

Enhancing the social capital in industrial work teams: results from a participatory intervention

Annette MENG^{1*}, Vilhelm BORG¹ and Thomas CLAUSEN¹

¹National Research Centre for the Working Environment, Denmark

Received January 22, 2020 and accepted April 22, 2020

Published online in J-STAGE April 28, 2020

Abstract: We investigated the effects of an intervention aiming at enhancing four types of team-level social capital (bonding, bridging and two types of linking social capital) in six dairy plants with a total of 60 teams. Social capital and work engagement was assessed in baseline and follow-up surveys. The follow-up period was approximately 20 months, comprising an intervention period of 12 months. Intervention effects were assessed by comparing changes in team-level mean-scores for teams that had developed action plans with teams that had not. Results show that teams that had developed action plans generally showed a larger increase in social capital and work engagement than other teams. Differences were statistically significant for linking social capital towards the workplace as a whole and work engagement. However, effect sizes indicate an effect of the action plans despite the lack of statistical significance. Moreover, the self-reported level of implementation of the action plans was associated with the size and direction of the observed change.

Key words: Bonding social capital, Bridging social capital, Linking social capital, Work engagement, Occupational psychology, Intervention mapping

Introduction

Social relations in the workplace are becoming increasingly important in complex work organisations. Social capital refers to the actual and potential resources in the social relations, for example in a workplace^{1–5}, and thus reflects the quality of cooperative relations in the workplace.

Knowledge on effective methods to enhance social capital in the workplace is, however, sparse as only few intervention studies, investigating methods to enhance social capital in the workplace, have been published^{6–8}. In the present study, we present results from an intervention study aiming at enhancing the social capital in the Danish dairy industry.

Social capital can be divided into three subtypes: bonding, bridging, and linking social capital⁹. In a work context, *bonding* social capital refers to the social capital in the relationships between individuals within a team, *bridging* social capital refers to the social capital in the relations between teams, and *linking* social capital refers to the social capital in relationships between individuals where the power relation or level of authority is unequal. *Linking* social capital has been further divided into two subtypes: linking social capital between employees and their immediate manager, and linking social capital between employees and the workplace as a whole^{10, 11}.

Previous studies have found that higher levels of social capital in the workplace are associated with lower levels of emotional exhaustion¹² and depression^{13, 14} and higher levels of psychological wellbeing¹⁵. Other studies have found that higher levels of social capital are associated with higher levels of job satisfaction¹⁶, work engagement^{11, 15, 17–20} and self-reported job performance¹⁵. Thus,

*To whom correspondence should be addressed.

E-mail: ame@nfa.dk

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social capital is associated with important work-related outcomes. Yet, to the authors' knowledge, only three studies so far have examined the effect of interventions to enhance the social capital in the workplace^{6–8}). The study by Andersen *et al.*⁶) found that doing physical exercise together enhanced social capital between employees. Sun *et al.*⁷) implemented a six-month workplace social capital intervention, including team building courses for directors of community health centres, voluntarily public services, group psychological consultation, and outdoor training. They found a moderate increase in workplace social capital in the intervention groups, but this increase did not reach the level of statistical significance. Finally, Framke *et al.*⁸) implemented an intervention where key elements were an organisational approach, a participatory approach, and a core job task focus. They found a decrease in workplace social capital in both intervention and control group during follow-up, however, workplaces in the intervention group, that had some success with the implementation of the intervention, showed less decrease in vertical workplace social capital.

Workplace interventions applying a participatory approach have been found to achieve positive effects^{21–24}). The advantages of the participatory approach include that it contributes to the creation of a feeling of psychological ownership amongst the employees, which facilitates the implementation of intervention activities²⁵). In addition, the employees' knowledge of the organisational context provide valuable input in the design and implementation of the interventions²⁶). Moreover, the successful implementation of the intervention is seen as crucial for it to have the desired effect^{27–29}). Furthermore, by being assigned an active role in the design of the intervention, the employees' feeling of self-efficacy (or collective efficacy in the case of groups³⁰) is assumed to be enhanced, which increases the likelihood of the intervention leading to actual behavioural change³¹). In the present study, we therefore applied a participatory approach based on the intervention mapping method^{32, 33}) to develop interventions to enhance social capital. Previous studies have concluded that the intervention mapping approach provides a useful approach for the development of workplace interventions^{34–38}).

