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Employees' and Line Managers' Active Involvement in Participatory Organizational Interventions: Examining Direct, Reversed, and Reciprocal Effects on Well-Being

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Abstract

This study examined how employee participation and perceptions of line managers' support during a participatory organizational intervention were related to well-being over time. While previous studies suggest that employees' and managers' active involvement in participatory organizational interventions may be related to well-being, little is known about the temporal aspects, such as at which time during the intervention these factors matter, or possible reciprocal effects. Building on conservation of resources theory, we tested hypotheses concerning direct, reversed, and reciprocal relationships between employee participation and perceptions of line manager support in relation to well-being. We used a four-wave panel design consisting of 159 hospital workers. Cross-lagged analyses showed that perceived line managers' support in the initiation and active phase was related to participation in the active phase. Participation in the initiation and active phase was related to well-being in the active and sustained phase, respectively. Results also revealed that participation in the initiation phase was related to perceived line managers' support in the active phase, which in turn predicted participation in the active phase, which translated into job satisfaction in the sustained phase supporting reversed and reciprocal effects in the form of resource caravans. Theoretical implications for research and practice are discussed.

*Keywords:* employee participation, perceived line managers' support, participatory organizational interventions, temporal perspective

## Employees' and Line Managers' Active Involvement in Participatory Organizational Interventions: Examining Direct, Reversed, and Reciprocal Effects on Well-being

Participatory organizational interventions – that is intentional actions in which employees and employers work together to improve employee well-being by changing the way work is organized, designed and managed (Nielsen, 2013) – is the recommended approach to psychosocial risk management in policies and legislation world-wide (e.g., ILO, 2001; EU-OSHA, 2010). However, empirical evidence supporting such interventions is somewhat mixed (e.g., Kawakami et al., 1997; Parker, 2003). Evaluation of participatory organizational interventions is challenging given the complexity and instability of organizations, the mix of participatory and top down elements in the same intervention, and evaluation studies have also been limited by under-reporting concerning the intervention process and contextual factors (Murta, Sanderson, & Oldenburg, 2007).

It has been argued that employee participation and perceptions of line managers' support influence intervention outcomes (Nielsen, 2013), reflecting the fact that both these groups play key roles in determining whether an organizational intervention may or may not be successful. Both employees and line managers are active agents, and they need to change their behaviors if changes in working procedures are to occur (Nielsen, 2013). Line managers are most often the drivers of change, as they are responsible for translating senior management's decisions about intervention goals into plans for change that are understandable and acceptable to employees (Nielsen & Randall, 2009). Employees play a key role, because they are expected to implement the planned changes; if they do not change their behavior, no change will occur (Nielsen, 2013). The purpose of the present study is to examine if and when employee participation in intervention activities and perceived line managers' support of the intervention are related to intervention outcomes, i.e. employee well-being, over time using a four-wave cross-lagged panel model.

Little is known about at what point in time employee participation and perceptions of line managers' support may have the greatest impact on intervention outcomes, i.e., employee well-being. From an implementation perspective, once the decision has been made to go forward with a given intervention, the intervention process may be divided into three broad phases: (1) the initiation phase, which takes place before the intervention is introduced and includes planning and other preparatory work such as information activities, activities to increase readiness for change, pilot testing (Nielsen & Abildgaard, 2013, Nielsen, Randall, Holten, & Rial Gonzalez, 2010), (2) the active intervention phase, which includes screening, development of action plans, and implementation of intervention activities (Nielsen & Abildgaard, 2013), and (3) the sustained phase, indicating the time when intervention activities are an integral part of everyday work.

Employee participation and perceived manager support may play a role during all these phases. For example, in the initiation phase, employees and line managers decide how much time and energy to invest in the intervention. In the active phase, employee participation and perceived line manager support may influence the realization of plans, and in the sustained phase, employee participation and perceived line managers' support help to ensure that the potential effects of an intervention do not dissipate, but rather become an integral part of everyday work. The influence of employee participation and perceived manager support at different phases in the intervention process are not well understood. It is, for example, possible that one of these factors is important during the initiation phase and another during the active intervention phase. Furthermore, few previous studies have examined whether employee well-being affects employee participation and perceived line manager support, thus reflecting reversed relationships, or reciprocal effects in the form of gain spirals. In line with Danna and Griffin (1999), we view well-being as comprising both

work- and non-work-related aspects of satisfaction and general health, and in the present study, we use job satisfaction and work ability as indicators of well-being.

The study's contribution to the current research is twofold. First, we examine at what intervention phase employee participation and perceived line manager support are related to employee well-being, thus addressing Nielsen's (2013) call for increased understanding of these factors' role in intervention outcomes. The majority of previous studies have examined the role of participation and perceived line manager support on the same measurement occasion as intervention outcomes (e.g., Nielsen & Randall, 2009; 2012; Randall, Nielsen, & Tvedt, 2009), not allowing any conclusions to be drawn concerning temporality, reversed causation or reciprocal relationships. Understanding the temporal aspects of the intervention process is important for a number of reasons. At what point in time we expect participation and perceived line managers' support to affect outcomes, and vice versa, should guide our research designs, for example our choice of measurement intervals (Timmons & Preacher, 2015), which would also allow us to better test our hypotheses. Also, if there are no guidelines concerning when to measure participation, perceived line managers' support, and outcomes, evaluations may miss important relationships (Ployhart & Vandenberg, 2010) and practitioners will not know when to involve employees and line managers in the intervention process.

