding job characteristics [11]. As distal outcomes, this mechanism improved employees' health and wellbeing by increasing employees' wellbeing, morale, and job satisfaction [6, 11, 17] and reducing their concentration problems and burnout [17, 23]. In addition, this mechanism improved organisational outcomes by improving performance and quality and positive performance management [6, 11, 17] and decreasing organisational sickness absence incidences and duration [6, 8]. The above evidence can be synthesised into the following realist programme theory.

Realist programme theory 6: **If** managers of the organisation cooperate with external consultants/researchers who have the necessary expertise in organisational psychology (*contextual factors*); **then** external consultants/researchers support of the intervention (a *mechanism*) improves psychosocial risk management by increasing employees' awareness of healthy psychosocial working conditions and their occupational self-efficacy (*proximal outcomes*); improves psychosocial working conditions by improving job design, psychosocial work factors, and employees' psychological contract fulfilment regarding job characteristics (*intermediate outcomes*); improves employees' health and wellbeing by improving their job satisfaction, morale, and wellbeing, and reducing their concentration problems and burnout (*distal outcomes*); and, ultimately, it improves organisational outcomes by improving performance and performance management and reducing organisational sickness absence incidences and duration (*distal outcomes*).

**FIGURE 2** A Summary of the Synthesised Realist Programme Theories



## Outcome Evaluation

As can be seen in the developed realist programme theories, the outcomes are relatively similar across different realist programme theories. The reason for this similarity of outcomes is that in the majority of the included intervention studies, a group of mechanisms working together produced outcomes, so we could not attribute a specific outcome to a specific mechanism. However, we can reflect on (1) a general pattern of outcomes across realist programme theories and (2) how specific mechanisms *might have* produced outcomes; these reflections can be explored further in future organisational intervention studies.

Regarding the general pattern of outcomes across realist programme theories, we observed that outcomes of organisational interventions can be classified into *proximal*, *intermediate*, and *distal outcomes*. Regarding *proximal outcomes*, some studies reported that organisational interventions improved employees' psychosocial risk management (i.e., increased employees' awareness of their psychosocial working conditions and their capacity to manage psychosocial working conditions) [12, 21, 27]. As for *intermediate outcomes*, a number of studies outlined that organisational interventions improved psychosocial working conditions (e.g., employees' perceived autonomy, employees' perceived social support, teamwork, relational job characteristics) [3, 4, 6, 7, 10, 11, 12, 14, 15, 17, 18, 23, 26, 28]. Finally, concerning *distal outcomes*, (1) many studies reported that organisational interventions improved employees' health and wellbeing (i.e., reduced employees' discomfort, concentration problems, blood pressure, psychosomatic complaints, stress, job insecurity, and burnout, and increased employees' job satisfaction, affective wellbeing, morale, and health and safety) [1, 3, 4, 5, 6, 11, 13, 15, 16, 17, 23, 24, 25, 27] and (2) several studies found that organisational interventions improved organisational outcomes (i.e., decreased employees' sickness absence and turnover, improved employees' productivity and

work ability, and increased team performance, sales, quality and positive performance management, and customers' perceived quality of services) [5, 6, 8, 11, 13, 17, 22, 24, 25].

By investigating outcomes at a lower level, we can reflect on how specific mechanisms *might have* produced outcomes. Regarding the mechanism of implementation adherence, it seems a high level of implementation adherence will enhance employees' exposure to changes, this will in turn enhance employees' perception of changes that will consequently improve psychosocial working conditions and employees' health and wellbeing [21, 23]. Concerning the mechanism of communication, it seems that a high level of communication will improve employees' awareness of the intervention process and of their psychosocial working conditions that will improve employees' health and wellbeing and organisational outcomes [5, 8]. Regarding the mechanism of employees' participation, it seems that employees' participation will improve employees' awareness of their psychosocial working conditions and their capacity to manage psychosocial working conditions [27], it will improve employees' perception of changes [15], and there will be association between employees' perception of changes and improved psychosocial working conditions, improved employees' health and wellbeing, and improved organisational outcomes [3, 4, 14, 15, 22, 25, 27, 28]. About the mechanism of senior management support, our observation is that a high level of senior management support will result in high levels of employees' participation, middle management support, implementation adherence, and their subsequent outcomes [4, 6, 17]; this implies the indirect, positive effect of senior management support on intervention outcomes. As for the mechanism of middle management support, it seems that (1) employees' perceived middle management support will improve psychosocial working conditions and employees' health and wellbeing [13, 16, 24] and (2) a high level of middle management support will lead to high levels of employees' participation, communication, implementation adherence, and their subsequent outcomes [1, 7, 10, 11, 12, 16, 18, 21, 24];



these show both direct and indirect, positive effects of middle management support on intervention outcomes. Finally, regarding the mechanism of external consultants/researchers support, our observation is that a high level of external consultants/researchers support will result in high levels of implementation adherence, communication, employees' participation, senior management support, middle management support, and their subsequent outcomes [6, 7, 8, 10, 11, 12, 17, 18, 21, 23, 26]; this reveals the indirect, positive effect of external consultants/researchers support on intervention outcomes.

## **DISCUSSION**

### **Summary of Findings and Strengths**

To enhance our knowledge of the “how to” of organisational interventions, we conducted a realist synthesis exploring which realist programme theories could be synthesised from the existing literature. In the present realist synthesis, we identified six realist programme theories (also known as CMO configurations) that may guide managers and occupational health practitioners when designing, implementing, and evaluating organisational interventions. We analysed and synthesised empirical evidence from a wide range of organisational intervention studies published in 28 journal articles. These studies using a range of methods reported various outcomes produced by the process mechanisms of implementation adherence, communication, employees' participation, senior management support, middle management support, and external consultants/researchers support.

To our knowledge, this is the first realist synthesis of organisational interventions with evidence from ‘real world’ intervention studies. Despite the complexities and diversities of organisational interventions, we identified and synthesised evidence to develop six realist programme theories. The strength of this realist synthesis is that, through these realist programme theories, it improves the understanding of what works for whom in which

circumstances. Regarding ‘what works?’, we highlighted the most promising process mechanisms and showed how each mechanism operated in the organisational interventions. For instance, regarding the mechanism of employees’ participation, employees engaged in identifying psychosocial working condition problems, developing action plans, implementing action plans, and tailoring the interventions to fit with their specific organisational contexts. Regarding ‘for whom in which circumstances?’, we highlighted the contextual factors that affected the operation of process mechanisms. For example, regarding the mechanism of employees’ participation, ‘employees with moderate pre-intervention health’ is an example of ‘for whom?’ this mechanism will be triggered, and ‘high pre-intervention level of autonomy’ is related to ‘in which circumstances?’ this mechanism will be triggered. In this regard, although there were some mechanisms that only triggered in certain contexts, there were some general pre-intervention conditions (i.e., *omnibus contextual factors*) that were necessary across many of the mechanisms. These included organisational resources (e.g., finance, human resources, time, infrastructure) and individual resources (e.g., knowledge, skills, motivation, health and wellbeing of employees and managers). By including a wide range of organisational interventions conducted by different disciplinary teams with different goals, this synthesis highlights how interactions between mechanisms and contextual factors produce outcomes. As such, it makes an important potential contribution to designing, implementing, and evaluating future organisational interventions.

Our findings showed that knowledge about the complex interactions between contexts, mechanisms, and outcomes (CMOs) is rather embryonic. First, a mechanism may interact with other mechanisms over the intervention period, hence, a group of mechanisms working together produce the outcomes. For instance, in the intervention study by Tafvelin, von Thiele Schwarz, Nielsen, and Hasson (2019), employees’ participation in the initiation phase (a *mechanism*) predicted perceive line managers’ support in the active phase (another

*mechanism*), which in turn predicted employees' participation in the active phase (another *mechanism*); in turn, these mechanisms interacted to influence employees' job satisfaction in the sustained phase (an *outcome*) [24]. Second, a mechanism may act as a contextual factor for triggering other mechanisms. For instance, Jenny et al. (2015) argued that strong commitment from senior managers through supporting and directing team managers (a *mechanism* working as a *contextual factor*) was a critical factor for team managers to pursue changes with their team (a *mechanism*) [12]. Third, an outcome may act as a contextual factor for triggering mechanisms (known as a ripple effect, Jagosh et al., 2015). For instance, Nielsen and Randall (2012) found that pre-intervention levels of autonomy and job satisfaction (*outcomes* working as *contextual factors*) predicted the degree of employees' participation in the planning and implementation of the intervention (a *mechanism*) [15]. Among the reviewed studies, only the study by Tafvelin et al. (2019), as the first study, developed a temporal perspective on the interactions between process mechanisms and outcomes in organisational interventions and provided evidence that CMOs were not equally important during all of the intervention phases. They argued that the alignment between CMOs over the intervention period improves the accumulation of resources (i.e., resource caravans) over the intervention period to achieve the intervention desired outcomes.

Our synthesis showed that good pre-intervention job design and employees' health and wellbeing predict better post-intervention job design and employees' health and wellbeing [2, 15, 27]. This link can be explained by the Conservation of Resources (COR) theory (Hobfoll, 1989) that would suggest employees experiencing a certain level of pre-intervention resources try the hardest to increase these resources during the intervention. On the other hand, organisations with less optimal conditions have few resources to initiate organisational intervention. In this case, building resources at the lower levels will enable employees and managers to engage in the organisational intervention. Therefore, we recommend conducting

workplace interventions at the Individual-, Group-, and/or Leader-levels to develop resources before conducting the organisational intervention. For instance, at the Individual-level, training employees in problem-solving and participatory decision-making can improve employees' self-efficacy. At the Group-level, implementing teamwork structures can build social capital and improve trust between managers and employees. Lastly, at the Leader-level, training leaders on transformational leadership can improve leaders' leadership skills. As such, we suggest multi-level interventions where, through primary interventions at Individual-, Group-, and/or Leader-levels, employees and managers gain additional resources to successfully initiate, implement, and maintain the organisational intervention (Nielsen et al., 2017).

### **Limitations and Future Research Directions**

This realist synthesis, however, encountered two groups of synthesis process limitations and literature limitations. Our synthesis process suffers from three limitations. First, we limited our search strategy to academic literature in peer-reviewed journals. This limitation was due to our quality appraisal which required relevant and rigorous evidence. We believe that including grey literature (i.e., non-academic and non-commercial) describing interventions in different contexts, including both successful and unsuccessful intervention studies and including less relevant and less rigorous studies in future syntheses could provide additional information on how and why different interventions in different contexts succeed or fail.

Second, there were various explicit and implicit mechanisms, multiple contextual factors, and diverse outcomes in the reviewed intervention studies. Identifying these elements particularly the implied ones and differentiating them from each other (e.g., mechanism from contextual factors) in each study and synthesising findings across the reviewed studies into realist programme theories were challenging and subject to the authors' discretion. This

discretion is critical as the overlaps between mechanisms, contextual factors, and outcomes might create issues in explaining the causal link among them. However, this is true for any realist synthesis manifesting the complexity of organisational intervention research (Coxon, Nielsen, Cross, & Fox, 2017). To minimise this, all authors in this realist synthesis involved in the iterative processes of data extraction, analysis, and synthesis.

Third, in analysing and synthesising the mechanism of communication and its causally related contextual factors and outcomes, we found evidence about communications between the steering group and employees and among organisational sub-units. The communications among employees, middle managers, senior managers, and external consultants/researchers were implied in their engagement in the interventions, thus were addressed in the realist programme theories about employees' participation, senior management support, middle management support, and external consultants/researchers support.

Regarding the literature limitations, we observed three literature limitations. First, our findings showed that intervention studies mainly lack details about contextual factors and their influence on triggering mechanisms and producing desired outcomes. In addition, while in the majority of reviewed intervention studies (n=19, 68% of the included studies) a group of mechanisms working together produced the intervention outcomes, a few intervention studies tested the causal links between a specific mechanism to a specific outcome. As such, in our synthesis, we could ascribe a few outcomes to one mechanism on its own (i.e., employees' participation), but for other mechanisms, we ascribed the intervention outcomes to all mechanisms that working together produced the intervention outcomes (Lacouture et al., 2015; Pawson & Tilley, 2004). We recommend future intervention studies should: first, identify contexts, mechanisms, outcomes, and their causal links in the form of CMO configurations at various intervention phases including preparation, screening, action

planning, and implementation; second, analyse the temporal interactions between the CMO configurations over the intervention period; third, provide suggestions on how to align CMO configurations to finally improve employees' health and wellbeing and organisational outcomes. In addition, we recommend future realist syntheses of organisational interventions to use our realist programme theories as their initial realist programme theories and try to test and refine them. Testing and refining means synthesising more empirical evidence from the organisational interventions literature into the initial realist programme theories to promote the understanding of what works for whom in which circumstances.

Second, a large percentage (53%) of the organisational intervention studies used only quantitative methods. While understanding contextual factors, mechanisms, and outcomes is crucial to what works for whom in organisational interventions, using only quantitative methods does not allow for rich exploration of for example concurrent events in the contexts which may facilitate or hinder mechanisms being triggered. Therefore, we recommend future organisational interventions should use mixed methods to examine what works for whom in which circumstances.

Third, a high number of organisational interventions were conducted in Western Europe (n=21, 75% of the included studies), particularly in Denmark (n=8, 28%). A possible explanation for the high incidence in these countries is the context in which the organisations exist. First, most of the countries included in our review are members of the European Union. According to the 89/391/EEC – OSH Framework Directive (EU-OSHA, 2008), employers in the European Union have a legal obligation to ensure the safety and health of workers in every aspect related to work, this onus is on addressing the antecedents of poor safety and health. The most recent ESENER (EU-OSHA, 2019) found that 89.2% of organisations reported the main reason for addressing health and safety is the 'fulfilment of legal

obligation'. Second, it is the responsibility of national states to translate this Directive into national policy. This has resulted in national policies such as the Management Standards in the UK, Work Positive in Ireland, and the INAIL approach to psychosocial risk management in Italy, all of which provide guidance on how to design and implement organisational interventions (Nielsen et al., 2010). Third, as stated in a review of prominent European national policies by Nielsen et al. (2010), all the national policies emphasised the importance of employees' participation and establishing a steering group composed of both employers and employees to ensure employees' participation (i.e., indirect participation for most employees). Fourth, the European Social Partners including trade unions and employer associations are encouraged by the Council of the European Union (2000) to directly or indirectly involve in organisational interventions (e.g., through joint consultative committees and collective bargaining). Finally, the alignment of organisational interventions' aims and values (e.g., improving employees' health and wellbeing through fostering teamwork) with national values, and availability of personal and social resources (e.g., teamwork, problem-solving skills) in Western Europe encourage researchers, practitioners, organisational managers, and employees to engage in the organisational initiatives including interventions (Vaskova, 2007). Together, supportive overarching contextual factors (i.e., EU legislation and the translation into national policies, employing the core principle of participation, utilising Social Partners' assistance, and alignment of national cultural values with interventions' aims and values) facilitate conducting organisational interventions.

## **CONCLUSION**

This realist synthesis aimed to examine what works for whom in which circumstances by identifying and synthesising various mechanisms, contextual factors, and outcomes in published organisational interventions into six realist programme theories. We do not claim

to yield final realist programme theories, but suggest that the identified theories should be tested and refined (e.g., by adding more tested CMO elements) in future organisational interventions whose ultimate goal is improving employees' health and wellbeing. Hence, we conclude that the synthesised realist programme theories contribute to existing knowledge and are highly beneficial for practice and policy decision-makers to design, implement, and evaluate future organisational interventions. Overall, we suggest that future research should use mixed methods to design, implements, and evaluate organisational interventions by addressing how different mechanisms in specific contexts produce specific outcomes.



## REFERENCES

### Studies included in the synthesis are highlighted by \*

- \*Abildgaard, J. S., Nielsen, K., & Sverke, M. (2018). Can job insecurity be managed? Evaluating an organizational-level intervention addressing the negative effects of restructuring. *Work & Stress*, 32(2), 105–123.
- \*Arapovic-Johansson, B., Wåhlin, C., Hagberg, J., Kwak, L., Björklund, C., & Jensen, I. (2018). Participatory work place intervention for stress prevention in primary health care. A randomized controlled trial. *European Journal of Work and Organizational Psychology*, 27(2), 219–234.
- \*Bourbonnais, R., Brisson, C., & Vezina, M. (2011). Long-term effects of an intervention on psychosocial work factors among healthcare professionals in a hospital setting. *Occupational and Environmental Medicine*, 68(7), 479–486.
- \*Busch, C., Koch, T., Clasen, J., Winkler, E., & Vowinkel, J. (2017). Evaluation of an organizational health intervention for low-skilled workers and immigrants. *Human Relations*, 70(8), 994–1016.
- Corbière, M., Shen, J., Rouleau, M., & Dewa, C. S. (2009). A systematic review of preventive interventions regarding mental health issues in organizations. *Work*, 33(1), 81–116.
- Council of the European Union. (2000). *An Information Society for all - Progress report for the Special European Council on Employment, Economic reforms and social cohesion towards a Europe based on innovation and knowledge*. EUR-Lex. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52000DC0130>
- Coxon, A., Nielsen, K., Cross, J., & Fox, C. (2017). Implementing enhanced recovery

- pathways: a literature review with realist synthesis. *Hospital Practice*, 45(4), 165–174.
- Czabala, C., & Charzynska, K. (2014). A systematic review of mental health promotion in the workplace. *Interventions and Policies to Enhance Wellbeing*, 6, 221–276.
- Danna, K., & Griffin, R. W. (1999). Health and Well-Being in the Workplace: A Review and Synthesis of the Literature. *Journal of Management*, 25(3), 357–384.
- \*DeJoy, D. M., Wilson, M. G., Vandenberg, R. J., McGrath-Higgins, A. L., & Griffin-Blake, C. S. (2010). Assessing the impact of healthy work organization intervention. *Journal of Occupational and Organizational Psychology*, 83(1), 139–165.
- \*Dollard, M. F., & Gordon, J. A. (2014). Evaluation of a participatory risk management work stress intervention. *International Journal of Stress Management*, 21(1), 27–42.
- \*Eklöf, M., & Ahlberg Jr, G. (2016). Improving communication among healthcare workers: a controlled study. *Journal of Workplace Learning*, 28(2), 81–96.
- EU-OSHA. (2008). 89/391/EEC – OSH Framework Directive. EUR-Lex.  
<http://data.europa.eu/eli/dir/1989/391/2008-12-11>
- EU-OSHA. (2016). *Second European Survey of Enterprises on New and Emerging Risks (ESENER-2). Overview Report: Managing Safety and Health at Work*. Publications Office of the European Union. <https://op.europa.eu/s/n7Wt>
- EU-OSHA. (2019). *How European workplaces manage safety and health*. European Survey of Enterprises on New and Emerging Risks (ESENER).  
<https://visualisation.osha.europa.eu/esener#!/>
- \*Framke, E., Sørensen, O. H., Pedersen, J., & Rugulies, R. (2016). Effect of a participatory organizational-level occupational health intervention on short-term sickness absence: a

cluster randomized controlled trial. *Scandinavian Journal of Work, Environment & Health*, 42(3), 192–200.

Fridrich, A., Jenny, G. J., & Bauer, G. F. (2015). The Context, Process, and Outcome Evaluation Model for Organisational Health Interventions. *BioMed Research International*, 2015, 1–12.

Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *American Journal of Public Health*, 89(9), 1322–1327.

\*Gupta, N., Wahlin-Jacobsen, C. D., Abildgaard, J. S., Henriksen, L. N., Nielsen, K., & Holtermann, A. (2018). Effectiveness of a participatory physical and psychosocial intervention to balance the demands and resources of industrial workers: A cluster-randomized controlled trial. *Scandinavian Journal of Work, Environment & Health*, 44(1), 58–68.

\*Hasson, H., Brisson, C., Guérin, S., Gilbert-Ouimet, M., Baril-Gingras, G., Vézina, M., & Bourbonnais, R. (2014). An organizational-level occupational health intervention: Employee perceptions of exposure to changes, and psychosocial outcomes. *Work & Stress*, 28(2), 179–197.

Havermans, B. M., Schlevs, R. M., Boot, C. R. L., Brouwers, E. P. M., Anema, J., & 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.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513–524.

- \*Holman, D., & Axtell, C. (2016). Can job redesign interventions influence a broad range of employee outcomes by changing multiple job characteristics? A quasi-experimental study. *Journal of Occupational Health Psychology, 21*(3), 284–295.
- ILO. (2001). *Guidelines on occupational safety and health management systems, ILO-OSH*. International Labor Office.
- Ivandic, I., Freeman, A., Birner, U., Nowak, D., & Sabariego, C. (2017). A systematic review of brief mental health and well-being interventions in organizational settings. *Scandinavian Journal of Work, Environment & Health, 43*(2), 99–108.
- Jagosh, J., Bush, P. L., Salsberg, J., Macaulay, A. C., Greenhalgh, T., Wong, G., Cargo, M., Green, L. W., Herbert, C. P., & Pluye, P. (2015). A realist evaluation of community-based participatory research: partnership synergy, trust building and related ripple effects. *BMC Public Health, 15*(1), 725.
- \*Jenny, G. J., Brauchli, R., Inauen, A., Fülleman, D., Fridrich, A., & Bauer, G. F. (2015). Process and outcome evaluation of an organizational-level stress management intervention in Switzerland. *Health Promotion International, 30*(3), 573–585.
- Lacouture, A., Breton, E., Guichard, A., & Ridde, V. (2015). The concept of mechanism from a realist approach: a scoping review to facilitate its operationalization in public health program evaluation. *Implementation Science, 10*(1), 153.
- \*Lundmark, R., Hasson, H., von Thiele Schwarz, U., Hasson, D., & Tafvelin, S. (2017). Leading for change: line managers' influence on the outcomes of an occupational health intervention. *Work & Stress, 31*(3), 276–296.
- Montano, D., Hoven, H., & Siegrist, J. (2014). Effects of organisational-level interventions at work on employees' health: a systematic review. *BMC Public Health, 14*(1), 135.

- \*Nabe-Nielsen, K., Garde, A. H., & Diderichsen, F. (2011). The effect of work-time influence on health and well-being: a quasi-experimental intervention study among eldercare workers. *International Archives of Occupational and Environmental Health*, 84(6), 683–695.
- Nielsen, K., & Noblet, A. (2018). Organizational interventions: Where are we, where do we go from here? In K. Nielsen & A. Noblet (Eds.), *Organizational Interventions for Health and Well-Being: A Handbook for Evidence-Based Practice*; (pp. 1–23). Routledge.
- Nielsen, K. (2013). Review Article: How can we make organizational interventions work? Employees and line managers as actively crafting interventions. *Human Relations*, 66(8), 1029–1050.
- 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.
- 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.
- Nielsen, K., Nielsen, M. B., Ogbonnaya, C., Käsälä, M., Saari, E., & Isaksson, K. (2017). Workplace resources to improve both employee well-being and performance: A systematic review and meta-analysis. *Work & Stress*, 31(2), 101–120.
- \*Nielsen, K., & Randall, R. (2009). Managers’ Active Support when Implementing Teams: The Impact on Employee Well-Being. *Applied Psychology: Health and Well-Being*, 1(3), 374–390.

- \*Nielsen, K., & Randall, R. (2012). The importance of employee participation and perceptions of changes in procedures in a teamworking intervention. *Work & Stress*, 26(2), 91–111.
- 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.
- 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.
- \*Niks, I., de Jonge, J., Gevers, J., & Houtman, I. (2018). Work Stress Interventions in Hospital Care: Effectiveness of the DISCOVERY Method. *International Journal of Environmental Research and Public Health*, 15(2), 332.
- \*Nylén, E. C., Lindfors, P., Ishäll, L., Göransson, S., Aronsson, G., Kylin, C., & Sverke, M. (2017). A pilot-study of a worksite based participatory intervention program: Its acceptability and short-term effects on work climate and attitudes in human service employees. *Work*, 56(4), 625–636.
- \*Oude Hengel, K. M., Blatter, B. M., Joling, C. I., van der Beek, A. J., & Bongers, P. M. (2012). Effectiveness of an intervention at construction worksites on work engagement, social support, physical workload, and need for recovery: results from a cluster randomized controlled trial. *BMC Public Health*, 12(1), 1008.
- Pawson, R. (2006). *Evidence-based policy: A realist perspective*. Sage Publications.
- Pawson, R., & Tilley, N. (1997). *Realistic evaluation* (1st ed.). Sage Publications Ltd.
- Pawson, R., & Tilley, N. (2004). *Realist Evaluation*.

[http://www.communitymatters.com.au/RE\\_chapter.pdf](http://www.communitymatters.com.au/RE_chapter.pdf)

Pawson, R., Greenhalgh, T., Harvey, G., & Walshe, K. (2005). Realist review - a new method of systematic review designed for complex policy interventions. *Journal of Health Services Research & Policy, 10*(1\_suppl), 21–34.

\*Schelvis, R. M. C., Wiezer, N. M., Blatter, B. M., van Genabeek, J. A. G. M., Oude Hengel, K. M., Bohlmeijer, E. T., & van der Beek, A. J. (2016). Evaluating the implementation process of a participatory organizational level occupational health intervention in schools. *BMC Public Health, 16*(1), 1212.

\*Schelvis, R. M. C., Wiezer, N. M., van der Beek, A. J., Twisk, J. W. R., Bohlmeijer, E. T., & Oude Hengel, K. M. (2017). The effect of an organizational level participatory intervention in secondary vocational education on work-related health outcomes: results of a controlled trial. *BMC Public Health, 17*(1), 141.

\*Schneider, A., Wehler, M., & Weigl, M. (2019). Effects of work conditions on provider mental well-being and quality of care: a mixed-methods intervention study in the emergency department. *BMC Emergency Medicine, 19*(1), 1.

Semmer, N. K. (2006). Job stress interventions and the organization of work. *Scandinavian Journal of Work, Environment & Health, 32*(6), 515–527.

\*Sørensen, O. H., & Holman, D. (2014). A participative intervention to improve employee well-being in knowledge work jobs: A mixed-methods evaluation study. *Work & Stress, 28*(1), 67–86.

\*Tafvelin, S., von Thiele Schwarz, U., Nielsen, K., & Hasson, H. (2019). Employees' and line managers' active involvement in participatory organizational interventions: Examining direct, reversed, and reciprocal effects on well-being. *Stress and Health,*

35(1), 69–80.

\*Tsutsumi, A., Nagami, M., Yoshikawa, T., Kogi, K., & Kawakami, N. (2009). Participatory Intervention for Workplace Improvements on Mental Health and Job Performance Among Blue-Collar Workers: A Cluster Randomized Controlled Trial. *Journal of Occupational and Environmental Medicine*, 51(5), 554–563.

\*Uchiyama, A., Odagiri, Y., Ohya, Y., Takamiya, T., Inoue, S., & Shimomitsu, T. (2013). Effect on Mental Health of a Participatory Intervention to Improve Psychosocial Work Environment: A Cluster Randomized Controlled Trial among Nurses. *Journal of Occupational Health*, 55(3), 173–183.

UK Health and Safety Executive. (2007). *Managing the causes of work-related stress : A step-by-step approach using the Management Standards* (2nd ed.). Health and Safety Executive.

Vaskova, R. (2007). Teamwork and high performance work organisation. In *Eurofound*.  
<https://www.eurofound.europa.eu/publications/article/2007/teamwork-and-high-performance-work-organisation>

\*von Thiele Schwarz, U., Nielsen, K. M., Stenfors-Hayes, T., & Hasson, H. (2017). Using kaizen to improve employee well-being: Results from two organizational intervention studies. *Human Relations*, 70(8), 966–993.

Williams, S. P., Malik, H. T., Nicolay, C. R., Chaturvedi, S., Darzi, A., & Purkayastha, S. (2018). Interventions to improve employee health and well-being within health care organizations: A systematic review. *Journal of Healthcare Risk Management*, 37(4), 25–51.

Wong, G., Greenhalgh, T., Westhorp, G., Buckingham, J., & Pawson, R. (2013). RAMESES



publication standards: realist syntheses. *BMC Medicine*, 11(1), 21.

\*Yoshikawa, T., Ogami, A., & Muto, T. (2013). Evaluation of participatory training in managing mental health for supervisory employees in the financial industry. *Journal of Human Ergology*, 42, 45–54.

## CHAPTER 3

### Developing Initial Middle Range Theories in Realist Evaluation

Hamid Roodbari <sup>1,\*</sup>, Karina Nielsen <sup>1</sup>, Carolyn Axtell <sup>1</sup>, Susan E. Peters <sup>2,3</sup> and Glorian Sorensen <sup>2,3</sup>

<sup>1</sup> Institute for Work Psychology, Sheffield University Management School, University of Sheffield, Sheffield, S10 2TN, UK

<sup>2</sup> Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, Boston, MA 02115, USA

<sup>3</sup> Dana-Farber Cancer Institute, Boston, MA 02215, USA

\*Corresponding author

Manuscript published, International Journal of Environmental Research and Public Health

**Roodbari, H.**, Nielsen, K., Axtell, C., Peters, S.E., Sorensen, G. (2021). “Developing Initial Middle Range Theories in Realist Evaluation: A Case of an Organisational Intervention”. *International Journal of Environmental Research and Public Health*, VOL. 18, p. 8360. <https://doi.org/10.3390/ijerph18168360>.

## Abstract

**(1) Background:** Realist evaluation is a promising approach for evaluating organisational interventions. Crucial to realist evaluation is the development and testing of middle range theories (MRTs). MRTs are programme theories that outline how the intervention mechanisms work in a specific context to bring about certain outcomes. To the best of our knowledge, no organisational intervention study has yet developed initial MRTs. This study aimed to develop initial MRTs based on qualitative evidence from the development phase of an organisational intervention in a large multi-national organisation, the US food service industry. **(2) Methods:** Data were collected through 20 semi-structured interviews with the organisation's managers, five focus groups with a total of 30 employees, and five worksite observations. Template analysis was used to analyse data. **(3) Results:** Four initial MRTs were developed based on four mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context to formulate 'what may work for whom in which circumstances?' in organisational interventions; **(4) Conclusions:** Our findings provide insights into 'how' and 'which' initial MRTs can be developed in organisational interventions.

**Keywords:** realist evaluation; organisational interventions; context–mechanism–outcome configuration; middle range theory; mechanism

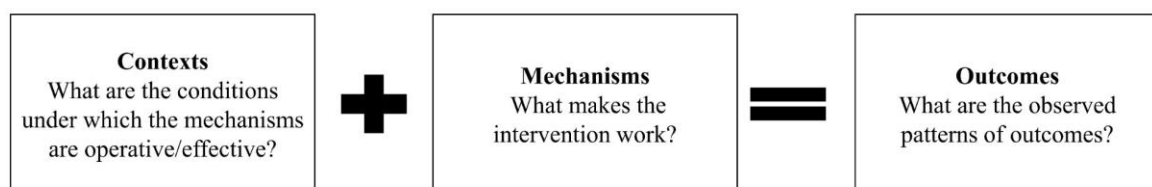
## INTRODUCTION

Organisational interventions are the recommended approach for improving psychosocial working conditions and employees' health and wellbeing [1,2]. Organisational interventions are 'planned, behavioural, and theory-based actions that aim to improve employees' health and wellbeing by changing the way work is designed, organised, and managed' [3] p. 1030. The organisational intervention literature shows that some organisational interventions have resulted in improvements in psychosocial working conditions and employee health and wellbeing; others have resulted in no effect, and a few even led to a deterioration in psychosocial working conditions and employee health and wellbeing [4–6]. Realist evaluation is a promising approach for evaluating organisational interventions [7]. Realist evaluation seeks to answer the important question of 'what works for whom in which circumstances?' through an iterative cycle of developing middle range theories (MRTs) and testing these theories [8]. MRTs are programme theories about how the mechanisms of an intervention work in a specific context to bring about certain outcomes [9]. Despite the emerging application of realist evaluation in organisational intervention studies [10–13], to the best of our knowledge, no organisational intervention study has developed initial MRTs. This study aimed to apply realist evaluation in an organisational intervention study by exploring 'how' and 'which' initial MRTs can be developed.

Realist evaluation examines the underlying mechanisms of an intervention (what makes the intervention work?), the contexts under which the mechanisms operate (what are the conditions under which the mechanisms are operative/effective?), and the patterns of outcomes produced (what are the observed patterns of outcomes?) in CMO configurations (Contexts + Mechanisms = Outcomes) [7,9]. Figure 1 depicts the relationship between contexts, mechanisms, and outcomes in a CMO configuration. To evaluate an intervention, realist evaluation involves an iterative cycle that has four steps of (1) developing initial

MRTs (i.e., a descriptive format of CMO configurations), (2) planning and implementing the intervention, based on these initial MRTs and collecting empirical data relevant to the mechanisms, contexts, and outcomes of the initial MRTs, (3) analysing and synthesising empirical data based on observed outcomes to formulate empirical MRTs, and (4) testing (i.e., confirming, refuting, or modifying) initial MRTs against the empirical MRTs [8,14].

**Figure 1.** The relationship between contexts, mechanisms, and outcomes in a CMO configuration



This study focused on the first step of the realist evaluation cycle; that is, the development of initial MRTs. To develop initial MRTs, realist evaluation requires identifying the most relevant mechanisms in each intervention study [8,15]. In this regard, the organisational intervention literature shows a number of intervention mechanisms that influence the success or failure of the interventions. In a recent review of organisational interventions, Nielsen and Noblet (2018) [16] identified a number of key intervention mechanisms, including tailoring the intervention to fit the organisational context, employees' participation, and management support. In addition, Schelvis et al. (2016) [17] identified important intervention mechanisms as targeting the right problem to solve in the organisation, employees' participation, middle management support, senior management support, communication, and employees' exposure to the intervention activities. Furthermore, Peters et al. (2020) [18] identified four essential intervention process mechanisms as organisation–intervention fit, employees' participation, communication, and leadership commitment. These

authors concluded that if these intervention mechanisms are not triggered/operated, the intended outcomes of interventions may not materialise [16–18].

Participation refers to the collective engagement of both employees and their worksite managers in the decision-making process about what and how changes in working conditions can be made in their specific worksite [3]. Leadership commitment refers to the engagement of senior management in the intervention through showing commitment to the intervention and allocating necessary resources to the intervention activities [7]. Communication refers to forming bottom-up and top-down communications between intervention stakeholders about the intervention [19]. Finally, tailoring the intervention to fit the organisational context refers to tailoring intervention components to fit existing policies and procedures, existing working conditions, and individuals in the organisation [20].

Since the success of an organisational intervention depends on the engagement of all organisational members (i.e., employees, line managers, and senior managers), it is important to explore the role of such intervention stakeholders in the change process [21]. Therefore, participation (of both employees and their worksite managers) and leadership commitment are two important process mechanisms that influence the effectiveness of organisational interventions and should be evaluated [16,17]. In addition, since the process and content of communication among the intervention stakeholders influence their awareness of the intervention, engagement in the intervention, and ultimately intervention outcomes, it is important to examine how the intervention stakeholders communicated with each other about the intervention and what kind of information was exchanged among them [21]. Hence, communication about the intervention among the intervention stakeholders is the third key process mechanism that should be evaluated [18]. Fourth, the intervention should fit the culture and working conditions of the intervention stakeholders [21], otherwise, the intervention may be perceived negatively and lead to the failure of the intervention [16]. As

such, tailoring the intervention to fit the organisational context is the fourth key process mechanism that should be evaluated [16,18]. In the current study, therefore, we focused on four process mechanisms that have been reported as important mechanisms of organisational interventions: participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context [16–18]. We focused on the process mechanisms, rather than contextual factors and outcomes, because the existing literature is less consistent as to what contextual factors and which outcomes are important, only the four mechanisms are clearly stated in the literature. In our study, we allowed exploration of other mechanisms, however, since we defined the above four mechanisms at high levels (e.g., participation mechanism covered both employees and worksite managers), no other mechanisms were identified.

Focusing on the above four mechanisms, we developed four initial MRTs by analysing qualitative data from the development phase of an organisational intervention aiming to improve employees' health and wellbeing in a large multi-national organisation operating in the US food service industry. We explored how the process mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context may be operated in the intervention study in the food service industry, what contextual factors may influence the operation of such mechanisms, and what outcomes these mechanisms may produce. Based on such findings, we developed CMO configurations and initial MRTs. In this study, therefore, we investigated the following general research questions:

*Research Questions:* How to develop initial MRTs in the organisational intervention?

Which initial MRTs can be developed in the organisational intervention?

The contribution of this study is twofold. First, regarding the process of developing initial MRTs (i.e., how to develop initial MRTs in the organisational intervention?), this

study addresses the call by Wong et al. (2013, 2016) [22,23] to provide details on how realist evaluation has been used in intervention studies. This article is an example of how to develop initial MRTs as required by realist evaluation. To the best of our knowledge, this article is the first to develop initial MRTs in an organisational intervention [19].

Second, in terms of the contents of initial MRTs (i.e., which initial MRTs can be developed in the organisational intervention?), this study developed four initial MRTs about the key process mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context and their causally related contextual factors and outcomes. These initial MRTs—by analysing organisational stakeholders' perspectives about how interactions between certain contextual factors and certain intervention mechanisms might produce certain outcomes—improve our understanding of what may work for whom, why, how, and under which circumstances [7]. The novelty of our article, despite previous organisational intervention studies, is linking context–mechanism–outcome elements together in initial MRTs. These initial MRTs create awareness of important intervention mechanisms and their causally related contextual factors and outcomes, and hence provide insights into which data should be collected and analysed when evaluating organisational interventions [7]. This is particularly important in worker populations that have, for example, low levels of autonomy [24], and low wage and immigrant workers [11], such as those employees included in this case study. Researchers and occupational health practitioners can then test (i.e., confirm, refute, or modify) these initial MRTs by using empirical evidence from their interventions [8,9].

## **MATERIALS AND METHODS**

### **Design**



The present study was based on formative qualitative research [25] conducted as part of the development phase of the Workplace Organizational Health Study, a proof-of-concept intervention study implemented as a Cluster Randomised Controlled Trial (CRCT) [26]. The formative research was used to identify working conditions to be targeted by the intervention, prioritise intervention outcomes, and identify promising intervention mechanisms [18]. The formative research was conducted during Spring–Summer 2017 in five worksites with between 7 and 30 employees. To avoid contamination [19], the worksites included in the formative research were not included in the later CRCT.

### **Setting**

The study was conducted in a large multi-national organisation operating in the US food service industry. This organisation had worksites that provided food service to corporate clients. The worksites participating in the formative research were located in corporate clients' premises across Boston, Massachusetts, USA. These worksites were organised by district, based on their geographical location. Each worksite had a specific corporate client (e.g., medical, legal, banking) with specific food service contract terms.

### **Data Collection**

To develop initial MRTs, the research team conducted semi-structured interviews with managers and focus groups with employees and undertook non-participant worksite observations.

#### ***Interviews with Managers***

Three research team members conducted 20 semi-structured interviews with the organisation's managers. The organisation generated a list of managers and, on behalf of the research team, sent recruitment letters/emails to its managers to participate in the intervention. At the district level, the research team conducted 11 telephone interviews with

12 district-level managers including district managers and other senior managers (human resources, health and safety, vice presidents, and senior vice presidents). At the worksite level, the research team conducted nine telephone interviews with worksite managers. An open-ended moderator guide was used containing questions about management and leadership perspectives on working conditions, essential elements of the intervention, and possible intervention outcomes. Each interview took approximately 35 min (ranging between 25 and 42 min). The research team audiotaped and transcribed all interviews. At the district level, each participant was given an identifier (DM#1-12) and at the worksite level, each participant was given an identifier (GM#1-4, 6, 8, 9, 12, 13).

### ***Focus Groups with Employees***

The research team conducted five focus groups with a total of 30 employees. The research team provided flyers to be distributed and a script to be read in both English and Spanish by the worksite manager in a team meeting inviting employees to participate. All focus groups were conducted on-site and to maintain privacy and confidentiality, no managers attended or observed the focus groups. Focus groups took approximately 60 min (ranging between 56 and 60 min). At one worksite, to accommodate the participants and the inability to release all employees from their duties at one time, the intended focus group was changed into four individual interviews; each took approximately 20 min (ranging between 15 and 25 min). A semi-structured focus group guide was used, including questions related to working conditions that impact employees' health and wellbeing, important aspects of employees' health and safety (e.g., pain, injury), essential intervention elements, and ideas and perspectives on how working conditions could be improved. The research team audiotaped and transcribed all focus groups. In focus groups, each participant was identified with their corresponding focus group or interview (FG#1-4, Int#1-4).

### ***Non-Participant Worksite Observations by the Research Team***

The research team conducted non-participant worksite observations to observe a normal workday at the five participating focus group worksites to triangulate data from the interviews with managers and focus groups with employees [27]. A research team member conducted the observations in August 2018 over a three-to-four-hour period at each worksite before the focus group. Based on the observations, extensive observation field notes were taken that contained identified specific risks in the physical work environment including the customer-facing, kitchen, and storage areas. The research team, then, summarised and discussed the field notes. The observations were highly useful in improving the contextual understanding of the setting and culture of each worksite.

### **Data Analysis and Synthesis**

We used template analysis to analyse our data. This method stands ‘between content analysis where all codes are predetermined... and grounded theory where there is no a priori definition of codes’ [28] p. 118. When coding data using template analysis, an initial template (a set of priori codes) is defined (based on existing knowledge about the study objects), then this initial template is refined as data are analysed [29]. We used template analysis, instead of a grounded theory approach [30], as the recent organisational intervention research has provided the information necessary to develop an initial template [31]. We developed the initial coding template based on Nielsen and Noblet (2018) [16], Schelvis et al. (2016) [17], and Peters et al. (2020) [18]. Therefore, our initial coding template contained four essential intervention process mechanisms; namely participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context.

To refine (i.e., expand) the initial template, we analysed and synthesised the collected qualitative data. To analyse data, first, an experienced qualitative researcher coded data according to (1) promising intervention mechanisms identified by managers and employees, (2) contextual factors including existing working conditions and policies and practices related

to health, wellbeing, and safety, and (3) outcomes of interest. A second qualitative researcher from a different discipline and training cross checked the codes against the original transcripts to enhance trustworthiness (peer debriefing). The observation field notes were used to triangulate and confirm the data observed in the interviews and focus groups. Then, the first, second, and third authors examined the initial template against the emerged codes and expanded the initial template to contain intervention mechanisms, contextual factors, and outcomes identified in the data set. Next, following a process of retrodution [32], the first, second, and third authors synthesised data by identifying how the process mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context could be operated in this intervention, what contextual factors may impair or facilitate the activation of each mechanism, and what outcomes each mechanism may produce. In doing so, the analysed data were synthesised into four contextualised CMO configurations that were, then, translated into four initial MRTs using the statement of *'if there are specific contextual factors, **then** specific mechanisms produce specific outcomes'*. Four final templates were developed, representing four initial MRTs, each template focusing on one initial MRT. During the analysis and synthesis process, the first, second, and third authors met regularly to refine the initial MRTs and their corresponding final templates.

### **Trustworthiness**

To ensure the trustworthiness of our qualitative findings, we followed a set of criteria proposed by Lincoln and Guba (1985) [33]. Their criteria of credibility were met through prolonged engagement in the field and peer debriefing. Their criterion of transferability was met by the description of the study design and organisational context. Their criteria of dependability were met by protecting research participants' confidentiality and drawing on different stakeholders at multiple organisational levels. Finally, their criteria of confirmability were met using template analysis and retrodution and transparent presentation of the data.

