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ORIGINAL ARTICLE

The second version of the Copenhagen Psychosocial Questionnaire

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Abstract

Aims: The aim of the present paper is to present the development of the second version of the Copenhagen Psychosocial Questionnaire (COPSOQ II). *Methods:* The development of COPSOQ II took place in five main steps: (1) We considered practical experience from the use of COPSOQ I, in particular feedback from workplace studies where the questionnaire had been used; (2) All scales concerning workplace factors in COPSOQ I were analyzed for differential item functioning (DIF) with regard to gender, age and occupational status; (3) A test version of COPSOQ II including new scales and items was developed and tested in a representative sample of working Danes between 20 and 59 years of age. In all, 3,517 Danish employees participated in the study. The overall response rate was 60.4%; (4) Based on psychometric analyses, the final questionnaire was developed; and (5) Criteria-related validity of the new scales was tested. *Results:* The development of COPSOQ II resulted in a questionnaire with 41 scales and 127 items. New scales on values at the workplace were introduced including scales on *Trust*, *Justice* and *Social inclusiveness*. Scales on *Variation*, *Work pace*, *Recognition*, *Work-family conflicts* and items on offensive behaviour were also added. New scales regarding health symptoms included: *Burnout*, *Stress*, *Sleeping troubles* and *Depressive symptoms*. In general, the new scales showed good criteria validity. All in all, 57% of the items of COPSOQ I were retained in COPSOQ II. ***Conclusions*: The COPSOQ I concept has been further developed and new validated scales have been included.**

Key Words: *Psychosocial factors, psychosocial work environment, questionnaire, stress, survey*

Background

The Copenhagen Psychosocial Questionnaire (COPSOQ I) was developed in 1997 to satisfy the need of Danish work environment professionals and researchers for a standardized and validated questionnaire that covered a broad range of psychosocial factors [1,2]. It was developed in three versions of different lengths: a long version for research use, a medium-length version for work environment professionals, and a short version for the workplace. This questionnaire concept has now become the national Danish standard for assessing psychosocial work environment, and both the short and the middle version questionnaire are widely used by workplaces and work environment professionals. For example, COPSOQ I is a standard choice when Danish companies perform their mandatory workplace risk assessment, which is required every third year and needs to include the psychosocial work environment [3]. The workplaces benchmark themselves against the national average for the different COPSOQ I scales based on the population study from 1997 [4].

The COPSOQ I questionnaire was developed based on the following principles and theoretical considerations [1]: (i) the questionnaire should cover all important aspects of the psychosocial work environment stressors as well as resources, (ii) the questionnaire should be theory-based, but not attached to one single theory, (iii) the dimensions of the questionnaire should be related to different analytical levels (company, department, job, person-work interface, and individual), (iv) the questionnaire should be generic.

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So far no single theory or model covers all important aspects of the psychosocial work environment but the seven major theories on psychosocial factors at work show considerable overlap of dimensions [5]. The COPSOQ I included a majority of the main dimensions of the seven theories in occupational health psychology but also lacked some important factors related to work: reward, justice, trust and discrimination [1].

The COPSOQ I questionnaires have now been translated into several languages: Chinese, English, Flemish, German, Japanese, Malaysian, Norwegian, Persian, Portuguese, Spanish (and also Catalan, Galician and Basque languages), Swedish and Turkish. Especially in Spain and Germany the questionnaire has been adopted as a standard for measuring the psychosocial work environment [6,7].

COPSOQ I scales have been used in several large Danish and international studies since 2000. These studies concern the work environment for: women [8], human service workers [9], computer users [10], dentists [11], correctional officers [12], hospital workers [13], pig-farm workers [14], office workers [15] and also workplace interventions [16]. Also, the Danish Work Environment Cohort Study (DWECS) [17], which has been performed every fifth year since 1990, has used COPSOQ I scales. Therefore COPSOQ I scales have been used in analyses of shift work [18], violence and stress [19], depressive symptoms [20], sickness absence [21] and early retirement [22].

The extensive use of the questionnaire, both in research and as a practical tool for assessing the psychosocial work environment at workplace level, has convinced us that the concept has to be maintained and further developed. The purpose of the present paper is to describe the COPSOQ II questionnaire and to clarify and explain the changes made from the previous version, the COPSOQ I.

Methods

The development of COPSOQ II took place in five main steps:

(1) We considered practical experience from the use of COPSOQ I, in particular feedback from workplace studies that had used the COPSOQ I.
(2) All scales concerning workplace factors in COPSOQ I [1] were analyzed for differential item functioning (DIF) [23] with regard to gender, age and occupational status. An example of such an analysis has been published previously [2].
(3) A test version of COPSOQ II was developed and tested in a representative sample of working Danes between 20 and 59 years of age.
(4) Based on psychometric analyses, the final COPSOQ II was developed.
(5) Criteria-related validity of the new scales was tested.

The sample, data collection procedures, item development, and psychometric and statistical analysis are described below.

COPSOQ II study sample

The total sample included 8,000 adult respondents randomly selected from the Danish Centralized Civil Register (in Danish CPR). On their change of address form, Danish citizens have the possibility of indicating whether they would like to have survey exemption [17], hence, when the sample was drawn, approximately 10% of the population had survey exemption – in particular the age group 20–29 years [24]. Survey exemption and a lower response rate in the youngest age group have led to some underrepresentation of the age group 20–29 in our sample.

COPSOQ II study procedure

The respondents received a questionnaire and a stamped response envelope by mail. Non-respondents received two mailed reminders, the second one with a new questionnaire. Non-respondents were contacted a third time by telephone and asked to fill in the questionnaire and if necessary a new questionnaire was mailed to the respondents. The respondents could also choose to fill in the questionnaire electronically on a website. This option was used by 10.4% of the respondents. The study took place in the autumn and winter 2004/2005.

Of the 8,000 selected participants 166 were excluded from the study: 12 had emigrated, 50 had unknown addresses, 62 were mentally handicapped, 37 were abroad for a longer period, two were dead and three persons were also in the COPSOQ I cohort. Furthermore, 53 persons filled in the questionnaire but had too many missing values or inconsistent data for both gender and day of birth compared to the Civil Register and were regarded as having invalid responses. We received a total of 4,732 valid responses corresponding to a response rate of 60.4% – 1,215 respondents indicated that they were not in the work force or that they were self employed, leaving us with a final sample of 3,517 wage earners. In the statistical analyses of the scales we used all 4,732 respondents for the scales on health and self-efficacy whereas the sample of 3,517 wage earners was used for analyzing the work environment scales.

The Civil Register provided data on the respondents' age and gender whereas the questionnaire

contained a number of background questions including: working hours, industry, occupation, education, and socioeconomic status.