Second, we further the study of temporal aspects by examining reversed causation, i.e., whether intervention outcomes, in the present case employee well-being, is related to perceptions of participation and line managers' support. Knowledge of how employee well-being may be related to the intervention process is valuable when starting up an intervention, as it allows us to understand how these factors may help or hinder implementation. For example, on the one hand, Nielsen et al. (2006) found a ceiling effect whereby intervention groups who reported high level of well-being prior to the intervention resulted in few

opportunities to improve, on the other hand, Nielsen and Randall (2012) found that a certain level of maturity is needed: Employees who reported high levels of well-being pre-intervention were more likely to report that the intervention had been implemented. Also, employees who were more satisfied with their jobs were more likely to engage in the participatory process. Moreover, by adding the temporal perspective and building on conservation of resources theory (COR; Hobfoll, 1989), we examine possible gain spirals in the form of reciprocal relationships between employee well-being and the behaviors of employees and line managers (i.e., employee participation and perceived line managers' support) to gain a fuller understanding of the complexity of the relationship between employee health and managers' and employees' active involvement in organization-level interventions.

### **Participation in Organizational Interventions and Employee Well-Being**

In the present study, we define participation as employees' perception of influence over the content of an intervention or the process of implementing it (Abildgaard et al., 2018), in our case during an intervention aimed at integrating occupational health and safety and health promotion with a continuous improvement system, Kaizen . In our study, a participatory approach was used in which all staff on the participating wards were invited to participate in identifying risks and improvement areas and suggesting, testing and evaluating possible solutions. Thus, in essence, both risk assessment (i.e., identification of areas in need of improvement) and selection of initiatives to implement were driven by employees.

Employee participation in organizational interventions has been suggested to be a central element when implementing interventions that is related to employee well-being both directly and indirectly through changes in working conditions. In the initiation phase, drawing on employees' expertise and knowledge may increase the likelihood that what is being planned and implemented is useful and relevant (Roskam, 2009) and well integrated into

existing organizational structures and processes (Tsutsumi, Nagami, Yoshikawa, Nogi, & Kawakami, 2009). Further, Nielsen and Randall (2012) found that employees involved in decisions about the intervention process reported increases in perceived autonomy and empowerment.

In the active intervention phase, employee participation may increase employees' perceived ownership of change, which in turn may help to ensure successful implementation (Roskam, 2009). Also, the experience of participation during a change process, where employees and managers act together as co-learners, may work as an empowering process (Mikkelsen, 2005), but also strengthen relationships between coworkers. In line with these arguments, Landsbergis and Vivona-Vaughan (1995) found that employee participation during organizational change results in strengthened working relationships with co-workers. Further, the job demands-control model (Karasek & Theorell, 1990) suggests that employees who experience high control-high demands conditions are more likely to experience active jobs characterized by learning and personal growth, and as a consequence improved well-being. In support of these assumptions, a number of studies have demonstrated that participation during organizational change is related to improvements in employees' mental health (Bond & Bunce, 2001), job satisfaction (Landsbergis & Vivona-Vaughan, 1995; Sverke, Hellgreen, Näswall, Göransson, & Öhrming, 2008), and reduced emotional exhaustion (Sverke et al., 2008). Existing studies linking employee participation to intervention outcomes are still few in number. Looking at a participatory teamwork intervention, Nielsen and Randall (2012) found that employee participation in planning and implementing the intervention was associated with their perceptions of changes in procedures concerning teamwork and post-intervention social support. Moreover, Randall et al. (2005) demonstrated that participation was related to post-intervention levels of exhaustion. Both Nielsen and Randall (2012) and Randall et al. (2005) measured participation and outcomes



after the intervention, not testing during what phase of the intervention employee participation is important.

COR theory (Hobfoll, 1989) may explain why employee participation will lead to increases in well-being. It suggests that individuals strive to acquire and maintain resources, defined as “objects, personal characteristics, conditions or energies valued in their own right (Hobfoll, 2001, p.339). According to COR theory, resources build not only resilience to stress by preventing the individual from perceiving events as stressors, it also improves overall well-being (Clarke, Arnold, & Connelly, 2015). Participation, both in the initiation and active intervention phase, may offer employees the opportunity to build resources in terms of a better working environment. Through discussions with their colleagues of what can be changed in the working environment and putting action plans together concerning how to improve the situation at work, employees can develop jobs that provide them with more challenges at work and social job resources (Nielsen & Abildgaard, 2012) and higher job satisfaction. Participation in the intervention may also increase employee workability, as employee participation in developing action plans increases the chance of what is being implemented will be adapted to employees capabilities Although no previous studies have examined at what intervention phase employee participation is related to well-being, we argue that employee participation is important in the initiation phase, when employees can decide how much time and energy to invest in an intervention, as well as in the active intervention phase, to ensure employee commitment to and ownership of the change process. We therefore propose:

*Hypothesis 1. Employee participation in the intervention process has a lagged effect on job satisfaction and work ability.*

## **Perceived Line Managers' Support of Organizational Interventions and Employee Participation**

It has been suggested that line managers play an important role in occupational health interventions because they are responsible for translating organizational change plans into actions (Bryant & Stensaker, 2011; Kavanagh & Ashkanasy, 2006) and because of their proximity to employees (Lewis, Yarker, & Donaldson-Fielder, 2012; Nielsen, 2013). Consequently, a number of studies have examined the role of line managers in implementing participatory organizational interventions (Biron, Gattrell, & Cooper, 2010; Hasson, Villaume, von Thiele Schwarz, & Palm, 2014; Nielsen & Randall, 2009; Randall et al., 2009). We will argue that perceptions of line managers' support is important for whether employees chose to participate in the organizational interventions and ultimately also the outcomes of such interventions, in our case employees levels of well-being.

