



Deposited via The University of Sheffield.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/id/eprint/170858/>

Version: Accepted Version

Article:

Nielsen, K., Antino, M., Rodríguez-Muñoz, A. et al. (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*, 35 (4). pp. 374-397. ISSN: 0267-8373

<https://doi.org/10.1080/02678373.2021.1889072>

This is an Accepted Manuscript of an article published by Taylor & Francis in *Work & Stress* on 17th February 2021, available online:

<https://www.tandfonline.com/doi/full/10.1080/02678373.2021.1889072>

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

Is it me or us? The impact of perceptions of individual and collective participation on work engagement and burnout in a cluster-randomised, controlled organisational intervention

Accepted Work & Stress, February 7, 2021

Karina Nielsen

Institute for Work Psychology, Sheffield University Management School, University of Sheffield, Sheffield, Conduit Road, S10 1 FL Sheffield, UK. K.m.nielsen@sheffield.ac.uk

Correspondence to: Professor Karina Nielsen, Institute for Work Psychology, Sheffield University Management School, University of Sheffield, Sheffield, Conduit Road, S10 1 FL Sheffield, UK. K.m.nielsen@sheffield.ac.uk

Dr Mirko Antino, Complutense Complutense University of Madrid, Campus de Somosaguas, 28223 - POZUELO DE ALARCÓN (MADRID), Spain,

m.antino@psi.ucm.es

Dr Alfredo Rodríguez-Munoz, Complutense University of Madrid, Campus de Somosaguas, 28223 - POZUELO DE ALARCÓN), Spain, alfredo.rodriguez@psi.ucm.es

Dr Ana Sanz-Vergel, Norwich Business School, University of East Anglia, Norwich Research Park, NR4 7TJ, Norwich, UK, A.Sanz-Vergel@uea.ac.uk

Is it me or us? The impact of perceptions of individual and collective participation on work engagement and burnout in a cluster-randomised, controlled organisational intervention

Abstract

Participation is generally recommended when implementing organisational interventions, however, understanding how participation works remains understudied. In a cluster-randomised, controlled intervention employing a wait-list control design, we explore whether perceptions of individual or collective participation had the greatest impact on a participatory organisational intervention's outcomes; work engagement and burnout. We conducted the study in the Danish postal service (N = 330). Using multi-level analyses, we found that perceptions of individual participation predicted improvements in work engagement and reductions in burnout post-intervention, however, these relationships became non-significant after including perceptions of being part of a collective participatory process in the model. Our findings add to the understanding of the role participation and in particular, perceptions of a collective participatory intervention process, plays in ensuring interventions achieve their intended outcomes.

Keywords: Multi-level modelling; organisational intervention; participation; burnout; work engagement

Is it me or us? The impact of perceptions of individual and collective participation on work engagement and burnout in a cluster-randomised, controlled organisational intervention

In recent years, there has been an increased interest in how to improve working conditions and employee wellbeing for employees with limited decision-making latitude through participatory organisational interventions (Busch, Koch, Clasen, Winkler, & Vowinkel, 2017; Gupta, Wåhlin-Jacobsen, Abildgaard, Henriksen, Nielsen, & Holtermann, 2018). According to a Danish national representative survey, mail carriers have the lowest levels of autonomy (scoring 3.8 out of a possible 5) of 78 occupational groups (WEHD, 2020), thus suggesting a need to explore other ways of involving these employees than through decision making about core tasks. Participatory organisational interventions can be defined as interventions that aim to improve working conditions and employee health and well-being through changing the way work is organised, designed and managed (Nielsen, 2013). In other words, participatory organisational interventions focus on changing work practices and procedures rather than on empowering employees to make decisions about how to perform their core tasks. To identify and implement changes to work practices and procedures, specific processes are put in place to facilitate collective decision making (Nielsen, Randall, Holten, & Rial-González, 2010).

Bartunek, Rousseau, Rudolph, and DePalma (2006) found that participants may perceive the same intervention differently, and Stensaker, Falkenberg, and Grønhaug (2008) argued we have limited understanding of the role sensemaking plays in bottom-up changes, such as participatory organisational interventions. In the present study, we explore how mail carriers' sensemaking of the participatory organisational intervention process influenced the intervention's outcomes, burnout and work engagement. In doing so, we explore two

different ways of making sense of the intervention; as an individual process where the individual participant contributes to the process or as part of a collective process, where participants engage in a collaborative problem-solving process.

We make two significant contributions to the field on organisational interventions. First, we address the calls of Walters, Wadworth, and March (2012) and Abildgaard, Nielsen and Sverke (2018b) to understand how participation influences intervention outcomes. Using sensemaking (Weick, 1995) as our underlying theory, we explore how participants' perceptions (sensemaking) of the participatory process influence the outcomes of the intervention. To the best of our knowledge, only one study has directly measured the impact of participants' perceptions of participation on an intervention's outcomes (Nielsen & Randall, 2012). We extend Nielsen and Randall's (2012) study by not only exploring participants' perceptions of individual participation, i.e., the extent to which they as individuals are engaged in the intervention, but also exploring the impact of perceptions of being involved in a collective participatory process, i.e., that participation as a collaborative problem-solving process at the team level. We explore whether these perceptions of being part of a collective process have a greater impact on intervention outcomes than perceptions of individual participation. Understanding the role of perceptions of individual and collective participation has important implications for how we design and implement participatory organisational interventions.

Second, we study the ability of the intervention to bring about both positive and negative wellbeing outcomes. The present study is a participatory organisational intervention study, and content was developed as part of the process. As a result, it was not possible to hypothesise the specific nature of changes to working conditions (Gupta et al., 2018; Holman & Axtell, 2016). Instead of focusing on these proximal outcomes, we tested the effects of one of our process measures (collective participation) on a proximal process outcome, team

functioning, and two distal outcomes, i.e., work engagement and burnout. We chose a positive and a negative distal outcome for several reasons. Organisational interventions exploring both negative and positive employee outcomes are limited (Nielsen & Noblet, 2018; Michel, O'shea, & Hoppe, 2015) and there is a need to understand the complexity of intervention outcomes. It has been suggested that although these interventions aim at improving wellbeing, the additional workload related to engaging in the participatory process on top of completing the additional workload related to the participatory process on top of completing core tasks may have negative consequences (Gupta et al., 2018; Nielsen, Fredslund, Christensen, & Albertsen, 2006). We chose burnout as a negative outcome as most burnout interventions have been individual level addressing the symptoms of burnout and been conducted in health care settings (West, Dyrbye, Erwin, & Shanafelt, 2016; Williams, Tricomi, Gupta, &, 2015). There is therefore good reason to explore whether burnout can be reduced through addressing the antecedents of burnout, i.e., poor working conditions (Aronsson et al., 2017) rather than the symptoms, and in other occupations, or whether the participatory process may indeed increase burnout. A recent meta-analysis on burnout interventions in mental healthcare (Dreison, Luther Bonfils, Sliter, McGrew, & Salyers, 2018) found that most interventions aimed at changing working conditions were ineffective and pointed to issues concerning poor implementation. In the present study, we tried to overcome the issue of poor implementation by following the evidence-based framework for organisational interventions developed by Nielsen et al. (2010). We chose the emotional exhaustion dimension of burnout as our outcome for four reasons: a) exhaustion is argued to be the most important component of burnout (Halbesleben & Bowler, 2007), b) it is the most frequently studied component (Aronsson et al., 2017), c) a team-based organisational intervention in the healthcare sector found the most impact on this component (Le Blanc, Hox, Schaufeli, Taris, & Peters, 2007) and d) emotional exhaustion may be most

sensitive outcome to an increased workload due to the participatory process.