In short, in the present study we aimed to enhance social capital by applying an adapted version of the intervention mapping method to develop action plans in six dairy companies. Moreover, given the participatory approach of the study, we also expect that the participation of the employees in the design of the action plans may have a positive impact on their work engagement.

We therefore investigate the effect of the adapted version of the intervention mapping approach aiming at enhancing the social capital in six industrial workplaces, in the dairy sector, with a total of 60 teams. We tested the following hypotheses:

1. The action plans developed using the adapted version of the intervention mapping approach lead to enhancement of the four types of social capital and in the work engagement in the participating work teams.
2. The level of self-reported success in implementing action plans to enhance social capital is associated with the impact of the action plans on the four types of social capital and on work engagement in the participating work teams.

Methods

Design

We designed the intervention study as a longitudinal quasi-experiment³⁹) including a baseline (T1) and a follow-up (T2) survey with an intervention period in between. The choice of a quasi-experimental design is a logical consequence of our decision to use the intervention mapping (IM) approach in the development of specific interventions in the teams assigned for IM workshops. According to Collins and Holton⁴⁴) a careful needs assessment must be considered a prerequisite for the successful implementation of an intervention. Although the most effective way to evaluate effects of interventions may be a randomized controlled trial (RCT), we decided that a quasi-experimental design in which teams were assigned to IM workshops on the basis of a thorough needs assessment was the most appropriate design for this study. Accordingly, the teams that were not assigned for IM workshops (n=25) and teams that had had IM workshops but decided not to develop action plans (n=6) functioned as comparison groups for the teams that did develop action plans (n=29).

Ethics

The study was approved by the Danish Data Protection Agency (Datatilsynet, Borgergade 28,5, 1300 Copenhagen K) the 6th of May 2015, case number: J.nr. 2015-54-0956. In addition, the anonymity of the individual participants was ensured in any publication of results.

The sample

A total of six Danish companies from the dairy industry participated in the study. They were all part of the same

dairy enterprise and were recruited through the Danish Dairy Cooperative Forum. Of the 71 teams at baseline, two were merged during the study leaving 70 teams at follow-up. Out of these, further ten teams were excluded; six teams because they did not constitute genuine teams in the daily routine in the dairies, and four teams had responses from less than three persons either at baseline or follow-up. Thus, we included 60 teams in the final sample with team sizes varying between 3 and 91 (mean=12.5). Across the teams, a total of 1,109 persons were invited to participate in the surveys, 538 responded to both rounds, 253 only responded at baseline and 173 only responded at follow-up, and finally, 145 did not respond at all.

Participation in the study was voluntary, which implies that written informed consent is not necessary as this consent is implied in individual respondents' voluntary participation. As stated above, the data collection was approved by Danish Data Protection Agency (J.nr. 2015-54-0956).

Procedure

The questionnaire survey

The baseline survey measuring the level of social capital at the team level was completed from June to August 2015 (T1). The follow-up survey was completed in February and March 2017 (T2). In addition to questions on the social capital and work engagement, questions evaluating the implementation of the interventions were included in the follow-up questionnaire. The questionnaire was made available online and employees completed it during working hours. To ensure the highest possible response rate, reminders, with information about the current response rate, were sent out to the contact persons at the dairies, who then encouraged team leaders to encourage their employees to fill in the questionnaire. Reminders were sent between one to three times depending on the response rate. Participation was voluntary.

