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Abstract

Purpose – The purpose of this study is to investigate the relationship between leadership profiles and differences in managers' own levels of work stress symptoms and perceptions of work stressors causing stress.

Design/methodology/approach – Cross-sectional data were used. Healthcare managers (n = 188) rated three dimensions of their leadership behavior and levels of work stressors and stress. Hierarchical cluster analysis was performed to identify leadership profiles based on leadership behaviors. Differences in stress-related outcomes between profiles were assessed using one-way analysis of variance.

Findings – Four distinct clusters of leadership profiles were found. They discriminated in perception of work stressors and stress: the profile distinguished by the lowest mean in all behavior dimensions, exhibited a pattern with significantly more negative ratings compared to the other profiles.

Practical implications – This paper proposes that leadership profile is an individual factor involved in the stress process, including work stressors and stress, which may inform targeted health promoting interventions for healthcare managers.

Originality/value – This is the first study to investigate the relationship between leadership profiles and work stressors and stress in healthcare managers.

Keywords Cluster analysis, Leadership, Stress, Managers, Healthcare, Leadership profile

Paper type Research paper

Healthcare managers today face many challenges in the task of guiding their employees to deliver high-quality services. Being a manager in a government-run organization, as often applies to healthcare managers, is acknowledged as a complex mission that requires the ability to balance between conflicting political and organizational demands and to handle constraints in decision-making autonomy (Rainey and Chun, 2005). Moreover, the introduction of market reforms in the healthcare sector has led to increased focus on rationalizations, customer satisfaction, competition and systematic quality evaluations, all of which increase the need for measurements to scrutinize the

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results connected with these market principles (Berntson *et al.*, 2012). This situation has further intensified the demands on healthcare service efficiency, and thereby potentially also on the managers, who themselves report a rise in conflicting demands within their managerial responsibility (Dellve *et al.*, 2006). Against this backdrop, the risk of increased levels of both work stress (a psychological and/or physical reaction) and work stressors (work environment factors that cause stress) is substantial for healthcare managers, and, hence, we need a better understanding of the factors that might explain differences in how managers perceive work stressors and stress.

Leadership profiles

Managerial responsibility in healthcare services involves three competing objectives (also referred to as logics): the strategic, the administrative and the personnel objective (Dellve *et al.*, 2006; Wikström *et al.*, 2011). These dimensions are reflected in the change, production and employee (CPE) leadership model, the three-factor structure of which has been validated in managerial samples across countries (Ekvall and Arvonen, 1991; Yukl *et al.*, 2009) and across organizational settings in different branches, including healthcare (Larsson and Vinberg, 2010; Sellgren *et al.*, 2008). A manager's leadership profile is characterized by a distinctive combination of the three behavioral orientations of change, production and employee, and ten leadership profiles have been described, each of which has its own blend of the these orientations (Ekvall and Arvonen, 1994). Leadership profiles have been shown to differ with respect to employee job satisfaction (Sellgren *et al.*, 2008) and to employee ratings of leader proficiency and popularity (Ekvall and Arvonen, 1994). However, leadership profiles have not yet been investigated in relation to managers' own experience of work stressors (e.g. job demand and control) or work stress.

Job demand and control as work stressors for managers

The job demand-control (JDC) model is one of the most influential theories about how work stress emerges (Karasek, 1979; Karasek and Theorell, 1990). This model postulates the significance of two central aspects in the work environment: job demands, which are the psychological demands perceived by an employee (primarily concerning workload) and control (also referred to as decision latitude), which is sub-divided into decision authority and skill discretion, respectively, representing the subjective freedom to make job-related decisions and the extent of skill that the employee uses at work. The strain hypothesis proposes that a combination of high job demands and low control induces a high-strain work situation, and an association between such a situation and low psychological and physical health outcomes has received substantial support in reviews covering 40 years of research (Hausser *et al.*, 2010; Van der Doef and Maes, 1999).

