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# Do managers experience more stress than employees? Results from the Intervention Project on Absence and Well-being (IPAW) study among Danish managers and their employees

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**Abstract.** *Objective:* To examine whether managers' perceived stress and work strain is higher than perceived stress and work strain among employees.

*Methods and Participants:* The study is based on questionnaire responses from 2052 respondents (128 managers and 1924 employees) at 48 worksites. Bi-variate and multivariate analyses were used to explain possible differences in stress levels and related mediators.

*Results:* Managers experienced higher demands, higher level of conflicts, and lower degree of social support from peers. They tended to experience significantly lower emotional stress, whereas this trend was insignificant with regards to behavioural, somatic and cognitive stress.

The difference was partly explained by higher scores in the psychosocial work environment factors; job satisfaction, perceived management quality from their managers, influence, degrees of freedom at work, possibilities for development and meaning of work. For behavioural stress, 41% of the difference was explained by the preventive factors, 20% for somatic stress, 39% for emotional stress and 56% for cognitive stress.

*Conclusions:* This study indicates that the preventive psychosocial factors explain parts of the managers' lower stress level. These results contradict the lay perception of managers being under higher pressure and experiencing more stress than employees. Interventions aiming at reducing employee stress levels, especially regarding behavioural and cognitive stress, could benefit from focussing on psychosocial work environment exposures such as skill discretion, meaning of work, psychological demands, information flow and management quality.

**Keywords:** Work related stress, psychosocial factors, leader, employee, prospective

## 1. Introduction

Stress is estimated to be the second largest work environmental problem in the European Union EU: every fourth wage earner in the EU will, at some point, suffer from work-related stress [8,9,11]. The consequences

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are severe as stress at the workplace leads to heavy expenses, both to those affected but also to society in terms of financial costs associated with stress related diseases [9,12].

Being a manager is related to having a large amount of responsibility, having to make unpopular decisions and being at the centre of attention. But does this lead to a higher degree of stress and work strain among managers as compared to employees? The lay perception of managers being under high pressure and reporting high levels of stress is supported by several surveys [4, 5]. Further, a large number of articles and books refer to managers' stress [2,6,7,10,23].

Among the studies examining managers' health and well-being, surveys state that a large proportion of the managers perceive stress to the extent, that it is hazardous for their well being [4]. This is partly explained by lack of correlation between demand and control [4]. According to Bernin [5] stress and stress-related diseases in managers have increased during the recent years.

Only a few empirical studies have been conducted examining and comparing stress among managers and employees. McLean and Andrew [18] examined the nature of job commitment, satisfaction, stress, and control among social services managers and social workers in the UK and found very clear associations. However, no major discrepancies were found between employees and managers. Wilkes and colleagues [29] examined job demands and worker health in machine-paced poultry inspection, and found that employees had more stress than their supervisors. Also various stress tests have revealed that high and intermediate level supervisors in the British civil service system suffered less stress throughout the work day than their worker bees, both men and women, although the picture is a bit murky for women [28].

However, these studies are all performed on specific job groups, and do not consequently look into the underlying causes for the stress level differences they found. Although the literature on leadership as well as stress in general is comprehensive, empirical based literature is scarce as is research on the differences between managers and employees in relation to stress and well-being.

The aims of this study are to examine whether managers' perceived stress exceeds the perceived stress among employees, and to investigate whether psychosocial work environment factors could explain a potential difference.

## **2. Materials and methods**

### *2.1. Data*

Data were collected as part of the Intervention Project on Absence and Well-being (IPAW) study including 52 work-sites with a total of 2716 employees from three different organizations. Baseline data were collected in 1996–1997. A more detailed description on the rationale, design study population and measurements is available elsewhere [20,21]. Analyses are based on data from baseline questionnaires for a total of 2052 respondents (response rate 75.6%).

