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A modified job demand, control, support model for active duty police

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Abstract

BACKGROUND: The Job demand control support model (JDCS) is one of the most widely used theoretical models relating job characteristics to health and wellbeing.

OBJECTIVE: This study aimed to assess the predictive power of the JDCS model for determining job satisfaction and fatigue in uniformed Swedish police. An additional aim was to determine if predictive power of the model would be improved with the addition of two occupation specific items.

METHODS: Questionnaire data, based upon the Swedish Work Environment Survey were collected from Swedish police (n=4244). A hierarchical multiple regression analysis was run to explore the predictive value of the model and to determine if the additional variables improved predictive power with respect to job satisfaction and fatigue.

RESULTS: Regression analysis demonstrated that the JDSC model had high predictive power in relation to job satisfaction and fatigue. Job demands was the strongest predictor of fatigue (14%) while support was the strongest predictor of job satisfaction (12%). The addition of exposure to threats significantly improved predictive power for both job satisfaction and fatigue while addition of shift work did not significantly affect predictive power of the model. Interaction variables showed no significant additive effects for fatigue however a significant additive effect was observed for job satisfaction.

CONCLUSIONS: Workplace interventions to address issues related to job satisfaction and fatigue in police should focus on maintaining a bearable level of job demands and provision of adequate support.

Key words

Fatigue, health, occupation, psychosocial, work

1 Introduction

While performing occupational activities, uniformed active duty police officers are exposed to a variety of factors that negatively impact upon their psychosocial health. These factors often produce situations of high intensity and high stress due to the fact that they expose police to physical harm and violence, long working hours, organizational stressors, and other tragic events (1). The work environment of police has been linked, among other factors, to an increased risk of depression (2), anxiety (3), sleep disorders (4, 5) and work absenteeism (6-9). Identifying specific risk factors and improving the psychosocial well-being of employees should subsequently become a priority of police authorities.

The psychosocial wellbeing of Swedish police has been a major focus of the employee union over the past three years (10). Job satisfaction in particular has raised considerable concern with statistics indicating that, during 2015, 589 police resigned for reasons other than retirement, this figure represents an increase of over 450% in a five-year period (11, 12). A 2016 survey indicated that fatigue is also major issue within the Swedish police force with 77% of police indicating that they experience high or very high levels of fatigue at the end of a working day (13, 14).

In order for research findings to help identify practical improvements that can be made to the psychosocial work environment, researchers are encouraged to utilize standardized models to evaluate job characteristics. The Job Demand-Control (JDC) model represents one such theory-based model (15) high or very high levels of

fatigue at the end of a working day (13, 14).

This model, proposed by Karasek (16), initially comprised of two constructs (job demands and job control) which were considered to be crucial determinants of work related wellbeing and health. The model hypothesized that jobs combining high demands and low control (high strain jobs) would have the most negative impact on psychosocial wellbeing. In the late 1980's Johnson (17) proposed a modification to the JDC model and suggested that social support should be added as a third dimension. The Job Demand-Control-Support (JDCS) model has since become one of the most widely studied theoretical approaches used to investigate the psychosocial work environment and has been widely used in medical and psychological research to investigate a variety of health measures including; fatigue and job satisfaction which have been identified as problem areas for Swedish police (18-24).

Studies utilizing the JDC and JDCS models to explore health outcomes in police have produced mixed results. On the one hand authors have found evidence supporting the models' predictive power with respect to sleep quality (5), cardiovascular responses (25) and stress (4, 7). On the other hand, results from Marchand et al (26) demonstrated that the ability to predict variance in mental health outcomes using the model was highly dependent upon the specific outcome measure used. These authors suggested that further analysis should focus on the integration of other occupation specific factors into the model.

Previous research into the health and wellbeing of police has identified several factors that negatively affect the psychosocial health of police and could potentially be incorporated into an occupation specific JDCS model. Those most frequently cited are shift work (27) and harassment and threats of violence (9)

Shift work has been associated with a number of adverse health outcomes in a variety of professional groups, including higher levels of work stress (4, 8, 25), increased risk of cardiovascular disease (17, 20, 25), fatigue (21, 28-31) and on-duty injury (3). Shift work in the police force has specifically been associated with a higher incidence of work-related stressors (27), poor sleep quality (5, 32, 33), increased systolic blood pressure (34) and a higher risk of workplace injury (1, 35).