## **RESULTS**

We developed four initial MRTs, focusing on four key process mechanisms highlighted in the organisational intervention literature, based on the empirical data from the formative research. In the following, the mechanisms and their causally related contextual factors and outcomes are highlighted; based on them, we developed an initial MRT. The findings are also presented in four figures (Figures 2–5). Each figure is a final template of one initial MRT. The text bubbles in the figures represent the relevant quotations/field observation notes from the data.

### **Initial MRT about Participation**

#### ***Mechanism of Participation***

Our analysed data showed that participation within food service industry intervention may operate through the following key mechanism.

*Mechanism: collective engagement of employees and their worksite managers in the decision-making process concerning improving their working conditions.* Managers at different levels suggested that a mechanism could be introduced, which grants autonomy to employees to, collectively with worksite managers, make decisions about how working conditions could be improved. Employees could be given the opportunity to discuss their physical and psychosocial working conditions with their worksite managers in worksite level committees. As part of this mechanism, employees would offer their perspective on how working conditions could be improved to their worksite managers who could then act on employees' suggestions.

#### ***Contextual Factors that May Influence Participation***

Our participants highlighted four contextual factors that may influence participation.

*Contextual factor one: reasonable workloads for employees and worksite managers.*

Employees and worksite managers reported high workloads and time pressure as a potential barrier to participation. This means, to trigger participation, employees and worksite managers need reasonable workloads to have the time to participate in the intervention's activities.

*Contextual factor two: low employees' turnover.* Worksite managers and employees acknowledged a high level of employees' turnover in the organisation and reported that the resultant high number of new, temporary employees would have insufficient experience in the food service environment to reduce regular employees' workload. Therefore, regular employees' workload would not be decreased to have time to participate in the intervention. This suggests that the level of employee turnover should be so low that regular employees have enough time to participate in the intervention's activities.

*Contextual factor three: high employee readiness for change.* Managers at different levels highlighted that low employee readiness for change in terms of high routine inertia and lack of motivation would impair participation. This means that, to trigger participation, employee readiness for change should be high.

*Contextual factor four: existing regular meetings.* District-level managers pointed out that existing daily, weekly, biweekly, and monthly meetings in the organisation would provide a platform that would facilitate participation in the intervention.

### ***Outcomes that May be Produced by Participation***

Our participants suggested three outcomes that may be produced by participation.

*Outcome one: improved employee awareness of their working conditions and behaviours.* District-level managers stated that participation in the intervention activities would improve employee awareness of their working conditions and behaviours. In particular, participation would improve employee awareness of their working conditions that

would affect their safety and wellness and the working conditions that would make them feel good, safe, comfortable, and confident in their job and in their work environment.

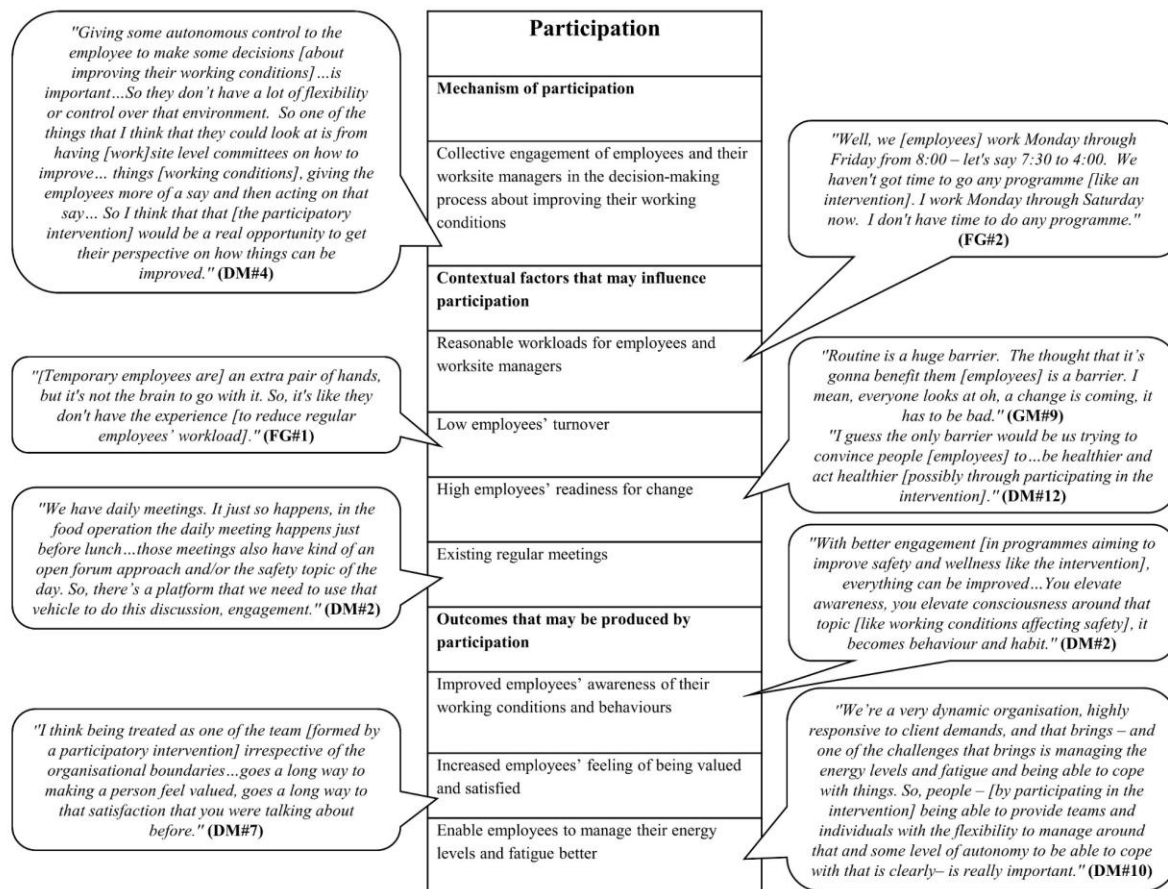
*Outcome two: increased employee feelings of being valued and satisfied.* District-level managers reasoned that participation in the intervention through forming teams and participating in team meetings, in which employees can freely provide their inputs, irrespective of the organisational boundaries, would help employees to feel valued and would improve their satisfaction.

*Outcome three: enable employees to manage their energy levels and fatigue better.* District-level managers pointed out that participation by providing job autonomy to employees regarding task management, decision making on the job, and skills to be able to rotate or work across jobs, as needed, would enable them to manage their energy level and fatigue. They highlighted that fatigue was associated with the schedules of the employees, including the early hours of their shifts, working multiple jobs, and the pace of the workday; hence, allowing employees to schedule their tasks would enable them to match their tasks with their energy level, which would ultimately reduce their fatigue.

The above analyses lead to the following initial MRT.

*Initial MRT about participation: if* there are reasonable workloads for employees and worksite managers, the level of employees' turnover is low, employee readiness for change is high, and there are structures in place, including existing regular meetings (*contextual factors*), *then* giving autonomy to employees to, collectively with their worksite managers, make decisions about improving their working conditions (a *mechanism*) will improve employees' awareness of their working conditions and behaviours, management of their energy levels and fatigue, and their feeling of being valued and satisfied (*outcomes*).

**Figure 2.** Final template for the initial MRT about participation



## Initial MRT about Leadership Commitment

### *Mechanisms of Leadership Commitment*

Our data showed that leadership commitment may operate in three ways (i.e., three mechanisms) within the food service industry intervention, as outlined below.

*Mechanism one: being involved in the intervention from the start of the intervention.*

District-level managers argued that, if senior management (i.e., district and higher-level managers), are not involved in the change process from the beginning, the lower-level managers and employees may choose some change initiatives that need large (financial) resources, and this would make the change process a longer process. They explained that leadership commitment from the start of the intervention would make the intervention more successful and quicker.



*Mechanism two: establishing the intervention as an organisational priority.* District-level managers highlighted that senior managers should make the participatory intervention an organisational priority as it helps to put the employees at the centre of consideration and legitimise the importance of creating a participatory culture.

*Mechanism three: allocating necessary resources.* District-level managers highlighted that senior managers should support the intervention with an emphasis on allocating necessary resources to implement the intervention. Such resources could include financial resources, human resources, training, and infrastructural resources (e.g., communication tools).

### ***Contextual Factors that May Influence Leadership Commitment***

Our participants highlighted three contextual factors that may influence leadership commitment.

*Contextual factor one: availability of sufficient financial resources.* District-level managers stated that the existing budget and cost constraints of the organisation working within the competitive food service industry could be a barrier for leadership commitment to cover the increased costs associated with the participatory intervention. This suggests that, to trigger leadership commitment, there should be sufficient financial resources to cover the increased costs associated with the intervention.

*Contextual factor two: low role conflict for senior managers.* District-level managers discussed that competing priorities including managing the internal affairs of the organisation and client relationships would limit senior management time to support the intervention. This implies that, to trigger leadership commitment, senior managers should have low role conflict so they can allocate time to support the intervention.

*Contextual factor three: availability of industry level resources.* District-level managers acknowledged that existing resources at the industry level would facilitate

leadership commitment. At the industry level, the resources would include the Occupational Safety and Health Administration (OSHA) (which sets and enforces standards about safe and healthy working conditions, and provides training, education, outreach, and assistance) and several organisations that senior managers could consult.

### ***Outcomes that May be Produced by Leadership Commitment***

Our participants suggested two outcomes that may be produced by leadership commitment.

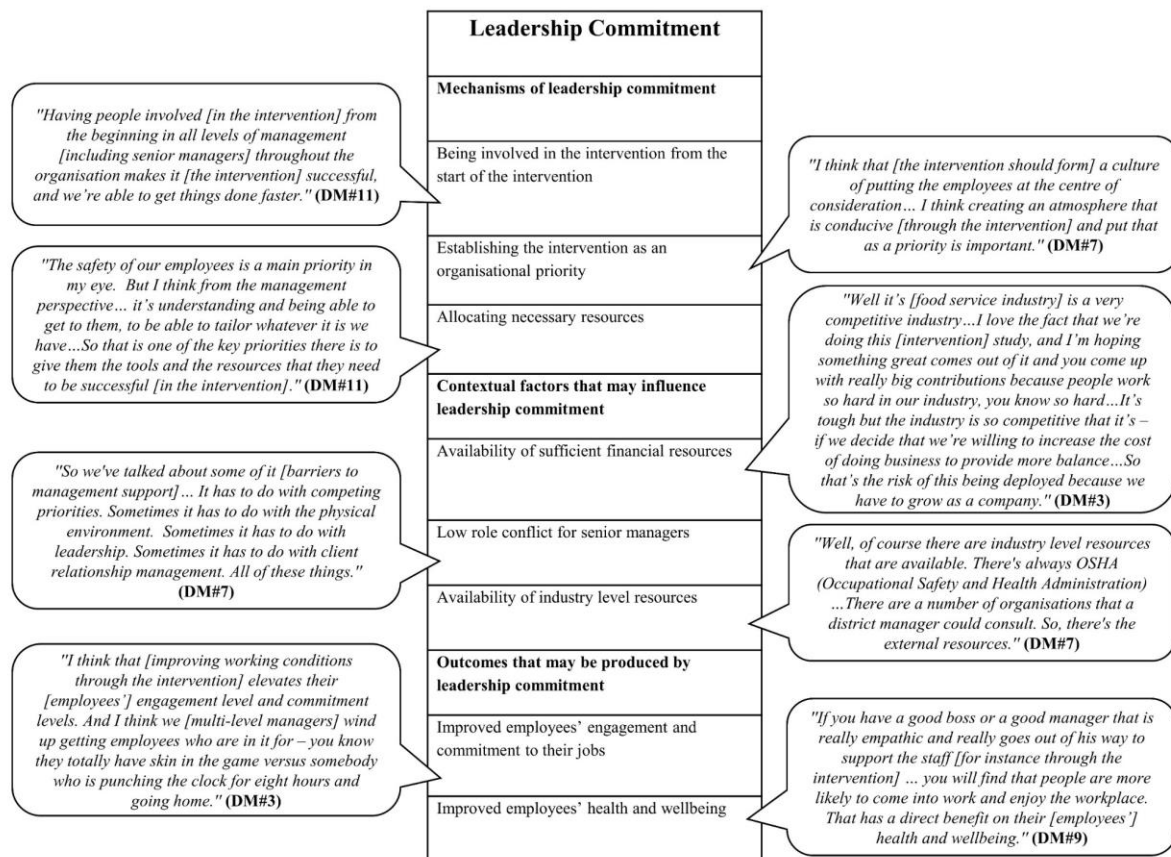
*Outcome one: improved employee engagement and commitment to their jobs.* District-level managers argued that multi-level management (including senior management) support of the intervention would improve working conditions that ultimately improve employees' engagement and commitment to their jobs.

*Outcome two: improved employee health and wellbeing.* District-level managers suggested that multi-level management (including senior management) support of the intervention to improve working conditions would improve employee-perceived managerial support. This would positively correlate with improving employee health and wellbeing.

The above analyses lead to the following initial MRT.

*Initial MRT about leadership commitment: **if** there are sufficient financial resources in the organisation, senior managers have low role conflict, and there are industry-level resources (*contextual factors*), **then** leadership commitment to the intervention by being involved from the start of the intervention, establishing the intervention as an organisational priority, and allocating necessary resources (*mechanisms*), will improve employee-perceived managerial support, which will consequently improve employee health and wellbeing, job engagement, and commitment (*outcomes*).*

**Figure 3.** Final template for the initial MRT about leadership commitment



## Initial MRT about Communication

### *Mechanisms of Communication*

Our data showed that communication may operate in two ways (i.e., two mechanisms) within the food service industry intervention, as detailed below.

*Mechanism one: establishing two-way communication.* District-level managers highlighted that a mechanism should establish two-way communication (i.e., top-down and bottom-up) between managers at different levels and employees about the intervention activities.

*Mechanism two: establishing clear, precise, and specific communication about the goals, process, and content of the intervention.* Managers at different levels suggested that communication about the goals, process, and content of the intervention should be clear,

precise, and specific. They suggested that the purpose of the intervention, the implementation process of the intervention, and the targeted working conditions to change by the intervention should be communicated to employees.

### ***Contextual Factors that May Influence Communication***

Our participants highlighted five contextual factors that may influence communication.

*Contextual factor one: flexibility of organisational communication structures to accommodate both top-down and bottom-up communication flows.* Managers at different levels considered existing top-down, multi-layered communication flow in the organisation as a barrier to effective communication about the intervention. They described existing communication as a “cascade from the top down”: at the senior management level, communication was web-based and through leadership meetings; as communication cascades down, the responsibility falls on the worksite managers, often through meetings, to carry the information to employees. They acknowledged that bottom-up communication was required but missing within the organisation. This suggests that, to trigger effective communication, organisational communication structures should be flexible to accommodate both top-down and bottom-up communication flows.

*Contextual factor two: minimised language barriers.* Worksite managers reported immigrant employees from different backgrounds were employed and, therefore, language barriers in the worksites could impair effective communication regarding the intervention. This implies that, to trigger effective communication, language barriers in the organisation should be minimised.

*Contextual factor three: reasonable workloads for worksite managers.* District-level managers highlighted existing high workloads and time pressure for worksite managers as potential barriers to communication about the intervention through in-person meetings with their employees. This suggests that, to trigger effective communication, worksite managers

need reasonable workloads and time allocated to have in-person communication with their employees about the intervention.

*Contextual factor four: availability of communication resources.* Managers at different levels reported that existing resources in the company including the safety website of the company, email, daily stand-up meetings (huddles), and formal department meetings would facilitate effective communication about the intervention.

*Contextual factor five: existing a culture of respect.* Worksite managers confirmed that the existing culture of respect in the organisation would encourage employees to communicate their ideas about improving working environment during the intervention and to provide honest feedback.

### ***Outcomes that May be Produced by Communication***

Our participants suggested three outcomes that may be produced by communication.

*Outcome one: improved employee job engagement and job satisfaction.* District-level managers suggested that communication about the content of the intervention (i.e., improving working conditions, such as by clarifying opportunities for career advancement) would improve employee job engagement and job satisfaction.

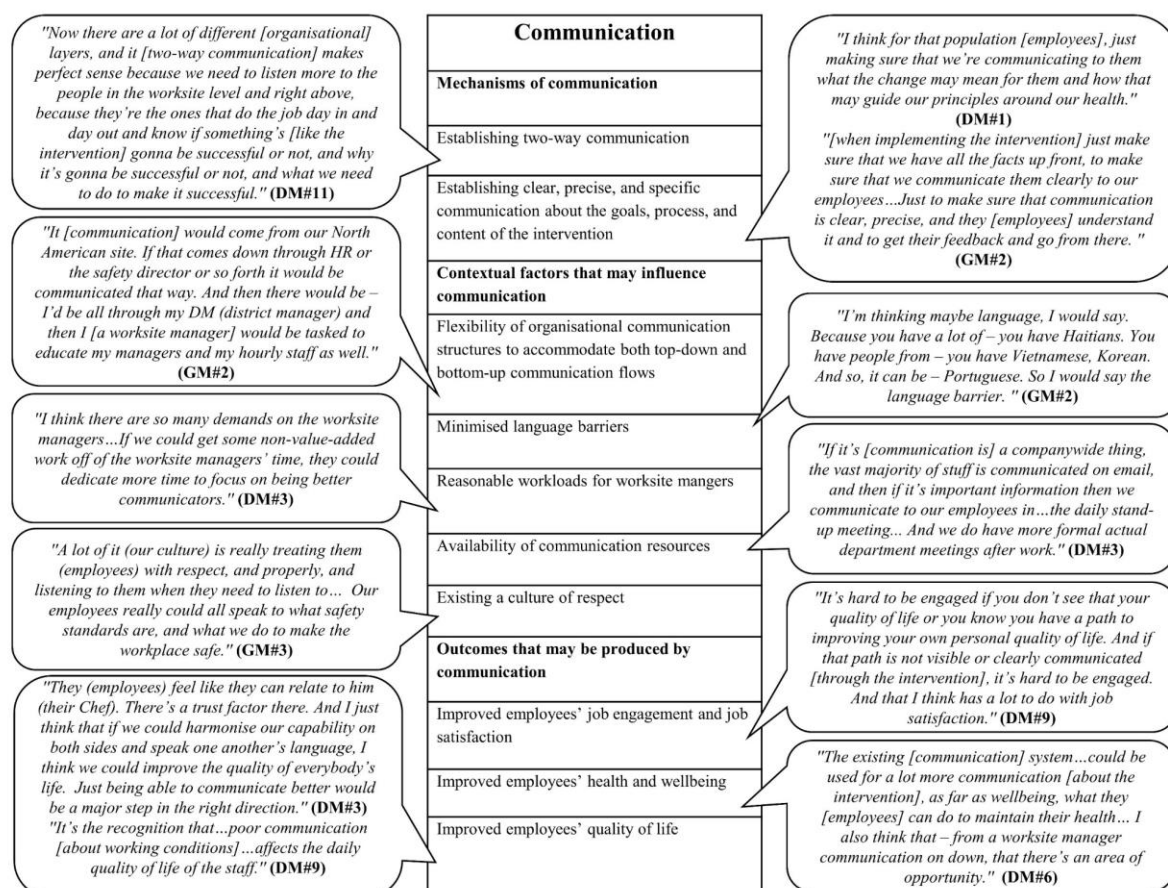
*Outcome two: improved employee health and wellbeing.* District-level managers considered communication about the intervention an important issue when implementing changes in working condition that would improve employee wellbeing and help employees maintain their health.

*Outcome three: improved employee quality of life.* District-level managers suggested that effective communication about the content of the intervention among employees and managers would improve relatedness among these different levels, create trust among them, harmonise their capabilities, and improve their daily quality of life.

The above analyses lead to the following initial MRT.

*Initial MRT about communication: if there are flexible organisational structures for both top-down and bottom-up communication flows, few language barriers, reasonable workloads for worksite managers, necessary communication resources, a culture of respect (contextual factors), then establishing two-way (i.e., top-down and bottom-up) communications between managers and employees to communicate clear, precise, and specific information about the goals, process, and content of the intervention (mechanisms) will improve employees' job engagement, job satisfaction, health and wellbeing, and quality of life (outcomes).*

**Figure 4.** Final template for the initial MRT about communication.



## Initial MRT about Tailoring the Intervention to Fit the Organisational Context

### *Mechanisms of Tailoring the Intervention to Fit the Organisational Context*

Our data showed that tailoring the intervention to fit the organisational context may operate in three ways (i.e., through three mechanisms) within the food service industry intervention as specified below.

*Mechanism one: tailoring the intervention to fit individuals.* Managers at different levels acknowledged the diversity of employees in terms of their needs, attitudes, skills, competencies, and dedications and suggested that a mechanism should be tailoring the intervention to fit individuals.

*Mechanism two: tailoring the intervention to fit existing policies and procedures.* District-level managers proposed tailoring the intervention activities to fit existing policies and procedures. They concluded that, due to the existing top-down organisational structure, changing working conditions should be through policies and procedures verified by the senior management.

*Mechanism three: tailoring the intervention to fit existing working conditions.* Our data suggested that intervention activities should target three groups of working conditions that were perceived to be influential on employees' safety, health, and wellbeing. These working conditions included safety practices and ergonomics (e.g., heavy lifting and carrying, injuries from cuts, burns, trips, slips, and falls), work intensity (e.g., workloads of worksite managers and employees, various shifts and schedules in worksites), and job enrichment and career advancement (e.g., role clarity and job tasks expectations, pathways for career advancement, teamwork).

### ***Contextual Factors that May Influence Tailoring the Intervention to Fit the Organisational Context***

Our analysed data highlighted two contextual factors that may influence tailoring the intervention to fit the organisational context.

*Contextual factor one: existing good practices.* Managers at different levels highlighted that to tailor the intervention to fit the organisational context, existing good practices could be used to build intervention activities. These existing good practices would include worksite managers' monthly safety inspections, daily and monthly safety meetings, safety committees, safety trainings, and using bulletin boards in worksites for communicating information on working conditions and safety policies and procedures.

*Contextual factor two: availability of resources.* Managers at different levels acknowledged that existing resources in the organisation could be used to tailor the intervention to fit the organisational context. These resources would include the company's website, wellness/safety/mindfulness programmes, the Employee Assistance Programme (EAP), online resources, and training coordinators.

***Outcomes that May be Produced by Tailoring the Intervention to Fit the Organisational Context***

Our participants suggested two outcomes that may be produced by tailoring the intervention to fit the organisational context.

*Outcome one: reduced work-related injuries and musculoskeletal disorders.* District-level managers stated that a tailored intervention targeting the most relevant problematic working conditions would reduce injuries and musculoskeletal disorders associated with the job tasks completed by employees.

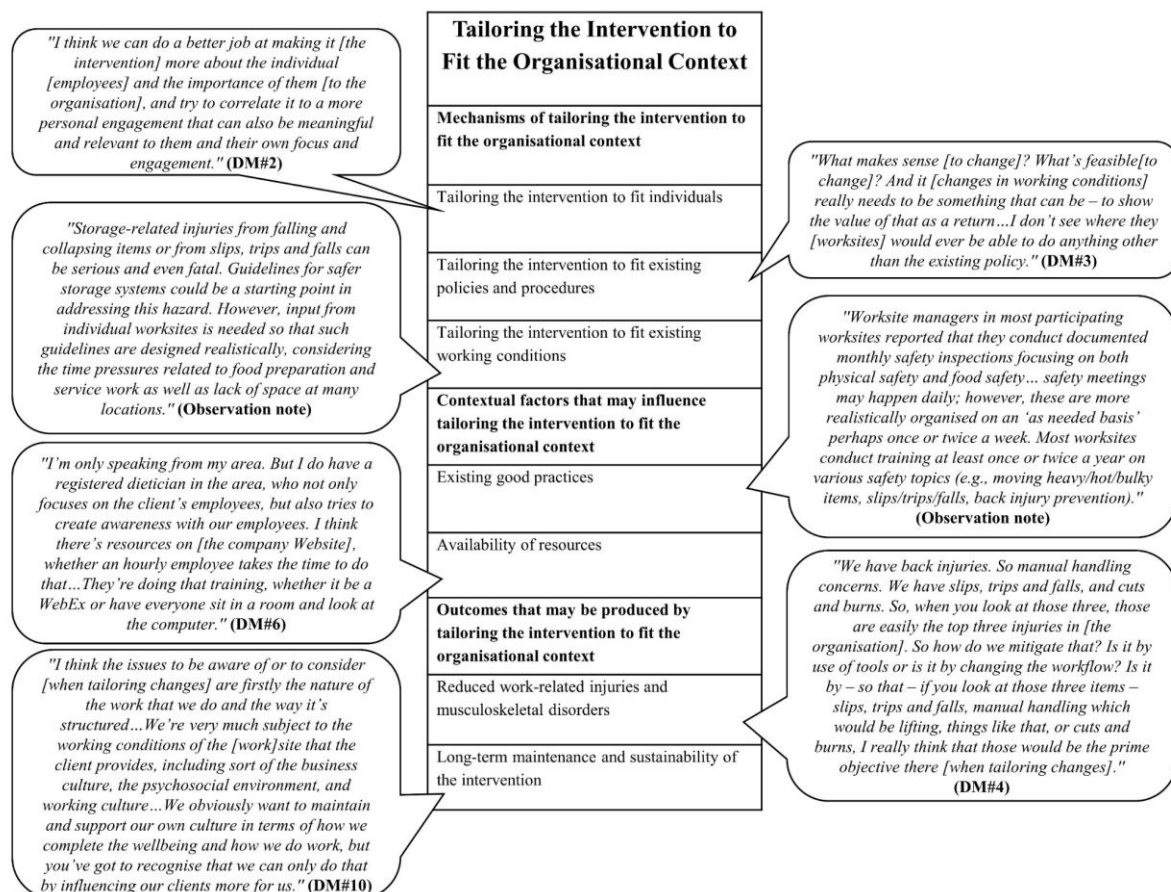
*Outcome two: long-term maintenance and sustainability of the intervention.* District-level managers explained that tailoring intervention activities to fit existing working conditions including physical working environment, psychosocial working environment, working culture, and relationships between the worksites and their clients would build long-term maintenance and sustainability of the intervention activities within the organisation.

The above analyses lead to the following initial MRT.



*Initial MRT about tailoring the intervention to fit the organisational context: if there are existing good practices and necessary resources in the organisation (contextual factors), then a tailored intervention that fits individual employees, existing policies and procedures, and existing working conditions (mechanisms) will reduce employees' work-related injuries and musculoskeletal disorders and will result in long-term maintenance and sustainability of the intervention (outcomes).*

**Figure 5.** Final template for the initial MRT about tailoring the intervention to fit the organisational context.



## DISCUSSION

In the present study, we developed an initial template containing four key process mechanisms of organisational interventions, based on the existing literature on mechanisms

in organisational interventions. Then, we refined this template by developing four final MRT templates, based on qualitative empirical data from the development phase of an organisational intervention in the US food service industry. Each final template represents an initial MRT (i.e., CMO configuration), as required by realist evaluation.

The organisational intervention literature mainly has focused on causal relationships between Mechanisms–Contexts or Mechanisms–Outcomes rather than linking these together to form Contexts–Mechanisms–Outcomes relationships [6]. Regarding the initial MRT about participation, the literature provides the causal relationship between mechanisms and contexts as to trigger participation there should be reasonable workloads for employees and worksite managers [34], low employee turnover [35], high employee readiness for change [17], and availability of resources [13,36]. Regarding the causal relationship between mechanisms and outcomes, the literature shows that participation has resulted in improved employee awareness of their working conditions [13], increased employee feelings of being valued and satisfied [13,34], and improved employee management of their energy levels and fatigue [11].

Concerning the initial MRT about leadership commitment, the literature illustrates the causal relationship between mechanisms and contexts as, to trigger leadership commitment, there should be availability of sufficient financial resources [37] and availability of industrial-level resources [11]. We could not find causal evidence between the mechanism of leadership commitment and the contextual factor of low role conflict of senior management in the literature. Regarding the causal relationship between mechanisms and outcomes, the literature manifests that leadership commitment led to improved employee engagement and commitment to their jobs [38] and improved employee health and wellbeing [39].

Regarding the initial MRT about communication, the literature provides the causal relationship between mechanisms and contexts as, to trigger communication, there should be

flexibility of organisational communication structures to accommodate both top-down and bottom-up communication flows [40], minimised language barriers [11], reasonable workloads for worksite managers [41], availability of resources [37], and a culture of respect [42]. Regarding the causal relationship between mechanisms and outcomes, the literature illustrates that communication produced outcomes of improved employees' job engagement and job satisfaction and improved employee health and wellbeing [42]. We do not have causal evidence between the mechanism of communication and the outcome of improved employee quality of life, as of yet.

Finally, concerning the initial MRT about tailoring the intervention to fit the organisational context, the literature suggests that the causal relationship between mechanisms and contexts as, to trigger tailoring the intervention to fit the organisational context, there should be existing good practices in the organisation [43] and availability of resources [12]. Regarding the causal relationship between mechanisms and outcomes, the literature shows that tailoring the intervention to fit the organisational context produced outcomes of reduced employee work-related injuries and musculoskeletal disorders [44] and long-term maintenance and sustainability of the intervention [12,26].

In summary, the previous intervention studies mainly have focused on causal relationships between mechanisms and contexts or mechanisms and outcomes, the novelty of our study is providing a list of causally related context–mechanism–outcome elements in each initial MRTs that can be tested in future intervention studies.

### **Implications for Future Research and Practice**

Our study has both theoretical and practical implications for planning and evaluating participatory organisational interventions. From the theory perspective, we followed realist evaluation as our theoretical approach and developed four initial MRTs. These initial MRTs provide a theoretically informed basis to focus data collection, analysis, and synthesis in

future organisational intervention studies [7]. While the empirical evidence in the organisational intervention literature, to a large extent, supports the elements of our initial MRTs, these initial MRTs have not been developed or tested in a single intervention study, as required by realist evaluation [9].

From a practice point of view, our initial MRTs can be used by occupational health practitioners and organisational managers to plan and evaluate organisational interventions to improve employee health and wellbeing. In particular, our initial MRTs can be tested in organisational interventions that target immigrant employees, low-wage employees, and/or employees with low levels of autonomy; since such employees encounter relatively similar contextual factors as employees in our study, our suggested mechanisms would likely produce the above mentioned intended outcomes [11]. Our initial MRTs provide insights to occupational health practitioners and organisational managers about (1) how the mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context can be triggered; (2) what contextual factors may influence (i.e., facilitate or impair) the operation of such mechanisms, so facilitators can be fostered, and barriers can be removed or weakened; (3) what outcomes the mechanisms may produce.

We recommend future organisational intervention studies to empirically test our initial MRTs. Testing these MRTs in an organisational intervention study helps to explore how the dynamic interactions between certain contextual factors and certain mechanisms produce certain outcomes, this helps to understand what works for whom in which circumstances in organisational interventions [7]. To test our MRTs, researchers, occupational health practitioners, and organisational managers can consult previous organisational intervention studies that followed realist evaluation [10,11,13], these studies have provided insights on how to empirically test CMO configurations using quantitative methods [13] or mixed methods (i.e., both quantitative and qualitative methods) [10,11].

## Strengths and Limitations

This study has three strengths. First, we used two types of triangulation, namely ‘method triangulation’ by using interviews, focus groups, and observations and ‘data source triangulation’ by targeting multi-level managers and employees and using research team observations [45]. These two types of triangulation, where each method relates to a specific stakeholder, correspond to the call to explain which methods, and how these methods, were used to collect realistic data from different stakeholders [9]. Second, to develop the initial template, we focused on four critical process mechanisms that may influence the success or failure of organisational interventions; namely, participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context. This focus on specific mechanisms is aligned with ‘theory adjudication’ as realist evaluation requires focusing on the most relevant mechanisms in each intervention study [9,15]. Third, we analysed and synthesised data based on template analysis incorporating the logic of retroduction. In operationalising the retroductive inferencing logic, we focused on causal relationships among contexts, mechanisms, and outcomes as made explicit by the organisational stakeholders. This approach seems fit to realist evaluation and contributes to answering the question of ‘how to construct realistic data?’ [9].

This study is not without its limitations. First, the process of analysing and synthesising realist data is based on the interpretation and judgment that a researcher/occupational health practitioner applies to data. This subjectivity is critical as the overlaps between mechanisms, contextual factors, and outcomes may create issues in explaining the causal relationship among them. In this study, we used more than one researcher (i.e., the first, second, and third author) in the process of analysing and synthesising data to minimise this limitation. Second, interviews and focus groups guides were not developed based on realist evaluation. Therefore, questions did not focus on how

the intervention mechanisms could be operationalised, what contextual factors may impair or facilitate the activation of each mechanism, and what outcomes each mechanism may produce. This made developing initial MRTs challenging. Third, the triangulation of evidence was at the MRT level; we could not find different evidence from different stakeholders for each single contextual factor, mechanism, and outcome of the initial MRTs. Further, the majority of evidence is from district-level managers, implying that top managers had a better overview, compared to worksite managers and employees, about the dynamics of the prospective intervention. In realist evaluation, however, each piece of evidence that contributes to the understanding of ‘what works for whom in which circumstances’ is valued in the synthesis process [9].

## **CONCLUSION**

As the first study in the organisational intervention literature to develop initial MRTs—the first phase of realist evaluation—we proposed four initial MRTs based on qualitative empirical evidence from the development phase of an organisational intervention in a large multi-national organisation in the US food service industry. The initial MRTs show how the key process mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context can be operated, what contextual factors may influence the operation of such mechanisms, and what outcomes they may produce. As such, by formulating ‘what may work for whom in which circumstances?’, these initial MRTs provide insights into how to evaluate future interventions [7]. The initial MRTs can be tested (i.e., confirmed, refuted, or modified) using empirical data in future organisation interventions, particularly organisational interventions in organisations with immigrant employees, low-wage employees, and/or employees with low levels of autonomy.

1. **Author Contributions:** Conceptualization: H.R., K.N., C.A., G.S.; Methodology: H.R., K.N., C.A.; Investigation: H.R., K.N., C.A., G.S., S.E.P.; Resources: G.S.; Writing—Original Draft Preparation: H.R.; Writing—Review and Editing: K.N., C.A., G.S., S.E.P.; Visualization: H.R.; Supervision: K.N., C.A., G.S.; Project Administration: G.S.; Funding Acquisition: G.S., H.R. All authors have read and agreed to the published version of the manuscript.
2. **Funding:** Funding for this project was provided by the US Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health grant R01 OH010811 (Glorian Sorensen, principal investigator). Funding support for Hamid Roodbari was provided by Sheffield University Management School.
3. **Institutional Review Board Statement:** The study was conducted according to the guidelines of the Declaration of Helsinki. The study was reviewed for human subjects research by the Harvard T.H. Chan School of Public Health Institutional Review board (protocol code IRB16-0488; date of approval 12th of March 2018).
4. **Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study. Participants provided informed consent prior to participating in any data collection.
5. **Data Availability Statement:** The data supporting the results presented in this study are available on reasonable request from the corresponding author. The data are not publicly available.
6. **Acknowledgments:** The authors would like to thank the large, multinational food service company and the site managers, district managers, and frontline workers who participated, for without their participation this study would not have been possible. The authors additionally thank Melissa Karapanos, Lorraine Wallace, Lisa Burke, and Eve Nagler for their contributions to this study.

7. **Conflicts of Interest:** The authors declare no conflict of interest. The funding sponsors had no role in the design, execution, interpretation, or writing of the study.



## REFERENCES

1. EU-OSHA Second European Survey of Enterprises on New and Emerging Risks (ESENER-2). Overview Report: Managing Safety and Health at Work. Available online: <https://op.europa.eu/s/n7Wt> (accessed on 10 June 2020).
2. ILO. *Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001)*; International Labor Office: Geneva, Switzerland, 2001.
3. Nielsen, K. Review Article: How can we make organizational interventions work? Employees and line managers as actively crafting interventions. *Hum. Relat.* **2013**, *66*, 1029–1050, doi:10.1177/0018726713477164.
4. Montano, D.; Hoven, H.; Siegrist, J. Effects of organisational-level interventions at work on employees' health: A systematic review. *BMC Public Health* **2014**, *14*, 135, doi:10.1186/1471-2458-14-135.
5. Semmer, N.K. Job stress interventions and the organization of work. *Scand. J. Work. Environ. Health* **2006**, *32*, 515–527, doi:10.5271/sjweh.1056.
6. Roodbari, H.; Axtell, C.; Nielsen, K.; Sorensen, G. Organisational Interventions to Improve Employees' Health and Wellbeing: A Realist Synthesis. *Appl. Psychol. An Int. Rev.* (under review).
7. Nielsen, K.; Miraglia, M. What works for whom in which circumstances? On the need to move beyond the 'what works?' question in organizational intervention research. *Hum. Relat.* **2016**, *70*, 40–62, doi:10.1177/0018726716670226.
8. Pawson, R.; Tilley, N. *Realist Evaluation*, 2004. Available online: [https://www.communitymatters.com.au/RE\\_chapter.pdf](https://www.communitymatters.com.au/RE_chapter.pdf) (accessed on 15 June 2021).
9. Pawson, R.; Tilley, N. *Realistic Evaluation*, 1st ed.; Sage Publications Ltd: London, UK, 1997.

10. Abildgaard, J.S.; Nielsen, K.; Wåhlin-Jacobsen, C.D.; Maltesen, T.; Christensen, K.B.; Holtermann, A. 'Same, but different': A mixed-methods realist evaluation of a cluster-randomized controlled participatory organizational intervention. *Hum. Relat.* **2020**, *73*, 1339–1365, doi:10.1177/0018726719866896.
11. Busch, C.; Koch, T.; Clasen, J.; Winkler, E.; Vowinkel, J. Evaluation of an organizational health intervention for low-skilled workers and immigrants. *Hum. Relat.* **2017**, *70*, 994–1016, doi:10.1177/0018726716682308.
12. Nielsen, K.; Abildgaard, J.S.; Daniels, K. Putting context into organizational intervention design: Using tailored questionnaires to measure initiatives for worker well-being. *Hum. Relat.* **2014**, *67*, 1537–1560, doi:10.1177/0018726714525974.
13. von Thiele S.U.; Nielsen, K.M.; Stenfors-Hayes, T.; Hasson, H. Using kaizen to improve employee well-being: Results from two organizational intervention studies. *Hum. Relat.* **2017**, *70*, 966–993, doi:10.1177/0018726716677071.
14. Roodbari, H.; Nielsen, K.; Axtell, C. An integrated realist evaluation model to evaluate organisational interventions. *Acad. Manag. Proc.* **2021**, *2021*, 10830, doi:10.5465/AMBPP.2021.10830abstract.
15. Pawson, R.; Greenhalgh, T.; Harvey, G.; Walshe, K. *Realist Synthesis: An Introduction*; University of Manchester: Manchester, UK, 2004.
16. Nielsen, K.; Noblet, A. Organizational interventions: Where are we, where do we go from here? In *Organizational Interventions for Health and Well-Being: A Handbook for Evidence-Based Practice*; Nielsen, K., Noblet, A., Eds.; Routledge: Oxon, UK, 2018; pp. 1–23.
17. Schelvis, R.M.C.; Wiezer, N.M.; Blatter, B.M.; van Genabeek, J.A.G.M.; Oude Hengel, K.M.; Bohlmeijer, E.T.; van der Beek, A.J. Evaluating the implementation process of a

- participatory organizational level occupational health intervention in schools. *BMC Public Health* **2016**, *16*, 1212, doi:10.1186/s12889-016-3869-0.
18. Peters, S.E.; Nielsen, K.M.; Nagler, E.M.; Revette, A.C.; Madden, J.; Sorensen, G. Ensuring Organization-Intervention Fit for a Participatory Organizational Intervention to Improve Food Service Workers' Health and Wellbeing. *J. Occup. Environ. Med.* **2020**, *62*, e33–e45, doi:10.1097/JOM.0000000000001792.
  19. Sorensen, G.; Peters, S.; Nielsen, K.; Nagler, E.; Karapanos, M.; Wallace, L.; Burke, L.; Dennerlein, J.T.; Wagner, G.R. Improving Working Conditions to Promote Worker Safety, Health, and Wellbeing for Low-Wage Workers: The Workplace Organizational Health Study. *Int. J. Environ. Res. Public Health* **2019**, *16*, 1449, doi:10.3390/ijerph16081449.
  20. Nielsen, K.; Randall, R. Assessing and Addressing the Fit of Planned Interventions to the Organizational Context. In *Derailed Organizational Interventions for Stress and Well-Being: Confessions of Failure and Solutions for Success*; Karanika-Murray, M., Biron, C., Eds.; Springer Netherlands: Dordrecht, The Netherlands, 2015; pp. 107–118.
  21. Nielsen, K.; Randall, R. Opening the black box: Presenting a model for evaluating organizational-level interventions. *Eur. J. Work Organ. Psychol.* **2013**, *22*, 601–617, doi:10.1080/1359432X.2012.690556.
  22. Wong, G.; Greenhalgh, T.; Westhorp, G.; Buckingham, J.; Pawson, R. RAMESES publication standards: realist syntheses. *BMC Med.* **2013**, *11*, 21, doi:10.1186/1741-7015-11-21.
  23. Wong, G.; Westhorp, G.; Manzano, A.; Greenhalgh, J.; Jagosh, J.; Greenhalgh, T. RAMESES II reporting standards for realist evaluations. *BMC Med.* **2016**, *14*, 96, doi:10.1186/s12916-016-0643-1.

24. Tsutsumi, A.; Nagami, M.; Yoshikawa, T.; Kogi, K.; Kawakami, N. Participatory Intervention for Workplace Improvements on Mental Health and Job Performance Among Blue-Collar Workers: A Cluster Randomized Controlled Trial. *J. Occup. Environ. Med.* **2009**, *51*, 554–563, doi:10.1097/JOM.0b013e3181a24d28.
25. Tessmer, M. *Planning and Conducting Formative Evaluations*; Routledge/Taylor & Francis Group: London, UK, 2013.
26. Sorensen, G.; Peters, S.; Nielsen, K.; Stelson, E.; Wallace, L.; Burke, L.; Nagler, E.; Roodbari, H.; Karapanos, M.; Wagner, G.W. Implementation of an organizational intervention to improve low-wage workers' safety, health and wellbeing: Findings from the Workplace Organizational Health Study. *BMC Public Health* **2021**, doi:10.21203/rs.3.rs-605964/v1
27. Schutt, R. *Investigating the Social World: The Process and Practice of Research*, 9th ed.; Sage Publications: London, UK, 2018.
28. King, N. Template Analysis. In *Qualitative Methods and Analysis in Organizational Research: A Practical Guide*, Symon, G., Cassell, C., Eds.; Sage: London, UK, 1998; pp. 118–134.
29. Crabtree, B.F.; Miller, W.L. A template approach to text analysis: Developing and using codebooks. In *Doing Qualitative Research*; Crabtree, B.F., Miller, W.L., Eds.; Sage: Newbury Park, CA, USA, 1992; pp. 93–109.
30. Glaser, B.; Strauss, A. *The Discovery of Grounded Theory: Strategies for Qualitative Research*; Weidenfeld & Nicholson: London, UK, 1968.
31. Randall, R.; Cox, T.; Griffiths, A. Participants' accounts of a stress management intervention. *Hum. Relat.* **2007**, *60*, 1181–1209, doi:10.1177/0018726707081660.