### *2.2. Population*

Two identification codes (DISCO 88 and NACE) were used to identify whether respondents were managers or employees, to identify managers and employees belonging to the same worksite, and to which of the three organizations they belong. A manager can be distinguished from an employee by having one or more subordinates. The manager could not be identified at 4 worksites out of 52 and the worksites are therefore excluded. Thus 48 worksites provided the basis for the current study.

The respondents and worksites belonged to three organizations:

A major Pharmaceutical Company (production factories, packaging units, laboratories, canteens and cleaning departments): 12 worksites, 74 managers, 656 employees.

Municipal workplaces in the Care Sector (nursing homes for elderly and institutions for mentally handicapped): 22 worksites, 31 managers, 948 employees.

Municipal workplaces related to Technical Service (cemeteries, parks, workshops, sewage pumping stations, road construction and repair, administrative offices): 14 worksites, 23 managers, 320 employees.

There were 43.5% female managers and 69% female employees in the sample. The size of the worksites varied and as such the respondents varied from 1 to 33 managers and 10 to 171 employees with an average number of 42 employees per unit.

### *2.3. Stress measures*

Stress was measured with four scales developed by Setterlind [26], defined as behavioural (7 items, alpha 0.85), somatic (5 items, alpha 0.72), emotional (8 items, alpha 0.88) and cognitive stress (4 items, alpha

0.87). The Cronbachs Alpha calculations above are performed on the IPAW dataset used in this study [20]. The four scales were originally part of the so-called "Stress Profile", a psychosocial instrument developed for measuring stress in life in general and at work at the levels of the individual, the group and the organization. It was originally tested and standardized on more than 4000 men and women [26]

#### 2.4. Psychosocial work environment factors

Psychosocial work environment factors were measured with 10 scales: quantitative demands (2 items, alpha 0.58), decision authority (7 items, alpha 0.81), degrees of freedom at work (3 items, alpha 0.48) and skill discretion (3 items, alpha 0.69) derived from the Whitehall II study [17] and translated into Danish [19]. Support from colleagues (2 items, alpha 0.76) and support from supervisors/ managers (2 items, alpha 0.84) are identical to the social support scale in the Whitehall II study and translated into Danish [19]. In addition, scales on meaning of work (4 items, alpha 0.78), predictability (2 items, alpha 0.75), management quality (4 items, alpha 0.89) and conflicts (3 items, alpha 0.53) were included [20]. The scores on all ten scales were transformed to a range from 0 to 100.

#### 2.5. Co-variates

Personal background variables were, apart from age and gender, self-reported working hours measured with one question: "How many hours per week do you normally work including fixed hours, paid overtime and other extra work, for example working from home?" with an open response category. Seniority at the workplace was also measured with one question: "How long have you been employed at this (the current) workplace? Response options were: Below 3 months, 3–5 months, 6–11 months, 1 year or more than 1 year.

#### 2.6. Analysis

Initial t-test was carried out in order to detect differences in stress, job strain and psychosocial factors between managers and employees. Then a bi-variate analysis was carried out using Pearson's correlations coefficient to analyse how psychosocial factors were correlated with the stress measures, and to identify which factors should enter a final multivariate regression analysis. The multivariate regression analysis was carried out to identify both risk factors and preventative factors

for stress. The strategy for entering risk factors to the model was as follows: If managers had a higher level of stress, adding preventive factors first would mean that the leadership indicator should be significant until risk factors were added to the model. On the contrary, if managers had a lower level of stress, first adding risk factors and then preventative factors, should cause the leadership indicator to be significant, until the preventative factor entered the model. First, regressions with only demographic variables, gender, age and job status (manager vs. employee) was carried out in order to identify the basic impact on the four stress scales. Second, risk factors were included in the model, and finally preventative factors. These regressions were carried out to identify whether the relationship between job status and stress was affected. Due to multi-collinearity among most of the preventative factors, individual regressions were carried out for each preventative factor in order to be able to assess the individual significance of the factors. Furthermore, analyses were controlled for gender interaction effects, unit size, and number of managers in each unit, department and organization. Data were analyzed using SAS version 8.02.