Often, senior management or HR only provide general guidelines or principles for change, leaving it up to the line managers to put the general intentions or plans into concrete action (Nielsen, 2013). Building on COR theory (Hobfoll, 1989) line managers' support may therefore be an important resource needed in the initiation phase to convert the intentions of the intervention into concrete work practices and procedures (Kira et al., 2010; Wrzesniewski & Dutton, 2001), which will enable employees to participate in the intervention. Drawing on this, it may be hypothesized that perceptions of line managers' support is important in the initiation phase when employee buy-in and participation must be ensured. In addition, line managers who express their support of the intervention to employees in the initiation phase may foster commitment and engagement to the intervention among employees (Nielsen, 2013) that translates into perception of participation in later phases. In the active intervention phase, manager support may be important to motivate employees to participate in the intervention and to implement the changes that are part of the intervention (Nielsen, Randall, & Christensen, 2015). In line with these arguments, empirical studies confirm the importance of perceived manager support for employees' perception of participation in general

(Richardson & Vandenberg, 2005) and during organizational interventions in particular (Coyle-Shapiro, 1999; Ipsen et al., 2015). We therefore propose;

*Hypothesis 2. Perceived line managers' support of the intervention has a lagged effect on employee participation.*

### **Perceived Line Managers' Support of Organizational Interventions and Employee Well-Being**

In the initiation phase, COR theory (Hobfoll, 1989) may explain why perceptions of line managers' support is linked to outcomes of participatory organizational interventions. First, as mentioned above, line managers' support may be viewed as an important resource needed to convert the intentions of the intervention into concrete work practices and procedures (Kira et al., 2010; Wrzesniewski & Dutton, 2001). Second, line managers' support may help employees to build resources that enable them to fully benefit from the intervention, such as increasing the levels of readiness for change (e.g., Nordin, 2011). Although few studies have directly linked perceived line managers' support to intervention outcomes, Randall et al. (2009) found that employees' appraisal of their line managers' attitudes toward the intervention positively predicted intervention outcomes for self-efficacy, job satisfaction, and well-being.

In the active intervention phase, manager support may enable employees to implement the changes that are part of the intervention (Nielsen, Randall, & Christensen, 2015). By implementing the planned improvements at work, levels of job satisfaction may be enhanced. It may also improve work ability, as the planned improvements may help to adapt the working environment to the abilities of the employee. This line of thinking is supported in a study by Nielsen and Randall (2009), who demonstrated that employees' perceptions of managers' active involvement and support during the intervention were positively related to improvements in working conditions, which in turn were related to increased job satisfaction

and well-being. Thus far, the support provided by line managers during implementations of participatory organizational interventions has mainly been examined after the intervention, on the same measurement occasion as intervention outcomes (Nielsen & Randall, 2009), thus offering limited information on temporal aspects. One exception is a study investigating what affected the intervention process of a teamwork intervention (Frykman, Hasson, Athlin & von Thiele Schwarz, 2014). The study showed that line managers had a central motivating role during the active intervention phase, whereas their support was less important once teamwork had become an established daily practice, because by that time, task-related feedback had become a more important motivator. Building on the above we propose:

*Hypothesis 3. Perceived line managers' support of the intervention has a lagged effect on job satisfaction and work ability.*

### **Reversed and Reciprocal Relationships Between Employee Participation, Perceived Line Manager Support, and Employee Well-Being**

Although previous research has focused on establishing a link between employee participation and perceived line managers' support in relation to intervention outcomes, there is also evidence supporting a reversed relationship, i.e. that employees' well-being may affect their perception of the intervention process, including perceptions of participation and their line managers' support. For example, Nielsen and Randall (2009; 2012) found that employee well-being prior to a participatory organizational intervention among elder care workers affected their perception of managers' support during the intervention. This is consistent with COR theory (Hobfoll, 1989; 2001), which suggests that, in the absence of threats, people are motivated to create resources. Employees with higher levels of well-being will activate or create job resources (e.g., ask colleagues for help or use the control made available to them through the participatory process) to use as a means to develop and implement changes to the way work is organized, designed, and managed. These ideas are in line with the work of

Fredrickson (2003), who suggested that positive affective states can build enduring personal, social, and psychological resources by broadening employees' momentary thought-action repertoires. Well-being, as a positive affective state, may build resources by creating the urge to expand the self through learning and goal fulfillment. Building on the above, we argue that employees with higher levels of job satisfaction or work ability may be more inclined to participate in the intervention or seek out support from their manager, and we therefore propose:

*Hypothesis 4. Job satisfaction and work ability have a lagged effect on employee participation in the intervention process and perceived line manager support of the intervention.*

There may also be reversed relationships between perceived line manager support and employee participation, where employees perception of participation may affect the support they perceive from their managers. Indeed, an increasing number of studies suggest that line managers do not lead in a vacuum, and that managers possibilities to exert leadership behaviours are influenced by their employees resources (e.g., Nielsen & Munir, 2009). Employees that happily participate in an organizational intervention may be one such resource that enable the line manager to better support the intervention. In line with these ideas, Björklund and colleagues (2007) found that employees who actively participated in an organizational intervention, reported better leadership quality post-intervention. Building on the above, we propose:

*Hypothesis 5. Employee participation has a lagged effect on perceived line manager support of the intervention.*

