An integrated realist evaluation model for evaluating organisational interventions

ABSTRACT

Organisational interventions are the recommended approach for improving employees' health and wellbeing, but evaluating these complex interventions is challenging. Realist evaluation is a promising approach for evaluating interventions, it aims to answer the question of 'what works for whom in which circumstances?' by studying how the mechanisms of an intervention work in a certain context to bring about certain outcomes in Context-Mechanism-Outcome (CMO) configurations. Based on realist evaluation, Nielsen and Abildgaard (2013) proposed a five-phase model to evaluate organisational interventions. We extend the five-phase model to capture more intervention components and align better with realist evaluation. First, to include further crucial intervention components to evaluate, we integrate the content of the RE-AIM framework into the five-phase model. Second, we provide guidance on when and how to develop and test CMO configurations for each intervention component. Thus, we develop an 'integrated realist evaluation model'. Also, we review the most recent evidence in the literature regarding each intervention component and develop an example of a CMO configuration for each component. As such, this article contributes to the understanding of 'how to' evaluate complex organisational interventions that can be used to design, implement, and evaluate future organisational interventions.

Keywords:

Participatory organisational interventions; realist evaluation; process evaluation; outcome evaluation; Context-Mechanism-Outcome configurations

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The recommended approach for improving employees' health and wellbeing is organisational interventions that seek to improve psychosocial working conditions and employees' health and wellbeing (EU-OSHA, 2016; ILO, 2001). These 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: 1030). Evaluating such interventions is challenging. First, interventions are implemented in complex organisational contexts, in which actors (i.e., managers and employees) at different organisational levels have different needs and resources, and these needs and resources change over time (von Thiele Schwarz et al., 2016). Second, organisational interventions work through different processes and content (e.g., the process of planning and implementing action plans and the content of action plans). These processes and content emerge or change during the intervention (Nielsen et al., 2014). Therefore, when evaluating organisational interventions, the ongoing, complex interactions between the interventions and their contexts within and surrounding the organisations must be studied to understand the often mixed outcomes of organisational interventions in order to inform future organisational interventions (Nielsen & Randall, 2013). Acknowledging this complexity, some work psychology scholars have adapted approaches and frameworks from other disciplines to enable the evaluation of complex organisational interventions. In this article, we integrate two well-known intervention evaluation models; the five-phase model by Nielsen and Abildgaard (2013) and the RE-AIM framework by Glasgow et al. (1999), to develop an integrated evaluation model that will advance our understanding of 'in which' contexts 'what' intervention components result in positive outcomes. The aim of the article is to contribute to the understanding of 'how to' evaluate complex organisational interventions that can be used to design, implement, and evaluate future organisational interventions.

In a recent critical review, Nielsen and Miraglia (2017) argued that complex organisational interventions can be evaluated using realist evaluation (Pawson & Tilley, 1997). Realist evaluation has primarily been applied in healthcare (Marchal, van Belle, van Olmen, Hoerée, & Kegels, 2012) and policy research (Pawson, 2013). Realist evaluation aims 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 an intervention is effective?), and how these mechanisms produce intended and/or unintended Outcomes (what are the observed patterns of outcomes?). The relationship between Contexts, Mechanisms, and Outcomes is developed into Context-Mechanism-Outcome (CMO) configurations where Contexts + Mechanisms = Outcomes (Pawson & Tilley, 1997). Based on CMO configurations, realist evaluation requires four steps to evaluate interventions. First, developing initial CMO configurations, which are hypotheses about how different components of the intervention are supposed to work and what the expected outcomes are. Second, designing and implementing the intervention based on the initial CMO configurations (i.e., ensuring the design and implementation is consistent with these hypotheses) and collecting empirical data that enables these CMO configurations to be tested. Third, analysing and synthesising data on the actual intervention implementations and developing empirically based CMO configurations based on this data. Fourth, testing the initial CMO configurations against the empirical CMO configurations to confirm, modify, refute, or reconstruct the initial CMO configurations (Pawson & Tilley, 1997, 2004).

Based on realist evaluation, Nielsen and Abildgaard (2013) developed a five-phase model to evaluate complex organisational interventions. The model contains the phases of preparation, screening, action planning, implementation, and evaluation. In *the preparation phase*, different intervention stakeholders including senior managers, middle managers,

employees, and consultants develop the intervention strategy and create readiness and support for the intervention. In the *screening phase*, the assessment of adverse psychosocial working conditions is conducted to get an overview of the current situation to identify and prioritise which problems to focus on. In *the action planning phase*, the identified problems are prioritised and with the participation of employees in structured meetings and workshops, action plans are developed on how to improve psychosocial working conditions and employees' health and wellbeing. In *the implementation phase*, intervention members implement the action plans, monitor the implementation of the plans, and discuss whether modifications or additional plans are needed. Finally, in *the evaluation phase*, both the implementation process and intervention outcomes are evaluated. As shown in Table 1, there are several intervention components in each phase. The five-phase model (Nielsen, Randall, Holten et al., 2010; Nielsen & Abildgaard, 2013) considers different categories for mechanisms, contexts, and outcomes of organisational interventions to answer the question of 'what works for whom in which circumstances?'. Mechanisms may be 'content mechanisms' that relate to 'what to change' (i.e., adverse psychosocial working conditions) or 'process mechanisms' that relate to 'how to make the change' (i.e., the coordinated sequence of intervention activities required to achieve the intervention's desired outcomes). Contexts may relate to the general intervention setting (e.g., existing working conditions, existing employees' health and wellbeing) referred to as 'omnibus contexts' or to the concurrent changes taking place during the intervention period (e.g., downsizing of the organisation, budget cuts, mergers) referred to as 'discrete contexts'. Lastly, outcomes may be (1) proximal outcomes (i.e., results of the change process that immediately arise such as changes in awareness of the psychosocial working conditions), (2) intermediate outcomes (i.e., results of the change process concerning the psychosocial working conditions such as changes in job

autonomy), and (3) distal outcomes (i.e., overall goals and impacts of the intervention such as changes in employees' health and wellbeing).

The five-phase model, however, is not without its challenges. First, this model needs to capture further crucial intervention components to evaluate. Such more intervention components improve the understanding of 'when to' and 'what to' look at when evaluating organisational interventions, this helps to develop and test more CMO configurations that, in turn, provides a more valid answer to the question of 'what works for whom in which circumstances' regarding organisational interventions. In particular, the five-phase model should capture the recruitment process of organisational units (a *mechanism*), implementation process (in terms of what was planned and what actually took place) (*mechanisms*), participation in the intervention (a *mechanism*), and maintenance of the intervention (a *mechanism*). To capture further crucial intervention components, the five-phase model can be enriched by integrating the content of another intervention evaluation framework, namely, the RE-AIM framework (hereon referred to as RE-AIM) (Glasgow et al., 1999) into its five phases. RE-AIM was primarily developed to evaluate the public health impact of community-based, health-promoting interventions (Jenny et al., 2015). RE-AIM has five dimensions of Reach, Effectiveness, Adoption, Implementation, and Maintenance. *Reach* captures the recruitment process and personal characteristics of intervention participants highlighting their representativeness. *Effectiveness* measures both intended and unintended intervention outcomes including behavioural outcomes and quality of life. *Adoption* captures the recruitment process and characteristics of both participating organisational units and intervention agents (who provide the intervention including managers) highlighting their representativeness. *Implementation* assesses intervention fidelity, adaptations made to the intervention, consistency of intervention delivery across different organisational units and intervention participants, and related costs of the intervention. And, *Maintenance* assesses the

extent to which the intervention is institutionalised and sustained over time. Together, since RE-AIM provides specific criteria for recruiting organisational units, implementation process, participation in the intervention, and maintenance of the intervention, integrating RE-AIM into each phase of the five-phase model results in a larger set of intervention components to evaluate.