Job groups were classified on the basis of self-reported information on occupation, industry, education and socioeconomic status using the 1986 Danish extended version of the International Standard Classification of Occupations (ISCO) [25]. In all, 56 major job groups with more than 20 employees in each group were identified based on the three first digits of the modified ISCO code supplied with information on education, socioeconomic status and industry. Social class was classified according to the European Classification of Social Class based on the three digits ISCO88 code [26] (For details, see Moncada in this issue [27]).

Characteristics of the study population are given in Table I.

Study samples for testing criteria related validity

Criteria-related validity for the scales with regard to the company level was analyzed by looking at the relation between self-reported sickness absence and scale values at the company level. The data was taken from a study of 10,600 care workers in the long-term care sector. For further details about the study, see Winsløw and Borg [28]. The care workers were employed in 310 different organizational units within 40 different municipalities.

Table I. Characteristics of the study population.

		%
Number of respondents	3,517	
Women		52.6
Average age, years	42.3	
Age distribution		
20–29 years		13.5
30–39 years		26.4
40–49 years		30.3
50–59 years		29.8
Social class		
1 Higher professionals and managers		12.8
2 Lower professionals and managers		17.9
3 Higher clerical, services and sales workers		21.3
4 Small employers and self-employed		0
5 Farmers		0
6 Lower supervisors and technicians		0.4
7 Lower clerical, services and sales workers		16.5
8 Skilled workers		9.8
9 Semi- and unskilled workers		17.1
Not classified		4.1
Sectors		
Private		53.8
Public		38.9
Semi-public		3.8
Not classified		3.5
Working hours per week		
<30		7.1
30–34		8.5
35–39		39.3
40–44		21.1
>44		21.1
Not stated		2.9

The scales on individual factors were analyzed by relating scale values for individuals to long-term sickness absence derived from the national register on social transfer payment DREAM [29]. The DREAM register contains information on the compensation that employers receive when their employees are sick. The employers are entitled to get compensation if their employees are sick for more than 14 days.

Structure of the questionnaires

Like COPSOQ I, COPSOQ II is available in three versions of different length but the structure was changed. The number of items in the scales for the long and medium questionnaire was kept the same in both questionnaires, but in the medium questionnaire the number of scales was reduced from 41 to 28, (see Table II). In the short questionnaire, the scales were generally based on two questions and the number of scales was further reduced to 23.

In COPSOQ II, we aimed at a scale length of three to four items. In our experience, this scale length represents a reasonable trade-off between precision and response burden. Because our test questionnaire contained more than four items for many scales, we used the psychometric analysis to select the best items for each scale.

Psychometric and statistical analysis

The items in COPSOQ II were analyzed using explorative factor analyses, separately within each major domain. The number of factors was decided based on Eigen value analysis and interpretable factor loadings. DIF analyses were performed on selected scales using the logistic regression approach [2]. Internal consistency reliability was analyzed using Cronbach's alpha. Floor and ceiling effects, defined as the proportion of respondents selecting the lowest (floor) and highest (ceiling) response options for all items in a scale, were determined for all scales.

Each item was scored 0–100 (i.e. 0, 25, 50, 75, and 100 for a five response category item). The scale score was computed as the mean item score. If respondents had answered less than half of the questions in the particular scale, the scale score was set to missing. Each scale was scored in the direction indicated by the scale name.

Table II. Dimension and items in the COPSOQ questionnaire. The scales and items in italics are new.

Domain	Dimension	COPSOQ version I	II-test	II-long	II middle/short	Level of dimension	Items, abbreviation and short label
Demands at work	Quantitative demands	7	5	4	4/2	J	QD1 Work piles up; QD2 Complete task; QD3 Get behind*; QD4 Enough time*
	Work pace	–	4	3	3/2	J	WP1 Work fast; *WP2 High pace*; WP3 High pace necessary**
	Cognitive demands	8	6	4	0/0	J	CD1 Eyes on lots of things; CD2 Remember a lot; CD 3 New ideas; CD4 Difficult decisions
	Emotional demands	3	4	4	4/2	J	ED1 Emotional disturbing*; *ED2 Relate to other people's problems**; ED3 Emotionally demanding; ED4 Emotionally involved
	Demands for hiding emotions	2	4	3	0/0	JD	*HE1 Treat equally*; HE2 Hide feelings; HE3 Kind and open
	Sensory demands	5	–	–	–	–	Not included
Work organization and job contents	Influence	10	8	4	4/2	J	IN1 Influence work*; IN2 Say in choosing colleges; IN3 Amount of work*; IN4 Influence work task
	Possibilities for development	7	5	4	4/2	J	PD1 Take initiative*; PD2 Learning new things*; PD3 Use skills; PD4 Develop skills
	Variation	–	2	2	0/0	J	*VA1 Work varied; VA2 Do things over and over again*
	Meaning of work	3	3	3	3/2	IJ	MW1 Work meaningful*; MW2 Work important*; MW3 Motivated and involved
	Commitment to the workplace	4	5	4	4/2	IJC	CW1 Enjoy telling others; CW2 Workplace great importance*; *CW3 Recommend a friend**; *CW4 Looking for work elsewhere*
	Degrees of freedom at work	4	–	–	–	–	Not included
Interpersonal relations and leadership	Predictability	2	2	2	2/2	D	PR1 Informed about changes*; PR2 Information to work well*
	Recognition (Reward)	–	6	3	3/2	DC	*RE1 Recognised by management*; RE2 Respected by management; RE3 Treated fairly**
	Role clarity	4	3	3	3/2	JD	CL1 Clear objectives*; CL2 Responsibility; CL3 Expectation*
	Role conflicts	4	4	4	4/0	JD	CO1 Mixed acceptance; CO2 Contradictory demands; CO3 Do things wrongly; CO4 Unnecessary tasks
	Quality of leadership	8	8	4	4/2	D	QL1 Development opportunities; QL2 Prioritise job satisfaction*; QL3 Work planning*; QL4 Solving conflicts
	Social support from supervisor	4	4	3	3/2	JD	SS2 Support supervisor*; SS1 Supervisor listens to problems*; SS3 Supervisor talks about performance
	Social support from colleagues			3	3/0	JD	SC1 Support colleagues*; SC2 Colleagues listen to problems*; SC3 Colleagues talk about performance
	Feedback	2	2	–	–	–	Included in support scales
	Social relations	2	–	–	–	–	Not included
	Social community at work	3	3	3	3/0	JDC	SW1 Atmosphere; SW2 Cooperation; SW3 Community
Work-individual Interface	Job insecurity	4	4	4	0/0	W	JI1 Unemployed; JI2 Redundant; JI3 Finding new job; JI4 Transferred
	Job satisfaction	7	6	4	4/1	W	JS1 Work prospects; JS2 Work conditions; JS3 Work abilities; JS4 Job in general*

Table II. Continued.