We focused on work engagement as a potential positive outcome. The links between working conditions and work engagement are well-established (Halbesleben, 2010) and thus a likely outcome of an intervention aiming to improve working conditions is work engagement. A meta-analysis revealed medium to large effects of group-level interventions on work engagement (Knight, Patterson, & Dawson, 2017), but failed to study the role of participation in producing this outcome. The collective participatory process is integrated in existing team/group structures (Nielsen, Stage, Abildgaard, & Brauer, 2013) and there is therefore good reason to explore the role of participation in improving work engagement in group settings to understand *how* these interventions work.

Participatory Organisational Interventions

Participation has been defined as “a process which allows employees to exert some influence over their work and the conditions under which they work” (Heller, Pusic, & Strauss, 2004; p. 15) and ranges from information dissemination to joint decision making (Cornwall & Jewkes, 1995). Based on reviews of national policy recommendations for organisational interventions and supporting scientific evidence, Nielsen et al. (2010) developed an evidence-based model for organisational interventions. According to this model, organisational interventions go through five phases, namely start-up, screening, action planning, implementation and evaluation (see Nielsen & Noblet, 2018, Nielsen et al., 2010 for a detailed description of each phase). In each phase, managers and employees jointly decide the design, implementation and evaluation of the intervention’s process and content (action plans; Abildgaard et al., 2018b). Participatory organisational intervention processes have been linked to improved job control, social support, and well-being (Eklöf, Ingelgård, & Hagberg, 2004; Nielsen & Randall, 2012).

The advantages of participatory processes are at least twofold. First, participation allows using the expertise of participants about what changes are necessary and feasible through a critical analysis of the changes possible (Rosskam, 2009). Second, participation ensures ownership as participants feel they have had a say in what changes should be made (Rosskam, 2009), facilitating the integration of changes into working practices and sustainable changes can be achieved (Daltuva, King, Williams, & Robins, 2009; Tsutsumi, Nagami Yoshikawa, Nogi, & Kawakami, 2009).

The Participatory Process as a Sensemaking Process

Cognitive models of participation are effective when explicit goalsetting is part of the intervention (Miller & Monge, 1986). As participatory interventions have the explicit goal of improving working conditions and employee wellbeing, we employ cognitive models thinking. Sensemaking theory suggests that participants develop cognitive schemas about their environment based on external stimuli (Gioia & Chittipeddi, 1991). Participation in intervention activities provide stimuli and cues that participants translate into cognitive schemas and these schemas drive behaviours (Weick, 1995). Weick (1988) argued that organisational members come to understand the world by acting and then observing the outcomes of this action. The sensemaking perspective may thus be a useful lens through which to understand participatory processes as intervention actions generate stimuli and cues enabling participants to learn about the intervention through the analysis of the cues generated by their actions (Weick, 1988).

Participants in organisational interventions are not just passive recipients, but actively generate meaning of what matters to them (De Jaegher & Di Paulo, 2008). Actual sensemaking only takes place as participants act (Ashmos & Nathan, 2002) and the structured participatory intervention process may facilitate sensemaking as participants take action through engaging in the intervention process. Sensemaking is about labelling (Weick,

Weickcliffe, & Obstfeld, 2005) and whether participants label the participatory process as a process they as individual are engaged in or as an interactive process is likely to influence how the intervention impacts their work engagement and burnout. Furthermore, sensemaking serves to preserve a positive self-image, which consists of a personal identity and a social identity; individuals have to decide which identity to activate in sensemaking processes (Allard-Poesi, 2005). In the present paper, we developed measures of participants' perceptions of the participatory process as either something they participated in as individuals or as part of a collective process as proxies for sensemaking.

The Impact of Perceived Individual Participation on Intervention Outcomes

Individuals' participation in interventions offers the opportunity for an empowerment and learning process where participants learn how to improve their working conditions (Mikkelsen & Saksvik, 1998; 1999). Weber and Manning (2001) found that participants who actively participated in the implementation revised their cognitive schemas. Nielsen and Randall (2012) found participants' perceptions of having been involved in the design and implementation of teamwork at the work group and organisational levels were related to increased levels of social support, which in turn was related to increased job satisfaction post-intervention. Nielsen and Randall (2012) operationalized participation as the individual's perceptions of participation in the intervention process. We follow this operationalization and suggest that individual participation concerns how participants perceive they have sought information about the intervention, they have had the opportunity to provide input to the intervention, and they have participated in ad hoc working groups and been involved in implementing action plans.

Parker, Williams, and Turner (2006) found autonomy to be an important antecedent of proactive behaviours and self-determination theory suggests the need for autonomy is a basic human need (Deci & Ryan, 2000). The autonomy afforded by organisational participatory

interventions (Bond & Bunce, 2001) may give participants the opportunity to shape their working conditions to reduce burnout and increase work engagement. Individuals learn as they act, i.e. engage in intervention activities and thus perceptions that they are involved in the participatory process is crucial to bringing about the intended outcomes of the intervention (McDaniel et al., 2003).

Participants need to feel they are involved in the participatory process in order to make sense of change (Stensaker et al., 2008). Participants who have proactively sought information about the intervention are more likely to understand the rationale behind the intervention, be aware of progress of the intervention and be aware of how they can benefit from the intervention (Nielsen et al., 2010; Stensaker et al., 2008). Having the information necessary to make decision is a crucial element to involvement (Lawler, 1996). Once participants perceive they have the necessary information about the rationale behind the intervention, the participation in ad hoc working groups and the development of action plans do not only enable people to make sense of the intervention, but also enables them to shape the intervention (Maitlis & Christianson, 2014).

Participants influence intervention outcomes through their interpretations and translations of intervention activities, which drive behaviours (Stensaker et al., 2008), both in terms of engaging in the intervention's activities, but also proactively making changes to work practices and procedures. Thus, participating in intervention activities will lead to improvements in work engagement and reductions in burnout as changes are made based on participants' input and expertise. Furthermore, participants who have participated in ad hoc working groups may feel responsible for developing and implementing action plans as they understand the rationale behind these action plans (Stensaker et al., 2008) and they feel ownership for making improvements to the way work is organised, designed and managed

(Bond & Bunce, 2001; Rosskam, 2009; Miller & Monge, 1986). We therefore proposed the following hypothesis:

Hypothesis 1. Participants' perceptions of having participated in the content development and process of the intervention (i.e., individual participation as reported at Time 2) will report a) increased work engagement and b) reduced burnout post-intervention at Time 2 (T2), after controlling for Time 1 (T1) work engagement and burnout.

The Impact of Perceived Collective Participation on Intervention Outcomes

Participatory interventions are a collective process whereby employees and managers engage in collective decision-making processes to design and implement the intervention and its content (Nielsen et al., 2010; Nielsen, 2013). People rely on external cues to make sense of situations and guide their behaviours (Goffman, 1974) and thus perceptions of engaging in collective participation processes may have powerful effects. Shared goals and roles create a collective structure and support interdependent actions (Allard-Poesi, 2005). Social aspects of sensemaking are particularly important in organisational settings (Maitlis, 2005), and shared understandings occur through collective sensemaking processes (Maitlis & Christianson, 2014). Participants who perceive they are part of a collective participation process may experience a qualitatively different sensemaking process.

By collective participation we mean the extent to which work teams collectively discuss adverse working conditions; they collectively prioritize which changes to the way work is organised, designed and managed, and they work collectively towards developing and following up on the implementation of the action plans (Nielsen & Noblet, 2018; Nielsen et al., 2010; Rosskam, 2009). Participants who perceive they engaged in a collaborative process both acts as sensemakers and sensegivers (Stensaker et al. 2008). In this study, the collective participatory process is likely to be more powerful than individual sensemaking processes as

social agents coordinate their sensemaking and the process involves sensegiving and sensemaking. These mutual influences ensure shared meanings and collective autonomy (De Jaegher & Di Paulo, 2008). Roskam (2009) argued that collective participation is a way to improve communication, create opportunities for participants to shape their jobs collectively, and to enhance the fit between participants' needs and their jobs.

