

Methods Chapter 2: The effects and mechanisms of restructuring

Analyses Danish sample

Participants

The analyses were conducted on the Danish Work Environment Cohort Study (DWECS). The DWECS is a longitudinal survey among a representative sample of the Danish population between ages 18 and 59. We made use of two waves (2000-2005). For the analyses in the current study we selected those respondents who were 1) employed in 2000 and 2005 and who 2) either experienced no change in ownership in the first wave. The sample consisted of 5,436 individuals in paid employment.

Measures

The DWECS contains one question about change in company ownership during the past 12 months: Has your workplace been taken over by a new employer? Response categories were:

- Outsourcing or privatisation
- Merger
- Sale
- No, but there are plans/discussions
- No

Based on these questions we made a distinction between employees who experienced a change in ownership and employees who did not experience change in the past year. See table 1 for an overview of the groups.

Table 1: Overview of restructuring groups

Groups	DWECS dataset	
	2000 (time 1)	2005 (time 2)
<i>Restructuring</i>		
Outsourcing or privatization	25 (.5%)	32 (.6)
Merger	311 (5.7%)	173 (3.2%)
Sale	37 (.7%)	21 (.4%)
No, but there are plans/discussions	19 (.3%)	148 (2.7%)
No/missing	5044 (92.8%)	5062 (93.1%)
Total	5436 (100%)	5436 (100%)

Included outcome variables and possible mediating and moderating variables are depicted in table 2.

Table 2: Overview of measures

DWECS	
Control variables	Age Gender Education
Work-related factors	
Job characteristics	Effort-reward balance Task autonomy
Organisational factors	Supervisory support Coworker support
Personal factors	Self-efficacy
Outcome variables	
<i>Work-related well-being</i>	Job insecurity Job satisfaction
<i>General well-being</i>	Mental health Self-rated health

Analyses

First, ANCOVA (analyses of variance) was used to test for the difference between employees who had experienced a change in ownership versus employees experiencing no change in ownership in the past 12 months. We controlled for age, gender, education and the outcome measure in 2000. Only outcome measures who differed significantly between the two groups were included in further analyses.

Second, using regression, we tested which working conditions in 2000 predicted job insecurity five years later among those who had experienced a change in ownership.

Limitations

A number of limitations should be considered when interpreting the results. First, our analyses are based on survey-data and as a result we do not exactly know what happened in the organisations. Because the participants were only asked to report whether they experienced a change in ownership *in the past 12 months*, we do not know (1) the exact moment of the change, (2) the duration of the change process, (3) the number of changes in that period, and (4) we have no information about other types of restructuring that may also have an impact on employee health and well-being. Since we made use of two waves, we do not know whether earlier changes in ownership or other types of restructuring may have affected the results.

Second, we conducted separate regression analyses in which we controlled for gender, age and education. We did not control for other personal or work-related factors.

Third, the follow-up period was five years this is a long period and we have little information about what has been going on in those five years.

Reference

Danish Work Cohort Study (DWECS):

<http://www.arbejdsmiljoforskning.dk/da/arbejdsmiljoedata/arbejdsmiljo-og-helbred/tidligere-undersogelser>

Analyses Dutch samples

Participants

The analyses were conducted on two longitudinal datasets (both consisting of two waves): The Cohort-study Social Innovation (CSI) 2008-2009 and the Netherlands Working Conditions Cohort-Study (NWCCS) 2007-2008.

The CSI is a longitudinal survey among employed persons. We used two waves (measurements in June 2008 and June 2009). In the 2008-wave persons in paid employment, aged 16 to 64 years, with a job tenure of at least three month were included. At wave 1, in 2008, there were 4,396 respondents in total. Response rates¹ were high: 84% in 2008. At follow-up, in 2009, the net response was 3,465 with a attrition rate² of 24%.The majority (3,329) was still employee, in 2009, whereas 136 respondents were not in paid employment anymore. In the analyses of the current study, we selected those respondents who where (1) employee in 2008 and 2009, (2) who did not change employer between 2008 and 2009 and (3) who either reported no restructuring in both measurements or who reported one or more types of restructuring in both measurements. The final sample contained 1,936 respondents.