Domain	Dimension	COPSOQ version I	II-test	II-long	II middle/ short	Level of dimension	Items, abbreviation and short label
	Work-family conflict	–	4	4	4/2	W	*WF1 Being in both places; WF2 Energy conflict*; WF3 Time conflict*;WF4 Family think you work too much*
	Family-work conflict	–	2	2	0/0	W	*FW1 Energy conflict; FW2 Time conflict*
Values at workplace level	*Trust regarding management*	–	9	4	4/2	C	*TM1 Management trust employees*; TM2 Employees trust information*; TM3 Management withhold information; TM4 Employees express views*
	Mutual trust between employees	–		3	3/0	C	*TE1 Colleagues withhold information; TE2 Withhold information management; TE3 Trust colleagues*
	Justice	–	9	4	4/2	C	*JU1 Conflicts resolved fairly*; JU2 Employees appreciated; JU3 Suggestions treated seriously; JU4 Work distributed fairly**
	Social inclusiveness	–	7	4	0/0	C	*SI1 Gender discrimination; SI2 Race/religion discrimination; SI3 Age discrimination; SI4 Health discrimination*
Health and well-being	General health perception	5	1	1	1/1	I	GH1 Health all in all*
	Burnout	–	6	4	4/2	I	*BO1 Worn out*; BO2 Physically exhausted; BO3 Emotionally exhausted*; BO4 Tired*
	Stress	–	7	4	4/2	I	*ST1 Problems relaxing; ST2 Irritable*; ST3 Tense; ST4 Stressed**
	Sleeping troubles	–	4	4	4/0	I	*SL1 Slept badly; SL2 Hard to sleep; SL3 Woken up early; SL4 Woken up several times*
	Depressive symptoms	–	8	4	0/0	I	*DS1 Sadness; DS2 Lack of self-confidence; DS3 Feel guilty; DS4 Lack of interest in daily activity*
	Somatic stress symptoms	7	6	4	0/0	I	SO1 Stomach ache; *SO2 Headache*; SO3 Palpitations; SO4 Muscle tension
	Cognitive stress symptoms	4	4	4	0/0	I	CS1 Problems concentrating; CS2 Difficult thinking clearly; CS3 Difficult taking decisions; CS4 Difficult remembering
	Mental health	5	–	–	–	–	Not included
	Vitality	4	–	–	–	–	Not included
	Behavioural stress	8	–	–	–	–	Not included
Personality	*Self-efficacy*	–	7	6	0/0	I	*SE1 Solve problems; SE2 Achieving what I want; SE3 Reach objectives; SE4 Handle unexpected events; SE5 Several ways solving problems; SE6 Usually manage*
	Sense of coherence	9	–	–	–	–	Not included
	Problem focused coping	2	–	–	–	–	Not included
	Selective coping	2	–	–	–	–	Not included
	Resigning coping	2	–	–		–	Not included
Offensive behaviours	Sexual harassment	1	1	1	1/1	JW	SH single item*
	Threats of violence	1	1	1	1/1	JW	TV single item*
	Physical violence	1	1	1	1/1	JW	PV single item*
	Bullying	–	1	1	1/1	W	*BU single item**
	Unpleasant teasing	1	1	1	0/0	W	UT single item
	Conflicts and quarrels	1	1	1	0/0	W	CQ single item
	Gossip and slander	1	1	1	0/0	W	GS single item
Total	Dimensions	36	40	41	28/23		
	Items	147	169	127	87/40		

I, Individual level; J, Job level; D, Department level; C, Company level; W, Work-individual interphase. *Items used in the short version.

Selection of scales and items

The selection of scales and items for the test questionnaire was based on COPSOQ I, but a number of new scales and items were also constructed. The COPSOQ I had 20 scales covering workplace factors, six scales covering individual factors of health and well-being and four scales covering individual factors of personality. In the new questionnaire, only one scale for personality was included and a major revision was made for scales on health and well-being. New scales concerning values at the workplace were introduced. To avoid increasing response burden a number of scales and questions from COPSOQ I were discarded. All in all, 57% of the items of COPSOQ I were retained. The scales and items of the COPSOQ II questionnaire are given in Table II and in more detail in the appendix.

Unchanged scales

The following COPSOQ I scales were incorporated in COPSOQ II without any changes: *Meaning of work*, *Predictability*, *Role conflicts*, *Social community at work* and *Cognitive stress* symptoms.

Deleted scales from COPSOQ I

The scales *Sensory demands, Degree of freedom* and *Social relations* were discarded mainly because they often revealed conditions that could be interpreted from the job title and therefore would be impossible to change (for example, bus drivers and teachers have few degrees of freedom; nurses have many relations to colleagues at work and truck drivers have few).

Feedback at work was deleted as a separate scale and the items were included in two new scales on social support. The scales on S*ense of coherence* and *Coping* were abandoned because they had not been widely used in research projects.

The revision of the health scales meant that we excluded the scale for *Behavioural stress* and the two SF-36 scales *Mental health* and *Vitality*. The *Mental health* scale correlated highly with the scale for *Vitality* and it contained two aspects of mental health, namely anxiety and depressive symptoms.

New scales

A new scale of *Work pace* was included in the questionnaire. The purpose of the scale was to measure the intensity aspect of the quantitative demands at work [2]. We had four items in the test questionnaire but chose to discard one of the items that had a more individual character than the others.

Our DIF analyses of the scale *Possibilities for development* showed that two items had DIF in relation to job category. These two items were originally intended to form a specific scale on *Variation* in COPSOQ I and we therefore formed this scale.

We wanted to include a new scale on rewards at work, as we consider rewards to be a very important factor in the psychosocial work environment. However, the three components recognition, salary, and career prospects that are included under the label of rewards in the Siegrist Effort-Reward Imbalance model [30] do not necessarily reflect the same underlying quality of the work of the individual. This expectation was confirmed by the statistical analyses. We had to discard items both due to poor correlation with other items and due to content considerations. Our final scale consists of three homogeneous items but covers only one of the three sub-components of Siegrist's reward concept, namely *Recognition*.

Two scales were constructed on work-family conflict that reflects the direction of the conflict, work interfering with private life and private life interfering with work. The items cover two aspects – time and energy. However, very few employees felt that their work was influenced by their private life.

Scales on values at the workplace are new in COPSOQ II. We included items intended to cover scales of *Trust*, *Justice* and *Social inclusiveness*. The purpose of these scales was to get a picture of the whole workplace (company) and not just the person's own job or department. Trust and justice, also referred to as Social Capital [31], are important human values in the workplace [32,33] and it is our hypothesis that living up to these values has a great impact not only on the recruitment and the well-being of the employees but also on the social processes in the workplace. The items chosen were inspired by a number of researchers in the fields of "trust" (Cook and Wall [34]) and "justice" (Carless [35], Elovainio and Vahtera [36]).