32. Greenhalgh, T.; Pawson, R.; Wong, G.; Westhorp, G.; Greenhalgh, J.; Manzano, A.; Jagosh, J. Retrodution in realist evaluation The RAMESES II Project. Available online: [www.ramesesproject.org](http://www.ramesesproject.org) (accessed on 20 May 2021).
33. Lincoln, Y.S.; Guba, E.G. *Naturalistic Inquiry*; Sage: Beverly Hills, CA, USA, 1985.
34. Nielsen, K.; Randall, R. The importance of employee participation and perceptions of changes in procedures in a teamworking intervention. *Work Stress* **2012**, *26*, 91–111, doi:10.1080/02678373.2012.682721.
35. Arapovic-Johansson, B.; Wåhlin, C.; Hagberg, J.; Kwak, L.; Björklund, C.; Jensen, I. Participatory work place intervention for stress prevention in primary health care. A randomized controlled trial. *Eur. J. Work Organ. Psychol.* **2018**, *27*, 219–234, doi:10.1080/1359432X.2018.1431883.
36. Abildgaard, J.S.; Nielsen, K.; Sverke, M. Can job insecurity be managed? Evaluating an organizational-level intervention addressing the negative effects of restructuring. *Work Stress* **2018**, *32*, 105–123, doi:10.1080/02678373.2017.1367735.
37. Schneider, A.; Wehler, M.; Weigl, M. Effects of work conditions on provider mental well-being and quality of care: a mixed-methods intervention study in the emergency department. *BMC Emerg. Med.* **2019**, *19*, 1, doi:10.1186/s12873-018-0218-x.
38. Nielsen, K.; Antino, M.; Rodríguez-Muñoz, A.; Sanz-Vergel, A. Is it me or us? The impact of individual and collective participation on work engagement and burnout in a cluster-randomized organisational intervention. *Work Stress* **2021**, 1–24, doi:10.1080/02678373.2021.1889072.
39. Niks, I.; de Jonge, J.; Gevers, J.; Houtman, I. Work Stress Interventions in Hospital Care: Effectiveness of the DISCOVERY Method. *Int. J. Environ. Res. Public Health* **2018**, *15*, 332, doi:10.3390/ijerph15020332.

40. Dollard, M.F.; Gordon, J.A. Evaluation of a participatory risk management work stress intervention. *Int. J. Stress Manag.* **2014**, *21*, 27–42, doi:10.1037/a0035795.
41. Nielsen, K.; Randall, R. Managers' Active Support when Implementing Teams: The Impact on Employee Well-Being. *Appl. Psychol. Health Well-Being* **2009**, *1*, 374–390, doi:10.1111/j.1758-0854.2009.01016.x.
42. DeJoy, D.M.; Wilson, M.G.; Vandenberg, R.J.; McGrath-Higgins, A.L.; Griffin-Blake, C.S. Assessing the impact of healthy work organization intervention. *J. Occup. Organ. Psychol.* **2010**, *83*, 139–165, doi:10.1348/096317908X398773.
43. Yoshikawa, T.; Ogami, A.; Muto, T. Evaluation of participatory training in managing mental health for supervisory employees in the financial industry. *J. Hum. Ergol.* **2013**, *42*, 45–54, doi:10.11183/jhe.42.45.
44. Haslam, C.; Kazi, A.; Duncan, M.; Clemes, S.; Twumasi, R. Walking Works Wonders: a tailored workplace intervention evaluated over 24 months. *Ergonomics* **2019**, *62*, 31–41, doi:10.1080/00140139.2018.1489982.
45. Patton, M.Q. Enhancing the quality and credibility of qualitative analysis. *Health Serv. Res.* **1999**, *34*, 1189–1208.

## CHAPTER 4

### Testing Middle Range Theories in Realist Evaluation

Hamid Roodbari <sup>1,\*</sup>, Karina Nielsen <sup>1</sup>, Carolyn Axtell <sup>1</sup>, Susan E. Peters <sup>2</sup> and Glorian Sorensen <sup>2,3</sup>

<sup>1</sup> Institute for Work Psychology, Sheffield University Management School, University of Sheffield, Sheffield S10 2TN, UK

<sup>2</sup> Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, Boston, MA 02115, USA

<sup>3</sup> Dana-Farber Cancer Institute, Boston, MA 02215, USA

\*Corresponding author

Revised manuscript with minor revisions submitted to International Journal of Workplace Health Management

**Abstract**

**Purpose** - Realist evaluation seeks to answer the question of ‘what works for whom in which circumstances?’ through developing and testing Middle Range Theories (MRTs). MRTs are programme theories that outline how certain mechanisms of an intervention work in a specific context to bring about certain outcomes. In this paper, we tested an initial MRT about the mechanism of participation. We used evidence from a participatory organisational intervention in five worksites of a large multi-national organisation in the US food service industry.

**Design/methodology/approach** - Qualitative data from 89 process tracking documents and 24 post-intervention, semi-structured interviews with intervention stakeholders were analysed using template analysis.

**Findings** – Regarding mechanisms, the operationalised mechanism was partial worksite managers’ engagement with the research team. Regarding contextual factors, six contextual factors impaired participation: (1) high workloads of worksite managers and employees, (2) lack of worksite managers’ motivation to participate in the intervention, (3) host corporate clients’ control over the worksite environment, (4) high worksite managers’ turnover, (5) employees’ language barriers, and (6) diminished support by the senior managers to the worksite managers. In contrast, existing participatory practices facilitated participation. Regarding outcomes, worksite managers’ participation resulted in limited improvement in their awareness of how working conditions can impact on their employees’ safety, health, and wellbeing. Based on these findings, we modified the initial MRT into an empirical MRT.

**Originality/value** – This paper contributes to the understanding of ‘what works for whom in which circumstances’ regarding participation in organisational interventions.

**Keywords** Realist evaluation, Organisational interventions, Food service, Work environment, Occupational health



## INTRODUCTION

From an occupational health perspective, participatory organisational interventions can be defined as ‘planned, behavioural, theory-based actions that aim to improve employees’ health and wellbeing through changing the way work is designed, organised, and managed’ (Nielsen, 2013, p. 1030). These interventions are the recommended approach for improving psychosocial working conditions and employees’ health and wellbeing (EU-OSHA, 2016; ILO, 2001). However, the evaluation of participatory organisational interventions is challenging (Fox *et al.*, 2021; Roodbari, Axtell, *et al.*, 2021). First, participatory organisational interventions work through different emergent process mechanisms (e.g., the process of action planning) and content mechanisms (e.g., the content of action plans) (Nielsen and Miraglia, 2017). Second, participatory organisational interventions are implemented in dynamic, complex organisational contexts where various contextual factors facilitate or impair the operation of intervention mechanisms (Nielsen and Randall, 2013). Realist evaluation is considered a promising approach to evaluate complex participatory organisational interventions (Nielsen and Miraglia, 2017).

Over the last decades, different types of evaluation, known as evaluation waves, have become dominant. According to Vedung (2010), four waves of evaluation have diffused between 1965 and 2010. First, the science-driven wave entailed that professional academic researchers should evaluate appropriate means (e.g., interventions), and public decision-makers being guided by feedback from scientific evaluations should roll out the most effective means. Second, the dialogue-oriented wave entailed that evaluation should be participatory, the information should be elicited from stakeholders through their discussions. Third, the neo-liberal wave pushed for market orientation, evaluation took the forms of accountability evaluation, customer-oriented evaluation, and value-for-money evaluation. Fourth, the evidence wave entailed that evaluation should be based on real empirical

evidence. More recently, Krogstrup and Mortensen (2021) suggested that new public governance, with co-concepts (e.g., co-design, co-evaluation) at the centre, is carrying the fifth evaluation wave known as the collaborative and citizen-focused wave. This wave considers professionals' and citizens' experiences and knowledge at the heart of evaluation. In organisational intervention research, the Randomised Control Trial (RCT) has been considered the gold standard (Nielsen and Miraglia, 2017). The RCT locates in the science-driven wave (as a scientific evaluation method) and in the evidence wave (as the highest rank in the evidence hierarchy) (Vedung, 2010). Recently, Nielsen and Miraglia (2017) argued for a need to move beyond the RCT question of 'what works?' to the realist evaluation question of 'what works for whom in which circumstances?'. Realist evaluation suggests that evaluators and intervention participants should engage in a 'teacher-learner relationship' or 'assisted sense-making relationship' and interact with each other to evaluate interventions (Pawson and Tilley, 2004). As such, realist evaluation locates in the collaborative and citizen-focused wave.

Recent reviews show that participatory organisational interventions have found favour in improving employees' health and wellbeing (Fox *et al.*, 2021; Roodbari, Axtell, *et al.*, 2021). In participatory organisational interventions, organisational members (including middle managers and employees) collectively identify their workplace problems, develop solutions, and make changes that they deem appropriate in their workplace (Nielsen, 2013). Participatory organisational interventions are advantageous as they: (1) allow targeting working condition problems at source (Busch *et al.*, 2017), targeting the right problem in the workplace (Schelvis *et al.*, 2016), and targeting changes in the working conditions at multiple organisational levels (Gupta *et al.*, 2018), (2) allow tailoring the intervention to fit with the organisational contexts and the individuals within the organisation (Abildgaard *et al.*, 2020), and (3) trigger co-learning processes which empower middle managers and employees to

solve the working condition problems (Nielsen and Randall, 2012). Consequently, these interventions improve employees' feeling of ownership for the intervention, psychosocial risk management, perceived autonomy, perceived social support, and health and wellbeing (Abildgaard *et al.*, 2020; Busch *et al.*, 2017; Nielsen and Randall, 2012; Tafvelin *et al.*, 2019; von Thiele Schwarz *et al.*, 2017). On the other hand, the two disadvantages of participatory organisational interventions are: (1) their outcomes are highly situation-specific as the development and implementation of intervention activities are determined by managers and employees in a specific workplace (Abildgaard *et al.*, 2020; Nielsen *et al.*, 2006) and (2) their outcomes are notoriously difficult to measure (Holman and Axtell, 2016). To address these issues, it has been suggested to focus on proximal outcomes rather than distal outcomes of these interventions (von Thiele Schwarz *et al.*, 2017) and to explore the links between these interventions' processes and outcomes, for instance by using realist evaluation (Nielsen and Miraglia, 2017).

Realist evaluation seeks to answer the question of 'what works for whom in which circumstances?'. To answer this question, realist evaluation studies (1) the underlying Mechanisms of an intervention (what makes the intervention work?), (2) the Contexts under which the mechanisms operate (what are the conditions that influence the operation of these mechanisms?), and (3) the patterns of Outcomes produced (what are the observed patterns of outcomes?). These form Context-Mechanism-Outcome (CMO) configurations (where Context + Mechanisms = Outcomes) (Pawson and Tilley, 1997). Realist evaluation requires following a cycle that contains the four steps. First, initial Middle Range Theories (MRTs) are developed. MRTs are programme theories based on CMO configurations that outline how certain mechanisms of an intervention work in a specific context to produce particular outcomes. Second, interventions are designed and implemented based on the initial MRTs and empirical data are collected to test these MRTs. Third, the empirical data are analysed

and synthesised to develop empirical MRTs. Fourth, initial MRTs are tested against empirical MRTs, it means, it is explored if CMOs of the empirical MRTs are the same or different from the CMOs of the initial MRTs (Pawson and Tilley, 2004; Roodbari, Nielsen and Axtell, 2021). The purpose of this paper is to perform the second, third, and fourth steps of a realist evaluation cycle in a participatory organisational intervention in a large multi-national organisation in the US food service industry.

While realist evaluation is a promising approach to evaluate organisational interventions (Nielsen and Miraglia, 2017), the current literature shows that a few organisational intervention studies have employed realist evaluation. For instance, Abildgaard et al. (2020) explored two mechanisms of active employee participation and empowerment (collective efficacy) and proactive line manager behaviour (transformational leadership). Nielsen et al. (2014) examined the mechanism of using a tailored questionnaire to measure employees' appraisals of their specific working conditions. von Thiele Schwarz et al. (2017) explored how Kaizen work as a mechanism in two studies. And, Busch et al. (2017) examined five mechanisms: the company management encouragement, the role model, the peer mentor support, the line manager support, and the participative work improvement. As such, we only know a little about how to apply realist evaluation in the evaluation of organisational interventions, and consequently have limited knowledge of the causal links between mechanisms of organisational interventions, the contextual factors that influence the operation of such mechanisms, and the outcomes the mechanisms produce (Nielsen and Miraglia, 2017; Nielsen and Noblet, 2018).

We conducted a proof-of-concept trial, the Workplace Organisational Health Study, to test the feasibility and efficacy of a participatory organisational intervention to improve working conditions and safety, health, and wellbeing of low-wage food service workers (Sorensen *et al.*, 2019). Food service workers have high risks of job-related injury and stress.

Regarding job-related injury, food service workers may experience strains and sprains because of prolonged standing or repetitive movements. They can slip, trip, and fall because of slick floors. They, also, burn from exposure to cooking oil and steam and suffer cuts from sharp objects (Alamgir *et al.*, 2007; Cann *et al.*, 2008; Cocci *et al.*, 2005). Concerning job-related stress, food service workers are exposed to adverse working conditions, including high workload, uncertainty around working hours, job insecurity, and low job decision latitude (Matsuzuki *et al.*, 2013). Many of the workers' safety, health, and wellbeing outcomes are rooted in working conditions. While warranting organisational interventions that focus on changing working conditions at the organisational level (e.g., through changing in policies, programmes, and practices) are promising to improve workers' safety, health, and wellbeing, few have been evaluated and are available in the literature (Busch *et al.*, 2017; Haukka *et al.*, 2008, 2010; Nielsen *et al.*, 2006; Siukola *et al.*, 2011).

In the planning phase of the participatory organisational intervention, we completed interviews with managers at multiple levels, focus groups with employees, and observation of the worksites. Then, prior to implementing the intervention, we undertook the first step of a realist evaluation cycle and developed four initial MRTs relating to four process mechanisms, namely, participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context (Roodbari, Nielsen, Axtell, *et al.*, 2021). This paper empirically tested one of these initial MRTs, participation. A recent evaluation of organisational interventions revealed that participation is the central mechanism of these interventions (Roodbari, Axtell, *et al.*, 2021). Although the literature highlights the importance of participation for intervention outcomes, still little is known about *how* participation interacts with prevalent contextual factors to produce intervention outcomes (Nielsen, 2013). In this paper, therefore, we empirically tested the following initial MRT about participation:

*Initial MRT about participation: ‘if there are reasonable workloads for employees and worksite managers, the level of employees’ turnover is low, employees’ readiness for change is high, and there are structures in place including existing regular meetings (contextual factors); then giving autonomy to employees to, collectively with their worksite managers, make decisions about improving their working conditions (a participation mechanism) will improve employees’ awareness of their working conditions and behaviours, management of their energy levels and fatigue, and their feeling of being valued and satisfied (outcomes).’*

The current paper’s main contribution is the demonstration of how qualitative data can be used to test an initial MRT about participation. First, Nielsen and Miraglia (2017) called for future organisational intervention studies to use realist evaluation. In response, this paper uses qualitative data from a participatory organisational intervention in the US food service industry to empirically test an initial MRT. As such, the first research question in this paper is:

***Research Question 1: How can initial CMO configurations be tested in an organisational intervention using qualitative data?***

Second, Nielsen (2013) called for future organisational intervention studies to examine the mechanism of participation. In response, this paper tests an initial MRT about the mechanism of participation using evidence from the participatory organisational intervention. Therefore, the second research question in this paper is:

***Research Question 2: What works for whom in which circumstances regarding participation in an organisational intervention?***

The empirically tested MRT can help in the design of future participatory organisational interventions and increase their likelihood of success (Nielsen, 2013; Roodbari, Axtell, *et al.*, 2021).

## **METHODS**

### **Sampling and Study Setting**

The need to improve food service workers' safety, health, and wellbeing prompted a large multi-national organisation to approach the Harvard T.H. Chan School of Public Health. This partnership resulted in the development and implementation of the Workplace Organisational Health Study to investigate if a participatory organisational intervention targeting working conditions could be feasibly implemented and would improve employees' safety, health, and wellbeing (Sorensen *et al.*, 2019). The organisation had worksites that provided food services to corporate clients. The worksites were located in corporate clients' premises across Boston, Massachusetts, USA. Each worksite had a specific contractual relationship with a corporate client. Each worksite had a worksite manager, grouped into districts and managed by a district manager, who supervised the worksite managers.

Two aims of the evaluation of the participatory organisational intervention were: (1) to assess the effectiveness of the intervention, and (2) to understand the intervention implementation across worksites (Sorensen *et al.*, 2019). To assess the effectiveness of the intervention (i.e., does it work?), we planned to use the Cluster RCT. We aimed to evaluate changes in intended outcomes between the baseline and final surveys and compare observed changes between intervention and control worksites. To understand variations in the intervention implementation (i.e., what works for whom in which circumstances?), we planned to use realist evaluation within the intervention worksites. We aimed to identify contextual factors that are likely to trigger the intervention's mechanisms to bring about the intended outcomes (Nielsen and Miraglia, 2017).

## Intervention Design

The participatory organisational intervention followed three phases: planning, implementation, and synthesis (Figure 1)(Sorensen *et al.*, 2021).

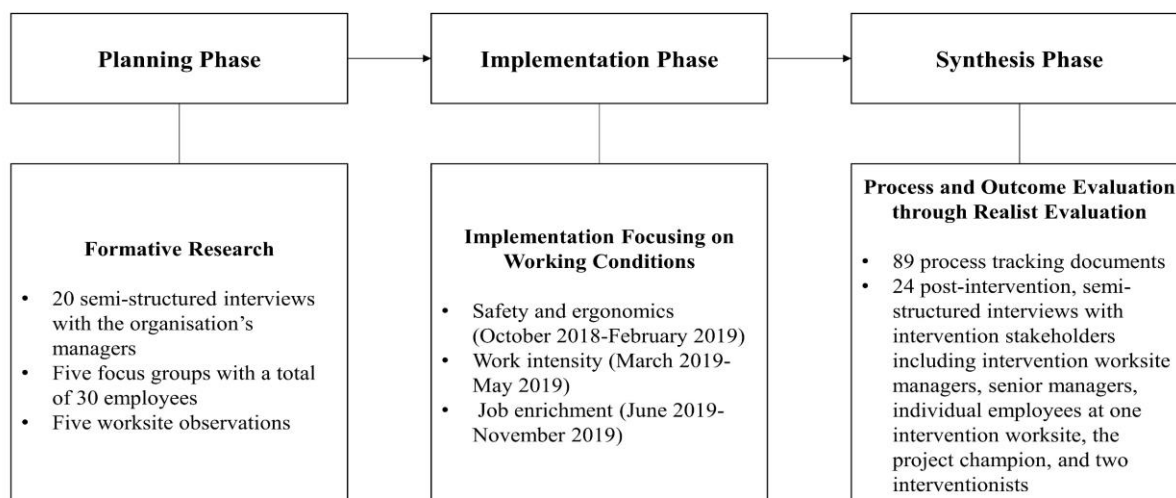
In the planning phase, the research team collaborated with organisational members at the district and worksite levels to create readiness and support for the intervention. In this phase, the research team conducted formative research during Spring-Summer 2017 in five worksites with between 7 and 30 employees. The formative research was conducted to assess working conditions, identify essential intervention mechanisms, and prioritise intervention outcomes (Sorensen *et al.*, 2019). The formative research included 20 semi-structured interviews with the organisation's managers, five focus groups with a total of 30 employees, and five worksite observations. Findings were synthesised to inform the intervention design in collaboration with representatives of the organisation in an intervention planning and prioritisation workshop. The formative research revealed four critical process mechanisms: (1) participation, (2) leadership commitment, (3) communication, and (4) tailoring the intervention to fit the organisational context. It, also, revealed three content mechanisms (i.e., influential working conditions on employees' safety, health, and wellbeing): (1) safety and ergonomics (e.g., burns, cuts, falls, trips, slips), (2) work intensity (e.g., workloads, various shift works), and (3) job enrichment (e.g., role clarity, career advancement pathways).

In the implementation phase, by using a Cluster RCT, ten worksites (different from the worksites that attended the formative research to minimise contamination) were assigned to five intervention worksites and five control worksites (Sorensen *et al.*, 2019). Due to the COVID-19 pandemic and subsequent closing of the worksites, the research team could not (1) conduct surveys and measure quantitative outcomes in both the intervention and control worksites, nor could we (2) conduct interviews with employees in both the intervention and control worksites (interviews with employees were conducted only in one intervention



worksite). The implementation phase was from October 2018 to November 2019, lasting 13 months. Over this period, the intervention focused on improving the pre-determined working conditions sequentially: safety and ergonomics (October 2018-February 2019), work intensity (March 2019-May 2019), and job enrichment (June 2019-November 2019). At the start of the implementation phase, the research team conducted orientation meetings with the five intervention worksite managers. In these meetings, they reviewed the intervention goals, problematic working conditions, and ways to align the intervention with the worksites. During the implementation phase, there were approximately one in-person meeting and a phone call between the research team and each worksite manager every month. In the in-person meetings, they discussed potential priorities and action steps for the action planning process, strategies for encouraging employees' input on priorities, and needed resources to move forward. Approximately two weeks after each in-person meeting, the research team and worksite managers spoke on the phone to reflect on the last in-person meeting, plan for the next in-person meeting, track what has occurred related to the intervention, and provide necessary guidance and technical assistance.

In the synthesis phase, both the implementation process and intervention outcomes were evaluated through realist evaluation. This study received ethical approval for human subjects research through the Harvard T.H. Chan School of Public Health Office of Regulatory Affairs and Research Compliance (Protocol # IRB16-0488).

**FIGURE 1** The Participatory Organisational Intervention Phases

### Data Collection

To empirically test the initial MRT about participation, the research team collected qualitative data during the intervention's implementation and at follow-up. The first and third authors assisted the research team in collecting data at follow-up. We used qualitative data for two reasons. First, although using quantitative data is advantageous in causally linking participation measures to contextual factors and intervention outcomes, qualitative data may better capture the complex nature of and interactions between mechanisms and contextual factors that result in outcomes (Pawson, 2013). Second, the targeted organisation provides food services to its corporate clients through its small-sized worksites (with employees ranging from 5-22). In quantitative studies with small sample size, the results may not have sufficient statistical power to detect a significant difference or effect (Cohen, 1988).

During the implementation, the research team used process tracking, recording all interactions between the research team and managers from the five intervention worksites, to monitor the implementation process. These interactions included regular in-person meetings, phone calls, and webinars between the research team and managers. After each interaction, the research team completed a process tracking form containing the date, start/end time,

method of contact, meeting objectives, topics covered, materials and tools shared, and written observations and reflections. We used process tracking as this method allowed us to avoid retrospective sensemaking and improve the understanding of how participation was triggered during the intervention and affected intervention outcomes (Nielsen and Randall, 2013).

Following the intervention, we conducted semi-structured interviews with intervention stakeholders, including intervention worksite managers, senior managers, individual employees at one intervention worksite, the project champion, and two interventionists. We followed the principles of realist evaluation (Nielsen and Miraglia, 2017). We interviewed all intervention stakeholders including organisational members and interventionists as recommended by realist evaluation (Pawson and Tilley, 2004). We asked questions to explore their perspectives on intervention mechanisms, facilitating and impairing contextual factors, and intervention outcomes (Roodbari, Nielsen and Axtell, 2021). The research team conducted five phone interviews with the five intervention worksite managers. Each interview lasted approximately 30 minutes (range 13 to 53 minutes). The research team conducted six phone interviews with senior managers, including district managers, human resources, health and safety, and operations managers involved in the intervention. Each interview took approximately 39 minutes (range 29 to 50 minutes). The research team conducted 11 interviews with individual employees at one intervention worksite. Due to the COVID-19 pandemic and subsequent closing of the worksites, the research team could not continue the planned interviews with employees in four of the intervention worksites. Each interview took approximately 19 minutes (range 14 to 26 minutes). The second and third authors conducted a phone interview with the project champion, who represented the company's national leadership and provided corporate-level support for the study. This interview took 63 minutes. The first author conducted an online interview with two interventionists, who were two research team members responsible for the process tracking.

This interview took 53 minutes. All interviews were audiotaped and transcribed verbatim. We used semi-structured interviews as this method allowed us to ask specific questions based on realist evaluation principles to explore how intervention stakeholders perceived participation and its related contextual factors and outcomes (Nielsen and Randall, 2013).

Overall, we collected qualitative data through 89 process tracking documents and 24 post-intervention, semi-structured interviews with intervention stakeholders (Table 1).

**Table 1.** Overview of the Data Collection Methods

When data was collected	Data collection methods	Who collected data	Participants
During the implementation	89 Process tracking documents	The research team	Multi-level managers of the five intervention worksites
Follow up	Five semi-structured phone interviews	The research team	Five intervention worksite managers
	Six semi-structured phone interviews	The research team	District level managers, including district managers, human resources, health & safety, and operations leaders involved in the intervention
	11 semi-structured interviews	The research team	11 employees at one intervention worksite
	One semi-structured phone interview	The second and third authors	The project champion
	One semi-structured online interview	The first author	Two interventionists

## Data Analysis

We used template analysis (King, 1998) to analyse data. In template analysis, an initial template (a priori themes) is developed and is then refined as data are analysed (Crabtree and Miller, 1992). We used the initial MRT as the initial template and then refined it by (1) breaking down the code of participation into two subcodes of ‘worksite managers’ participation’ and ‘employees’ participation’ to better understand the how of participation mechanism and (2) adding codes based on other contextual factors and outcomes that were not in the initial MRT. In refining the initial template (representing initial MRT) into a finalised template (representing the empirical MRT), the first author and an experienced

qualitative researcher independently coded empirical data based on intervention mechanisms, contextual factors, and outcomes. Both used NVivo 12 to code data and cross-checked their codes to enhance trustworthiness. Then, the first, second, and third authors, focusing on participation, refined the initial template based on the emerged themes. Following a process of retroduction, which identifies links between specific mechanisms, their influencing contextual factors, and their outcomes (Greenhalgh *et al.*, 2017), the coded data was synthesised into a CMO configuration. This CMO configuration was then translated into an MRT using the statement of '*if there are specific contextual factors, then specific mechanisms produce specific outcomes*'.

The description of how qualitative data were collected, analysed, and synthesised into empirical CMO configuration answers the **Research Question 1**.

## **RESULTS**

In the following, we describe how the mechanism of participation was triggered, what contextual factors influenced triggering participation, and what proximal outcomes participation contributed to produce. We highlight if and how the initial codes (i.e., CMO elements) in the initial MRT (initial template) were observed in our analysed data. Based on these, we developed an empirical MRT identified through the analysis of the data (Figure 2).

### **Mechanisms of Participation**

Our analyses showed that the proposed participation mechanism in the initial MRT (initial template), 'collective engagement of worksite managers and employees in the decision-making process about improving working conditions', was partially operationalised in some worksites. We found that the organisational context hindered triggering participation. We found that 'worksite managers' participation' and 'employees' participation' were two different participation mechanisms operationalised as follows:

*Mechanism one: worksite managers' participation in the intervention activities.*

Worksite managers were the gatekeeper between the research team and employees. As such, their participation in the intervention activities was at two levels of (1) engagement with the research team and (2) engagement with employees.

For engagement with the research team, worksite managers attended approximately two-thirds of the targeted number of in-person visits, phone calls, and group training/discussion with the research team (Sorensen *et al.*, 2021). Process tracking showed that: *“total contact points/planned contact points was 12.6/19 (66%).”* Worksite managers' engagement with the research team varied across different worksites. Process tracking showed that worksite managers received consultation, tools, and technical support from the research team in the forms of: (1) worksite-specific assessment reports of current working conditions, (2) tools for developing and implementing an action plan, (3) consultation and technical support to develop solutions for improving the targeted working conditions, and (4) tools for engaging employees including scripts for huddles (existing regular meetings between worksite managers and employees in each worksite) for each working condition and a coaching and feedback tool.

Regarding worksite managers' engagement with their employees, worksite managers acted as gatekeepers, they decided the intervention activities that employees would participate in.

First, worksite managers' engagement with their employees varied in different worksites. (1) Only one of the worksite managers used the 2+2 coaching and feedback tool with employees. The 2+2 coaching and feedback tool was used to guide a brief conversation with an employee about two things that are working well, two things the employee should improve, and specific actions and next steps. An interventionist said: *“One worksite started – by the end of the intervention- using that (the coaching and feedback tool) and found it very*

*helpful in terms of providing feedback and providing coaching.*” However, managers at all worksites considered it a useful resource, for example, process tracking showed: “[A] worksite manager thought that the coaching and feedback tool is a good resource to use with employees... [The other] worksite manager indicated that he does believe the [coaching and feedback] approach is appropriate for employees...[Another] worksite manager particularly appreciated that the coaching and feedback tool promotes a back and forth conversation with his employees allowing them to give their thoughts as well.” (2) Only one worksite manager did involve employees in selecting priorities for the safety and ergonomics module, this worksite manager, in response to ‘were you able to involve your employees in selecting priorities?’ said: “*To some extent, yes.*” However, the other managers were less comfortable encouraging employees participation, for instance, process tracking showed that: “*Worksite manager was not eager to share [worksite-specific assessment] report with staff – issue of mats/chairs for cashier would have opened up discussion and frustration because the client won’t allow.*” (3) Only two worksite managers confirmed using the huddle scripts. One worksite manager found the scripts effective to convey messages, he said: “*that (using scripts in huddles) was effective because when we schedule huddles, you go over things and bring things to light.*” The other shared key points addressed in the scripts but did not use the exact language included in the scripts, he stated that: “*I did not follow the scripts verbatim.*”

Second, worksite managers’ engagement with their employees about the intervention activities was limited. An interventionist explained: “*They (worksite managers) would talk to us on the phone, they would talk to us when we went into the accounts, they were supposed to read huddle scripts, and they were supposed to implement an action plan. But I would say most of them didn’t do much. They sat on the phone calls, they talked to us when we were in, but I don’t think much happened in between.... There was always a lot of reasons why they couldn’t get to it when we had our check-in phone calls.*”

In short, worksite managers' engagement with the research team was partially operationalised and also worksite managers' engagement with employees was limited and inconsistent across worksites.

*Mechanism two: employees' participation in the intervention activities.* Plans for engaging employees in the intervention activities included existing huddles, one-on-one conversations between worksite managers and employees, and existing committees, such as health and safety committees. Data showed that employees' engagement in determining how to improve their working conditions was minimal. An interventionist recalled: *"Yeah. So only in the one smaller worksite where they (employees) provided written feedback to the worksite manager. And then at one of my other worksites the worksite manager did ask everyone to write something down regarding safety and ergonomics, and only two people did. But while we were in the worksites, the few huddles that we were participating in, they said almost nothing...Truly nothing. They listened to me, listened to the worksite manager."* In brief, employees' engagement in the intervention activities was minimal.

### **Contextual Factors that Influenced Participation**

Our analyses showed that the two contextual factors proposed in the initial MRT (initial template) influenced participation: (1) existing participatory practices facilitated participation and (2) high workloads of worksite managers and employees impaired participation. In addition, our data revealed that five unanticipated contextual factors, that were not in the initial MRT (initial template), impaired participation: (1) lack of worksite managers' motivation to participate in the intervention, (2) host corporate clients' control over the worksite environment, (3) high worksite managers' turnover, (4) employees' language barriers, and (5) diminished support by the senior managers (district and national managers) to the worksite managers. The ways these seven contextual factors influenced participation are outlined below:



*Contextual factor one: existing high workloads of both worksite managers and employees (a barrier).* High workloads limited worksite managers' and employees' ability to participate in the intervention activities. A worksite manager asserted that: *"I really think it (a barrier to participating in the intervention) was a time thing. Our industry is very intense – our jobs are very intense...There's rarely any downtime in our position. And not just manager or employees – everyone comes in every day and they have a job to do and they get it done."* In a nutshell, existing high workloads of both worksite managers and employees impaired their participation.

*Contextual factor two: lack of worksite managers' motivation to participate in the intervention (a barrier).* Three worksite managers described their motivation for participating in the intervention as coming from above them, in that they were informed by their managers that they would participate in the intervention. A worksite manager explained that: *"To be perfectly honest, and I don't mean this in a bad way, – there was nothing really that motivated me. I was told pretty much that my worksite was selected and asked me what you're gonna do."* Another worksite manager stated that: *"Um, honestly, I was told very briefly about it– I don't think I was given a choice to participate."* Briefly, lack of worksite managers' motivation hindered their participation.

*Contextual factor three: host corporate clients' control over the worksite environment (a barrier).* Worksites were accountable to both the organisation (the parent employer) and their host corporate clients. First, worksites had to respond to clients' catering requests often with little notice, which meant they had less (or no) time to engage in the intervention activities. The project champion explained: *"We try to stick to their (clients') goals. It's all about them. So, if quality of life or employee wellbeing is important, truly, for everyone, yeah we'd bring them in. Otherwise, no, because it's another time thing and – the [clients'] perception could be, why are they (worksites) doing this, why is it taking away time from*

*them doing the core business [which is preparing and selling food]?”* Second, as the clients owned the physical work environment and the cafeterias were housed in the client’s building, they needed to approve any changes made to the appearance/physical work environment. For example, process tracking showed that: *“There are some things that the client won’t allow to change. Specifically, adding a chair and a mat for the cashier. For aesthetics, the client won’t allow this. The worksite has no choice.”* In short, host corporate clients’ control over the worksite environment impaired participation.

*Contextual factor four: high worksite managers’ turnover (a barrier).* There was a high level of worksite managers’ turnover in the organisation during the intervention period. For instance, in one worksite, four worksite managers turned over during the intervention. A safety manager outlined that: *“They (worksite managers) get shuffled and moved around. They want to get promoted and further their careers and they’re always looking at the next step. So, there’s that turnover which is a big challenge.”* Such a high level of worksite managers’ turnover meant that new worksite managers did not know enough about the work environment and employees in their worksites to engage them in the intervention activities, or have enough time to complete intervention activities when they are becoming oriented to their new job/worksite. For example, process tracking notes revealed: *“The worksite manager is very hesitant to engage employees [in the intervention activities]; he doesn’t know enough about the worksite or staff yet.”* In brief, high worksite managers’ turnover hindered their participation.

*Contextual factor five: employees’ language barriers.* Communication at worksites was generally conducted in English, unless the manager or other employees could translate for those whose primary language was not English. Therefore, language barriers made engaging employees, whose primary language was not English, in the intervention activities harder. A worksite manager explained that: *“We (worksite managers) are those ones that set*

*the tone and pass through all the information [about changes at the worksite level]...And of course, there are some language barriers in that.*" In a nutshell, language barriers impaired employees' participation.

*Contextual factor six: diminished support by the senior managers (district and national managers) to the worksite managers (a barrier).* Senior managers voiced support for the intervention and supported the intervention at the start. For example, in the job enrichment model, existing company tools were identified that could be modified and used in the intervention, such as a tool for managers to provide coaching and feedback to employees. However, during the intervention, support from senior managers (mainly from district managers) was impeded by competing priorities, turnover, and lack of resources. Therefore, worksite managers received little support from them to overcome some of the contextual barriers to participation. A worksite manager recalled that: *"There was a lot of assistance from those above us, there was a bit right after the meeting (an introduction meeting between the research team and managers at multi-level), but then that's kind of where it ended."* Such diminished senior management support reduced worksite managers' motivation to participate in the intervention activities. For example, a district manager called employees' list of safety concerns a 'Christmas Wish List', which discouraged a worksite manager from participating in the intervention and obtaining employees' inputs. The worksite manager explained that: *"[The district manager told me] it just looks like your [worksite] team thought this was an opportunity to write their Christmas list. And I didn't appreciate that in the sense that if you ask my opinion, I will give you my opinion. If you don't want my opinion, then don't listen to it."* In sum, diminished support by the senior managers to the worksite managers hindered worksite managers' participation.

*Contextual factor seven: existing participatory practices (a facilitator).* Two participatory practices in the organisation were used in the intervention's activities and

facilitated participation in some worksites. First, in each of the worksites, the worksite manager brought together all staff in huddles on a regular basis, and this was an existing practice that was used to facilitate employees' participation. Process tracking showed:

*"Huddles occur at different rates at different worksites – some reported daily, 3x week, 2x week and 1x week".* An employee stated that: *"Since I've been here, it seems like they're (worksite managers) doing it [huddles] more. I guess they always did it, but they're doing it more often now. I guess, to make sure everyone's refreshed and knows about the safety rules and everything."* Second, in one worksite, the worksite manager used an existing health and safety committee to funnel employee input. An interventionist stated that: *"The worksite manager had a health and safety committee at that worksite... he was going to funnel employee input through this safety committee."* In short, existing participatory practices facilitated participation.

### **Proximal Outcomes that Participation Contributed to Produce**

Due to incomplete data collection caused by worksite closures, and subsequent staff lay-offs because of the COVID-19 pandemic, we were unable to conduct interviews with employees from all of the intervention worksites. Although it would have been optimal to measure outcomes related to employees' awareness about changes in their working conditions, and their safety, health, and wellbeing, this was not possible. As such, we could not test the outcomes proposed in the initial MRT (initial template). Instead, as we were able to interview worksite managers, and because they are the primary gatekeepers for triggering participation at the worksites in the present study, we modified the MRT outcomes to: *change in worksite managers' perception of how working conditions can impact on their employees' safety, health, and wellbeing.*

Our analyses showed that worksite managers' participation with the research team was partially triggered, but worksite managers' participation with the employees related to

the intervention was minimal. As such, the participatory intervention resulted in limited, sporadic improvement in worksite managers' awareness of how working conditions can impact on their employees' safety, health, and wellbeing, this outcome was not in the initial MRT (initial template). Three worksite managers acknowledged this proximal outcome as a result of the participatory intervention. For example, a worksite manager shared that: *“What it (the participatory intervention) brought to the table for me was a fresh eye approach as to the way that we conduct our business. There were some safety issues that were addressed and corrected...And it was a good opportunity for us to address some over and above issues that aren't currently covered by our standards.”* Another worksite manager explained: *“Well, some of the things that [caused hazards in the worksite] were discarded...People were thrilled that we were getting rid of some of the things...My employees were very excited to have that change.”* In sum, worksite managers' participation resulted in limited improvement in their awareness of how working conditions can impact on their employees' safety, health, and wellbeing.

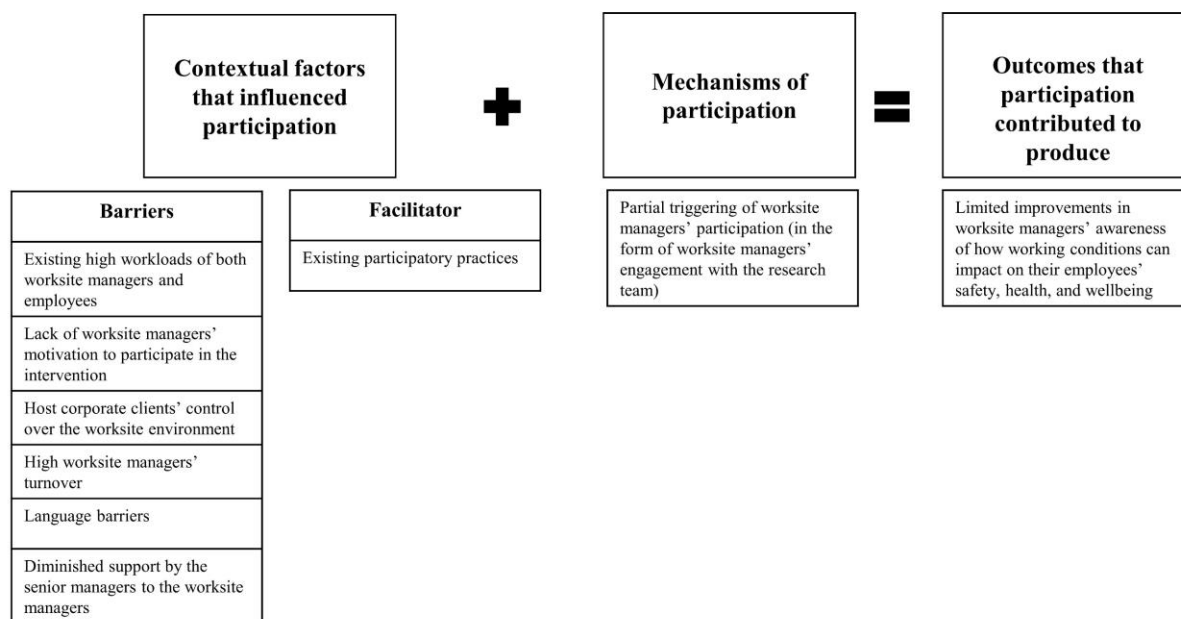
Based on the above empirical evidence, we modified the initial MRT to the following empirical MRT.

*Empirical MRT about participation: if* there are barriers of high workloads of worksite managers and employees, lack of worksite managers' motivation to participate in the intervention, host corporate clients' control over the worksite environment, high worksite managers' turnover, language barriers, and diminished support by the senior managers to the worksite managers (*barriers*), despite existing some participatory practices in the organisation (*facilitator*) (*contextual factors*); **then** partial triggering of worksite managers' participation (in the form of worksite managers' engagement with the research team)(*participation mechanism*) results in limited improvement in worksite managers'

awareness of how working conditions can impact on their employees' safety, health, and wellbeing (*proximal outcome*).

The above empirical MRT about participation answers the *Research Question 2*.

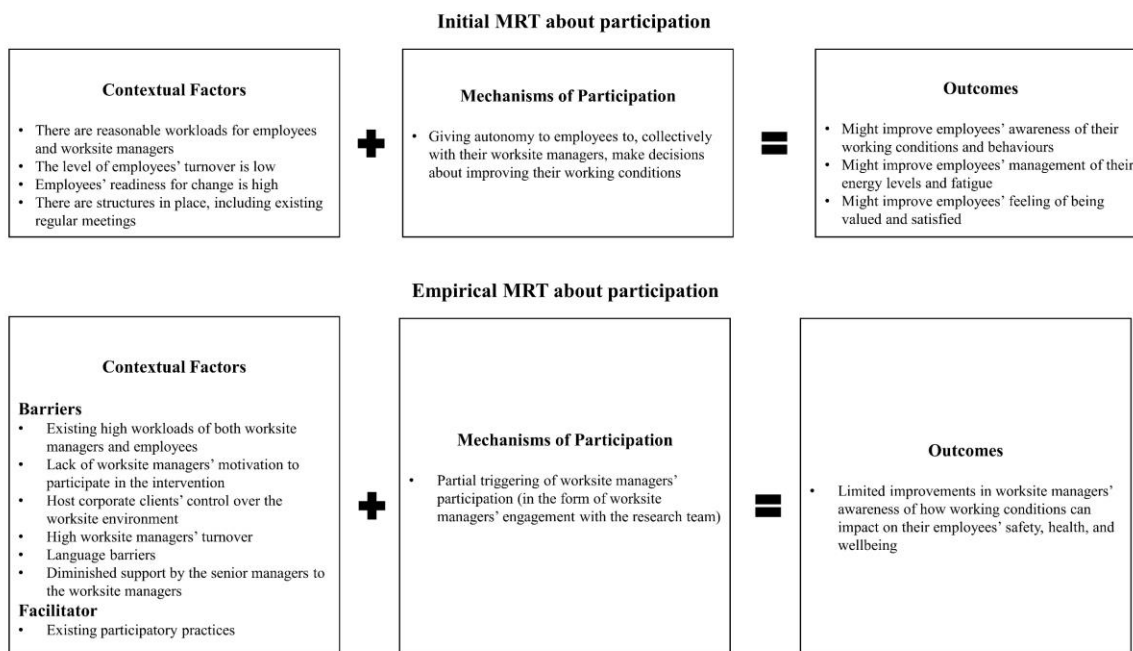
**FIGURE 2** CMOs of the Empirical MRT



## DISCUSSION

Based on qualitative empirical data from a participatory organisational intervention in worksites of a large multi-national organisation in the US food service industry, we tested and modified an initial MRT about the mechanism of participation into an empirical MRT. Figure 3 shows CMOs of the initial and empirical MRTs. The mechanism of participation has been identified as a central mechanism in participatory organisational interventions (Roodbari, Axtell, *et al.*, 2021). Using realist evaluation (Pawson and Tilley, 2004), we explored how the mechanism of participation was operationalised in the intervention, what contextual factors facilitated or impaired the operation of this mechanism, and what proximal outcomes this mechanism contributed to produce.