The collective exchanges between participants are likely to lead to collectively generated sensemaking as the intervention progresses (Stensaker et al., 2008). It is possible that through the discussions of working conditions, members of the work team develop a shared meaning of the problems (Weick, 1995) and this shared meaning enables them to collectively develop action plans that may successfully reduce burnout and increase work engagement within the team. Interpretations are shaped by the social context (Stensaker et al., 2008), and engaging in collaborative activities enables a shared meaning and action taking towards developing and implementing action plans. We, therefore, suggest that collective participation will increase engagement and reduce burnout over and above individual participation.

It has been argued that it is not only the content of action plans, but also the intervention process itself that brings about positive intervention outcomes (Nielsen & Miraglia, 2017) and therefore participation can be seen as a means to an end (Abildgaard, Hasson, von Thiele Schwarz, Løvseth, Ala-Laurinaho, & Nielsen, 2018a).

As with individual participation, engaging in the process may be explained by the need for autonomy being fulfilled (Deci & Ryan, 2000), however, other basic needs may be fulfilled through the perception of being part of a collective participatory process. Such perceptions may increase a sense of relatedness as adverse working conditions and possible solutions are discussed and implemented in collaboration with team colleagues. Through the process of collective participation, participants may come to see their work team and its

members as valuable players in creating a good work environment for all and this is likely to create engagement. Furthermore, the need for competence may also be fulfilled as participants develop their abilities to engage in decision-making processes. Fulfilment of the needs for autonomy, relatedness, and competence have all been related to reduced burnout and work engagement (van den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010).

Nielsen (2013) argued that participatory interventions may involve collective job crafting, a process where participants jointly develop strategies for making changes to their working conditions (Leana, Appelbaum, & Shevchuk, 2009). Through the collective participatory process, participants discuss their working conditions and learn how they can collectively question existing working procedures and craft their jobs, not only to ensure their own goal and needs fulfilment, but also those of their colleagues. Kuijpers, Kooij, and Woerkom (2020) found that an individual-level job crafting intervention was not effective for all participants and suggested context played a role. It is possible that the collective process prevents some participants benefitting at the expense of others, e.g. one lecturer getting rid of teaching will inevitably mean somebody else will have to pick this up. Therefore, perceptions of the intervention being a collective participatory process may be more powerful than individual participation as it has more wide-ranging effects – together more powerful changes are implemented through the action plans. As action plans are aimed at making changes that improve work engagement and reduce burnout then we would expect these outcomes to be improved as a result of the intervention.

We therefore formulated the following hypothesis:

Hypothesis 2. Participants' perceptions of collective participation in the intervention design and implementation (T2) is positively related to a) improvements in work engagement and b) burnout post-intervention over and above individual participation, after controlling for T1 work engagement and burnout.

Team Functioning Mediating Collective Participation and Outcomes

Working in teams have been found to be positive for burnout (Falgueras, Muñoz, Pernas, Sureda, & Miralles, 2014) and work engagement (Montgomery, Spânu, Băban, & Panagopoulou, 2015) and we propose that team functioning may explain the association between collective participation and the intervention's outcomes. Work functioning relates to how well the team performs, in terms of achieving its goals and getting positive feedback on its performance (West, Markiewicz, & Dawson, 2004).

As teams engage in the participatory process, the sensemaking process happening during this process may influence their overall functioning. Information sharing may lead to improved coordination and integration in to existing work practices and procedures (Ashmos & Nathan, 2002). As participants share information as part of the collective participation process, interpretations are challenged and new meanings and shared understandings are developed. Through the collective participatory process, teams collectively agree which cues to focus on. These cues help team members to focus on the most important problems and this could help overall team functioning. As teams function as sensemakers, members get to understand their work better and this enhances team functioning (Ashmos & Nathan, 2002).

In the organisation under study, teams employed Kaizen boards to improve their performance. The Kaizen board is a problem-solving tool that can lead to an increase in information and knowledge sharing and creativity, all of which may help improve team processes (Ashmos & Nathan, 2002). As participants develop their problem-solving skills and in their team meetings begin to focus on not only performance issues, but also wellbeing issues, mutual gains may be achieved (von Thiele Schwarz, Nielsen, Stenfors-Hayes, & Hasson, 2017). As the participatory process at the team level offers a social arena for participants to question existing procedures and suggest solutions, this may improve team functioning. Such improved team functioning is likely to be related to reduced burnout and

improved work engagement and participants feel empowered to deal with problematic issues (Ashmos & Nathan, 2002). We, therefore, developed the following hypothesis:

Hypothesis 3. Team functioning (T2) will mediate the relationship between perceptions of collective participation (T2) and a) improvements in work engagement (T2) and b) burnout reduction (T2).

Methods

Study Design

The study was conducted in the Danish national postal service in 2011-2012. Two geographical areas took part in the study. All full-time mail carriers and their team managers participated in the study and completed a questionnaire at baseline and 12 months later. Mail carriers were organised into teams, each covering a smaller geographical area within the overall geographical area. Each team had a line manager, which we term team manager for the purpose of this paper. The two geographical areas had come forward after an invitation by an internal occupational health consultant. This internal consultant functioned as the project champion and facilitated meetings and workshops. A research team independent of the organisation evaluated the intervention. The study was registered with the national data protection agency and thus no local ethics approval was required. In addition to this registration, we followed the ethics guidelines of the British Psychological Society.

The Intervention

The intervention was a participatory organisational intervention consisting of the five phases outlined by Nielsen et al. (2010) where employees and managers in collaboration developed and implemented the process and content of the intervention. In the first phase, two levels of steering groups were established. A strategic steering group was established that oversaw the integration into overall health and safety management structures. This steering group consisted of a facilitator (an internal occupational consultant), senior management,

central union representative, and Human Resources. An operational steering group consisted of the geographical manager, team managers, union and safety representatives, together with employee wellbeing representatives (employees who had volunteered for a role of promoting employee wellbeing in their teams), and the facilitator. In the second phase, we conducted focus groups with employees and semi-structured interviews with managers at all levels in the geographical areas about job demands and resources. The results of the qualitative research were used to develop a tailored questionnaire. The results of the questionnaire survey were fed back to the steering group and a procedure was agreed for feedback to all teams: Team managers and employee representatives together fed back results in their teams to facilitate a coherent presentation. In the third phase, teams developed action plans through workshops. All teams used a template developed by the facilitator. In the fourth phase, the implementation phase, action plans were implemented using Kaizen boards (Imai, 1996). Action plans were placed on boards in the team room and followed the plan-do-check-act cycle. The facilitator provided teams with discussion sheets on how to monitor follow-up. Finally, in the fifth phase, teams discussed the extent to which action plans had been implemented according to plan and had achieved their objectives, collectively evaluating the impact of the intervention. Employees and team managers completed the survey once again and the research team fed back results focusing on the changes compared to the baseline survey. The facilitator mediated discussions of the results and what may explain changes – or the lack of changes in some cases. All activities took place at the team level and thus all mail carriers and their team managers were involved in the development, implementation, and evaluation of action plans.

A cluster-randomised, wait-list control design was employed with a baseline and a follow-up 12 months later. The postal service is divided into geographical areas with their senior management, Human Resource departments, and administrative services. The

randomisation took place after the baseline survey at the level of the geographical level to avoid contamination. The intervention was delivered to one area the first year and the second area the year after. In the first year, one geographical area was actively supported by the facilitator (group 1) while the other functioned as a comparison group (group 2). In the second year, the previous comparison group became the intervention group (group 2) and was supported by the facilitator while the first intervention group went through the five phases themselves without the support of the facilitator (group 1). In the present study, we focus on the second year only as we could only study intervention processes in groups that implement the intervention, however, to ensure readability we refer to the two time points included in this study at Time 1 and Time 2. Using a wait-list control design, we address the call of O'Shea, O'Connell, and Gallagher (2016) to use "active" control groups, which may allow for more realistic comparisons, i.e., we are able to test the sustainable impact of a participatory intervention after the intensive phase and teams are left to continue the process of improving working conditions. We, therefore, call this group the intervention-sustainability group. See figure 1 for an overview of the intervention.