Second, the five-phase model does not follow the four steps of realist evaluation, i.e. developing initial CMO configurations, collecting data, analysing and synthesising data, and testing initial CMO configurations. Developing and testing CMO configurations helps to understand what goes on in the intervention, in terms of how objective aspects of the implementation process (e.g., who get access to what? who is exposed to what?) influence the reasoning and behaviour of intervention participants which in turn determines the intervention outcomes. As such, applying the process of developing and testing CMO configurations in organisational intervention research is important as it helps to accumulate consistent, valid empirical evidence, which may be synthesised and used to increase the likelihood of future interventions succeeding.

In the first section of this article, we integrate the content of RE-AIM dimensions into the five-phase model, thus, we develop an 'integrated evaluation model'. Then, in the second section, we provide guidance on when and how to develop and test CMO configurations for each intervention component, hence, we develop an 'integrated realist evaluation model'. In the second section, also, as done by Nielsen and Abildgaard (2013), we provide the most recent evidence in the organisational intervention literature regarding each intervention component and develop an example of a CMO configuration for each component. Our integrated realist evaluation model improves the understanding of 'what works for whom in which circumstances?' regarding organisational interventions by addressing the intervention contexts, implementation process containing various mechanisms, and intervention outcomes.

INTEGRATING THE RE-AIM CONTENTS INTO THE FIVE-PHASE MODEL

The five-phase model lacks clarity on the recruitment process of organisational units, implementation process (in terms of what was planned and what actually took place), participation in various stages of the intervention, and maintenance of the intervention (that can be achieved through aligning the intervention with organisational aims, values, policies, and practices). In this section, we explain the over-arching ideas of the RE-AIM dimensions of Adoption, Reach, Implementation, Effectiveness, and Maintenance and describe how these dimensions can be added to the five-phase model.

The Adoption dimension, at both organisational and individual levels, captures the recruitment process of participating organisational units and intervention agents (i.e., managers) (Gaglio, Shoup, & Glasgow, 2013). Similarly, *the Reach dimension*, at the individual level, captures the recruitment process of intervention participants (i.e., employees) (Gaglio et al., 2013). Identifying both the Adoption and Reach is important as they improve the understanding of why different organisational units and organisational actors (i.e., managers and employees) decide to accept or decline to participate or engage in the intervention. For instance, some organisational units may not participate in an organisational intervention due to conflicting priorities (Arapovic-Johansson et al., 2018). Since the interventions aim to change adverse psychosocial working conditions at the organisational level (rather than at the individual level, Nielsen, 2013), it is important to evaluate how the organisational units with adverse psychosocial working conditions were selected and recruited (Gupta et al., 2018; von Thiele Schwarz, Nielsen, Stenfors-Hayes, & Hasson, 2017). As such, the recruitment process of organisational units, not covered in the five-phase model, should be documented and analysed as a *mechanism* of a CMO configuration in *the preparation phase* of the intervention. We explain how to develop a CMO configuration for each intervention component in section 2.

The Adoption and *Reach dimensions* also require the documentation of characteristics of organisational units, intervention agents (i.e., managers), and intervention participants (i.e., employees) (Gaglio et al., 2013). In organisational intervention evaluation, these pre-intervention characteristics of organisational units, managers, and employees are considered as omnibus contextual factors, and it is important to document and evaluate how omnibus contextual factors have influenced the intervention (Nielsen & Miraglia, 2017). Organisational intervention studies have identified important omnibus contextual factors. At the individual level, for instance, Nielsen et al. (2006) reported that employees with little formal education found it challenging to engage in participatory processes and Bond et al. (2008) found psychological flexibility important for successful intervention outcomes. At the organisational level, for instance, poor pre-intervention working conditions and wellbeing have been shown to limit implementation processes (Taris et al., 2003). As such, pre-intervention characteristics of organisational units (e.g., culture, physical working environment, psychosocial working conditions, availability of resources), managers (e.g., management style, knowledge, skills, previous experience with organisational interventions, work experience), and employees (e.g., physical and mental health conditions, previous experience with organisational interventions, psychological flexibility, level of arousal and energy, individual resources), partially covered in the five-phase model, should be documented and analysed as *omnibus contextual factors* of CMO configurations in *the screening phase* of the intervention.

The Implementation dimension, at the organisational level, refers to the measurement of intervention fidelity, adaptations made to the intervention, consistency of intervention delivery across different organisational units and intervention participants, and related costs of the intervention (Gaglio et al., 2013). Monitoring and evaluating the implementation process is important as it improves the understanding of perceptions and reactions of

intervention participants to the implementation process that in turn affect the intervention outcomes (Pawson & Tilley, 2004); for instance, it can help identify what adaptations were made to the intervention, why the intervention was not implemented as intended, why managers did not hold workshops and meetings, why employees did not attend meetings and workshops, and why employees did not implement the action plans. Therefore, in organisational intervention evaluation, it is important to monitor the implementation process by measuring (1) intervention fidelity (i.e., the extent to which the intervention delivered was consistent with its protocol), (2) dose delivered (i.e., the extent to which the number or amount of planned activities was actually delivered by intervention agents), and (3) dose received (i.e., the extent to which intervention participants were receptive to the activities, materials, resources, and techniques recommended by the intervention); then identify why there were differences (if any) between what was planned and what actually took place (Gupta et al., 2018; Oude Hengel, Blatter, Joling, van der Beek, & Bongers, 2012; Schelvis et al., 2016). As such, fidelity and dose, partially covered in the five-phase model, should be measured and analysed as *mechanisms* of CMO configurations in *the implementation phase* of the intervention.

The Effectiveness dimension, at the individual level, measures both intended and unintended intervention outcomes including behavioural outcomes and quality of life (Gaglio et al., 2013). In organisational intervention evaluation, it is recommended to evaluate the effectiveness of an organisational intervention by monitoring the chain of effects in the intervention in terms of changes in attitudes, values, and knowledge, development of individual resources, changes in procedures, changes in psychosocial working conditions, changes in employees' health and wellbeing, changes in quality and productivity, and changes in occupational safety and health practices (Nielsen & Abildgaard, 2013). As such, the effectiveness of the intervention in terms of the chain of effects revealing both intended

and unintended effects, covered in the five-phase model, should be evaluated as *outcomes* of CMO configurations in *the evaluation phase* of the intervention. In addition, *the Effectiveness dimension* at the organisational level requires measuring attrition, that is, the loss of study units from a sample over the intervention period (Gaglio et al., 2013). Measuring attrition based on employees' responses to surveys at several stages of the intervention helps to determine if and why any particular groups of employees (e.g., women, older workers) decided to drop out of the intervention (Hasson et al., 2014; Niks, de Jonge, Gevers, & Houtman, 2018). Hence, attrition, not covered in the five-phase model, should be documented and analysed as a *mechanism* of a CMO configuration in *the implementation phase* of the intervention. Further, *the Effectiveness dimension* measures the effectiveness of the interventions at individual and organisational levels. In organisational intervention evaluation, this approach is operationalised by identifying intervention effects across Individual, Group, Leader, and Organisational (IGLO) levels (Nielsen, Stage, Abildgaard, & Bauer, 2013). Therefore, intervention effects across IGLO levels, covered in the five-phase model, should be evaluated as *outcomes* of CMO configurations in *the evaluation phase* of the intervention.

