



Public sector managers and work stress

Public sector
managers

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Received 14 March 2013
Revised 24 October 2013
Accepted 10 January 2014

Abstract

Purpose – The purpose of this paper is to identify the determinants of perceived work-related stress among public sector managers.

Design/methodology/approach – A general questionnaire-based survey of managers at all managerial levels in Danish organizations concerning the content of their job and the way it is practiced ($n = 1,500$, response rate 72 per cent) are applied. For the purpose of this paper only specific information related to the perception of work stress among public sector managers is analyzed ($n = 400$).

Findings – The perception of stress are influenced by factors like gender, managerial level, work load, the influence on own job situation, if they have children living at home as well as the percentage of work-at-home.

Research limitations/implications – In a general survey work stress is one among a larger number of issues. This fact may influence the validity of the information – in a positive as well as a negative way. However, the findings point to issues which call for more in-depth analyses.

Practical implications – The identified significant determinants influencing the perception of stress point to issues where preventive initiatives can be taken.

Social implications – Since work-related stress may cause absence from work it may influence production and the health system. If preventive measures can be taken a positive impact on the economy may be the result.

Originality/value – Work-related stress has been studied before. But little focus has been given to the public sector and especially managers. Furthermore, including a variety of potential explanatory determinants such a work-life balance, psycho-social work characteristics, gender and managerial level – as well as the potential interaction between them – give a detailed platform for the analyses.

Keywords Gender, Work stress, Work-life balance, Public sector managers, Managerial level, Psychosocial work characteristics

Paper type Research paper

Introduction

Healthy managers, both physically and mentally, are an assumption for productive and competitive organizations (Quick *et al.*, 2007). Thus, managers need to have energy to provide a good working environment for employees and to deliver sound leadership (Bech *et al.*, 2002).

Today many job-situations are characterized by an increasing degree of mental rather than physical demands (Siegrist *et al.*, 2004), which is why different psychosocial work characteristics are expected to have an influence on managers' stress (Agervold, 1999). However, managers' job-situation are interrelated with family-life (Geurts and Demerouti, 2003). So if managers experience an imbalance between work and family-life it may result in negative influences on the organization, the individual and her/his family (Boyar *et al.*, 2003).

Previous studies have shown that managerial level in the organization also may have a potential influence on the perception of stress and its determinants (e.g. Frankenhaeuser *et al.*, 1989; Lundberg *et al.*, 1994; Björklund *et al.*, 2013) as well as how to cope with conflicts (Bernin *et al.*, 2003). Thus, managers' perceptions of the factors



that provoke stress differs from that of clerical workers (Frankenhaeuser *et al.*, 1989). One study confirms that middle-level managers are more stressed than lower and top-level managers (Ivancevich *et al.*, 1982); hence feeling squeezed in the middle. Another study finds that lower level managers experience job strain to a greater extent compared with their higher level counterparts (Björklund *et al.*, 2013). A parallel characteristic is that autonomy at work is higher among higher managerial levels, and that top managers experience less conflict between demands in general (Lundberg *et al.*, 1994).

It is generally recognized that private sector managers experience a more intense workload, and in general spend more hours working compared to public sector colleagues (Bech *et al.*, 2002). Therefore, working in the public sector is often assumed to be less stressful. This can, however, not always be confirmed empirically, although public managers do report having significantly more control in their work than their private counterpart (Macklin *et al.*, 2006).

On the other hand, public sector managers seem to experience a higher work strain (Bech *et al.*, 2002), which might result in stress. The question is then, if it is not the number of hours worked in the organization and the job control, what is it then that makes public sector managers stressed?

The potential influence from managerial level is until now largely unexplained in the Danish public sector. However, middle-level managers in the public sector may also feel caught in a cross-fire between top and lower level managers. On the other hand, top managers may experience a higher degree of stress due to their close position to the political system and its shifting agendas (cf. Boyne, 2002). Alternatively, it can be argued that lower level managers experience more stress from a closer contact to more and more demanding clients and citizens (cf. Greve, 2003).