The NWCCS is a longitudinal survey among employees aged from 15 to 64 years. In total, questionnaires of 32.8% of the employed, sampled individuals in 2007 were available for analysis (N= 22,759). In November 2008, the 19,161 persons who had provided consent to be contacted in the future, received the first follow-up questionnaire of the NWCCS. In 2007 and 2008, 10,395 respondents filled out both questionnaires. As for the CSI, in the analyses of the current study, we selected those respondents who where 1) employee in 2007 and 2008, 2) who did not change employer between 2007 and 2008 and 3) who either reported no restructuring in both measurements or who reported one or more types of restructuring in both measurements. The final sample contained 6,105 respondents.

Measures

The CSI and the NWCCS both contain a question on the occurrence of different types of restructuring in the organisation during the past 12 months. In the CSI restructuring is measured by the following question: In the past 12 months (that is, between June 1 2008 and June 1 2009) did any of the following changes take place at your current organisation (establishment/location)? (*multiple answers possible*):

¹ Percentage of the gross response N=5,245

² De attrition rate is calculated with the formula: $1 - (\text{'response on wave 2'} / \text{'number of responses of wave 1'})$.

- Closure/new start-up of the company
- Downsizing of the number of employees
- Outsourcing of production/services
- Acquisition *of* or *by* another organisation
- A merger
- Relocation of company activities
- Relocation of employees within the organisation
- Other internal re-organisation (for instance, towards Just-in-Time production)
- None of the above changes.

In the NWCCS restructuring is measured by the question: In the last year, were there any changes in your workplace?

- A major restructuring
- A takeover *by* another organisation
- A takeover *of* another organisation
- Downsizing *without* compulsory redundancies
- Downsizing *with* compulsory redundancies
- A merger with another company
- Outsourcing of supportive services
- Relocation of company activities to another country
- Automation of company activities
- None of the above changes.

Based on these questions we made a distinction between (1) employees who experienced one or more types of organisational changes in the past two years, and (2) employees who experienced no change in the past two years. Employees who experienced restructuring only last year or two years ago, were excluded from the analyses since our focus is on prolonged restructuring. Table 3 shows an overview of the selected groups.

Table 3: Overview of restructuring groups

Groups	CSI dataset		NWCCS dataset	
	2008 (time 1)	2009 (time 2)	2007 (time 1)	2008 (time 2)
No	1,324 (46%)	1,331 (47%)	4,597 (54%)	4,828 (56%)
Yes	1,533 (54%)	1,526 (53%)	3,979 (46%)	3,748 (44%)
Total	2,857	2,857	8,576	8,576
	<i>Total groups</i>	<i>Study selection</i>	<i>Total groups</i>	<i>Study selection</i>
No (at time 1)-No (at time 2)	867 (30%)	45%	3,477 (41%)	57%
Yes-No	464 (16%)	-	1,351 (16%)	-
No-Yes	457 (16%)	-	1,120 (13%)	-
Yes-Yes (prolonged)	1,069 (37%)	55%	2,628 (31%)	43%
Total	2,857	1,936	8,576	6,105

Table 4 depicts the included outcome variables and possible mediating and moderating variables.

Analyses

First ANCOVA (analyses of variance) was used to test for the difference between employees experiencing prolonged restructuring versus employees experiencing no restructuring in the past two years on the outcome measures. We corrected for age, gender, educational attainment and the outcome measure on T1. Only outcome measures which differed significantly between the two groups, were included in the further analyses.

To study moderation, interaction terms were calculated and separate linear regression analyses were performed for each interaction term. To prevent collinearity, we centred the main effects before calculating interaction terms according to the procedure of Aiken and West (1991). We chose for the T1 measurement of the moderating variable because the moderator should be present before the re-organisation takes place (otherwise the factor can be influenced by the re-organisation). Unfortunately, this is not completely possible, since we referred to the last 12 months on T1.