**FIGURE 3** CMOs of the Initial and Empirical MRTs



As shown in figure 3, the CMOs of the empirical MRT have similarities and differences compared to the CMOs of the initial MRT. Regarding mechanisms, in the initial MRT the proposed mechanism was full engagement of both worksite managers and employees in intervention activities to improve their working conditions. However, in the empirical MRT, the operationalised mechanism was partial worksite managers' engagement with the research team. Triggering worksite managers' participation was necessary for triggering employees' participation. Since (1) worksite managers' engagement with the research team was partially operationalised and (2) worksite managers' engagement with employees was limited and inconsistent across worksites, it was unlikely that employees' participation was triggered. Although data are not available to confirm this conclusion. This finding highlights the importance of examining participation at the different levels of the organisation and the research team's role in the participatory processes. Future evaluation studies should investigate participation at multiple levels (i.e., worksite managers' and employees' levels) and their temporal effects on each other (Tafvelin *et al.*, 2019).

Regarding contextual factors, both the initial and empirical MRTs acknowledged that existing participatory practices facilitate participation and high workload impairs participation. The empirical MRT incorporated five unanticipated contextual factors, all of which impaired participation: (1) lack of worksite managers' motivation to participate in the intervention, (2) host corporate clients' control over the worksite environment, (3) high worksite managers' turnover, (4) language barriers, and (5) diminished support by the senior managers to the worksite managers. We identified more contextual factors in the empirical MRT than in our initial MRT. The identification of further contextual factors indicates that the initial MRT did not anticipate all the contextual factors that impaired triggering participation during the implementation (Pawson and Tilley, 1997, 2004). Conducting further evaluation studies using a realist evaluation approach might reveal more contextual factors that impair or facilitate participation.

The proposed outcomes in the initial MRT were about employees' awareness of their working conditions and their health and wellbeing. These outcomes could not be measured, and due to the very limited triggering of employees' participation in a few worksites, our expectation is that these outcomes were not likely produced. Instead, partial triggering of worksite managers' participation (in the form of worksite managers' engagement with the research team) resulted in limited improvement in worksite managers' awareness of how working conditions can impact on employees' safety, health, and wellbeing. Future evaluation studies should consider specific outcomes for participation at each level (i.e., outcomes of worksite managers' participation and outcomes of employees' participation).

Overall, the empirical MRT contained more CMOs compared to the initial MRT. This expanded MRT implies that organisational interventions and their contexts are dynamic and their interactions and outcomes can be different from what is expected before the



implementation of the intervention. In other words, initial MRTs representing ‘what *might work* for whom in which circumstances?’ should be tested in different contexts to see ‘what actually *worked* for whom in which circumstances?’. Following this cycle can add more crucial, tested CMOs to the empirical MRTs that represent ‘what *works* for whom in which circumstances?’.

A realist synthesis of 28 organisational interventions revealed that the main focus of previous organisational intervention studies has been on the link between participation and its contextual factors or between participation and its outcomes (Roodbari, Axtell, *et al.*, 2021). The contribution of the current paper is the exploration of contexts-mechanism (participation)-outcome configuration in a single participatory organisational intervention that can be further refined in future organisational intervention studies.

Regarding the link between participation and contexts, the literature supports our finding that existing participatory practices as a contextual factor facilitates the triggering of participation (von Thiele Schwarz *et al.*, 2017). The literature also supports the contextual factors that we identified for impairing participation, including: (1) workloads of both worksite managers and employees (Arapovic-Johansson *et al.*, 2018), (2) lack of worksite managers’ motivation to participate in the intervention (Busch *et al.*, 2017), (3) language barriers (Busch *et al.*, 2017), and (4) diminished senior managers’ support of the intervention (Schelvis *et al.*, 2016). We also identified two additional contextual factors that impaired the triggering participation, including: (1) host corporate clients’ control over the physical worksite environment and (2) worksite managers’ turnover. These factors particularly characterise this setting of contracted worksites in the food service industry. These two contextual factors suggest the importance of considering specific features of different organisational contexts in the evaluation of organisational interventions, such as, multi-

employer worksites, and other industries in which turnover is high. Future organisational intervention studies can explore these two barriers further.

Regarding the link between participation and outcomes, we could not find evidence in the literature showing the link between worksite managers' participation and their awareness of how working conditions can impact on employees' safety, health, and wellbeing.

However, von Thiele Schwarz et al. (2017) found that the employees' participation increased employees' awareness of and capacity to manage psychosocial issues.

This paper used two specific qualitative methods to collect data, which allowed us to explore intervention stakeholders' perceptions of participation and its related contextual factors and outcomes. We used process tracking during the intervention implementation to monitor how participation was operationalised, what contextual factors influenced participation, and what proximal outcomes participation contributed to produce. Also, we conducted semi-structured interviews with intervention stakeholders (including intervention worksite managers, senior managers, individual employees at one intervention worksite, the project champion, and two interventionists) after the completion of the intervention and asked specific questions based on realist evaluation principles.

### **Implications for Future Research and Practice**

Our study has both theoretical and practical implications. From a theory point of view, we employed realist evaluation as a promising theoretical approach (Nielsen and Miraglia, 2017) to evaluate the mechanism of participation in a participatory organisational intervention. We describe how we collected, analysed, and synthesised qualitative empirical data to test an initial MRT about the critical mechanism of participation in a participatory organisational intervention (Wong *et al.*, 2016). Future participatory organisational interventions can follow our data collection, analysis, and synthesis process to further refine this MRT about participation in different contexts. In different contexts, participation may be triggered

differently, other contextual factors may influence triggering participation, and other outcomes may be produced. This approach helps accumulate theoretically informed knowledge about how participation works for whom in which circumstances (Nielsen, 2013; Nielsen and Miraglia, 2017).

From a practice perspective, our tested MRT provides insights to occupational health practitioners and organisational managers to design and evaluate future participatory organisational interventions. Regarding the mechanisms of participation, the triggered mechanism in our study was worksite managers' participation (in the form of worksite managers' engagement with the research team). In this regard, we recommend occupational health practitioners and organisational managers should consider participation at two levels with worksite managers and employees, and ensure that participation is able to be triggered at both these levels for the success of the intervention (Tafvelin *et al.*, 2019). Both worksite managers and employees are active agents, and they should, therefore, collectively participate in the intervention activities to make a participatory intervention succeed. Worksite managers are often the drivers of change as they translate intervention goals into plans for change that are understandable to employees and, employees are responsible for implementing the planned changes (Nielsen and Miraglia, 2017). Further intervention studies should explore the effects of worksite managers' and employees' participation on each other and on intervention outcomes (Tafvelin *et al.*, 2019).

Regarding contextual factors, occupational health practitioners and organisational managers should strengthen facilitators and overcome barriers to triggering effective participation. In our study, the facilitator was 'existing some participatory practices in the organisation', we recommend increased use of existing participatory policies, practices, and procedures to operationalise participation. To overcome barriers, we recommend

occupational health practitioners and organisational managers should take the following steps.

First, regarding the barrier of ‘lack of worksite managers’ motivation to participate in the intervention’, they should ensure worksite managers are motivated to participate in the intervention activities so that they voluntarily engage in the intervention activities. This can happen by: (1) conducting transparent recruitment of intervention worksites, (2) communicating with worksite managers about the importance of employees’ health, safety, and wellbeing and the impacts of the participatory organisational intervention on such outcomes, (3) ensuring they receive encouragement from the managers above them and the requisite resources to support success, and (4) helping them to tailor intervention activities to their specific organisational context (Lundmark *et al.*, 2020).

Second, regarding the barrier of ‘high workloads of worksite managers and employees’, they should consider the workloads of both worksite managers and employees and tailor the intervention process and content to avoid putting additional pressure on them, for instance, through integrating the intervention process into existing meeting structures (von Thiele Schwarz *et al.*, 2021).

Third, regarding the barrier of ‘host corporate clients’ control over the worksite environment’, they should consider the influence of host clients, and multi-employer workplaces, on the intervention planning and implementation in contracted settings and, where possible, engage clients in determining the intervention process and content. This engagement can happen by communicating with the clients about the dual benefits of the participatory organisational intervention for clients and employees. Organisational interventions in contracted settings might consider recommending that the organisations include specific terms in their contracts with clients that allow the organisations to improve working conditions considering the time and cost for implementing such improvements.

Fourth, regarding the barrier of ‘high worksite managers’ turnover’, they should consider how worksites managers’ turnover will impact the intervention, and where possible, address this within the intervention. Worksite manager turnover causes instability in the continuity of the intervention planning and implementation. Possible solutions could be (1) developing contingency plans in collaboration with multi-level managers to accommodate turnover, or unexpected absences of worksite managers, (2) establishing an operational steering group in each worksite to maintain intervention activities throughout the intervention period, and (3) assigning more than one intervention champion in each worksite (e.g., worksite manager and employees’ champion) responsible for the intervention activities.

Fifth, regarding ‘language barriers’, in many low-wage industries, such as food service, multi-ethnic workforces are common. Interventions targeting worksites with employees whose primary language is different from the primary language spoken on worksites should consider how to overcome the language barriers. A potential solution could be assigning experienced employees to mentor junior employees who speak the same language (Busch *et al.*, 2017).

Finally, regarding the barrier of ‘diminished support by the senior managers to the worksite managers’, to ensure continual senior management support of the intervention, it is important to: (1) understand who has decision-making authority to influence the intervention activities, (2) communicate with them about the goals and process of the intervention, (3) align intervention activities with their priorities early on, and (4) develop their leadership resources for supporting intervention activities (Karanika-Murray *et al.*, 2018).

Our observed outcome manifested a link between worksite managers’ partial participation in the intervention and limited improvement in their awareness of how working conditions can impact on employees’ safety, health, and wellbeing (a *proximal outcome*). We recommend occupational health practitioners and organisational managers should investigate

Context-Mechanism (worksite managers' participation)-Outcomes, Context-Mechanism (employees' participation)-Outcomes, and their temporal effects on each other and on intervention outcomes over the intervention period. Such effects can be investigated using a chain of effects, as proposed by Nielsen and Abildgaard (2013, p. 288), containing: 'changes in attitudes, values and knowledge, development of individual resources, changes in procedures, changes in working conditions, changes in employee health and wellbeing, changes in quality and productivity and finally, changes in occupational safety and health practices'.

This paper answered two research questions. **Research Question 1:** *How can initial CMO configurations be tested in an organisational intervention using qualitative data?* This paper undertook the second, third, and fourth steps of a realist evaluation cycle (i.e., collecting, analysing, and synthesising the empirical data to develop empirical CMO configurations and testing initial CMO configurations against empirical CMO configurations) (Pawson and Tilley, 2004). It described how qualitative data were collected (through 89 process tracking documents and 24 post-intervention, semi-structured interviews with different intervention stakeholders), analysed (using template analysis), and synthesised (using retrodution) into empirical CMO configuration. Future intervention studies can follow our approach to test their intended mechanisms using realist evaluation. **Research Question 2:** *What works for whom in which circumstances regarding participation in an organisational intervention?* This paper tested the initial CMO configuration about the critical mechanism of participation. The tested CMO configuration showed how participation was operationalised in the intervention, what contextual factors facilitated or impaired the operation of participation, and what proximal outcomes participation contributed to produce. Future intervention studies can further test and refine this MRT in similar or different contexts.

## Strengths and Limitations

Three strengths of this study can be highlighted. First, this study used realist evaluation, as a promising theoretical approach, to study participation as the central mechanism of participatory organisational interventions and its related contextual factors and outcomes (Nielsen, 2013; Nielsen and Miraglia, 2017). Second, this study focused on a participatory organisational intervention in a fissured work environment with low-wage employees from diverse cultures and languages (Sorensen *et al.*, 2021). Third, we collected data through a substantive number of process tracking documents and post-intervention interviews with different intervention stakeholders (Sorensen *et al.*, 2021).

This study also faced two main limitations. First, although qualitative data better capture the complex nature of and interactions between mechanisms and contextual factors that result in outcomes (Pawson, 2013), using quantitative measures of outcomes could help to triangulate results and provide a more scientific evaluation of the CMOs (cf. Abildgaard *et al.*, 2020; Busch *et al.*, 2017). However, due to closures related to the COVID-19 pandemic, we could not conduct surveys and measure quantitative outcomes (Sorensen *et al.*, 2021). The only outcome we presented was limited improvement in the worksite managers' awareness of how working conditions can impact on employees' safety, health, and wellbeing, and this outcome was based on interviews with the worksite managers.

Second, due to a COVID-19 lockdown at the end of the intervention period, we could interview only 11 employees at one intervention worksite. The collected employee data were not rich enough to extract their perspectives on outcomes and outcomes' links with intervention mechanisms as required by realist evaluation (Pawson and Tilley, 2004). As such, we could not present any changes in employees' awareness about working conditions, working condition, and their safety, health, and wellbeing. We recognise that the perceptions

of all employees in different intervention worksites about outcomes and their links with mechanisms are critical in the evaluation of interventions (Nielsen *et al.*, 2021).

Given these limitations, we acknowledge that the reported outcome might not be the same if we could have collected and analysed quantitative measures of outcomes and if we could have interviewed employees from all of the five intervention worksites. As such, we recommend that future organisational intervention studies should consider using our empirical MRT as their initial MRT and further test and refine it (Pawson and Tilley, 2004).

Positionality refers to the position that researchers adopted in designing, implementing, and evaluating results of a research (Savin-Baden and Major, 2013). We reflect on three aspects of our positionality as recommended by Savin-Baden and Major (2013). The first aspect is our positionality relevant to the research project. In this regard, we assisted the organisational members to plan and implement the organisational intervention: we communicated our mental model as ‘working conditions are determinants of health and safety outcomes as well as organisational outcomes’ with them, helped them to identify priorities, and assisted them to develop and implement intervention activities over the course of intervention. The second aspect is our positionality relevant to participants. In this regard, it is possible that participants viewed us as outsiders, someone whose personal biography (e.g., education, career) is different from the participants (Mercer, 2007). As a consequence, it is possible that participants were less confident and willing to share their ideas either during the intervention or during data collection with us. In response, we asked worksite managers to encourage employees to express their ideas during the intervention. We also sought consent from participants and assured them confidentiality in our data collection. The third aspect is our positionality relevant to data gathering and findings. This aspect is critical as we used realist evaluation that suggests the evaluation of an intervention is about sharing participants’ and researchers’ mental models of CMO configurations in an assisted sense-



making process (Pawson and Tilley, 1997, 2004). We encountered two main issues. First, we were from different backgrounds (including work psychology, public health, health and rehabilitation, and management), we had different levels of experience in evaluating interventions (ranging from decades to a few years), and we were at different academic levels (ranging from professors to a PhD student). As such, our mental models of the evaluation of organisational interventions and CMO configurations were different. In response, we held several meetings to determine how to collect, analyse, and synthesise data and we used teamwork in these iterative processes so that more than one researcher was involved in each process. Second, our level of education and expertise were different from employees with a low level of education. Therefore, our mental models of the intervention and CMO configurations were likely different from employees. In response, we tried to simplify questions to ensure employees understand and answer the questions, also, the interviews with employees were done by two interventionists who were familiar with the worksites and employees.

## **CONCLUSION**

This paper empirically tested an initial MRT about participation based on qualitative empirical data from a participatory organisational intervention in a large multi-national organisation in the US food service industry. The tested MRT showed how participation was operationalised in the intervention, what contextual factors facilitated or impaired the operation of participation, and what proximal outcomes participation contributed to produce. Therefore, this paper contributes to the understanding of ‘what works for whom in which circumstances’ regarding participation in organisational interventions. Future organisational interventions can follow our qualitative approach based on realist evaluation to develop and test initial MRTs focusing on different mechanisms; also, they can further refine our tested MRT about participation in different contexts.

## REFERENCES

- Abildgaard, J.S., Nielsen, K., Wåhlin-Jacobsen, C.D., Maltesen, T., Christensen, K.B. and Holtermann, A. (2020), “‘Same, but different’: A mixed-methods realist evaluation of a cluster-randomized controlled participatory organizational intervention”, *Human Relations*, Vol. 73 No. 10, pp. 1339–1365.
- Alamgir, H., Swinkels, H., Yu, S. and Yassi, A. (2007), “Occupational injury among cooks and food service workers in the healthcare sector”, *American Journal of Industrial Medicine*, Vol. 50 No. 7, pp. 528–535.
- Arapovic-Johansson, B., Wåhlin, C., Hagberg, J., Kwak, L., Björklund, C. and Jensen, I. (2018), “Participatory work place intervention for stress prevention in primary health care. A randomized controlled trial”, *European Journal of Work and Organizational Psychology*, Vol. 27 No. 2, pp. 219–234.
- Busch, C., Koch, T., Clasen, J., Winkler, E. and Vowinkel, J. (2017), “Evaluation of an organizational health intervention for low-skilled workers and immigrants”, *Human Relations*, Vol. 70 No. 8, pp. 994–1016.
- Cann, A.P., Baker, A.M., Hansen, A., Massie, D. and Vandervoort, A.A. (2008), “A five year retrospective analysis of occupational injuries and incidence reported at a research intensive Canadian university.”, *Work (Reading, Mass.)*, Vol. 30 No. 2, pp. 171–84.
- Cocci, S., Namasivayam, K. and Bordi, P. (2005), “An investigation of ergonomic design and productivity improvements in foodservice production tables”, *Foodservice Research International*, Vol. 16 No. 3–4, pp. 53–59.
- Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., Routledge, New York.
- Crabtree, B.F. and Miller, W.L. (1992), “A template approach to text analysis: Developing and using codebooks”, in Crabtree, B.F. and Miller, W.L. (Eds.), *Doing Qualitative*

*Research*, Sage, Newbury Park, CA, pp. 93–109.

EU-OSHA. (2016), “Second European Survey of Enterprises on New and Emerging Risks (ESENER-2). Overview Report: Managing Safety and Health at Work”, *Publications Office of the European Union*, available at: <https://op.europa.eu/s/n7Wt> (accessed 10 June 2020).

Fox, K.E., Johnson, S.T., Berkman, L.F., Sianoja, M., Soh, Y., Kubzansky, L.D. and Kelly, E.L. (2021), “Organisational- and group-level workplace interventions and their effect on multiple domains of worker well-being: A systematic review”, *Work & Stress*, pp. 1–30.

Greenhalgh, T., Pawson, R., Wong, G., Westhorp, G., Greenhalgh, J., Manzano, A. and Jagosh, J. (2017), “Retrodution in realist evaluation The RAMESES II Project”, *The RAMESES Projects*, available at: [www.ramesesproject.org](http://www.ramesesproject.org).

Gupta, N., Wåhlin-Jacobsen, C.D., Abildgaard, J.S., Henriksen, L.N., Nielsen, K. and Holtermann, A. (2018), “Effectiveness of a participatory physical and psychosocial intervention to balance the demands and resources of industrial workers: A cluster-randomized controlled trial”, *Scandinavian Journal of Work, Environment & Health*, Vol. 44 No. 1, pp. 58–68.

Haukka, E., Leino-Arjas, P., Viikari-Juntura, E., Takala, E.-P., Malmivaara, A., Hopsu, L., Mutanen, P., *et al.* (2008), “A randomised controlled trial on whether a participatory ergonomics intervention could prevent musculoskeletal disorders”, *Occupational and Environmental Medicine*, Vol. 65 No. 12, pp. 849–856.

Haukka, E., Pehkonen, I., Leino-Arjas, P., Viikari-Juntura, E., Takala, E.-P., Malmivaara, A., Hopsu, L., *et al.* (2010), “Effect of a participatory ergonomics intervention on psychosocial factors at work in a randomised controlled trial”, *Occupational and Environmental Medicine*, Vol. 67 No. 3, pp. 170–177.

- Holman, D. and Axtell, C. (2016), “Can job redesign interventions influence a broad range of employee outcomes by changing multiple job characteristics? A quasi-experimental study.”, *Journal of Occupational Health Psychology*, Vol. 21 No. 3, pp. 284–295.
- ILO. (2001), *Guidelines on Occupational Safety and Health Management Systems, ILO-OSH*, International Labor Office, Geneva.
- Karanika-Murray, M., Gkiontsi, D. and Baguley, T. (2018), “Engaging leaders at two hierarchical levels in organizational health interventions”, *International Journal of Workplace Health Management*, Vol. 11 No. 4, pp. 210–227.
- King, N. (1998), “Template Analysis”, in Symon, G. and Cassell, C. (Eds.), *Qualitative Methods and Analysis in Organizational Research: A Practical Guide*, Sage, London, pp. 118–134.
- Krogstrup, H.K. and Mortensen, N.M. (2021), “The Fifth Evaluation Wave”, in Thomassen, A.O. and Jensen, J.B. (Eds.), *Processual Perspectives on the Co-Production Turn in Public Sector Organizations*, Information Science Reference/IGI Global, Hershey, PA, US, pp. 59–78.
- Lundmark, R., Nielsen, K., Hasson, H., von Thiele Schwarz, U. and Tafvelin, S. (2020), “No leader is an island: contextual antecedents to line managers’ constructive and destructive leadership during an organizational intervention”, *International Journal of Workplace Health Management*, Vol. 13 No. 2, pp. 173–188.
- Matsuzuki, H., Haruyama, Y., Muto, T., Aikawa, K., Ito, A. and Katamoto, S. (2013), “Workers’ load and job-related stress after a reform and work system change in a hospital kitchen in Japan”, *Environmental Health and Preventive Medicine*, Vol. 18 No. 2, pp. 171–176.
- Mercer, J. (2007), “The challenges of insider research in educational institutions: wielding a double-edged sword and resolving delicate dilemmas”, *Oxford Review of Education*,

Vol. 33 No. 1, pp. 1–17.

- Nielsen, K. (2013), “Review Article: How can we make organizational interventions work? Employees and line managers as actively crafting interventions”, *Human Relations*, Vol. 66 No. 8, pp. 1029–1050.
- Nielsen, K. and Abildgaard, J.S. (2013), “Organizational interventions: A research-based framework for the evaluation of both process and effects”, *Work & Stress*, Vol. 27 No. 3, pp. 278–297.
- Nielsen, K., Abildgaard, J.S. and Daniels, K. (2014), “Putting context into organizational intervention design: Using tailored questionnaires to measure initiatives for worker well-being”, *Human Relations*, Vol. 67 No. 12, pp. 1537–1560.
- Nielsen, K., Antino, M., Rodríguez-Muñoz, A. and Sanz-Vergel, A. (2021), “Is it me or us? The impact of individual and collective participation on work engagement and burnout in a cluster-randomized organisational intervention”, *Work & Stress*, pp. 1–24.
- Nielsen, K., Fredslund, H., Christensen, K.B. and Albertsen, K. (2006), “Success or failure? Interpreting and understanding the impact of interventions in four similar worksites”, *Work & Stress*, Vol. 20 No. 3, pp. 272–287.
- Nielsen, K. and 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*, Vol. 70 No. 1, pp. 40–62.
- Nielsen, K. and Noblet, A. (2018), “Organizational interventions: Where are we, where do we go from here?”, in Nielsen, K. and Noblet, A. (Eds.), *Organizational Interventions for Health and Well-Being: A Handbook for Evidence-Based Practice*, Routledge, Oxon, pp. 1–23.
- Nielsen, K. and Randall, R. (2012), “The importance of employee participation and perceptions of changes in procedures in a teamworking intervention”, *Work & Stress*,

Vol. 26 No. 2, pp. 91–111.

- Nielsen, K. and Randall, R. (2013), “Opening the black box: Presenting a model for evaluating organizational-level interventions”, *European Journal of Work and Organizational Psychology*, Vol. 22 No. 5, pp. 601–617.
- Pawson, R. (2013), *The Science of Evaluation: A Realist Manifesto*, 1st ed., SAGE, London.
- Pawson, R. and Tilley, N. (1997), *Realistic Evaluation*, 1st ed., Sage Publications Ltd, London.
- Pawson, R. and Tilley, N. (2004), *Realist Evaluation*, available at:  
[http://www.communitymatters.com.au/RE\\_chapter.pdf](http://www.communitymatters.com.au/RE_chapter.pdf) (accessed 10 January 2019).
- Roodbari, H., Axtell, C., Nielsen, K. and Sorensen, G. (2021), “Organisational Interventions to Improve Employees’ Health and Wellbeing: A Realist Synthesis”, *Applied Psychology*, pp. 1–24.
- Roodbari, H., Nielsen, K. and Axtell, C. (2021), “An integrated realist evaluation model to evaluate organisational interventions”, *Academy of Management Proceedings*, Vol. 2021 No. 1, p. 10830.
- Roodbari, H., Nielsen, K., Axtell, C., Peters, E.S. and Sorensen, G. (2021), “Developing Initial Middle Range Theories in Realist Evaluation: A Case of an Organisational Intervention.”, *International Journal of Environmental Research and Public Health*, Vol. 18, p. 8360.
- Savin-Baden, M. and Major, C.M. (2013), *Qualitative Research: An Essential Guide to Theory and Practice.*, Routledge, 1st ed.
- Schelvis, R.M.C., Wiezer, N.M., Blatter, B.M., van Genabeek, J.A.G.M., Oude Hengel, K.M., Bohlmeijer, E.T. and van der Beek, A.J. (2016), “Evaluating the implementation process of a participatory organizational level occupational health intervention in schools”, *BMC Public Health*, Vol. 16 No. 1, p. 1212.

- Siukola, A., Virtanen, P., Huhtala, H. and Nygard, C.-H. (2011), "Absenteeism following a workplace intervention for older food industry workers", *Occupational Medicine*, Vol. 61 No. 8, pp. 583–585.
- Sorensen, G., Peters, S., Nielsen, K., Nagler, E., Karapanos, M., Wallace, L., Burke, L., *et al.* (2019), "Improving Working Conditions to Promote Worker Safety, Health, and Wellbeing for Low-Wage Workers: The Workplace Organizational Health Study", *International Journal of Environmental Research and Public Health*, Vol. 16 No. 8, p. 1449.
- Sorensen, G., Peters, S.E., Nielsen, K., Stelson, E., Wallace, L.M., Burke, L., Nagler, E.M., *et al.* (2021), "Implementation of an organizational intervention to improve low-wage food service workers' safety, health and wellbeing: findings from the Workplace Organizational Health Study", *BMC Public Health*, Vol. 21 No. 1, p. 1869.
- Tafvelin, S., von Thiele Schwarz, U., Nielsen, K. and Hasson, H. (2019), "Employees' and line managers' active involvement in participatory organizational interventions: Examining direct, reversed, and reciprocal effects on well-being", *Stress and Health*, Vol. 35 No. 1, pp. 69–80.
- von Thiele Schwarz, U., Nielsen, K., Edwards, K., Hasson, H., Ipsen, C., Savage, C., Simonsen Abildgaard, J., *et al.* (2021), "How to design, implement and evaluate organizational interventions for maximum impact: the Sigtuna Principles", *European Journal of Work and Organizational Psychology*, available at:<https://doi.org/10.1080/1359432X.2020.1803960>.
- von Thiele Schwarz, U., Nielsen, K.M., Stenfors-Hayes, T. and Hasson, H. (2017), "Using kaizen to improve employee well-being: Results from two organizational intervention studies", *Human Relations*, Vol. 70 No. 8, pp. 966–993.
- Vedung, E. (2010), "Four Waves of Evaluation Diffusion", *Evaluation*, Vol. 16 No. 3, pp.

263–277.

Wong, G., Westhorp, G., Manzano, A., Greenhalgh, J., Jagosh, J. and Greenhalgh, T. (2016), “RAMESES II reporting standards for realist evaluations”, *BMC Medicine*, Vol. 14 No. 1, p. 96.



## CHAPTER 5

### **An Integrated Realist Evaluation Model for Organizational Interventions (IREMOI)**

Hamid Roodbari\*, Karina Nielsen, Carolyn Axtell

Institute for Work Psychology, Sheffield University Management School, University of  
Sheffield, Sheffield, UK

\*Corresponding author

Manuscript accepted for the Academy of Management conference (2021)

**Roodbari, H.,** Nielsen, K. Axtell, C. (2021). “An integrated realist evaluation model to evaluate organisational interventions”, *Academy of Management Proceedings*, VOL. 2021 NO. 1, p. 10830. <https://doi.org/10.5465/AMBPP.2021.10830abstract>.

Manuscript submitted to Scandinavian Journal of Work and Organizational Psychology

## **Abstract**

Realist evaluation is a recommended approach to evaluate organisational interventions. It examines how specific intervention mechanisms work in a given context to produce certain outcomes through developing and testing Context-Mechanism-Outcome (CMO) configurations. Inspired by realist evaluation, the five-phase model (containing the phases of preparation, screening, action planning, implementation, and evaluation) was developed. However, this model (1) does not include some crucial intervention components that should be evaluated in each intervention phase and (2) does not follow the full realist evaluation cycle. In this paper, we address these two limitations of the five-phase model. First, we integrate the contents of the RE-AIM framework (containing dimensions of Reach, Effectiveness, Adoption, Implementation, and Maintenance) into the five-phase model to include crucial intervention components. Then, we explain how to follow a realist evaluation cycle, provide guidance on when, why, and how to develop and test CMO configurations for intervention components, and develop examples of CMO configurations for intervention components based on evidence from the literature. In doing so, we develop an Integrated Realist Evaluation Model for Organisational Interventions (IREMOI). As such, this article (1) improves the understanding of ‘how to’ evaluate organisational interventions based on realist evaluation and (2) improves the understanding of ‘what works for whom in which circumstances’.

**Keywords:** Realist evaluation; RE-AIM framework; organisational interventions; Context-Mechanism-Outcome configurations; occupational health; working conditions

## INTRODUCTION

Organisational interventions are “planned, behavioural, and theory-based actions that aim to improve employees’ health and wellbeing by changing the way work is designed, organised, and managed” (Nielsen, 2013, p. 1030). These interventions are the recommended approach for improving employees’ health and wellbeing (EU-OSHA, 2016; ILO, 2001). However, some reviews have argued that evidence showing the effectiveness of organisational interventions is inconsistent (Richardson & Rothstein, 2008). The lack of consistency in the evidence of organisational interventions may be due to the heterogeneity in their designs (e.g., various approaches to develop action plans), implementation strategies (e.g., using different drivers of change including multi-level managers and employees), contexts (e.g., changes in the organisation during the intervention), and outcomes (e.g., using different outcome measures)(Nielsen & Randall, 2013; Roodbari et al., 2021). Other reviews have concluded that there is evidence of the effectiveness of organisational interventions, but few studies have examined why and how organisational interventions have succeeded or failed (Egan et al., 2009; Murta et al., 2007; Semmer, 2006). As such, to inform future organisational interventions, we need evaluation models that examine what works for whom, why, how, and under which circumstances. Using such evaluation models improves the understanding of why and how organisational interventions succeed or fail and consequently reduce the inconsistency of empirical evidence of organisational interventions (Nielsen & Miraglia, 2017; Roodbari et al., 2021).

A reason for insufficient examination of why and how organisational interventions succeed or fail and consequently inconsistency of empirical evidence of organisational interventions may be that researchers and occupational practitioners are uncertain about what intervention components should be evaluated and why, and what theoretical frameworks they should be drawn from (Nielsen, 2013; Nielsen & Randall, 2013). Nielsen and Miraglia

(2017) argued realist evaluation (Pawson & Tilley, 1997) may present a suitable framework to open the black box of how and why organisational interventions succeed or fail. Realist evaluation seeks to answer the question of ‘what works for whom in which circumstances?’ through studying what the Mechanisms of an intervention are (what makes an intervention work?), the Contexts in which these mechanisms are triggered (what are the conditions in which the mechanisms are operative/effective?), and the Outcomes these mechanisms produce (what are the observed patterns of outcomes?) in Context-Mechanism-Outcome (CMO) configurations where Contexts + Mechanisms = Outcomes (Pawson & Tilley, 1997).

Inspired by the CMO configuration of realist evaluation, Nielsen and Abildgaard (2013) proposed a five-phase model which grouped crucial intervention components into four overarching categories of (1) the organisational actors, (2) the mental models of those actors, (3) the context of the intervention, and (4) intervention design and process. These categories should be evaluated over the five phases of an intervention: preparation, screening, action planning, implementation, and evaluation. In the preparation phase, different intervention stakeholders develop the intervention strategy and create readiness and support for the intervention. In the screening phase, the assessment of psychosocial working conditions is conducted to identify the problems. In the action planning phase, the identified problems are prioritised and action plans are developed on how to improve psychosocial working conditions and employees’ health and wellbeing. In the implementation phase, intervention members put the action plans into practice, monitor their implementation, and discuss whether modifications or additional plans are needed. Finally, in the evaluation phase, both the implementation process and intervention outcomes are evaluated.

The five-phase model is not without its limitations. The first limitation is that the five-phase model does not include some crucial intervention components that should be evaluated in each intervention phase. In particular, the five-phase model does not include the

recruitment process of organisational units (in terms of how organisational units were recruited and how such process affected the intervention), implementation process (in terms of what was planned, what actually took place, and why there were difference (if any) between them?), and maintenance of the intervention (in terms of whether and how the intervention was institutionalised and how participants designed, organised, and managed their jobs differently that lasted in the organisation). To include such intervention components in the evaluation, the contents of the RE-AIM framework (hereon referred to as RE-AIM) (Glasgow et al., 1999) can be integrated into the five-phase model. RE-AIM was proposed to evaluate community-based, health-promoting interventions and has five dimensions of Reach, Effectiveness, Adoption, Implementation, and Maintenance. This article discusses RE-AIM dimensions in the context of organisational interventions and integrates them into the five-phase model. Our integrated model, therefore, has more intervention components than the five-phase model; including more intervention components and evaluating how and why such components affected the interventions improve the understanding of ‘what works for whom in which circumstances’ (Nielsen, Randall, Holten, et al., 2010; Nielsen & Miraglia, 2017).

The second limitation is that the five-phase model, although inspired by the CMO configuration of realist evaluation, does not follow the full realist evaluation cycle, that is, it does not explain when and how to conduct the four steps of the realist evaluation cycle, including developing initial CMO configurations, collecting empirical data, analysing and synthesising empirical data, and testing initial CMO configurations (Pawson & Tilley, 1997, 2004). Following the four steps of the realist evaluation cycle helps accumulate valid, consistent empirical evidence (Pawson & Tilley, 2004) that can inform future organisational interventions. This article, therefore, discusses crucial intervention components from a realist evaluation perspective (i.e., CMO perspective) and by following the four steps of the realist

evaluation cycle, provides guidance on when, why, and how to develop and test CMO configurations for the intervention components.

In short, this article addresses the above two limitations of the five-phase model and develops an Integrated Realist Evaluation Model for Organisational Interventions (IREMOI). Following this model helps to consider crucial intervention components upfront, develop initial CMO configurations, design and implement the intervention based on the initial CMO configurations, collect empirical data, analyse and synthesise empirical data, and test the initial CMO configurations; following this process will enhance the quality of evaluation which will ultimately help develop and implement interventions that are more likely to be effective. As such, the first contribution of this article is improving the understanding of ‘how to’ evaluate complex organisational interventions based on realist evaluation. In addition, in line with Nielsen and Abildgaard (2013), this article provides the most recent empirical evidence in the organisational intervention literature and develops examples of CMO configurations for intervention components. Therefore, the second contribution of this article is improving the understanding of ‘what works for whom in which circumstances’ regarding organisational interventions.

#### **INTEGRATING THE CONTENTS OF RE-AIM INTO THE FIVE-PHASE MODEL**

This section discusses the RE-AIM dimensions of Adoption, Reach, Implementation, Effectiveness, and Maintenance (that operate at two organisational and individual levels) in the context of organisational interventions and describes how and why these dimensions are integrated into the five-phase model.

*Adoption*, at the organisational level, includes the recruitment process of organisational units and, at the individual level, includes the recruitment process of intervention providers (managers) (Gaglio et al., 2013). *Reach*, at the individual level, includes the recruitment process of intervention participants (employees) (Gaglio et al.,

2013). In organisational interventions, however, the recruitment process is at the organisational level, this means the organisational units, either worksites, organisational departments, or working teams are identified and recruited (Gupta et al., 2018; von Thiele Schwarz et al., 2017). Evaluating the recruitment process of organisational units is important as it improves the understanding of why different organisational units (with their managers and employees) accept or decline to participate in the intervention. As such, the recruitment process of organisational units (not covered in the five-phase model) should be evaluated as a *mechanism* in the preparation phase of the intervention.

*Implementation*, at the organisational level, refers to the measurement of intervention fidelity, adaptations made to the intervention, and consistency of intervention delivery across different organisational units and employees (Gaglio et al., 2013). In organisational intervention evaluation, the implementation process is evaluated in terms of intervention fidelity (i.e., the extent to which the intervention delivered is consistent with its protocol), dose delivered (i.e., the extent to which the number or amount of intervention activities was delivered to intervention participants), and dose received (i.e., the extent to which intervention participants received and participated in the intervention activities) (Nielsen & Randall, 2013). Evaluating fidelity and dose is important as it helps to identify what was planned, what actually took place, and why there were differences (if any) between what was planned and what actually took place (Nielsen & Randall, 2013). As such, fidelity and dose (partially covered in the five-phase model) should be evaluated as *mechanisms* in the implementation phase of the intervention.

*Effectiveness*, at the individual level, measures both intended and unintended intervention outcomes (Gaglio et al., 2013). Similarly, the five-phase model covers both intended and unintended outcomes in the evaluation phase of the intervention. In realist evaluation, intended effects are seen as results of the interactions between *acknowledged*

mechanisms and contexts, whereas unintended effects are results of the interactions between *unacknowledged* mechanisms and contexts (Pawson & Tilley, 1997, 2004).

Finally, *Maintenance*, at the organisational level, refers to the extent to which the intervention is integrated into the organisation's day-to-day operation and maintained over time (Gaglio et al., 2013). In organisational intervention evaluation, the maintenance of the intervention is determined by, first, the extent to which the intervention aims and objectives were aligned with organisational aims and values (i.e., strategic alignment) and, second, the extent to which the intervention activities were integrated into organisational policies and practices (i.e., operational alignment) (von Thiele Schwarz & Hasson, 2013). Evaluating maintenance is important as it helps to determine if changes in the organisation maintained over time, resulting in long-term improvements in the psychosocial working conditions and employees' health and wellbeing (Nielsen & Noblet, 2018). Therefore, the alignment of the intervention with organisational aims and values and with organisational policies and practices (that are not covered in the five-phase model) should be evaluated as *mechanisms* in the preparation and action planning phases of the intervention, respectively. In addition, *Maintenance*, at the individual level, measures the long-term effects of the intervention six months or more after the last intervention contact (Gaglio et al., 2013). Similarly, the five-phase model covers evaluating intervention outcomes at different time points, including *proximal outcomes* (i.e., changes in psychosocial risk management), *intermediate outcomes* (i.e., changes in psychosocial working conditions) and *distal outcomes* (i.e., changes in employees' health and wellbeing and organisational outcomes like performance).

Table 1 shows where the contents of each RE-AIM dimension are integrated into the five-phase model in our model.



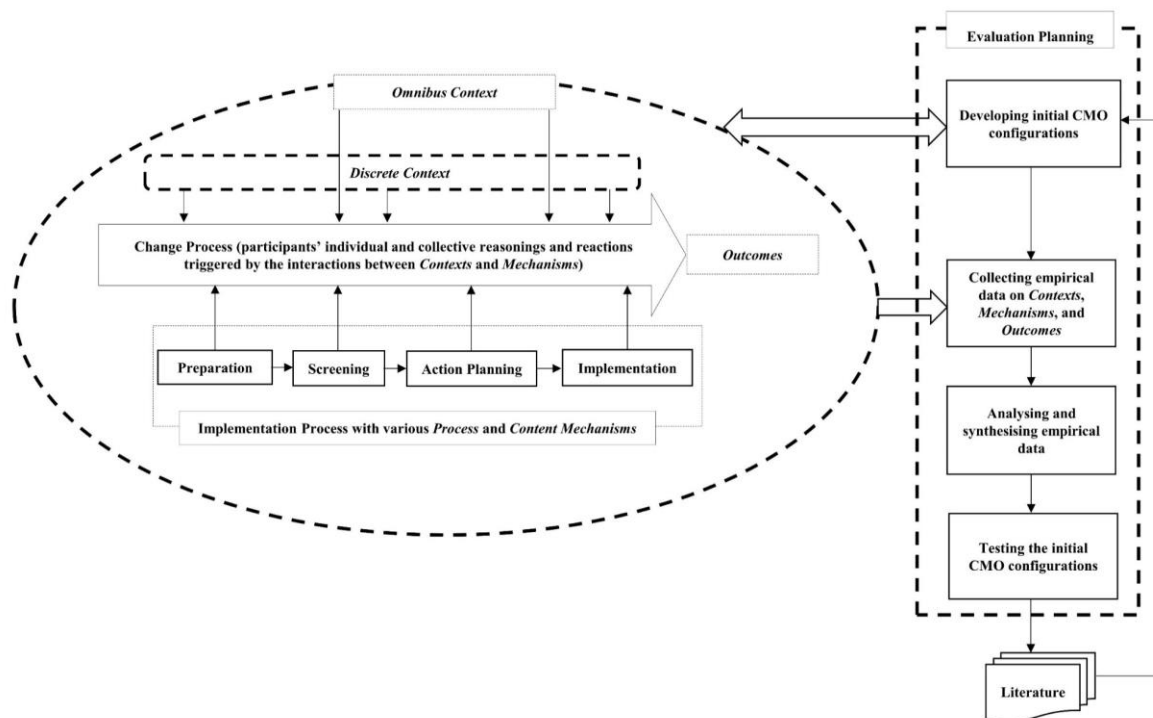
**Table 1:** The contents of the Five-Phase Model, the RE-AIM Framework, and the IREMOI.