Another potential influential factor is gender since women's perception of stress frequency is higher than that of men (Burke, 2002; Lundberg *et al.*, 1994; Macdonald *et al.*, 2005). This is also the case for managers, as female managers seems to have a higher work-related stress than their male counterpart (Björklund *et al.*, 2013).

A potential gender effect on the perception of stress is until now unexplored both directly and in interaction with psychosocial work characteristics and work life balance among Danish public sector managers.

Therefore, the objective of this paper is to study the relationship between, respectively, psychosocial work characteristics and work-life balance on the perception of stress among public sector managers taking into account the potential influence from managerial level and gender, in order to identify where preventive actions can be taken.

Research of managers' stress and stressors are limited. A reason might be the assumption that managers are able to control their work environments, including potential stressors (Rodham and Bell, 2002).

The study takes place in a Danish context, which is interesting for several reasons. First of all the Danish public sector is the largest in the western world (Horn, 2008) and the potential benefits of reducing stress and its negative consequences is therefore very high.

Denmark is, furthermore, characterized by a high focus on obtaining a good work environment, which is reflected in the Working Environment Act. Currently, however, the Danish public sector is characterized by an intense competition, organizational changes, and use of efficiency measures, in combination with an increasing control (Olesen *et al.*, 2008). The financial crisis has contributed to enhance these

characteristics and changes. Overall, it challenges a good work environment, and thus makes the Danish context interesting to study further.

In the following section the theoretical foundation of the study is outlined. In the next two sections the methodological approach applied and data set used is described and the results of the analyses are presented. The paper concludes with a discussion and implications for research and practice.

Work stress

Stress is the second largest occupational health problem in Europe after back pain (Nielsen and Kristensen, 2007).

When measuring stress in present-day research individuals are often asked if they experience a number of signs and symptoms (Arsenault and Dolan, 1983). These signs may either be physiological (e.g. high blood pressure) or behavioural (e.g. performance and absence), and the symptoms may either be psychological (e.g. depression and job dissatisfaction) or somatic (op cit) or even psychosomatic, i.e. physiological reactions with a psychological element, such as headaches and muscular pain (Agervold, 1999). The signs and symptoms are used as indicators of the individual's state of stress although they in fact are outcomes.

Pre-defining the concept of stress by signs and symptoms is not necessarily an advantage. Instead it may be useful to have respondents determine only whether they feel under stress or not in order to avoid bias if the respondents display other signs or symptoms than those included in the pre-definition of the concept stress. Furthermore, the experience of stress is an interaction between an individual's attitudes and the work environment. Objective measurements of these signs or symptoms cannot capture this interaction. Psychosocial work characteristics and stress, therefore, may be more appropriately evaluated using self-reported data (Karasek and Theorell, 1990; Siegrist *et al.*, 2004).

Studies dealing with stress across public managerial levels are scarce. In a non-public context Frankenhaeuser *et al.* (1989) found no differences in the perception of stress between clerical workers and managers, only in those determinants causing stress. Ivancevich *et al.* (1982) did, however, find some hierarchical differences since middle-level managers were more stressed compared to lower and top-level managers when it came to quantitative work overload, lack of career progression, supervisor relations and role conflict. Björklund *et al.* (2013) also confirmed an effect, but here lower level managers experience job strain to a greater extent compared with their higher level counterparts.

Studies have also shown that stress frequency is higher for women than men (Burke, 2002; Lundberg *et al.*, 1994; Macdonald *et al.*, 2005), which is also the case when looking at female and male managers (Burke, 2002; Björklund *et al.*, 2013). One reason is that women feel more under pressure as a result of their domestic workload (Burke, 2002; Macdonald *et al.*, 2005).

Psychosocial work characteristics

People who judge their psychosocial work characteristics as being unsatisfactory often feel stressed (Agervold, 1999). According to Karasek and Theorell's (1990) job strain model determinants in the job situation and social support influence the degree of stress.