Although managers in general do not perceive their occupational environment as a particularly high-strain work situation, the picture might be different for healthcare managers, in particular. In contrast to managers in other sectors, most of whom have a work situation characterized by a combination of high job demands and high control (i.e. an "active" work situation) (Karasek and Theorell, 1990; Skakon *et al.*, 2011), healthcare managers' perception of control might be limited due to a lower decision-making autonomy, although they report a freedom related to where and when to work (Johansson *et al.*, 2013). Moreover, a high level of job control *per se* has been shown to be associated with low levels of fatigue (Daniels *et al.*, 2013), which suggests that this

dimension alone can also affect stress outcomes. The results of several studies have pointed towards a high-strain situation for managers in the healthcare sector, reflected by aspects such as overload, scarce resources, constraints in decision-making autonomy and conflicting demands (Berntson *et al.*, 2012; Landstad and Vinberg, 2013; Rodman and Bell, 2002). Although some authors are of the opinion that the JDC model falls short with regard to predicting work stress for managers (Kristensen, 1995), others argue that this model does explain a substantial part of stress outcomes connected with a managerial position (Noblet *et al.*, 2001).

Managers' leadership and work stress

Research to date has paid little attention to how managers' leadership is related to the way the managers themselves experience work stress. Only a few studies have addressed this subject, one of which showed that hotel managers with higher levels of burnout also scored higher in passive/avoidance leadership (Zopiatis and Constanti, 2010), and another demonstrated that collaborative leadership style predicted burnout symptoms in college athletic directors (Ryska, 2002). The latter of the cited investigations included leadership styles based exclusively on two dimensions of leadership, namely, concern for production and concern for people, and thereby overlooked a third important aspect of leadership, namely, change orientation (Ekvall and Arvonen, 1991; Yukl, 1999). Furthermore, besides being conducted in very specific branches and not obviously generalizable to other managerial samples, the two studies mentioned here also applied a variable approach to measuring leadership, that is, they assessed leadership as a unidimensional score on a variable and analyzed its relationship with the work stress criteria. Another strategy is to assess leadership as particular profiles (i.e. different combinations of leadership behaviors). The premise of this person-centered methodology is that behaviors (or other characteristics of an individual) do not function separately from each other, but rather they interact and therefore should be analyzed as an integrated whole (Bergman and Magnusson, 1997). Accordingly, we wanted to use this holistic approach to investigate the relationship between healthcare managers' leadership and the way work stressors and work stress is perceived. To our knowledge, our study is the first of its kind. As work stress indicators, we included the following: the core burnout dimensions exhaustion and disengagement (Demerouti *et al.*, 2001), three indicators of subjective work achievement and sleep disturbance.

Aim

The aim of the present study was to identify the leadership behavior profiles that are represented among healthcare managers in Sweden and to explore how these profiles differ with regard to perception of work stress and the work stressors job demands and control.

Methods

We used baseline data from the intervention study "Effects of Leadership Development in Healthcare" which was conducted in collaboration between Karolinska Institutet and Stockholm County Council (SCC). The SCC provides institutional and non-institutional care in nine separate organizations that serve a catchment area with a population of nearly two million. The study was approved by the Regional Ethical Review Board.

Procedure and participants

In 2010, SCC initiated a two-year leadership development program and invited all their healthcare managers (n = 589) to participate. Thirty-five per cent of those managers (n = 204) accepted and entered the program, and all of them received written information about the intervention study before the onset of the development program. Participation in the intervention study was voluntary, and informed consent was obtained and confidentiality and anonymity guaranteed. Immediately before enrollment in the leadership program (which was started at three different time points due to the large number of participants: September 2010, January 2011 and September 2011), the healthcare managers were invited by e-mail to respond to a web-based survey including the CPE leadership behavior questionnaire and the the Webb-QPS (Questionnaire for Psychological and Social Factors at Work) instrument assessing health and psychosocial work environment. The response rate was 93 per cent (n = 190). However, the number of respondents with complete data available for our study was lower (n = 188; 92 per cent). Eighty-seven per cent of the participants were women, and the mean age in the group was 51 years (range 30-63 years). The participating healthcare managers worked in the following areas: primary care (46.2 per cent), adult psychiatry (26.0 per cent), geriatrics (6.9 per cent), dependency disorder care (5.2 per cent), central administration (4.6 per cent), child and adolescent psychiatry (4.6 per cent), rehabilitation and functional assistance (3.5 per cent) and others (2.9 per cent). The managers had a background in the following professions: nurses (56 per cent), paramedics (21 per cent), administration (11 per cent), physicians (7 per cent) and other categories (5 per cent). Among the SCC healthcare managers who chose not to take part in the leadership development program (n = 385), 76 per cent were women and the mean age was 55 years.