Finally, *the Maintenance dimension*, at the organisational level, refers to the extent to which the intervention is institutionalised into the every-day operation of the organisation and maintained over time (Gaglio et al., 2013). Determining maintenance of the intervention helps to ensure that changes in organisation policies and practices are contextualised and maintained over time resulting in long-term improvements in the psychosocial working conditions and in employees' health and wellbeing (Nielsen & Noblet, 2018). For instance, in a systematic realist review, Higgins et al. (2012) concluded that proactive organisational procedures in the management of sickness absence (e.g., implementing sickness absence policies that include flexible working arrangements) is a vital mechanism for reducing

employees' long-term sickness absence. In organisational intervention evaluation, the maintenance of the intervention is determined by (1) the extent to which the intervention was aligned with organisational aims and values, implying strategic alignment, and (2) the extent to which the intervention was aligned with organisational policies and practices, implying operational alignment (von Thiele Schwarz & Hasson, 2013). Therefore, the alignment of the intervention with organisational aims and values, not covered in the five-phase model, should be documented and analysed as a *mechanism* of a CMO configuration in *the preparation phase* of the intervention; because if senior managers do not see the intervention aligned with aims and values of their organisation, they may not initiate or support the intervention (Schelvis et al., 2016). Also, the alignment of the intervention with organisational policies and practices, not covered in the five-phase model, should be documented and analysed as a *mechanism* of a CMO configuration in *the action planning phase* of the intervention where the aligning process can be facilitated by action plans that consider possibilities and constraints in the organisation to make the intervention practically fit (von Thiele Schwarz & Hasson, 2013). In addition, *the Maintenance dimension*, 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). Hence, intervention effects at various time points, covered in the five-phase model, should be evaluated as *proximal, intermediate, and distal outcomes* of CMO configurations in *the evaluation phase* of the intervention.

Table 1 shows where the content of each RE-AIM dimension is added to the five-phase model in our integrated realist evaluation model. In the next section, we explain how to develop CMO configurations for each intervention component.

Insert Table 1 about here

THE INTEGRATED REALIST EVALUATION MODEL

Our integrated realist evaluation model 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 (containing various process and content mechanisms) and the intervention contexts (containing both omnibus and discrete contextual factors) trigger managers' and employees' individual and collective reasoning and reactions (e.g., individual and collective self-efficacy) that gradually produce changes in the psychosocial working conditions and employees' health and wellbeing (Nielsen & Miraglia, 2017; Pawson & Tilley, 1997).

As shown in Figure 1, in our model based on the realist evaluation cycle (Pawson & Tilley, 2004), developing initial CMO configurations (as the first step) takes place before the intervention. Then, based on the initial CMO configurations, the intervention is designed and implemented to collect empirical data to test these CMO configurations. Hence, data collection (as the second step) and data analysis and synthesis (as the third step) take place during the implementation process till the implementation process is completed and outcomes are measured. Finally, testing initial CMO configurations (as the fourth step) is conducted to confirm, refute, or refine initial CMO configurations against empirical CMO configurations.

Insert Figure 1 about here

Evaluation

Step 1: Developing Initial CMO configurations. To develop initial CMO configurations before the intervention, data can be collected from various sources including previous intervention studies, academic literature, grey literature (i.e., non-academic and non-commercial), national policies, and interviews with researchers, occupational health practitioners, policymakers, and organisational actors including managers and employees (Pawson & Tilley, 2004). Then, these data are analysed based on a mode of inference referred to as 'retroduction' in which mechanisms, contexts associated with such mechanisms, and possible outcomes are identified based on their causal relationships

(Greenhalgh et al., 2017). Using the identified contexts, mechanisms, and outcomes, various initial CMO configurations are developed which may be presented as: *'**if** there are specific contextual factors, **then** specific mechanisms produce specific outcomes'*. These initial CMO configurations represent 'what *might* work for whom in which circumstances?'.

Step 2: Data collection. To test the initial CMO configurations, empirical data are collected for all intervention components (that were integrated from the five-phase model and RE-AIM) during the preparation, screening, action planning, and implementation phases. To collect empirical data, Pawson and Tilley (2004) suggested that different methods including interviews with intervention stakeholders, dedicated before-and-after intervention measures, focus groups, and process tracking should be used by researchers to search for the best data to test out the initial CMO configurations. Besides, Pawson and Manzano-Santaella (2012) suggested using a mixed-method, balanced approach to collect data because each CMO element may require a specific method. They argued that identifying mechanisms requires qualitative evidence, identifying contexts requires comparative and/or historical data, and observing how mechanisms are linked to outcomes requires quantitative data.

Step 3: Data analysis and synthesis. 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 (Pawson and Tilley, 2004). To analyse and synthesise empirical data, researchers can use different data analysis methods which are suitable based on the data collection methods and the nature of collected data (Pawson and Tilley, 2004). More specifically, Marchal et al. (2012) proposed that although qualitative data should be analysed by thematic content analysis using the themes of contexts, mechanisms, and observed outcomes, quantitative data should be analysed. The empirical CMO configurations developed based on the observed patterns of outcomes represent 'what *worked*

for whom in which circumstances?'. In the following, we develop an example of a CMO configuration for each intervention component.

Preparation

Developing CMO configurations about recruiting organisational units (a mechanism) and organisational readiness for change (contexts). To evaluate an organisational intervention, the recruitment process of the organisational units with adverse psychosocial working conditions (from RE-AIM) and organisational readiness for change (from the five-phase model) should be identified as these influence organisational actors' appraisal of and engagement in the intervention and ultimately intervention outcomes (Abildgaard, Nielsen, & Sverke, 2018; Nielsen & Randall, 2009; Sørensen & Holman, 2014). Organisational readiness for change refers to organisational actors' shared resolve and belief in their collective capability to implement the intervention (Weiner, 2009). From a realist evaluation perspective, it is important to determine how the organisational units with adverse psychosocial working conditions 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 decided to accept or decline to participate in the intervention (*mechanisms*); which and how contextual factors facilitated and impaired the recruitment process (*contextual factors*); what contextual factors influenced organisational readiness for change (*contextual factors*); and, how the recruitment process and organisational readiness to change affected employees' and managers' perceptions of and participation in the intervention (*outcomes*).

The literature shows that various *omnibus contextual factors* associated with organisational readiness for change facilitate or impair participation in the intervention and influence intervention *outcomes*. First, pre-intervention levels of employees' health and wellbeing including a high job satisfaction (*contextual factors*) have a positive influence on

participation (*outcome*) (von Thiele Schwarz et al., 2017). Second, pre-intervention working conditions including a high level of job autonomy, a good level of interpersonal relations, high coordination of work tasks, and a high level of management and co-workers support (*contextual factors*) are positively associated with participation (*outcome*) (Nielsen et al., 2006; Nielsen and Randall, 2013). Third, previous experience with change processes and resultant positive appraisal of change processes (*contextual factors*) increase the enthusiasm about the intervention (*outcome*) (Framke et al., 2019). Fourth, the change valence (i.e., the extent to which organisational actors collectively perceive the change as needed, important, or worthwhile) (a *contextual factor*) is positively related with participation (*outcome*) (Weiner, 2009). Fifth, a shared understanding of the needed changes among middle managers and their employees (a *contextual factor*) has positive effects on organisational readiness for change and intervention outcomes (*outcomes*) (Hasson et al., 2013). Finally, 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) (a *contextual factor*) is positively associated with participation (*outcome*) (Abildgaard et al., 2020). Given these, an example of a **CMO configuration** could be: **If** organisational units have good working conditions, organisational actors have a moderate to good level of health and wellbeing, and their collective efficacy is high (*contextual factors*); **then** a recruitment process of organisational units in which all intervention actors are informed about the goals and processes of the intervention (a *mechanism*) improves employees' and managers' awareness of and readiness for the intervention and promotes mutual trust *(proximal outcomes)*; it improves managers' and employees' engagement in the intervention and employees' perceived social support *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Developing CMO configurations about multi-level management engagement and support (mechanisms). To evaluate an organisational intervention, managers' onboarding process (from RE-AIM) and their support of the intervention (from the five-phase model) should be determined as these influence employees' participation in the intervention (Jenny et al., 2015). From a realist evaluation point of view, it is important to understand what was done to get managers on board and how managers at all levels supported the intervention (*mechanisms*); which and how contextual factors facilitated or hindered multi-level management onboarding process and their support of the intervention (*contextual factors*); and, how managers' engagement and support improved employees' awareness of, commitment to, and engagement in the intervention (*outcomes*).