Job situation

Karasek and Theorell's (1990) model suggests that high demands combined with limited influence on one's job situation may lead to stress. A review of empirical

research confirm a relationship between high-strain work and a low job-related psychological well-being, such as stress (Van Der Doef and Maes, 1999). In addition, there is a confirmed correlation between sensing work overload and being under constant time pressure and developing stress (Frankenhaeuser *et al.*, 1989).

People may also experience stress when they are uncertain of what is expected of them. Middle-level managers in particular experience a higher degree of role conflict in terms of “incompatible requests to do some job related activity” compared to lower and top-level managers (Ivancevich *et al.*, 1982). Therefore, middle and lower level managers are more liable to role conflict as they refer upwards through more hierarchical levels. However, in the public sector top managers might also experience some problems due to the political counterpart.

In a study of eight Swedish companies findings show no significant differences among female and male managers when it comes to psychological demand and influence, except in one company; here female managers report a higher demand than their male counterparts (Bernin and Theorell, 2001).

Social support

Social support at the workplace may have a direct influence on the perception of stress (Agervold, 1998; Bech *et al.*, 2002). It is generally considered to consist of two dimensions: socio-emotional support comprises good fellowship and social networking, whereas instrumental support is about actual help and guidance from colleagues (Karasek and Theorell, 1990).

Managerial jobs often involve a high degree of social contact, this contact, however, being rather superficial (Bech *et al.*, 2002). But particularly the depth and the trust in social contact are important. Moreover, men and women’s perception of social contact may differ. As it turns out female managers often feel more isolated than their male counterparts as mentioned by Burke (2002) referring to Davidson and Cooper (1983, 1992). This may be due to men using the same network for both their occupational and their personal relations, whereas women have two separate networks (Waldstrøm and Madsen, 2007).

Findings show no significant differences among female and male managers regards to social support; furthermore, there was no difference among females and males with regards to the amount of time spent together with colleagues (Bernin and Theorell, 2001).

Work life balance

Not only the job situation, but also an imbalance between work and family roles may lead to stress (Geurts and Demerouti, 2003; Greenglass *et al.*, 1988). In an attempt to obtain a better balance between work and family, women in Denmark might deliberately choose to work in the public sector because of its more family-friendly work conditions, e.g. “care-days” entitlements and better parental leave schemes in terms of wage compensation and duration are affiliated with the public sector (Nielsen *et al.*, 2004).

The literature on work-life balance has been dominated by two contrasting approaches – the role strain hypothesis and the role enhancement hypothesis. In the first perspective it is assumed that performing multiple roles (such as manager, parent, spouse) is difficult and might lead to stress since the individual has scarce resources (Geurts and Demerouti, 2003). That is, a negative work-life balance leading to stress (Greenhaus and Powell, 2006). The second perspective assumes that energy from one

role might improve the performance of another. A fulfilment of multiple roles is, thus, not necessarily associated with reducing energy and role strain (Geurts and Demerouti, 2003), but may result in a positive work-life balance.

Studies of differences across managerial levels regarding work-life balance are scarce. Gender has, however, been examined frequently. For instance, Greenglass *et al.* (1988) found that all work-life-imbalance measures were correlated to stress for women, but only few were significant for men. Generally work-life imbalance is more widespread among women, as they have the primary responsibility for the family roles (Frone, 2000). This is also the case for female managers as they experience more imbalance between paid and unpaid work (Frankenhaeuser *et al.*, 1989).

Support from family and friends

Social support from family, friends and spouses may lower the degree of stress (Carlson and Perrewé, 1999). Thus, social support, from supervisor and family and friends, reduces the work-life imbalance predominantly for women (Greenglass *et al.*, 1988).

Working at home

Working at home may offer an opportunity to fulfil some of the family roles, while at the same time lead to a feeling of boundary less work with no fixed working hours, since work can be performed at all times and in all places. This situation may influence stress positively or negatively.

Many people who have flexible working hours also carry a large responsibility in their jobs which involves a large number of working hours extending beyond their hours at the actual workplace. This is especially true for managers (Macdonald *et al.*, 2005).