Measures

Leadership orientation. Leadership behavior was assessed with three subscales measuring orientation toward change, production and employee in the CPE questionnaire, which is a 360-degree instrument based on the CPE model of leadership behavior that was developed using data on nearly 4,000 managers rated by 6,400 subordinates (Arvonen, 2002). We used self-ratings from the healthcare managers, which were made on a six-point scale ranging from "Do not agree at all" (1) to "Agrees fully" (6) for 24 items that captured the three behavioral orientations. The reliability of the subscales and the included items were as follows: change 0.86 (e.g. "Shares thoughts and plans about the future" and "Initiates new projects"), production 0.88 (e.g. "Makes a point of following rules and principles" and "Gives clear instructions") and employee 0.75 (e.g. "Relies on her/his subordinates" and "Shows respect for other people").

Work stressors and work stress. Work stressors and stress were measured using Webb-QPS (Hasson *et al.*, 2008), which is a short web-based version of QPS Nordic (Dallner, 2000), an instrument that measures health and psychosocial work environment and is well-validated for Swedish employees. Work stressors were assessed with the subscales job demands (four items, reliability 0.74), decision authority (seven items, reliability 0.67) and skill discretion (three items, reliability 0.64) on a five-point Likert scale ranging from "Very seldom" (1) to "Very often" (5). These three subscales measure perceptions of workload and demanding decisions, perception of role clarity and

influence on work content and opportunity to use skills and meaningfulness at work, respectively.

Work stress was evaluated using the following subscales: exhaustion (five items, reliability 0.77), disengagement (five items, reliability 0.69), sleep disturbances (five items, reliability 0.69), satisfaction with quality of work (single item), satisfaction with quantity of work (single item) and satisfaction with problem-solving ability (single item). Exhaustion, disengagement and sleep disturbances were measured using four-point Likert scales as follows: ranging from "Completely incorrect" (1) to "Completely correct" (4) for exhaustion and disengagement and ranging from "Never" (1) to "Always" (4) for sleep disturbances. The scores for subscales, namely, satisfaction with quality of work, quantity of work and problem-solving ability were measured on a five-point Likert scale ranging from "Very seldom or never" (1) to "Very often or always" (5).

Statistical analysis

We applied an exploratory approach to examine possible groupings of leadership behavior toward change, production and employee orientation. To answer our research questions, we performed hierarchical agglomerative cluster analysis using IBM Statistical Package for the Social Sciences (SPSS) 22. The aim of cluster analysis is to group cases that have both responded in a similar way and responded differently from other cases. In a hierarchical cluster analysis, a case that has been allocated to a particular cluster remains in that cluster throughout the analysis. Possible cluster solutions were identified by inspection of the agglomeration schedule and dendrogram, which was done using Ward's method with standardized variables and squared Euclidian distances. The selected cluster solutions were further tested in a K-means relocation cluster analysis using the centroid values (means) from the hierarchical cluster analysis as initial cluster centers, as recommended by Milligan (1980). In contrast to hierarchical cluster analysis, a K-means analysis allows relocation of cases to new clusters in an iterative process, which may potentially improve the location of each case. However, the number of clusters is specified in advance and remains unchanged throughout the iteration. The reliability of the cluster solution from our K-means analysis was inspected by a cross-tabulation between the hierarchical and the K-means clusters. The discrimination between the clusters was tested using a one-way analysis of variance (ANOVA). The most reliable cluster solution (constituting distinct leadership profiles) subsequently served as an independent variable in further analyses of the potential differences related to work stressors and stress. For this purpose, we performed one-way ANOVA with post-hoc Bonferroni pairwise comparisons.