The literature shows that multi-level management engagement and support through different *mechanisms* promote intervention *outcomes*. For instance, senior managers may support the intervention by introducing *mechanisms* of (1) committing to the intervention at the start of the intervention (Schelvis et al., 2016), (2) setting health and safety policies (DeJoy, Wilson, Vandenberg, McGrath-Higgins, & Griffin-Blake, 2010), (3) participating in the development and/or implementation of the intervention (Niks et al., 2018), and (4) providing resources and facilitating development and implementation of the intervention (Busch, Koch, Clasen, Winkler, & Vowinkel, 2017; Sørensen & Holman, 2014). Similarly, middle managers may support the intervention by delivering *mechanisms* of (1) committing to the intervention at the start of the intervention (Schelvis et al., 2016), (2) participating in the development and implementation of the intervention (Abildgaard et al., 2018), (3) performing transformational leadership (Lundmark et al., 2017), and (4) supporting and involving in implementing teams (Nielsen, Randall, & Christensen, 2017). These interventions studies reported that these *mechanisms* improve employees' support of, feeling ownership for, and commitment to the intervention, improve psychosocial working

conditions, and improve employees' health and wellbeing and organisational performance *(outcomes).* Therefore, an example of a **CMO configuration** could be: **If** both senior and middle managers have necessary individual resources (e.g., motivation to change, knowledge, skills) and organisational resources (e.g., budget, time), where they have a good level of health and wellbeing (*contextual factors*); **then** multi-level management engagement and support (a *mechanism*) improves employees' support of, feeling ownership for, and commitment to the intervention (*proximal outcomes*); it improves employees' perceived social support and employees' perceived autonomy (*intermediate outcomes*); and it, ultimately, improves employees' health and wellbeing and organisational performance (*distal outcomes*).

Developing CMO configurations about employees' readiness for change (contexts). To evaluate an organisational intervention, employees' readiness for change (from the five-phase model) should be determined and improved as this influences employees' perception of and active engagement in the intervention and ultimately affects intervention outcomes (Jenny et al., 2015; Nielsen & Randall, 2012). Employee readiness for change can be defined as the extent to which an employee is cognitively inclined to accept and participate in the intervention which includes employee's view on whether the intervention is appropriate, whether it is beneficial, and whether she or he supports it (Weiner, 2009). From a realist evaluation perspective, it is important to determine which and how *contextual factors* and *mechanisms* affected employees' perception of, readiness for, and participation in the intervention (*outcomes*). For instance, employees who are already satisfied with their jobs *(*a *contextual factor)* are more ready for change *(outcomes)*. However, paradoxically, where working conditions that the intervention targets to change are already good *(*a *contextual factor)*, employees perceive little need to change and therefore readiness for change is lower *(outcomes)* (Nielsen and Randall, 2011). In addition, managers'

readiness for change *(*a *contextual factor)* is positively associated with employees' readiness for change *(outcome)* (Nielsen and Randall, 2011). Further, managers communicating a clear and positive vision for the future to employees *(*a *mechanism)* has a positive effect on employees' readiness for change *(outcomes)* (Nielsen, Randall, & Christensen, 2010). Thus, an example of a **CMO configuration** could be: **If** managers perceive the intervention as needed, important, and worthwhile and their readiness for change is high, but their employees perceive little need to change and their readiness for change is low (*contextual factors*); **then** improving employees' readiness for change by managers communicating a clear and positive vision for the future to employees (a *mechanism*) improves employees' awareness of and positive appraisal of the intervention *(proximal outcomes)*; it improves employees' engagement in the intervention and their perceived social support *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Developing CMO configurations about aligning the intervention with organisational vision and values (a mechanism). To achieve long-term effectiveness through the institutionalisation of the intervention into the organisation, the alignment of aims and objectives of the intervention with vision and values of the organisation (from RE-AIM) should be determined in the preparation phase (von Thiele Schwarz & Hasson, 2013). From a realist evaluation perspective, it is important to determine how aims and objectives of the intervention were aligned (or so-called philosophical fit) with vision and values of the organisation (*mechanisms*), which and how contextual factors facilitated or impaired the alignment process (*contextual factors*), and how this alignment process was perceived by managers (particularly senior managers) and employees (*outcomes*). The literature shows that aligning the intervention with the vision and values of the organisation (a *mechanism*) works specifically in two ways. First, through affecting the perception of senior managers about the alignment of the intervention with organisational goals (Jenny et al., 2015; Schelvis et al.,

2016). Second, through affecting the perception of middle managers and employees about the alignment of the intervention with their shared values (Nielsen, Randall et al., 2017) (*proximal outcomes*). These perceptions influence management support of and employees' participation in the intervention (*intermediate outcomes*) and ultimately affect employees' health and wellbeing (*distal outcomes*). Hence, an example of a **CMO configuration** could be: **If** there are necessary resources in the organisation for conducting the intervention where managers', employees', and organisational readiness for change are high (*contextual factors*); **then** aligning aims and objectives of the intervention with the vision and values of the organisation (a *mechanism*) improves managers' and employees' positive appraisal of and commitment to the intervention *(proximal outcomes)*; it improves managers' support of the intervention, employees' engagement in the intervention, and employees' perceived social support *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Developing CMO configurations about establishing steering groups and assigning a project champion (mechanisms). Establishing steering groups and assigning a project champion (from the five-phase model) are, respectively, recommended to ensure participation and better management of organisational interventions in (large) organisations (Nielsen et al., 2013). In organisations where steering groups are established and a project champion is assigned, it is recommended to evaluate the influence of the steering groups and the project champion on the intervention outcomes (Abildgaard et al., 2018; Brakenridge et al., 2018; Gupta et al., 2018; Jenny et al., 2015; Nielsen and Randall, 2012). From a realist evaluation perspective, it is important to determine how the steering groups were established, how the project champion was assigned, and how they affected the process of the intervention (*mechanisms*), which and how contextual factors facilitated or impaired the engagement and support of the steering groups and the champion in the intervention

(*contextual factors*), and how successful they were in bringing in employees' and managers' perspectives and engagement in the intervention (*outcomes*).