Exposure to threats and violence in the workplace is a cause of major concern for police authorities. Police who are exposed to violence are exposed to a greater risk of depressive symptoms (36) and psychological distress (37). In a Swedish study a significant association was identified between the rate of sickness absence from work and police who were exposed to threats of violence, discrimination or sexual harassment in the workplace (38).

The aim of the present study was to examine the predictive power of the JDSC model for determining job satisfaction and fatigue in Swedish police and to investigate if the predictive power of the model would be improved with the addition of two occupation specific variables (1/exposure to threats and 2/shift work).

2 Method

2.1 Design and study population

There are approximately 28 000 police employed in Sweden. Information provided by each county to the researchers indicated that a total of 7387 police worked as active duty, uniformed officers at the time of this study. As it was not possible to identify the internal e-mail addresses of police who worked only as active duty, uniformed officers, the self-administered on-line survey used in this investigation was distributed to all personnel (n=28000) and only active duty officers were requested to reply. An initial question regarding each individuals' role within the police force ensured that only uniformed, active duty officers were included in the analysis. Employees received two e-mail reminders regarding the survey, one after 2 weeks and a second after 4 weeks.

Responses were received from 4244 uniformed, active duty officers. The overall response rate was 57%, varying across counties from 100% on the island of Gotland to 46% in Västerbotten, northern Sweden.

Police were informed that their responses to the survey would be anonymous and that results would be analysed and published by the researchers who are not employed by the police. Ethical approval was sought and granted by the Regional Ethics Committee in Linköping, Sweden (Dnr 2010/261-31).

2.2 Survey

The survey used in this study was based upon the 2011 Swedish Work Environment Survey (SWES) developed jointly by Statistics Sweden (SCB) and The Swedish Work Environment Authority (31). SWES is a survey that is conducted biennially on a sample representing the Swedish working population and includes questions related to physical and psychosocial work environment, work-related morbidity, education and training. The present study focused only on questions related to the psychosocial work environment of police. Other issues will be addressed in future publications. In addition to SWES, 46 questions of specific relevance to police were also included. These questions were developed by a working group including the researchers, a physiotherapist employed by the National Police and a police officer who holds a position as an occupational health and safety representative. Additional questions included items related to demographics, exercise, tasks performed within the police force, use of personal equipment and use of fleet vehicles. Data related to the age of respondents (measured on an ordinal scale with higher score representing an older age group) and sex (women = 0, men = 1) were also obtained. Prior to distribution, pilot tests of the survey were conducted with representative police. After answering the pilot survey these individuals participated in a focus group discussion in which they were requested to express their opinions regarding the questions included in the survey. One focus group session (n=5) was conducted with police employed in large city and a second was conducted with police employed in a smaller town (n=4). Several questions in the survey were removed following focus group sessions and several questions were modified for the purpose of clarification. The final survey consisted of 146 questions taking approximately 30 minutes to complete. Questions which were phrased in the semantically opposite direction were

reversed prior to analysis. Construction of scales used in this study are described below. Detailed information related to scale construction is included as Annex 1.

2.3 Job demands

Job demands were measured with 8 items and included both workload demands and physical demands. Most items were measured on a 5-point Likert scale with the exception of one item, measured on a 6-point scale. Examples of questions related to job demands were "*Does your job require all of your attention and concentration?" and "Are you required to lift 15 kg or more several times a day?"*

2.4 Job Control

Job control consisted of 4 items. These items included measures of timing control (i.e. opportunities to determine scheduling of work) and method control (choice in how to carry out specific tasks) (32). Examples include: "*Is it possible for you to decide the pace at which you work*?" and "*Are you able to participate in decisions relating to the organization/planning of your work*?" All items were scored on a six point Likert scale (1=almost all the time, 6= not at all).