Results

Means, standard deviations and correlations for the variables included in the study are presented in Table I. One four-cluster and one six-cluster solution were tentatively identified in a hierarchical agglomerative cluster analysis, and these were further investigated using a K-means relocation cluster analysis. The cross-tabulation between the hierarchical and the K-means clusters of the six-cluster solution showed that between 4 and 21 per cent of the cases were assigned to a different K-means cluster compared to the hierarchical cluster. Moreover, an ANOVA comparing the means for the three cluster variables (change, production and employee orientation) showed

Table I.
Correlations and mean values

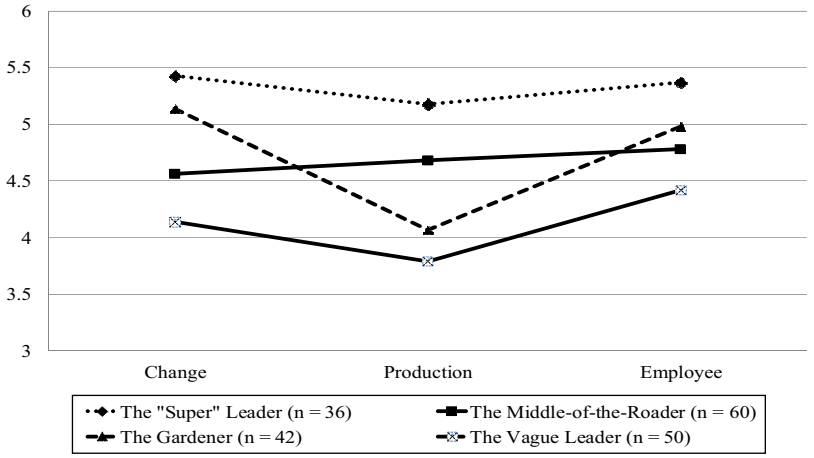
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Change														
2. Production	0.440**													
3. Employee	0.606**	0.508**												
4. Age	−0.035	0.076	0.008											
5. Tenure	−0.157*	0.065	−0.136	0.338**										
6. Job demands	0.083	0.120	0.028	0.016	0.116									
7. Decision authority	0.247**	0.303**	0.356**	0.086	−0.047	−0.118								
8. Skill discretion	0.349**	0.311**	0.435**	0.021	−0.068	0.077	0.353**							
9. Satisfaction work quality	0.300**	0.336**	0.278**	0.130	0.074	0.006	0.273**	0.355**						
10. Satisfaction work quantity	0.247**	0.243**	0.226**	−0.006	−0.061	−0.110	0.281**	0.364**	0.403**					
11. Satisfaction problem – solving ability	0.394**	0.266**	0.405**	−0.023	−0.067	−0.002	0.263**	0.397**	0.410**	0.361**				
12. Exhaustion	−0.260**	−0.187*	−0.298**	0.019	0.151	0.203*	−0.330**	−0.297**	−0.282**	−0.313**	−0.318**			
13. Disengagement	−0.301**	−0.178*	−0.378**	0.119	0.103	0.052	−0.269**	−0.639**	−0.209**	−0.260**	−0.261**	0.423**		
14. Sleep disturbances	−0.128	−0.080	−0.156*	0.088	0.030	0.112	−0.243**	−0.189*	−0.118	−0.191**	−0.102	0.483**	0.298**	
Mean	4.74	4.40	4.84	50.4	7.26	3.70	3.86	4.53	4.03	3.88	4.11	2.16	1.65	1.94
SD	0.58	0.61	0.43	7.2	6.2	0.60	0.46	0.43	0.58	0.74	0.61	0.53	0.40	0.43

Notes: N for correlation between 161-188; $^{*}p < 0.05$, $^{**}p < 0.01$ (two-tailed)

inadequate discrimination between the clusters (analysis not shown). Therefore, we evaluated the four-cluster solution by computing a K-means with four clusters using the centroid values from the hierarchical cluster and cross-tabulated it with the K-means six-cluster solution. Cases from two different clusters, numbers 1 and 5, in the six-cluster solution were assigned to the same cluster in the four-cluster solution, which also applied to cluster numbers 3 and 4. This four-cluster solution was further complemented with a four-cluster K-means solution without specification of the centroid values, and the reliability was examined by cross-tabulation between the two K-means four-cluster solutions. Satisfactorily, only one out of 188 cases was assigned to a different cluster in this comparison. Finally, the means for each cluster variable were also investigated using ANOVA to confirm that the clusters successfully discriminated between the variables. All mean differences within a behavior orientation were significant at the 0.01 level (Figure 1). Based on the results from the series of analyses outlined above, we chose the four-cluster K-means solution with specified centroids as the independent variable for further analysis.