The factor analyses of the trust items showed three items loaded on a common factor about the employees' trust in each other and their behaviour in relation to the management. The other items covered trust between management and employees. Therefore we chose to form an independent scale for *Trust regarding management* with four items and a scale on *Mutual trust between employees* with three items as in accordance with Cook and Wall [34].

The scale on *Justice* was formed on the basis of nine test questions. The final scale had four items and the two items that used the words "justice" and "respect", respectively, had the highest correlation with the total scale. This suggests that the scale measures what it is intended to measure.

Table III. Mean score, standard deviation, ceiling, floor, and missing values for the COPSOQ II questionnaire ($n = 3{,}517$).

	Cronbach alpha	Mean[a]	SD	% Floor	% Ceiling	Range of item missing (%)	Scale missing (%)
Quantitative demands	0.82	40.2	20.5	2.9	0.3	2.3–2.6	2.2
Work pace	0.84	59.5	19.1	0.5	3.4	2.4–2.9	2.2
Cognitive demands	0.74	63.9	18.7	0.3	1.1	2.3–2.5	2.2
Emotional demands	0.87	40.7	24.3	5.7	0.4	2.4–2.9	2.2
Demands for hiding emotions	0.57	50.6	20.8	1.5	0.9	2.6–3.0	2.3
Influence	0.73	49.8	21.2	1.6	0.5	2.3–2.7	2.2
Possibilities for development	0.77	65.9	17.6	0.4	2.3	2.8–3.1	2.6
Variation	0.50	60.4	21.4	2.0	4.2	2.4–2.6	2.2
Meaning of work	0.74	73.8	15.8	0.1	7.3	2.7–2.8	2.8
Commitment to the workplace	0.76	60.9	20.4	0.7	2.2	2.3–3.0	2.2
Predictability	0.74	57.7	20.9	1.5	4.2	2.6–2.8	2.3
Recognition (Reward)	0.83	66.2	19.9	0.9	5.8	2.8–3.0	2.8
Role clarity	0.78	73.5	16.4	0.0	7.5	2.7–3.0	2.7
Role conflicts	0.67	42.0	16.6	1.3	0.2	2.8–3.5	2.6
Quality of leadership[b]	0.89	55.3	21.1	1.2	1.9	2.1–2.7	2.0
Social support from supervisor[b]	0.79	61.6	22.4	0.9	4.4	1.9–2.1	2.0
Social support from colleagues[c]	0.70	57.3	19.7	1.1	1.9	2.7–3.0	2.7
Social community at work[d]	0.85	78.7	18.9	0.2	24.4	2.7–2.8	2.6
Job insecurity	0.77	23.7	20.8	19.0	0.5	2.8–2.9	2.3
Job satisfaction[e]	0.82	65.3	18.2	0.7	5.1	2.9–3.1	2.8
Work–family conflict	0.80	33.5	24.3	9.7	1.2	3.1–3.8	2.9
Family–work conflict	0.79	7.6	15.3	74.6	0.2	2.9–3.1	2.9
Trust regarding management	0.80	67.0	17.7	0.2	3.9	2.6–4.2	2.5
Mutual trust between employees	0.77	68.6	16.9	0.0	5.6	3.0–3.8	3.2
Justice	0.83	59.2	17.7	0.4	1.6	2.8–3.6	2.6
Social inclusiveness	0.63	67.5	16.3	0.1	3.8	3.4–5.2	2.8
Self-rated health	–	66.0	20.9	0.8	14.8	–	1.2
Burnout	0.83	34.1	18.2	1.7	0.2	0.7–1.0	0.6
Stress	0.81	26.7	17.7	5.2	0.1	0.7–1.0	0.6
Sleeping troubles	0.86	21.3	19.0	17.4	0.0	0.7	0.6
Depressive symptoms	0.76	21.0	16.5	10.3	0.0	0.7–0.9	0.7
Somatic stress symptoms	0.68	17.8	16.0	16.6	0.0	0.7–0.8	0.6
Cognitive stress symptoms	0.83	17.8	15.7	18.6	0.0	0.8–0.9	0.7
Self-efficacy	0.80	67.5	16.0	0.0	1.8	1.3–1.5	1.3
Sexual harassment	–	2.9%	–	97.0	0.1	–	3.3
Threats of violence	–	7.8%	–	92.2	0.3	–	3.2
Physical violence	–	3.9%	–	96.1	0.0	–	3.3
Bullying	–	8.3%	–	91.7	0.5	–	2.5
Unpleasant teasing	–	8.3%	–	91.7	0.3	–	3.2
Conflicts and quarrels	–	51.2%	–	48.8	1.3	–	2.5
Gossip and slander	–	38.9%	–	61.1	3.5	–	2.6

[a]Prevalence proportions for the single items. [b]$n = 2{,}719$ did have a leader. [c]$n = 3{,}422$, 95 answered not relevant. [d]$n = 3{,}481$, 36 answered not relevant. [e]$n = 3{,}494$, 23 answered not relevant.

In Danish society there has been increasing interest in the issues of social inclusiveness and social responsibility of the workplace. Therefore we included seven items on this aspect of the psychosocial work environment in our test questionnaire. Although the two items on gender and race/religion had the lowest correlation with the others, we chose to disregard statistics for the final scale and gave priority to four key domains regarding inclusiveness: Gender, ethnicity, age and health.

The scale on sleeping quality from the Karolinska Sleep Questionnaire was included in the questionnaire [37]. The four items loaded clearly on the same factor in the analyses and the scale had high internal reliability (see Table III). Furthermore, the scale has worked well in Swedish research [38] and in our own study on burnout among human service workers [9].

We included the scale for personal burnout from the Copenhagen Burnout Inventory [39], which was developed in connection with the study on burnout [9]. The questions were changed so that they fitted the COPSOQ I format and the time window of four weeks. The items *Vulnerable* and *Cannot take it anymore* were discarded as they had a very skewed response distribution and also showed weak correlations with the other items. We found that

the item *Emotionally exhausted* loaded on the scale about *Depressive symptoms* but we chose to keep it in the scale since we wanted to cover emotional as well as physical fatigue.

In COPSOQ II we have chosen to separate the two phenomena stress and depressive symptoms. We define stress as an individual state characterized by a combination of high arousal and displeasure. In the choice of symptoms we were inspired by Peter Warr's circle model for psychological states from which we have chosen examples characterized by the combination of arousal and displeasure [40]. In the scale for stress, we have chosen not to combine positive and negative questions since it was our experience that the positive and negative symptoms tended to form separate scales. We included seven items in our test questionnaire and had a number of considerations regarding content as well as statistics. We retained the four items that were the most appropriate for a conceptualization of stress as an intra-individual state (see Table II).