----- insert figure 1 about here -----

Sample

At Time 1, the questionnaire was completed by 135 out of 148 participants (90% response) in intervention-sustainability group 1 (without the facilitator supporting the intervention) and by 196 out of 215 participants (response rate 91%) in intervention group 2 (which had the support of the facilitator). As we are interested in changes at the work team level, all participants were invited to complete the questionnaire at Time 2 regardless of whether they had completed the baseline questionnaire, 117 out of 140 (response rate 84%) participants responded to the questionnaire in the intervention-sustainability group and 112

out of 137 (response rate 89%) completed the questionnaire in the intervention group. For the intervention sustainability group, the respondents were 94.5 % co-workers and 5.1% were team managers; 58.3% were males and the average age was 42.07 ($SD = 11.81$). For the intervention group, the respondents were 95.7 % co-workers and 4.3% were team managers; 54.2% were males and the average age was 45.88 ($SD = 11.33$). One of the smaller geographical areas was not included in the follow-up as it now belonged to another large geographical area. In total, 330 respondents were included in the final analyses.

Measures

The questionnaire contained demographics information, psychosocial working condition measures together with burnout, and work engagement. At Time 2, we also included many process variables inspired by Randall, Nielsen, and Tvedt (2009). Due to the participatory nature of the process, it is recommended to develop tailored items to measure the specific organisational process (Randall et al., 2009); we are also not aware of any measures capturing the participatory process in participatory interventions. The Nielsen and Randall (2012) study was a teamwork implementation. Items were developed following the recommended procedures by Randall et al. (2009), i.e., interviews were conducted three months prior to follow-up. In interviews, participants were asked to give examples of how they had been involved in the process, and from interviews, it became clear that two key perceptions of participation were apparent. One that focused on the extent to which participants as individuals had received information about the intervention, had been involved in developing and implementing action plans and had participated in ad hoc working groups. A second perception of the participatory process involved whether participants had discussed action plans and made decisions as to how to implement action plans at their team meetings, whether they had followed up on and implemented action plans, and whether they had integrated working with action plans into the team meeting process. Interviews also revealed

that participants reported they as a team had become better at managing working conditions, had become more aware of working conditions and wellbeing issues and discussed emerging working condition issues at their team meetings. On the basis of the interview results, we developed tailored items to capture individual and collective participation. The items were discussed and agreed with the steering group members. For both measures, a five-point response scale was used ranging from 1 = completely disagree to 5 completely agree.

Individual participation. Four items capturing individual participation asking participants if individuals had proactively sought information about the intervention, been involved in the development and implementation of action plans, and whether they had been part of ad hoc working groups (in the action planning and implementation phases). Individual participation was measured on a 5-point Likert scale ranging from 1 = Strongly disagree to 5 = Strongly agree. An example of an item is: “I have been involved in the implementation of action plans”. Cronbach’s alpha at T2 was .88.

Collective participation. To capture the collective participatory process, we followed recommendations from the multilevel theory literature. Specifically, we adopted a compositional perspective, where we used lower level information (participant information) to assess a collective (higher level) construct, such as collective participation (van Mierlo, Vermunt, & Rutte, 2009). According to the group climate literature, the proximal group (as it is in our case where participants worked in formally recognized teams) is the appropriate context to evaluate the perception of a collective level phenomenon (Anderson & West, 1998), like collective participation. Whereas previous studies on related issues such as involvement and voice have simply shifted the referent (Chan, 1998), i.e. “I speak up with ideas for new project or changes in procedures” to “In my team, we speak up with ideas for new project or changes in procedures” (Morrison, Wheeler-Smith, & Kamdar, 2011), we not

only change the referent but also focus our collective participation construct on the collective process, i.e., the activities taking place at the team level.

We developed eight items measuring the extent to which the work team had increased their focus on working with the psychosocial work environment, felt the team had become better at working together to solve the issues related to the working conditions. According to multilevel theory measurement procedure (Klein & Kozlowski, 2000), the focus of the items was the team, and examples of items include: “We have had the opportunity to improve the psychosocial work environment and wellbeing in our team”, “We have become better at managing changes in our workplace”, “We have discussed the results of the survey”, and “We follow up on action plans on an ongoing basis”. We used a 5-point Likert scale ranging from 1 = Strongly disagree to 5 = Strongly agree. Cronbach’s alpha at T2 was .92. IntraClass Correlations (ICC) revealed team-level aggregation was warranted (ICC1 = .31; ICC2 = .84).

Team functioning was measured by the 3-item scale from West et al. (2004). This measure focused on whether teams received feedback that they were well functioning. An example of an item is: “The team is consistently told that it achieves or exceeds its goals.” We used a 5-point Likert scale ranging from 1 = Strongly disagree to 5 = Strongly agree. Cronbach’s alpha at T2 was .77. ICCS revealed team level aggregation was warranted (ICC1 = .27; ICC2 = .78).

Burnout was measured by a 7-item scale developed by Kristensen, Borritz, Villadsen, and Christensen (2005). This measure has been developed for use in all occupations and captures the emotional exhaustion dimension of burnout. An example of an item is: “Do you feel burnt out because of your work?” Burnout was measured on a 6-point Likert scale ranging from 1 = Not at all to 6 = All the time. Cronbach’s alpha was .84 at T1, and .91 at T2. Since we were interested in studying the effects on the reduction of burnout, we computed

our dependent variable as *burnout reduction* (Burnout measured in time 1 – Burnout measured in time 2).

Work engagement was measured using the 9-item Utrecht Work Engagement Scale (UWES; Schaufeli, Bakker, & Salanova, 2006), for example: “At my work, I feel bursting with energy”. Responses were measured on a 7-point Likert scale ranging from 1 = Never to 7 = Every day. Cronbach’s alpha was .92 at T1 and .93 at T2. Since we were interested in studying the effects on the improvement of engagement, we computed our dependent variable as *engagement improvement* (Engagement measured in time 2 – Engagement measured in time 1).

All scales were transformed so they ranged from 0 to 100 with 100 representing a high score on the construct. Responses were transformed such that 1 = 0, 2 = 25, 3 = 50, 4 = 75, 5 = 100. This was done to facilitate interpretation of results at the descriptive level and does not influence the outcomes of the data analysis.

Statistical analyses

We initially included several control variables: Age and tenure because younger employees are more positively oriented toward organisational changes (Furst & Cable, 2008), managerial position because employees at the higher levels may be more positive towards change (Judge, Thoresen, Pucik, & Welbourne, 1999), and we also controlled for gender and team size as team size may influence team building (Salas, Rozell Mullen, & Driskell, 1999) and thus the participatory process. The second group had the support of a facilitator. In line with von Thiele Schwartz et al. (2017), we controlled for having a facilitator support the process. A dummy variable was created, which divided the two groups into having the support of the facilitator or not. This variable also determines whether the respondent was part of the intervention sustainability group (no facilitator support) or intervention 2 (support of facilitator).

Following Becker, Atinc, Breugh, & Carlson (2016), we included only gender as this variable had a significant relationship with work engagement.

To test our hypotheses, we employed hierarchical linear modeling (HLM). We first tested the bivariate correlations between the control variables and the outcomes. Gender was significantly related to improvements in and T2 work engagement. In Model 2, to replicate the results of von Thiele Schwarz et al. (2017), we added the involvement of the facilitator as a control variable. In Model 3, we entered the first level predictor of individual participation testing our first Hypothesis. In Model 4, we entered the second level independent variable collective (group level) participation testing our second Hypothesis. This multistep procedure is based on the recommendation of Aguinis, Gottfredson, and Culpepper (2013). Finally, we tested the two 2-2-1 mediation models, studying the mediating role of team functioning, conducting several bootstrapping analyses (5000 resamples) following Hayes's (2013) recommendation (testing Hypothesis 3). We repeated this procedure with burnout as the outcome. To test the time evolution of the dependent variables as a function of the intervention, we also analysed our data with an alternative analytical approach based on linear growth model with two-waves of data (which consists in regressing the dependent variables – using Time 1 and Time 2 measures instead of the differential - on the interaction between the linear growth parameter and the interaction (Bodner & Bliese, 2018). The results were consistent. To run our analysis, we used both R (R Core Team, 2014) and the SPSS Statistical package.