It is also possible that employee participation and perceived line managers' support demonstrate reciprocal relationships to outcomes, such that employee health and well-being is related to perceptions of participation and line managers' attitudes, which in turn may be

related to employee health and well-being. COR theory may be used to explain how such gain spirals work (Hobfoll, 2011). COR theory suggests that employees not only strive to protect, but also to accumulate current resources, and it predicts that employees in possession of more resources are also more capable of gaining resources. This phenomenon is called gain spirals, where initial resource gain leads to future gain because gained resources increase the resource pool, making it more likely that additional resources will be acquired. COR theory further suggests that this accumulation and linking of resources form a so-called “resource caravan.” As an example, employees working in a resourceful environment are likely to reinforce their beliefs in their capabilities, feel valued, and be optimistic about meeting their goals, which in the long run results in positive personal outcomes in the form of better coping and well-being.

Empirical research has supported the existence of gain spirals and “resource caravans” (e.g., Hakanen, Perhoniemi, & Toppinen-Tanner, 2008; Salanova, Bakker, & Llorens, 2006; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). In organizational interventions, employees with high levels of well-being may experience a gain spiral in which they use current resources to gain new ones, such as actively participating in the intervention as a way to improve their work environment, which over time increases their well-being even more. To our knowledge, no previous studies have examined reciprocal effects between employee well-being and participation or between well-being and perceptions of line managers’ support, but in line with the above reasoning, we propose:

*Hypothesis 6. Job satisfaction and work ability are reciprocally related to employee participation in the intervention process and perceived line manager support of the intervention.*

## **Method**

### **Design and Setting**

The present study is based on a four-wave longitudinal data set from a cluster-randomized intervention study. The study was set in a regional hospital in Sweden employing

approximately 500 people. The hospital provides services within several sub-specialties (e.g., surgery, internal medicine, geriatrics and acute and intensive care), including both daytime care and around-the-clock care. After the first data collection, the twelve units were matched in most similar pairs based on unit characteristics (size, acute versus non-acute care, day versus around the clock care) and structure of internal quality improvement work. From each pair, one unit was randomized to the intervention group and the other to the control. The intervention started with baseline in 2011 with the last data collection 24 months later, in 2013. A previous study evaluated the effects, showing positive effects on health protection and promotion work, engagement in continuous improvements (Kaizen), as well as improved understanding of how work and health are interlinked. There was also a trend toward improvements in work ability and productivity (References omitted for Review). For the purpose of the present study, where the focus is on how employee participation and perceptions of line managers' support were related to outcomes, only data from the intervention group is presented, as only participants in the intervention could respond to factors relating to the intervention process such as participation and perceptions of line managers' support of the intervention. The present study therefore has an adapted study design, where variation in process factors are tested in relation to intervention outcomes (Randall, Griffiths, & Cox, 2005). These designs are helpful to understand when and why organizational interventions work, and have been put an important next step in intervention research (Nielsen, Taris, & Cox, 2010)

### **The Intervention**

The intervention was a participatory, integrated intervention aimed at improving the way occupational health and safety (OHS) and health promotion (HP) were conducted in the organization (denoted LeanHealth). This was accomplished by integrating the process through which OHS and HP were approached in their continuous improvement system: Kaizen. The

Kaizen system had been introduced throughout the organization in 2009 as a way to engage employees in working continuously with identifying work problems and discussing, testing and evaluating possible solutions using a structured action plan. This was documented in a specific document format, i.e. a Kaizen note. Participatory meetings were held 1-4 times a month at each unit and were led by one to three employees serving as unit Kaizen representatives. Within this general work process, each unit decided independently how to set up the details of their Kaizen work. The intervention was rolled out within this pre-existing Kaizen work process, and thus involved modification of the existing practice rather than the addition of new processes or structures. In practice, the intervention had two main components. The first was that issues relating to OSH and HP were to be identified and addressed using the same procedures as problems and suggestions for improvements related to, for instance, production and quality, using the Kaizen notes. Second, all issues, regardless of the nature of the problem, were to be analyzed from the OSH and HP perspective. The researchers provided support and guidance to the hospital in conducting the intervention and, where responsible, in collecting and evaluating the data using an interactive research approach. More details concerning the intervention and implementation of the intervention can be found elsewhere (Reference omitted for review).

The overarching aim of the intervention was to put worker health issues on the daily agenda and to link employee health to hospital procedures. The intervention involved changing the process through which occupational health was approached, thereby giving employees a better understanding of how work conditions affected health, and vice versa. Subsequently, each unit was expected to identify and implement action plans for more specific issues. Thus, the intervention was set up to have a positive impact on employee health in two ways: One related to the new process of working with occupational health and one related to the specific changes launched on each level. Whereas the latter would be related to



more specific outcomes at each unit, depending on what issues each unit targeted, and not expected to be detectable in the overall evaluation of effects of the intervention, the former was anticipated to lead to improvements in broader types of outcomes. Job satisfaction and work ability were identified as feasible indicators of such broader outcomes, based on previous research indicating that these factors are related to a broad range of work- and health-related factors (Airila, Hakanen, Punakallio, Lusa, & Luukkonen, 2012; Macdonald & MacIntyre, 1997).