Materials

Social capital

Social capital was measured using the Danish social capital questionnaire developed by Borg *et al.*¹⁰⁾ and further validated by Meng *et al.*¹¹⁾. The Danish social capital questionnaire consists of four subscales: *social capital within the team* (bonding) consists of six items (T1: $\alpha=0.88$; T2: $\alpha=0.89$). Sample item: "In my team, we help colleagues who have too much to do". *Social capital between teams* (bridging) consists of six items (T1: $\alpha=0.95$; T2: $\alpha=0.96$). Sample item: "My team and Team X

acknowledge each other's contribution to solve the work task". *Social capital in the relation to the immediate management* (linking) consists of six items (T1: $\alpha=0.95$; T2: $\alpha=0.95$). Sample item: "Our immediate manager takes our needs and views into consideration when he/she makes decisions". Finally, *social capital in the relation to the workplace as a whole* (linking) consists of three items (T1: $\alpha=0.78$; T2: $\alpha=0.78$). Sample item: "There is a common understanding between the management and employees about how we complete the tasks". Responses were a five point Likert type scale: 1="To a very low extent", 2="To a low extent", 3="Partially", 4="To a high extent", and 5="To a very high extent". For each subscale, the scale score is computed as the mean of the item scores, and this is transformed into a scale from 0 to 100 points where 0 indicates a low level and 100 the highest level of social capital.

To identify reference teams for each team, when responding to the items regarding bridging social capital, the contact person on each of the dairy plants provided an overview of all teams each team had important cooperative relationships with. Thus, if a team had important cooperation with three other teams, the members of this team would receive the questions regarding bridging social capital three times, once for each of the other teams they had important cooperation with.

Work engagement

Work engagement was measured with the 9-item Utrecht work engagement scale (UWES9)⁴⁰⁾. It consists of nine items (T1: $\alpha=0.93$; T2: $\alpha=0.93$) where the participant responded on a seven point Likert type scale ranging from 1="never" to 7="always". Sample item: "I am enthusiastic about my job". For each subscale, the scale score is computed as the mean of the item scores, and this is transformed into a scale from 0 to 100 points where 0 indicates a low level and 100 the highest level of work engagement.

Level of implementation of the interventions

Members of teams who had developed action plans in the IM workshops were asked if they were familiar with the action plans developed by their team. If they were, they were asked if they had succeeded in implementing the action plan with the following response options: "Fully", "partly", and "not at all".

The intervention

We applied an adapted version of the intervention mapping (IM) method^{32, 33)} to develop targeted interventions

(action plans) to enhance social capital in work teams at each of the six dairies included in the study. In the adapted version, the employees themselves (the target group), went through a structured process to develop interventions (action plans) specifically for their own team.

The adapted intervention mapping method can be divided into two phases. In the first phase, “the planning of the IM workshops”, teams that should participate in the workshops were selected on the basis of a thorough needs assessment. In this phase, teams were selected for IM workshops based on their social capital scores from the baseline survey and the experience of the steering groups at the dairies regarding the needs for intervention of individual teams. In addition, practical considerations also influenced the number of teams that were offered a workshop. Teams selected for IM workshops would then be included in the second phase and complete an IM workshop, while teams not selected did not participate in any intervention activities. Second, in the actual workshop phase, action plans to enhance social capital were developed. During the IM workshops, teams reflected on strengths and challenges in the team’s social capital. These discussions were facilitated by members of the research team and during the workshops, possible intervention activities were identified. Based on these discussions, teams decided if they wanted to develop actions plans and if so, action plans were formulated with each action plan representing a targeted intervention aiming to solve a specific problem, related to aspects of social capital, identified at the workshop. Action plans were not developed for individual team members, all action plans involved the whole team. An example of an action plan targeting linking social capital was a team working night shifts that felt, that they did not receive all relevant information given during the day. As a solution, the immediate manager would make the IT responsible expand the existing IT system to include a site for communication between the immediate manager and staff. This IT system was accessible from the machines the staff was working at. After the IM workshops, the employees implemented their action plans without assistance from the researchers (for a more detailed description of the adapted version of the IM method see Meng *et al.*⁴¹).