Table 4: Overview of measures (outcome variables, control variables, moderating variables, mediating variables)

	CSI	NWCCS
<i>Control variables</i>		
	Age Gender Educational attainment	Age Gender Educational attainment
<i>Moderating/Mediating variables</i>		
Background variables	Size of the workplace* Contract type (temporary/permanent)* Contract size (number of contractual working hours)* Supervisory position (yes/no)* Working overtime (hours)*	Size of the workplace* Contract type (temporary/permanent)* Contract size (number of contractual working hours)* Supervisory position (yes/no)* Partner with job (yes/no)* Immigrant (yes/no)*
Job characteristics	Skill discretion Task autonomy Quantitative task demands Task interdependency Collaboration with external relations - - - - -	Skill discretion Task autonomy Quantitative task demands Time pressure Emotional demands Cognitive demands Perceived risk of job loss Frequency of contact with: - direct colleagues - colleagues from other departments - clients
Job insecurity	-	Job insecurity (perceived risk of job loss and worrying about keeping the job)(yes/no)
Organisational factors	Supervisory social support Participation in decision-making Information provision Adaptive culture Trust from supervisor -	Supervisory social support Co-worker support Conflict with supervisor Conflict with colleagues Conflict with employer Unwanted internal behaviour (yes/no)
Personal factors	Self-efficacy*	Employability*
<i>Outcome variables</i>		
Work related well-being	Burnout: Emotional exhaustion Job engagement: Dedication	Burnout: Emotional exhaustion General job satisfaction
General well-being	- -	General Health Sickness absenteeism

* Only as moderator

Beside a direct effect of restructuring and moderation effects we hypothesized a mediation model. Rather than hypothesizing a direct causal relationship between the independent variable and the dependent variable, a mediational model hypothesizes that the independent variable causes the mediator variable, which in turn causes the dependent variable. Mediation was examined by conducting a series of regression analyses. To examine the mediating role of variables on the restructuring- well-being relationship we followed the procedure suggested by Baron and Kenny (1986) and conducted a series of regressions. The restructuring variable, control variables (T1) and mediator variable (T2) were entered in several steps. We chose to use the T2 measurement of the mediator because in the time frame the mediating variable should be influenced by the independent variable. A disadvantage of this method is that the mediator and outcome variable are measured at the same time. In case the effect of restructuring on the outcome is less strong when entering the

possible mediating variable, it is a possible mediator. If this was the case, we tested the effect of restructuring on the possible mediator. This enabled us to conclude whether it was a mediator. Perfect mediation occurs when the restructuring variable has no effect once the mediation variable is entered, whereas partial mediation occurs when the effect of the restructuring variable on the outcome variable becomes less strong when the mediation variable is added to the equation. In order to test this effect we performed the Sobel-test (Aroian test) (e.g. see people.ku.edu/~preacher/sobel/sobel.htm).

Limitations

Since our analyses are based on survey data we have no 'exact' information on what actually, objectively happened in the organisation. Because the participants were only asked to report whether they experienced restructuring events *in the last year*, we do not know (1) the exact moment of the restructuring, (2) the duration of the restructuring, (3) the number of restructurings in that period. Since we made use of two waves, we do not know whether previous or upcoming changes may have affected the results. Secondly, we grouped all types of restructuring together since a lot of employees experienced more than one type of restructuring at the same time, therefore we do not know whether some types of restructuring have more impact than others. Lastly, we conducted separate regression analyses in which we controlled for gender, age and educational attainment. We did not control for other personal or work related factors.

References

- Bossche, S.N.J. van den, Koppes, L.L.J., Granzier, J.J.M., Vroome, E.M.M. de & Smulders, P.G.W. (2008). *Nationale Enquête Arbeidsomstandigheden 2007: Methodologie en globale resultaten*. [Netherlands Working Conditions Survey 2007: Methodology and overall results]. Hoofddorp: TNO.
- Kraan, K.O, Hooftman, W.E. & Jong, T. de (2009). *Cohortstudie Sociale Innovatie (CSI) 2008-2010; Methodologie en beschrijving tweede meting*. [Cohort Study Social Innovation 2008-2010; Methodology and description of second wave]. Hoofddorp: TNO.
- Kraan, K.O., Hooftman, W.E., Jong, T. de & Dhondt, S. (2011). *Cohortstudie Sociale Innovatie (CSI) 2008-2010; Beschrijving steekproeven 1e, 1e , 2e en 3e meting*. [Cohort Study Social Innovation 2008-2010; Description samples first, second and third measurement]. Hoofddorp: TNO.

