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SHORT COMMUNICATION

## Associations between the workplace-effort in psychosocial risk management and the employee-rating of the psychosocial work environment – a multilevel study of 7565 employees in 1013 workplaces

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### Abstract

**Aims:** This study examined the association between the workplace-effort in psychosocial risk management and later employee-rating of the psychosocial work environment. **Method:** The study is based on data from two questionnaire surveys – one including 1013 workplaces and one including 7565 employees from these workplaces. The association was analyzed using multi-level linear regression. The association for five different trade-groups and for five different psychosocial work environment domains was examined. **Results:** Limited but statistically significant better employee-ratings of the psychosocial work environment in the respective domains were observed among Danish workplaces that prioritized “development possibilities for employees,” “recognition of employees,” “employees influence on own work tasks,” good “communication at the workplace,” and “help to prevent work overload.” **Conclusion:** Danish workplaces with a high effort in psychosocial risk management in the preceding year had a small but significantly more positive rating of the psychosocial work environment by the employees. However, future studies are needed to establish the causality of the associations.

**Key Words:** Occupational health management, psychosocial risk management, psychosocial working conditions, risk management intervention, work environment intervention, primary intervention

### Introduction

The need to improve the psychosocial work environment was voiced by the European Agency for Safety and Health at Work already in 2006 [1]. The background for the appeal was the high prevalence of mental disorders and psychological distress in Europe [2].

Several studies have shown the association between the psychosocial work environment and the employees' health [3–5]. For example, job control [4,5], effort–reward imbalance [3,4], job strain [6], social support, poor management quality, work overload, and injustice have been linked with mental disorder and sickness absence [3–5]. Based on such

results, the World Health Organization has provided recommendations and guidelines to companies for improving the psychosocial work environment through psychosocial risk management [7].

However, studies show that it is difficult to improve the psychosocial work environment. Several workplace interventions have failed to show an effect [8,9]. In some cases, they even seemed to do more harm than good [10].

The present study examined to what degree the employee-rated psychosocial work environment was better in Danish workplaces that had a high effort in

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psychosocial risk management compared to those workplaces that had not.

## Methods and material

### *Study sample and design*

Our study linked two questionnaire-surveys: a special subsample of a workplace-survey – “Work Environment Activities in Danish Workplaces (WEADW)” [11], and a special subsample of an employee-survey – “Work Environment and Health in Denmark (WEHD).” The WEADW-survey (conducted early 2012) measured the workplace-efforts in the preceding year, and the WEHD-survey (conducted late spring/summer 2012) measured employee-rated work environment at the present. The study was approved by the Danish Data Protection Agency, journal number 2012-54-0017.

### *Work Environment Activities in Danish Workplaces (WEADW) – special sample*

Our workplaces were stratified on five trade-groups (“knowledge work,” “private service,” “care work,” “industry,” and “building and construction”) and five size groups (10–34, 35–99, 100–249, 250–499, and 500 or more employees). We used web-based and paper questionnaires. Both a management representative and an employee involved in occupational health management were invited to participate. In case of two answers we used the average score. In March 2012 we had at least one response from 1060 workplaces (response rate 52%).

### *Work Environment and Health in Denmark (WEHD) – special sample*

Depending on the size of the workplace, 10–30 employees were randomly extracted from each of the responding workplaces (15,767 employees). The employees were sent an invitation to the survey (response rate 53%). We excluded employees with less than 3 months seniority, workplaces with less than 10 employees, and employees and workplaces with missing answers to all questions, leaving 7565 employees from 1013 workplaces. For 2% of the workplaces we had only one valid employee-answer and for 22% of the workplaces we had more than 10 valid answers.

### *Predictors*

The workplace-effort was divided on: “possibilities for development,” “recognition of employees,” “employee-influence on own work tasks,” “communication at

the workplace,” and “help to prevent work overload” (see questions in Table I). Questions were scored from 0 to 100 on a Likert scale (no (0), to a small extent (33.3), somewhat (66.6), to a large extent (100)). We used the average score when we had two questions on the subject.

### *Outcomes*

The employee-ratings of the psychosocial work environment were chosen to match the workplace-survey (see Table I). Questions were scored from 0 to 100 on a Likert scale (never (0), seldom (25), sometimes (50), often (75), always (100)). We used the average score when we had two questions on the subject.

### *Covariates*

We adjusted for trade-group, size of the workplace, previous identification of psychosocial improvement possibilities at the workplace (“yes/no/missing,” in case of two answers, “yes” overruled “no”), age, and gender of the employee. We chose to adjust for these covariates since they may influence both predictor and outcome in our analyses (e.g. both workplace-efforts and the psychosocial work environment may be dependent on trade-group).