Statistical analyses

In analysing the effect of the intervention, we calculated baseline mean scores and follow-up mean scores at the team level on the four types of social capital and work engagement. We investigated the effect of the intervention by subtracting baseline mean scores from follow-up mean

scores on work engagement and the four types of social capital for teams that respectively had and had not developed action plans to enhance social capital (action plan status). In Tables 1–3, we analysed differences in means of the investigated groups using Z-tests calculated in linear regression models. As the participating teams were clustered within dairies, observations were not statistically independent⁴². Therefore, all team-level analyses were adjusted for random effects at the dairy level by using the option ‘repeated’ in the PROC GENMOD-procedure in SAS, to base the analyses on robust standard errors. We also used this approach to analyse the specific effects of action plans addressing specific types of social capital.

To assess effect sizes, we deployed the Cohen’s *d* coefficient⁴³. We calculated Cohen’s *d* by subtracting e.g. bonding social capital at baseline from bonding social capital at follow-up and divided the difference with the standard deviation of bonding social capital at baseline, i.e. $(\text{Mean (follow-up)} - \text{Mean (baseline)}) / (\text{Standard deviation (baseline)})$. We interpreted the Cohen’s *d* coefficient as follows: A Cohen’s *d* coefficient larger than 0.8 indicates a large effect. A coefficient between 0.5 and 0.8 indicates a moderate effect. A coefficient between 0.2 and 0.5 indicates a small effect’. A coefficient below 0.2 indicates a negligible effect.

In these analyses, six teams that did not develop action plans in their workshops were allocated to the control group. To investigate the robustness of the findings, we also conducted a sensitivity analysis in which we excluded these six teams from the analyses.

We also analysed whether the self-reported level of implementation of action plans were associated with changes in social capital from baseline to follow-up in the intervention group. As we were unable to assess the level of implementation at the team level, this analysis was conducted at the individual level. This analysis was therefore based on responses from 224 participants (57%) who confirmed they were familiar with their teams’ action plan and who responded to the relevant questions in the study questionnaire. The participants were divided into three groups based on their response regarding level of implementation of their action plans (not at all implemented, partly implemented, fully implemented) and we compared the group means for the outcome measures in linear regression models using Z-tests. As the individual respondents were clustered within teams, observations were not statistically independent⁴². Therefore, these analyses were adjusted for random effects at the team level by using the option ‘repeated’ in the PROC GENMOD-procedure in SAS, to

Table 1. Descriptive statistics at baseline for the main study variables for teams that did and did not develop action plans to enhance the social capital^a

	Did develop action plan on social capital (n=29)	Did not develop action plan on social capital (n=31)	
	Mean (SD)	Mean (SD)	
Bonding social capital	69.3 (7.3)	75.2 (7.5)	***
Bridging social capital	63.0 (7.1)	68.6 (9.8)	
Linking social capital in relation to the immediate manager	65.6 (8.9)	79.9 (9.4)	***
Linking social capital towards the workplace as a whole	61.3 (8.2)	71.1 (8.0)	***
Work engagement	70.2 (8.0)	76.7 (6.3)	**

^aGroup means were compared using Z-test. Difference between the two groups significant at the * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. n: Number of teams.

Table 2. Change in social capital and work engagement (T1–T2) comparing teams that did and did not develop action plans to enhance the social capital during the IM workshops^a

	Developed action plans	Size and direction of change*	Cohen's <i>d</i>	<i>p</i>
Bonding social capital	Yes	+2.6	0.36	0.314
	No	+1.2	0.16	
Bridging social capital	Yes	+4.4	0.63	0.573
	No	+5.4	0.55	
Linking social capital in relation to immediate manager	Yes	+3.2	0.35	0.053
	No	-0.5	-0.06	
Linking social capital in relation to the workplace as a whole	Yes	+4.5	0.54	0.042
	No	+0.2	0.02	
Work engagement	Yes	+7.3	0.91	0.040
	No	+2.7	0.43	

*n varies from 54–60 teams.