### 3. Results

Initial analysis showed that managers were 3 years older than employees, worked 6 hours longer per week, and had 3 years more seniority at work (Table 1).

Managers tended to experience less behavioural, emotional and cognitive stress than employees, although only statistically significant ( $p = 0.006$ ) for emotional stress. Managers reported significantly higher levels of management quality ( $p < 0.001$ ), influence (decision authority) ( $p < 0.001$ ), freedom at work ( $p < 0.001$ ), possibilities for development (skill discretion) ( $p < 0.001$ ), meaning at/of work ( $p < 0.001$ ) and information/ predictability ( $p = 0.012$ ) as compared to employees. Managers also experienced significantly higher demands ( $p < 0.001$ ) and conflicts at work ( $p = 0.009$ ) than the employees, and lower social support from peers. There was no difference in the perception of leader support.

Bi-variate analyses of associations between psychosocial factors and stress (Table 2), showed that leader support ( $p < 0.001$ ), management quality ( $p < 0.001$ ), meaning ( $p < 0.001$ ), support from peers freedom at work ( $p < 0.001$ ), and information/ predictability ( $p < 0.001$ ), support from peers ( $p < 0.001$ ) influence ( $p < 0.001$ ), at work were negatively correlated

Table 1  
Distribution of variables among manager ( $n = 127$ ) and employees ( $n = 1915$ )

Variable	Manager	Manager	Empl	Empl	P
	Mean	Std dev	Mean	Std dev	
N		127	1915	–	
Age	43.9	9.2	40.6	10.5	< 0.001
Working hours	40.5	6.0	34.3	5.8	< 0.001
Seniority at work	10.6	10.0	7.1	7.0	< 0.001
Behavioural stress	10.4	11.2	12.5	15.7	0.146
Somatic stress	11.3	13.7	11.5	14.4	0.876
Emotional stress	18.3	14.6	22.8	17.8	0.006
Cognitive stress	21.7	17.4	23.0	18.3	0.424
Management Quality	61.3	27.7	53.0	21.0	< 0.001
Manager support	67.6	27.7	69.0	27.6	0.579
Support from colleagues	71.8	24.1	77.0	23.8	0.018
Influence / decision authority	79.6	16.0	65.1	21.1	< 0.001
Freedom at work	83.4	17.7	64.7	23.6	< 0.001
Poss. for development/Skill discretion	91.3	9.6	74.7	18.4	< 0.001
Meaning at/ of work	82.6	12.0	76.2	16.4	< 0.001
Demands Quantitative (psychological)	66.5	17.3	57.3	21.8	< 0.001
Information /predictability	56.1	23.8	50.5	24.5	0.012
Conflicts	34.1	20.0	29.2	20.3	0.009

with emotional stress. Conflicts ( $p < 0.001$ ) and quantitative demands ( $p < 0.001$ ) were positively correlated with stress.

As shown above, the initial analysis presented in Table 1 showed, that managers had significantly higher scores on most of these psychosocial factors, suggesting that a relatively high amount of stress-reducing factors are present in the work environment of managers. On the other hand, managers scored low on support from colleagues which was negatively correlated with stress, and they scored high on conflicts and demands (Table 1).

No significant correlations between the percentage of managers per unit, gender or department size and either of the four stress scales were found.

The final regression analyses of risk factors separately (without reservation for the protective factors of being a leader), showed that being a leader was associated with a lower degree of stress, even when demands were higher, collegial support was lower and degree of conflicts higher. As the only stress scale, somatic stress was neutral regarding manager-ship status. The results showed that when including preventive factors, the effect of being a manager became insignificant in relation to stress, except in the case of emotional stress (Table 3).

Table 4 shows to what extent the preventive factors explained the managers' lower stress levels, and possibly indicates that the variations in the manager status were more likely due to the variation in the preventive factors. For behavioural stress 41% of the difference is explained by the preventive factors, 20% for somatic

stress, 39% for emotional stress and 56% for cognitive stress (Table 4).