Results

Preliminary analyses

Before testing our hypotheses, we conducted a series of tests. First, we conducted an exploratory factor analysis using Varimax rotation with our participation items. This analysis revealed to distinct factors: Collective participation explained 53% of the variance (factor

loadings ranged from .63 to .86) and individual participation explained 15% of the variance (factor loading ranged from .78 to .87). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .88 suggesting a large proportion of variance was caused by underlying factors. Bartlett's Test of Sphericity revealed $p < .001$ suggesting the variables are unrelated. We also conducted a CFA focusing on the participation variables only to offer further empirical evidence that the two constructs are related but separate phenomena. We therefore compared a two-factor model with a single-factor model, finding that the first presented a good fit to our data (CFI = .99, TLI = .99, RMSEA = .09, SRMR = .05) while second had an unacceptable fit (CFI = .96, TLI = .95, RMSEA = .26, SRMR = .15). These additional analyses indicate that the two facets of participations are clearly empirical distinguishable and referring to two different processes.

Next, we tested the measurement model by running several Confirmatory Factor Analyses (CFA), both for the individual and the group level constructs. Given the nature of our data (categorical) we ran CFA using Robust Maximum likelihood (MLM in the Mplus Software) using the polychoric correlation matrix (Finney & DiStefano, 2006). Regarding the individual level constructs, our results showed that the 3-factor model (individual level participation, engagement and burnout) presented a reasonable fit to our data (CFI = .95, TLI = .95, RMSEA = .09). The 1-factor model (CFI = .83, NFI = .81, RMSEA = .19) had an unacceptable fit (Hu & Bentler, 1999). Regarding the group level constructs, we run two multilevel CFA (clustering the participants in their respective groups, to control for non-independence in the measurement); our results showed that the 2-factor model (collective participation and team functioning presented a reasonable fit to our data (CFI = .96, TLI = .95, RMSEA = .03, SRMR_{between} = .08, SRMR_{within} = .05). The 1-factor model (CFI = .80, TLI = .76, RMSEA = .06, SRMR_{between} = .12, SRMR_{within} = .07) had an unacceptable fit. Descriptive statistics and correlations are presented in Table 1 (separated for each condition).

----- insert table 1 about here -----

Tests of the Hypotheses

Test of main and cross-level effects on Engagement improvement

To test our hypotheses, we used only full information participants, as no differences were found in terms of age, gender, tenure and experimental condition in a dropout analysis studying both dependent variables (for engagement, respectively: $t = -.11, p = \text{ns}$; $t = .90, p = .\text{ns}$; $t = -1.03, p = \text{ns}$; $t = 1.80, p = \text{ns}$. For burnout, respectively: $t = -1.11, p = \text{ns}$; $t = 1.14, p = .\text{ns}$; $t = -1.50, p = \text{ns}$; $t = -.85, p = \text{ns}$). Before estimating the above-mentioned models, we checked for the amount of variance that could be attributed to the group level. We found that for work engagement, 7.6% of the variance and for burnout, 14.3% could be attributed to the group level thus warranting multi-level analyses (Bliese, Maltarich, & Hendricks, 2018). Table 2 reports the parameters of interest of the different models used to study the impact of the intervention on work engagement and Table 3 the parameters of interest of the different models for burnout.

----- insert tables 2 and 3 about here -----

Among the control variables, we found that women experienced increase in work engagement compared to their male counterparts ($Estimate = -4.20, p < .05$); similarly, we found that the higher the baseline of work engagement, the lower the increase ($Estimate = -.25, p < .01$), suggesting a ceiling effect. The support of the facilitator led to increased work engagement compared to the group who no longer received this support (the intervention sustainability group; $Estimate = 6.20, p < .01$), as shown in Model 2, Table 2. With regard to

burnout, as shown in Table 3, we only included the baseline burnout as a control variable. Baseline burnout predicted the reduction (the higher the baseline, the higher the reduction, $Estimate = .51, p < .01$). We found no direct effect of the facilitator on burnout.

Regarding Hypothesis 1a, we found that individual participation in the intervention was not related to increased work engagement ($Estimate = .09, p > .05$) as shown in Model 3, Table 2. Hypothesis 1b was supported: Individual participation predicted reduced burnout ($Estimate = .16, p < .05$), as shown in Model 3, Table 3.

In support of Hypothesis 2a, we found that collective participation was positively related to increased work engagement ($Estimate = .16, p < .01$). The introduction of collective participation reduced the effect of individual-level participation on the improvement of work engagement ($Estimate = .03, p > .05$). We also found support for Hypothesis 2b, collective participation was positively related to reduced burnout ($Estimate = .51, p < .01$). After the introduction of collective participation, individual-level participation on burnout was no longer significant ($Estimate = .01, p > .05$).

Finally, testing Hypothesis 3 we found that collective participation had a positive and significant effect on team functioning ($Estimate = .97, p < .01$), and that the indirect effect of collective participation on work engagement improvement through team functioning was significant ($M_{indirect\ effect} = .15, SE_{Boot} = .09, 95\% CI = .00/.37$), while the direct effect of collective participation on engagement improvement became non-significant ($Estimate = .01, p > .05$). Thus, Hypothesis 3a is supported. Regarding Hypothesis 3b, we found that collective participation had a positive and significant effect on team functioning ($Estimate = .93, p < .01$), but the indirect effect of collective participation on burnout reduction through team functioning was non-significant ($M_{indirect\ effect} = .26, SE_{Boot} = .25, 95\% CI = -.21/.78$) as was the direct effect of collective participation on burnout reduction ($Estimate = .27, p < .10$). Thus, Hypothesis 3b is not supported.

Discussion

In the present study, we explored how participants' perceptions of the participatory process in an organisational intervention influenced the intervention's outcomes: burnout and work engagement. We explored the impact of whether individuals felt they had been involved as individuals in the process or as being part as a collective process. Based on sensemaking theory (Weick, 1995), we suggested that participation can be seen as the participants making sense of the intervention and acting to shape better working conditions.

Although most organisational intervention evaluation studies do not include control variables (cf. Abildgaard et al., 2018b; Holman & Axtell, 2016; Nielsen & Randall, 2012; von Thiele Schwarz et al., 2017), preliminary analyses indicated that gender correlated with work engagement and we included this as a control variable. Female participants reported lower increases in work engagement than males. It has been found that women are typically less forthcoming speaking up when engaging in interventions (Budd, Gollan, & Wilkinson, 2010; Settles, Cortina, Stewart, & Malley, 2007) and this may also be the case in this intervention. Although the present intervention was implemented at the team level and discussions took place at team meetings, it is possible that women may still not come forward and particular attention needs to be paid on how to ensure women are given a voice in this type of intervention.

We also found that having a facilitator supporting the intervention was significantly related to improvements in work engagement. This result is contrary to von Thiele Schwarz et al. (2017) who found no such effect when studying overall improved ability to manage the psychosocial work environment. It is possible that the different outcomes used in the two studies may be the explanation. It might be that facilitators are not needed to develop the ability to manage the psychosocial work environment, which was the outcome used by von

Thiele Schwarz et al. (2017). Participants may go through a learning process feel they are capable of doing managing the psychosocial work environment themselves, but facilitators may be important to improve work engagement as they can create energy and structure to the intervention and thus participants may as a result feel more engaged in their work.

With regards to our hypotheses, Hypothesis 1a was not supported, individual participation did not predict increases in work engagement. Thus, it would appear that perceptions of having sought out information and being involved in developing and implementing action plans do not in itself lead to increased work engagement. For burnout, we found support for Hypothesis 1b. Participants who felt they had played an active role in shaping and implementing the intervention's process and content reported greater reductions in burnout. It is possible that this direct type of intervention reduces burnout as individuals feel that they have influence over which changes may reduce their burnout levels.