Children living at home

Children may also be a stress factor (Lundberg *et al.*, 1994; Parasuraman *et al.*, 1992). The total workload at home and at the job seems to increase with the number of children: this increase is more pronounced for women (Lundberg *et al.*, 1994).

In conclusion, the theoretical section indicates the relevance of studying the differences in the potential relationship between psychosocial work characteristics, work-life balance and perceived stress among public managers with regard to managerial level and gender in order to identify significant determinants; i.e. issues where preventive actions can take place.

Method

Data set

Data is derived from a national-wide survey of managers employed in Danish public and private organizations ($n = 1,500$). Due to an initial pre-notification contact via telephone and a single reminder the response rate reached a level of 72 per cent. Public sector managers constitute 400 respondents equivalent to 37.0 per cent of the respondents. The subsequent analyses will be based on these 400 respondents only.

The survey instrument is a mailed paper-based questionnaire with 380 questions organized into sections according to a variety of theories within the fields of organization and management. The content of the questionnaire was primarily based on a comprehensive survey of the literature available in journals covering various aspects of theoretical and empirical studies of management and organizations. These include generalist journals like the *Academy of Management Review*, *Harvard Business Review* and *Sloan Management Review* as well as more specialized journals like *Industrial*

Relations, Management Science and Personnel Psychology. The development of the questionnaire was supplemented by a number of focus-group interviews with managers in various functions. Before the survey was carried out, the survey instrument was tested by 20 managers possessing the required competencies to evaluate the content, functionality and wording of the questionnaire.

One of the questions concerns the perception of work stress and is measured by: "I feel stressed". The response was measured on a five-point ordinal scale ranging from "not at all" to "to a very high degree".

Initial data analysis

In preparing the final analysis a number of initial analyses are carried out. First a frequency tabulation of the perception of stress is produced (see Table I).

As can be seen from Table I only 16 per cent of the respondents do not feel stressed on their work and 42 per cent only to a limited degree. The remaining 42 per cent of the managers have a more clear perception of being stressed. Therefore, it seems logical to reduce the information on stress to a binary variable expressing the perception of stress in a minor or major degree. As a consequence, a binary logistic regression model is an obvious choice.

The content of the explanatory variables psychosocial work characteristics and work-life balance are both based on scales of items. The psychosocial work characteristics include a total of 19 items, and the work-life balance 15. The underlying structures in the responses to these scales of items were identified by a standard explorative factor analysis based on a principal component analysis extracting factors with eigenvalues above 1 followed by a varimax rotation.

Concerning the psychosocial work characteristics (see Table II) five factors can be identified explaining 59.9 per cent of the total variation. Despite the presence of some secondary loadings and a single tertiary loading it seems reasonable to conclude that the 19 items in the original scale can be expressed by the five factors:

- (1) job content;
- (2) managerial responsibility;
- (3) workload;
- (4) influence on own job situation; and
- (5) social support from colleagues.

Concerning work-life balance (see Table III) four factors can be identified explaining 50.5 per cent of the total variation. Despite the presence of a few secondary loadings it seems reasonable to conclude that the 15 items in the original scale can be expressed by the four factors:

- (1) negative work-life balance;
- (2) positive work-life balance;

Table I.
Perception of stress
among managers in public
organizations in Denmark

	Not at all	To a limited degree	To some degree	To a high degree	To a very high degree	Total within category
	63 (16%)	168 (42%)	122 (31%)	35 (9%)	8 (2%)	396 (100%)

	Factor 1: job content	Factor 2: managerial responsibility	Factor 3: work-load	Factor 4: influence on own job situation	Factor 5: social support from colleagues
Every day I have to try to balance various interests	0.787				
My job is full of dilemmas	0.740				
My job involves difficult decisions	0.671				
I have to relate to many different problems	0.607				
I'm often interrupted in my daily work	0.552				
I'm at the disposal of my workplace round the clock	0.471		0.313		
My authority is clearly defined		0.861			
My responsibility is clearly defined		0.803			
My authority matches my responsibility		0.794			
My performance goals/success criteria are clearly defined		0.615			
I have an excessive workload			0.784		
I work more than I actually want to			0.770		
I bring home work from the office			0.604		
I have influence on my workload			-0.471	0.447	0.313
I plan my working hours				0.782	
I prioritize my own tasks				0.718	
I have a say on my job content				0.699	
My manager colleagues and I support each other					0.857
Our communication in the management group is positive and constructive					0.842
Explained variation (%)	14.9	13.7	11.3	10.6	9.4