After a thorough review of the internationally acknowledged questionnaires on depression and depressive symptoms we chose to include eight items slightly modified from Bech et al. in our test questionnaire [41]. The purpose of this scale was not to try to diagnose clinical depression but to develop a simple scale measuring the degree of depressive symptoms in persons belonging to the working population. After our analyses and content considerations we excluded four items: *Lacked energy* because it was close to the dimension Burnout, *Lacked appetite* since 76% of the respondents did not have a problem with appetite, and both *Bad mood* and *Upset* since the items were too similar to the item on *Sadness*. We ended up with the four items covering S*adness, Lack of self-confidence, Feel guilty* and *Lack of interest in daily activities*.

In order to assess the respondents' level of self-confidence or faith in their own abilities to solve unexpected or difficult problems in life, we chose seven items on self-efficacy from Bandura [42]. The scale worked well statistically but we excluded the item *I keep calm* as it has a hidden assumption, namely that the person is always calm. In this scale, we did not give high priority to reaching a scale with four items since the scale was only to be included in the long questionnaire.

A number of single items measuring offensive behaviour were included in the questionnaire, (see Table II), except for bullying they were all taken from COPSOQ I [1]. Offensive behaviour seems to be an important factor in the psychosocial work environment and is now included also in the middle and short version of the questionnaire [43].

Shortening of scales from COPSOQ I

In order to keep the general layout of a maximum four items per scale, a number of COPSOQ I scales were reduced based on the statistical analysis of DIF and by looking at the distributions of the items. For the scales *Cognitive demands*, *Influence* and *Job satisfaction* the analyses showed that the old scales from the medium size COPSOQ I worked quite well and these are now used in the long version of COPSOQ II. *Role clarity* was reduced to three items due to DIF for one of the items.

We have previously found that traditional scales for quantitative demands contains two dimensions of intensity (tempo, pace) and extensity (amount of work, deadlines, workload) that ought to be separated in specific scales [2]. Thus, the quantitative demand scale was reduced from seven to four items and a new *Work pace* scale has been formed (see *New scales)*. This change also reflects our experiences from using the COPSOQ I scale on quantitative demands in practical workplace surveys.

For *General health perception* we selected only one global item, which has been used in the SF-36 [44] and in numerous other questionnaires, and has been shown to predict many different endpoints including mortality, cardiovascular diseases, hospitalizations, use of medicine, absence, and early retirement [45].

Change of items and new items on COPSOQ I scales

We included new items (*Relate to other people's problems* and *Treat equally*) in the scales for *Emotional demands* and *Demands for hiding emotions* to make the scales broader. These items performed well in the psychometric analyses. The scale *Demands for hiding emotions* aims at catching the essence of "emotional labour" where the employee is expected to keep a neutral façade regardless of the behaviour of the clients or customers [46].

We have included two new items (*Recommend a friend*, *Looking for work elsewhere*) in the scale for *Commitment to the workplace*. The items have been used in other studies and the last of the items can be seen as a measure of the concept "intention to quit" [47].

In the COPSOQ I, the *Social support* scale included items on support from supervisors and colleagues. In discussions with workplaces, the respondents felt that support from supervisors and support from colleagues were two different things. Also, our statistical analyses of the scale showed that the items on colleagues correlated poorly with the items on supervisors. Finally, items on support from colleagues had strong correlations with items on *Feedback at work*

from colleagues, while items on support from supervisors had strong correlations with items on *Feedback at work* from supervisors. We ended up with two scales on social support at work including items on feedback, namely one for *Social support from colleagues* and one for *Social support from supervisors*.

The items on the *Somatic stress* symptoms have been changed slightly compared with COPSOQ I in order to fit the general layout. We included two new symptoms, *Nauseous* and *Headache,* and removed *Chest pain*, *Short of breath* and *Tendency to sweat* in the test questionnaire. The final four-item scale on *Somatic stress* included the items with the least skew and highest interim correlation: *Stomach ache; Headache; Palpitations; Muscle tension*. Also, this scale did not show DIF in relation to gender.

Change of response categories in COPSOQ I scales

We changed the response options for *Insecurity at work* from yes-no to five response options as with most of the other items in the questionnaire. The categories for the scales on *Somatic* and *Cognitive stress* were changed to: All the time; A large part of the time; Part of the time; A small part of the time; Not at all. These categories were used for most of the health scales (see appendix).

Criteria-related validity of the new scales

We looked at criteria validity only for the new scales that have not been used in other studies before. The scales were constructed to cover different analytical levels: Scales mainly related to job factors (*Work pace, Variation)*, scales mainly related to the company level (*Justice, Trust* and *Social inclusiveness*), scales mainly related to the department level (*Recognition*), individually based scales (*Stress* and *Depression)* and scales related to work–individual interface (*Work-family conflic*t), see Table II.

The job-related scales *Work pace* and *Variation* were analyzed by looking at their ability to discriminate among job groups. The scale on *Work-family conflict* was also analyzed this way because it has a strong element related to the job content. Analysis of variance was performed on the scales with job group as the independent variable. We hypothesised that: (1) *Work pace* is high for industrial workers, slaughterhouse workers etc and is low for drivers, family childcare providers, childcare workers and janitors; (2) *Variation* in work is high for academic groups and is low for the industrial job groups, postal workers etc; (3) *Work family conflict* is high for academic groups and teachers and is low for industrial groups.

Criteria-related validity for the scales on *Justice* was analyzed by looking at the relation between self-reported sickness absence and scale values at company level. We also analyzed *Recognition* this way even though the scale is more related to department level than company level. It was expected that low scale values for *Justice* and *Recognition*, respectively, were related to high rates of sickness absence for the organizational units. The mean scale scores for *Justice* and *Recognition* were calculated for each organizational unit and related to the mean number of sickness absence days for the unit within the last year. The mean number of sickness absence days was categorized into low level (0–5 days), medium level (6–20 days) and high level (more than 20 days). Logistic regression was used with the categorized variable on sickness absence as the dependent variable and the scale score as the independent variable. We calculated the odds ratio for a score difference of 10 points. We were not able to validate the other company-related scales on *Trust* and *Social inclusiveness* since we did not have a workplace study where these scales were included.

Because both the scales for *Burnout* and *Sleeping problems* have been used in other studies [37–39] we decided only to look at criteria-related validity for the new scales on *Stress* and *Depression*. The hazard ratios (HR) for long-term sickness absence were calculated using the Cox regression model. We calculated the hazard ratios for scale value differences of 10 points. The analyses were adjusted for age, gender and social class. Separate analyses were performed including interaction between gender and scale value for the independent variable.

Results

Scale characteristics for the dimensions in COPSOQ II are shown in Table III. The internal consistency reliability measured by Cronbach alpha was high and above 0.7 for most of the scales. However, low values were seen for the scales *Demands for hiding emotions* (0.57) and *Variation* (0.50). The proportion of missing values for the scales was between 0.6% and 3.3%. The items on offensive behaviour had the highest number of missing values. Most of the scales had low floor or ceiling effect but problems were seen for the scales: *Family-work conflicts, Job-insecurity and Social community at work*. The scale *Family-work conflict* had high floor effect (74.6%) and a very low mean value (7.6) showing that private life is not interfering with work in general. Floor effect was also seen for the scale *Job insecurity* (19.0%) and ceiling effect was found for the scale *Social community at work* (24.4%).