The four leadership profiles that emerged from the final cluster solution were designated the Vague Leader, the "Super" Leader, the Middle-of-the-Roader and the Gardener based on their most prominent characteristics. These four profiles are described below. No significant differences in demographic variables were found between the clusters:

- *Cluster 1*: The Vague Leader ($n = 50$) profile was distinguished by having the lowest means in all three leadership orientations, <1 SD below the total cluster mean for each variable. The mean age in this cluster was 50 years (range 33-62 years), 82 per cent were women and the mean tenure was 8.5 years (range 1-33 years). In total, 27 per cent of the total sample belonged to this cluster.
- *Cluster 2*: The "Super" Leader ($n = 36$) profile was characterized by the highest means of all three leadership orientations, > 1 SD above the total cluster mean for each variable. The mean age in this cluster was 51 years (range 39-63 years), 86



Note: All mean differences are significant at the 0.01 level

Figure 1.
Means in change, production, and employee-orientation in the four leadership profiles

per cent were women and the mean tenure was 7 years (range 1-31 years). In total, 19 per cent of the total sample belonged to this cluster.

- *Cluster 3*: The Middle-of-the-Roader ($n = 60$) profile had relatively uniform means but a stronger production orientation: 1 SD higher than that of the Gardener and the Vague Leader profiles. The mean age in this cluster was 51 years (range 30-63 years), 87 per cent were women and the mean tenure was 7.8 years (range 0-25 years). In total, 32 per cent of the total sample belonged to this cluster.
- *Cluster 4*: The Gardener ($n = 42$) profile had characteristically high means in change and employee orientation, and a substantially lower mean in the production orientation. The mean age in this cluster was 50 years (range 34-62 years), 86 per cent were women and the mean tenure was 5.2 years (range 0-19 years). In total, 22 per cent of the total sample belonged to this cluster.

Table II presents the results of the one-way ANOVA and post-hoc analyses of the mean differences between the leadership profiles in relation to the outcome measures. Overall, significant differences were found for seven out of nine outcome measures, and these disparities exhibited a clear pattern: irrespective of outcome variable, managers in the Vague Leader profile consistently rated themselves more negatively compared to what was noted for managers in at least one of the other leadership profiles.

Concerning work stressors, managers in the Vague Leader profile perceived having less decision authority [$F = 7.588$ (3; 174), $p = 0.000$] and less skill discretion [$F = 12.396$ (3; 183), $p = 0.000$] than those in any of the other leadership profiles. Hence, a Vague Leader did not experience the same level of control. No differences were found regarding the outcome measure job demands, although a difference between the Vague Leader and the "Super" Leader profiles did approach significance [$F = 2.198$ (3; 180), $p = 0.09$].

Considering two of the work stress outcomes, managers in the Vague Leader profile experienced more symptoms of exhaustion and disengagement compared to those in the "Super" Leader profile [exhaustion $F = 4.297$ (3; 178), $p = 0.006$; disengagement $F = 5.722$ (3; 176), $p = 0.001$]. Concerning disengagement, the Vague Leader managers also reported more disengagement than the Gardener managers. No significant differences emerged concerning the variable sleep disturbances [$F = 0.524$ (3; 179), $p = 0.667$].