^aGroup means were compared using Z-test.

Table 3. Change in social capital (T2–T1) comparing teams that developed action plans on the specific type of social capital with all other teams^a

	Action plan developed on the specific type of social capital	n	Size and direction of change	Cohen's <i>d</i>	<i>p</i>
Bonding social capital	Yes	9	+2.9	0.37	0.625
	No	51	+1.7	0.23	
Bridging social capital	Yes	25	+4.5	0.58	0.615
	No	35	+5.3	0.56	
Linking social capital in relation to immediate manager	Yes	10	+7.5	0.81	<0.000
	No	50	+0.0	0.00	
Linking social capital in relation to the workplace as a whole	Yes	3	+9.4	1.80	0.108
	No	57	+2.1	0.22	

n: Number of teams.

^aGroup means were compared using Z-test.

base the analyses on robust standard errors.

Data were analyzed using SAS version 9.4 [SAS Institute Inc., Cary, NC, USA].

Results

We completed a total of 38 IM workshops with the participation of one or more teams. Of these 31 resulted in the development of one or more action plans. In total, 29

Table 4. Change in social capital and work engagement (T2–T1) comparing different levels of implementation of the action plans^a

	Self-reported level of implementation	n	Size and direction of change	<i>p</i>
Bonding social capital	Fully	51	+5.4	0.007
	Partially	153	+0.8	0.187
	Not at all	20	-7.0	(Ref)
Bridging social capital	Fully	51	+9.2	<0.000
	Partially	153	+1.2	0.071
	Not at all	20	-5.9	(Ref)
Linking social capital in relation to immediate manager	Fully	51	+5.2	0.013
	Partially	153	+2.1	0.050
	Not at all	20	-13.3	(Ref)
Linking social capital in relation to the workplace as a whole	Fully	51	+6.6	0.023
	Partially	153	+4.8	0.069
	Not at all	20	-8.3	(Ref)
Work engagement	Fully	51	+4.4	0.229
	Partially	153	+5.1	0.148
	Not at all	20	-2.2	(Ref)

n: Number of individuals.

^aGroup means were compared using Z-test.

teams developed one or more action plans. Of these, nine teams developed action plans on bonding social capital, 25 teams developed action plans on bridging social capital, 10 teams developed action plans on linking social capital in relation to the immediate management, and three teams developed action plans on linking social capital in relation to the workplace as a whole.

As mentioned above, teams were primarily selected for workshops based on their baseline scores on social capital. Table 1 shows that the teams that developed action plans, had lower social capital scores at baseline than teams that did not develop action plans.

Table 2 shows that teams that developed action plans had significantly larger increases in linking social capital in relation to the workplace as a whole and in work engagement than teams that did not develop action plans. For the other types of social capital, we found no statistically significant differences.

However, when inspecting the Cohens's *d* coefficient, the results show that effect sizes are larger for teams that did develop action plans than for teams that did not develop action plans, except for bridging social capital.

We also investigated if the development of action plans aiming at enhancing a specific type of social capital had a specific effect on this particular type of social capital. In Table 3, we compare the change in each of the four types of social capital, comparing teams who had developed

action plans on the specific type of social capital with all other teams (i.e. teams that had not developed action plans at all and teams that had developed action plans, but not on that specific type of social capital).

The results show that teams that had developed action plans on bonding and bridging social capital did not show a significantly larger increase in these types of social capital than the other teams. Teams that had developed action plans on linking social capital in relation to the immediate manager showed a larger increase in this type of social capital and the difference was statistical significant. Finally, teams that had developed action plans on linking social capital in relation to the workplace as a whole, showed a larger increase in this type of social capital but although the difference in effect size is substantial, it did not reach the level of statistical significance (Table 3).