Also the scales on health had some floor or ceiling effect indicating a high proportion of respondents with no health symptoms.

The analyses of variance on the scales *Work pace*, *Variation* and *Work-family conflict* showed that job group was significantly ($p < 0.0001$) related to the scale score for all three dimensions. Table IV shows the scale scores on the dimensions for the 10 job groups with the lowest and highest scores, respectively. The table shows that the scales, in general, are able to discriminate between job groups as we had expected. As hypothesised *Work pace* was high for the industrial groups, slaughterhouse workers, packing and bottling plant employees and also high for mailworkers, managers in the private sector and doctors and dentists. *Work pace* was low for child-minders, drivers and janitors as expected and also low for pre-school teachers and teachers. However, surprisingly, unskilled metal workers also had low work pace, which we do not have an explanation for. The degree of variation in the work was, as expected, low for mailworkers, bus drivers and industrial workers and high for academics, engineers and managers. *Work-family conflict* was low for industrial workers and high for academics, engineers, school teachers and managers.

The logistic regressions showed that mean sickness absence at the organizational units was significantly related to mean score values of *Justice* and *Recognition.* For *Justice,* the risk of being absent due to sickness was 1.66 (confidence interval (CI) 1.12–2.40) for a mean scale score difference of 10 points. For *Recognition,* the odds ratio was 1.58 (CI 1.09–2.29).

The Cox regression on the *Stress* scale showed increased risk of long-term sickness absence with increasing scale value (step of 10 points) (hazard ratio (HR) = 1.16 (CI 1.11–1.21)) when adjusting for age, gender and social class. A similar result was found for the *Depression* scale where the risk of long-term sickness absence increased with increasing scale value (HR = 1.16 (CI 1.11–1.22)) when adjusting for age, gender and social class. For both scales, the results are in the expected direction. There was no significant interaction between gender and the scale value for any of the tested models.

Discussion and conclusions

Standardized generic questionnaires face an inherent conflict between conservatism and innovation. If the instrument is revised frequently, comparisons between studies are hampered since the questions will not be identical. On the other hand, if problems have been identified, revisions in order to improve validity and reliability seem logical. After developing COPSOQ I version I, we decided to use the following guidelines for revisions: (1) In order to have a standardized measuring tool we would not like to make changes too often and at the most every fifth year; (2) We would only make changes in scales if tests had shown problems with scales or items or if the practical use of the scales had shown problems, as for instance with the scale of quantitative demands [2]; (3) We would delete scales which had not been used for research or practical purposes (e.g sensory demand, freedoms at work); and (4) We would include new scales that reflected the development of new theories and new perspectives (e.g *Recognition, Trust, Justice, Work-family conflicts* and *Depressive symptoms*).

The development of COPSOQ II was based on theoretical considerations and on feedback from the users of the questionnaire. Following standard approaches in the field of occupational psychology and sociology, our psychometric testing used classical psychometric techniques evaluating dimensionality and internal consistency (e.g. explorative factor analyses, Cronbach's analysis of internal reliability) as well as evaluation of criteria validity. In addition, we used modern psychometric methods such as DIF analysis. We found high Cronbach alphas for most but not all scales. Interestingly, a reliability study of COPSOQ I scales using a test–retest design have found higher reliabilities for most of the scales where Cronbach's alphas were low in this study (Thorsen et al in this issue [48]). A possible reason for this discrepancy is the implicit logic behind Cronbach's alpha and classical psychometrics in general. Generally, these criteria are most appropriate for so-called effect-indicator scales (i.e. scales where the items can be seen as effects of a single latent cause such as an intra-individual trait or a state like depression or anxiety) [49]. As discussed in other papers in this issue (Thorsen et al. [48] and Bjorner et al. [50]) these criteria may set too narrow limits on scales where items are not all effects of a single intra-individual state. This suggests that internal consistency may underestimate reliability for scales that are not comprised solely of effect indicators.

Our analysis showed low floor and ceiling effects for most scales. From a technical perspective, this is important, since floor or ceiling effects limit the ability to show changes over time and reduce the scales' power to predict other outcomes. However, in scales for phenomena such as violence or harassment floor (or ceiling) is unavoidable since such outcomes are rare.

Generally, our tests of criteria validity supported the validity of the new scales. For the job-related scales *Work pace, Variation,* and *Work-family conflict* our overall hypotheses about which job groups had

Table IV. The 10 job groups with the lowest and highest, respectively scale score for *work pace*, *variation* and *work–family conflict*. The order is from low to high.

Order	Work pace	*n*	Score	Variation	*n*	Score	Work family conflict	*n*	Score
1	Child-minders	52	38.5	Mailperson	21	27.4	Machinists	41	18.4
2	High school teachers	25	47.0	Bus drivers	22	35.1	Metal workers, unskilled	24	20.5
3	Bus drivers	22	47.2	Food, drink and tobacco workers	29	36.2	Cleaners	48	21.9
4	Pre-school teacher, unskilled	41	47.8	Cleaners	48	36.5	Warehouse workers and dockworkers	41	22.8
5	Metal workers, unskilled	24	50.0	Slaughterhouse workers	22	41.5	Electronic workers, unskilled	22	22.9
6	Teachers, other	67	50.7	Packing and bottling plant employees	21	43.8	Pre-school teacher, unskilled	41	23.1
7	Janitors	62	51.4	Warehouse workers and dockworkers	41	45.0	Clerk, public sector	104	23.5
8	Truck drivers	48	52.0	Metal workers, unskilled	24	46.7	Mechanics	37	25.5
9	Social education worker	70	52.8	Electronic workers, unskilled	22	49.4	Construction workers, skilled	28	26.5
10	Caregivers, hospital	22	53.8	Medical secretary	30	61.4	Aides for handicapped children or adults	61	27.3
47	Store managers	27	67.0	Administrator, public health	26	69.2	Social education worker	70	39.4
48	Administrator, public health	26	67.0	High school teachers	25	70.0	Medical doctors and dentists	35	40.7
49	Media employees	20	67.9	Social worker	28	70.1	Physical and occupational therapist	22	41.3
50	Construction workers, skilled	28	68.2	Physical and occupational therapist	22	71.0	Supervisors	68	41.5
51	Medical doctors and dentists	35	68.6	Teachers, other	67	71.1	Media employees	20	42.1
52	Manager, private sector	107	68.8	Academics, social sciences and humanities	50	71.8	Graduate engineers and architects	62	42.2
53	Packing and bottling plant employees	21	70.8	Graduate engineers and architects	62	72.0	Academics, natural sciences	32	42.4
54	Slaughterhouse workers	22	71.2	Academics, natural sciences	32	72.7	Academics, social sciences and humanities	50	42.8
55	Medical secretary	30	71.4	Manager, private sector	107	73.5	Primary and secondary school teachers	120	43.1
56	Mailperson	21	73.4	Manager, public sector	21	76.8	Manager, private sector	107	43.3