Table II.
Rotated component matrix
of factor analysis for items
related to psychosocial
work characteristics

Notes: Response scale for psychosocial work characteristics: not at all, not often, to some extent, to a high extent, to a very high extent. Factor loadings below 0.3 have been excluded in order to improve the impression of the factor structure

	Factor 1: negative work-life balance	Factor 2: positive work-life balance	Factor 3: social support from family/friends	Factor 4: working at home
Work, leisure and family merge	0.769			
My work life, family life and leisure time are not separated entities	0.756			
I often work during the weekend	0.651			
I'm not good at focusing on one thing at the time	0.533			
I think about my job when I'm not working	0.455		0.336	
It is a life style being a manager	0.395			-0.323
I do not take all my holidays	0.370			
There is a good balance between my work life, my family life and leisure time		0.820		
There is a good balance between my workload and my life situation		0.768		
I rarely have to prioritize work over leisure	0.321	0.646		
I really experience that I have leisure time		0.626		
The organisation I work for is family-friendly		0.442		0.426
I discuss concrete management problems with my friends			0.757	
I discuss concrete management problems with my spouse			0.742	
I sometimes work at home				0.798
Explained variation (%)	17.4	16.5	9.2	7.4

Notes: Response scale for work-life balance: no, yes. Factor loadings below 0.3 have been excluded in order to improve the impression of the factor structure

Table III.
Rotated component matrix of factor analysis for items related to work-life balance

- (3) social support from family and friends; and
- (4) working at home.

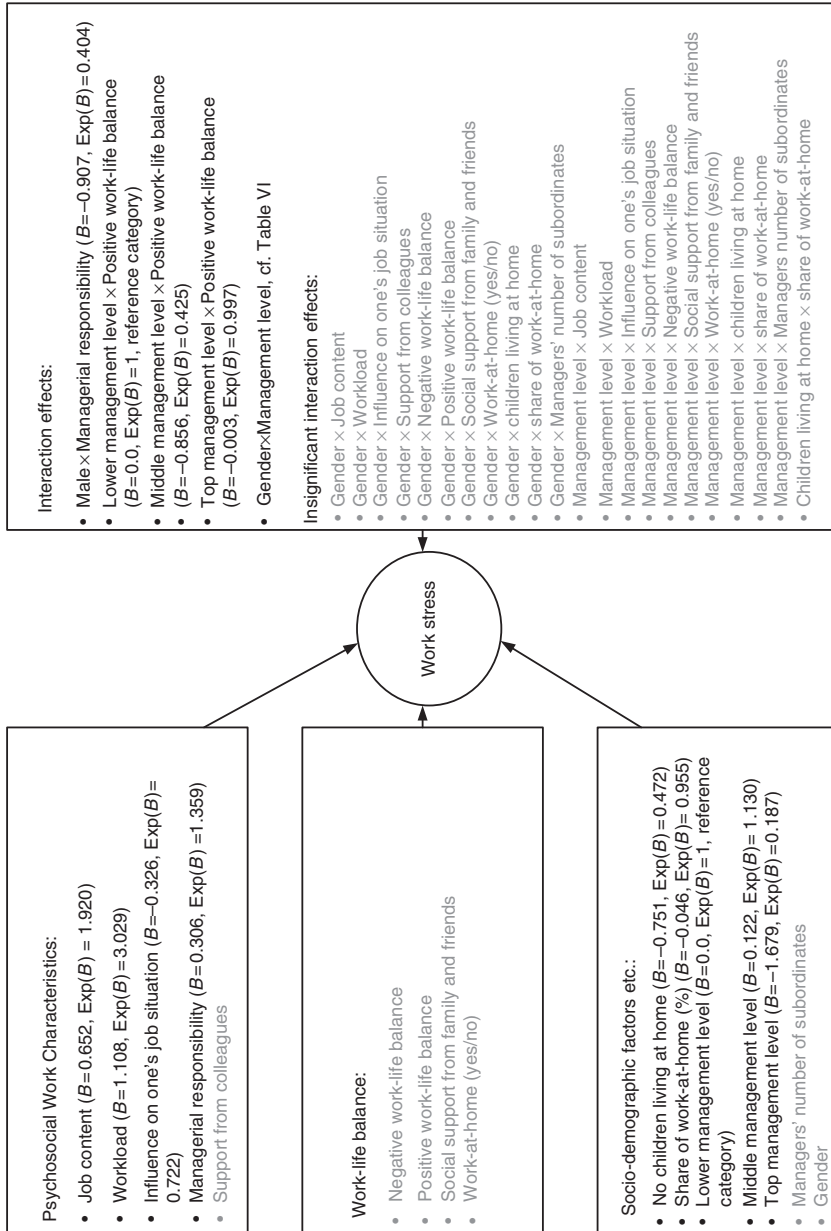
The estimated factor scores from the two factor analyses will be used in the logistic regression analysis.