2.5 Support

Six items made up the category of social support which included questions related to support from supervisors, co-workers and the general supportive work atmosphere (33). Four items were rated on a four-point scale and two on a five-point scale. Typical items on this scale were: "*Do you receive support and encouragement from*

your boss when your work feels problematic?" and *"Does your boss/supervisor show appreciation for what you do at work?"*

2.6 Exposure to threats

Exposure to threats was measured by ten items which included questions related to threats from within the organization "*Are you involved in any form of conflict with your co-workers?"* and from external parties *"Do you sometimes work alone and risk being exposed to unsafe or threatening situations?" Eight items were recorded on a six-point scale while two were recorded on a five-point scale.*

2.7 Shift work

Shift work was measured using a purpose designed single-item scale in which participants were asked, "What does you working schedule look like?" Response choices were day time=1, two-shift =2 or three-shift =3. These are the shift definitions used by the Swedish police. Police who are scheduled only during day work an 8 hour shift from 08:30 to 17:00. Police on two-shift work a schema that rotates between a day pass (07:00-15:00) and an evening pass (14:00-22:00), while police who work three-shift rotate between a day pass (07:00-15:00), evening pass (14:00-22:00), night shift (22:00-07:00) and an extra shift which is in place on Friday and Saturday evenings (17:00-03:00).

3 Dependent variables

3.1 Fatigue

Fatigue was measured by six items each using a 5-point scale. Questions addressed both subjective fatigue and reduced motivation. *Example questions are: "Do you feel that you get enough sleep" and "Over the past 3 months have you felt tired and apathetic?"*

3.2 Job satisfaction

The construct "job satisfaction" consisted of six items, each of which was measured on a 5-point scale. Some examples of items on the job satisfaction scale are; "*Does your work give you the possibility to learn new things and develop your career?" and "Do you sometimes feel reluctant to go to work*?"

3.3 Statistical analysis

A hierarchical multiple regression was run to explore main effects of elements contained within the JDCS model and to determine the main and interactive effects associated with the additional variables 1/exposure to threats and 2/shift work. Data was initially screened to ensure that assumptions for performing a hierarchical multiple regression were not violated. Linearity was confirmed using partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals as assessed by a Durbin-Watson statistic of 1.9 for both regression analyses (fatigue and job satisfaction). There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1.

Inter-item correlations and internal consistency of independent variable are presented as table 1. Cronbach's alpha for each variable ranged from 0.65 to 0.81. Given the large sample size and the relatively low number of questions within each item, alpha levels in this study are considered acceptable (39)

In the first step of the regression analysis the control variables, age and sex, were entered into the model. Main effects of demand, control and support were entered as steps 2,3 and 4 while threats to personal safety and working hours were included as steps 5 and 6 respectively. Step 7 saw the inclusion of interaction variables related to threats to personal safety while step 8 included interaction variables related to shift work (see tables 3 and 4). Overall significance of each model was analysed as well as change in the variance explained with the addition of each step. Missing values per item ranged from 0.5% (e.g. for sex) to 5.5% (for shift work). Missing values were excluded from the analysis.

Statistical analyses were carried out using IBM SPSS Statistics 20 (IBM Corp, Armonk, NY, USA). Regression analyses were performed separately for each of the dependent variables (job satisfaction and fatigue).

4 Results

4.1 Descriptive statistics

General characteristics of the study population are presented in table 2. Of the total 4244 police who responded to this survey, 74% of respondents were male (n=3121) and 26% female (N=1096). The majority of respondents were aged between 30-34 years (29%). Fifty-three percent of respondents were employed in a large city while 47% worked in middle-sized cities or smaller towns. Forty-five percent of respondents had worked as police for 3-4 years or less while 77% had worked less than 10 years. The working schedule for the majority of police was rotational shift work with three shifts scheduled per day (77%).