The Five-Phase Model	The RE-AIM Framework	The IREMOI
<b>Evaluation</b> <ul style="list-style-type: none"> <li>Evaluating the implementation process</li> <li>Evaluating intervention intended and unintended outcomes covering proximal, intermediate, and distal outcomes</li> </ul>	<b>The Effectiveness dimension at both individual and organisational levels</b> <ul style="list-style-type: none"> <li>Identifying intermediate outcomes, distal outcomes, and negative outcomes at the completion of the intervention</li> </ul> <b>The Maintenance dimension at the individual level</b> <ul style="list-style-type: none"> <li>Identifying distal outcomes and negative outcomes six months or more after the most recent intervention contact</li> </ul>	<b>Evaluation Planning</b> <ul style="list-style-type: none"> <li>Developing initial CMO configurations</li> <li>Collecting empirical data on the implementation process and intervention outcomes</li> <li>Analysing and synthesising empirical data and developing empirical CMO configurations</li> <li>Testing initial CMO configurations against empirical CMO configurations</li> </ul>
<b>Preparation</b> <ul style="list-style-type: none"> <li>Determining organisational readiness for change</li> <li>Determining employees' readiness for change</li> <li>Determining multi-level management support</li> <li>Establishing steering groups and assigning a project champion</li> <li>Developing a communication strategy.</li> </ul>	<b>The Adoption and Reach dimensions at both individual and organisational levels</b> <ul style="list-style-type: none"> <li>Recruiting organisational units with their managers and employees</li> </ul> <b>The Maintenance dimension at the organisational level</b> <ul style="list-style-type: none"> <li>Aligning the intervention with organisational vision and values</li> </ul>	<b>Preparation</b> <ul style="list-style-type: none"> <li>Developing a CMO configuration about recruiting organisational units (a <i>mechanism</i>)</li> <li>Developing a CMO configuration about organisational units' readiness for change (a <i>mechanism</i>)</li> <li>Developing a CMO configuration about multi-level management onboarding process (a <i>mechanism</i>)</li> <li>Developing a CMO configuration about multi-level management support (a <i>mechanism</i>)</li> <li>Developing a CMO configuration about aligning the intervention aims and objectives with organisational vision and values (a <i>mechanism</i>)</li> <li>Developing CMO configurations about establishing steering groups and assigning a project champion (<i>mechanisms</i>)</li> <li>Developing a CMO configuration about the communication strategy (a <i>mechanism</i>)</li> </ul>
<b>Screening</b> <ul style="list-style-type: none"> <li>Auditing existing systems</li> <li>Feeding back the results to employees</li> </ul>	-	<b>Screening</b> <ul style="list-style-type: none"> <li>Developing a CMO configuration about tailoring risk assessment methods (a <i>mechanism</i>)</li> <li>Developing a CMO configuration about reporting the results of the risk assessment (a <i>mechanism</i>)</li> </ul>
<b>Action planning</b> <ul style="list-style-type: none"> <li>Determining the process of action planning</li> <li>Determining the content of action plans</li> </ul>	<b>The Maintenance dimension at the organisational level</b> <ul style="list-style-type: none"> <li>Integrating the intervention into organisational policies and practices</li> </ul>	<b>Action planning</b> <ul style="list-style-type: none"> <li>Developing a CMO configuration about the process of action planning (a <i>mechanism</i>)</li> <li>Developing a CMO configuration about the content of action plans (a <i>mechanism</i>)</li> <li>Developing a CMO configuration about integrating the intervention activities into organisational policies and practices (a <i>mechanism</i>)</li> </ul>
<b>Implementation</b> <ul style="list-style-type: none"> <li>Implementing action plans</li> <li>Documenting intervention activities and comparing them against planned intervention activities</li> <li>Documenting who makes intervention activities happen</li> </ul>	<b>The Implementation dimension at the organisational level</b> <ul style="list-style-type: none"> <li>Measuring intervention fidelity</li> <li>Measuring dose delivered</li> <li>Measuring dose received</li> </ul>	<b>Implementation</b> <ul style="list-style-type: none"> <li>Developing a CMO configuration about the process of implementing action plans (a <i>mechanism</i>)</li> <li>Developing a CMO configuration about intervention fidelity (a <i>mechanism</i>)</li> <li>Developing CMO configurations about dose delivered and dose received (<i>mechanisms</i>)</li> </ul>

## **THE INTEGRATED REALIST EVALUATION MODEL FOR ORGANISATIONAL INTERVENTIONS (IREMOI)**

The IREMOI views an organisational intervention as a collective of CMO configurations that explain the change process by hypothesising how the ongoing interactions between the implementation process and the intervention contexts trigger managers' and employees' individual and collective reasoning and reactions regarding psychosocial working conditions that gradually produce changes in the psychosocial working conditions, employees' health and wellbeing, and organisational outcomes (Figure 1). The implementation process contains various process and content mechanisms. The intervention contexts include both omnibus contextual factors (i.e., contextual factors that relate to the general intervention setting such as existing working conditions in organisational units and health and wellbeing of managers and employees) and discrete contextual factors (i.e., concurrent changes taking place in the organisation during the intervention) (Nielsen & Randall, 2013).

**FIGURE 1** The Integrated Realist Evaluation Model for Organisational Interventions (IREMOI)



In the following, we elucidate how the IREMOI can be used. Since the ‘evaluation phase’ runs throughout the entire intervention, it is important to determine when, why, and how to evaluate intervention components upfront. Hence, we call the first phase ‘evaluation planning’. Below, we explain the evaluation planning by describing the four steps of the realist evaluation cycle and highlighting when each step should be taken.

### **Intervention Phase 1: Evaluation Planning**

*Step 1: Developing initial CMO configurations.* This step takes place before initiating the intervention. Data are collected from the organisational interventions literature (cf. Roodbari et al., 2021), national policies, organisation’s databases, researchers, occupational health practitioners, policymakers, and organisation’s managers and employees (Pawson & Tilley, 2004). The collected data are, then, analysed based on themes of contexts, mechanisms, and outcomes and are synthesised by following ‘retroduction’ that requires

identifying mechanisms, contexts associated with such mechanisms, and possible outcomes based on their causal links to develop initial CMO configurations (Greenhalgh et al., 2017). These initial CMO configurations represent ‘what might work for whom in which circumstances?’. Developing initial CMO configurations upfront helps to ensure all crucial intervention components are considered upfront, this helps to design the intervention based on initial CMO configurations and ensure necessary empirical data are collected during the implementation and at the follow-up.

*Step 2: Collecting empirical data.* This step takes place from the baseline to the last follow-up. Different methods, including before-and-after intervention measures (i.e., questionnaires), interviews, focus groups, observations, and process tracking can be used to collect empirical data (Pawson & Tilley, 2004).

*Step 3: Analysing and synthesising empirical data.* This step takes place after the last follow-up when all empirical data are collected. The main purpose of data analysis and synthesis is to search for intervention outcomes, identify patterns of outcomes, and develop empirical CMO configurations based on these patterns of outcomes (Pawson & Tilley, 2004). Marchal et al. (2012) suggested that qualitative data should be analysed by thematic content analysis using the themes of contexts, mechanisms, and observed outcomes, and quantitative data should be analysed to assess the effectiveness of the intervention and to validate or invalidate the empirical CMO configurations (cf. von Thiele Schwarz et al., 2017). The empirical CMO configurations represent ‘what worked for whom in which circumstances?’.

*Step 4: Testing initial CMO configurations.* This step takes place after empirical CMO configurations are developed. In this step, the initial CMO configurations are tested against the empirical CMO configurations to confirm, refute, or modify the initial CMO configurations. These empirically tested CMO configurations can be tested again in the next cycle in the same organisation until the observed patterns of outcomes are fully explained or

can be used as initial CMO configurations for other interventions in other organisations. The repetition of this realist evaluation cycle results in more valid CMO configurations which are better tested and increasingly refined (Pawson & Tilley, 2004). This recycling process of CMO configurations accumulates knowledge about ‘what works for whom in which circumstances?’ which is the ultimate goal of realist evaluation of organisational interventions.

In the following, we show how steps two and three of the realist evaluation cycle (i.e., collecting, analysing, and synthesising empirical data) are taken. Table 2 shows how to develop CMO configurations (i.e., which questions to be asked to develop CMO configurations) and provides examples of CMO configurations.

### **Intervention Phase 2: Preparation**

*Developing a CMO configuration about recruiting organisational units (a mechanism).* RE-AIM requires evaluating the recruitment process of organisational units. This evaluation is essential because the recruitment process of organisational units can influence their readiness for change which in turn affect the implementation of intervention activities. For instance, if the intervention is forced upon organisational units in recruiting organisational units, they may not be ready for change and, consequently, may not complete intervention activities (Framke & Sørensen, 2015). Therefore, the IREMOI suggests developing a CMO configuration about the recruitment process of organisational units.

*Developing a CMO configuration about organisational units’ readiness for change (a mechanism).* The five-phase model requires evaluating organisational units’ readiness for change. This evaluation is important because organisational units’ readiness for change can influence the implementation and outcomes of the intervention. For instance, if employees do not see the intervention's benefits, they resist the intervention, and consequently, the intervention may not produce positive outcomes (Albertsen et al., 2014). The literature shows

that various omnibus contextual factors influence organisational units' readiness for change, including pre-intervention levels of employees' health and wellbeing (von Thiele Schwarz et al., 2017), pre-intervention working conditions (Nielsen & Randall, 2012), previous experience with change processes and resultant positive appraisal of change processes (Framke et al., 2019), the change valence (i.e., the extent to which organisational actors perceive the change as needed, important, or worthwhile) (Weiner, 2009), a shared understanding of the needed changes among managers and their employees (Hasson et al., 2013), a shared positive vision for the future among managers and their employees (Nielsen et al., 2010), and the collective efficacy (i.e., the extent to which organisational actors feel capable of solving the problems as a group and of making changes to psychosocial working conditions) (Abildgaard et al., 2020). Given these, the IREMOI suggests developing a CMO configuration about organisational units' readiness for change.

*Developing a CMO configuration about multi-level management onboarding process (a mechanism).* RE-AIM requires the evaluation of the managers' onboarding process. This evaluation is important because the onboarding process of managers can influence their support of the intervention. For example, Busch et al. (2017) reported that to get management onboard, they were assured that the intervention would be low cost (by utilising the services provided by non-profit agencies); subsequently, managers offered the intervention to their employees and supported them the intervention activities. Therefore, the IREMOI suggests developing a CMO configuration about multi-level management on boarding process.

*Developing a CMO configuration about multi-level management support (a mechanism).* The five-phase model requires evaluating managers' support of the intervention. This evaluation is crucial because it helps determine how multi-level management support through different mechanisms promotes intervention outcomes. For instance, senior managers may support the intervention by introducing the mechanisms of committing to the

intervention at the start of the intervention (Schelvis et al., 2016), allocating resources, and facilitating development and implementation of the intervention (Busch et al., 2017). Similarly, middle managers may support the intervention through the mechanisms of commitment to the intervention at the start of the intervention (Schelvis et al., 2016), participation in the development and implementation of the intervention (Abildgaard et al., 2018), and the performance of transformational leadership (Lundmark et al., 2017). As such, the IREMOI suggests developing a CMO configuration about multi-level management support of the intervention.

*Developing a CMO configuration about aligning the intervention aims and objectives with organisational vision and values (a mechanism).* RE-AIM requires evaluating maintenance of the intervention. A key to achieving maintenance is aligning aims and objectives of the intervention with vision and values of the organisation. This evaluation is important because it helps to understand how the intervention was institutionalised and maintained in the organisation. The literature shows that aligning the intervention aims and objectives with organisational vision and values works in two ways. First, through affecting the perceptions of senior managers about the alignment of the intervention aims and objectives with organisational goals (Schelvis et al., 2016). Second, through affecting the perceptions of middle managers and employees about aligning the intervention aims and objectives with their shared values (Nielsen et al., 2017). Considering these, the IREMOI suggests developing a CMO configuration about aligning the intervention aims and objectives with the organisation's vision and values.

*Developing CMO configurations about establishing steering groups and assigning a project champion (mechanisms).* The five-phase model requires evaluating the establishment of steering groups, the assignment of a project champion, and their support of the intervention. Evaluating the establishment of steering groups and their roles is essential

because it helps to understand how steering groups were formed, the selection criteria for including members, their representativeness of the entire organisation, their decision latitude, and how they influenced intervention activities. Previous research has found that if the steering groups have the necessary autonomy and resources and consist of members with influence and credibility, they can enable employees to contribute their ideas and provide honest feedback that affect intervention outcomes (Jenny et al., 2015). Also, evaluating the assignment of a project champion and its roles is important because it helps to determine how a project champion was assigned, the required competencies for the role, the champion's decision latitude, and how the champion managed the intervention. The literature shows that champion involvement is a key strategy for awareness-raising and culture change, provided that the champion possesses the personal characteristics, seniority, and skills required by the role (Brakenridge et al., 2018). As such, the IREMOI suggests developing CMO configurations about the establishment of steering groups, the assignment of a project champion, and their support of the intervention.

*Developing a CMO configuration about the communication strategy (a mechanism).*

The five-phase model requires evaluating the communication strategy regarding the intervention. This evaluation is essential as it helps to understand what kind of information has been distributed, to whom, and how it has been received and perceived. The literature shows that a communication strategy containing rationale behind the intervention, process and progress of the intervention, and expected outcomes that uses two-ways communication, including the main and feedback channels, raises employees' awareness of the intervention (DeJoy et al., 2010), increases the chance of cognitive appraisal of employees (Nielsen et al., 2014), triggers co-learning processes (Nielsen & Randall, 2012), and increases the quality of action plans which in turn improves working conditions and employees' health and wellbeing



(DeJoy et al., 2010). Therefore, the IREMOI suggests developing a CMO configuration about the communication strategy.

### **Intervention Phase 3: Screening**

*Developing a CMO configuration about tailoring risk assessment methods (a mechanism).* The five-phase model requires evaluating risk assessment methods. This evaluation is vital as it helps to determine how risk assessment methods were tailored to fit the organisational context (e.g., existing psychosocial working conditions) and how intervention activities were prioritised and planned based on the results of the risk assessment methods. The literature shows that using specific qualitative and quantitative risk assessment methods produce specific intervention outcomes. For instance, Nielsen et al. (2014) found a tailored questionnaire enabled participants' understanding of their working conditions and made it easier to develop initiatives specific to their working conditions. Therefore, the IREMOI suggests developing a CMO configuration about tailoring risk assessment methods.

*Developing a CMO configuration about reporting the results of the risk assessment (a mechanism).* The five-phase model requires evaluating how the risk assessment results were reported to employees and managers. This evaluation is crucial as it helps to understand how the reporting process enabled employees and managers to make sense of their working conditions and determine further intervention activities. The literature shows that reporting the risk assessment results to employees and managers facilitates developing concrete action plans, leads to more intervention activities, and influences the success of the intervention (Bourbonnais et al., 2006; Nielsen et al., 2014). Therefore, the IREMOI suggests developing a CMO configuration about reporting the results of the risk assessment.

#### **Intervention Phase 4: Action Planning**

*Developing a CMO configuration about the process of action planning (a mechanism).* The five-phase model requires evaluating the process of action planning. This evaluation is critical as it helps to identify how employees and their (line) managers collectively translated risk assessment results into action plans and how and why activities were prioritised. The literature shows that the processes of action planning affect intervention outcomes. For instance, von Thiele Schwarz et al. (2017) found that using the Kaizen board to develop and implement action plans increased employees' awareness of and capacity to manage psychosocial issues and their wellbeing. Sørensen and Holman (2014) reported that developing action plans in workshops and refining these plans by employees' initiative leaders (who were appointed to refine the plans and to coordinate the subsequent implementation process) improved relational job characteristics and burnout. As such, the IREMOI suggests developing a CMO configuration about the process of action planning.

*Developing a CMO configuration about the contents of action plans (a mechanism).* The five-phase model requires evaluating the contents of action plans. Evaluating the contents of action plans is essential as it helps to understand how the contents of action plans produced intervention outcomes. The literature shows that changing specific working conditions produce specific intervention outcomes. For instance, Holman and Axtell (2016) found that managing administrative tasks improved employees' job control (*outcome*) and clarifying the performance criteria improved feedback. Sørensen and Holman (2014) found that targeting task uncertainty, task ambiguity, job complexity, and task interdependencies to change improved relational job characteristics and burnout. Therefore, the IREMOI suggests developing a CMO configuration about the contents of action plans.

*Developing a CMO configuration about integrating the intervention activities into organisational policies and practices (a mechanism).* RE-AIM requires evaluating

maintenance of the intervention. A key to achieving maintenance is integrating the intervention activities into organisational policies and practices. The evaluation of integrating intervention activities into organisational policies and practices is important as it helps to determine how the intervention activities were embedded into day-to-day practices of the organisation and how participants designed, organised, and managed their jobs differently that lasted in the organisation. The literature shows that to evaluate the effects of integrating the intervention activities into organisational policies and practices on the intervention outcomes, three issues should be explored. First, it should be explored how the intervention activities were integrated into the existing management system, primarily quality improving and production systems such as Lean production (von Thiele Schwarz et al., 2017). Second, it should be explored how the intervention activities were integrated into the work routine of the organisation. For instance, participatory decision-making, in addition to focusing on employees' health and wellbeing, can be employed in other organisational processes such as HR practices (Nielsen, Nielsen et al., 2017). Third, it should be explored how the integration of intervention activities into organisational policies and practices were perceived by managers and employees (Nielsen & Randall, 2012). Considering these, the IREMOI suggests developing a CMO configuration about integrating the intervention activities into organisational policies and practices.

### **Intervention Phase 5: Implementation**

*Developing a CMO configuration about the process of implementing action plans (a mechanism).* The five-phase model requires evaluating the process of implementing action plans. This evaluation is crucial because it helps to understand whether and how employees and their (line) managers collectively prioritised action plans and implemented the action plans. The literature shows that the process of implementing action plans affects intervention outcomes. For instance, DeJoy et al. (2010) reported that implementing action plans by an

'Action Team' (consisting of 8-12 employees from different departments) improved organisational commitment, job satisfaction, and employees' health and wellbeing. Holman and Axtell (2016) found that forming implementation teams consisting of employees with a team leader to implement the intervention activities and holding regular meetings among researchers, employee representatives, team leaders, and managers to discuss the progress of implementation improved employees' job control and wellbeing. As such, the IREMOI suggests developing a CMO configuration about the process of implementing action plans.

*Developing a CMO configuration about intervention fidelity (a mechanism).* RE-AIM requires evaluating intervention fidelity that is the extent to which the intervention was implemented according to its original protocol. Evaluating fidelity is important as it helps to identify what was planned, what actually took place, and why there were differences (if any) between them. Further, unless the evaluation of fidelity is made, it cannot be determined whether the failure of the intervention was due to poor implementation (programme failure) or inadequacies inherent in the intervention programme (theory failure). The literature shows that contextual factors can influence the relationship between intervention fidelity and intervention outcomes. For instance, Schelvis et al. (2016) reported that a high level of intervention fidelity resulted in a low level of overall satisfaction due to a lack of employees' involvement in the choice of intervention activities and a lack of mutual trust. Oude Hengel et al. (2012) concluded that failure of the intervention could be attributed to both medium level of intervention fidelity and a theory failure, as the theory behind the intervention did not address the problem (e.g., changes in communication were at the individual level by relying on workers, but it should be at the organisational level by relying also on supervisors and middle management).

The traditional concept of fidelity (i.e., fidelity to the original protocol), however, is less useful in realist evaluation and could be re-articulated to show fidelity to the initial CMO

configurations (Wong et al., 2017). In realist evaluation, fidelity is measured based on the initial CMO configurations, not the intervention original protocol (Wong et al., 2017). As such, the IREMOI suggests that the empirical CMO configurations representing ‘what *worked* for whom in which circumstances?’ should be compared with the initial CMO configurations representing ‘what *might work* for whom in which circumstances?’, this comparison should be used to confirm, refute, or modify the initial CMO configurations in order to understand ‘what *works* for whom in which circumstances?’ (Pawson & Tilley, 2004).

*Developing CMO configurations about dose delivered and dose received (mechanisms).* RE-AIM requires evaluating dose delivered (i.e., how many intervention activities were delivered by intervention providers) and dose received (i.e., the extent to which intervention participants received and participated in intervention activities). Evaluating dose is important as it helps to identify the relationship between components delivered to participants and participants’ use of such components and their collective effects on the intervention outcomes. For instance, Sørensen and Holman (2014) outlined that higher levels of dose delivered and dose received in an intervention group resulted in greater improvements in relational job characteristics compared to other groups. The literature also shows that contextual factors can influence the relationship between dose and intervention outcomes. For instance, Gupta et al. (2018) reported that 100% dose delivered with 69% dose received did not improve the intended outcomes since additional burden on the workers who already faced high demands and efforts at work caused the negative perception of the intervention.

Realist evaluation, however, criticises the terms of dose delivered and dose received in two ways. First, realist evaluation views intervention participants as active agents, rather than passive recipients of the intervention components delivered by intervention providers.

Realist evaluation suggests that intervention providers and participants engage in a ‘teacher-learner relationship’ or ‘assisted sense-making relationship’ and interact with each other and develop and test CMO configurations (Pawson & Tilley, 2004). Second, these terms imply the use of quantitative measures. Realist evaluation, however, advocates the use of qualitative measures to develop an in-depth understanding of how intervention participants interact with providers, how they perceive the intervention, and how they change their behaviours in response to the intervention. Hence, the IREMOI suggests combining quantitative and qualitative measures as it helps to provide a better measurement of dose and ultimately helps with testing CMO configurations.

Table 2 shows how to develop CMO configurations for the above intervention components and provides examples of CMO configurations

**Table 2:** How to develop CMO configurations for the intervention components and examples of CMO configurations.

Questions to be Asked to Develop CMO Configurations	Examples of CMO Configurations
<b>Preparation</b>	
<p>To develop a CMO configuration about the recruitment process of organisational units:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> how the organisational units were recruited in terms of how organisational units were identified, how they were provided with information about the goals and processes of the intervention, how they were invited to participate in the intervention, and why they accepted or declined to participate in the intervention?</li> <li>• <b>Contextual factors:</b> which and how contextual factors facilitated and impaired the recruitment process?</li> <li>• <b>Outcomes:</b> how the recruitment process influenced organisational units' readiness to change and affected employees' and managers' perceptions of and participation in the intervention?</li> </ul> <p>To develop a CMO configuration about organisational units' readiness for change:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> how the organisational units perceived problems in the current situation, saw the need for intervention, and believed the intervention would have the desired effects?</li> <li>• <b>Contextual factors:</b> which and how contextual factors influenced organisational units' readiness for change?</li> <li>• <b>Outcomes:</b> how the organisational units' readiness to change affected employees' and managers' perceptions of and participation in the intervention?</li> </ul>	<p><i>If</i> organisational units have reasonably good working conditions, organisational actors have a moderate to good level of health and wellbeing, and their change valence and collective efficacy are high (<i>contextual factors</i>); <i>then</i> a recruitment process of organisational units in which all intervention actors are informed about the goals and processes of the intervention and are invited to voluntarily participate in the intervention (<i>mechanisms</i>) improves employees' and managers' awareness of and readiness for the intervention (<i>proximal outcomes</i>); improves managers' and employees' engagement in the intervention and employees' perceived social support (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing (<i>distal outcomes</i>).</p>
<p>To develop a CMO configuration about multi-level management on boarding process:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> how multi-level management got onboard in terms of how they were provided with information about the goals and processes of the intervention, how they were invited to participate in the intervention, and why they accepted or declined to participate in the intervention?</li> <li>• <b>Contextual factors:</b> which and how contextual factors facilitated or hindered multi-level management onboarding process</li> <li>• <b>Outcomes:</b> how managers' onboarding process improved employees' awareness of and engagement in the intervention</li> </ul> <p>To develop a CMO configuration about multi-level management support of the intervention:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> how managers at all levels supported the intervention?</li> <li>• <b>Contextual factors:</b> which and how contextual factors facilitated or hindered multi-level</li> </ul>	<p><i>If</i> both senior and middle managers have necessary individual resources (e.g., motivation to change, knowledge, skills, a good level of health and wellbeing) and there are organisational resources (e.g., budget, time) (<i>contextual factors</i>); <i>then</i> multi-level management onboarding and their support of the intervention (<i>mechanisms</i>) improve employees' awareness of the intervention (<i>proximal outcomes</i>); improve employees' perceived social support and their engagement in the intervention (<i>intermediate outcomes</i>); and, ultimately, improve employees' health and wellbeing (<i>distal outcomes</i>).</p>

<p>management support of the intervention?</p> <ul style="list-style-type: none"> <li>● <b>Outcomes:</b> how multi-level management support improved employees' awareness of and engagement in the intervention?</li> </ul>	
<p>To develop a CMO configuration about the alignment of the intervention aims and objectives with the organisation vision and values:</p> <ul style="list-style-type: none"> <li>● <b>Mechanisms:</b> how aims and objectives of the intervention were aligned (or so-called philosophical fit) with vision and values of the organisation?</li> <li>● <b>Contextual factors:</b> which and how contextual factors facilitated or impaired the alignment process?</li> <li>● <b>Outcomes:</b> how the alignment of the intervention aims and objectives with the organisation vision and values was perceived by managers (particularly senior managers) and employees?</li> </ul>	<p><i>If</i> there are necessary resources in the organisation for conducting the intervention where organisational and employees' readiness for change are high (<i>contextual factors</i>); <i>then</i> aligning aims and objectives of the intervention with the vision and values of the organisation (a <i>mechanism</i>) improves managers' and employees' positive appraisal of and commitment to the intervention (<i>proximal outcomes</i>); improves managers' support of the intervention, employees' engagement in the intervention, and employees' perceived social support (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing (<i>distal outcomes</i>).</p>
<p>To develop a CMO configuration about the establishment of steering groups, the assignment of a project champion, and their support of the intervention:</p> <ul style="list-style-type: none"> <li>● <b>Mechanisms:</b> how the steering groups were established, how the project champion was assigned, and how they affected the process of the intervention?</li> <li>● <b>Contextual factors:</b> which and how contextual factors facilitated or impaired the engagement and support of the steering groups and the champion?</li> <li>● <b>Outcomes:</b> how successful the steering groups and the champion were in bringing in employees' and managers' perspectives and engagement in the intervention?</li> </ul>	<p><i>If</i> the steering groups and the project champion have the necessary autonomy and resources, including motivation, skills, influence, and credibility (<i>contextual factors</i>); <i>then</i> steering groups' and the champion's leadership and support of the intervention (<i>mechanisms</i>) improve managers' and employees' awareness of and commitment to the intervention (<i>proximal outcomes</i>); improve managers' support and employees' engagement in the intervention (<i>intermediate outcomes</i>); and, ultimately, improve employees' health and wellbeing (<i>distal outcomes</i>).</p>
<p>To develop a CMO configuration about the communication strategy:</p> <ul style="list-style-type: none"> <li>● <b>Mechanisms:</b> what the communication strategy contained, and how the communication strategy affected the participatory process of the intervention?</li> <li>● <b>Contextual factors:</b> which and how contextual factors facilitated or impaired effective communication in the organisation about the intervention?</li> <li>● <b>Outcomes:</b> how employees and managers perceived the communication?</li> </ul>	<p><i>If</i> there is a climate of openness, trust, and respect in the organisation where there are enough resources in terms of time, energy, and infrastructure (<i>contextual factors</i>); <i>then</i> a communication strategy which directs effective communication across the organisation about the intervention (a <i>mechanism</i>) improves employees' awareness of the intervention and promotes employees' co-learning (<i>proximal outcomes</i>); improves organisational culture and employees' perceived social support (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing (<i>distal outcomes</i>).</p>
<b>Screening</b>	
<p>To develop a CMO configuration about tailoring risk assessment methods:</p> <ul style="list-style-type: none"> <li>● <b>Mechanisms:</b> which and how risk assessment method, with which measures, was used to identify psychosocial working conditions?</li> <li>● <b>Contextual factors:</b> which and how contextual factors facilitated or impaired the process of identifying psychosocial working conditions?</li> <li>● <b>Outcomes:</b> how the process of identifying psychosocial working conditions with its</li> </ul>	<p><i>If</i> there are necessary organisational resources for conducting a risk assessment where organisational and employees' readiness for change are high (<i>contextual factors</i>); <i>then</i> using a tailored risk assessment method that measures local psychosocial working conditions (a <i>mechanism</i>) improves managers' and employees' awareness of and sense-making of their psychosocial working conditions (<i>proximal outcomes</i>); improves developing</p>



<p>measures affected subsequent process mechanisms (e.g., developing action plans), content mechanisms (e.g., the content of action plans), and employees' and managers' awareness of and capacity to manage adverse psychosocial working conditions?</p>	<p>detailed and contextualised action plans to improve the psychosocial working conditions (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing (<i>distal outcomes</i>).</p>
<p>To develop a CMO configuration about reporting the results of the risk assessment:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> how the risk assessment results were reported to employees and managers?</li> <li>• <b>Contextual factors:</b> which and how contextual factors facilitated or hindered the reporting process?</li> <li>• <b>Outcomes:</b> how the reporting process influenced employees' and managers' sense-making of their psychosocial working conditions and their appraisal of the intervention?</li> </ul>	<p><i>If</i> there are necessary organisational resources (e.g., infrastructure for meetings), the existing working conditions allows managers and employees to attend meetings, and there is a culture of trust and openness in the organisation (<i>contextual factors</i>); <i>then</i> reporting the results of the risk assessment to both employees and managers through regular meetings where the results can be discussed in the meetings (<i>a mechanism</i>) improves employees' and managers' awareness and sense-making of their psychosocial working conditions (<i>proximal outcomes</i>); improves employees' perceived social support and promotes developing concrete action plans (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing (<i>distal outcomes</i>).</p>
<p><b>Action Planning</b></p>	
<p>To develop a CMO configuration about the process of action planning:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> how action plans were developed, in particular how employees and managers in a participatory process jointly developed action plans?</li> <li>• <b>Contextual factors:</b> which and how contextual factors facilitated or impaired the participatory process of action planning?</li> <li>• <b>Outcomes:</b> how the process of action planning affected subsequent process mechanisms (e.g., implementation of action plans), content mechanisms (e.g., the content of action plans), and employees' and managers' perceptions of their working conditions and their awareness of and engagement in the intervention?</li> </ul>	<p><i>If</i> existing job design and employees' and managers' health and wellbeing are reasonably good and there are necessary resources in the organisation (e.g., motivation, time, infrastructure) (<i>contextual factors</i>); <i>then</i> participatory action planning (<i>a mechanism</i>) improves employees' awareness of and capacity to manage their psychosocial issues (<i>proximal outcomes</i>); improves employees' engagement in the intervention, perceived autonomy, and perceived social support (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing (<i>distal outcomes</i>).</p>
<p>To develop a CMO configuration about the contents of action plans:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> what were the contents of action plans, in particular, what were the relevance and importance of the working conditions that were targeted to change?</li> <li>• <b>Contextual factors:</b> which and how contextual factors influenced the contents of action plans?</li> <li>• <b>Outcomes:</b> how the contents of action plans affected subsequent process mechanisms (e.g., implementation of action plans) and employees' and managers' perceptions of working conditions and their engagement in the intervention?</li> </ul>	<p><i>If</i> there are individual resources (e.g., motivation, readiness for change, knowledge, skills) and organisational resources (e.g., time, infrastructure), where employees and managers have a shared understanding of psychosocial working conditions (<i>contextual factors</i>); <i>then</i> jointly determining the contents of action plans by targeting adverse psychosocial working conditions to change (<i>a mechanism</i>) improves employees' assertiveness and self-efficacy to manage psychosocial working conditions (<i>proximal outcomes</i>); improves employees' perceived autonomy and perceived social support (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing (<i>distal outcomes</i>).</p>
<p>To develop a CMO configuration about integrating the intervention activities into organisational policies and practices:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> how the intervention activities were integrated into the organisational</li> </ul>	<p><i>If</i> jobs are well-designed, where change valence and collective efficacy are at high levels (<i>contextual factors</i>); <i>then</i> integrating the intervention activities and action plans into organisational policies and practices (<i>a mechanism</i>)</p>

<p>policies and practices?</p> <ul style="list-style-type: none"> <li>• <b>Contextual factors:</b> which and how contextual factors facilitated or impaired this integration process?</li> <li>• <b>Outcomes:</b> how the integration process was perceived by managers and employees that influenced their engagement in the implementation of the intervention?</li> </ul>	<p>improves managers' and employees' positive appraisal of the intervention (<i>proximal outcomes</i>); improves employees' perceived autonomy (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing and organisational outcomes (<i>distal outcomes</i>).</p>
<b>Implementation</b>	
<p>To develop a CMO configuration about the process of implementing action plans:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> how action plans were implemented, in particular how employees and managers in a participatory process jointly implemented action plans?</li> <li>• <b>Contextual factors:</b> which and how contextual factors facilitated or impaired the participatory process of implementing action plans?</li> <li>• <b>Outcomes:</b> how managers and employees perceived the implementation process that affected their behaviours and resultant intervention outcomes?</li> </ul>	<p><i>If</i> there are individual resources (e.g., motivation, skills) and organisational resources (e.g., time, budget, infrastructure) where collective efficacy to implement action plans is high (<i>contextual factors</i>); <i>then</i> a participatory process of implementing action plans (a <i>mechanism</i>) improves employees' feelings ownership for and commitment to the intervention (<i>proximal outcomes</i>); improves employees' perceived autonomy and perceived social support (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing (<i>distal outcomes</i>).</p>
<p>To develop a CMO configuration about intervention fidelity:</p> <ul style="list-style-type: none"> <li>• <b>Mechanisms:</b> if and how the intended intervention mechanisms were actually triggered?</li> <li>• <b>Contextual factors:</b> what predicted contextual factors facilitated or impaired the activation of the intended mechanisms?</li> <li>• <b>Outcomes:</b> which intended outcomes were actually produced?</li> </ul>	<p><i>If</i> the theory behind the intervention has a strong theoretical basis and addresses the existing psychosocial working problems and managers and employees have positive appraisals of the intervention and participate in the intervention activities (<i>contextual factors</i>); <i>then</i> a high level of intervention fidelity (a <i>mechanism</i>), retains and increases employees' motivation and excitement to keep the intervention and improves their feeling of moving forward (<i>proximal outcomes</i>); improves employees' perceived social support (<i>intermediate outcomes</i>); and, ultimately, improves employees' health and wellbeing (<i>distal outcomes</i>).</p>
<p>To develop a CMO configuration about dose delivered and dose received:</p> <ul style="list-style-type: none"> <li>• <b>Dose Delivery Mechanisms:</b> if and how intervention providers, including managers, steering groups, and external consultants engaged in developing and implementing action plans (e.g., by holding regular meetings with employees)?</li> <li>• <b>Dose Reception Mechanisms:</b> if and how employees participated in developing and implementing action plans (e.g., by attending regular meetings)?</li> <li>• <b>Contextual factors:</b> which and how contextual factors facilitated or impaired delivering and receiving dose?</li> <li>• <b>Outcomes:</b> how employees perceived their interactions with intervention providers regarding the intervention that affected their behaviours and, in turn, intervention outcomes?</li> </ul>	<p><i>If</i> there are necessary organisational resources (e.g., infrastructure, time, budget) and individual resources (e.g., motivation, skills), where a supportive culture facilitate the implementation process (<i>contextual factors</i>); <i>then</i> high levels of dose delivered and dose received by increasing interactions between managers and employees and their engagement in the intervention (<i>mechanisms</i>) broaden employees' horizon, promote their sense-making and reflection, and empower them (<i>proximal outcomes</i>); improve organisational culture, employees' perceived social support, and their perceived autonomy (<i>intermediate outcomes</i>); and, ultimately, improve employees' health and wellbeing (<i>distal outcomes</i>).</p>

## DISCUSSION

This article presented a model for what organisational intervention components to evaluate, when, why, and how based on realist evaluation. It integrated the RE-AIM dimensions (Glasgow et al., 1999) into the five-phase model (Nielsen & Abildgaard, 2013) to provide insights into what intervention components should be included in the realist evaluation of organisational interventions. Further, it provided guidance on how to apply realist evaluation by describing when, why, and how to develop a CMO configuration for each intervention component and provided examples of CMO configurations for intervention components. As such, this article has two contributions. First, it improves the understanding of ‘how to’ evaluate organisational interventions based on realist evaluation. Second, it improves the understanding of ‘what works for whom in which circumstances’.

Regarding ‘what works for whom in which circumstances?’, this article, based on evidence from the literature, developed examples of CMO configurations for a range of mechanisms in preparation, screening, action planning, and implementation phases. Each CMO configuration shows how the mechanisms may be triggered, what contextual factors may influence the operation of each mechanism, and what outcomes each mechanism may produce (Nielsen & Miraglia, 2017). Future intervention studies can test and refine these CMO configurations to understand better ‘what works for whom in which circumstances?’ in organisational interventions.

Our model has six strengths. First, this model contains further crucial intervention components, compared to the five-phase model, essential for evaluating organisational interventions. Considering a larger set of intervention components sheds light on what intervention components to include, when, why, and how, this provides a more valid answer to the question of ‘what works for whom in which circumstances’ regarding organisational interventions. Second, we suggested how to develop CMO configurations for intervention

components, hence, our model is a theory-driven model based on CMO configurations. Following our model enables researchers and occupational practitioners to develop initial CMO configurations and test whether empirical CMO configurations (that are developed based on the proposed intervention components in the phases of preparation, screening, action planning, and implementation) confirm, refute, or modify the initial CMO configurations (Nielsen & Miraglia, 2017; Pawson & Tilley, 1997). Third, this model has the flexibility that allows identifying the most relevant and promising CMO configurations considering the specific intervention aims, the specific contexts, and the desired outcomes. Fourth, since CMO configurations explain ‘what works for whom in which circumstances’, following this CMO-based model improves the internal and external validity of the organisational intervention findings (Nielsen and Miraglia, 2017). Fifth, in this model, evaluating empirical CMO configurations throughout the implementation process not only improves the understanding of how and why changes in the intervention components, participants, their roles, and their participation during the intervention affected intervention outcomes but also avoids retrospective sense-making of the intervention (Nielsen & Randall, 2013). Finally, since CMO configurations are not equally important during all of the intervention phases, developing CMO configurations as shown in our model and aligning CMO configurations over the intervention period improves the accumulation of resources to achieve the intervention outcomes (Tafvelin et al., 2019).

### **Limitations and Challenges of the IREMOI**

The IREMOI has three limitations. Although this model provides the most central components of organisational interventions, since the organisational contexts and individuals within organisations vary significantly in each intervention, this model should be seen as a guideline for evaluating organisational interventions. This model, therefore, should be tailored to fit with the organisational contexts and individuals within organisations. Besides,

this model may be criticised for not addressing in-depth the questions about (1) which intervention component triggers which individual and collective reasoning and reactions of participants; (2) how and which specific contextual factors affect this process; and, (3) what would be the resultant outcomes of such interactions. We argue that to answer these specific questions, each intervention research should develop the most relevant and promising initial CMO configurations (based on its specific intervention goals, specific contexts, and desired outcomes) and empirically test these CMO configurations (Pawson & Tilley, 2004). Third, despite the *Effectiveness* dimension of RE-AIM requires measuring attrition (i.e., the reduction of employees' responses to surveys over the intervention period) (Gaglio et al., 2013), we did not consider attrition as a mechanism as it simply illustrates the representativeness of the surveys' participants (i.e., attrition does not produce intervention outcomes).

We acknowledge that there are three challenges in applying the IREMOI. First, the application of this model is time-consuming and needs skilled researchers/occupational health practitioners. The processes of developing initial CMO configurations, designing and implementing the intervention, and testing the initial CMO configurations requires skills in collecting, analysing, and synthesising mixed data over a long period of time. Second, to evaluate interventions, researchers/occupational health practitioners should be aware of the complexity of psychological health and wellbeing and be able to causally relate contexts, mechanisms, and outcomes in CMO configurations. Third, collecting rigorous data is resource-consuming. To mitigate these challenges, we recommend focusing on the most relevant and promising CMO configurations in each intervention study.

### **Implications for Research and Practice**

Organisational interventions are complex and this complexity needs to be addressed by evaluation frameworks (Nielsen, 2013). In response to the call for evaluation frameworks, we

proposed the IREMOI to evaluate complex organisational interventions. Since the call for evaluation frameworks has arisen from research, practice, and policy levels, we briefly discuss the contribution of our model to each level. From the research perspective, our model is based on realist evaluation which is a recommended approach to evaluate complex organisational interventions (Nielsen & Miraglia, 2017). Therefore, our model provides a theoretical framework based on realist evaluation for researchers to evaluate organisational interventions. From the practice point of view, our model improves the understanding of change processes in organisations. Therefore, our model can be used by occupational health practitioners and organisational managers to improve employees' health and wellbeing within organisations. Finally, from the policy perspective, our model has the potential to provide a basis for national policies whose aims are managing psychological risks and ensuring employees' health and wellbeing. Thus, our model can, in the long term, be used by policymakers. Given these, the success of our model like other evaluation frameworks depends on the collaboration of researchers, occupational health practitioners, organisational managers, and policymakers.

## **CONCLUSION**

In conclusion, this paper presents an Integrated Realist Evaluation Model for Organisational Interventions (IREMOI) that can be used by researchers, occupational health practitioners, and organisational managers to design, implement, and evaluate organisational interventions. The IREMOI is based on two evaluation frameworks of the five-phase model (proposed to evaluate organisational interventions) and RE-AIM (proposed to evaluate community-based, health-promoting interventions) and applies realist evaluation. The IREMOI contributes to the understanding of 'how to' evaluate complex organisational interventions based on realist evaluation. Also, applying this model improves the understanding of 'what works for whom

in which circumstances?', such understanding may increase the likelihood of future interventions successes.