For two of the measures of subjective performance, satisfaction with work quantity and satisfaction with problem-solving ability, the managers in the Vague Leader profile rated themselves significantly lower than the managers in all other leadership profiles [satisfaction with work quantity: $F = 6.815$ (3; 182), $p = 0.000$; satisfaction with problem-solving ability: $F = 10.155$ (3; 183), $p = 0.000$]. In addition, the managers in the Middle-of-the-Roader profile experienced having a significantly lower problem-solving ability compared to those in the "Super" Leader profile. Furthermore, for the outcome measure satisfaction with work quality, the Vague Leader profile differed significantly from both the "Super" Leader and the Middle-of-the-Roader profile [$F = 7.226$ (3; 182), $p = 0.000$]. Again, managers in the Vague Leader profile were less satisfied.

Discussion

We explored the characteristics and distribution of leadership profiles in a healthcare setting and found four robust clusters: one with high self-ratings in all behavior orientations, one with low self-ratings in all behavior orientations and two with mixed profiles. These distinct leadership profiles were also found to differ regarding

Table II.
ANOVA. Effects of leadership profile belonging on work stressors and work stress. Post-hoc tests of differences between profile means

	1–The Vague Leader	2–The "Super" Leader	3–The Middle-of-the-Roader	4–The Gardener	Group effect (df1, df2a)	Post-hoc tests (Bonferroni)
Work stressors, means (SD)						
Job demands	3.57 (0.55)	3.84 (0.67)	3.77 (0.55)	3.59 (0.63)	$F = 2.198\ (3; 180)\ p = 0.09$	–
Decision authority	3.62 (0.43)	4.07 (0.44)	3.87 (0.43)	3.94 (0.45)	$F = 7.588\ (3; 174)\ p = 0.000$***	1 < 2, 3, 4
Skill discretion	4.26 (0.50)	4.78 (0.32)	4.56 (0.37)	4.58 (0.38)	$F = 12.396\ (3; 183)\ p = 0.000$***	1 < 2, 3, 4
Work stress, means (SD)						
Satisfaction work quality	3.75 (0.57)	4.31 (0.58)	4.10 (0.51)	4.02 (0.60)	$F = 7.226\ (3; 182)\ p = 0.000$***	1 < 2, 3
Satisfaction work quantity	3.48 (0.68)	4.03 (0.81)	3.98 (0.75)	4.05 (0.58)	$F = 6.815\ (3; 182)\ p = 0.000$***	1 < 2, 3, 4
Satisfaction problem-solving ability	3.78 (0.51)	4.44 (0.61)	4.10 (0.57)	4.21 (0.61)	$F = 10.155\ (3; 183)\ p = 0.000$***	1 < 2, 3, 4 3 < 2
Exhaustion	2.36 (0.48)	1.97 (0.57)	2.13 (0.46)	2.14 (0.58)	$F = 4.297\ (3; 178)\ p = 0.006$**	1 > 2
Disengagement	1.82 (0.45)	1.50 (0.33)	1.67 (0.36)	1.55 (0.36)	$F = 5.722\ (3; 176)\ p = 0.001$***	1 > 2, 4
Sleep disturbances	2.00 (0.38)	1.90 (0.38)	1.96 (0.47)	1.91 (0.46)	$F = 0.524\ (3; 179)\ p = 0.667$	–

Notes: [a] The number of degrees of freedom vary between outcome measures due to occasional missing values; $^{**}p < 0.01$; $^{***}p < 0.001$

perception of work stressors and stress, with the profile denoted the Vague Leader being distinguished by a pattern of more negative ratings compared to the other clusters.

Our primary finding is that leadership profile emerged as one of the factors that might explain the variation in how individual healthcare managers comprehend and react to the context in which they operate. The differences in perception of work stressors and stress could not be explained by demographical variables, such as age, gender or tenure. Our results support a previously suggested relationship between leadership and burnout symptoms (Zopiatis and Constanti, 2010), and they also indicate an association between leadership profiles and aspects that normally forego work-stress reactions, namely, work stressors. This agrees with research demonstrating that individual characteristics, such as locus of control (Parkes, 1991) and active coping (Rijk *et al.*, 1998), moderate the way that the potential work stressors (job demand and control) in the JDC model are experienced.