Insert table 1 and table 2 about here

4.2 Regression analyses

Results of the analysis for the dependent variable fatigue are presented in table 3, which indicates the significance of each model and the successive change statistics. Each model was significant overall. Addition of the control variables 'age' and 'sex' (step 1) accounted for 2% of variance in the model ($F_{(2, 3485)} = 42.2$, $p < .01$). Addition of the 'demand' variable (step 2) led to a statistically significant increase of 22% ($F_{(1, 3484)} = 380.56$, $p < .01$), while addition of the 'control' variable led to a statistically significant increase of 1% (step 3) ($F_{(1, 3483)} = 304{,}74$ $p < .01$). 'Support' led to a statistically significant increase of 4% (step 4) ($F_{(1, 3482)} = 291.01$, $p < .01$). 'Exposure to threats' (step 5) accounted for a significant increase of 4% ($F_{(1, 3481)} = 286.69$, $p < .01$) while the addition of 'shift work' (step 6), did not lead to any further increase in R^2 ($F_{(1, 3480)} = 245.94$, $p = .251$). Addition of interaction variables did not result in any significant increase of R^2 (step 7 $F_{(3, 3477)} = 172.64$, $p = .0.24$; step 8 $F_{(3, 3474)} = 132.88$, $p = 0.65$).

The stepwise multiple regression analysis for job satisfaction is presented in table 4. Each of the models were significant overall. Control variables entered at step 1 showed that 'age' and 'sex' accounted for 1% of variance ($F_{(2, 3486)} = 25.18$, $p < .01$). The addition of 'demand' (step 2) led to a statistically significant increase of 6%, $F(1, 3485) = 87.39$, $p < .01$). 'Control' (step 3) resulted in a significant increase of 4% $F(1, 3484) = 102.36$, $p < .01$) while 'support' (step 4) accounted for the largest amount of variance with a significant increase in R^2 of 13% ($F(1, 3483) = 208.05$, $p < .01$). 'Exposure to threats' (step 5) accounted for a significant2%increase ($F(1, 3661) = 194.9$, $p < 0.01$). The addition of 'shift work' (step 6) lead to a minimal increase in R2 ($F(1, 3658) = 131.05$, $p = 0.04$).

Insert tables 3 and table 4 about here

5 Discussion

When controlling for age and gender the JDCS model proved to have high predictive power for both dependent variables (fatigue and job satisfaction). The relative contribution of items within the model were found to differ based upon on the dependent variable under investigation. Job demands accounted for most variance related to fatigue (22%) while support accounted for most variance related to job satisfaction (13%). Addition of the item 'exposure to threats' significantly improved predictive power of the model with slightly more variance observed for fatigue (4%) than job satisfaction (2%). Addition of shift work into the model did not significantly affect predictive power. Interactions were only significant in relation to job satisfaction and even in this instance resulted in changes of less than 1%.

The outcome variables investigated in this study (fatigue and job satisfaction) are considered highly relevant for Swedish police. At the present time, record numbers of police are choosing to leave their profession and approximately three-quarters are reporting levels of fatigue at the end of the working day as being high or very high(10-13). Results from the present study suggest that, in order to address these issues, priority should be given to reducing job demands and improving job support.

The relative contribution of items within the JDCS model on fatigue varies greatly within the literature. deCroon et al (29) indicated that job control accounted for most variance related to fatigue (22%) in Dutch lorry drivers while Lindeberg et al (40) demonstrated that job support was most strongly associated with fatigue in a group of vocationally active individuals from southern Sweden. Results of the present study

are consistent with findings from Vanroelen et al (41) indicating that job demands have the greatest impact on fatigue. Job support was demonstrated to explain most variance related to job satisfaction in the present study while job control explained just 4% of the variance.

This can be contrasted to results from deCroon et al (29) who demonstrated that job control in Dutch lorry drivers accounted for 26% of variance related to job satisfaction. Kawada and Otsuka demonstrated that both job control and support were significantly related to job satisfaction and that unskilled manual workers had significantly higher levels of job dissatisfaction (42). Variation in results related to items within the JDCS model are likely due to occupation specific differences but can also be influenced by the measurement instrument used (26).

The JDCS model is not without criticism and several authors have suggested that the model is too broad, failing to consider individual factors and occupational specific variables (29, 43, 44). These authors argue that occupation specific items should be added to models of job stress in order to gain a comprehensive understanding of the psychosocial work environment and to identify risk factors that can be addressed with targeted interventions. Sparks and Cooper (44) provided support for this argument by demonstrating that some job characteristics are significantly associated with mental and physical ill-health in one occupation but not in others. de Croon et al. (29) demonstrated that the addition of two occupation specific job variables (physical demands and supervisor demands) to the JDCS model improved its predictive power for fatigue (3%) and job satisfaction (7%) in a group of Dutch lorry drivers. Results from the present study demonstrate that addition of the occupation specific item ‘exposure to threats’ significantly improved predictive power in active duty police officers.