## REFERENCES

- Abildgaard, J. S., Nielsen, K., & Sverke, M. (2018). Can job insecurity be managed? Evaluating an organizational-level intervention addressing the negative effects of restructuring. *Work & Stress*, 32(2), 105–123. DOI: <https://doi.org/10.1080/02678373.2017.1367735>
- Abildgaard, J. S., Nielsen, K., Wåhlin-Jacobsen, C. D., Maltesen, T., Christensen, K. B., & Holtermann, A. (2020). ‘Same, but different’: A mixed-methods realist evaluation of a cluster-randomized controlled participatory organizational intervention. *Human Relations*, 73(10), 1339–1365. DOI: <https://doi.org/10.1177/0018726719866896>
- Albertsen, K., Garde, A. H., Nabe-Nielsen, K., Hansen, Å. M., Lund, H., & Hvid, H. (2014). Work-life balance among shift workers: results from an intervention study about self-rostering. *International Archives of Occupational and Environmental Health*, 87(3), 265–274. DOI: <https://doi.org/10.1007/s00420-013-0857-x>
- Bourbonnais, R., Brisson, C., Vinet, A., Vézina, M., & Lower, A. (2006). Development and implementation of a participative intervention to improve the psychosocial work environment and mental health in an acute care hospital. *Occupational and Environmental Medicine*, 63(5), 326–334. DOI: <https://doi.org/10.1136/oem.2004.018069>
- Brakenridge, C. L., Healy, G. N., Hadgraft, N. T., Young, D. C., & Fjeldsoe, B. S. (2018). Australian employee perceptions of an organizational-level intervention to reduce sitting. *Health Promotion International*, 33(6), 968–979. DOI: <https://doi.org/10.1093/heapro/dax037>
- Busch, C., Koch, T., Clasen, J., Winkler, E., & Vowinkel, J. (2017). Evaluation of an organizational health intervention for low-skilled workers and immigrants. *Human Relations*, 70(8), 994–1016. DOI: <https://doi.org/10.1177/0018726716682308>



- DeJoy, D. M., Wilson, M. G., Vandenberg, R. J., McGrath-Higgins, A. L., & Griffin-Blake, C. S. (2010). Assessing the impact of healthy work organization intervention. *Journal of Occupational and Organizational Psychology*, 83(1), 139–165. DOI: <https://doi.org/10.1348/096317908X398773>
- Egan, M., Bambra, C., Petticrew, M., & Whitehead, M. (2009). Reviewing evidence on complex social interventions: appraising implementation in systematic reviews of the health effects of organisational-level workplace interventions. *Journal of Epidemiology & Community Health*, 63(1), 4–11. DOI: <https://doi.org/10.1136/jech.2007.071233>
- EU-OSHA. (2016). *Second European Survey of Enterprises on New and Emerging Risks (ESENER-2). Overview Report: Managing Safety and Health at Work*. Publications Office of the European Union. <https://op.europa.eu/s/n7Wt>
- Framke, E., & Sørensen, O. (2015). Implementation of a participatory organisational-level occupational health intervention: focusing on the primary task. *International Journal of Human Factors and Ergonomics*.
- Framke, E., Sørensen, O. H., Pedersen, J., Clausen, T., Borg, V., & Rugulies, R. (2019). Effect of a participatory organizational workplace intervention on workplace social capital: post-hoc results from a cluster randomized controlled trial. *BMC Public Health*, 19(1), 693. DOI: <https://doi.org/10.1186/s12889-019-6903-1>
- Gaglio, B., Shoup, J. A., & Glasgow, R. E. (2013). The RE-AIM Framework: A Systematic Review of Use Over Time. *American Journal of Public Health*, 103(6), e38–e46. DOI: <https://doi.org/10.2105/AJPH.2013.301299>
- Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *American Journal of Public Health*, 89(9), 1322–1327. DOI: <https://doi.org/10.2105/AJPH.89.9.1322>
- Greenhalgh, T., Pawson, R., Wong, G., Westhorp, G., Greenhalgh, J., Manzano, A., &

- Jagosh, J. (2017). *Retrodution in realist evaluation The RAMESES II Project*. The RAMESES Projects. [www.ramesesproject.org](http://www.ramesesproject.org)
- Gupta, N., Wåhlin-Jacobsen, C. D., Abildgaard, J. S., Henriksen, L. N., Nielsen, K., & Holtermann, A. (2018). Effectiveness of a participatory physical and psychosocial intervention to balance the demands and resources of industrial workers: A cluster-randomized controlled trial. *Scandinavian Journal of Work, Environment & Health*, *44*(1), 58–68. DOI: <https://doi.org/10.5271/sjweh.3689>
- Hasson, H., Tafvelin, S., & von Thiele Schwarz, U. (2013). Comparing Employees and Managers' Perceptions of Organizational Learning, Health, and Work Performance. *Advances in Developing Human Resources*, *15*(2), 163–176. DOI: <https://doi.org/10.1177/1523422313475996>
- Holman, D., & Axtell, C. (2016). Can job redesign interventions influence a broad range of employee outcomes by changing multiple job characteristics? A quasi-experimental study. *Journal of Occupational Health Psychology*, *21*(3), 284–295. DOI: <https://doi.org/10.1037/a0039962>
- ILO. (2001). *Guidelines on occupational safety and health management systems, ILO-OSH*. International Labor Office.
- Jenny, G. J., Brauchli, R., Inauen, A., Füllemann, D., Fridrich, A., & Bauer, G. F. (2015). Process and outcome evaluation of an organizational-level stress management intervention in Switzerland. *Health Promotion International*, *30*(3), 573–585. DOI: <https://doi.org/10.1093/heapro/dat091>
- Lundmark, R., Hasson, H., von Thiele Schwarz, U., Hasson, D., & Tafvelin, S. (2017). Leading for change: line managers' influence on the outcomes of an occupational health intervention. *Work & Stress*, *31*(3), 276–296. DOI: <https://doi.org/10.1080/02678373.2017.1308446>

- Marchal, B., van Belle, S., van Olmen, J., Hoerée, T., & Kegels, G. (2012). Is realist evaluation keeping its promise? A review of published empirical studies in the field of health systems research. *Evaluation, 18*(2), 192–212. DOI: <https://doi.org/10.1177/1356389012442444>
- Murta, S. G., Sanderson, K., & Oldenburg, B. (2007). Process Evaluation in Occupational Stress Management Programs: A Systematic Review. *American Journal of Health Promotion, 21*(4), 248–254. DOI: <https://doi.org/10.4278/0890-1171-21.4.248>
- Nielsen, K., & Noblet, A. (2018). Organizational interventions: Where are we, where do we go from here? In K. Nielsen & A. Noblet (Eds.), *Organizational Interventions for Health and Well-Being: A Handbook for Evidence-Based Practice*; (pp. 1–23). Routledge.
- Nielsen, K. (2013). Review Article: How can we make organizational interventions work? Employees and line managers as actively crafting interventions. *Human Relations, 66*(8), 1029–1050. DOI: <https://doi.org/10.1177/0018726713477164>
- 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. DOI: <https://doi.org/10.1080/02678373.2013.812358>
- Nielsen, K., Abildgaard, J. S., & Daniels, K. (2014). Putting context into organizational intervention design: Using tailored questionnaires to measure initiatives for worker well-being. *Human Relations, 67*(12), 1537–1560. DOI: <https://doi.org/10.1177/0018726714525974>
- 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. DOI: <https://doi.org/10.1177/0018726716670226>

- Nielsen, K., Nielsen, M. B., Ogbonnaya, C., Käsälä, M., Saari, E., & Isaksson, K. (2017). Workplace resources to improve both employee well-being and performance: A systematic review and meta-analysis. *Work & Stress, 31*(2), 101–120. DOI: <https://doi.org/10.1080/02678373.2017.1304463>
- Nielsen, K., & Randall, R. (2012). The importance of employee participation and perceptions of changes in procedures in a teamworking intervention. *Work & Stress, 26*(2), 91–111. DOI: <https://doi.org/10.1080/02678373.2012.682721>
- 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. DOI: <https://doi.org/10.1080/1359432X.2012.690556>
- Nielsen, K., Randall, R., & Christensen, K. B. (2010). Does training managers enhance the effects of implementing team-working? A longitudinal, mixed methods field study. *Human Relations, 63*(11), 1719–1741. DOI: <https://doi.org/10.1177/0018726710365004>
- Nielsen, K., Randall, R., & Christensen, K. B. (2017). Do Different Training Conditions Facilitate Team Implementation? A Quasi-Experimental Mixed Methods Study. *Journal of Mixed Methods Research, 11*(2), 223–247. DOI: <https://doi.org/10.1177/1558689815589050>
- 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. DOI: <https://doi.org/10.1080/02678373.2010.515393>
- Oude Hengel, K. M., Blatter, B. M., Joling, C. I., van der Beek, A. J., & Bongers, P. M. (2012). Effectiveness of an intervention at construction worksites on work engagement, social support, physical workload, and need for recovery: results from a cluster randomized controlled trial. *BMC Public Health, 12*(1), 1008. DOI: <https://doi.org/10.1186/1471-2458-12-1008>

Pawson, R., & Tilley, N. (1997). *Realistic evaluation* (1st ed.). Sage Publications Ltd.

Pawson, R., & Tilley, N. (2004). *Realist Evaluation*.

[http://www.communitymatters.com.au/RE\\_chapter.pdf](http://www.communitymatters.com.au/RE_chapter.pdf)

Richardson, K. M., & Rothstein, H. R. (2008). Effects of occupational stress management intervention programs: A meta-analysis. *Journal of Occupational Health Psychology, 13*(1), 69–93. DOI: <https://doi.org/10.1037/1076-8998.13.1.69>

Roodbari, H., Axtell, C., Nielsen, K., & Sorensen, G. (2021). Organisational Interventions to Improve Employees' Health and Wellbeing: A Realist Synthesis. *Applied Psychology, 1–24*. DOI: <https://doi.org/10.1111/apps.12346>

Schelvis, R. M. C., Wiezer, N. M., Blatter, B. M., van Genabeek, J. A. G. M., Oude Hengel, K. M., Bohlmeijer, E. T., & van der Beek, A. J. (2016). Evaluating the implementation process of a participatory organizational level occupational health intervention in schools. *BMC Public Health, 16*(1), 1212. DOI: <https://doi.org/10.1186/s12889-016-3869-0>

Semmer, N. K. (2006). Job stress interventions and the organization of work. *Scandinavian Journal of Work, Environment & Health, 32*(6), 515–527. DOI: <https://doi.org/10.5271/sjweh.1056>

Sørensen, O. H., & Holman, D. (2014). A participative intervention to improve employee well-being in knowledge work jobs: A mixed-methods evaluation study. *Work & Stress, 28*(1), 67–86. DOI: <https://doi.org/10.1080/02678373.2013.876124>

Tafvelin, S., von Thiele Schwarz, U., Nielsen, K., & Hasson, H. (2019). Employees' and line managers' active involvement in participatory organizational interventions: Examining direct, reversed, and reciprocal effects on well-being. *Stress and Health, 35*(1), 69–80. DOI: <https://doi.org/10.1002/smi.2841>

von Thiele Schwarz, U., & Hasson, H. (2013). Alignment for achieving a healthy

organization. In G. Bauer & J. G. (Eds.), *Salutogenic organizations and change* (pp. 107–125). Springer Netherlands.

von Thiele Schwarz, Ulrica, Nielsen, K. M., Stenfors-Hayes, T., & Hasson, H. (2017). Using kaizen to improve employee well-being: Results from two organizational intervention studies. *Human Relations, 70*(8), 966–993. DOI: <https://doi.org/10.1177/0018726716677071>

Weiner, B. J. (2009). A theory of organizational readiness for change. *Implementation Science, 4*(1), 67. DOI: <https://doi.org/10.1186/1748-5908-4-67>

Wong, G., Westhorp, G., Greenhalgh, J., Manzano, A., Jagosh, J., & Greenhalgh, T. (2017). Quality and reporting standards, resources, training materials and information for realist evaluation: the RAMESES II project. *Health Services and Delivery Research, 5*(28), 1–108. DOI: <https://doi.org/10.3310/hsdr05280>

## **CHAPTER 6**

### **General Discussion**

## OVERVIEW OF THE THESIS AND LINKS BETWEEN CHAPTERS

The present thesis focuses on the application of realist evaluation in organisational interventions and the understanding of ‘what *worked/might work/works* for whom in which circumstances’. Chapter 2 is a realist synthesis, it identified and synthesised empirical evidence from 28 organisational intervention studies into six CMO configurations (realist programme theories, MRTs). Chapter 3 developed four initial CMO configurations in a participatory organisational intervention in an organisation in the US food service industry. Chapter 4 empirically tested one of these initial CMO configurations. And, chapter 5 developed an Integrated Realist Evaluation Model for Organisational Interventions (IREMOI).

Chapters are linked and follow a realist evaluation cycle (Pawson and Tilley, 1997, 2004). Chapter 2 synthesised the empirical evidence from previous organisational intervention studies into CMO configurations; hence, it contributes to the understanding of ‘what *worked* for whom in which circumstances’. Chapter 3 used the qualitative evidence from the planning phase of the participatory organisational intervention in the US food service industry and developed four initial CMO configurations; hence, it contributes to the understanding of ‘what *might work* for whom in which circumstances’. Chapter 4 used the qualitative evidence from the implementation and evaluation phases of the participatory organisational intervention and tested one of these initial CMO configurations; therefore, it contributes to the understanding of ‘what *works* for whom in which circumstances’. Finally, chapter 5 proposed the IREMOI, it re-synthesised the evidence identified in chapter 2 (i.e., synthesised evidence based on different mechanisms identified in chapter 2) and provided a number of CMO configurations; therefore, it contributes to the understanding of ‘what *worked* for whom in which circumstances’. In essence, this thesis explored ‘what *worked* for



whom in which circumstances' (chapter 2), proposed 'what *might work* for whom in which circumstances' (chapter 3), tested 'what *works* for whom in which circumstances' (chapter 4), and proposed a model based on 'what *worked* for whom in which circumstances' (chapter 5). The chapters represent a complete realist evaluation cycle (Pawson and Tilley, 1997, 2004).

Chapters followed a progressive logic, findings from a chapter informed the following chapters. Chapter 2 provided the latest evidence regarding mechanisms, contexts, and outcomes in the organisational intervention literature. Chapter 3 used the mechanisms, contexts, and outcomes identified in chapter 2 as its initial template and developed initial CMO configurations based on empirical evidence from the participatory organisational intervention in the US food service industry. Chapter 4 tested one of these initial CMO configurations based on empirical evidence from the participatory organisational intervention in the US food service industry. Chapter 5 used the lessons learned on how to follow a realist evaluation cycle from the participatory organisational intervention in the US food service industry in chapters 3 and 4 to develop the IREMOI, and utilised the contexts, mechanisms, and outcomes identified in chapter 2 to support the IREMOI. The IREMOI is a model based on realist evaluation that contains a comprehensive list of CMO configurations which can be used to plan, implement, and evaluate future organisational interventions.

## **THEORETICAL CONTRIBUTION OF THE THESIS AND CHAPTERS**

The overall contribution of this thesis is to advance the knowledge of how to design, implement, and evaluate organisational interventions that improve the psychosocial working conditions and employees' health and wellbeing. To achieve this, this thesis aimed to (1) improve the understanding of 'how to' apply realist evaluation in organisational interventions and (2) improve the understanding of 'what *worked/might work/works* for whom in which

circumstances' in organisational interventions. Such understanding helps design, implement, and evaluate future organisational interventions and may increase their likelihood of success (Nielsen and Miraglia, 2017). The chapters in this thesis contribute to such understanding, each chapter answered specific research questions, reflected on a specific aspect of the application of realist evaluation, and addressed a specific part of 'what *worked/might work/works* for whom in which circumstances'. See figure 1.

Chapter 2 answered **RQ1**: *Which CMO configurations can be developed based on the empirical evidence from the organisational intervention literature?* Regarding the application of realist evaluation, chapter 2 used a realist synthesis as a theory-driven, evidence-based, qualitative method of literature review (Pawson *et al.*, 2005). It described how the six steps of a realist synthesis were taken: defining a research question; formulating an initial realist programme theory (CMO configuration); searching for primary studies; selecting the studies and appraising their quality; extracting, analysing, and synthesising relevant data; and, refining the realist programme theories (Nielsen and Miraglia, 2017; Pawson *et al.*, 2005). Regarding 'what *worked* for whom in which circumstances?', chapter 2 developed six CMO configurations based on the process mechanisms of implementation adherence, communication, employees' participation, senior management support, middle management support, and external consultants/researchers support. Each CMO configuration shows how the mechanisms were operationalised in organisational interventions in the literature, what contextual factors impaired or facilitated the operation of each mechanism, and what outcomes each mechanism produced in the form of CMO configurations (Nielsen and Miraglia, 2017).

The CMO configurations of communication, employees' participation, middle management support, and senior management support in chapter 2 were further explored in the participatory organisational intervention in the US food service industry in chapter 3. In

chapter 3, first, two of these mechanisms were reformulated: employees' participation and middle management support in chapter 2 were reformulated into two different mechanisms of participation and tailoring the intervention to fit the organisational context. Second, specific contextual factors in the food service industry that may influence the operation of these mechanisms were explored. Third, outcomes these mechanisms may produce in the food service industry were explored.

Chapter 3 answered **RQ 2: *How can initial CMO configurations be developed in an organisational intervention?*** and **RQ 3: *Which initial CMO configurations can be developed in an organisational intervention?*** Concerning the application of realist evaluation, chapter 3 undertook the first step of the realist evaluation cycle (i.e., developing initial CMO configurations) (Pawson and Tilley, 2004). It explained how qualitative data were collected (through 20 semi-structured interviews with the organisation's managers, five focus groups with a total of 30 employees, and five worksite observations), analysed (using template analysis), and synthesised (using retroduction) into initial CMO configurations. Regarding 'what *might work* for whom in which circumstances?', chapter 3 developed four initial CMO configurations based on the four mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context.

The initial CMO configurations in chapter 3 were based on empirical evidence from the participatory organisational intervention in the US food service industry. As such, they show how the mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context can be operated in the food service industry, what contextual factors may influence the operation of such mechanisms, and what outcomes they may produce. In chapter 4, one of these initial CMO configurations, participation, was empirically tested.

Chapter 4 answered **RQ 4**: *What works for whom in which circumstances regarding participation in an organisational intervention?* and **RQ 5**: *How can initial CMO configurations be tested in an organisational intervention using qualitative data?* Concerning the application of realist evaluation, chapter 4 undertook further steps of the realist evaluation cycle (i.e., collecting, analysing, and synthesising the empirical data to develop empirical CMO configurations and testing initial CMO configurations against empirical CMO configurations) (Pawson and Tilley, 2004). It described how qualitative data were collected (through 89 process tracking documents and 24 post-intervention, semi-structured interviews with different intervention stakeholders), analysed (using template analysis), and synthesised (using retrodution) into empirical CMO configurations. Regarding ‘what *works* for whom in which circumstances?’, chapter 4 tested the initial CMO configuration about the critical mechanism of participation. The tested CMO configuration shows how participation was operationalised in the intervention, what contextual factors facilitated or impaired the operation of participation, and what proximal outcomes participation contributed to produce.

Based on realist evaluation, interventions work through participants’ interpretations and reasoning (mental models) (Pawson and Tilley, 1997, 2004). Previous organisational intervention studies mainly explored the implementation of interventions and their outcomes (Fox *et al.*, 2021; Nielsen and Abildgaard, 2013). Chapter 5 proposed an evaluation model based on realist evaluation (the IREMOI) that allows linking implementation of interventions and participants’ mental models with the aim of better understanding of what works for whom in which circumstances (Nielsen and Randall, 2013). The IREMOI explains how to follow a realist evaluation cycle in an organisational intervention and provides examples of CMO configurations based on crucial intervention mechanisms. While the proposal of the IREMOI was to address the limitations of the five-phase model, previous chapters were used to inform the model. Chapters 3 and 4 were used in developing the IREMOI (by providing

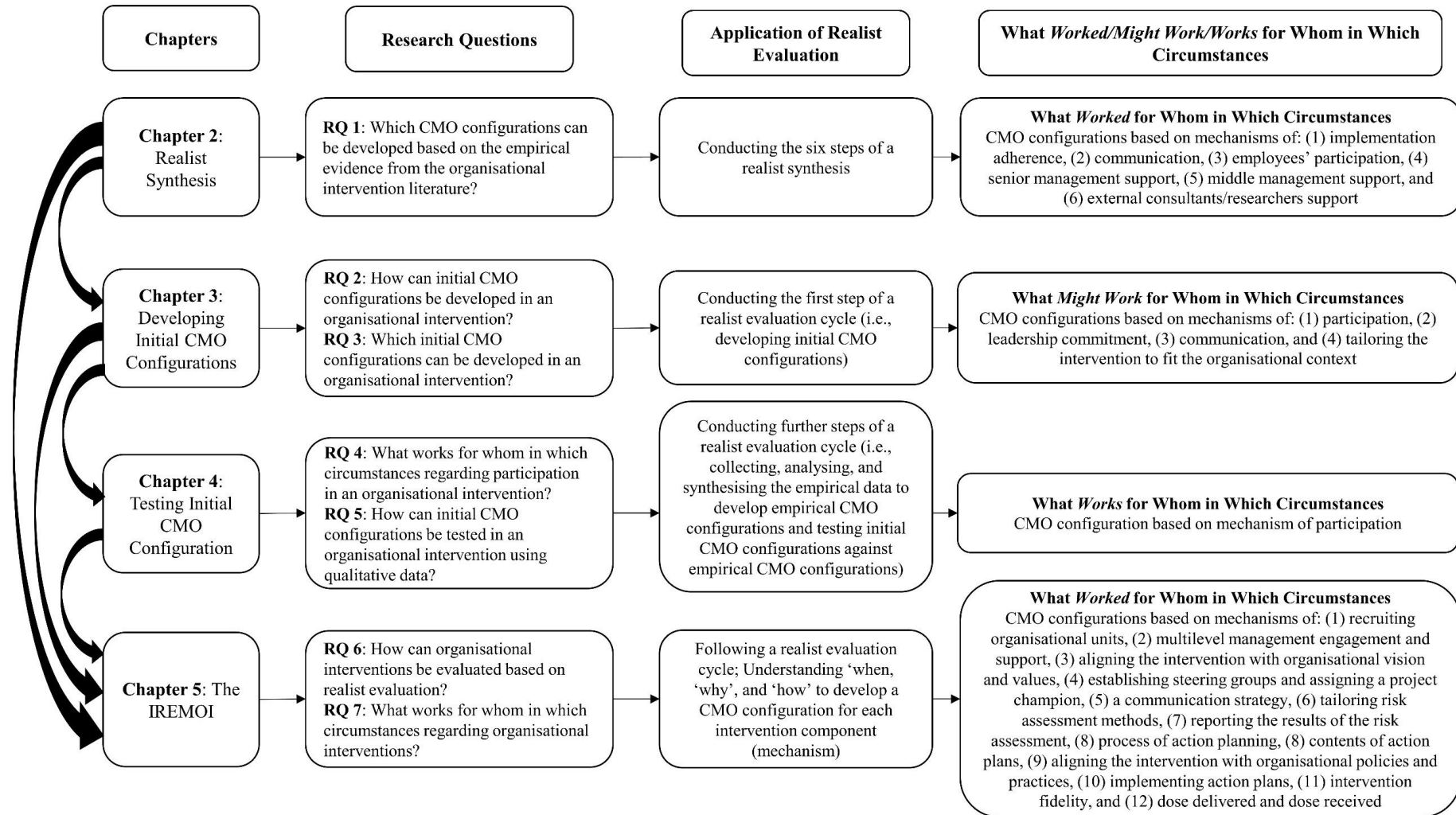
insights on how to follow a realist evaluation cycle) and chapter 2 was used to support the IREMOI (by providing evidence from previous organisational intervention studies to develop examples of CMO configurations).

Chapter 5 answered **RQ 6**: *How can organisational interventions be evaluated based on realist evaluation?* And **RQ 7**: *What works for whom in which circumstances regarding organisational interventions?* Regarding the application of realist evaluation, chapter 5 explained how to follow a realist evaluation cycle (Pawson and Tilley, 2004). It explained ‘when, ‘why’, and ‘how’ to develop a CMO configuration for each intervention mechanism. Regarding ‘what *worked* for whom in which circumstances?’, chapter 5 developed examples of CMO configurations for the mechanisms of recruiting organisational units, multilevel management engagement and support, aligning the intervention with organisational vision and values, establishing steering groups and assigning a project champion, and a communication strategy in *the preparation phase*; the mechanisms of tailoring risk assessment methods and reporting the results of the risk assessment in *the screening phase*; the mechanisms of action planning, contents of action plans, and aligning the intervention with organisational policies and practices in *the action planning phase*; and, the mechanisms of implementing action plans, intervention fidelity, and dose delivered and dose received in *the implementation phase*. Each CMO configuration shows how the mechanisms triggered in previous organisational interventions, what contextual factors influenced the operation of each mechanism, and what outcomes each mechanism produced.

In summary, this thesis has two overarching theoretical contributions. First, this thesis shows how to employ realist evaluation principles in reviewing and synthesising the literature (chapter 2), developing initial CMO configurations (chapter 3), testing initial CMO configurations (chapter 4), and evaluating organisational interventions through an integrated

realist evaluation framework (chapter 5). Second, this research adds to the understanding of ‘what *worked/might work/works* for whom in which circumstances?’ by exploring organisational interventions mechanisms, contextual factors that hinder or facilitate the operation of mechanisms, and outcomes that mechanisms produce (Pawson and Tilley, 1997, 2004).

**FIGURE 1** Overview of the Chapters, their Links, and Contributions



## **REFLECTIONS ON CMO CONFIGURATIONS IN ORGANISATIONAL INTERVENTIONS**

### **Considering Organisational Interventions as a Collection of CMO Configurations**

Realist evaluation assumes that interventions are ‘theories incarnate’, meaning that every intervention is made of a collection of programme theories (Pawson, 2006). A programme theory is a theory of what causes change, it can be seen as a set of implicit assumptions of how the intervention is expected to work and should be designed (Pawson, 2013). Often, programme theories are in the form of a logic model, examining inputs and outputs but not why and how they work (Greenhalgh *et al.*, 2017b). To understand what works for whom in which circumstances, a programme theory should be promoted to a realist programme theory by reflecting on contexts and mechanisms in relation to outcomes to establish CMO configurations (Greenhalgh *et al.*, 2017b). Considering these, from a realist evaluation perspective, the function of interventions is to make implicit realist programme theories (CMO configurations) explicit through developing and testing them (Pawson and Tilley, 2004).

To employ realist evaluation in organisational interventions, this thesis suggests considering an organisational intervention as a collective of CMO configurations that explain the change process by hypothesising how the ongoing interactions between the implementation process and the intervention contexts trigger managers’ and employees’ individual and collective reasoning and reactions regarding psychosocial working conditions that gradually produce changes in the psychosocial working conditions and employees’ health and wellbeing. Following this approach provides an opportunity for conducting both process and outcome evaluations that may advance our theoretical understanding of what



elements of organisational interventions produce desired outcomes in which conditions (Nielsen and Miraglia, 2017).

Following CMO configurations allows conducting a process evaluation by examining the interactions between process and context of the intervention (Nielsen and Miraglia, 2017). Process evaluation is important as it helps to: (1) ensure all intervention components have been implemented and avoid committing a Type III error: evaluating an intervention that has not been adequately implemented (Basch *et al.*, 1985), (2) interpret outcomes and identify which process and contextual factor are important in producing the desired outcomes (Cox *et al.*, 2007; Kompier and Aust, 2016; Nielsen and Randall, 2013), and (3) conclude the generalisability and transferability of interventions to other settings (Nielsen and Randall, 2013). Organisational interventions involve various designs (e.g., numerous methods of action planning), multiple implementation strategies by multiple stakeholders at different organisational levels, different contexts of the intervention, and multiple outcomes (Sanz-Vergel and Nielsen, 2021). The complexity of organisational interventions makes it difficult to conclude which interventions are effective. In other words, only comparing employees' health and wellbeing pre- and post-intervention is insufficient to determine the success or failure of the intervention and to identify the mechanisms underlying the change (Nielsen, Taris, *et al.*, 2010). Therefore, evaluating the process and context and linking them to outcomes (as done in CMO configurations) enhance our generalisable understanding of what works for whom in which circumstances (Nielsen and Miraglia, 2017). This thesis provided examples of CMO configurations to generate such understanding, each chapter focused on specific CMO configurations.

Following CMO configurations also allows performing an outcome evaluation by examining the chain of effects in the intervention (Nielsen and Miraglia, 2017). Evaluating a

chain of effects is important as it helps to establish whether observed changes are the results of the intervention (Nielsen and Abildgaard, 2013). Organisational interventions usually follow certain temporal phases, for instance, initiation, active, and sustained (Tafvelin *et al.*, 2019) or preparation, screening, action planning, implementation, and evaluation (Nielsen, Randall, *et al.*, 2010). Hence, it is necessary to examine at which time during the intervention which mechanisms matter and produce what outcomes (Nielsen, Randall, *et al.*, 2010; Tafvelin *et al.*, 2019). To perform an outcome evaluation, different chains of effects can be examined. For instance, Fridrich *et al.* (2015) suggested evaluating outcomes using a chain of effects consisting of: proximal outcomes (e.g., changes in individuals' skills and capacities), intermediate outcomes (e.g., changes in psychosocial working conditions), and distal outcomes (e.g., improved employees' health and wellbeing). Nielsen and Abildgaard (2013, p. 279) suggested evaluating outcomes using another chain of effects including: "changes in attitudes, values and knowledge, changes in individual resources, changes in organisational procedures, changes in working conditions, changes in psychological health and wellbeing, changes in productivity and quality and changes in occupational safety and management procedures." Considering these, to link observed outcomes to the intervention, a chain of effects should be established. Developing CMO configurations facilitates outcome evaluation by causally linking a specific mechanism to specific outcomes in the form of a chain of effects, as such, it advances our understating of what works for whom in which circumstances (Nielsen and Miraglia, 2017). This thesis acknowledged the chain of effect perspective, and in developing the CMO configurations it tried to reflect on how specific mechanisms produce proximal, intermediate, and distal outcomes.

## **Mechanisms: What Makes Organisational Interventions Work?**

According to realist evaluation, interventions work through mechanisms that produce outcomes (Pawson and Tilley, 1997, 2004). Pawson (2013) defined mechanisms as interpretations, considerations, decisions, and ultimately behaviours of intervention participants that produce outcomes. Despite this definition, there is confusion about the concept of mechanisms (Lacouture *et al.*, 2015). The ambiguity about the concept of mechanism in organisational interventions is more evident as a few studies explicitly used realist evaluation and conceptualised mechanisms (Nielsen and Miraglia, 2017). Abildgaard *et al.* (2020) examined two mechanisms: active employee participation and empowerment (collective efficacy) and proactive line manager behaviour (transformational leadership). Nielsen *et al.* (2014) examined the mechanism of using a tailored questionnaire to measure employees' appraisals of their specific working conditions. von Thiele Schwarz *et al.* (2017) studied the mechanism of using Kaizen boards. Busch *et al.* (2017) explored five mechanisms: the company management encouragement, the role model, the peer mentor support, the line manager support, and the participative work improvement. Despite Dalkin *et al.* (2015) who suggested considering intervention resources and participants' reasoning as two constructs of a mechanism, to be consistent with the previous organisational intervention studies, this thesis considered the resources that interventions provide to participants (e.g., participation in action planning) as mechanisms and consequent changes in participants' individual and collective reasoning and reactions as proximal outcomes.

This thesis developed a number of CMO configurations based on critical mechanisms of organisational interventions. Figure 1 shows these mechanisms. Since a few organisational interventions explicitly suggested mechanisms, the mechanism explored in this thesis are mainly from studies that implicitly suggested mechanisms. Following the recommendation by

Nielsen and Miraglia (2017), this thesis tried to examine mechanisms using two overarching classifications of process mechanisms and content mechanisms, where possible. Process mechanisms are the processes of designing and implementing the interventions, they refer to 'how to'. Content mechanisms are the nature of changes focused on in the interventions including the content of action plans, they refer to 'what to'. For instance, regarding the process mechanism, von Thiele Schwarz et al. (2017) found that using the Kaizen board to develop and implement action plans (*a process mechanism*) increased employees' awareness of and capacity to manage psychosocial issues and their wellbeing (*outcomes*), and regarding the content mechanism, Holman and Axtell (2016) found that managing administrative tasks (*a content mechanism*) improved employees' job control (*an outcome*) and clarifying the performance criteria (*a content mechanism*) improved feedback (*an outcome*).

In this thesis, based on evidence in each chapter, mechanisms were conceptualised differently. Regarding the mechanism of participation, in chapter 2, employees' participation and middle management support were two different mechanisms because the focus of the realist synthesis was exploring different stakeholders' roles in previous organisational interventions. Both of these mechanisms were triggered through engaging in the process of intervention (e.g., developing and implementing action plans) and determining the content of intervention (e.g., the contents of action plans). In chapter 3, the mechanism of participation was conceptualised as the collective engagement of both employees and their worksite managers in the decision-making process about improving their working conditions: employees would discuss their working conditions with their worksite managers who would then act on employees' suggestions. In chapter 4, the mechanism of participation was conceptualised as (1) employees' engagement in the intervention activities, (2) worksite managers' engagement with the research team, and (3) worksite managers' engagement with employees.

Concerning the mechanism of senior management support, in chapter 2, the realist synthesis showed that the mechanism of senior management support was triggered through their engagement in the process of intervention (e.g., allocating resources) and determining the content of intervention (e.g., intervention activities). In chapter 3, the mechanism of senior management support was conceptualised as (1) involving in the intervention from the start of the intervention, (2) establishing the intervention as an organisational priority, and (3) allocating necessary resources.

Regarding the mechanism of communication, in chapter 2, the realist synthesis showed that the mechanism of communication had two aspects of process (e.g., communication among organisational sub-units) and content (e.g., communication about the aims, objectives, and progress of the intervention). In chapter 3, the mechanism of communication was conceptualised as (1) establishing two-way communication and (2) establishing clear, precise, and specific communication about the goals, process, and content of the intervention.

Finally, concerning the mechanism of tailoring the intervention to fit contexts, in chapter 2, the realist synthesis showed that tailoring was to fit intervention with (1) organisational contexts and (2) individuals within the organisations. In chapter 3, the mechanism of tailoring the intervention to fit contexts was conceptualised as (1) tailoring the intervention to fit individuals, (2) tailoring the intervention to fit existing policies and procedures, and (3) tailoring the intervention to fit existing working conditions.

As can be seen, conducting steps of a realist evaluation cycle (as done in chapters 2, 3, and 4, respectively) revealed more aspects of each mechanism. Identifying more aspects of mechanisms coupled with their influencing contextual factors and outcomes improve our understanding of what works for whom in which circumstances (Pawson and Tilley, 1997,

2004). Overall, this thesis suggests differentiating between the resources that interventions provide to participants as mechanisms and consequent changes in participants' individual and collective reasoning and reactions as proximal outcomes. In addition, it suggests examining mechanisms based on their process and content. Further, it suggests conducting a complete realist evaluation cycle in each intervention study to refine the mechanisms through identifying more aspects of mechanisms in a specific organisational setting.

### **Contexts: What Are the Conditions in Which the Mechanisms Are Operative/Effective?**

According to realist evaluation, the operation of mechanisms is contingent on context (Pawson and Tilley, 1997), this is a reason why interventions may produce different outcomes in different settings (Greenhalgh *et al.*, 2015). Pawson and Tilley (2004) defined contexts as the conditions in which interventions are introduced that are relevant to the operation of mechanisms, they address 'for whom' and 'in which circumstances' interventions work. Since the context is diverse and multifaceted, this thesis used two main classifications of contexts, where possible. First, contextual factors were categorised as omnibus (i.e., the general intervention setting) and discrete contexts (i.e., the concurrent changes taking place during the intervention) (Nielsen and Randall, 2013). For instance, as omnibus contextual factors, pre-intervention levels of autonomy and job satisfaction (*omnibus contextual factors*) predicted the degree of employees' participation in the intervention (*a mechanism*) (Nielsen and Randall, 2012), and as discrete contextual factors, staffing and scheduling during the intervention (*discrete contextual factors*) influenced the participation of teams in the intervention (*a mechanism*) (DeJoy *et al.*, 2010). Second, contextual factors were classified as facilitators and barriers (Johns, 2006). For instance, as a facilitator, pre-existing good level of employees' mental health (*a contextual factor*) was related to more use of Kaizen (*a mechanism*) (von Thiele Schwarz *et al.*, 2017), and as a

barrier, unexpected events (e.g., changes in the organisation and composition of teams) hindered the implementation of the intervention (*a mechanism*) (Schelvis *et al.*, 2016). Chapter 2 classified contexts into omnibus and discrete, chapters 3 and 5 classified contexts into facilitators and barriers, these three chapters translated (neutralised) contextual factors into pre-conditions necessary for triggering mechanisms in the CMO configurations. Chapter 4 that tested a CMO configuration about participation, categorised contexts into facilitators and barriers and addressed them (without neutralising them) in the CMO configuration to show how they actually influenced triggering the mechanism of participation. This process means to explore ‘what *worked/might work* in which circumstances’ the contextual factors should be neutralised, but to examine ‘what *works* in which circumstances’ the contextual factors should be presented as how they actually influenced the operation of mechanisms.

This thesis identified a range of contextual factors that influence the operation mechanisms. Regarding the mechanism of participation, in chapter 2, the contextual factors that influenced triggering employees’ participation were: (1) existing climate of trust, openness, and support in the organisation, (2) existing job design, (3) employees’ existing level of health and wellbeing, (4) employees’ outcome expectancy, (5) middle managers support, (6) training and participatory recruitment process for employees, (7) economic environment and internal events, and (8) existing structural resources in the organisation. In chapter 2, the contextual factors that influenced triggering middle management support were: (1) senior management commitment, (2) existing working conditions, (3) middle management existing mental and physical health, (4) training for middle managers, and (5) employees’ participation. In chapter 3, four contextual factors were identified that could influence participation (of both employees and their worksite managers) in the food service industry intervention: (1) workloads for employees and worksite managers, (2) employees’ turnover, (3) employees’ readiness for change, and (4) existing regular meetings. In chapter

4, seven contextual factors influenced participation in the food service industry intervention: (1) existing participatory practices, (2) workload, (3) worksite managers' motivation to participate in the intervention, (4) host corporate clients' control over the worksite environment, (5) worksite managers' turnover, (6) language barriers, and (7) senior management support.

Concerning the mechanism of senior management support, in chapter 2, the contextual factors that influenced triggering senior management support were: (1) lack of conflict between the mission and objectives of the organisation and the aims and objectives of the intervention and (2) existing resources in the organisation (e.g., finance, human resources, infrastructure). In chapter 3, three contextual factors were identified that could influence senior management support in the food service industry intervention: (1) availability of sufficient financial resources, (2) low role conflict for senior managers, and (3) availability of industry level resources.

Regarding the mechanism of communication, in chapter 2, the contextual factors that influenced triggering communication were: (1) existing climate of trust, openness, and support in the organisation and (2) existing sufficient resources in the organisation. In chapter 3, five contextual factors were identified that could influence communication in the food service industry intervention: (1) flexibility of organisational communication structures to accommodate both top-down and bottom-up communication flows, (2) language barriers, (3) workloads for worksite managers, (4) availability of communication resources, and (5) existing a culture of respect.

Finally, concerning the mechanism of tailoring the intervention to fit contexts, in chapter 3, two contextual factors were identified that could influence tailoring the



intervention to fit the organisational context in the food service industry intervention: (1) existing good practices and (2) availability of resources.

As shown above, in chapters 2, 3, and 4 which follow a realist evaluation cycle, contextual factors became more specific to an organisational setting. In chapter 2 the contextual factors were general among organisational interventions, in chapter 3 the contextual factors were anticipated contextual factors that would influence mechanisms in the food service industry intervention, and in chapter 4 the contextual factors actually influenced triggering participation in the food service industry intervention. The contextual factors about the mechanism of participation in chapter 4 were more than in chapter 3, this implies that some contextual factors were not anticipated in the planning phase of the intervention but they actually influenced participation during the intervention. Following a realist evaluation cycle allows exploring more specific contextual factors in a specific organisational setting, this improves our understanding of ‘for whom and under which circumstances?’ mechanisms work (Pawson and Tilley, 1997, 2004). Overall this thesis suggests categorising contextual factors as omnibus and discreet contextual factors and then subcategorising them into barriers and facilitators of specific mechanisms in an organisational intervention study. In addition, it suggests conducting a complete realist evaluation cycle in each intervention study to explore more contextual factors in a specific organisational setting.

### **Outcomes: What Are the Observed Patterns of Outcomes?**

According to realist evaluation, interventions trigger multiple mechanisms that influenced by different contextual factors produce different outcomes (Pawson and Tilley, 1997). In realist evaluation, outcomes patterns are not examined to only see if interventions work, but they are analysed to explore if the CMO configurations are confirmed (Pawson and Tilley, 1997). From this perspective, intended outcomes are seen as results of the interactions between

*acknowledged* mechanisms and contexts, whereas unintended outcomes are results of the interactions between *unacknowledged* mechanisms and contexts (Pawson and Tilley, 1997, 2004). This means evaluating organisational interventions using realist evaluation, as done in this thesis, helps exploration of both intended and unintended outcomes and disclosing more mechanisms and contexts that are relevant to these outcomes.

This thesis analysed outcomes in CMO configurations by showing a chain of effects, including proximal, intermediate, and distal outcomes. Regarding proximal outcomes, organisational interventions improve employees' psychosocial risk management (i.e., their awareness of and capacity to manage their psychosocial working conditions) (e.g., Jenny *et al.*, 2015; von Thiele Schwarz *et al.*, 2017) and enhance employees' exposure to and perception of changes (e.g., Hasson *et al.*, 2014; Nielsen and Randall, 2012). As for intermediate outcomes, these interventions improve the psychosocial working conditions such as job autonomy and social support (e.g., Busch *et al.*, 2017; Hasson *et al.*, 2014; Nielsen and Randall, 2012). Finally, concerning distal outcomes, these interventions improve employees' health and wellbeing and organisational outcomes (e.g., Holman and Axtell, 2016; Nielsen and Randall, 2009, 2012; Tafvelin *et al.*, 2019). This chain of effects is meaningful in organisational interventions that take some time to produce changes in working conditions and employees' health and wellbeing (Nielsen, Randall, *et al.*, 2010).

### **Reflections on the Interactions between CMO Elements**

In organisational interventions, there are complex interactions between contexts, mechanisms, and outcomes (CMO elements). First, a mechanism may interact with other mechanisms over the intervention period, hence, a group of mechanisms working together produce the outcomes. For instance, in the intervention study by Tafvelin *et al.* (2019) employees' participation in the initiation phase (a *mechanism*) predicted perceive line managers' support in the active phase (another *mechanism*), which in turn predicted

employees' participation in the active phase (another *mechanism*); in turn, these mechanisms interacted to influence employees' job satisfaction in the sustained phase (an *outcome*).

Second, a mechanism may act as a contextual factor for triggering other mechanisms. For instance, Jenny et al. (2015) argued that strong commitment from senior managers through supporting and directing team managers (a *mechanism* working as a *contextual factor*) was a critical factor for team managers to pursue changes with their team (a *mechanism*). Third, an outcome may act as a contextual factor for triggering mechanisms (known as a ripple effect, Jagosh *et al.*, 2015). For instance, Nielsen and Randall (2012) found that pre-intervention levels of autonomy and job satisfaction (*outcomes* working as *contextual factors*) predicted the degree of employees' participation in the planning and implementation of the intervention (a *mechanism*). As such, it is important to examine the interaction between CMO elements in different phases of the intervention and align them. To support this, the study by Tafvelin et al. (2019) is a good example of the interactions between mechanisms and outcomes in an organisational intervention; this study provides evidence that CMOs are not equally important during all of the intervention phases, and it shows the alignment between CMOs over the intervention period improves the accumulation of resources over the intervention period to achieve the intervention desired outcomes.

### **Reflections on the Methods to Study CMO Configurations**

Realist evaluation follows the retrodution logic of inference that requires identifying mechanisms, contexts associated with such mechanisms, and possible outcomes based on their causal links to develop CMO configurations (Greenhalgh *et al.*, 2017a). In following retrodution, realist evaluation has no particular preference for either qualitative or quantitative methods, it considers merit in using mixed-methods to conduct process and outcome evaluation (Pawson and Tilley, 2004). The choice of methods and their balance

should be in accordance with the CMO configurations being studied, available tools, and data (Pawson and Tilley, 2004). To collect data, Pawson and Manzano-Santaella (2012) suggested that identifying mechanisms requires qualitative evidence, observing the causal links between mechanisms and outcomes requires quantitative analysis, and investigating contexts requires comparative and historical evidence. To analyse data, Marchal et al. (2012) suggested that qualitative data should be analysed based on themes of mechanisms, contexts, and outcomes, and quantitative data should be analysed to assess the effectiveness of the intervention and to validate or invalidate the CMO configurations. The realist synthesis (chapter 2) showed that previous organisational intervention studies mainly used quantitative or mixed methods, including studies that employed realist evaluation using quantitative methods (von Thiele Schwarz *et al.*, 2017) or mixed methods (Abildgaard *et al.*, 2020; Busch *et al.*, 2017).

This thesis used qualitative methods. Chapter 2 used qualitative realist synthesis since the limitations of meta-analytic analysis (e.g., excluding qualitative studies, superficial treatment of mechanisms and contexts) make it unsuitable to realistically review the complex organisational interventions (Nielsen and Miraglia, 2017). Chapters 3 and 4 also used qualitative methods in the food service industry intervention to better capture the complex nature of and interactions between mechanisms and contextual factors that result in outcomes (Pawson, 2013). Despite the merits of using qualitative methods, this approach has some limitations that are discussed in the limitations section.