Another important finding of our study is a distinct pattern of disparities in which the Vague Leader profile was distinguished by consistently more negative ratings compared to one or more of the other leadership profiles (the "Super" Leader, the Middle-of-the-Roader and the Gardener). In two out of the three work stressors (in the JDC dimension control), the Vague Leader profile differed from the other three leadership profiles. The work stressor job demands showed the same pattern, although in that case the difference between leadership profiles did not reach statistical significance. Thus, it seems that our results indicate a variation between managers with respect to how they perceive constraints in decision-making in healthcare settings. Furthermore, for four out of five work stress variables, the Vague Leader profile differed from at least one of the other leadership profiles, and only one mean difference not involving the Vague Leader profile was identified in the analyses (observed between the "Super" Leader and the Middle-of-the-Roader group regarding the outcome variable satisfaction with problem-solving ability).

No difference in the work stress outcome sleep disturbances was found between the leadership profiles, perhaps because this outcome, compared with the other outcomes, was less extensively related to variations in work stressors and was more extensively affected by factors outside work. Nevertheless, taken together, our results suggest a higher-order structure of the cluster solution, with the Vague Leader profile representing the "stressed" cluster and the other three clusters forming a joint group as the "unstressed".

This concurs with the findings Berntson *et al.* (2012) obtained in a study examining stress and performance under different types of managerial working conditions (grouped into eight clusters) in the public sector in Swedish municipalities. The study showed that one of the most salient differences in stress outcomes and self-rated performance occurred between the cluster with the worst working conditions on the one hand and the rest of the clusters on the other. Berntson and co-workers further reported that the conditions for managers seemed to be gendered, with primarily male-dominated organizations (e.g. technical services) among the clusters with the best working conditions and female-dominated organizations (e.g. healthcare) among the worst. Interestingly, in our study, there were no significant differences in gender between the leadership profiles, indicating that the working conditions in a female-dominated organization appear to have similar effects on both men and women if they are clustered into combinations of leadership behavior dimensions.

Another interesting aspect of our study concerns description of the leadership profiles that are represented in the healthcare sector in Sweden, and how prevalent these profiles are. In our sample of healthcare managers, we discerned four out of the ten leadership profiles previously described by Ekvall and Arvonen (1994). These four profiles (the "Super" Leader, the Gardener, the Middle-of-the-Roader and the Vague Leader) deviate somewhat from the most prominent profiles that Ekvall and Arvonen found represented in healthcare, which those authors called the Transactional Leader (production-oriented, but weak in change orientation), the "Nice Guy" (weak at production and change orientation, strong at employee orientation) and the Super Leader. However, the leadership profiles in Ekvall and Arvonen's study were based on ratings of managers provided by subordinates, whereas in our study the healthcare managers rated themselves. This may account for some of the disparities between the two investigations, because ratings made by different categories of respondents have been found to deviate from each other (Bergman *et al.*, 2014). However, three of our leadership profiles (the "Super" Leader, the Middle-of-the-Roader and the Vague Leader) corresponded well to those previously identified in a study of 52 nurse managers (Sellgren *et al.*, 2006).

In our sample, 19 per cent (the "Super" Leader profile) rated themselves substantially higher in all leadership orientations compared to the average healthcare manager, whereas 27 per cent (the Vague Leader profile) rated themselves substantially lower than the average healthcare manager. We also found that the managers in the Vague Leader profile experienced more work stressors and more stress, indicating an increased risk of stress-related illness and possibly also other adverse outcomes. First of all, this is implied by previous research showing that low ratings of change, production and employee orientation are related to higher levels of subordinate distress (Lornudd *et al.*, 2015), which suggests that the Vague Leader managers in our study may not only have experienced more distress themselves, but they may also have caused distress among their subordinates. Second, managers in the Vague Leader profile may have been less efficient in their work (i.e. their performance may have been inferior). Our data show that the Vague Leader profile reported lower subjective quality of work, and the literature on burnout indicates that decreased sense of personal accomplishment is viewed as a self-evaluation component that emphasizes the personal feeling of suboptimal performance. Thus, the Vague Leader managers' subjective experience of a lower performance level may in itself be relevant as an indicator of a burnout dimension, rather than as an indicator of performance. However, the lower ratings of quality of work can also be interpreted as suggesting a lower (objective) performance level in the Vague Leader profile. This conclusion is partly supported by Ekvall and Arvonen's (1994) research exploring different leadership profiles in relation to effectiveness outcomes, such as proficiency and popularity, considered from the viewpoint of subordinates. Those researchers studied a male-dominated sample consisting of managers from various branches, and they found that subordinates rated the proficiency and popularity of managers as follows (in groups corresponding to the profiles designated in our study): the Vague Leader profile scored 0.5–1 SD below the mean, the "Super" Leader and the Gardener scored 0.5–1 SD above the mean and the Middle-of-the-Roader scored within 0.5 SD of the mean.