By including organizational status, gender and children living at home as well as simple first-order interactions between all explanatory variables, it is possible to take account of potential variation across respondents' perception of stress.

Results

By means of a binary logistic regression model it is now possible to analyse if the psychosocial factors, the work-life factors as well as gender and organizational status influences stress.

Figure 1 shows the full model tested with all main effects and interactions included.



Note: The grey determinants are non-significant

Figure 1.
Determinants of public sector managers' stress – full model

The logistic regression analysis was done applying a backward elimination of insignificant effects using a five-per cent level of significance and following the hierarchical principle. The final result is shown in Table IV.

Looking at the psychosocial work characteristics it appears from the result that public sector managers' perception of stress is influenced by their job content ($B = 0.652$), their workload ($B = 1.108$) and the influence they have on their own job situation ($B = -0.326$). Managerial responsibility is also included in the final model ($B = 0.306$). However, the presence is due to a significant interaction effect, and therefore no separate interpretation is made of this main effect.

Concerning the work characteristics the result shows that the more public sector managers perceive that they have to try to balance various interests in their daily work, that their job is dilemma-ridden, that they have an excessive workload, and have no influence on workload, etc. the higher the stress. On the other hand it seems that the more influence managers have on their own job situation the less stressed they are.

The results concerning the factors related to the work-life balance show that only the factor that can be characterized as a positive work-life balance has an impact on work stress, but only in association with managerial level.

If a manager has no children living at home the stress level seems to be lower ($B = -0.751$). The share of working at home also has an effect ($B = -0.046$); i.e. if the share of working at home increases, the level of stress decreases.

Determinants	Cases (%)	<i>B</i>	Significance	<i>OR</i> (95% <i>CI</i>)
Female ^a	174 (43.5)	0		1.00
Male	223 (55.8)	0.772	0.414	2.164 (0.34-13.785)
Lower level manager ^a	43 (10.8)	0		1.00
Middle level manager	226 (56.5)	0.122	0.850	1.130 (0.319-4.006)
Top level manager	119 (29.8)	-1.679	0.058	0.187 (0.033-1.057)
Children living at home ^a	176 (44.0)	0		1.00
No children living at home	221 (55.3)	-0.751	0.014	0.472 (0.259-0.861)
<i>Psychosocial work characteristics</i>				
Job content		0.652	0.000	1.920 (1.397-2.639)
Managerial responsibility		0.306	0.253	1.359 (0.803-2.297)
Workload		1.108	0.000	3.029 (2.043-4.490)
Influence on own job situation		-0.326	0.043	0.722 (0.526-0.990)
<i>Work-life balance</i>				
Positive work-life balance		-0.036	0.942	0.965 (0.368-2.532)
Share of working at home (percent)		-0.046	0.015	0.955 (0.920-0.991)
<i>Interaction effects</i>				
Male × managerial responsibility		-0.907	0.009	0.404 (0.205-0.795)
Lower level manager × positive work-life balance ^a		0	0.023	1.00
Middle level manager × positive work-life balance		-0.856	0.112	0.425 (0.148-1.22)
Top level manager × positive work-life balance		-0.003	0.996	0.997 (0.335-2.969)
Male × lower level manager ^a		0	0.015	1.00
Male × middle level manager		-1.315	0.196	0.268 (0.037-1.972)
Male × top level manager		0.891	0.450	2.438 (0.241-24.631)