We found that perceptions of collective participation predicted improvements in work engagement and reductions in burnout supporting Hypotheses 2a and b. Our results suggest that collective participation is more powerful in predicting intervention outcomes than individual participation, because it led to improvements in both outcomes, but also because after the inclusion of collective participation, individual participation no longer predicted increases in burnout. These findings suggest that making sense of participation as a collective process may be particularly powerful in bringing about intended intervention outcomes. It is possible that the individual participatory process is insufficient to create enthusiasm and energy among participants, only when participants engage in the collective process may such positive benefits be achieved. Additional benefits of participation can be achieved as participants perceive their work team collectively planning and implementing action plans and collectively engaging in the intervention process rather than just individuals feeling involved. We found that the explanation for why collective participation explained

intervention outcomes was because team functioning mediated the relationship between such participation and work engagement. It would appear that work engagement increases as a result of participants' perceptions that they are part of a greater whole, i.e., a collaborative participation process, because the team becomes better functioning.

Implications for Theory and Practice

Although participation is widely recognized and recommended as a key mechanism in organisational interventions (Nielsen & Noblet, 2018), there is limited knowledge about the importance of how participants make sense of the participatory process and the impact of such sensemaking (Nielsen et al., 2010). We make a significant contribution to the participatory intervention literature employing sensemaking theory (Weick, 1995) as our underlying framework to understand how perceptions of whether the participatory process involves individuals participating in the process or perceptions of being part of a collaborative process in their teams influenced the intervention's outcomes. Our findings suggest that the greatest benefits are reaped when the process is made sense of as a collective process. Our results suggest that collective participation offers the opportunity for joint creation of meaning, e.g. developing shared mental models of what changes need to be made to the way work is organised, designed and managed, joint decision making and action to make such changes and the opportunity of participants acting as both sensegivers and sensemakers. Our results support the underlying theory of sensemaking (Weick, 1995) and in particular the claims of Stensaker et al. (2008) and Maitlis (2005) that sensemaking should not be seen as an individual process. When participants feel they are part of a great whole and engage in collaborative processes in their teams, these processes enable them to jointly decide on the most appropriate actions to take with resultant improvements in work engagement and reductions in burnout.

Our second major contribution lies in the fact that we explored both positive and

negative well-being. We controlled for baseline levels of our outcomes and although not hypothesised, we found interesting relationships with our outcomes. On the one hand, a ceiling effect could be observed for work engagement; the higher the levels of work engagement, the lower the increases in work engagement. On the other hand, the higher levels of burnout at baseline, the greater decreases in burnout, suggesting that those most in need of intervention benefitted from the intervention. Our results point to the importance of understanding how an intervention may impact both positive and negative outcomes. We found that individual participation was only related to reduced burnout, whereas collective participation was effective in improving work engagement and reducing burnout. Importantly, we were able to extend existing research by exploring the ability of organisational interventions to reduce burnout, replicating the results of Le Blanc et al. (2007). Our results suggest that the additional work involved in participating in the intervention did not have an adverse effect on participants, the benefits from participation outweighed the extra work involved.

Our findings have important practical implications for policy makers and how organisations design and implement organisational interventions. Although individuals need to exert influence over the intervention process to reduce burnout, greater benefits may be reaped when participants perceive they are part of a greater whole. Prominent national policies such as the Management Standards in the UK recommend steering groups develop and implement actions based on input from working groups (for reviews, see Nielsen & Noblet, 2018). Our results indicate the key phases, action planning, and implementation, in the intervention should be conducted at the team level with the support of the steering group. Developing actions, implementing them, and following up on progress at the team level may be more powerful in creating shared sensemaking that has a great impact than being involved in the intervention as an individual. One recommendation is thus to engage participants in a

participatory process at the team level, rather than in steering groups as has been the norm (Nielsen et al., 2010; Nielsen & Noblet, 2018). Furthermore, our finding that facilitation may have a direct effect, in particular, on work engagement suggests that having a facilitator keeping the process on track may give participants a boost. Maitlis (2005) introduced the concept of guided sensemaking, i.e. that participants go through a structured process, facilitators may support the intervention by helping create a clear vision for the team and guiding participants through the five phases ensuring that at each step, the importance of collective interpretations of the process are promoted. Structures should be developed to ensure that participants can act as both sensegivers and sensemakers and thus dialogue tools should be employed at all phases that promote social interaction and joint decision making from all participants. Using tools that participants are familiar with may also promote active participation (von Thiele Schwarz et al., 2017).

Strengths and Limitations

The main strengths of this intervention are the cluster-randomised, wait-list control design with two active intervention groups, which allowed us to examine how the same intervention may work in different contexts (O'Shea et al., 2016), the relatively large sample size, and the multi-level analyses which allowed us to make full use of the data (Nielsen et al., 2006). A further strength was the referent-shift model used (van Mierlo et al., 2009) used to capture the level of theory (van Mierlo, Rutte, Kompier, & Doorewaard, 2005), i.e., the collective participation measure that captured the collective participatory processes at the team level.

The present study has its limitations, which must be considered when evaluating its results. First, the study took place in one organisation only, which limits generalisation. Future research should replicate our findings in other settings. Second, our design suffers from several limitations. We only used self-report data collected over two waves and

common methods bias may pose a threat to our results, however, the multilevel analyses (Hox, 2010) reduce the risk of such bias. The two-wave design meant that process, mediator, and outcome data were collected at the same time. Unfortunately, funding did not allow us to collect four waves of data and we are thus unable to draw conclusions of long-term effects beyond the sustainability test in the first intervention group. Future studies should aim to replicate our results in a four-wave study to overcome these limitations. Finally, we included a dummy variable for the facilitator, it would have been useful to understand more of the role of the facilitator in driving change. Future studies should explore what the role of facilitators are and develop measures to capture the impact of this role.

Conclusion

The contributions of the present study are twofold: First, using a sensemaking perspective, we studied not only how individuals' perception of whether they were involved in the participatory intervention process, but also how perceptions of the collective participation influenced participation outcomes. We found that perceptions of collective participation are more powerful in bringing about intended outcomes compared to individuals' participation in the intervention process. As collective action is more closely aligned with the proposed mechanisms of participatory interventions, this finding offers a significant contribution to the organisational intervention literature. Second, we explored both negative and positive intervention outcomes and explored how process variables may impact work engagement and burnout. We found that participation could increase work engagement and reduce burnout.

References

- Abildgaard, J.S. Hasson, H., von Thiele Schwarz, U., Løvseth L., Ala-Laurinaho, A., & Nielsen, K. (2018). Forms of participation – the development and application of a conceptual model of participation in work environment interventions. *Economic and Industrial Democracy*. doi.org/10.1177/0143831X17743576.
- Abildgaard, J.S., Nielsen, K., & Sverke, M. (2018). Can the job insecurity be managed? A mixed method evaluation study of an organizational level intervention addressing the negative effects of restructuring. *Work & Stress*, 32(2), 105-123. doi.org/10.1080/02678373.2017.1367735
- Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-practice recommendations for estimating cross-level interaction effects using multilevel modeling. *Journal of Management*, 39(6), 1490-1528. doi.org/10.1177/0149206313478188
- Allard-Poesi, F. (2005). The paradox of sensemaking in organizational analysis. *Organization*, 12(2), 169-196. doi.org/10.1177/1350508405051187
- Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: development and validation of the team climate inventory. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 19(3), 235-258. doi.org/10.1002/(SICI)1099-1379(199805)19:3<235::AID-JOB837>3.0.CO;2-C
- Ashmos, D. P., & Nathan, M. L. (2002). Team sense-making: A mental model for navigating uncharted territories. *Journal of Managerial Issues*, 14(2), 198-217.
- Bartunek, J. M., Rousseau, D. M., Rudolph, J. W., & DePalma, J. A. (2006). On the receiving end: Sensemaking, emotion, and assessments of an organizational change initiated by others. *The Journal of Applied Behavioral Science*, 42(2), 182-206. doi.org/10.1177/0021886305285455
- Becker, T. E., Atinc, G., Breugh, J. A., Carlson, K. D., Edwards, J. R., & Spector, P. E. (2016). Statistical control in correlational studies: 10 essential recommendations for organizational researchers. *Journal of Organizational Behavior*, 37(2), 157-167. doi.org/10.1177/0021886305285455
- Bliese, P. D., Maltarich, M. A., & Hendricks, J. L. (2018). Back to Basics with Mixed-Effects Models: Nine Take-Away Points. *Journal of Business and Psychology*, 33(1), 1-23. doi.org/10.1007/s10869-017-9491-z
- Bodner, T. E., & Bliese, P. D. (2018). Detecting and differentiating the direction of change and intervention effects in randomized trials. *Journal of Applied Psychology*, 103(1), 37-45.