## **PRACTICAL CONTRIBUTION OF THE THESIS**

This thesis provides insights to policy makers, occupational health practitioners, and organisational managers on how to improve employees' health and wellbeing through organisational interventions.

From a policy point of view, different countries have different policies that require organisations to take measures to manage psychosocial risks (Nielsen, Randall, *et al.*, 2010). Two general critiques to the national policies are: (1) their focus has been on assessing risks rather than developing a specific strategy that is more practically oriented to improve psychosocial working conditions and employees' health and wellbeing (Leka *et al.*, 2014) and (2) they are often not rigorously evaluated using scientific research (Nielsen and Noblet, 2018). Conducting organisational interventions and evaluating them using theoretical frameworks can inform policies on the tools and methods that can be used by organisations to ensure the success of organisational interventions. This thesis provides insights to policy makers on (1) how organisational interventions can be designed, implemented, and evaluated using realist evaluation and (2) what *worked/might work/works* for whom in which circumstances highlighting critical mechanisms, important contextual factors, and measures of desired outcomes. As such this thesis can be used to improve the existing strategies and support the improvement of national policies, which in turn may increase organisations' motivations and ability to conduct organisational interventions.

From a practice point of view, this thesis raises the awareness of managers and occupational health practitioners of how self-initiated organisational interventions can be designed, implemented, and evaluated. This thesis may serve as a sense-making resource (Weick *et al.*, 2005) as managers and practitioners can start developing the understanding of complexities of organisational interventions in terms of different mechanisms that can be triggered during the interventions, various contexts that should be in place to trigger mechanisms, and different outcomes the mechanisms can produce. The practical implications of each chapter were provided in details in the chapter, the most important things to take home are addressed below.

First, a successful conducting of organisational interventions needs a certain level of resources to be in place. Hence, conducting workplace interventions at the individual-, group-, and/or leader-levels to develop resources before conducting the organisational intervention should be considered. Through primary interventions at individual-, group-, and/or leader-levels, employees and managers gain additional resources to successfully initiate, implement, and maintain the organisational intervention (Nielsen *et al.*, 2017).

Second, managers and practitioners should develop initial CMO configurations before starting the organisational interventions (e.g., via formative research as done in chapter 3). This helps them to assess working conditions, identify essential intervention mechanisms, and prioritise intervention outcomes, hence, it helps them to tailor the intervention to the specific context (Peters *et al.*, 2020; Sorensen *et al.*, 2019). Organisational interventions should follow the five core phases of preparation, screening, action planning, implementation, and evaluation (Nielsen, Randall, *et al.*, 2010; Nielsen and Abildgaard, 2013); evaluation should be conducted at all phases, not only at the end (Thiele Schwarz *et al.*, 2016). In each phase, the interactions between intervention mechanisms, contextual factors, and outcomes should be evaluated, this helps to: (1) ensure there are alignments between CMOs that improves the alignment of resources over the intervention period (Tafvelin *et al.*, 2019) and (2) better understand what works for whom in which circumstances (Nielsen and Miraglia, 2017).

Third, managers and practitioners should: (1) ensure that mechanisms are fully operated (i.e., their process and content are realised), (2) strengthen facilitators and overcome barriers to trigger mechanisms, and (3) assess the temporal effects of CMO configurations on each other and on intervention outcomes over the intervention period using a chain of effects.

Fourth, where possible, analyse CMO elements at multiple levels. A mechanism can be operated at different levels. For instance, participation can be operated at two levels with worksite managers and employees. Contextual factors that influence mechanisms can be at individual, group, leader, and organisational levels (IGLO levels) (Day and Nielsen, 2017; Fridrich *et al.*, 2015). For instance, for participation, existing employees' health and wellbeing is at the individual level, teamwork and co-workers support is at the group level, support of senior managers is at the leader level, and existing culture and practices are at the organisational level. Outcomes produced can be at IGLO levels too (Day and Nielsen, 2017; Fridrich *et al.*, 2015). For instance, for participation, improved individual resources is at the individual level, improved teamwork and collective decision making is at the group level, improved senior managers skills is at the leader level, and improved working conditions is at the organisational level (Nielsen *et al.*, 2018; Nielsen and Christensen, 2021).

Finally, managers and practitioners can use the CMO configurations explored in this thesis to plan and evaluate organisational interventions to improve employees' health and wellbeing. They can further test and refine the CMO configurations (i.e., adding, modifying, or omitting some CMO elements based on their evidence from their specific organisational interventions)(Nielsen and Miraglia, 2017). In particular, the CMO configurations in chapters 3 and 4 can be tested in organisational interventions that target immigrant employees, low-wage employees, and/or employees with low levels of autonomy. Since such employees encounter relatively similar contextual factors as employees in these studies, the suggested mechanisms would likely produce the outcomes (Busch *et al.*, 2017). The more refined CMO configurations improve the understanding of what works for whom in which circumstances in organisational interventions (Pawson and Tilley, 1997, 2004).

## Limitations

The specific limitations of each chapter were addressed in the chapter; the overall limitations of this thesis are as follows. First, realist evaluation starts with developing initial CMO configurations, this step requires focusing on specific mechanisms to develop CMO configurations (Pawson and Tilley, 1997). Following this approach implies that different evaluators may focus on different mechanisms and develop different CMO configurations in a single intervention study. To minimise this limitation, the thesis first explored the literature to identify the critical mechanisms of organisational interventions (chapter 2). Then, it focused on the most critical and relevant mechanisms of participatory organisational interventions (participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context) to develop (four) initial CMO configurations (chapter 3). Finally, it tested the central mechanism of participatory organisational interventions, participation (chapter 4).

Second, mechanisms, contextual factors, and outcomes have various constructs and interact with each other over the intervention period, hence, differentiating them from each other and synthesising them is challenging and subject to evaluators' discretion. This discretion is critical as the overlaps between mechanisms, contextual factors, and outcomes might create issues in explaining the causal link among them. However, this is true for any realist CMO configuration (De Weger *et al.*, 2020), particularly in organisational interventions that are complex and dynamic (von Thiele Schwarz *et al.*, 2021). To minimise this, a group of researchers involved in all chapters to collect, analyse, and synthesise data to develop CMO configurations.

Third, this thesis, particularly empirical studies in chapters 3 and 4, used only qualitative methods. In this regard, the first limitation was that, while qualitative methods



have merits in examining who did what, what actually happened during the intervention, and why (i.e., exploration of mechanisms, contexts, and their interactions) (Picciotto, 2014), the knowledge these methods produced could be subjective (Pawson and Manzano-Santaella, 2012). This subjectivity could happen at two levels: (1) intervention participants' interpretation of mechanisms, contexts, and their interactions and (2) evaluators' interpretation of participants' interpretation. In other words, participants' mental models of mechanisms, contexts, and their interactions could be perceived differently by evaluators who would then apply their mental models to mechanisms, contexts, and their interactions. To minimise this limitation, more than one researcher involved in the processes of collecting, analysing, and synthesising data. The second limitation was that using only qualitative methods impaired scientifically establishing and validating causal links between contexts-mechanisms and outcomes (Pawson and Manzano-Santaella, 2012). A possible solution here could be using mixed methods. Using mixed methods would allow triangulating results and providing a more comprehensive evaluation of the intervention (Abildgaard *et al.*, 2020). In previous interventions studies that used mixed methods, both qualitative and quantitative measurements have been used to assess implementation process and effect, qualitative analyses have been mainly done to aid interpretation of the quantitative results (Abildgaard *et al.*, 2020; Busch *et al.*, 2017; Jenny *et al.*, 2015). Nevertheless, using mixed methods was not possible because, first, the small size of worksites would cause the results to have insufficient statistical power to detect a significant difference or effect (Cohen, 1988) and, second, the closures related to the COVID-19 pandemic made it impossible to measure and report quantitative data (Sorensen *et al.*, 2021). Conducting realist evaluation using mixed methods, also, would not be without challenges; it would be time and resource consuming, it would be difficult to balance the utilisation of efficient separate qualitative/quantitative methods, and it

would need skills to collect, analyse, and synthesise empirical evidence to develop and test CMO configurations (Abildgaard *et al.*, 2016).

## **FUTURE RESEARCH AND CONCLUSION**

### **Future Research**

To determine where further research is needed, two overarching factors should be considered: (1) the overarching context that is likely to dominate the organisations in the future and (2) existing gaps in the current literature. Regarding the overarching context of organisations, complex and dynamic organisations with increasing complexity and volume of demands and low resources available to respond to the demands need to change in order to survive in the highly competitive and evolving business environment (Reeves and Deimler, 2011; Todnem By, 2005). In this context, the understanding of what works for whom in which circumstances is the overarching goal of organisational interventions (as a special case of organisational change)(Nielsen and Noblet, 2018). Organisational intervention agents need strong theoretical frameworks and knowledge about the CMO elements of organisational interventions to fit intervention process and content mechanisms to their specific organisations. This thesis recommends using realist evaluation in future organisational interventions to understand what works for whom in which circumstances in order to produce valuable knowledge that can be used to design, implement, and evaluate organisational interventions (Nielsen and Miraglia, 2017).

Concerning the existing gaps in organisational interventions, the first gap in knowledge is about process and content mechanisms of organisational intervention. There has been rare use of realist evaluation in organisational interventions to identify mechanisms, the majority of previous organisational interventions implicitly suggested mechanisms (Nielsen and Miraglia, 2017). A number of reviews have listed intervention process mechanisms

(Egan *et al.*, 2009; Murta *et al.*, 2007; Nielsen and Abildgaard, 2013) and content mechanisms (Daniels *et al.*, 2017; Fox *et al.*, 2021). In this thesis, chapters 2 and 5 provided a number of mechanisms based on the evidence from the literature; still, more organisational intervention studies are needed to explore what and how process and content mechanisms make interventions work. In particular, since content mechanisms relate to the content of action plans which target problematic working conditions in a specific organisational setting, more interventions in diverse organisations help to identify further content mechanisms that may produce the intended outcomes.

The second gap in knowledge is about the contextual factors that influence the operation of mechanisms. Contextual factors not only facilitate or impair the triggering of mechanisms, but also influence the relationship between mechanisms and outcomes, hence, they should be analysed in CMO configurations (Greenhalgh and Manzano, 2021). The realist synthesis (chapter 2, Appendix C) shows that a few organisational intervention studies analysed the interactions of contextual factors and mechanisms that produce outcomes, the majority of them considered contexts as their study setting, study population, or study participants. Future organisational intervention studies should identify both omnibus and discrete contextual factors and more importantly investigate how they influence the operation of specific mechanisms that produce outcomes in CMO configurations.

The final gap in knowledge is how to transfer the learning from prior interventions to future interventions (Nielsen and Noblet, 2018). Organisational interventions work differently in different contexts (Nielsen and Miraglia, 2017), further, various measures have been used in the process and outcome evaluations of the previous intervention studies (Bambra *et al.*, 2007; Daniels *et al.*, 2017; Egan *et al.*, 2007, 2009; Fox *et al.*, 2021; Lamontagne *et al.*, 2007; Richardson and Rothstein, 2008; Ruotsalainen *et al.*, 2006;

Semmer, 2006; Taris *et al.*, 2003). To improve existing organisational interventions and inform future interventions, interventions should be planned, implemented and evaluated in a cyclical basis (Todnem By, 2005). Following the realist evaluation cycle (Pawson and Tilley, 2004) which asks for developing and testing CMO configurations helps to: (1) plan, implement, and evaluate a single intervention study, (2) links interventions studies (the future intervention studies can consider the tested CMO configurations in previous interventions as their initial CMO configurations and further test and refine them), and (3) accumulate a transferable understanding of what works for whom in which circumstances. This thesis explained how to follow a realist evaluation cycle. It described how to conduct a realist synthesis (chapter 2), how to develop initial CMO configurations (chapter 3), how to test initial CMO configurations (chapter 4), and proposed an evaluation model based on realist evaluation (the IREMOI) to provide guidance on when, why, and how to develop and test CMO configurations. Besides, this thesis provided a number of CMO configurations. Future intervention studies can consider them as their initial CMO configurations and test them in different contexts following the IREMOI. To test the CMO configurations, previous organisational intervention studies that followed realist evaluation can be consulted, these studies have provided insights on how to empirically test CMO configurations using quantitative methods (von Thiele Schwarz *et al.*, 2017) or mixed methods (Abildgaard *et al.*, 2020; Busch *et al.*, 2017).

In summary, this thesis has two overarching theoretical contributions. First, this thesis shows how to employ realist evaluation principles in reviewing and synthesising the literature (chapter 2), developing initial CMO configurations (chapter 3), testing initial CMO configurations (chapter 4), and evaluating organisational interventions through an integrated realist evaluation framework (chapter 5). Second, this research adds to the understanding of ‘what *worked/might work/works* for whom in which circumstances?’ by exploring

organisational interventions mechanisms, contextual factors that hinder or facilitate the operation of mechanisms, and outcomes that mechanisms produce (Pawson and Tilley, 1997, 2004).

## CONCLUSION

Organisational interventions that target adverse working conditions to change are the recommended approach to improve employees' health and wellbeing (EU-OSHA, 2016; ILO, 2001; UK Health and Safety Executive, 2007). However, we lack knowledge on how to design, implement, and evaluate these complex interventions (Nielsen and Noblet, 2018). This need relates to the overall lack of research examining 'what works for whom in which circumstances' (Nielsen and Miraglia, 2017). This thesis aimed to show how to employ realist evaluation in organisational interventions to understand 'what *worked/might work/works* for whom in which circumstances?'. To achieve such understanding, this thesis examined how different mechanisms can be operated in the organisational interventions, what contextual factors influence triggering mechanisms, and what outcomes the mechanisms produce, based on these elements a number of CMO configurations were developed.

The CMO configurations in chapters 2 and 5 were based on the evidence from previous organisational interventions studies, and the CMO configurations in chapters 3 and 4 were based on empirical evidence from a participatory organisational intervention in the US food service industry. While the organisational intervention literature mainly has focused on causal relationships between Mechanisms-Contexts or Mechanisms-Outcomes, this thesis linked mechanisms, contexts, and outcomes together to form CMO configurations that are transferred to future studies (Goodridge *et al.*, 2015; Nielsen and Miraglia, 2017).

This thesis synthesised inconsistent empirical evidence in the organisational intervention literature into generalisable CMO configurations based on the process

mechanisms of implementation adherence, communication, employees' participation, senior management support, middle management support, and external consultants/researchers support. In addition, this thesis developed four initial CMO configurations based on mechanisms of participation, leadership commitment, communication, and tailoring the intervention to fit the organisational context and empirically tested one of these CMO configurations, participation. Further, the thesis developed a framework based on realist evaluation, suggested a comprehensive list of mechanisms to be considered in the organisational interventions, and proposed CMO configurations focusing on these mechanisms based on evidence from the literature. The knowledge generated through a number of CMO configurations in this thesis can be used to design, implement, and evaluate future organisational interventions.

## REFERENCES

- Abildgaard, J.S., Nielsen, K., Wåhlin-Jacobsen, C.D., Maltesen, T., Christensen, K.B. and Holtermann, A. (2020), “‘Same, but different’: A mixed-methods realist evaluation of a cluster-randomized controlled participatory organizational intervention”, *Human Relations*, Vol. 73 No. 10, pp. 1339–1365.
- Abildgaard, J.S., Saksvik, P.Ø. and Nielsen, K. (2016), “How to Measure the Intervention Process? An Assessment of Qualitative and Quantitative Approaches to Data Collection in the Process Evaluation of Organizational Interventions.”, *Frontiers in Psychology*, Vol. 7, p. 1380.
- Bambra, C., Egan, M., Thomas, S., Petticrew, M. and Whitehead, M. (2007), “The psychosocial and health effects of workplace reorganisation. 2. A systematic review of task restructuring interventions”, *Journal of Epidemiology & Community Health*, Vol. 61 No. 12, pp. 1028–1037.
- Basch, C.E., Sliepcevich, E.M., Gold, R.S., Duncan, D.F. and Kolbe, L.J. (1985), “Avoiding Type III Errors in Health Education Program Evaluations: A Case Study”, *Health Education Quarterly*, Vol. 12 No. 3, pp. 315–331.
- Busch, C., Koch, T., Clasen, J., Winkler, E. and Vowinkel, J. (2017), “Evaluation of an organizational health intervention for low-skilled workers and immigrants”, *Human Relations*, Vol. 70 No. 8, pp. 994–1016.
- Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., Routledge, New York.
- Cox, T., Karanika, M., Griffiths, A. and Houdmont, J. (2007), “Evaluating organizational-level work stress interventions: Beyond traditional methods”, *Work & Stress*, Vol. 21

No. 4, pp. 348–362.

Dalkin, S.M., Greenhalgh, J., Jones, D., Cunningham, B. and Lhussier, M. (2015), “What’s in a mechanism? Development of a key concept in realist evaluation”, *Implementation Science*, Vol. 10 No. 1, p. 49.

Daniels, K., Gedikli, C., Watson, D., Semkina, A. and Vaughn, O. (2017), “Job design, employment practices and well-being: a systematic review of intervention studies”, *Ergonomics*, Vol. 60 No. 9, pp. 1177–1196.

Day, A. and Nielsen, K. (2017), “What Does Our Organization Do to Help Our Well-Being? Creating Healthy Workplaces and Workers”, in Chmiel, N., Fraccaroli, F. and Sverke, M. (Eds.), *An Introduction to Work and Organizational Psychology*, 3rd ed., John Wiley & Sons, Ltd, Hoboken, NJ, US, pp. 295–314.

DeJoy, D.M., Wilson, M.G., Vandenberg, R.J., McGrath-Higgins, A.L. and Griffin-Blake, C.S. (2010), “Assessing the impact of healthy work organization intervention”, *Journal of Occupational and Organizational Psychology*, Vol. 83 No. 1, pp. 139–165.

Egan, M., Bambra, C., Petticrew, M. and Whitehead, M. (2009), “Reviewing evidence on complex social interventions: appraising implementation in systematic reviews of the health effects of organisational-level workplace interventions”, *Journal of Epidemiology & Community Health*, Vol. 63 No. 1, pp. 4–11.

Egan, M., Bambra, C., Thomas, S., Petticrew, M., Whitehead, M. and Thomson, H. (2007), “The psychosocial and health effects of workplace reorganisation. 1. A systematic review of organisational-level interventions that aim to increase employee control”, *Journal of Epidemiology & Community Health*, Vol. 61 No. 11, pp. 945–954.

EU-OSHA. (2016), “Second European Survey of Enterprises on New and Emerging Risks



- (ESENER-2). Overview Report: Managing Safety and Health at Work”, *Publications Office of the European Union*, available at: <https://op.europa.eu/s/n7Wt> (accessed 10 June 2020).
- Fox, K.E., Johnson, S.T., Berkman, L.F., Sianoja, M., Soh, Y., Kubzansky, L.D. and Kelly, E.L. (2021), “Organisational- and group-level workplace interventions and their effect on multiple domains of worker well-being: A systematic review”, *Work & Stress*, pp. 1–30.
- Fridrich, A., Jenny, G.J. and Bauer, G.F. (2015), “The Context, Process, and Outcome Evaluation Model for Organisational Health Interventions”, *BioMed Research International*, Vol. 2015, pp. 1–12.
- Goodridge, D., Westhorp, G., Rotter, T., Dobson, R. and Bath, B. (2015), “Lean and leadership practices: development of an initial realist program theory”, *BMC Health Services Research*, Vol. 15 No. 1, p. 362.
- Greenhalgh, J. and Manzano, A. (2021), “Understanding ‘context’ in realist evaluation and synthesis”, *International Journal of Social Research Methodology*, pp. 1–13.
- Greenhalgh, T., Pawson, R., Wong, G., Westhorp, G., Greenhalgh, J., Manzano, A. and Jagosh, J. (2017a), “Retroduction in realist evaluation The RAMESES II Project”, *The RAMESES Projects*, available at: [www.ramesesproject.org](http://www.ramesesproject.org).
- Greenhalgh, T., Pawson, R., Wong, G., Westhorp, G., Greenhalgh, J., Manzano, A. and Jagosh, J. (2017b), “Developing Realist Programme Theories: The RAMESES II Project”, available at: [http://www.ramesesproject.org/media/RAMESES\\_II\\_Developing\\_realist\\_programme\\_theories.pdf](http://www.ramesesproject.org/media/RAMESES_II_Developing_realist_programme_theories.pdf) (accessed 10 January 2022).

- Greenhalgh, T., Wong, G., Jagosh, J., Greenhalgh, J., Manzano, A., Westthorp, G. and Pawson, R. (2015), "Protocol-the RAMESES II study: Developing guidance and reporting standards for realist evaluation", *BMJ Open*, available at:<https://doi.org/10.1136/bmjopen-2015-008567>.
- Hasson, H., Brisson, C., Guérin, S., Gilbert-Ouimet, M., Baril-Gingras, G., Vézina, M. and Bourbonnais, R. (2014), "An organizational-level occupational health intervention: Employee perceptions of exposure to changes, and psychosocial outcomes", *Work & Stress*, pp. 1–19.
- Holman, D. and Axtell, C. (2016), "Can job redesign interventions influence a broad range of employee outcomes by changing multiple job characteristics? A quasi-experimental study.", *Journal of Occupational Health Psychology*, Vol. 21 No. 3, pp. 284–295.
- ILO. (2001), *Guidelines on Occupational Safety and Health Management Systems, ILO-OSH*, International Labor Office, Geneva.
- Jagosh, J., Bush, P.L., Salsberg, J., Macaulay, A.C., Greenhalgh, T., Wong, G., Cargo, M., *et al.* (2015), "A realist evaluation of community-based participatory research: partnership synergy, trust building and related ripple effects", *BMC Public Health*, Vol. 15 No. 1, p. 725.
- Jenny, G.J., Brauchli, R., Inauen, A., Fülleman, D., Fridrich, A. and Bauer, G.F. (2015), "Process and outcome evaluation of an organizational-level stress management intervention in Switzerland", *Health Promotion International*, Vol. 30 No. 3, pp. 573–585.
- Johns, G. (2006), "The Essential Impact of Context on Organizational Behavior", *Academy of Management Review*, Vol. 31 No. 2, pp. 386–408.

- Kompier, M. and Aust, B. (2016), “Organizational stress management interventions: Is it the singer not the song?”, *Scandinavian Journal of Work, Environment & Health*, Vol. 42 No. 5, pp. 355–358.
- Lacouture, A., Breton, E., Guichard, A. and Ridde, V. (2015), “The concept of mechanism from a realist approach: a scoping review to facilitate its operationalization in public health program evaluation”, *Implementation Science*, Vol. 10 No. 1, p. 153.
- Lamontagne, A.D., Keegel, T., Louie, A.M., Ostry, A. and Landsbergis, P.A. (2007), “A Systematic Review of the Job-stress Intervention Evaluation Literature, 1990–2005”, *International Journal of Occupational and Environmental Health*, Vol. 13 No. 3, pp. 268–280.
- Leka, S., Jain, A., Houtman, I., McDaid, D., Park, A.-L., De Broeck, V. and Wynne, R. (2014), “Evaluation of policy and practice to promote mental health in the workplace in Europe”, *European Commission*, available at:  
<https://ec.europa.eu/social/BlobServlet?docId=13871&langId=en>.
- Marchal, B., van Belle, S., van Olmen, J., Hoérée, T. and Kegels, G. (2012), “Is realist evaluation keeping its promise? A review of published empirical studies in the field of health systems research”, *Evaluation*, Vol. 18 No. 2, pp. 192–212.
- Murta, S.G., Sanderson, K. and Oldenburg, B. (2007), “Process Evaluation in Occupational Stress Management Programs: A Systematic Review”, *American Journal of Health Promotion*, Vol. 21 No. 4, pp. 248–254.
- Nielsen, K. and Abildgaard, J.S. (2013), “Organizational interventions: A research-based framework for the evaluation of both process and effects”, *Work & Stress*, Vol. 27 No. 3, pp. 278–297.

- Nielsen, K., Abildgaard, J.S. and Daniels, K. (2014), “Putting context into organizational intervention design: Using tailored questionnaires to measure initiatives for worker well-being”, *Human Relations*, Vol. 67 No. 12, pp. 1537–1560.
- Nielsen, K. and Christensen, M. (2021), “Positive Participatory Organizational Interventions: A Multilevel Approach for Creating Healthy Workplaces”, *Frontiers in Psychology*, available at:<https://doi.org/10.3389/fpsyg.2021.696245>.
- Nielsen, K. and 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*, Vol. 70 No. 1, pp. 40–62.
- Nielsen, K., Nielsen, M.B., Ogbonnaya, C., Känslä, M., Saari, E. and Isaksson, K. (2017), “Workplace resources to improve both employee well-being and performance: A systematic review and meta-analysis”, *Work & Stress*, Vol. 31 No. 2, pp. 101–120.
- Nielsen, K. and Noblet, A. (2018), “Organizational interventions: Where are we, where do we go from here?”, in Nielsen, K. and Noblet, A. (Eds.), *Organizational Interventions for Health and Well-Being: A Handbook for Evidence-Based Practice*, Routledge, Oxon, pp. 1–23.
- Nielsen, K. and Randall, R. (2009), “Managers’ Active Support when Implementing Teams: The Impact on Employee Well-Being”, *Applied Psychology: Health and Well-Being*, Vol. 1 No. 3, pp. 374–390.
- Nielsen, K. and Randall, R. (2012), “The importance of employee participation and perceptions of changes in procedures in a teamworking intervention”, *Work & Stress*, Vol. 26 No. 2, pp. 91–111.
- Nielsen, K. and Randall, R. (2013), “Opening the black box: Presenting a model for

evaluating organizational-level interventions”, *European Journal of Work and Organizational Psychology*, Vol. 22 No. 5, pp. 601–617.

Nielsen, K., Randall, R., Holten, A.-L. and González, E.R. (2010), “Conducting organizational-level occupational health interventions: What works?”, *Work & Stress*, Vol. 24 No. 3, pp. 234–259.

Nielsen, K., Taris, T.W. and Cox, T. (2010), “The future of organizational interventions: Addressing the challenges of today’s organizations”, *Work & Stress*, Vol. 24 No. 3, pp. 219–233.

Nielsen, K., Yarker, J., Munir, F. and Bültmann, U. (2018), “IGLOO: An integrated framework for sustainable return to work in workers with common mental disorders”, *Work & Stress*, Vol. 32 No. 4, pp. 400–417.

Pawson, R. (2006), *Evidence-Based Policy: A Realist Perspective*, Sage Publications, London.

Pawson, R. (2013), *The Science of Evaluation: A Realist Manifesto*, 1st ed., SAGE, London.

Pawson, R., Greenhalgh, T., Harvey, G. and Walshe, K. (2005), “Realist review - a new method of systematic review designed for complex policy interventions”, *Journal of Health Services Research & Policy*, Vol. 10 No. 1\_suppl, pp. 21–34.

Pawson, R. and Manzano-Santaella, A. (2012), “A realist diagnostic workshop”, *Evaluation*, Vol. 18 No. 2, pp. 176–191.

Pawson, R. and Tilley, N. (1997), *Realistic Evaluation*, 1st ed., Sage Publications Ltd, London.

Pawson, R. and Tilley, N. (2004), *Realist Evaluation*, available at:

[http://www.communitymatters.com.au/RE\\_chapter.pdf](http://www.communitymatters.com.au/RE_chapter.pdf) (accessed 10 January 2019).

- Peters, S.E., Nielsen, K.M., Nagler, E.M., Revette, A.C., Madden, J. and Sorensen, G. (2020), “Ensuring Organization-Intervention Fit for a Participatory Organizational Intervention to Improve Food Service Workers’ Health and Wellbeing”, *Journal of Occupational & Environmental Medicine*, Vol. 62 No. 2, pp. e33–e45.
- Picciotto, R. (2014), “Have Development Evaluators Been Fighting the Last War... And If So, What is to be Done?”, *IDS Bulletin*, Vol. 45 No. 6, pp. 6–16.
- Reeves, M. and Deimler, M. (2011), “Adaptability: The new competitive advantage”, *Harvard Business Review*.
- Richardson, K.M. and Rothstein, H.R. (2008), “Effects of occupational stress management intervention programs: A meta-analysis.”, *Journal of Occupational Health Psychology*, Vol. 13 No. 1, pp. 69–93.
- Ruotsalainen, J.H., Verbeek, J.H., Salmi, J.A., Jauhiainen, M., Laamanen, I., Pasternack, I. and Husman, K. (2006), “Evidence on the effectiveness of occupational health interventions”, *American Journal of Industrial Medicine*, Vol. 49 No. 10, pp. 865–872.
- Sanz-Vergel, A.I. and Nielsen, K. (2021), “Virtual issue: Psychological interventions in the field of work and organizational psychology”, *Applied Psychology*, available at:<https://doi.org/10.1111/apps.12361>.
- Schelvis, R.M.C., Wiezer, N.M., Blatter, B.M., van Genabeek, J.A.G.M., Oude Hengel, K.M., Bohlmeijer, E.T. and van der Beek, A.J. (2016), “Evaluating the implementation process of a participatory organizational level occupational health intervention in schools”, *BMC Public Health*, Vol. 16 No. 1, p. 1212.
- Semmer, N.K. (2006), “Job stress interventions and the organization of work”, *Scandinavian*

*Journal of Work, Environment & Health*, Vol. 32 No. 6, pp. 515–527.

Sorensen, G., Peters, S., Nielsen, K., Nagler, E., Karapanos, M., Wallace, L., Burke, L., *et al.* (2019), “Improving Working Conditions to Promote Worker Safety, Health, and Wellbeing for Low-Wage Workers: The Workplace Organizational Health Study”, *International Journal of Environmental Research and Public Health*, Vol. 16 No. 8, p. 1449.

Sorensen, G., Peters, S.E., Nielsen, K., Stelson, E., Wallace, L.M., Burke, L., Nagler, E.M., *et al.* (2021), “Implementation of an organizational intervention to improve low-wage food service workers’ safety, health and wellbeing: findings from the Workplace Organizational Health Study”, *BMC Public Health*, Vol. 21 No. 1, p. 1869.

Tafvelin, S., von Thiele Schwarz, U., Nielsen, K. and Hasson, H. (2019), “Employees’ and line managers’ active involvement in participatory organizational interventions: Examining direct, reversed, and reciprocal effects on well-being”, *Stress and Health*, Vol. 35 No. 1, pp. 69–80.

Taris, T.W., Kompier, M.A.J., Geurts, S.A.E., Schreurs, P.J.G., Schaufeli, W.B., de Boer, E., Sepmeijer, K.J., *et al.* (2003), “Stress management interventions in the Dutch domiciliary care sector: Findings from 81 organizations.”, *International Journal of Stress Management*, Vol. 10 No. 4, pp. 297–325.

Thiele Schwarz, U., Lundmark, R. and Hasson, H. (2016), “The Dynamic Integrated Evaluation Model (DIEM): Achieving Sustainability in Organizational Intervention through a Participatory Evaluation Approach”, *Stress and Health*, Vol. 32 No. 4, pp. 285–293.

von Thiele Schwarz, U., Nielsen, K., Edwards, K., Hasson, H., Ipsen, C., Savage, C.,

- Simonsen Abildgaard, J., *et al.* (2021), “How to design, implement and evaluate organizational interventions for maximum impact: the Sigtuna Principles”, *European Journal of Work and Organizational Psychology*, available at:<https://doi.org/10.1080/1359432X.2020.1803960>.
- von Thiele Schwarz, U., Nielsen, K.M., Stenfors-Hayes, T. and Hasson, H. (2017), “Using kaizen to improve employee well-being: Results from two organizational intervention studies”, *Human Relations*, Vol. 70 No. 8, pp. 966–993.
- Todnem By, R. (2005), “Organisational change management: A critical review”, *Journal of Change Management*, Vol. 5 No. 4, pp. 369–380.
- UK Health and Safety Executive. (2007), *Managing the Causes of Work-Related Stress : A Step-by-Step Approach Using the Management Standards*, 2nd ed., Health and Safety Executive, Surrey, UK.
- De Weger, E., Van Vooren, N.J.E., Wong, G., Dalkin, S., Marchal, B., Drewes, H.W. and Baan, C.A. (2020), “What’s in a Realist Configuration? Deciding Which Causal Configurations to Use, How, and Why”, *International Journal of Qualitative Methods*, Vol. 19, pp. 1–8.
- Weick, K.E., Sutcliffe, K.M. and Obstfeld, D. (2005), “Organizing and the Process of Sensemaking”, *Organization Science*, Vol. 16 No. 4, pp. 409–421.



## APPENDICES

### APPENDIX A

#### Applied Search Terms in the Databases

PsycARTICLES, PsycINFO, Social Policy and Practice, and Medline via OvidSP (June 8, 2019)

1. exp mental health/ or exp job satisfaction/ or exp occupational health/ or exp stress,psychological/ or exp burnout,professional/ or exp psychological well-being/ or exp stress, occupational/ or exp health promotion/ or exp work environment/ or exp depression/ or exp motivation/ or exp support, psychosocial/ or exp program evaluation
2. ("occupation\*" or "organization\*" or "work\*" or "busines" or "job\*" or "corporat\*" or "vocation\*" or "career\*" or "industr\*").ti.
3. ("occupation\*" or "organization\*" or "work\*" or "busines" or "job\*" or "corporat\*" or "vocation\*" or "career\*" or "industr\*").ab.
4. 2 and 3
5. ("intervention\*" or "program\*" or "stud\*" or "promotion\*" or "training\*" or "method\*" or "exercise\*" or "measure\*" or "activit\*").ti.
6. ("intervention\*" or "program\*" or "stud\*" or "promotion\*" or "training\*" or "method\*" or "exercise\*" or "measure\*" or "activit\*").ab.
7. 5 and 6
8. ("mental health" or "occupational health" or "well-being" or "wellbeing" or "well being" or "wellness" or "satisfaction" or "quality of life" or "social skills" or "self-efficacy" or "motivation" or "empowerment" or "happiness" or "fatigue" or "stress" or "distress" or "anxiety" or "absenteeism" or "depression" or "sickness absence" or "burnout" or "burn out" or "burn-out").af.
9. 1 and 4 and 7 and 8
10. limit 9 to (yr="2009 - 2019" and English and humans)

Results: 7810

Scopus (June 9, 2019)

```
( SUBJAREA ( psyc ) SUBJAREA ( soci ) ) AND ( ( ( TITLE ( occupation* ) OR TITLE ( organization* )
OR TITLE ( work* ) OR TITLE ( business ) OR TITLE ( industr* ) OR TITLE ( job ) OR TITLE (
corporat* ) OR TITLE ( career ) OR TITLE ( vocation* ) ) ) AND ( ( ABS ( occupation* ) OR ABS (
organization* ) OR ABS ( work* ) OR ABS ( business ) OR ABS ( industr* ) OR ABS ( job ) OR ABS (
corporat* ) OR ABS ( career ) OR ABS ( vocation* ) ) ) ) AND ( ( ( TITLE ( intervention* ) OR TITLE (
program* ) OR TITLE ( stud* ) OR TITLE ( promotion ) OR TITLE ( training* ) OR TITLE ( method* )
OR TITLE ( exercise* ) OR TITLE ( measure* ) OR TITLE ( activit* ) ) ) AND ( ( ABS ( intervention* )
OR ABS ( program* ) OR ABS ( stud* ) OR ABS ( promotion ) OR ABS ( training* ) OR ABS ( method*
) OR ABS ( exercise* ) OR ABS ( measure* ) OR ABS ( activit* ) ) ) ) AND ( ( TITLE-ABS-KEY (
mental AND health ) OR TITLE-ABS-KEY ( occupational AND health ) OR TITLE-ABS-KEY ( well-
being ) OR TITLE-ABS-KEY ( wellbeing ) OR TITLE-ABS-KEY ( well AND being ) OR TITLE-ABS-
KEY ( satisfaction ) OR TITLE-ABS-KEY ( "quality of life" ) OR TITLE-ABS-KEY ( social AND skills )
OR TITLE-ABS-KEY ( self-efficacy ) OR TITLE-ABS-KEY ( motivation ) OR TITLE-ABS-KEY (
empowerment ) OR TITLE-ABS-KEY ( happiness ) OR TITLE-ABS-KEY ( fatigue ) OR TITLE-ABS-
KEY ( stress ) OR TITLE-ABS-KEY ( distress ) OR TITLE-ABS-KEY ( anxiety ) OR TITLE-ABS-KEY (
absen* ) OR TITLE-ABS-KEY ( burnout ) OR TITLE-ABS-KEY ( burn AND out ) OR TITLE-ABS-KEY
( burn-out ) OR TITLE-ABS-KEY ( depress* ) OR TITLE-ABS-KEY ( "sickness absence" ) OR TITLE-
ABS-KEY ( wellness ) ) ) AND ( LIMIT-TO ( PUBYEAR , 2019 ) OR LIMIT-TO ( PUBYEAR , 2018 )
OR LIMIT-TO ( PUBYEAR , 2017 ) OR LIMIT-TO ( PUBYEAR , 2016 ) OR LIMIT-TO ( PUBYEAR ,
2015 ) OR LIMIT-TO ( PUBYEAR , 2014 ) OR LIMIT-TO ( PUBYEAR , 2013 ) OR LIMIT-TO (
```

PUBYEAR , 2012 ) OR LIMIT-TO ( PUBYEAR , 2011 ) OR LIMIT-TO ( PUBYEAR , 2010 ) OR LIMIT-TO ( PUBYEAR , 2009 ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )

Results: 684

#### CINAHL via EBSCO (June 10, 2019)

( MH ("psychological well-being" OR "mental health" OR "occupational health" OR "stress, occupational" OR "stress, psychological" OR "health promotion" OR "work environment" OR "job satisfaction" OR "depression" OR "burnout, professional" OR "motivation" OR "support, psychosocial" OR "program evaluation") ) AND ( TI (occupation\* OR organization\* OR work\* OR business OR industr\* OR job OR corporat\* OR career OR vocation\*) AND AB (Occupation\* OR organization\* OR work\* OR business OR industr\* OR job OR corporat\* OR career OR vocation\*) ) AND ( TI (Intervention\* OR program\* OR stud\* OR promotion\* OR training\* OR method\* OR exercise\* measure\* OR activit\*) AND AB (intervention\* OR program\* OR stud\* OR promotion\* OR training\* OR method\* OR exercise\* measure\* OR activit\*) ) AND ( TX (((mental OR occupation\*) AND health) OR well-being OR well being OR wellbeing OR wellness OR satisfaction OR "quality of life" OR social skill\* OR self-efficacy OR motivation OR empowerment OR happiness OR fatigue OR stress OR distress OR anxiety OR absen\* OR burnout OR burn-out OR burn out OR depress\* OR (sickness AND absence)) )

The primary results: 4,728; Limited to Published Date: 20090101-20190531(3,306); Language: English (3,231); Source Types: Academic Journals (1,793)

Results: 1793

#### Web of Science/Social Science Citation Index (SSCI) (June 11, 2019)

((SU=Social Sciences) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article) Indexes=SSCI Timespan=2009-2019)

AND ((TS=("psychological well-being" OR "mental health" OR "occupational health" OR "stress, occupational" OR "stress, psychological" OR "health promotion" OR "work environment" OR "job satisfaction" OR "depression" OR "burnout, professional" OR "motivation" OR "support, psychosocial" OR "program evaluation")) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article) Indexes=SSCI Timespan=2009-2019)

AND ((TS=(occupation\* OR organization\* OR work\* OR business OR industr\* OR job OR corporat\* OR career OR vocation\*)) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article) Indexes=SSCI Timespan=2009-2019)

AND ((TS=(Intervention\* OR program\* OR stud\* OR promotion\* OR training\* OR method\* OR exercise\* measure\* OR activit\*)) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article) Indexes=SSCI Timespan=2009-2019)

AND ((TS=((((mental OR occupation\*) AND health) OR well-being OR well being OR wellbeing OR wellness OR satisfaction OR "quality of life" OR social skill\* OR self-efficacy OR motivation OR empowerment OR happiness OR fatigue OR stress OR distress OR anxiety OR absen\* OR burnout OR burn-out OR burn out OR depress\* OR (sickness AND absence)))) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article) Indexes=SSCI Timespan=2009-2019)

Results: 3439

#### Cochrane Library (June 11, 2019)

1. (occupation\* OR organization\* OR work\* OR business OR industr\* OR job OR corporat\* OR career OR vocation\*):ti
2. (occupation\* OR organization\* OR work\* OR business OR industr\* OR job OR corporat\* OR career OR vocation\*):ab

3. #1 and #2
4. (intervention\* OR program\* OR stud\* OR promotion\* OR training\* OR method\* OR exercise\* measure\* OR activit\*):ti
5. (intervention\* OR program\* OR stud\* OR promotion\* OR training\* OR method\* OR exercise\* measure\* OR activit\*):ab
6. #4 and #5
7. (((mental OR occupation\*) AND health) OR well-being OR well being OR wellbeing OR wellness OR satisfaction OR "quality of life" OR social skill\* OR self-efficacy OR motivation OR empowerment OR happiness OR fatigue OR stress OR distress OR anxiety OR absen\* OR burnout OR burn-out OR burn out OR depress\* OR (sickness AND absence)):ti,ab,kw
8. #3 and #6 and #7
9. Limit to Cochrane Library publication date from Jan 2009 to Jun 2019, in Cochrane Reviews, Cochrane Protocols and Trials

Results: 1984

ProQuest (June 12, 2019)

(ti(occupation\* OR organization\* OR work\* OR business OR industr\* OR job OR corporat\* OR career OR vocation\*) AND ab(occupation\* OR organization\* OR work\* OR business OR industr\* OR job OR corporat\* OR career OR vocation\*))

AND (ti(intervention\* OR program\* OR stud\* OR promotion\* OR training\* OR method\* OR exercise\* measure\* OR activit\*) AND ab(intervention\* OR program\* OR stud\* OR promotion\* OR training\* OR method\* OR exercise\* measure\* OR activit\*))

AND (ti(((mental OR occupation\*) AND health) OR well-being OR well being OR wellbeing OR wellness OR satisfaction OR "quality of life" OR social skill\* OR self-efficacy OR motivation OR empowerment OR happiness OR fatigue OR stress OR distress OR anxiety OR absen\* OR burnout OR burn-out OR burn out OR depress\* OR (sickness AND absence)) AND ab(((mental OR occupation\*) AND health) OR well-being OR well being OR wellbeing OR wellness OR satisfaction OR "quality of life" OR social skill\* OR self-efficacy OR motivation OR empowerment OR happiness OR fatigue OR stress OR distress OR anxiety OR absen\* OR burnout OR burn-out OR burn out OR depress\* OR (sickness AND absence)) AND ft(((mental OR occupation\*) AND health) OR well-being OR well being OR wellbeing OR wellness OR satisfaction OR "quality of life" OR social skill\* OR self-efficacy OR motivation OR empowerment OR happiness OR fatigue OR stress OR distress OR anxiety OR absen\* OR burnout OR burn-out OR burn out OR depress\* OR (sickness AND absence)))

Narrowed by: Entered date: 2009-01-01 - 2019-05-31; Document type: Article; Source type: Scholarly Journals; Language: English; Database: Publicly Available Content Database; Social Science Database; Sociology Collection; Sociology Database; Applied Social Sciences Index & Abstracts (ASSIA); Sociological Abstracts; International Bibliography of the Social Sciences (IBSS); Sociological Abstracts; Social Services Abstracts