#### 4. Discussion

The overall picture showed that managers had active jobs (high degree of control and high demands) [15], had a more positive perception of their job conditions, and reported less stress than employees. The results contradict the lay perception of managers being more stressed than the employees.

The differences in the psychosocial working environment for managers and employees explained between 20% and 56% of the variation in relation to the four stress scales.

However, the results also indicate that there is still a difference that could not be explained by the preventative factors alone and therefore should be explained by other factors. Hypotheses related to impact of personality factors such as, self confidence, emotional stability, and ability to handle of complexity [24], and how these factors may result in a certain stress resistance among managers [16]. Also, managers may influence employee stress and well being, as exposure to leadership can be considered a stressor [22,25,27], and managers also have direct influence on the psychosocial work environment for the employees. Finally, external factors not measured in this study, for example downsizing or fluctuations in the general business cycle, could affect stress levels among both managers and employees [13, 14,30].

Table 2  
Bi-variate correlational analyses

	Age	Working hours	Female gender	Seniority at work	Support, manager	Man. quality	Influence	Freedom at work	Deveop. Poss.	Meaning at work	Infor- mation	Quanti. Demands	Support, Coll.	Conflicts
<i>Behavioral stress</i>														
Corr. Coef.	-0.107	-0.009	0.011	-0.047	-0.166	-0.163	-0.155	-0.083	-0.060	-0.160	-0.167	0.133	-0.146	0.242
P value	< 0.001	0.663	0.595	0.033	< 0.001	< 0.001	< 0.001	< 0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
N	2012	2002	2022	2005	2006	1992	2012	2006	2011	2001	1990	2007	2002	2014
<i>Somatic stress</i>														
Corr. Coef.	0.083	-0.041	0.002	0.082	-0.090	-0.098	-0.104	-0.063	0.005	-0.070	-0.118	0.104	-0.124	0.177
P value	< 0.001	0.061	0.911	< 0.001	< 0.001	< 0.001	< 0.001	0.004	0.814	0.001	< 0.001	< 0.001	< 0.001	< 0.001
N	2010	2000	2020	2004	2004	1991	2010	2004	2009	2001	1990	2005	2000	2013
<i>Emotional stress</i>														
Corr. Coef.	-0.010	-0.049	0.114	-0.001	-0.148	-0.179	-0.180	-0.135	-0.041	-0.155	-0.193	0.188	-0.120	0.270
P value	0.643	0.026	< 0.001	0.940	< 0.001	< 0.001	< 0.001	< 0.001	0.064	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
N	2017	2006	2027	2011	2011	1997	2017	2011	2016	2007	1996	2012	2007	2020
<i>Cognitive stress</i>														
Corr. Coef.	0.061	-0.014	0.062	0.059	-0.100	-0.126	-0.131	-0.087	-0.021	-0.155	-0.163	0.168	-0.094	0.181
P value	0.005	0.508	0.005	0.007	< 0.001	< 0.001	< 0.001	< 0.001	0.345	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
N	2015	2004	2025	2009	2009	1995	2015	2009	2014	2005	1994	2010	2005	2018

Table 3  
Multivariate regression analysis of management and stress. Stepwise adjusted for control variables, risk factors and preventive factors

	Behavioral stress			Somatic stress			Emotional stress			Cognitive stress						
	Estimate	Std	P-Value	Estimate	Std	P-Value	Estimate	Std	P-Value	Estimate	Std	P-Value				
Manager*	1.459	1.481	0.98	0.324	1.390	0.13	0.898	-3.144	1.685	-1.87	0.062	-0.975	1.747	-0.56	0.576	
Manager**	-3.198	1.442	-2.22	0.026	-1.522	1.378	-1.10	0.269	-45.631	1.618	-3.48	< 0.001	-3.175	1.723	-1.84	0.065
Manager***	-1.895	1.493	-1.27	0.204	-1.227	3.421	-0.85	0.393	-3.422	3.978	-2.06	0.040	-1.412	1.775	-0.80	0.426

\* Adjusted for age, gender and working hours.  
 \*\* Additionally adjusted for risk factors: quantitative demands, conflicts and support from colleagues.  
 \*\*\* Additionally adjusted for preventive factors: Influence at work, degree of freedom at work, possibilities for development, meaning at work, information, management quality.