the highest and lowest scale scores, respectively, were fulfilled for the three scales in general. Unskilled (and to some degree skilled) metal workers reported lower *Work pace* than we expected. One explanation could be that these jobs may involve automatic processing and therefore process monitoring rather than manual work. The company level analyses of the scales on *Justice* showed that higher mean company score on justice was associated with low company frequency of sickness absence. These analyses ignored score variation within companies and are therefore rather conservative (for a more sophisticated multilevel approach see [51]). In our register-based individual-level analyses, the scales on *Stress* and *Depression* also showed good criteria validity by being able to predict long term sickness absence.

We did not have a workplace study where the scales on *Trust* and *Social inclusiveness* had been included, so we were not able to evaluate these scales. However, other studies have shown that the dimensions *Trust* and *Justice* combined into the concept of "Social capital" [31] are related to human health, since decreasing social capital at work was related to low self rated health [52]. We believe that social capital at the company level is an important factor for the psychosocial work environment.

An advantage of the present study is that the development of the COPSOQ I questionnaire is based on a representative national sample of wage earners in Denmark. A weakness of the current study is the somewhat low response rate (60.4%) and the disproportionately higher exclusion of young people due to general Danish survey exception policy. A previous analysis of response rates in this sample using logistic regression evaluated gender, age group and degree of urbanization [53]. No effect was found for urbanization, but the response rates were higher for women and increased with age [53]. To evaluate the possibility that the response rate differences had an impact on the reported mean values we calculated standardized regression coefficients for the regression of scale values on age group and gender. For one scale, *Emotional demands*, we found a standardized regression coefficient of 0.25 for gender. All other coefficients were below 0.2, suggesting that response rate differences across age and gender are unlikely to have major impact on the mean values. With regard to reliability the study by Thorsen et al. in this issue [48] showed that there were no major age and gender differences for reliability. All in all, while the low response rate is still a limitation of the study we have no indication that it had any major impact on the results.

We conclude that these initial results support the validity of the COPSOQ II questionnaire. Further information on reliability, construct validity and criteria validity are presented in other papers in this issue. (Construct validity, Bjorner et al. [50]; Test–retest reliability, Thorsen et al. [48]; and Predictive validity, Rugulies et al. [54]).

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Appendix

Appendix: Scales of the COPSOQ II questionnaire

The response option for questions in COPSOQ II is given below:

(a) Always; Often; Sometimes; Seldom; Never/hardly ever
(b) Always; Often; Sometimes; Seldom; Never/hardly ever (reversed scoring)
(c) To a very large extent; To a large extent; Somewhat; To a small extent; To a very small extent
(d) Always; Often; Sometimes; Seldom; Never/hardly ever; Not relevant
(e) Very satisfied; Satisfied; Unsatisfied; Very unsatisfied; Not relevant
(f) Yes, often; Yes, sometimes; Rarely; No, never
(g) Yes, certainly; Yes, to a certain degree; Yes, but only very little; No, not at all
(h) To a very large extent; To a large extent; Somewhat; To a small extent; To a very small extent (reversed scoring)
(i) Excellent; Very good; Good; Fair; Poor
(j) All the time; A large part of the time; Part of the time; A small part of the time; Not at all
(k) Fits perfectly; Fits quite well; Fits a little bit; Does not fit
(l) Yes, daily; Yes, weekly; Yes, monthly; Yes, a few times; No
   – If yes, with whom? (You may tick off more than one); Colleagues; Manager/superior; Subordinates; Clients/customers/patients
(m) Yes, daily; Yes, weekly; Yes, monthly; Yes, a few times; No
   – If yes, from whom? (You may tick off more than one); Colleagues; Manager/superior; Subordinates; Clients/customers/patients

Demands at work

Scale	Item #	Item	Response option
Quantitative demands	QD1	Is your workload unevenly distributed so it piles up?	a
	QD2	How often do you not have time to complete all your work tasks?	a
	QD3	Do you get behind with your work?	a
	QD4	Do you have enough time for your work tasks?	b
Work pace	WP1	Do you have to work very fast?	a
	WP2	Do you work at a high pace throughout the day?	c
	WP3	Is it necessary to keep working at a high pace?	c
Cognitive demands	CD1	Do you have to keep your eyes on lots of things while you work?	a
	CD2	Does your work require that you remember a lot of things?	a
	CD3	Does your work demand that you are good at coming up with new ideas?	a
	CD4	Does your work require you to make difficult decisions?	a
Emotional demands	ED1	Does your work put you in emotionally disturbing situations?	a
	ED2	Do you have to relate to other people's personal problems as part of your work?	a
	ED3	Is your work emotionally demanding?	c
	ED4	Do you get emotionally involved in your work?	c
Demands for hiding emotions	HE1	Are you required to treat everyone equally, even if you do not feel like it?	a
	HE2	Does your work require that you hide your feelings?	c
	HE3	Are you required to be kind and open towards everyone – regardless of how they behave towards you?	c

Work organization and job contents

Scale	Item#	Item	Response option
Influence	IN1	Do you have a large degree of influence concerning your work?	a
	IN2	Do you have a say in choosing who you work with?	a
	IN3	Can you influence the amount of work assigned to you?	a
	IN4	Do you have any influence on what you do at work?	a
Possibilities for development (skill discretion)	PD1	Does your work require you to take the initiative?	c
	PD2	Do you have the possibility of learning new things through your work?	c
	PD3	Can you use your skills or expertise in your work?	c
	PD4	Does your work give you the opportunity to develop your skills?	c
Variation	VA1	Is your work varied?	a
	VA2	Do you have to do the same thing over and over again?	b
Meaning of work	MW1	Is your work meaningful?	c
	MW2	Do you feel that the work you do is important?	c
	MW3	Do you feel motivated and involved in your work?	c
Commitment to the workplace	CW1	Do you enjoy telling others about your place of work?	c
	CW2	Do you feel that your place of work is of great importance to you?	c
	CW3	Would you recommend a good friend to apply for a position at your workplace?	c
	CW4	How often do you consider looking for work elsewhere?	b