Addition of the occupation specific item ‘shift work’ did not improve predictive power of the JDCS model. This result is supported by findings of Eriksen et al (45) who demonstrated that varying the shift system used by Swedish police did not significantly affect sleep/wake complaints. It should be recognized however that the shift work definition used in this study addressed just one aspect of shift work and future studies should also include additional aspects including periods of rest between shifts (46) and direction of shift rotations (47).

The occupation specific items included in this analysis, exposure to threats and shift work, were selected on the basis that previous studies focusing on police have identified them as significantly affecting the psychosocial health of police. In the present study, both occupation specific items were considered outside the JDCS model. This assumes that each item is independent of the existing demand, control and support variables. An interesting focus of future research would be to identify and incorporate occupation specific variables within the existing demand, control and support scales.

Data presented in this study was obtained from a nationwide questionnaire distributed to all employees of the Swedish Police. It represents a large population of Police who work as uniformed officers over the entire country. The response rate was high (57%). Police were aware that the results would be analysed by independent researchers and this is likely to have led to more truthful responses. As in all cross-sectional studies however it is not possible to draw conclusions about causality. Respondents were guaranteed complete anonymity and therefore no information was available about individuals who did not respond, hence, no detailed drop out analyses could be performed.

This research presented has focused on fatigue and satisfaction which have previously been identified as problem areas for police (28, 30, 31, 48). While these are two factors with known associations to psychosocial health, other associations need to be studied. Understanding the link between psychosocial factors and physical aspects of policing is one area that requires immediate attention.

6 Conclusion

The JCDS model has a high level of predictive power for fatigue and job satisfaction among Swedish police. The relative contribution of items within the model vary across dependent variables. The addition of an occupation specific item ‘exposure to threats’ significantly improved the predictive value of the model however addition of the occupation specific item ‘shift work’ did not significantly improve the model. The findings of this study have practical implications for intervention research as strategies which take into consideration the unique job profile of police are likely to be more effective at reducing fatigue and improving job satisfaction.

7 Acknowledgments

The authors wish to thank Patrik Forsemalm, Gunilla Wallin and Charlotte Råstedt from the Swedish Police for their assistance in developing the questionnaire in this study and for practical assistance related to data collection. This project was funded in part by the Swedish National Police Board.

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9 Table captions

Table 1 Range, mean, SD, internal consistency (α) and Inter-item correlations of the study variables (n = 4244), $*p < 0.01$

Table 2 General characteristics of the study population

Table 3 Stepwise regression analysis demonstrating associations between covariates (sex and age), elements of the JDCS model, exposure to threats, shift work and the dependent variable fatigue.
($*p < 0.05$)

Table 4 Stepwise regression analysis demonstrating associations between covariates (sex and age), elements of the JDCS model, exposure to threats, shift work and the dependent variable job satisfaction. ($*p < 0.05$)

Table 1 Range, mean, SD, internal consistency (α) and Inter-item correlations of the study variables (n=4244), *p<0.01

	Range	Mean	SD	α	Age	Sex	Demand	Control	Support	Exposure to threats
Age	1-7	3.86	1.59		-					
Sex	na	na	na	na	.19*	-				
Demand	8-42	29.2	4.9	0.68	.17*	.06*	-			
Control	4-21	11.9	3.6	0.67	-.16*	-.05*	-.43*	-		
Support	6-26	14.5	3.1	0.73	.20*	.05*	-.05*	.18*	-	
Exposure to threats	17-52	44.9	4.5	0.66	.05*	-.07*	.47*	-.28*	-.17*	-
Shift work	1-3	2.7	0.49	na	-.48*	-.09*	-.23*	.26*	-.05*	-.15*
Fatigue	*6-30*	*20.6*	*4.8*	*0.81*	*.15**	*-.01**	*.49**	*-.32**	*-.22**	*.43**
Job satisfaction	*6-30*	*21.6*	*3.9*	*0.65*	*-0.01*	*-0.12**	*0.23**	*-0.26**	*-0.40**	*0.31**