The literature shows that the champion involvement *(*a *mechanism)* is a key strategy for awareness-raising and culture change *(outcomes)* provided that the champion possesses the personal characteristics, seniority, and skills required by the role *(contextual factors)* (Brakenridge, Healy, Hadgraft, Young, & Fjeldsoe, 2018). Likewise, if the steering groups have necessary autonomy and resources and consist of members with influence and credibility *(contextual factors)*, they can enable employees to contribute opinions and ideas and provide honest feedback *(mechanisms)* that affect intervention outcomes *(outcomes)* (Jenny et al., 2015). As such, an example of a **CMO configuration** could be: **If** the steering groups and the project champion have necessary autonomy and resources including motivation, skills, influence, and credibility (*contextual factors*); **then** steering groups' and the champion's leadership and support of the intervention (*mechanisms*) improve employees' awareness of and commitment to the intervention *(proximal outcomes)*; they improve employees' perceived social support, employees' engagement in the intervention, and organisational culture *(intermediate outcomes)*; and they, ultimately, improve employees' health and wellbeing *(distal outcomes).*

Developing CMO configurations about a communication strategy (a mechanism). Since a communication strategy (from the five-phase model) affects the successful implementation of an organisational intervention, the communication strategy regarding the intervention should be assessed (Eklöf & Ahlborg Jr, 2016; Nielsen & Abildgaard, 2013). From a realist evaluation perspective, it is important to determine what the communication strategy contained and how the communication strategy affected the participatory process of the intervention (*mechanisms*), which and how contextual factors facilitated or impaired effective communication in the organisation about the intervention

(*contextual factors)*, and how employees and managers perceived the communication (*outcomes*). The literature shows that a communication strategy containing rationale behind the intervention, process and progress of the intervention, and expected outcomes, using two-ways communication including both the main and feedback channels of communication (*mechanisms*) (1) raises employees' awareness of the intervention (DeJoy et al., 2010), (2) increases the chance of cognitive appraisal of employees (Nielsen et al., 2014), (3) triggers co-learning processes (Nielsen & Randall, 2012), and (4) increases the quality of action plans which in turn improves working conditions and employees' health and wellbeing (DeJoy et al., 2010; Holman and Axtell, 2016) *(outcomes)*. The literature, also, shows that to trigger an effective communication strategy (a *mechanism*), there should be a climate of trust, openness, and support in the organisation encouraging managers and employees to communicate with each other and not be afraid of retaliation for their communications (particularly employees) (*contextual factors*) (DeJoy et al., 2010). As such, an example of a **CMO configuration** could be: **If** there is a climate of openness, trust, and respect in the organisation where there are enough resources in terms of time, energy, and infrastructure (*contextual factors*); **then** a communication strategy which directs effective communication across the organisation about the intervention (a *mechanism*) improves employees' awareness of the intervention and promotes employees' co-learning *(proximal outcomes)*; it improves organisational culture and employees' perceived social support *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Screening of Adverse Psychosocial Working Conditions

Developing CMO configurations about tailored risk assessment methods (a mechanism). Adverse psychosocial working conditions should be identified by risk assessment methods that are tailored to pre-intervention organisational and individual characteristics (from RE-AIM) (Nielsen et al., 2014). Since organisational interventions

target specific aspects of the psychosocial working conditions to change, the methods employed for risk assessment and their measures (from the five-phase model) influence the perception of managers and employees regarding working conditions, the subsequent steps of the intervention, and ultimately employees' health and wellbeing (Nielsen et al., 2014). From a realist evaluation perspective, it is important to determine which and how risk assessment method with its measures was used to identify adverse psychosocial working conditions (*mechanisms*), which and how contextual factors facilitated or impaired the process of identifying adverse psychosocial working conditions (*contextual factors*), how the process of identifying adverse psychosocial working conditions with its measures affected subsequent *process mechanisms* (e.g., developing action plans and tailoring them to fit), *content mechanisms* (e.g., the content of action plans), and employees' and managers' awareness of and capability to manage adverse psychosocial working conditions (*outcomes*).

The literature shows that using specific qualitative and quantitative risk assessment methods *(mechanisms)* produce specific intervention *outcomes*. For instance, Nielsen et al. (2014) found that using cognitive mapping interviews (to map job resources and demands) and tailored questionnaires (*mechanisms*) improve employees' appraisals of their specific working conditions and make initiatives easier to develop owing to their specificity (*outcomes*). Niks et al. (2018) reported that the DISC-R Model that uses internal benchmarks and external reference groups for diagnosis of adverse psychosocial working conditions (a *mechanism*) results in (1) improvements in employees' perception of their work situation and ownership for the intervention (*proximal outcomes*), (2) positive changes in targeted work-related characteristics including teamwork (*intermediate outcomes*), and (3) improvements in targeted health and wellbeing and performance outcomes such as work satisfaction and team performance (*distal outcomes*). Thus, an example of a **CMO configuration** could be: **If** managers', employees', and organisational readiness for change are high where there are

resources (e.g., time, infrastructure, expertise) (*contextual factors*); **then** using a tailored risk assessment method that measures local psychosocial working conditions (a *mechanism*) improves managers' and employees' awareness of and sensemaking of the psychosocial working conditions *(proximal outcomes)*; it improves developing detailed and contextualized action plans to improve the psychosocial working conditions *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Developing CMO configurations about reporting the results of the risk assessment (a mechanism). Reporting the results of the risk assessment to both employees and managers (from the five-phase model) enable them to make sense of their work environment and psychosocial working conditions (Jenny et al., 2015; Nielsen et al., 2014). From a realist evaluation point of view, it is important to determine how the results of the risk assessment were reported to employees and managers (a *mechanism*), which and how contextual factors facilitated or hindered the reporting process (*contextual factors*), and how the reporting process influenced employees' and managers' perception of the intervention and their sense-making of their working conditions (*outcomes*). The literature shows that reporting the results of the risk assessment to employees and managers (a *mechanism*) facilitates developing concrete action plans (Nielsen et al., 2014), leads to more intervention activities (Eklöf & Ahlborg Jr, 2016), and influences the success of the participatory intervention (Bourbonnais, 2006) (*outcomes*). As such, an example of a **CMO configuration** could be: **If** 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 where employees feel comfortable to speak freely in front of their managers (*contextual factors*); **then**, reporting the results of the risk assessment to both employees and managers through regular meetings where the results can be discussed in the meetings (a *mechanism*) improves employees' and managers'

awareness and sensemaking of the psychosocial working conditions *(proximal outcomes)*; it improves employees' perceived social support and promotes developing concrete action plans *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Action Planning

Developing CMO configurations about the process of action planning (a mechanism). The process of action planning (from the five-phase model) activates certain behaviours of participants, namely their engagement in developing changes in the working conditions and these behaviours determine intervention outcomes (Abildgaard et al., 2020; Nielsen & Miraglia, 2017). From a realist evaluation perspective, it is important to understand how action plans were developed, in particular how employees and managers in a participatory process jointly developed action plans (a *mechanism*), which and how contextual factors facilitated or impaired the participatory process of action planning (*contextual factors*), 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 (*outcomes*).

The literature shows that the processes of action planning (*mechanism*s) affect intervention *outcomes*. For instance, von Thiele Schwarz et al. (2017) found that using the Kaizen system in the participatory approaches to develop and implement action plans (a *mechanism*) increases the level of employees' awareness of and capacity to manage psychosocial issues and their wellbeing (*outcomes*). Sørensen and Holman (2014) reported that developing action plans in workshops and refining these plans by employees' 'initiative leaders' (a *mechanism*) improves relational job characteristics including manager relationship quality, leader support, leadership skills, and co-workers social support (*outcomes*). Given

these, an example of a **CMO configuration** could be: **If** employees' and managers' health and wellbeing are already at a moderate to good level, jobs are well-designed, and there are necessary resources (e.g., motivation, time, infrastructure) to conduct collaborative problem-solving dialogues (*contextual factors*); **then** participatory action planning (a *mechanism*) improves employees' awareness of, feelings ownership for, and commitment to the intervention and empowers employees *(proximal outcomes)*; it improves employees' engagement in the intervention, their perceived autonomy, and their perceived social support *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Developing CMO configurations about the content of action plans (a mechanism). The extent to which employees and (middle) managers collaboratively decide on the content of action plans (from the five-phase model) plays a role in ensuring successful intervention outcomes (Nielsen et al., 2014; Nielsen, Randall, Holten et al., 2010; Nielsen and Randall, 2012). From a realist evaluation perspective, it is important to determine what the content of action plans were to improve employees' health and wellbeing, in particular what were the relevance and importance of the working conditions that were targeted to change (*content mechanisms),* which and how contextual factors influenced the content of action plans (*contextual factors*), and how the content of action plans affected subsequent *process mechanisms* (e.g., implementation of action plans) and employees' and managers' perception of their working conditions and their awareness of and engagement in the intervention (*outcomes*).