- Bond, F., & Bunce, D. (2001). Job control mediates change in a work reorganization intervention for stress reduction. *Journal of Occupational Health Psychology, 6*, 290-302.
- Budd, J. W., Gollan, P. J., & Wilkinson, A. (2010). New approaches to employee voice and participation in organizations. *Human Relations, 63*(3), 303-310. doi.org/10.1177/0018726709348938
- Busch, C., Koch, T., Clasen, J., Winkler, E., & Vowinkel, J. (2017). Evaluation of an organizational health intervention for low-skilled worknd immigrants. *Human Relations, 70*(8), 994-1016.
- Chan, D. (1998). Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology, 83*(2), 234-246.
- Cornwall, A., & Jewkes, R. (1995). What is participatory research?. *Social Science & Medicine, 41*(12), 1667-1676. doi.org/10.1016/0277-9536(95)00127-S
- Daltuva, J. A., King, K. R., Williams, M. K., & Robins, T. G. (2009). Building a strong foundation for occupational health and safety: Action research in the workplace. *American Journal of Industrial Medicine, 52*(8), 614-624. doi.org/10.1002/ajim.20711
- De Jaegher, H., & Di Paolo, E. (2008). Making sense in participation: An enactive approach to social cognition. *Emerging communication, 10*, 33-47.
- Deci, E. L., & Ryan, R. M. (2000). The " what" and " why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry, 11*(4), 227-268. doi.org/10.1207/S15327965PLI1104_01
- Dreison, K. C., Luther, L., Bonfils, K. A., Sliter, M. T., McGrew, J. H., & Salyers, M. P. (2018). Job burnout in mental health providers: A meta-analysis of 35 years of intervention research. *Journal of Occupational Health Psychology, 23*(1), 18-30. doi.org/10.1037/ocp0000047
- Eklöf, M., Ingelgård, A., & Hagberg, M. (2004). Is participative ergonomics associated with better working environment and health? A study among Swedish white-collar VDU users. *International Journal of Industrial Ergonomics, 34*(5), 355-366. doi.org/10.1016/j.ergon.2004.04.013
- Falgueras, V., Muñoz, C., Pernas, O., Sureda, C., MP, G. L., & Miralles, D. (2014). Burnout and teamwork in primary care teams. *Atencion primaria, 47*(1), 25-31. DOI: 10.1016/j.aprim.2014.01.008
- Finney, S. J., & DiStefano, C. (2006). Non-normal and categorical data in structural equation modeling. *Structural equation modeling: A second course, 10*(6), 269-314.
- Furst, S. A., & Cable, D. M. (2008). Employee resistance to organizational change: Managerial influence tactics and leader-member exchange. *Journal of Applied Psychology, 93*(2), 453-462. DOI: 10.1037/0021-9010.93.2.453

- Gioia, D. A., & Chittipeddi, K. (1991). Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal*, 12(6), 433–448. doi.org/10.1002/smj.4250120604
- Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Harvard University Press.
- 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.org/10.5271/sjweh.3689
- Halbesleben, J. R. (2010). A meta-analysis of work engagement: Relationships with burnout, demands, resources, and consequences. In A.B. Bakker and M.P. Leiter (Eds) *Work Engagement: A Handbook of Essential Theory and Research*. New York: Psychology Press.
- Halbesleben, J. R. B., & Bowler, W. M. (2007). Emotional exhaustion and job performance: The mediating role of motivation. *Journal of Applied Psychology*, 92(1), 93–106. https://doi.org/10.1037/0021-9010.92.1.93
- Hayes, A. F. 2013. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
- Heller, F., Pusic, E., & Strauss, G. (2004). *Organizational Participation, Myth and Reality*, reprint. Oxford: Oxford University Press.
- 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.org/10.1037/a0039962
- Hox, J.J. (2010). *Multilevel analysis. Techniques and applications* (2nd edition). New York: Routledge.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. doi.org/10.1080/10705519909540118
- Imai, M. (1986). *Kaizen*. New York: Random House Business Division.
- Judge, T. A., Thoresen, C. J., Pucik, V., & Welbourne, T. M. (1999). Managerial coping with organizational change: A dispositional perspective. *Journal of Applied Psychology*, 84(1), 107-122. doi:10.1037/0021-9010.84.1.107
- Klein, K. J., & Kozlowski, S. W. (2000). From micro to meso: Critical steps in conceptualizing and conducting multilevel research. *Organizational research methods*, 3(3), 211-236.

- Knight, C., Patterson, M., & Dawson, J. (2017). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. *Journal of Organizational Behavior*, 38(6), 792-812. doi.org/10.1002/job.2167
- Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress*, 19(3), 192-207. doi.org/10.1080/02678370500297720
- Kuijpers, E., Kooij, D. T., & van Woerkom, M. (2020). Align your job with yourself: The relationship between a job crafting intervention and work engagement, and the role of workload. *Journal of Occupational Health Psychology*, 25(1), 1-16. doi.org/10.1037/ocp0000175
- Lawler, E.E. III (1996). *From the Ground Up: Six Principles for Building the New Logic Corporation*. Jossey-Bass, San Francisco, CA.
- Le Blanc, P. M., Hox, J. J., Schaufeli, W. B., Taris, T. W., & Peeters, M. C. (2007). Take care! The evaluation of a team-based burnout intervention program for oncology care providers. *Journal of applied psychology*, 92(1), 213-227. doi.org/10.1037/0021-9010.92.1.213
- Leana, C., Appelbaum, E., & Shevchuk, I. (2009). Work process and quality of care in early childhood education: The role of job crafting. *Academy of Management Journal*, 52(6), 1169-1192. doi.org/10.5465/amj.2009.47084651
- Maitlis, S. (2005). The social processes of organizational sensemaking. *Academy of Management Journal*, 48(1), 21-49. doi.org/10.5465/amj.2005.15993111
- Maitlis, S., & Christianson, M. (2014). Sensemaking in organizations: Taking stock and moving forward. *The Academy of Management Annals*, 8(1), 57-125. doi.org/10.5465/19416520.2014.873177
- McDaniel Jr, R. R., Jordan, M. E., & Fleeman, B. F. (2003). Surprise, surprise, surprise! A complexity science view of the unexpected. *Health Care Management Review*, 28(3), 266-278. doi:10.1097/00004010-200307000-00008
- Michel, A., O'shea, D., & Hoppe, A. (2015). Designing and evaluating resource-oriented interventions to enhance employee well-being and health. *Journal of Occupational and Organizational Psychology*, 88(3), 459-463. doi.org/10.1111/joop.12131
- Mikkelsen, A. (2005). Methodological challenges in the study of organizational interventions in flexible organizations. In A.M. Fuglseth & I.A. Kleppe (Eds.), *Anthology for Kjell Grønhaug in celebration of his 70th birthday* (1st ed., pp. 150-178). Bergen, Norway: Fagbokforlaget.
- Mikkelsen, A., & Gundersen, M. (2003). The Effect of a Participatory Organizational Intervention on Work Environment, Job Stress, and Subjective Health Complaints. *International Journal of Stress Management*, 10(2), 91-110. doi.org/10.1111/joop.12131