Abbreviations: SD = Standard Deviation, na = not applicable

Table 2 General characteristics of the study population

Characteristics	Total population (n= 4244)	
	n	%
Age (years)		
20-24	32	0.8
25-29	834	19.9
30-34	1223	29.2
35-39	837	20.0
40-44	528	12.6
45-49	246	5.9
50+	461	11.0
Gender		
Female	1096	25.8
Male	3121	73.5
Years as police		
Less than 1 year	109	2.6
1-2 years	710	17.0
3-4 years	1046	25.0
5-6 years	684	16.3
7-8 years	453	10.8
9-10 years	226	5.4
More than 10 years	952	22.7

Role within police		
Patrol officer	2882	68.9
Dog handler	187	4.5
Water police	18	.4
Community police	606	14.5
Mounted police	22	.5
Traffic police	273	6.5
Place of employment		
Large city	1484	35.5
Middle sized	718	17.2
city	787	18.8
Small city	1188	28.4
Small town		
Work Schedule		
Day shift	119	2.9
2 shift	597	14.3
3 shift	3237	77.6
Other	217	5.2

Table 3. Stepwise regression analysis demonstrating associations between covariates (sex and age), elements of the JDCS model, exposure to threats, shift work and the dependent variable fatigue. ($*p < 0.05$)

	1		***2***		***3***		***4***		***5***		***6***		***7***		***8***	
Predictor	β	p	β	p	β	p	β	p	β	p	β	p	β	p	β	p
Sex	-0.04	0.024	-0.05	0.002	-0.05	0.001	-0.04	0.003	-0.02	0.093	-0.02	0.093	-0.02	0.099	-0.024	0.098
Age	0.16	0.000	0.08	0.000	0.07	0.000	0.11	0.000	0.10	0.000	0.10	0.000	0.10	0.000	0.10	0.000
Demand			0.48	0.000	0.43	0.000	0.43	0.000	0.33	0.000	0.33	0.000	0.49	0.000	0.55	0.002
Control					-0.12	0.000	-0.08	0.000	-0.07	0.000	-0.07	0.000	0.17	0.271	0.11	0.574
Support							-0.20	0.000	-0.17	0.000	-0.17	0.000	-0.35	0.004	-0.23	0.142
Threats									0.22	0.000	0.22	0.000	0.31	0.010	0.31	0.009
Shift work											-0.02	0.251	-0.02	0.252	0.09	0.507
Threats x demand													-0.22	0.218	-0.23	0.207
Threats x control													-0.23	0.128	-0.20	0.178
Threats x support													-0.19	0.132	0.16	0.207
Shift x demand															-0.06	0.614
Shift x control															0.05	0.687
Shift x support															0.12	0.247
Full model, F	42.24		380.56		304.74		291.05		286.69		245.94		172.64		132.88	
Full model, R2	0.02		0.25		0.26		0.29		0.33		0.33		0.33		0.33	
R2 Change	0.02		0.22		0.01		0.04		0.04		0.00		0.00		0.00	
F Change	42.24		1032.19		58.46		175.31		187.08		1.32		1.41		0.55	
p Change	<0.001		<0.001		<0.001		<0.001		<0.001		0.25		0.24		0.65	

Table 4. Stepwise regression analysis demonstrating associations between covariates (sex and age), elements of the JDCS model, exposure to threats, shift work and the dependent variable job satisfaction. (∗p < 0.05)