We adjusted for respondent-type from the workplace-survey (management representative = 1; employee working with risk-management = 2; answers from both = 1.5), since managers tend to rate the effort higher than employees. (We had both respondent-types in 449 workplaces; the average overall effort was rated by managers to be = 77 points and by employees to be = 64 points. The Pearson correlation of manager-rating and employee-rating was 0.22 with  $p$ -value  $\leq 0.0001$ .)

Trade-group, age, and gender data came from registers; all other variables were measured in the questionnaires.

### *Statistical methods*

We used multilevel linear regression analyses with adjustment for clustering effects (employees from same workplace), covariance matrix was compound symmetry [12,13]. As robustness analyses, we performed analyses with 36 trade-groups (instead of 5), we performed analyses stratified on the five workplace sizes (instead of adjusting for workplace size), we performed analyses only including the workplace respondent-type “management representative” and analyses only including respondent-type “employee working with risk-management” (instead of adjusting for respondent-type). The

Table I. Questions regarding workplace-effort (WEADW-survey) and employee-rating of the psychosocial work environment (WEHD-survey).

	Workplace-effort (WEADW-survey)	Employee-rating (WEHD-survey)
Psychosocial work environment domain	In the past year, has your workplace implemented specific initiatives to ...	How often ...
<b>1) Development possibilities for employees</b>	1) ... give employees the opportunity for professional development? (to a large extent, somewhat, to a small extent, no)	1) ... does your immediate manager take time to engage oneself in your professional development? (always, often, sometimes, seldom, never)
<b>2) Recognition of employees</b>	2) ... give employees recognition and appreciation for work well done? (to a large extent, somewhat, to a small extent, no)	2) ... is your work recognized and valued by the management? (always, often, sometimes, seldom, never)
<b>3) Employees influence on own work tasks</b>	3) ... give employees sufficient influence on how and when they solve their tasks? (to a large extent, somewhat, to a small extent, no)	3a) ... do you have a say in how you complete your work tasks? (always, often, sometimes, seldom, never) 3b) ... do you have a say in when you complete your work tasks? (always, often, sometimes, seldom, never)
<b>4) Communication at the workplace</b>	4) ... establish a good internal communication at the workplace? (to a large extent, somewhat, to a small extent, no)	4) ... do you receive all the information you need in order to do your job? (always, often, sometimes, seldom, never)
<b>5) Help to prevent work overload</b>	5a) ... prioritize and allocate work tasks to prevent work overload on the employees? (to a large extent, somewhat, to a small extent, no) 5b) ... prevent workload and time pressure causing problems for the employees? (to a large extent, somewhat, to a small extent, no)	5) ... do you receive the help and support you need from your immediate manager? (always, often, sometimes, seldom, never)

robustness analyses results were similar to the main analyses (results not shown).

## Results

Almost 80% of the workplaces stated they had made an assessment of the psychosocial work environment within the last 3 years (the Danish APV = "health and safety risk assessment," all workplaces should evaluate and document the work environment at the workplace at least every three years according to EU rules. It is not supervised by the authorities, but a risk assessment in writing must be available at the workplace). Of those 74% had identified improvement possibilities. Workplace-efforts were not limited to workplaces that had identified improvement possibilities. In workplaces with identified improvement possibilities 49% had made a high effort, in workplaces without identified improvement possibilities 51% had made a high effort, and in workplaces without assessment (or missing answer) 45% had made a high effort (high effort defined as an effort "to a high degree" in at least one of the five psychosocial work environment domains).

The unadjusted workplace-effort scores across all five psychosocial domains were for each trade-group,

respectively: 72 points in "knowledge work," 70 in "private service," 77 in "care work," 63 in "industry," and 65 in "building and construction." The corresponding average employee-rating scores were: 66 points in "knowledge work," 63 in "private service," 66 in "care work," 62 in "industry," and 62 in "building and construction." That is, the unadjusted results indicate a positive association.

Table II shows the associations between the workplace-effort and the employee-rating adjusted for workplace size, workplace respondent, previous identified improvement possibilities, age, gender, and trade-group. Only some associations were significant when divided on trade-group; however, all associations were significant if trade-groups were pooled. All associations were small, e.g. an increase in workplace-effort of 1 in the domain "development possibilities for employees" is only associated with an increase in employee-rating of 0.11 points (see Table II).

## Discussion

The questionnaire responses available do not cover all psychosocial work environment areas. However, taken together we believe that the questions measure

Table II. The association of the workplace-effort and the employees-rating of the work environment. Linear regressions adjusted for trade-group, size of the workplace, age and gender of the employee, previous identified psychosocial work environment improvement possibilities, and who answered the workplace survey.