- Mikkelsen, A., & Saksvik, P.Ø. (1998). Learning from parallel organizational development efforts in two public sector settings. *Review of Public Personnel Administration*, 2, 5-22. doi.org/10.1177/0734371X9801800202
- Mikkelsen, A., & Saksvik, P.Ø. (1999). Impact of a participatory organizational intervention on job characteristics and job stress. *International Journal of Health Services*, 29, 871-893. doi.org/10.2190/KLPQ-FTH3-WHH5-PPP1
- Miller, K. I., & Monge, P. R. (1986). Participation, satisfaction, and productivity: A meta-analytic review. *Academy of Management Journal*, 29(4), 727-753.
- Montgomery, A., Spânu, F., Băban, A., & Panagopoulou, E. (2015). Job demands, burnout, and engagement among nurses: A multi-level analysis of ORCAB data investigating the moderating effect of teamwork. *Burnout Research*, 2(2-3), 71-79. doi.org/10.1016/j.burn.2015.06.001
- Morrison, E. W., Wheeler-Smith, S. L., & Kamdar, D. (2011). Speaking up in groups: a cross-level study of group voice climate and voice. *Journal of Applied Psychology*, 96(1), 183-191. doi.org/10.1037/a0020744
- Nielsen, K. (2013). How can we make organizational interventions work? Employees and line managers as actively crafting interventions. *Human Relations*. 66, 1029-1050. DOI: 10.1177/001872671347716.
- Nielsen, K., Fredslund, H., Christensen, K.B., & Albertsen, K. (2006). Success or failure? Interpreting and understanding the impact of interventions in four similar worksites. *Work & Stress*, 20(3), 272-287. doi.org/10.1080/02678370601022688
- Nielsen, K. & Miraglia, M. (2017). Critical essay: What works for whom in which circumstances? On the need to move beyond the “what works?” question in organizational intervention. *Human Relations*, 70(1) 40-62. 10.1177/0018726716670226.
- Nielsen, K. & Noblet, A. (2018). Introduction: Organizational interventions: where we are, where we go from here? In K. Nielsen and A. Noblet. *Designing, implementing and evaluating organizational interventions*. London. Routledge, pp. 1-22.
- Nielsen, K., & Randall, R. (2012). The importance of employee participation and perception of changes in procedures in a teamworking intervention. *Work and Stress*, 29 (2), 91-111. doi.org/10.1080/02678373.2012.682721
- Nielsen, K., Randall, R, Holten, A.L. & Rial-González, E. (2010) Conducting Organizational-level Occupational Health Interventions: What Works? *Work & Stress*, 24, 234-259. doi.org/10.1080/02678373.2010.515393
- Nielsen, K., Stage, M., Abildgaard, J.S., & Brauer, C.V. (2013). Participatory intervention from an organizational perspective: Employees as active agents in creating a healthy work environment. Eds: G. Bauer, G. & G. Jenny. *Concepts of salutogenic organizations and change: The logics behind organizational health intervention research*. Dordrecht. Springer Publications, pp. 327-350.

- O'Shea, D., O'Connell, B. H., & Gallagher, S. (2016). Randomised controlled trials in WOHP interventions: A review and guidelines for use. *Applied Psychology, 65*(2), 190-222. doi.org/10.1111/apps.12053
- Parker, S. K., Williams, H. M., & Turner, N. (2006). Modeling the antecedents of proactive behavior at work. *Journal of Applied Psychology, 91*(3), 636-656. doi.org/10.1037/0021-9010.91.3.636
- R Core Team (2014). R: A language and environment for statistical computing [Version 3.1.1]. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from <https://www.r-project.org/>
- Randall, R., Nielsen, K. & Tvedt, S. D. (2009). The development of 5 scales to measure participants' appraisal of organizational-level stress management interventions. *Work & Stress, 23*(1), 1-23. doi.org/10.1080/02678370902815277
- Roskam, E. (2009). Using participatory action research methodology to improve worker health. In P. Schnall, M. Dobson, & E. Roskam (Eds.), *Unhealthy work: Causes, consequences, cures* (pp. 211-229). New York, NY: Baywood Publishing Company.
- Salas, E., Rozell, D., Mullen, B., & Driskell, J. E. (1999). The effect of team building on performance: An integration. *Small group research, 30*(3), 309-329. doi.org/10.1177/104649649903000303
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66*(4), 701-716. doi.org/10.1177/0013164405282471
- Settles, I. H., Cortina, L. M., Stewart, A. J., & Malley, J. (2007). Voice matters: Buffering the impact of a negative climate for women in science. *Psychology of Women Quarterly, 31*(3), 270-281. doi.org/10.1111/j.1471-6402.2007.00370.x
- Stensaker, I., Falkenberg J., & Grønhaug, K. (2008). Implementation activities and organizational sensemaking. *The Journal of Applied Behavioral Science, 44*(2), 162-85.
- Theorell, T., Hammarström, A., Aronsson, G., Bendz, L. T., Grape, T., Hogstedt, C., ... & Hall, C. (2015). A systematic review including meta-analysis of work environment and depressive symptoms. *BMC public health, 15*(1), 738. doi.org/10.1186/s12889-015-1954-4
- 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. doi: 10.1097/JOM.0b013e3181a24d28
- Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the Work-related Basic Need Satisfaction scale. *Journal of Occupational and Organizational Psychology, 83*(4), 981-1002. doi.org/10.1348/096317909X481382

- Van Mierlo, H., Rutte, C. G., Kompier, M. A., & Doorewaard, H. A. (2005). Self-managing teamwork and psychological well-being: Review of a multilevel research domain. *Group & Organization Management, 30*(2), 211-235. doi.org/10.1177/1059601103257989
- Van Mierlo, H., Vermunt, J. K., & Rutte, C. G. (2009). Composing group-level constructs from individual-level survey data. *Organizational Research Methods, 12*(2), 368-392. doi.org/10.1177/1094428107309322
- Von Thiele Schwarz, U., Nielsen, K., Stenfors-Hayes, T., Hasson, H. (2017). Using Kaizen to improve employee wellbeing: Results from two organizational intervention studies. *Human Relations, 70*(8), 966-993. DOI: 10.1177/0018726716677071.
- Walters, D., Wadworth, E., & March, K. (2012). *Worker representation and consultation on health and safety: an analysis of the findings of the European Survey of Enterprises on New and Emerging Risks (ESENER)*. Publications Office of the European Union.
- Weber, P. S., & Manning, M. R. (2001). Cause maps, sensemaking, and planned organizational change. *The Journal of Applied Behavioral Science, 37*(2), 227-251. doi.org/10.1177/0021886301372006
- WEHD (2020). Work environment and health in Denmark. <http://www.arbejdsmiljoforskning.dk/da/arbejdsmiljoedata/arbejdsmiljoe-og-helbred-20> Accessed 7 June 2020.
- Weick, K. E. (1988). Enacted sensemaking in crisis situations. *Journal of Management Studies, 25*(4), 305–317. doi.org/10.1111/j.1467-6486.1988.tb00039.x
- Weick, K. E. (1995). *Sensemaking in organizations*. Thousand Oaks, CA: Sage Publications.
- Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science, 16*(4), 409-421. doi.org/10.1287/orsc.1050.0133
- West, C. P., Dyrbye, L. N., Erwin, P. J., & Shanafelt, T. D. (2016). Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. *The Lancet, 388*(10057), 2272-2281. doi.org/10.1016/S0140-6736(16)31279-X
- Williams, D., Tricomi, G., Gupta, J., & Janise, A. (2015). Efficacy of burnout interventions in the medical education pipeline. *Academic Psychiatry, 39*(1), 47-54. doi.org/10.1007/s40596-014-0197-5