Table IV.
Determinants of public
managers' work stress

Note: ^aReference category

Gender and organizational status are also included in the final model, but concerning gender it is due to significant interactions.

Looking at organizational status top-level managers are less stressed ($B = -1.679$) than lower ($B = 0.0$) and middle-level managers ($B = 0.122$); i.e. middle-level managers are most stressed.

The significant interactions comprise those between gender and managerial responsibility, organizational status and the positive work-life balance as well as gender and organizational status. Concerning the interaction between gender and managerial responsibility it appears that the more clearly defined the authority, responsibility and performance goals/success criteria as well as whether the authority matches the managers' level of responsibility, the lower the stress among male managers. Regarding the interaction between organizational status and a positive work-life balance the result shows no great differences between managers on the lower and the top managerial levels. Still, middle managers tend to be less stressed than the other two categories if their work-life balance is positive.

Logit values and corresponding probabilities for the influence on perceived stress due to interaction between gender and organizational status is shown in Table V. Thus, female managers at the top level are less stressed than male managers at the middle and lower levels with the ones at the middle level being most stressed. Male middle managers are the least stressed, whereas those at the lower level are most stressed. At the top and lower levels female managers seem less stressed than male managers, whereas female managers at the middle level are more stressed than their male colleagues.

Discussion

Findings show that 42 per cent of the managers perceive themselves as stressed. The presence of stress in the public sector in general might be worse, if we accept the assumptions that the recruitment process for managers often are more thorough and leads to the selection of healthier individuals who are better to cope with stress (Björklund *et al.*, 2013).

The results of this study indicate that a way Danish public sector managers can cope with stress is to focus on especially three psychosocial work characteristics, i.e. job content, workload and influence on one's job situation, – but also the work-life balance in terms of the working at home workload.

Regarding the job content a useful strategy to reduce stress could be to change it in a direction, so it no longer is marked by balancing several interests, dealing with dilemmas, being interrupted, etc.

Another suggestion for public sector managers is to decrease their workload and at the same time increase their influence on own job situation. To improve this situation, managers on all levels should learn how to delegate more responsibility and to empower their employees. This would lighten their workload, but also give next

	Male	Female
Top-level manager	-0.016 (0.496)	-1.679 (0.157)
Middle-level manager	-0.421 (0.396)	0.122 (0.530)
Lower level manager	0.772 (0.684)	0 (0.5)

Note: Logit values and probabilities in paranthesis

Table V.
Interactions between
gender and
managerial level

level in the organization an increased influence on their job situation. This influence regarding planning own working hours and prioritising own tasks seem to have an effect on stress.

Managers might have difficulties in reducing the workload, because recognition and rewards often are received in the form of more exciting tasks. These might be difficult to refuse, maybe especially for managers, and this may increase stress. This aspect might be even more relevant in public organizations where the wage budget often is lower and with it the financial incentives.

Considering the work-life balance, then working at home seem to reduce the perception of stress. Thus, working at home might help fulfil some of the roles linked to family life. This seems to be the case for both male and female managers. It was, thus, not possible to identify any gender-differences although previous research supports this. For instance, MacDonald *et al.* (2005) found that women's satisfaction with their work-life balance drops with the number of hours worked outside the home, whereas the number of hours worked at home does not reduce their satisfaction, only childcare reduces the satisfaction a little. Men's satisfaction with their work-life balance also falls in line with hours worked outside the home, but contrary to women their satisfaction also declines when working at home.