We also estimated the results reported in Tables 1–3 in a sensitivity analysis, in which we excluded the six teams that did not develop action plans in their workshops from the control group. In terms of statistical significance, the results from the sensitivity analyses followed the same pattern as the findings reported in Tables 1–3 (results not shown).

Finally, Table 4 shows substantial differences in the individually perceived changes in social capital and work engagement depending on the individual participants' perceived level of implementation of action plans. Partici-

pants reporting not to have implemented the action plans at all showed a decrease in the four types of social capital and work engagement, while participants who had either fully or partly implemented their action plans showed an increase.

Discussion

The aim of this study was to evaluate the effect of an intervention aiming to enhance social capital in work teams in the Danish dairy sector. The study showed that teams that developed action plans to enhance social capital had statistically significantly larger changes in linking social capital in the relation to the workplace as a whole and in work engagement during follow-up than teams that did not develop action plans. When looking at the specific effects of the action plans, it was only in the case of linking social capital in relation to the immediate manager, that the teams that had developed action plans on this particular type of social capital, showed significantly larger increases in this type of social capital than other teams. In addition, the results showed that participants who reported that their action plans had not been implemented at all, showed a decrease in individually perceived social capital while participants who reported to have either fully or partly implemented their action plans, showed an increase and these differences were statistically significant.

The results indicated that teams that had developed actions plans to enhance the social capital showed a larger increase in social capital and work engagement than teams that had not developed action plans, but only two of five differences (linking social capital in relation to the workplace as a whole and work engagement) were statistically significant. The results, therefore, only provide support for Hypothesis 1 for one of the sub-dimensions of social capital and for work engagement. Nevertheless, the effect sizes (reported in Table 2 as Cohen's *d*) indicate that the action plans did have an effect on social capital and work engagement, as the results showed notable differences between teams that had developed action plans to enhance social capital and teams that had not developed action plans. One exception was bridging social capital, where both types of teams exhibited similar changes from baseline to follow-up.

The effect sizes (Cohen's *d*) were largest for the two types of linking social capital both when analysing the general and specific effects of the action plans, indicating that the adapted IM method, applied in this study, may be most effective for enhancing linking social capital. These results are in line with the Framke *et al.*⁸⁾ study that found

that their participatory intervention had an effect on vertical but not horizontal social capital. It may be that the IM workshops and the development and implementation of the action plans in general, in itself, had a positive effect on the relationship with overall management and immediate manager, and these positive developments could be ascribed to an intensified interaction between workers and their managers in the implementation of the action plans.

In addition, the results showed the trend that teams that *had* developed action plans did not show greater increase in bridging social capital than teams that *had not* developed action plans. Prior to the present project, efforts to enhance bridging social capital had been given little attention at the participating workplaces and at some of the dairies supplementary initiatives were taken to enhance this type of social capital. Thus, teams that had not developed action plans may have participated in interventions to enhance bridging social capital anyway, which may contribute to explaining the notable positive development in bridging social in both groups.

Even though no action plans targeting work engagement were developed, results showed that teams that had developed action plans to enhance social capital, had a greater increase in work engagement than teams that did not develop action plans. These results indicate that the process of developing action plans, in itself, may have a positive impact on the work engagement of employees.

When comparing participants who reported that they had not implemented their action plans with participants that had implemented their action plans, the results showed that higher levels of self-reported success in implementing the action plans was associated with larger perceived increases in social capital and work engagement. These findings support Hypothesis 2, and are in line with the existing literature, stressing that the implementation of interventions are essential for them to have an effect^{8, 27–29)}. The results suggest that the implementation of the action plans is associated with a larger increase in social capital indicating that the action plans played a role in the observed change in social capital, indirectly providing further support for Hypothesis 1. Moreover, this supports the conclusion that the adapted intervention mapping approach provides an effective method to develop action plans to enhance the social capital—on the condition that teams manage to implement the action plans.