### **Data Collection Procedure**

Questionnaire data were collected at four time points, 0, 6, 12 and 24 months, reflecting the initiation phase (0 months), the active intervention phase (6 and 12 months) and the sustained phase (24 months). Data were collected on two occasions in the active intervention phase to allow more sophisticated analysis of this broad phase, whereas one occasion each was judged to be feasible for the initiation and sustained phase. We used a web-based questionnaire that was sent via a link in an email. The first data collection wave was completed before the intervention had started. The intervention was then launched at the intervention units through a workshop where staff representatives and managers participated and were supported by clarifying how they, in turn, would launch the intervention on their unit. This was then initiated during the following months so that at the 6-month follow-up, the intervention had recently been introduced to all staff on the intervention units. The work with establishing the intervention components continued up to the 12-month follow-up, during which additional joint meetings with staff representatives and managers were held to support the process. Coaching by a member of the research team (who had no other roles in the project) was also offered to support managers and the central hospital staff involved in the intervention. At the 12-month follow-up, interviews with staff representatives indicated a need for new written informational material about the intervention, and staff representatives

and managers were engaged to create such material. Support from the research team was gradually withdrawn over the course of the project so that more and more was taken over by hospital staff, and it ended 18 months after the baseline measurement.

### **Participants**

Participants were all currently employed staff working at the intervention units and in active duty at the hospital, excluding those employed on an hourly basis and staff on parental leave, long-term sick leave or leave of absence, but including new hires between the measurement waves. At baseline, 172 employees completed the survey (response rate 88%). The corresponding numbers at the first follow-up (at 6 months) was 173 employees (response rate 80%). At the second follow-up (at 12 months) 175 employees responded (response rate 81%) and at the third follow-up (at 24 months), 171 employees answered the survey (response rate 78%). The final sample consisted of 159 employees. Their mean age was 45.8 years (SD 10.9) and 93.6% were women, Mean tenure at the current work place was 9.5 years (SD 8.6) and they held positions as physicians, nurses, assistant nurses, physiotherapists, and administrators at the hospital.

### **Measures**

We used single items as indicators of our constructs. When collecting longitudinal survey data, in this case over four measurements waves, the tradeoff between measurement reliability and validity, on the one hand, and potential decreases in response rate due to a lengthy questionnaire, on the other, has to be considered (Fisher, Matthews, & Gibbons, 2016). Single items make it difficult to establish reliability as well as construct validity. However, a recent study examined a wide range of single items in organizational research and found support of their usefulness in terms of good psychometric properties (Fisher et al., 2016). Also, single items have been found appropriate in situations where the constructs are concrete and unidimensional and the sample size limited (Fuchs & Diamantopolos, 2009),

which is the case in our study. We therefore decided to use single items to keep our questionnaire as short as possible, the aim being to keep response rates high over time. The single items of job satisfaction and work ability have been used in previous research, demonstrating both acceptable validity and reliability (Ahlstrom, Grimby-Ekman, Hagberg, & Dellve, 2010; Dolbier et al., 2005; El Fassi et al., 2013; Wanuous, Reichers, & Hudy, 1997), . The single items measuring employee participation and line managers' support were developed by the research team to assess the specific intervention process under study. All single items were piloted at the hospital with members of the HR department as well as with the health coordinator, to ensure items with high face validity.

**Employee participation.** We assessed employees' perception of participation, in terms of influence over the intervention process, with the statement "I feel that I am an important part of how we approach health promotion at my workplace". Respondents were asked to rate to what degree they agreed with the statements on a 4-point Likert scale (0-3).

**Perceived line manager support.** We measured perceived line manager support of the intervention, in this case the implementation of Kaizen, using a single item reflecting the line managers' Kaizen leadership. The statement was "I believe that my closest manager encourages us to use Kaizen to develop our work." Respondents were asked to rate to what degree they agreed with the statements on a 4-point Likert scale (0-3).

**Job Satisfaction.** We measured global job satisfaction using a single item from the Job Satisfaction Scale from Hellgren, Sjöberg, and Sverke (1997), which is based on the work of Brayfield and Rothe (1951). The respondents were asked to rate their overall satisfaction with their work, "I'm satisfied with my job", on a 4-point Likert scale (0-3).

**Work ability.** We assessed work ability with a single item asking the respondents to rate their current work ability as compared to their work ability at its best. The response was given on a 10-point scale ranging from "Complete lack of work ability" (1) to "Work ability

at its best” (10) (Tuomi, Ilmarinen, Jahkola, Katajarinne, & Tulkki, 1998; Dallner et al., 2000).

### **Statistical Analysis**

Analyses using a four-wave cross-lagged, autoregressive panel model were performed to examine the temporal relationship between the study variables. This type of analysis can examine direct, reversed, and reciprocal relationships. A path analytic approach was used, and all models included stability effects between constructs. Residuals at the same time point were allowed to covary, and all earlier time points predicted later time points within constructs (e.g. work ability at time 4 was predicted by work ability at time 1, 2 and 3). Given the model complexity in combination with the relatively small sample size, we decided to test our hypotheses in two separate models (one for each intervention outcome) in an effort to increase the number of observations per estimated parameter (Bollen, 1989). Two models were therefore tested, the first model examined the relationships between perceived line manager support, employee participation, and job satisfaction (Model 1). The second model examined the relationship between perceived line manager support employee participation and work ability (Model 2), Given that our data consisted of employees nested within 12 departments (with one manager leading each department), we also ran alternative models with one dummy variable for each department. As these models were similar to the original models, to increase power we decided to not include these covariates in the final analyses. All models were estimated using the software Mplus version 7.3 (Muthén & Muthén, 1998-2012). Regarding missing values, 99 respondents answered all four surveys. However, Mplus uses FIML (full information maximum likelihood) to handle missing data, where all available data are used. FIML has been found to be superior to other methods of handling missing data such as listwise deletion or pairwise deletion (Enders & Bandalos, 2001). Conventional cut-off criteria ( $CFI > 0.90$ ,  $SRMR$  and  $RMSEA < 0.08$ ) were used to evaluate the model fit (Hu & Bentler, 1999).