Table 4  
Difference in stress among managers and employees explained by preventive factors

Scale	Risk factors	Risk and preventive factors	Difference in stress level explained by preventive factors
Behavioral stress	-3.2	-1.9	41%
Somatic stress	-1.5	-1.2	20%
Emotional stress	-5.6	-3.4	39%
Cognitive stress	-3.2	-1.4	56%

Decreasing the stress level and increasing job satisfaction among employees would probably involve a change in leadership style for some. Transformational leadership is mentioned as a leadership style that creates competitive advantage by motivating the employees [1]. It includes the ability to inspire and motivate through visions and values, offers intellectual challenge and openness to new approaches and provides intellectual attention through coaching and support [3]. Transformational leadership style has been found to work best in environments of high employee autonomy. The workforce sampled for this study may not be the best environment in which to suggest transformational leadership. Perhaps a transactional leadership style may be more appropriate. However, as managers overall, according to the present study, most likely are satisfied with their current situation, they might not have sufficient incentive for a change in leadership style: Such a change could affect psychosocial work environment exposures as for example conflicts and psychological demands in work – and if it works, why fix it? A change would require that managers adopt an organisational perspective, in which employee satisfaction is a critical success factor for the success of the workplace.

#### 4.1. Strengths and limitations

The IPAW study has certain unique features which are strengths in relation to the focus of this study. Contrary to the surveys described in the introduction, the IPAW data contain data from both managers and their employees from the same worksites and departments. Therefore, the present study not only describes managers' stress and employee stress in general, but manager stress and employee stress related to the same organization and department. Hereby we were able to compare data from the two parties belonging to the same working culture and having fairly similar working conditions.

A limitation of the study is the fact that IPAW consists primarily of blue collar/low educated employees, which makes it difficult to generalize due to a fundamental

difference between high and low educated employees in terms of e.g. influence on and autonomy in work.

Data were collected during the mid 90s, and therefore does not capture the stress alleviating – or stress inducing – effects of management concepts introduced since then. However, the measures used to assess both exposure – psychosocial work environment, leadership and social relations – and outcome – perceived stress level – are surely very relevant in a more contemporary labour market context. Based on this one could say, that the present study definitely highlights significant associations of relevance today, whereas the estimated size of this association could be affected over time.

The fact that the study uses a cross sectional design, might lead to overestimation of the associations between poor psychosocial work environment and high stress levels, due to common method variance. However, this bias is likely to be systematic in the sense that managers and employees will tend to report poor work environment when experiencing stress. This implies that this type of bias will not affect conclusions regarding analyses of differences between managers and employees.

## 5. Conclusion

Overall managers reported lower levels of stress than employees. This was partly explained by an active job with high demands at work as well as high control, and that managers had a more positive perception of their working conditions. The difference between managers and employees was explained by a favourable psychosocial work environment for the managers, which accounted for between 20–56% when measured for the four stress measures. The results of this study contradict the lay perception of managers being under higher pressure and feeling more stress than employees.

Workplace-based stress reduction initiatives should take into account that one size does not fit all: Stress is unequally distributed across job status in the organization, and different factors in work are predictive

of stress for the different job groups. One should exert caution when labelling all the psychosocial exposures in this study as “preventive” if focus is on levelling out stress levels between employees and their leaders: Some factors are merely characteristics of the occupational grade rather than – potentially changeable – explanatory factors (for example, freedom at work and decision authority are more related to jobs involving leadership). However, based on the results of this study, interventions aiming at reducing employee stress levels, especially regarding behavioural and cognitive stress, could benefit from focussing on psychosocial work environment exposures such as skill discretion, meaning of work, psychological demands, information/predictability and management quality.

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