Furthermore, the results showed that participants who reported that their action plans had not been implemented at all, actually showed a decrease in social capital and work engagement. The failure to implement the action

plans may lead to a demoralisation amongst the employees and reduced trust and feelings of support from management and colleagues. This finding stresses the importance of putting greater effort into the implementation of the action plans. It also provides further support for the point raised by Nielsen *et al.*²⁹⁾, that a careful process evaluation is important to aid the interpretation of the results. By not evaluating the process of implementing the action plans one might, wrongly, conclude that the action plans themselves had or no, or even negative effects.

All in all, the results indicate that the adapted IM approach to develop action plans to enhance social capital, can lead to enhanced social capital, especially linking social capital, given that the action plans are implemented. These findings provide further support for the literature pointing towards the use of participatory approaches to develop successful interventions^{21–24)}.

In addition, the results show that the majority of the participants reported that their action plans were only partly implemented. Some of these may still have been in the process of being implemented but some of them may never reach the goal. Together, these findings provide further support for the conclusion by Meng *et al.*⁴¹⁾ that a greater focus on the implementation of the action plans needs to be incorporated into adapted IM method.

Strengths and weaknesses of the study

It may be considered a weakness of the present study that we did not apply an RCT design. It can be argued, however, that the quasi-experimental design is a logical consequence of the IM approach that is based on a thorough needs assessment prior to the deployment of the intervention⁴⁴⁾. Our approach where we identify where there is a need to intervene is closer to practice, and can thus be considered having a higher ecological validity for workplace settings than, for instance, an RCT design. In addition, as pointed out by Nielsen *et al.*²⁹⁾, all other things are not always equal in control groups anyhow, particularly when conducting research in natural settings, which also has implications for the feasibility of deploying RCT designs in workplace settings. Nevertheless, this method of selecting intervention teams calls for caution then interpreting the results and making conclusions regarding causality.

When not all teams at a workplace are offered an intervention, there may be a risk that those teams not offered an intervention feel excluded or passed by leading to a reduction of their work engagement and linking social capital. Except for a minor decrease in social capital in

the relation to the immediate manager, we did not see a decrease in neither work engagement nor social capital in relation to the work place as a whole, so the likelihood of this mechanism having affected the results of our study is minor.

Also, our comparison group (the teams that did not develop action plans) had relatively high levels of social capital and work engagement at baseline, and it could be argued that they may have had limited room for improvement, a so-called ceiling effect. In such case, it could have inflated the difference found between the two groups regarding the change in social capital and work engagement. Nevertheless, the scales range from 0–100, which implies that both intervention groups and control groups should have had the opportunity to raise their levels of social capital more than they did from baseline to follow up and thus, ceiling effects should not constitute a major methodological issue in this study.

It is also a weakness in the study that a relatively low proportion of the participants (57%) from teams that had developed action plans were able to recall the action plans they were involved in, and were able to provide information about the level of implementation of the action plans. Hence, these responses could not be regarded as representative of the team's experience and, therefore, we analysed the interplay between level of implementation of action plans and changes in social capital and work engagement at the individual level. Nevertheless, the results still shed light on the importance of emphasising the implementation of action plans for them to have an impact.

A final limitation may be that the analyses presented in Tables 2 and 3 were based on few observations (between 54 and 60). This implies that the analyses were subject to low statistical power, which may explain why some of the observed differences did not reach the level of statistical significance despite the notable differences in effect sizes.

Conclusion

The results of the present study suggest that the adapted version of the intervention mapping method to develop action plans is a promising approach to enhance the social capital, particularly linking social capital, at the workplace. However, the implementation of the action plans is essential for them to be effective and, thus, increased focus on the full implementation of action plans needs to be incorporated into the adapted version of the intervention mapping method applied in this study.

Acknowledgements

We would like to thank Torben R. Jans and Paw Jensen from the Danish Dairy Cooperative Forum for their support in the recruitment of and cooperation with the dairies of the study. We would also like to thank the participating dairies for their time and efforts. The study was funded by the Danish Work Environment Research Fund (26-2014-09).

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