	1		***2***		***3***		***4***		***5***		***6***		***7***		***8***	
Predictor	β	p	β	p	β	p	β	p	β	p	β	p	β	p	β	p
Sex	-0.12	0.000	-0.13	0.000	-0.13	0.000	-0.12	0.000	-0.11	0.000	-0.11	0.000	-0.10	0.000	-0.10	0.000
Age	0.01	0.491	-0.03	0.093	-0.05	0.004	0.04	0.014	0.04	0.019	0.04	0.016	0.05	0.007	0.05	0.007
Demand			0.24	0.000	0.15	0.000	0.15	0.000	0.07	0.000	0.08	0.000	0.60	0.000	0.98	0.000
Control					-0.21	0.000	-0.13	0.000	-0.12	0.000	-0.12	0.000	-0.08	0.623	-0.04	0.838
Support							-0.37	0.000	-0.35	0.000	-0.35	0.000	-0.58	0.000	-0.62	0.000
Threats									0.18	0.000	0.18	0.000	0.37	0.003	0.43	0.001
Shift work											0.01	0.498	0.00	0.919	0.27	0.058
Threats x demand													-0.72	0.000	-0.82	0.000
Threats x control													-0.04	0.807	-0.04	0.815
Threats x support													0.24	0.066	0.21	0.130
Shift x demand															-0.38	0.004
Shift x control															-0.05	0.683
Shift x support															0.11	0.322
Full model, F	25.18		87.39		102.36		208.05		197.70		168.64		121.35		94.30	
Full model, R2	0.01		0.07		0.11		0.23		0.25		0.25		0.26		0.26	
R2 Change	0.01		0.06		0.04		0.13		0.02		0.00		0.01		0.00	
F Change	25.18		208.80		137.02		564.61		108.00		0.46		8.5		0.00	
p Change	<0.001		<0.001		<0.001		<0.001		<0.001		0.50		<0.001		0.02	

Annex 1 – Construction of scales used in the study (Questions have been translated from Swedish)

Job Demands

1. Does your job require all of your attention and concentration?

2. Are you sometimes so stressed that you don't have time to think or talk about anything but work?

3. Do you come in contact with very ill people or people with serious problems?

4. Does your job require that you repeat the same task many times each hour?

5. Are you required to lift 15kg or more several times a day?

6. Does your work require that you sometimes work purely physically (ie strain your body more than you do when you just stand or walk)

7. Do you spend your work day trying to understand or solve difficult problems?

8. At the end of your working day do you feel unsatisfied with your contribution?

Job control

1. Is it possible for you to decide the pace at which you work? 1=almost all the time.

2. Can you take short breaks whenever you like?

3. Are you able to participate in decisions relating to the organising/ planning of your work?

4. Can you decide yourself when different tasks shall be completed?

Support

1. If work tasks feel difficult, do you have the possibility to get advice or help?

2. Do you receive support and encouragement from your boss when your work feels problematic?

3. Do you receive support from your colleagues when your work feels problematic?

4. If you have too much to do can you get advice from your boss/superior about what to prioritise?

5. Does your boss/supervisor show appreciation for what you do at work?

6. Do other people show appreciations for what you do at work?

Exposure to threats

1. Are you involved in any form of conflict with your superiors at work?

2. Are you involved in any form of conflict with your co-workers?

3. Are you involved in any form of conflict with other people at your workplace?

4. Are you exposed to threats or violence during working hours?

5. Are you the receiver of personal attacks through unkind words or behaviour from your superiors or co-workers?

6. Are you sexually harassed by superiors or co-workers

7. Are you sexually harassed by other people during working hours?

8. Är du utsatt för trakasserier av ovanstående slag på din arbetsplats från chefer eller arbetskamrater?

9. Händer det att du känner dig illa till mods och misströstar, som följd av svårigheter som du ställs inför på jobbet?

10. Do you sometimes work alone and risk being exposed to unsafe or threatening situations?

Job satisfaction

How satisfied are you with your work?

How meaningful is your work?

Does your work give you the possibility to learn new things and develop your career?

Do you sometimes feel reluctant to go to work?

How satisfied are you with your working hours?

How satisfied are you with varying nature of your work?

Fatigue

1. Do you feel that you get enough sleep?

2. Excluding sleep, do you feel that you get enough rest between working days?

3. Over the past 3 months have you had difficulty sleeping because you lie awake thinking about work?

4. Does it occur that you cannot stop thinking about work when you have time off?

5. Over the past 3 months have you felt tired and apathetic?

6. Are you sometimes too tired or feel that you do not have time for your family, friends or other activities?