The literature shows that changing specific working conditions *(content mechanisms)* produce specific intervention *outcomes*. For instance, Holman and Axtell (2016) found that managing administrative tasks (a *content mechanism*) improves employee job control (*outcome*) and clarifying the performance criteria (a *content mechanism*) improves feedback

(*outcome*). Nielsen and Randall (2012) reported that the focus on changing from working in groups to functioning as teams (a *content mechanism*) improves employees' commitment to change and learning (*outcomes*). Sørensen and Holman (2014) found that targeting task uncertainty, task ambiguity, job complexity, and task interdependencies to change (*content mechanisms*) improve relational job characteristics and burnout (*outcomes*). As such, an example of a **CMO configuration** could be: **If** there are individual resources (e.g., motivation, readiness for change, knowledge, skills) and organisational resources (e.g., time, infrastructure), where employees and managers have shared understanding of psychosocial working conditions (*contextual factors*); **then** jointly determining the content of action plans by targeting adverse psychosocial working conditions to change (a *mechanism*) improves employees' awareness of, sense-making of, and capacity to manage psychosocial working conditions *(proximal outcomes)*; it improves employees' perceived autonomy and perceived social support *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Developing CMO configurations about aligning the intervention with organisational policies and practices (a mechanism). To achieve contextual alignment and long-term effectiveness, intervention activities and action plans should be aligned with organisational policies and practices (from RE-AIM) (Nielsen & Noblet, 2018; von Thiele Schwarz & Hasson, 2013). From a realist evaluation point of view, it is important to determine how the intervention activities and action plans were aligned (or so-called practical fit) with the organisational policies and practices (*mechanisms*), which and how contextual factors facilitated or impaired this alignment process (*contextual factors*), and how the alignment process was perceived by managers and employees that influenced their engagement in the implementation of the intervention (*outcomes*).

The literature shows that to evaluate the effects of aligning the intervention with organisational policies and practices (a *mechanism*) on the intervention *outcomes*, three issues should be determined. First, it should be determined how the intervention was integrated and aligned with the existing management system, primarily quality improving and production systems such as the Kaizen system (a *mechanism*), as this increases the level of employees' awareness of and capacity to manage psychosocial issues and their wellbeing (*outcomes*)(von Thiele Schwarz et al., 2017). Second, it should be determined how the intervention activities and action plans were integrated into the work routine of the organisation (a *mechanism*). For instance, participatory decision-making (a *mechanism*), in addition to focusing on employees' health and wellbeing (a *content mechanism*), can be employed in other organisational processes such as HR practices (a *content mechanism*) to increase productivity (*outcome*) (Nielsen, Nielsen et al., 2017). Third, it should be determined how the alignment of intervention with organisational policies and practices (*mechanisms*) were perceived by managers and employees (*outcomes*). For instance, Nielsen and Randall (2012) reported when changing procedures associated with team implementation (a *mechanism*), the perception of employees in the form of perceived changes of procedures associated with team implementation (*proximal outcome*) positively correlates with their autonomy (*intermediate outcome*) and their affective wellbeing and job satisfaction (*distal outcomes*). Given these, an example of a **CMO configuration** could be: **If** jobs are well-designed, where change valence and collective efficacy are at high levels (*contextual factors*); **then** aligning the intervention activities and action plans with organisational policies and practices (a *mechanism*) improves managers' and employees' positive appraisal of the intervention and capacity to manage psychosocial working issues *(proximal outcomes)*; it improves employees' perceived autonomy *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing and organisational performance *(distal outcomes).*

Implementation

Developing CMO configurations about the process of implementing action plans (a mechanism). The process of implementing action plans (from the five-phase model) triggers certain behaviours of participants, namely their engagement in implementing action plans, and these behaviours produce certain outcomes (Lundmark et al., 2017; Nielsen & Miraglia, 2017). From a realist evaluation point of view, it is vital to understand how action plans were implemented, in particular how employees and managers in a participatory process jointly implemented action plans (a *mechanism*), which and how contextual factors facilitated or impaired the participatory process of implementing action plans (*contextual factors*), and how managers and employees perceived the implementation process that affected their behaviours and resultant intervention outcomes (*outcomes*).

The literature shows that the processes of implementing action plans (*mechanisms*) affect intervention *outcomes*. For instance, Goodridge et al. (2015) outlined that using Lean activities and tools in implementing intervention activities (a *mechanism*) results in employees' participation in the intervention activities, greater decision making, and more visibility of leaders (that leads to leader accountability for implementing Lean) (*outcomes*). DeJoy et al. (2010) reported that implementing action plans by an 'Action Team' (consisting of 8-12 employees from different departments) (a *mechanism*) improves organisational commitment, job satisfaction, and employees' health and wellbeing (*outcomes*). 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 with researchers, employee representatives, team leaders, and managers to discuss the progress of implementation (a *mechanism*) improve employees' job control and wellbeing (*outcomes*). As such, an example of a **CMO configuration** could be: **If** 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 (*contextual factors*); **then** a participatory process of implementing action plans (a *mechanism*) improves employees' feelings ownership for and commitment to the intervention and empowers employees *(proximal outcomes)*; it improves employees' perceived autonomy and perceived social support *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Developing CMO configurations about intervention fidelity (a mechanism). Intervention fidelity (from RE-AIM) is the extent to which the intervention was delivered consistent with its original protocol. This concept of fidelity is not helpful in realist evaluation and it should be re-articulated to show fidelity to initial CMO configurations (Wong et al., 2017). In realist evaluation, fidelity is measured based on the initial CMO configurations, not the intervention original protocol. This means empirical CMO configurations representing 'what *worked* for whom in which circumstances?' are compared with initial CMO configurations representing 'what *might* work for whom in which circumstances?', this comparison is used to confirm, modify, refute, or reconstruct the initial CMO configurations in order to understand 'what *works* for whom in which circumstances?'. (Pawson & Tilley, 2004). In essence, realist evaluation instead of focusing whether an intervention worked or not (i.e., succeeded or failed), focuses on CMO configurations underpinning the interventions and try to use empirical evidence to improve the validity of CMO configurations. From a realist evaluation perspective, to measure intervention fidelity, it is important to determine if and how the intended intervention mechanisms were actually triggered (e.g., if intended participatory action plans were implemented by participation of employees) (*mechanisms*), what predicted contextual factors facilitated or impaired the activation of the intended mechanisms (e.g., if the predicted competing priorities impaired the

intended participatory implementation of action plans) (*contextual factors*), and which intended outcomes were actually produced (*outcomes*).