## Results

Descriptive statistics and correlations between the study variables are presented in Table 1. With four waves of data collection, attrition is to be expected. We conducted a series of t tests on demographic variables and core constructs from Time 1 to determine whether there were meaningful differences across two samples: the panel sample responding to all four surveys ( $n = 99$ ) versus participants who completed only one, two, or three of the four surveys ( $n = 71$ ). No group differences were found for the core constructs (participation, perceived line manager support, job satisfaction and workability), age, or tenure. However, there was a significant difference on gender, with the panel sample including more women than the attrition sample (97 % compared to 88 %). Taken together, these analyses suggest that there was no systematic biasing effect due to attrition.

[Insert Table 1 about here]

To examine the relationship between the intervention process, in terms of employee perceptions of participation and line manager support, and employee well-being over time, two cross-lagged panel models were analyzed. First, the relationship between perceptions of line manager support, participation during the intervention process and job satisfaction were examined. The model showed an acceptable fit to the data:  $\chi^2(18) = 19.63, p > .05, CFI = .98, RMSEA = .02, 95\% CI (.00, .07), SRMR = .03$ . Second, the relationships between perceptions of line manager support, participation and work ability were examined. The second model also showed an acceptable fit to the data:  $\chi^2(18) = 23.91, p > .05, CFI = .99, RMSEA = .05, 95\% CI (.00, .09), SRMR = .03$ . In the two models, a number of paths were not significant. In line with recommendations in the literature (Kline, 2005) and previous research (Matthews & Toumbeva, 2015), we therefore trimmed the two models by removing nonsignificant paths. The trimmed models were then compared to the original models using the  $\chi^2$ -difference test to examine if they resulted in a statistically significant decrease in model fit or not.

In the first model, including perceived line manager support, participation, and job satisfaction, 17 nonsignificant paths were removed. The trimmed model (see Figure 1) did not demonstrate a significant decrease in model fit,  $\chi^2(35) = 44.20, p > .05$ , CFI = .99, RMSEA = .04, 95 % CI (.00, .07), SRMR = .07,  $\Delta \chi^2$ -difference (17) = 24.57,  $p > .05$ . The trimmed model therefore served as the basis for our hypothesis testing (see Figure 1). In the second model, including perceived line manager support, participation, and work ability, we removed 18 nonsignificant paths. The trimmed model did not demonstrate a significant decrease in model fit,  $\chi^2(40) = 51.29, p > .05$ , CFI = .98, RMSEA = .04, 95 % CI (.00, .07), SRMR = .06,  $\Delta \chi^2$ -difference (22) = 27.38,  $p > .05$ , and was therefore used as the basis for our hypothesis testing (see Figure 2).

In line with Hypothesis 1, employee participation at the initiation phase predicted both job satisfaction ( $\beta = .18, p < .05$ ) and work ability ( $\beta = .16, p < .05$ ) 6 months into the active intervention phase. In addition, participation at 12 months (i.e. active intervention phase) predicted job satisfaction at 24 months (i.e., sustained phase) ( $\beta = .24, p < .01$ ).

Lending partial support to Hypothesis 2, in both tested models perceived line manager support in the initiation phase was related to participation 6 months into the active intervention phase in both ( $\beta = .23$  and  $.21, p < .05$ ), and perceived line manager support at 6 months predicted participation at 12 months ( $\beta = .25$  and  $.27, p < .05$ ).

Hypothesis 3, that perceived line manager support had lagged relationships to job satisfaction and work ability was not supported.

Hypothesis 4, suggesting reversed relationships between the well-being measures in relation to participation or perceived line manager support was not supported.

Hypothesis 5 was partly supported as participation in the initiation phase was related to perceived line manager support 6 months into the intervention both in the first ( $\beta = .20, p < .05$ ) and the second model ( $\beta = .20, p < .01$ ).

Finally, Hypothesis 6 predicted reciprocal relationships, where initial levels of job satisfaction or work ability would be related to perceived line manager support or participation, which in turn would increase levels of job satisfaction or work ability over time. The patterns of relationships over time do not support Hypothesis 6.

[Insert Figure 1 &2 about here]

### **Discussion**

In a four-wave cross-lagged panel model, we examined how employees' perceptions of participation and line managers' support for the intervention were related to the intervention outcomes over time, in terms of employee job satisfaction and work ability. The focus was on the temporal aspect, i.e. during which intervention phase employee participation and perceived line manager support are related to intervention outcomes. We found partial support for Hypothesis 1 that employees' participation, both in the initiation and active intervention phase, was positively related to employee job satisfaction and work ability. We found partial support for Hypothesis 2; perceptions of line managers' support in both the initiation phase as well as the active intervention phase was related to participation in the active intervention phase. In addition, indicating reversed causation, participation in the initiation phase predicted perceptions of line manager support in the active intervention phase partly supporting Hypothesis 5. However, no reversed relationship were found between the well-being measures in relation to neither participation nor perceived line manager support.