Interpersonal relations and leadership

Scale	Item #	Item	Response option
Predictability	PR1	At your place of work, are you informed well in advance concerning for example important decisions, changes, or plans for the future?	c
	PR2	Do you receive all the information you need in order to do your work well?	c
Recognition	RE1	Is your work recognised and appreciated by the management?	c
	RE2	Does the management at your workplace respect you?	c
	RE3	Are you treated fairly at your workplace?	c
Role clarity	CL1	Does your work have clear objectives?	c
	CL2	Do you know exactly which areas are your responsibility?	c
	CL3	Do you know exactly what is expected of you at work?	c
Role conflicts	CO1	Do you do things at work, which are accepted by some people but not by others?	c
	CO2	Are contradictory demands placed on you at work?	c
	CO3	Do you sometimes have to do things which ought to have been done in a different way?	c
	CO4	Do you sometimes have to do things which seem to be unnecessary?	c
Quality of leadership		To what extent would you say that your immediate superior:	
	QL1	– makes sure that the individual member of staff has good development opportunities?	c
	QL2	– gives high priority to job satisfaction?	c
	QL3	– is good at work planning?	c
	QL4	– is good at solving conflicts?	c
			c
Social support from colleagues	SC1	How often do you get help and support from your colleagues?	d
	SC2	How often are your colleagues willing to listen to your problems at work?	d
	SC3	How often do your colleagues talk with you about how well you carry out your work?	d
Social support from supervisors*	SS1	How often is your nearest superior willing to listen to your problems at work?	a
	SS2	How often do you get help and support from your nearest superior?	a
	SS3	How often does your nearest superior talk with you about how well you carry out your work?	a
Social community at work	SW1	Is there a good atmosphere between you and your colleagues?	a
	SW2	Is there good co-operation between the colleagues at work?	a
	SW3	Do you feel part of a community at your place of work?	a

*These questions were only addressed to respondents who were not supervisors themselves and who had a supervisor.

Work-individual interface

Scale	Item #	Item	Response option
Job insecurity	JI1	Are you worried about becoming unemployed?	c
	JI2	Are you worried about new technology making you redundant?	c
	JI3	Are you worried about it being difficult for you to find another job if you became unemployed?	c
	JI4	Are you worried about being transferred to another job against your will?	c
Job satisfaction		Regarding your work in general. How pleased are you with:	
	JS1	– your work prospects?	e
	JS2	– the physical working conditions?	e
	JS3	– the way your abilities are used?	e
	JS4	– your job as a whole, everything taken into consideration?	e
Work–family conflict	WF1	Do you often feel a conflict between your work and your private life, making you want to be in both places at the same time?	f
		The next three questions concern the ways in which your work affects your private life:	
	WF2	Do you feel that your work drains so much of your *energy* that it has a negative effect on your private life?	g
	WF3	Do you feel that your work takes so much of your *time* that it has a negative effect on your private life?	g
	WF4	Do your friends or family tell you that you work too much?	g
Family–work conflict		The next two questions concern the ways in which *your private life* affects your work:	
	FW1	Do you feel that your private life takes so much of your *energy* that it has a negative effect on your work?	g
	FW2	Do you feel that your private life takes so much of your *time* that it has a negative effect on your work?	g

Values at the workplace

The next questions are not about your own job but about the workplace as a whole

Scale	Item #	Item	Response option
Mutual trust between employees	TE1	Do the employees withhold information from each other?	h
	TE2	Do the employees withhold information from the management?	h
	TE3	Do the employees in general trust each other?	c
Trust regarging management	TM1	Does the management trust the employees to do their work well?	c
	TM2	Can you trust the information that comes from the management?	c
	TM3	Does the management withhold important information from the employees?	h
	TM4	Are the employees able to express their views and feelings?	c
Justice	JU1	Are conflicts resolved in a fair way?	c
	JU2	Are employees appreciated when they have done a good job?	c
	JU3	Are all suggestions from employees treated seriously by the management?	c
	JU4	Is the work distributed fairly?	c
Social inclusiveness	SI1	Are men and women treated equally at your workplace?	c
	SI2	Is there space for employees of a different race and religion?	c
	SI3	Is there space for elderly employees?	c
	SI4	Is there space for employees with various illnesses or disabilities?	c

Health and well-being

Scale	Item #	Item	Response option
General health perception	GH1	In general, would you say your health is: (Excellent, Very good, Good, Fair, Poor)	i
		These questions are about how you have been during *the last 4 weeks*.	
Sleeping troubles	SL1	How often have you slept badly and restlessly?	j
	SL2	How often have you found it hard to go to sleep?	j
	SL3	How often have you woken up too early and not been able to get back to sleep?	j
	SL4	How often have you woken up several times and found it difficult to get back to sleep?	j
Burnout	BO1	How often have you felt worn out?	j
	BO2	How often have you been physically exhausted?	j
	BO3	How often have you been emotionally exhausted?	j
	BO4	How often have you felt tired?	j
Stress	ST1	How often have you had problems relaxing?	j
	ST2	How often have you been irritable?	j
	ST3	How often have you been tense?	j
	ST4	How often have you been stressed?	j
Depressive symptoms	DS1	How often have you felt sad?	j
	DS2	How often have you lacked self-confidence?	j
	DS3	How often have you had a bad conscience or felt guilty?	j
	DS4	How often have you lacked interest in everyday things?	j
Somatic stress	SO1	How often have you had stomach ache?	j
	SO2	How often have you had a headache?	j
	SO3	How often have you had palpitations?	j
	SO4	How often have you had tension in various muscles?	j
Cognitive stress	CS1	How often have you had problems concentrating?	j
	CS2	How often have you found it difficult to think clearly?	j
	CS3	How often have you had difficulty in taking decisions?	j
	CS4	How often have you had difficulty with remembering?	j
Self-efficacy		How well do these descriptions fit you as a person?	
	SE1	I am always able to solve difficult problems, if I try hard enough.	k
	SE2	If people work against me, I find a way of achieving what I want.	k
	SE3	It is easy for me to stick to my plans and reach my objectives.	k
	SE4	I feel confident that I can handle unexpected events.	k
	SE5	When I have a problem, I can usually find several ways of solving it.	k
	SE6	Regardless of what happens, I usually manage.	k

Offensive behaviour

Scale	Item #	Item	Response option
Sexual harassment	SH	Have you been exposed to undesired sexual attention at your workplace during the last 12 months?	l
Threats of violence	TV	Have you been exposed to threats of violence at your workplace during the last 12 months?	l
Physical violence	PV	Have you been exposed to physical violence at your workplace during the last 12 months?	l
Bullying	BU	Bullying means that a person repeatedly is exposed to unpleasant or degrading treatment, and that the person finds it difficult to defend himself or herself against it.	
		Have you been exposed to bullying at your workplace during the last 12 months?	l
Unpleasant teasing	UT	Have you been exposed to unpleasant teasing at your workplace during the last 12 months?	l
Conflicts and quarrels	CQ	Have you been involved in quarrels or conflicts at your workplace during the last 12 months?	l
Gossip and slander	GS	Have you been exposed to gossip and slander at your workplace during the last 12 months?	m