In the literature, the relationship between intervention fidelity (a *mechanism*) and intervention *outcomes* has been highlighted in some intervention studies. For instance, Oude Hengel et al. (2012) concluded that due to a high level of intervention fidelity (a *mechanism*), a reason for the failure of the intervention (*outcome*) was theory failure, that is, where a perfectly implemented intervention did not produce the intended outcomes as the theory behind the intervention did not address the problem (a hampering *mechanism*). Schelvis et al. (2016) reported that a high level of intervention fidelity (a *mechanism)* resulted in a low level of overall satisfaction (*outcome*) due to other hampering *mechanisms* like lack of employees' involvement in the choice of intervention activities and hindering *contextual factors* like lack of mutual trust. As such, an example of a **CMO configuration** could be: **If** managers and employees have positive appraisals of the intervention and there are necessary organisational resources (e.g., budget, time) and individual resources (e.g., motivation, skills) (*contextual factors*); **then** a high level of intervention fidelity provided that the theory behind the intervention accurately provides solutions to the identified psychosocial working problems (*mechanisms*), retains and increases employees' motivation and excitement to keep the intervention and improves their feeling of moving forward *(proximal outcomes)*; it improves employees' perceived social support *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing *(distal outcomes).*

Developing CMO configurations about dose delivered and dose received (mechanisms). Measuring dose delivered (i.e., how many activities were delivered by intervention providers) and dose received (i.e., the extent to which participants were receptive to the intervention activities) (from RE-AIM) is necessary when interpreting intervention outcomes (Murta et al., 2007). Realist evaluation, however, criticises these terms in two

ways. First, realist evaluation views 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 sensemaking 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 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 that produce outcomes. Hence, combining quantitative and qualitative measures helps to provide a better measurement of dose and ultimately helps with testing CMO configurations. From a realist evaluation perspective, it is important to determine if and how intervention providers including managers, steering groups, and/or external consultants engaged in developing and implementing action plans (e.g., by holding regular meetings with employees, by communicating the progress of the intervention with employees) (*dose delivery mechanisms*), if and how employees participated in developing and implementing action plans (e.g., by attending in regular meetings) (*dose reception mechanisms*), which and how contextual factors facilitated or impaired delivering and receiving dose (*contextual factors*), and how employees perceived their interactions with intervention providers regarding the intervention that affected their behaviours and in turn intervention outcomes (*outcomes*).

In the literature, the relationship between dose levels (*mechanisms*) and intervention *outcomes* is highlighted in some intervention studies. For example, Gupta et al. (2018) reported that 100% dose delivered with 69% dose received (*mechanisms*) did not improve the intended outcomes (*distal outcomes*) since additional burden on the workers who already faced high demands and efforts at work (a *contextual factor*) caused the negative perception

of the intervention (*proximal outcome*). Sørensen and Holman (2014) outlined that higher levels of dose delivered and dose received in an intervention group (*mechanisms*) resulted in greater improvements in relational job characteristics (except co-worker support) compared to other groups *(outcomes)*. Given these, an example of a **CMO configuration** could be: **If** there are necessary organisational resources (e.g., infrastructure, time, budget) and individual resources (e.g., motivation, skills), where a supportive culture and promotive events facilitate the implementation process (*contextual factors*); **then** high levels of dose delivered and dose received by increasing interactions between managers and employees and their engagement in the intervention (*mechanisms*) broaden employees' horizon, promote their sensemaking and reflection, and empower them *(proximal outcomes)*; it improves organisational culture, perceived social support, perceived autonomy, and work engagement *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing and organisational performance *(distal outcomes).*

Developing CMO configuration about attrition (participation) (a mechanism). Measuring the participation level at various stages of the intervention (from RE-AIM) is important to understand the impact of employees' reactions to intervention activities on intervention outcomes (Murta et al., 2007; Nielsen, 2013). In organisational interventions, the proportion of target population (i.e., targeted organisations with their managers and employees) that participate in the intervention (i.e., recruited organisational units with their managers and employees) is referred to as 'reach', 'participation rate', or 'attendance rate', and the loss of participation rate over the intervention period is referred to as 'attrition' (Murta et al., 2007). Attrition (participation) is particularly important for assessing the external validity of intervention effects as it shows the representation of the target population. From a realist evaluation perspective, it is important to determine how and when attrition (participation) was measured and why attrition (participation) changed (if any) during the

intervention (e.g., employees perceived that action plans were not addressing the fundamental problems or action plans could not solve the identified problems) (*mechanisms*), which and how contextual factors facilitated or impaired participation in various stages of the intervention (e.g., lack of time, competing priorities) (*contextual factors*), and how managers and employees perceived changes in attrition (participation) that in turn influenced the intervention outcomes (*outcomes*).

The literature shows that (1) in organisations where employees' wellbeing is poor (*contextual factors*), employees may find it difficult to engage in developing and implementing action plans and (2) in organisations with a high turnover of managers and employees (a *contextual factor*), they may decide to leave the organisations before or during the implementation of action plans; both cases trigger more (less) attrition (participation) (a *mechanism*) (Nielsen & Randall, 2011, 2012). The literature, also, shows that more participation (a *mechanism*) triggers higher exposure to change (a *mechanism*), this increases the perception of changes (*proximal outcome*) (Schelvis et al., 2016), and there is a positive relationship between the perception of changes and employees' autonomy (*intermediate outcome*) and their affective wellbeing and job satisfaction (*distal outcomes*) (Nielsen & Randall, 2012). Therefore, an example of a **CMO configuration** could be: **If** employees and managers have a moderate to good level of health and wellbeing, where they have a low level of turnover (*contextual factors*); **then** a high (low) level of participation (attrition) by increasing exposure to change (*mechanisms*), improves the perception of changes, broadens employees' horizons, and improves their self-efficacy *(proximal outcomes)*; it improves employees' perceived autonomy and work engagement *(intermediate outcomes)*; and it, ultimately, improves employees' health and wellbeing and organisational performance *(distal outcomes).*

Evaluation

Step 4: Testing initial CMO configurations. Based on the realist evaluation cycle, after developing empirical CMO configurations based on the intervention empirical evidence, the initial CMO configurations should be tested against such empirical CMO configurations (Pawson & Tilley, 2004). As such, the initial CMO configurations are confirmed, refuted, or refined to develop empirically tested 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 by them or can be used as initial CMO configurations for other interventions in other organisations. The repetition of this realist cycle results in more valid CMO configurations which are better tested and increasingly refined (Pawson and Tilley, 2004). This recycling process of CMO configurations accumulates knowledge about 'what *works* for whom in which circumstances?' as the ultimate goal of realist evaluation of organisational interventions.

DISCUSSION

The integrated realist evaluation model has five strengths. First, this model contains further crucial intervention components, compared to the five-phase model, that are essential for evaluating organisational interventions. Considering a larger set of intervention components, in particular at the preparation phase, shed light on 'when to' and 'what to' document and evaluate, this provides a more valid answer to the question of 'what works for whom in which circumstances' regarding organisational interventions (Nielsen, Randall, Holten et al., 2010; Nielsen and Abildgaard, 2013). Second, we discussed each intervention component from a realist evaluation perspective and concluded that these intervention components should be used to develop and test CMO configurations. As such, this model is a theory-driven model based on CMO configurations. Following this model enables researchers to develop initial CMO configurations and through a participatory approach jointly design

and implement an intervention to see whether empirical evidence in the intervention confirm, modify, refute, or refine these CMO configurations (Nielsen & Miraglia, 2017; Pawson & Tilley, 1997). Third, this model does not prioritise which specific CMO configurations to develop and test (particularly CMO configurations that focus on content mechanisms), but allows researchers to identify the most relevant and promising CMO configurations considering their specific intervention aims, their specific contexts, and their desired outcomes. Fourth, CMO configurations, by revealing the causal relationships between contextual factors, mechanisms, and outcomes show which and how specific components of the intervention work, in which circumstances, and produce what outcomes. As argued by Nielsen and Miraglia (2017), CMO configurations by showing 'what works for whom in which circumstances' help to better capture internal and external validity (generalisability) of the intervention findings. Therefore, following this CMO-based model improves the internal and external validity of the organisational intervention findings. Fifth, in our model, collecting empirical CMO data 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 sensemaking of the intervention (Nielsen & Randall, 2013).