To the best of our knowledge, the present study is the first attempt toward developing a temporal perspective on the intervention process and outcome relationship in participatory organizational interventions (Collins, 2006; Ployhart & Vandenberg, 2010) – a perspective that is important to improving intervention design and implementation as well as intervention evaluation (Pettigrew, Woodman, & Cameron, 2001). It is well known from prior studies that both employee participation and perceived line manager support are important for intervention success (e.g., Nielsen & Randall, 2009, 2012). Extending these findings, the

present study highlights the importance of a temporal perspective by illustrating that employee participation and perceived line manager support were not equally important during all of the intervention phases.

Employee participation was positively related on employee well-being both in initiation and the active intervention phase. These findings implies that employee participation is important initially and during the intervention because it increases the likelihood that employees' expertise in the area will be taken into consideration, and that the intervention will be tailored to the needs and wishes of the target group and thus be effective in improving employee well-being (Roskam, 2009). The present results seem to indicate that intervention facilitators should focus on ensuring employee involvement before and during the intervention, until the intervention has become an integrated part of the functions of the organization. In addition, the finding that employee participation is associated with increased well-being is in line with COR theory (Hobfoll, 1989) where employees through active participation in the intervention can build resources by discussing what can be changed in the working environment with their co-workers.

Perceived line manager support was not directly related to employee well-being. Instead, perceptions of support from the line manager were related to increased levels of participation, both in the initiation phase and the active intervention phase. Qualitative research has suggested that line managers' support prior to an intervention may impact on how well the intervention will be implemented (Ipsen, Gish, & Poulsen, 2015). However, the present results suggest that this is not translated to positive employee well-being outcomes directly. Rather, perceived line managers' support translates into increased perceptions of participation in the intervention. The present study thereby sheds lights on the process by which line managers' influence intervention outcomes, and how different factors related to the intervention process are related to each other. Our findings are also in line with frameworks of



participatory organizational interventions, that suggest that line managers role during interventions is to facilitate participation (Nielsen, 2013).

Although our study is a first attempt to understand these temporal aspects, developing a temporal perspective is important as it may help to guide future researchers in designing more accurate measurement intervals (Timmons & Preacher, 2015), and thereby not missing out important relationships (Ployhart & Vandenberg, 2010). Knowledge of when participation and perceived line managers' support affect well-being will also allow us to develop more targeted hypotheses, which is important for both theoretical and practical reasons, as process evaluations can easily become cumbersome and time consuming (Nielsen & Randall, 2013). Furthermore, there are other process and context factors such as quality of consultation or roles of key stakeholders and cultural aspects of the workplace (e.g., Nielsen & Abildgaard, 2013). We suggest that these measures are also studied with a temporal perspective implying that future research should examine during what intervention phases different process and context factors are related to an intervention's outcomes.

Our findings also showed a reversed relationship between perceptions of participation in relation to perceived line managers' support, which adds to the complexity of the temporal relations between the variables. We found that the initiation levels of employee participation shaped their perceptions of line managers' support in the active intervention phase. These findings suggest that intervention process factors are dynamically related to each other, and in line with COR theory (Hobfoll, 1989) that employees with resources in terms of feelings of involvement in the intervention are able to better acquire additional resources in terms of line manager support which over time, through perceptions of participation, translates into intervention outcomes in terms of job satisfaction. These results also adds to the findings of Lundmark (2018) who showed that employee readiness for change before the intervention predicted line manager support during the intervention. Together these studies suggest that

line managers' support do not occur in a vacuum, but rather are contingent upon the context in terms of their employees' attitudes.

Our findings did not support reciprocal relationships between perceptions of the intervention process (perceptions of participation and line manager support) and intervention outcomes in terms of increased well-being. Instead, our findings suggest that initial resources in terms of high levels of participation or perceived line manager support in the initiation phase lead to the accumulation of additional resources in terms of perceived line manager support or participation in the active intervention phase, which over time translated into increased job satisfaction in the sustained phase. Our findings illustrate the resource caravans as described in the COR theory (Hobfoll, 1989). Resource caravans have not previously been explored in the context of participatory organizational interventions or for the relationship between the intervention process and employee well-being. The present findings suggest a complex interplay between perceived line manager support, and employee involvement in participatory organizational interventions over a period of two years. COR theory has not previously been applied to evaluation of participatory organizational interventions, but based on our findings, it may offer a theoretical lens that helps us understand how perceptions of participation and line managers' support relates to outcomes of participatory organizational interventions, which provides a promising contribution to the field of evaluation of participatory organizational interventions. The majority of prior studies examining employee participation or perceived line manager support and their relationship to intervention outcomes have measured these variables at the same time point, thus not allowing any conclusions to be drawn on either temporality, reversed causation, or reciprocal relationships. Our findings show the clear limitations of such approaches, and we call for future intervention evaluations that carefully consider at what intervention phase employees and line managers' active involvement are particular important.

## **Practical Implications**

Our findings have several practical implications for planning, implementing, and evaluating participatory organizational interventions. The present study shows that during the initiation phase, employee participation should be in focus. Our results suggest that occupational health consultants and organizations should offer opportunities for employees to get involved in the planning and implementation of organizational interventions, as participation is key to achieving targeted outcomes such as employee well-being.

Our findings also suggest that to ensure employee participation, line manager support is essential, both in the initiation phase and early in the active intervention phase. Line managers therefore need to be motivated and willing to support the intervention particularly in the early days of the intervention process.