Analyses Finnish sample

Participants

The data originate from the "Still Working" study (Väänänen et al., 2011), which is a prospective cohort study within a multinational forest industry corporation with domicile in Finland.

In 1996 (T1) a company-wide survey on work and well-being was carried out (response rate 63%). The merger took place between two enterprises of equal size at the beginning of 1999. The merger did not lead to any dramatic changes during the study period (such as major downsizing). However, some considerable changes in work tasks, work roles, and procedures took place.

In the autumn 2000 (T2) a corporate survey was carried out in a new globally operating company, (response rate 61%). This second survey was implemented within two years of the beginning of the merger, and it provided information on how the employees had experienced the organisational change and how it had affected their situation at work.

Measures

The participants' experience of the change in their job position was measured by asking whether they perceived their own position at the work place as 1=improved, 2= no change, 3= declined. The participants who replied that there was no change in their job position were excluded from later analyses since the aim of the current study was to examine the change in position.

Table 5: Overview of the groups

	Improved position (n=604)	No change (N=2599)	Declined position (n=482)
Gender			
Men	78%	76%	75%
Women	22%	24%	25%
Age			
Under 50	74%	59%	54%
50+	26%	41%	46%
Education			
Comprehensive school	20%	32%	22%
Vocational school	30%	40%	34%
College /university	50%	28%	44%

Table 6: Overview of measures (outcome variables, control variables, moderating variables, mediating variables)

Still Working	
<i>Control variables/ moderating variables</i>	
	Age Gender Educational attainment
<i>Moderating/Mediating variables</i>	
Job characteristics	Task autonomy Role clarity
Job insecurity	
Organisational factors	Organisational support Supervisor support Co-worker support Participation in decision making
Personal factors	Sense of coherence Sense of competence
<i>Outcome variables</i>	
Work related wellbeing	Emotional exhaustion Stress Work ability
General wellbeing	-

Analyses

First ANCOVA (analyses of covariance) was used to test for the difference between employees who had experienced the change in their job position differently (improved vs. declined.) The analyses were adjusted for age, gender, educational attainment and the outcome measure on T1. Only outcome measures in which there was a significant difference between the two groups were included in further analyses.

To study moderation interaction terms were calculated and separate linear regression analyses were performed for each interaction term. To prevent collinearity we centred the main effects before calculating interaction terms according to the procedure of Aiken & West (1991). The moderators were measured at T1.

Mediation was examined by conducting a series of regression analyses. To examine the role of mediating variables on the experience of the change in position- well-being relationship the procedure suggested by Baron and Kenny (1986) was followed. In several steps the restructuring variable, control variables (T1) and mediator variable (T2) were entered. Since the study included only two measurement points, measuring both the mediator and outcome at T2 is one of the

limitations of the study. In order to test the mediation effect the Sobel-test (Aroian test) was performed (<http://people.ku.edu/~preacher/sobel/sobel.htm>). Also bootstrapping (see for example <http://davidakenny.net/cm/mediate.htm>) was used to ensure the mediation effect.

Strengths and limitations

The strength of the study was that the exact time and content of the organisational change was known. As a limitation it may be considered that the study was based on survey data: The participants' experience of the change in their job position was measured by asking the participants' perception of the change. Considering the regression analyses, separate analyses were conducted controlled for gender, age and educational attainment but not for other personal or work related factors. For more detailed analyses about the merger and self-rated change in one's job position see Pahkin et al. (2011) and Väänänen et al. (2011).

References

- Pahkin, K., Väänänen, A., Koskinen, A., Bergbom, B., Kouvonen, A. (2011). Organizational change and Employees' mental health: The Protective role of Sense of Coherence. *Journal of Occupational and Environmental medicine*, 53(2), 118-123.
- Väänänen, A., Ahola, K., Koskinen, A., Pahkin, K., Kouvonen, A. (2011). Organisational merger and psychiatric morbidity. *Journal of Epidemiology and Community Health* 65 (8), 682-687.

More detailed information about the applied datasets and results is available upon request from the authors. The results are described in:

Wiezer, N., Nielsen, K., Pahkin, K., Widerszal-Bazyl, M., De Jong, T., Mattila-Holappa, P., Mockało Z. (2011). *Exploring the link between restructuring and employee well-being*. CIOP-PIB, Warsaw.