Results: 827

## APPENDIX B

### The Details of the Reviewed Studies

Identifier: Authors and publication year	Country	Study Aim	Study Design	Evaluation Methods
[1]: Abildgaard et al. (2018)	Denmark	To evaluate the effects of a participatory organisational-level intervention in which employees and managers chose to address the psychosocial consequences, specifically job insecurity, of restructuring.	Cluster randomised controlled trial	Interviews, questionnaires, field observations with meeting minutes, and action plans
[2]: Arapovic-Johansson et al. (2018)	Sweden	To explore whether a participatory, organisational intervention can reduce work-related risk factors, and thereby prevent stress-related ill health.	Two-armed randomised controlled trial (using units)	Questionnaires, documents, checklists, and telephone interviews
[3]: Bourbonnais et al. (2011)	Canada	To assess the long-term effects of a workplace intervention aimed at reducing adverse psychosocial work factors and mental health problems among health care professionals in an acute care hospital.	Quasi-experimental design with a control group	Interviews, questionnaires, and observation with meeting minutes
[4]: Busch et al. (2017)	Germany	To study an organisational health intervention for low skilled workers and immigrants in Germany.	Combined realist evaluation with a quasi-experimental design and process evaluation	Questionnaires, interviews, observations, blood pressure readings, and Psychosomatic complaints
[5]: DeJoy et al. (2010)	USA	To evaluate the effectiveness of a participatory, problem-solving intervention designed to promote healthy work organisation.	Quasi-experimental study	Questionnaires, interviews, process tracking notes, and focus group
[6]: Dollard & Gordon (2014)	Australia	To evaluate the effects of a participatory risk management intervention in an Australian public sector organisation.	Quasi-experimental cohort study	Questionnaires
[7]: Eklof & Ahlborg Jr (2016)	Sweden	To test the effects on aspects of workplace communication relevant to teamwork and social support of a Dialog Training (DT) intervention.	Cluster randomised controlled study	Questionnaires
[8]: Framke et al. (2016)	Denmark	To examine whether employees in pre-schools that implemented a participatory organisational-level intervention focusing on the core task at work had a lower incidence of short-term sickness absence compared to employees in the control group.	Cluster randomised controlled trial	Sickness absence data was retrieved from a municipal register
[9]: Gupta et al. (2018)	Denmark	To evaluate a participatory intervention aiming to improve the workability and need for recovery of industrial workers.	Cluster-randomised controlled trial	Questionnaires, process tracking of implementation (to measure dose delivered and dose received)
[10]: Hasson et al. (2014)	Canada	To investigate the association between employees' perceptions of their exposure to an organisational-level occupational health intervention and its psychosocial outcomes.	Longitudinal, non-randomised controlled intervention	Questionnaires and intervention logbook

[11]: Holman & Axtell (2016)	The UK	To test a multiple mediator–multiple outcome model of a job redesign intervention by examining whether a job redesign intervention can enhance a range of employee outcomes by changing multiple job characteristics.	Clustered quasi-experimental study	Questionnaires
[12]: Jenny et al. (2015)	Switzerland	To evaluate the process and outcome of an organisational level Stress Management Intervention (SMI) in the field.	An adapted research design, retrospectively assigning study participants to comparison groups, and using the RE-AIM framework	Questionnaires, face-to-face interviews, telephone interviews, and group discussions
[13]: Lundmark et al. (2017)	Sweden	To investigate the influence of line managers' behaviours on the expected outcomes (i.e., changes in self-rated health and work ability) of an occupational health intervention.	Longitudinal study	Questionnaires and a diary for conducting expressive writing and adding other relevant health measures (such as blood pressure and physical activities)
[14]: Nabe-Nielsen et al. (2011)	Denmark	To investigate the effect of work-time influence on stress and energy, work-family conflicts, lifestyle factors, and biomarkers of cardiovascular disease risk.	Quasi-experimental intervention study	Questionnaires, blood samples, and measurements of waist and hip circumference
[15]: Nielsen & Randall (2012)	Denmark	To examine the links between pre-intervention working conditions and wellbeing, levels of participation in planning and implementation, employees' reports of changes in procedures, and intervention outcomes.	Longitudinal study of teamwork implementation	Questionnaires
[16]: Nielsen & Randall (2009)	Denmark	To examine whether middle managers' active support for an intervention mediated its impact on working conditions, wellbeing, and job satisfaction.	Longitudinal intervention study	Questionnaires
[17]: Niks et al. (2018)	The Netherlands	To quantitatively assess the effectiveness of the DISCOVERY method in hospital care.	Quasi-experimental design	Questionnaires
[18]: Nylén et al. (2017)	Sweden	To describe and evaluate a newly developed worksite-based participatory organisational intervention programme.	Longitudinal study	Questionnaires, participants written evaluation of the programme after each workshop, and an open-ended question in questionnaires number 2
[19]: Oude Hengel et al. (2012)	The Netherlands	To investigate the effectiveness of a worksite prevention programme aimed to improve the health and work ability of construction workers.	Cluster randomised controlled trial	Questionnaires and filling in Rest-Break tool
[20]: Schelvis et al. (2016)	The Netherlands	To systematically describe the implementation process of a participatory organisational level occupational health intervention aimed at reducing work stress and increasing vitality in two schools.	Process evaluation alongside a controlled trial	Questionnaires, interviews, and logbooks
[21]: Schelvis et al. (2017)	The Netherlands	To evaluate the effectiveness of an organisational level, participatory intervention on the need for recovery and vitality in educational workers.	Quasi-experimental design	Questionnaires
[22]: Schneider et al.	Germany	To evaluate prospective effects of a multi-professional organisational-level	Before and after study including	Questionnaires, work observation, register

(2019)		intervention on changes in Emergency Department (ED) providers' work conditions and wellbeing and patient-perceived quality of ED care.	an interrupted time-series (ITS) design (as a quasi-experiment)	data on ED workload, and interviews
[23]: Sørensen & Holman (2014)	Denmark	To evaluate a participative organisational-level occupational health intervention designed to improve working conditions and psychological wellbeing of knowledge workers.	Longitudinal study	Questionnaires, focus group interviews, observation notes, and logbook notes
[24]: Tafvelin et al. (2019)	Sweden	To examine how employee participation and perceptions of line managers' support during a participatory organisational intervention were related to wellbeing over time.	Cluster-randomised intervention study	Questionnaires and interviews
[25]: Tsutsumi et al. (2009)	Japan	To explore the effect of a participatory intervention for workplace improvement on mental health and job performance.	Cluster randomised controlled trial	Questionnaires and interviews
[26]: Uchiyama et al. (2013)	Japan	To investigate the effect on mental health among nurses of a participatory intervention to improve the psychosocial work environment.	Cluster randomised controlled trial	Interviews, process tracking, and questionnaires
[27]: von Thiele Schwarz et al. (2017)	Denmark and Sweden	To explore how kaizen, continuous improvement used in lean management, can be used in psychosocial risk management to improve employee wellbeing.	Using the realist evaluation approach in two cluster-randomised controlled interventions	Study 1 & 2: Questionnaires
[28]: Yoshikawa et al. (2013)	Japan	To evaluate a participatory training intervention in managing mental health for supervisory employees in the financial industry.	Quasi-experimental design	Using Mental Health Action Checklist to develop actions in the workshops and using questionnaires to evaluate changes

## APPENDIX C

### Contexts, Mechanisms, and Outcomes Identified in each Reviewed Intervention Study

Identifier	Contexts	Mechanisms	Outcomes
[1]: Abildgaard et al. (2018)	<b>Omnibus Contexts:</b> 1. Participants were postal delivery workers from two postal regions within the Danish National Postal Service; Denmark.	<b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) employee representatives attending workshops; B) involved in action planning and implementation; and, C) tailoring the intervention to the organisational context based on the screening results. 2. Middle management support in the forms of: A) line managers attending workshops; B) involved in action planning and implementation; and, C) tailoring the intervention to the organisational context based on the screening results. <b>Content Mechanisms:</b> Working conditions that related to restructuring and job insecurity	1. Employees in the intervention group experienced a smaller increase in job insecurity compared to the comparison group, but only for the specific type of qualitative insecurity that was related to daily operations as well as to present and future tasks).
[2]: Arapovic-Johansson et al. (2018)	<b>Omnibus Contexts:</b> 1. Participants were employees in a primary health care division run by a Swedish county council; Sweden. <b>Discrete Contexts:</b> 1. There were a high workload and the difficulty of obtaining information from the central administrative office during the intervention.	<b>Process Mechanisms:</b> 1. External consultants support in the form of facilitating the intervention process (using ProMES “Productivity Measurement and Enhancement System”) by an independent, external practitioner. 2. Participation of employees in the forms of: A) attending regular meetings (employees in the design teams had meetings during the intervention) and B) involving in the work of design teams (to identify objectives, develop indicators, develop contingencies, conduct feedback meeting, and monitor). 3. Communication in the form of developing feedback reports (about indicators) and conduct feedback meetings by professional design teams (to provide information on results, evaluations of results, and developing new strategies). 4. The implementation fidelity and/or adherence in the form of the low fidelity implementation process as not all the components of the intervention were implemented as intended.	1. There was no significant difference in the change in levels of job strain between the intervention and the control groups. Nor was there any significant difference between groups found for job control. 2. There was no significant difference in the change in effort-reward imbalance (ERI) between the intervention and the control groups. 3. In the intervention group the changes in ERI differed between the participants who showed signs of exhaustion and those who did not, with employees with high exhaustion at baseline (M1) having significantly higher ERI at follow up. 4. There was no significant difference between the groups concerning effort. 5. For low values of exhaustion at baseline, reward levels were significantly higher at follow up for the intervention group. 6. There was no significant difference between groups regarding problems with sleeping or recovery. Furthermore, there was no significant difference in exhaustion over time between the intervention and the control groups.
[3]: Bourbonnais et al. (2011)	<b>Omnibus Contexts:</b> 1. Participants were health care professionals in an acute care hospital; Canada.	<b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) attending team meetings (eight times for 3 h each time over a 4-month period) and B) determining what changes should be introduced to reduce adverse psychosocial work factors in the specific care units and throughout the hospital, and the best way to implement these changes. <b>Content Mechanisms:</b> Teamwork and team spirit, staffing processes, work organisation, training, communication and ergonomics.	1. All adverse psychosocial work factors except social support had improved in the intervention hospital 3 years after the beginning of the intervention (T2) and the improvement was statistically significant for 5/9 factors: psychological demands, effort-reward imbalance, quality of work, and physical and emotional demands. 2. All health indicators improved and 2/5 significantly: work-related and personal burnout. At T2, the mean of all psychosocial factors except for emotional demands, and all health indicators, were more favourable in the intervention hospital than in the control hospital. 3. In the control hospital, 3/9 psychosocial work factors improved significantly: psychological demands, physical load and emotional demand. However, social support from supervisors and total support deteriorated significantly. Also, no health indicator improved significantly in this hospital. 4. All health problems were also lower in the intervention hospital, and the

<p>[4]: Busch et al. (2017)</p>	<p><b>Omnibus Contexts:</b> 1. Participants were low-skilled workers half of whom were immigrants, in three companies; Germany. 2. High cost was a barrier that prevented company management from offering health interventions to low-skilled employees. 3. There were training prior to the start of the mentorship where peer-mentors attended three fortnightly spaced training sessions of four hours each and line managers attended four fortnightly spaced sessions of four hours each. 4. There was a participatory recruitment process of mentors prior to mentorship.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the form of participating in collective problem-solving (to improve work situation) that initiated and supported by peer-mentors (who provide social support and role modelling) (M4, M3, M2). 2. Senior management support in the form of cooperating with the health insurance funds to provide enough resources for the intervention (M1). 3. Middle management support in the form of providing support for the implementation of peer-mentoring and providing social support to the employees (M5).</p>	<p>difference was statistically significant for 3/5 of the health indicators (client, work and personal burnout) and borderline for a fourth indicator, psychological distress.</p> <ol style="list-style-type: none"> <li>1. The company management encouragement mechanism (M1) was successfully released by utilising the services provided by nonprofit agencies such as health insurance funds in Germany.</li> <li>2. The role model mechanism (M2) was successfully released by peer-mentoring in all three companies.</li> <li>3. The peer-mentor support mechanism (M3) was activated by the intervention in all three companies.</li> <li>4. The participative work improvement mechanism (M4) was clearly released by the intervention in all three companies.</li> <li>5. The line manager support mechanism (M5) was not activated by the intervention programme in all three companies.</li> <li>6. Diastolic blood pressure decreased from T1 to T3 (three months after T2) in both groups; however, a statistically significant decrease in diastolic blood pressure from T1 (before the intervention) to T3 was merely found in the intervention group.</li> <li>7. There was a significant decrease in systolic blood pressure in the intervention group but not in the control group.</li> <li>8. Psychosomatic complaints showed a significant mean increase from T1 to T2 (three months after T1) in the control group, but not in the intervention group. The intervention did protect the workers against an increase in psychosomatic complaints.</li> </ol>
<p>[5]: DeJoy et al. (2010)</p>	<p><b>Omnibus Contexts:</b> 1. Participants were employees in a retail setting; the USA. 2. There were issues of trust in the organisation where some employees felt coerced into completing surveys and some focus group members indicated fear of retaliation and distrust in the store.</p> <p><b>Discrete Contexts:</b> 1. Soon after study initiation, the company was jarred by a series of significant events including an abrupt transition in top corporate leadership, severe competitive pressures, a recessionary American economy, and a series of unsettling world events, including the '9-11' terrorist attack on the World Trade Centre and the war in Afghanistan. 2. Staffing and scheduling were problems limiting the overall effectiveness of the ACTION teams.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) developing, implementing, and evaluating action plans by ACTION teams (with 8-12 members who were representative of the employee mix at each location) and B) tailoring action plans by the ACTION teams for addressing the issues or problems identified within each worksite. 2. Communication in the form of A) sharing and discussing action plans in meetings as well as communicating about the steps being taken to refine and adjust the overall plan.</p>	<p><b>Proximal Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Almost all of the proximal outcomes (targeted aspects of job design, organisational climate, or job future) declined across time within both treatment and control stores, due primarily to internal corporate events and a generally adverse economic environment.</li> <li>2. The intervention stores were more able to retain their strengths during turbulent times. Indeed, the extent of negative change in many of the job-domain dimensions was less precipitous in the sites receiving the intervention.</li> </ol> <p><b>Intermediate Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. The negative change across time for job satisfaction and organisational commitment was greater for control than for intervention stores.</li> <li>2. Employees in stores of both conditions were experiencing an overall decline in morale.</li> <li>3. The results for job stress showed that the level of stress within the intervention stores remained relatively low and unchanging across time, whereas stress within the control stores increased steadily over the same time period.</li> <li>4. Non-significant effects were obtained for work self-efficacy and personal impact on the work-group.</li> </ol> <p><b>Distal Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. In contrast to the intervention stores, which experienced a slight positive change in both health and safety during the duration of this study, the vectors of change for the control stores were negative for both health and safety.</li> </ol>



			2. From Time 2 (after 12 months) to Time 3 (24 months later), the intervention stores experienced a positive change in sales per labour hour and a levelling of employee turnover. In contrast, the vector of change for sales was slightly negative while turnover changed positively (increased) in the Control stores.
[6]: Dollard & Gordon (2014)	<b>Omnibus Contexts:</b> 1. Participants were employees in an Australian public sector organisation; Australia. 2. There was a high level of sickness absence.	<b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) attending capacity-building problem-solving workshops (4hr*4 weeks) and B) formulating action plans. 2. External consultants/researchers support in the forms of: A) facilitating the intervention process by an external expert in organisational psychology and B) coaching managers to implement action plans. 3. Senior management support in the forms of: A) showing top management commitment which was evident through a written statement to employees from the chief executive officer and B) providing resources for the intervention. <b>Content Mechanisms:</b> Job design, performance management, work quality, and organisational change.	1. Multivariate analysis of variance showed a Group (Intervention vs. Control)*Time (T1 vs. T2 (12 months later)) interaction effect with significant improvements for job design (demand, control) and training and development; and marginal effects for quality and positive performance management. 2. Regarding stress outcomes, morale improved, organisational sickness absence duration decreased, but there was no effect of the intervention on the Work Stress measure in the intervention group compared with the control group. 3. Workshop participants rated their extent of participation very highly and that they were listened to and that the process was worthwhile.
[7]: Eklof & Ahlborg Jr (2016)	<b>Omnibus Contexts:</b> 1. Participants were healthcare workers in ten care units; Sweden.	<b>Process Mechanisms:</b> 1. External consultants/researchers support in the form of facilitating and supporting dialogue training by four licensed psychotherapists (triggering mechanisms of promoting psychological safety by managing openness and defensiveness; voicing and listening; avoiding power asymmetry). 2. Participation of employees in the forms of: A) attending two single training days (8 h/day) per group of six to eight persons with their unit managers and B) identifying workplace issues (psychosocial working issues) via group discussions (triggering mechanisms of face-to-face communication; involving the manager; avoiding power asymmetry; focus on workplace issues; voicing and listening). 3. Middle management support in the forms of: A) tailoring the training themes to each unit and B) attending in all the training sessions in their units (triggering mechanism of avoiding power asymmetry).	1. The hypothesis that Dialogue Training (DT) would affect participative safety was supported. The effect was strongest at the six-month follow-up. 2. The hypothesis that DT would affect trust/openness was not supported. The observed tendency was in favour of DT. 3. The hypothesis that DT would affect social support from colleagues was not supported. 4. The hypothesis that DT would affect social support from supervisors was supported at the six-month follow-up.
[8]: Framke et al. (2016)	<b>Omnibus Contexts:</b> 1. Participants were employees in pre-schools in the Municipality of Copenhagen; Denmark.	<b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) employees' participation in the development and implementation of the intervention activities and B) tailoring the intervention activities to the specific workplace. 2. External consultants/researchers support in the form of facilitating and supporting the intervention by eight professional working environment consultants from a consultancy company. 3. Communication in the form of holding a dialogue meeting between the steering group and all employees at each workplace about the intervention.	1. During the 29 months of follow-up, the number of estimated days with short-term sickness absence was 8.68 per person-year in the intervention group and 9.17 per person-year in the control group. 2. Similar to the results of short-term sickness absence, participants in the intervention group had a decreased risk of long-term sickness absence.
[9]: Gupta et al. (2018)	<b>Omnibus Contexts:</b> 1. Participants were workers in three large Danish industrial workplaces, which employed workers organised in teams and mainly carried out manufacturing work; Denmark. 2. Blue-collar workers already faced high demands and efforts at work.	<b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) participating in three workshops and B) developing action plans and implementing them. 2. The implementation fidelity and/or adherence in the forms of: A) dose delivered: 100% of the planned activities (the visual mapping workshop, action planning workshop, and follow-up workshop) were delivered and B) dose received: 75%, 71% and 61% of the workers in the intervention group participated in the visual mapping workshop, action planning workshop, and follow-up workshop, respectively.	1. The averages for workability, recovery, physical demands and resources, physical exertion, wellbeing, mental health and productivity at baseline and 8-, 10- and 12-month follow-up stratified on the control and intervention groups. No statistically significant overall effects on any of the outcomes were found. 2. A tendency towards an overall increased poor recovery in the intervention group was found, which was significant at the 10- and 12-month follow-up. 3. The intervention group had a significant decrease in workability compared to the control group at 10-month follow-up.

[10]: Hasson et al. (2014)	<p><b>Omnibus Contexts:</b> 1. Participants were employees in a large public insurance firm composed of six sectors across with different functions(e.g. administration, finance or client services).</p>	<p><b>Process Mechanisms:</b>1. Participation of employees in the forms of: A) attending focus groups with researchers to identify prioritised organisational changes and B) tailoring changes by targeting the adverse psychosocial factors of each department. 2. External consultants/researchers support in the form of assisting in performing the prior risk assessment. 3. Middle management support in the forms of: A) making decisions about changes and implementation of them and B) tailoring changes to specific departments.</p> <p><b>Perception Mechanisms:</b> Employees' perceptions of exposure to the intervention and its impact on their work.</p> <p><b>Content Mechanisms:</b> Psychological demands, decision latitude, social support, and rewards.</p>	<ol style="list-style-type: none"> <li>1. There was a significant decrease in the overall mean value of the work factors psychological demands and social support from supervisors between 2005 and 2007. For psychological demands, a lowered value indicates improvement whereas a lowered value of social support indicates deterioration.</li> <li>2. For intervention changes potentially improving psychological demands, only the group reporting that a change had been implemented had a significantly lower mean value on psychological demands in 2007 compared to 2005.</li> <li>3. For changes potentially improving decision latitude, the groups reporting that these changes had not been implemented had significantly lower mean values over time.</li> <li>4. For changes potentially improving social support from supervisor and colleagues as well as reward, there were no significant changes over time in any of the groups.</li> <li>5. The group of employees who perceived that work changes had been implemented and that they had improved their work situation was the only group that showed significant improvement over time in all four psychosocial outcomes.</li> </ol>
[11]: Holman & Axtell (2016)	<p><b>Omnibus Contexts:</b> 1. Participants were call centre agents and supervisors in one department of the United Kingdom Civil Service that dealt with transport-related issues; The UK.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the forms of involving in identifying problems, developing solutions, and implementing changes. 2. Middle management support in the form of involving in identifying problems, developing solutions, and implementing changes. 3. External consultants/researchers support in the form of monitoring and facilitating the intervention process (both the assessment and implementation phases) by the research team.</p> <p><b>Content Mechanisms:</b> Two job characteristics of job control and feedback.</p>	<ol style="list-style-type: none"> <li>1. Job control increased in the experimental group and decreased in the control group, while feedback remained at a constant level in the experimental group and decreased in the control group.</li> <li>2. There were significant positive associations between job control and well-being, job performance, and psychological contract fulfilment. Feedback was positively associated with wellbeing and psychological contract fulfilment.</li> <li>3. The indirect path from the intervention to wellbeing was significant through changes in job control and feedback. The indirect path from the intervention to job performance was significant through changes in job control but not through changes in feedback. The indirect path from the intervention to psychological contract fulfilment was significant through changes in job control and feedback.</li> <li>4. For the experimental group, there were significant increases in job control, job performance, and psychological contract fulfilment. In the control group, there was a significant increase in job performance and significant decreases in feedback and wellbeing.</li> </ol>
[12]: Jenny et al. (2015)	<p><b>Omnibus Contexts:</b> 1. Participants were employees in eight medium-sized and large companies in diverse sectors (e.g., a food processing company, a public administration service, hospitals) in two language regions; Switzerland.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the form of attending employee-level stress management courses and team-level workshops. 2. Middle management support in the form of attending managerial-level courses. 3. External consultants/researchers support in the form of providing courses to employees and managers and workshops to teams by external consultants.</p> <p><b>Perception Mechanisms:</b> Perception of managers and employees of coherence of both employees and managerial level courses, company fit, outcome expectations, and the voluntariness of participation.</p>	<ol style="list-style-type: none"> <li>1. Participants with high outcome expectancies perceived a better company fit of measures as well as a higher coherence of course contents.</li> <li>2. Consistent improvement or maintenance in the job resources/demands-ratio (R/D-ratio) was likely to be observed over 2 years for those who retrospectively attributed a high impact to the project at the final follow-up survey, except managers with a very favourable R/D-ratio.</li> <li>3. The project raised awareness in all branches, and especially in the industrial sector, of the links between psychosocial working conditions and health, and in particular of the impact of manager behaviour on employee health, recognising the strategic importance of the subject.</li> </ol>

[13]; Lundmark et al. (2017)	<b>Omnibus Contexts:</b> 1. Participants were employees in a white-collar organisation; Sweden.	<b>Process Mechanisms:</b> 1. Middle management support in the forms of: A) line managers' attitudes and actions towards the intervention and B) exercising transformational leadership.	<ol style="list-style-type: none"> <li>1. Line managers' attitudes and actions at Time 2 (during the intervention) were significantly correlated with self-rated health and work ability of employees at Time 3 (follow-up).</li> <li>2. Transformational leadership was significantly correlated to the self-rated health of employees at Time 3 but not with the workability of employees.</li> <li>3. Line managers' attitudes and actions and their transformational leadership at Time 2 were positively correlated.</li> <li>4. When mediated by line managers' attitudes and actions, a significant indirect effect of transformational leadership on both intervention outcomes (i.e. positive change in self-rated health and workability of employees) was found.</li> </ol>
[14]; Nabe-Nielsen et al. (2011)	<b>Omnibus Contexts:</b> 1. Participants were eldercare workers employed in homecare or homes for elderly requiring full-time care; Denmark.	<b>Process Mechanisms:</b> 1. Participation of employees in the form of deciding how to increase the influence on work schedules in three subgroups of A (implementation of self-scheduling via a computer programme), B (setting up a task group that developed a questionnaire on work-time preference and participated in a one-day course on flexible working hours), and C (discussions of how employee work-time influence could be increased).	<ol style="list-style-type: none"> <li>1. There was an increase from 19 to 97% in the frequency of participants in subgroup A reporting being often or always involved in the planning of their working hours.</li> <li>2. There was a decrease from 95 to 82% in the frequency of participants in subgroup C being (very) satisfied with their working hours.</li> <li>3. There was a decrease in the mean stress score from 2.51 to 2.14 in subgroup B.</li> <li>4. There was an increase in the mean HbA1c serum concentration from 4.86 to 5.09% in subgroup B.</li> <li>5. There were no significant effects on the experience of work-family conflicts, lifestyle factors, serum lipids, or testosterone. However, post hoc analyses revealed that the degree of social support increased significantly in two of the intervention subgroups (subgroup A and subgroup B).</li> <li>6. There were no significant differences between those who participated in the sampling of blood and those who did not in terms of body mass index, self-rated health, involvement in the planning of own working hours, time of the day where they were usually working, or use of medication for cardiovascular diseases.</li> <li>7. The degree of baseline involvement in the planning of own working hours was negatively associated with the risk of dropout from the study.</li> </ol>

[15]: Nielsen & Randall (2012)	<p><b>Omnibus Contexts:</b> 1. Participants were employees in two Danish elder care centres; Denmark. 2. Employees already worked in groups before the team implementation. 3. There were difficulties maintaining and recruiting staff and high absence levels.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) planning and implementing team works as team members were jointly responsible for allocating tasks among themselves and deciding how they should be carried out and B) attending regular team meetings to support the joint decision-making and problem-solving.</p> <p><b>Perception Mechanisms:</b> Perception of employees in the form of perceived changes in procedures.</p> <p><b>Content Mechanisms:</b> The shift changing from working in groups to functioning as teams</p>	<ol style="list-style-type: none"> <li>Changes in procedures reported at T2 (18 months after implementing teams) were positively related to autonomy at T2, wellbeing T2, and job satisfaction T2.</li> <li>Participation at T2 was positively associated with social support at T2.</li> <li>Having participated in the planning and implementation of teamwork predicted the degree to which employees experienced changes had been introduced at follow-up.</li> <li>Autonomy and job satisfaction at T1 significantly predicted participation at T2.</li> <li>Wellbeing levels before the interventions predicted changes in procedures at T2.</li> <li>The higher the level of social support that employees reported having before team implementation the fewer changes in procedures they reported having introduced.</li> <li>Autonomy at T2 significantly predicted affective wellbeing and job satisfaction (T2).</li> <li>In summary, social support, autonomy and job satisfaction at baseline level predicted the degree to which employees reported changes in procedures and this was fully mediated by the degree to which employees reported that they had participated in the planning and implementation of teamwork.</li> </ol>
[16]: Nielsen & Randall (2009)	<p><b>Omnibus Contexts:</b> 1. Participants were employees in the elderly care sector in a large Danish local government organisation; Denmark. 2. There were pre-intervention poor social support, lack of role clarity, and meaningful work.</p>	<p><b>Process Mechanisms:</b> 1. Middle management support in the form of support and active involvement in team implementation.</p> <p><b>Perception Mechanisms:</b> Employees' perceptions of their middle managers' support and active involvement in team implementation.</p> <p><b>Content Mechanisms:</b> The role clarity, meaningful work, and social support</p>	<ol style="list-style-type: none"> <li>Significant paths existed between self-reported working conditions (role clarity, meaningful work, and social support) at time 1 (before the implementation of Teams) and employees' ratings of their middle manager's active involvement in implementing teams. This active involvement predicted working conditions at time 2 (18 months after team implementation).</li> <li>A direct path existed between working conditions at time 1 and working conditions at time 2: this indicated partial mediation.</li> <li>Working conditions at time 2 significantly predicted wellbeing and job satisfaction at time 2, after controlling for baseline levels of job satisfaction and wellbeing.</li> </ol>
[17]: Niks et al. (2018)	<p><b>Omnibus Contexts:</b> 1. Participants were health care staff in a multi-located Dutch general hospital; The Netherlands.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) attending brainstorm sessions about possible work-oriented interventions and B) making decisions about action plans. 2. Senior management support in the forms of: A) making decisions about action plans and implementation of them in close consultation with other stakeholders and B) tailoring the intervention to the organisational contexts and individuals within it.</p> <p>3. External consultants/researchers support in the forms of: A) holding meetings to provide feedback about the identified psychosocial risks to management and B) providing support in developing and implementing unit-specific interventions.</p> <p><b>Content Mechanisms:</b> Job resources, recovery, and job demands.</p>	<ol style="list-style-type: none"> <li>In cases study 1 (Nursing Department), a positive change between Time 1 (October 2011) and Time 2 (January 2013) in emotional resources, physical resources, and cognitive detachment for members of the intervention group relative to the comparison group. A similar effect was found for work break conditions at Time 2. A decrease in concentration problems in the intervention group between Time 1 and Time 3 (November 2013) relative to the comparison group.</li> <li>In case study 2 (Laboratory), positive changes in the emotional resources and teamwork as well as work satisfaction and team performance between Time 1 and Time 2 for members of the intervention group relative to the comparison group. The positive changes in emotional resources and team performance for members of the intervention group effects were also found for at Time 3.</li> </ol>
[18]: Nylén et al. (2017)	<p><b>Omnibus Contexts:</b> 1. Participants were employees in a social service organisation; Sweden.</p> <p><b>Discrete Contexts:</b> 1. There were seasonal variations in</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) attending in four 3-hour workshops scheduled in a sequence with an interval of around a month in-between workshops and B) developing action</p>	<ol style="list-style-type: none"> <li>For demands, that quantitative role overload decreased significantly post-intervention.</li> <li>Among job resources, social support decreased between the two time points.</li> </ol>

	terms of workload between baseline and follow-up which resulted in a higher workload at follow-up.	plans and implementing action plans. 2. Middle management support in the forms of: A) attending four 3-hour workshops scheduled in a sequence with an interval of around a month in-between workshops and B) developing action plans and implementing action plans. 3. External consultants/researchers support in the form of supporting the intervention by researchers and consultants.	3. In terms of work-related attitudes, that employee turnover intention increased significantly over time.
[19]: Oude Hengel et al. (2012)	<b>Omnibus Contexts:</b> 1. Participants were construction workers; The Netherlands.	<b>Process Mechanisms:</b> 1. External consultants/researchers support in the forms of: A) providing individual training to employees focusing on physical health by a physical therapist and B) providing interactive empowerment trainings to employees focusing on mental health by an empowerment trainer. 2. Participation of employees in the forms of: A) filling in the Rest-Break tool and discussing the results with their supervisor and B) attending two interactive empowerment training sessions; in the first session, employees developed an action plan and after four months, at the second empowerment training session, employees and the empowerment trainer evaluated the action plan and results. 3. The implementation fidelity and/or adherence in the form of: A) dose received: 39% of the workers followed less than three training sessions and less than 50% of workers filled in the Rest Break Tool and B) dose delivered: the physical therapist did not deliver all training sessions individually, and the empowerment trainer did not always involve the supervisor in the training sessions.	1. No significant intervention effects were found for work engagement and the accompanying subscales (i.e. vigour, dedication, and absorption) at three, six and 12 months. 2. The intervention did not result in significant effects on social support at work, neither on social support from colleagues nor on social support from the supervisor. 3. Construction workers in the intervention group experienced a slightly higher physical workload at 6 months follow-up compared to the construction workers in the control group. 4. No overall effect or an effect at any of the time measurements was found for the need for recovery.
[20]: Schelvis et al. (2016)	<b>Omnibus Contexts:</b> 1. Participants were teaching and non-teaching employees and their managers in two secondary vocational education and training schools; The Netherlands. 2. In school A, the culture was characterised by a distant relation between management and 'shop floor' and lacking mutual trust; in school B, some of the employees felt that over the years formerly friendly hierarchical relations had developed into business relations, constructing 'a culture of fear'. 3. Senior managers in one school doubted the decision to conduct the intervention project at all because they saw it as interfering with an organisational goal that was an ongoing transition toward self-managing teams. <b>Discrete Contexts:</b> 1. School A had more capacities (e.g., more stability in management during intervention) to implement the action plan than school B. 2. At both schools, unexpected events negatively interfered with the implementation process over the course of 24 months. 3. In one school, there were information meetings between the management team and employees.	<b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) involving in formulating the action plans and B) targeting the right problem in the workplace. 2. Senior management support in the form of: A) committing to the intervention at the start. 3. Middle management support in the forms of: A) committing to the intervention at the start and B) formulating the action plans and implementing them. 4. Communication in the form of: A) communicating the action plans to the employees by the management team. 5. The implementation fidelity and/or adherence in the forms of: A) fidelity: the three major intervention steps were executed as planned in both schools and B) dose received: the majority in school A and B did participate in the intervention. <b>Perception Mechanisms:</b> Perception of employees and middle managers in the form of perceived intervention as positive or negative.	1. The needs assessment phase was implemented successfully in school A, but not in school B where participation and readiness for change were insufficient. In the second phase, several intervention activities were implemented at school A, whereas this was only partly the case in school B. In both schools, however, participants felt not involved in the choice of intervention activities (targeting, participation, support), resulting in a negative perception of and only partial exposure to the intervention activities. 2. In both schools, overall satisfaction with the implementation of the action plan was poor.

[21]: Schelvis et al. (2017)	<b>Omnibus Contexts:</b> 1. Participants were teaching and non-teaching staff in two Vocational Education and Training (VET) schools; The Netherlands.	<b>Process Mechanisms:</b> 1. Participation of employees in the form of developing actions for happy and healthy working. 2. Middle management support in the form of implementing the actions. 3. External consultants/researchers support in the form of supervising needs assessment. 4. The implementation fidelity and/or adherence in the form of dose received as there were high intervention compliers in phase 1 (participated in two or three of the intervention's first phase elements).	<ol style="list-style-type: none"> <li>1. No significant intervention effects were found on the primary outcomes need for recovery and vitality.</li> <li>2. For most of the secondary outcomes no intervention effect was found either, except for absorption (a subscale of work engagement) and organisational efficacy. The intervention group scored on average over time significantly lower on absorption than the control group. The intervention group scored on average over time, significantly lower on organisational efficacy than the control group.</li> <li>3. The high compliers scored on average over time significantly higher on occupational self-efficacy than the control group.</li> </ol>
[22]: Schneider et al. (2019)	<b>Omnibus Contexts:</b> 1. Participants were physicians and nurses in a tertiary referral hospital; Germany.	<b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) attending ten 90-min meetings, termed health circles; B) identifying adverse working conditions and develop contextualised action plans and implementing them; and, C) tailoring action plans to be fit with the local context.	<ol style="list-style-type: none"> <li>1. No significant changes were observed in mean daily ED workload, workflow interruptions by patients, and respondents' time spent in personal breaks. Intra-professional interruptions (e.g., nurse interrupts nurse) decreased before the intervention, whereas inter-professional interruptions (e.g., nurse interrupts physician) significantly increased after the intervention.</li> <li>2. At follow-up, the proportion of ED respondents with reported emotional exhaustion (75.6%) and depressive symptoms increased (34.1%). Both trends were not statistically significant. Depersonalisation significantly increased over time. Respondents further reported less job satisfaction and higher turnover intentions at follow-up. However, mean daily work stress did not change significantly.</li> <li>3. The frequency of medical errors and overall ED patient safety remained stable over time. However, significant changes in patient-perceived quality of care were observed. Ratings of waiting time declined before the intervention, but improved significantly after the intervention. Patient's overall satisfaction with ED care remained stable at a high level. Daily ED workload negatively predicted overall patient satisfaction.</li> </ol>
[23]: Sørensen & Holman (2014)	<b>Omnibus Contexts:</b> 1. Participants were knowledge workers (i.e. cognitively demanding jobs involving knowledge) across six organisations; Denmark.	<b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) in the action planning phase, attending a workshop with managers and developing the workplace change initiatives and B) in the implementation phase, implementing changes with initiative leaders. 2. External consultants/researchers support in the forms of: A) in the preparation phase, informing employees and managers about the intervention, gaining acceptance for it, and discussing budget and planning issues by the researchers and B) in the action planning phase, facilitating action planning workshops by the researchers. 3. The implementation fidelity and/or adherence in the form of dose delivered and received that were realised by differences in type, extent, and speed of initiative implementation, such that there was a high-implementation group, a medium-implementation group, and a non-implementation group. <b>Content Mechanisms:</b> Task uncertainty, task ambiguity, job complexity, and task interdependencies.	<ol style="list-style-type: none"> <li>1. Improvements in relational job characteristics (including manager relationship quality, leadership skills, and leader support) were significantly greater in the high-implementation group with regard to all the relational variables except co-worker support.</li> <li>2. There were no significant changes in the job characteristics: workload and work tempo.</li> <li>3. The change in burnout was significantly higher in the high-implementation group than in the non-implementation group but not significantly different from the medium-implementation group.</li> </ol>

[24]: Tafvelin et al. (2019)	<p><b>Omnibus Contexts:</b> 1. Participants were employees working on active duty in a regional hospital; Sweden. 2. The Kaizen system had been introduced to the organisation.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in three phases of initiation, active, and sustained phases in the forms of: A) identifying and addressing occupational health and safety (OHS) and health promotion (HP) issues using the Kaizen work process and B) analysing all issues from the OSH and HP perspective. 2. Middle management support in the form of enacting Kaizen leadership (i.e., using Kaizen tools in the intervention activities).</p>	<p>1. Employee participation at the initiation phase predicted both job satisfaction and workability 6 months into the active intervention phase. 2. Participation in the initiation phase was related to perceived line manager support 6 months into the active intervention phase. 3. Participation at 12 months (i.e., active intervention phase) predicted job satisfaction at 24 months (i.e., sustained phase). 4. Perceived line manager support in the initiation phase was related to participation 6 months into the active intervention phase, and perceived line manager support at 6 months predicted participation at 12 Months.</p>
[25]: Tsutsumi et al. (2009)	<p><b>Omnibus Contexts:</b> 1. Participants were workers in a medium-sized company producing electrical devices; Japan.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the form of participating in team-based, problem-solving intervention through which employees identified and prioritised their specific needs and developed action plans to improve their work environments.</p>	<p>1. General Health Questionnaire (GHQ) scores remained the same in the intervention group, whereas the GHQ scores deteriorated (increased) in the control group; the change was statistically significant. 2. Health and Work Performance Questionnaire (HPQ) scores increased in the intervention group, but decreased in the control group. 3. With the exception of two lines (b and c), scores on the psychosocial job conditions scale generally improved in the intervention group, in particular, increased job control at lines a and f, and improved supervisor or coworker support at lines e and f were noted. Although there was a line in which the psychosocial job conditions scores slightly improved in the control group (line i), the scores worsened in the remaining lines (g, h, j, and k).</p>
[26]: Uchiyama et al. (2013)	<p><b>Omnibus Contexts:</b> 1. Participants were nurses in general hospitals; Japan.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) participation of employees in action planning and implementing them to improve the work environment and B) attending in 30-minute group meetings to exchange views on their unit's intervention activities. 2. External consultants/researchers support in the form of observing, facilitating, and supporting the whole intervention process by researchers.</p>	<p>1. No significant intervention effect was observed for mental health status. 2. A favourable intervention effect was found in some variables of psychosocial work environment. The intervention group showed a statistically significant increase in the scales of Participatory Management, Job Control and Coworker Support, whereas the control group showed a statistically significant decrease in Goals. There was also a significant increase in Effort in both groups.</p>
[27]: von Thiele Schwarz et al. (2017)	<p><b>Study 1: Omnibus Contexts:</b> 1. Participants were workers in the Danish Postal Service; Denmark. 2. Pre-intervention levels of employees' wellbeing including high job satisfaction were high. <b>Study 1: Discrete Contexts:</b> 1. Downsizing took place during the intervention. <b>Study 2: Omnibus Contexts:</b> 1. Participants were employees in a county district hospital; Sweden. 2. Pre-intervention levels of employees' wellbeing including high job satisfaction were high. 3. The hospital, two years before the intervention, had introduced Kaizen as a process for continual improvements.</p>	<p><b>Study 1: Process Mechanisms:</b> 1. Participation of employees in the forms of using Kaizen boards (a lean tool for participatory continuous improvement) to implement action plans and to ensure integration with existing structures and use tools with which the employees were familiar. <b>Study 2: Process Mechanisms:</b> 1. Participation of employees in the forms of using Kaizen that involves greater integration of organisational and employee objectives.</p>	<p><b>Study 1:</b> 1. Better baseline level of mental health was associated with more use of Kaizen board in Group 1* and 2*. 2. Higher baseline level of job satisfaction was significantly related to increased use of Kaizen board, but only in Group 2*. 3. The use of Kaizen boards predicted improved participants' awareness of and capability to manage their psychosocial work environment (i.e. improved psychosocial risk management), and this, in turn, was related to higher job satisfaction and better mental health. *During the first year, Group 1 received the intervention supported by the internal consultant (active phase) while Group 2 remained on the waitlist. After the first follow-up, Group 1 continued with the intervention but without the support of the internal consultant (the sustainable phase) while Group 2 entered the active phase. <b>Study 2:</b> 1. For the intervention group, the hypothesised paths from Kaizen work at T0 (baseline) to integration at T1 (12 months after baseline) and from integration at T1 to both outcomes (job satisfaction and discomfort with work) at T2 (24 months after baseline), respectively, were all significant.</p>

			<p>2. Higher job satisfaction at T0 was related to more Kaizen work and a higher degree of integration at T1 in the intervention group.</p> <p>3. The finding that the level of job satisfaction at T1 predicted Kaizen work and integration a year later (at T2) indicates reversed causation between job satisfaction and Kaizen work and integration, respectively, under the intervention condition.</p>
<p>[28]: Yoshikawa et al. (2013)</p>	<p><b>Omnibus Contexts:</b> 1. Participants were supervisory employees in a health insurance company; Japan.</p>	<p><b>Process Mechanisms:</b> 1. Participation of employees in the forms of: A) attending four training, team-based, and problem-solving workshops; B) developing action plans to improve work environment; and, C) tailoring the intervention by identifying ‘good features’ of the workplaces and ‘improvement actions’ by applying the Mental Health Action Checklist (MHACL) to their workplaces.</p> <p><b>Content Mechanisms:</b> Actions areas of participation in work planning and sharing of information, working time, work organisation, ergonomic work methods, workplace physical environment, mutual support at work, and preparedness and care.</p>	<p>1. Two-thirds of the participants were satisfied with the group work results and the participatory workshops. About 70% of the participants replied that the training was effective.</p> <p>2. Post-training follow-up survey showed that participatory, action-oriented training facilitated sharing of feasible measures and mutual support, leading to the development of measures easily introduced and established at each workplace.</p>