One strategy that may be used by organizations is to analyze the results of baseline questionnaires that can provide information about the pre-conditions each work unit has prior to launching the intervention in terms of participation and perceived line manager support. This information can be used to tailor the intervention activities to each group, which has been suggested in previous research (Nielsen, 2013) for example by setting realistic expectations, to offer additional resources, or to decide whether it would be more beneficial for some groups to wait before beginning the intervention program. This information may also be used to identify line managers that are unsupportive of the intervention, and may need additional resources and information to get onboard. By continuously measuring the intervention process during the intervention, follow up questionnaires can provide information on levels of participation and perceived line manager support during the intervention, which may be helpful to identify work units or managers that need additional support to ensure successful implementation of the intervention.

## **Limitations and Conclusion**

Our results should be considered in light of three important limitations. First, the time lags in our study may not accurately represent the underlying temporal process. As the appropriate time lag will vary depending on the stability of the construct under study, there is no universal time lag that can be recommended (Menard, 2002). Although we partly addressed this by using both a 6- and a 12-month time lag in our study, these lags may not accurately represent how our constructs unfolded over time. Also, our items asked about the present state, not a specific recall period which could have been useful. More frequent measurement, including for example an additional measurement in the sustained phase, with specific recall periods would help to uncover the process in more detail, but would also increase the response burden on participants. Nevertheless, lagged effects tend to increase in magnitude over time (Ford et al., 2014), which supports our use of rather long lags between assessments. Another concern is the single items we used as indicators of our constructs. Single items make it difficult to establish reliability and may also raise concerns about construct validity regarding the extent to which the item used in fact captures the whole construct it is intended to measure. Although a range of single items have been found to be valid in organizational research (Fisher et al., 2016), in future studies it may be advisable to examine the present pattern of results using psychometrically valid scales to measure our constructs. Finally, we did not control for positive affectivity, which means that we can't rule out that the state that our respondents had when filling out our surveys could have affected their responses.

Even with these noted limitations, our study makes two important contributions to the literature. First, based on COR theory, we demonstrate that line managers' and employees' active involvement in participatory organizational interventions and employee well-being are dynamically related to one another over time, reflecting how the accumulation of resources (i.e. resource caravans) over time translates into well-being. Second, the present approach

represents a first attempt toward taking a temporal perspective on participatory organizational interventions. This includes specifying what factors should be in focus during different intervention phases in order to optimize intervention outcomes. The present study represents a step forward for intervention research and has implications for the design, implementation, and evaluation of participatory organizational interventions.

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Table 1.  
*Descriptive statistics and correlation between all study variables (n= 159)*

Scale	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Participation, T1	1.50	0.83															
2. Managers' support, T1	2.13	0.85	<b>.49</b>														
3. Job satisfaction, T1	2.61	0.59	<b>.23</b>	<b>.29</b>													
4. Workability, T1	8.68	1.30	<b>.19</b>	.01	<b>.26</b>												
5. Participation, T2	1.83	0.81	<b>.52</b>	<b>.44</b>	<b>.29</b>	<b>.20</b>											
6. Managers' support, T2	2.11	0.90	<b>.39</b>	<b>.50</b>	<b>.29</b>	.15	<b>.49</b>										
7. Job satisfaction, T2	2.62	0.60	<b>.34</b>	<b>.28</b>	<b>.60</b>	<b>.19</b>	<b>.28</b>	<b>.28</b>									
8. Work ability, T2	8.71	1.26	<b>.18</b>	.01	<b>.26</b>	<b>.37</b>	.14	.14	<b>.24</b>								
9. Participation, T3	1.70	0.85	<b>.55</b>	<b>.36</b>	<b>.23</b>	<b>.22</b>	<b>.49</b>	<b>.44</b>	.10	.16							
10. Managers' support, T3	2.23	0.80	<b>.37</b>	<b>.44</b>	<b>.18</b>	.11	<b>.45</b>	<b>.63</b>	<b>.29</b>	-.04	<b>.52</b>						
11. Job satisfaction, T3	2.62	0.56	<b>.30</b>	<b>.19</b>	<b>.58</b>	.16	<b>.27</b>	<b>.25</b>	<b>.59</b>	.17	<b>.29</b>	<b>.24</b>					
12. Work ability, T3	8.68	1.33	.10	.05	<b>.18</b>	<b>.41</b>	.09	.09	.15	<b>.46</b>	.08	-.02	.11				
13. Participation, T4	1.69	0.91	<b>.55</b>	<b>.34</b>	<b>.22</b>	<b>.22</b>	<b>.51</b>	<b>.31</b>	<b>.21</b>	.00	<b>.67</b>	<b>.37</b>	<b>.28</b>	<b>.17</b>			
14. Managers' support, T4	2.30	0.71	<b>.40</b>	<b>.49</b>	<b>.23</b>	-.09	<b>.41</b>	<b>.67</b>	<b>.18</b>	-.03	<b>.42</b>	<b>.59</b>	<b>.16</b>	.04	<b>.48</b>		
15. Job satisfaction, T4	2.52	0.75	<b>.39</b>	<b>.29</b>	<b>.46</b>	.13	<b>.28</b>	<b>.38</b>	<b>.40</b>	.02	<b>.41</b>	<b>.33</b>	<b>.58</b>	.04	<b>.46</b>	<b>.42</b>	
16. Work ability, T4	8.73	1.33	<b>.19</b>	.10	<b>.29</b>	<b>.26</b>	.10	<b>.20</b>	<b>.25</b>	<b>.31</b>	<b>.14</b>	<b>.16</b>	<b>.18</b>	<b>.53</b>	<b>.26</b>	<b>.20</b>	<b>.21</b>

Note. Correlations in bold are significant ( $p < .05$ ).