Limitations and Challenges of the Integrated Realist Evaluation Model

The integrated realist evaluation model has two 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 of which intervention component might trigger which individual and collective reasonings

and reactions of participants? How and which specific contextual factors might affect this process? And 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.

There are three challenges in applying the integrated realist evaluation model. First, the application of this model is time-consuming and needs skilled researchers. The processes of developing initial CMO configurations, designing and implementing the intervention, and testing the initial CMO configurations requires skilled researchers to collect and analyse mixed data over a long period of time. Second, to evaluate interventions, researchers 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 captured by evaluation frameworks (Nielsen, 2013). In response to the call for evaluation frameworks, we proposed an integrated realist evaluation model to evaluate complex organisation 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 the 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.

In essence, we suggest that our integrated realist evaluation model contributes to the understanding of 'how to' evaluate complex organisational interventions, to produce valid, consistent empirical evidence, that can be used to design, implement, and evaluate future organisational interventions. Applying this model improves the understanding of 'what works for whom in which circumstances?', such understanding may increase the likelihood of interventions successes.

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TABLE 1

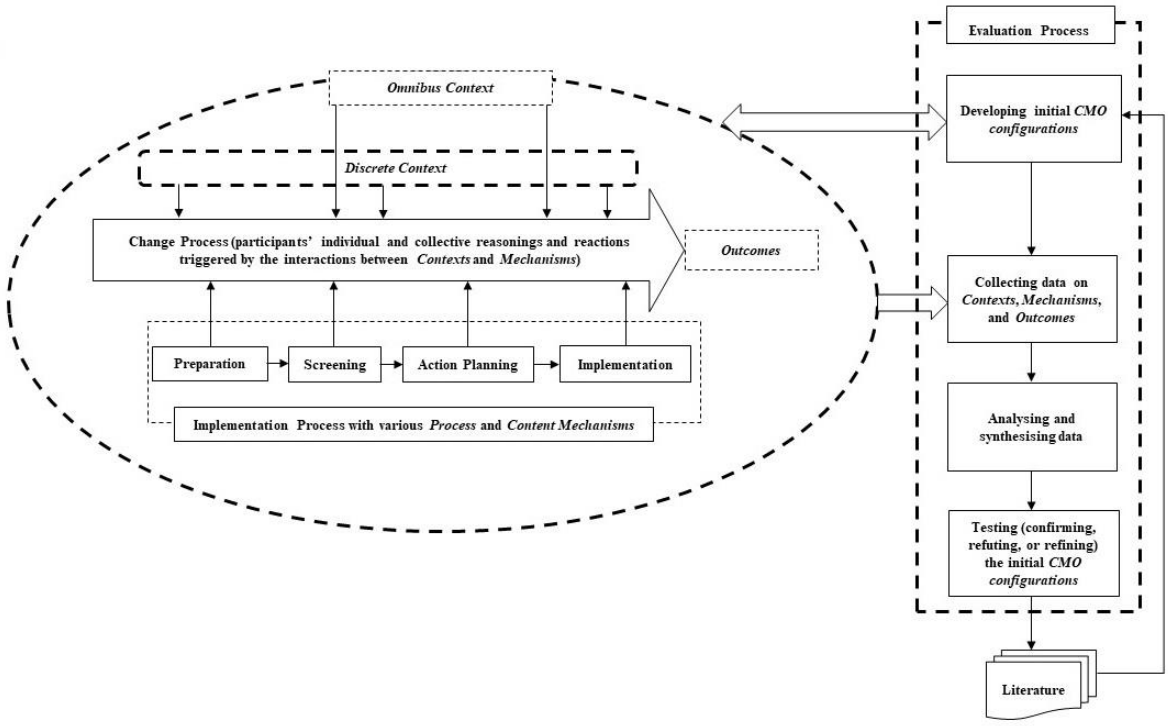
The contents of the five phase, RE-AIM, and the integrated realist evaluation models

The five-phase model	The RE-AIM framework	The integrated realist evaluation model
Preparation • Organisational readiness for change • Employees' readiness for change • Multilevel management support • Establishing steering groups and assigning a project champion • Developing a communication strategy.	**The Adoption and Reach dimensions at both individual and organisational levels** • Recruiting organisational units with their employees and managers with adverse psychosocial working conditions **The Maintenance dimension at the organisational level** • Aligning the intervention with organisational vision and values	**Preparation** • Developing CMO configurations about recruiting organisational units (a *mechanism*) and organisational readiness for change (*contexts*) • Developing CMO configurations about multi-level management engagement and support (*mechanisms)* • Developing CMO configurations about employees' readiness for change (*contexts*) • Developing CMO configurations about aligning the intervention with organisational

		vision and values (a *mechanism)* • Developing CMO configurations about establishing steering groups and assigning a project champion (*mechanisms)* • Developing CMO configurations about a communication strategy (a *mechanism)*
Screening • Auditing existing systems • Feeding back the results to employees	**The Adoption dimension at the organisational level** • Identifying pre-intervention characteristics of organisational units **The Adoption dimension at the individual level** • Identifying pre-intervention characteristics of units' managers **The Reach dimension at the individual level** • Identifying pre-intervention characteristics of employees	**Screening** • Developing CMO configurations about tailored risk assessment methods (a *mechanism)* • Developing CMO configurations about reporting the results of the risk assessment (a *mechanism)*
Action planning • How action plans are developed • What action plans contain	**The Maintenance dimension at the organisational level:** • Aligning the intervention with organisational policies and practices	**Action planning** • Developing CMO configurations about the process of action planning (a *mechanism)* • Developing CMO configurations about the content of action plans (a *mechanism)* • Developing CMO configurations about aligning the intervention with organisational policies and practices (a *mechanism)*
Implementation • Implementing action plans • Documenting intervention activities and comparing them against planned intervention activities • Documenting who makes intervention activities happen	**The Implementation dimension at the organisational level** • Measuring intervention fidelity • Measuring dose delivered • Measuring dose received **The Effectiveness dimension at the organisational level** • Measuring attrition	**Implementation** • Developing CMO configurations about the process of implementing action plans (a *mechanism*) • Developing CMO configurations about intervention fidelity (a *mechanism*) • Developing CMO configurations about dose delivered and dose received (*mechanisms*) • Developing CMO configurations about attrition (participation) (a *mechanism*)
Evaluation • Evaluating the implementation process • Evaluating intervention outcomes (i.e., identifying proximal, intermediate, and distal outcomes)	**The Effectiveness dimension at both individual and organisational levels** • Identifying intermediate outcomes, distal outcomes, and negative outcomes at the completion of the intervention across IGLO levels **The Maintenance dimension at the individual level** • Identifying distal outcomes and negative outcomes six months or more after the most recent intervention contact across IGLO levels	**Evaluation** • Evaluating the implementation process • Evaluating intervention outcomes (i.e., evaluating both intended and unintended proximal, intermediate, and distal outcomes across IGLO levels)

FIGURE 1

The Integrated Realist Evaluation Model to Evaluate Organisational Interventions


Evaluation Process
Omnibus Context
Discrete Context
Change Process (participants' individual and collective reasonings and reactions triggered by the interactions between Contexts and Mechanisms)
Outcomes
Preparation
Screening
Action Planning
Implementation
Implementation Process with various Process and Content Mechanisms
Developing initial CMO configurations
Collecting data on Contexts, Mechanisms, and Outcomes
Analysing and synthesising data
Testing (confirming, refuting, or refining) the initial CMO configurations
Literature