Boundary less work does therefore not seem to be an immediate drawback in the perception of stress. Still, the question remains whether there is a limit to how much working at home a manager can undertake before, perhaps, an adverse effect sets in including marginalization and isolation from the social network in the organization or less face-to-face contact to the subordinates influencing the subordinates' general work environment.

In the theory section it was indicated that children could be a stress factor. This is supported in this study since managers with children living at home are more stressed than managers with no children at home. The result indicates that having to take on several roles, does not benefit the stress situation, which supports the role strain hypothesis approach described. It is noteworthy here that there is no detectable difference regarding gender.

Organizational status influences public sector managers' stress both directly and when combined with other factors. Top managers were found to be significantly less stressed than both middle and lower managers. This supports the model of Karasek and Theorell (1990), that a higher degree of influence may reduce stress. It also supports the findings that higher level managers experience less job strain than lower level managers (Björklund *et al.*, 2013), more autonomy, and less conflicts between demands (Lundberg *et al.*, 1994). In this respect, it was, however, not lower level managers who were mostly stressed, but instead middle-level managers. This was also the result of Ivancevich *et al.*'s (1982) study. A reason why top managers are less stressed might be explained by findings that confirm that higher level managers have a tendency to perform a more open coping towards conflicts and unfairness, i.e. to react more directly (Bernin *et al.*, 2003), before stress occurs. Further research is needed to find out more about what makes middle-level managers stressed.

Organizational status and gender also interacted. Here it was demonstrated that female managers were less stressed than male managers at the top as well as the low level, while they were less stressed than male middle managers. Thus, the results raise doubts about the common belief that in general female managers are more under stress than male managers. As it turns out it seems to vary between the managerial

levels. This ambiguity was also confirmed in the study of Björklund *et al.* (2013). Here lower level female managers experienced more job strain than higher level male managers, but there was no significant difference between higher level female managers and their male counterparts (Björklund *et al.*, 2013). Further research needs to be conducted in order to find out how, more specifically, gender and managerial level interacts.

When looking at the psychosocial work characteristics it turns up, that support from colleagues had no significant influence on public sector managers' perception of stress. Furthermore, it was not possible to identify differences in the impact of social contact on perceived stress between male and female. The study of Bernin and Theorell (2001) also showed no gender differences as regards to social support.

Concerning the work-life balance, social support from family and friends had no significance, and neither did a negative work-life balance. Thus, it has not been possible to establish the fact that support from family and friends reduces the perception of stress or that a negative work-life balance increases the likelihood of stress. Furthermore working at home had no significance. But as the share of working at home appeared to reduce stress, it seems that it is not a question of whether managers work at home or not, but rather to what extent they work at home.

Comparing the actual results with similar findings reported from other countries like the ones mentioned in the introduction must be done with some caution since working conditions in the public sector may vary from country to country. However, some basic similarities like the effect from gender and managerial level seem to be present in results reported previously from other countries (see, e.g. Bernin and Theorell, 2001; Björklund *et al.*, 2013; Ivancevich *et al.*, 1982).

Conclusion

This study indicates that stress among public sector managers is not an oxymoron, although only few managers' report their job situation as being stressful to a high or a very high degree.

The theoretical implications of the study are that public sector manager's perception of stress increases by their workload and decreases by their influence on their work situation; this is supported by Karasek and Theorell's (1990) model.

Additionally, the role strain hypothesis approach was supported. Since the number of children living at home increases manager's perception of stress, it supports the hypothesis that having more roles is bad for the perception of stress.

The practical implications of the study is that it is necessary to focus on particularly job content, workload and influence on one's own work situation along with managerial responsibility in correlation with gender in order to be able to reduce stress. Furthermore, public organizations might benefit from focussing on how managers at each level experience a positive balance between work and family life, besides how large a share of working at home managers prefer. How these stress reducing initiatives in the work situation should take place is very much dependent on the local work place situation.

This study has contributed with a model of the determinants of public sector managers' stress. This is only a first step in understanding public managers' stress, and further research needs to be carried out to explore and confirm the efficacy of the model.

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