Psychosocial work environment domain	Trade-group	N employees	N workplaces	Slope of linear regression*	CI 95	p-value
<b>1) Development possibilities for employees</b>						
	Knowledge work	1985	232	0.07	(-0.01; 0.15)	0.10
	Private service	1187	177	0.15	(0.05; 0.26)	0.003
	Care work	2072	251	0.13	(0.06; 0.20)	0.0002
	Industry	1367	185	0.14	(0.05; 0.23)	0.002
	Building and construction	835	167	0.05	(-0.06; 0.16)	0.34
	The trade-groups pooled	7446	1012	0.11	(0.07; 0.15)	p<0.0001
<b>2) Recognition of employees</b>						
	Knowledge work	1969	231	0.06	(0.00; 0.13)	0.06
	Private service	1175	176	0.07	(-0.02; 0.16)	0.13
	Care work	2066	250	0.10	(0.03; 0.17)	0.008
	Industry	1364	184	0.13	(0.05; 0.21)	0.002
	Building and construction	819	165	0.04	(-0.06; 0.13)	0.44
	The trade-groups pooled	7393	1006	0.08	(0.05; 0.12)	<0.0001
<b>3) Employees influence on own work tasks</b>						
	Knowledge work	1997	230	0.02	(-0.02; 0.07)	0.23
	Private service	1181	175	0.06	(-0.03; 0.15)	0.18
	Care work	2051	248	0.03	(-0.02; 0.08)	0.21
	Industry	1383	185	0.06	(0.00; 0.12)	0.05
	Building and construction	828	164	0.03	(-0.03; 0.08)	0.33
	The trade-groups pooled	7440	1002	0.04	(0.01; 0.06)	0.004
<b>4) Communication at the workplace</b>						
	Knowledge work	2004	231	0.04	(0.00; 0.08)	0.04
	Private service	1192	176	0.03	(-0.02; 0.09)	0.25
	Care work	2083	251	0.07	(0.03; 0.11)	0.002
	Industry	1382	185	0.06	(0.00; 0.12)	0.03
	Building and construction	853	168	0.07	(0.01; 0.14)	0.02
	The trade-groups pooled	7514	1011	0.06	(0.03; 0.08)	<0.0001
<b>5) Help to prevent work overload</b>						
	Knowledge work	1987	232	0.02	(-0.04; 0.09)	0.53
	Private service	1167	174	0.02	(-0.07; 0.11)	0.67
	Care work	2065	249	0.05	(-0.01; 0.12)	0.11
	Industry	1348	183	0.08	(0.01; 0.16)	0.03
	Building and construction	841	168	0.08	(0.00; 0.16)	0.05
	The trade-groups pooled	7408	1006	0.05	(0.01; 0.08)	0.007

\*The slope is  $\beta$  from the linear regression formula  $y = a + \beta x$ ,  $x$  = workplace-effort,  $y$  = employee-rating.

important aspects of the workplaces' everyday management of the psychosocial work environment.

We found that workplaces with a high effort in the preceding year had a more positive employee-rating. However, although the result was consistent and statistically significant, the estimated associations were small.

Several previous studies of psychosocial work environment interventions have failed to show an effect [8–10]. Researchers have explained this lack of success by difficulties in the implementation process of psychosocial work environment interventions, and the result of an intervention may be widely different in different workplace settings [10,14]. Hence, if many psychosocial work environment

interventions fail, it may explain the limited association between the workplace-effort and the employee-rating in our study.

A strength of our study is the inclusion of 1013 Danish workplaces. The main limitation of our study is the lack of employee-ratings of previous work environment. If most workplace-efforts were initiated due to a previous poor work environment, we would underestimate the effect of the risk-management. If most workplace-efforts were initiated in well-functioning workplaces, which have good work environment due to other reasons, we would over-estimate the effect of the risk-management. If only the past years workplace-effort matters for the work environment, we should not adjust for previous levels.

We adjusted for previous psychosocial work environment using the workplaces self-report of identified improvement possibilities; nevertheless, individual measurements of previous work environment from all employees would have been preferable and would have given us the possibility to examine some of these mechanisms.

Another limitation of our study is a low response-rate. Our study may not reflect an average workplace – in particular we suspect we miss answers from workplaces with low effort. Furthermore, responding workplaces with a low effort may over-report in order to give more desirable answers. This may also lead to an underestimation of the association between workplace-effort and employee-rating.

Our study shows that Danish workplaces with a high effort in psychosocial risk management had a small but statistically significant higher employee-rating of the psychosocial work environment. The results indicate a limited but overall positive effect of the efforts, but causality cannot be firmly established using our observational design.

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### Conflict of interest

The authors declare that there are no conflicts of interest.

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