Theoretical and practical implications

Few studies have examined healthcare managers' perceptions of work stressors and stress, and thus the present investigation makes a valuable contribution to research in this field by suggesting that leadership profile constitutes an individual factor that explains variation in perceptions of the work stressors and stress. Although it has previously been demonstrated that public sector managers report the worst working conditions in female-dominated organizations (e.g. in healthcare) (Berntson *et al.*, 2012), our results indicate that the working conditions within such organizations affect both men and women in a similar manner when the managers are grouped into clusters of leadership behavior. Hence, we present findings that extend earlier data by suggesting that leadership profiles can be considered as a factor that modifies the way that working conditions are perceived by managers. In doing so, we also make a contribution to the application of the JDC model, which has been criticized for being too general and not taking individual differences into account (Mark and Smith, 2008).

How are our findings related to the everyday practices that are part of managerial responsibility? Previous reports have described the strategic, administrative and personnel objectives as conflicting demands that a healthcare manager has to handle (Dellve *et al.*, 2006; Wikström *et al.*, 2011). Our results indicate an additional potential problem, namely, that a group of managers can perceive themselves as being generally weaker than the average healthcare manager. Furthermore, the combination of scores for leadership behaviors that we found for the Vague Leader profile might require special attention from the perspective of the employer. In line with this, Berntson *et al.* (2012) reported that the respondents in the three healthiest clusters in their investigation all had satisfactory managerial and employee support-structures in common. We can only speculate that the characteristics of the Vague Leader profile create a special need for social and/or instrumental support. This seems feasible, given the beneficial effects of social support that have been established in the literature, (Stansfeld *et al.*, 1997) and considering that healthcare managers spend on average only 1 per cent of their working time alone with their superiors (Arman *et al.*, 2009). Another implication of our results is that for the individual managers assigned to a profile other than the Vague Leader, the emphasis on change-, production- or employee-oriented behaviors was of little significance in relation to how these leaders experienced work stressors or stress. Accordingly, it is plausible that the healthcare managers in the "Super" Leader, Gardener and Middle-of-the-Roader profiles might be equally successful in handling conflicts between the strategic, the administrative and the personnel aspects of managerial responsibility.

Methodological considerations

A study design using cross-sectional data based on self-ratings imposes two potential limitations. First, considering our results, it is not possible to draw conclusions about a causal direction of the relationships found. This is of less significance for the practitioners; by adopting a holistic approach, we were able to identify differences between groups of managers with respect to risk of high levels of stress, information that might be useful regardless of whether the leadership profile causes work stressors/stress or vice versa. However, the theoretical contribution of the present study is restricted to disclosure of an important relationship. The second possible limitation is that self-ratings introduce the risk of common method bias, because the same

individuals provide ratings of both the predictor and the criterion variable. This can lead to measurement errors and produce distorted relationships between the investigated constructs, especially when dealing with attitude measures (Cote and Buckley, 1988). Even so, in the presence of measurement error, the worst distortions of the strength of any true relationship occur when two constructs are either perfectly correlated (the observed correlation is then deflated) or uncorrelated (the observed correlation is then inflated), whereas a true correlation of around 0.30 between two attitude measures is distorted to a lesser extent (Podsakoff *et al.*, 2003). That coefficient level can be seen in Table I for the majority of the correlations between the cluster variables (change, production and employee orientation) and the criterion variables. Furthermore, we used Harman's single-factor test to assess the presence of common method bias. There is a basic assumption that if common method bias is present, an exploratory factor analysis including all study variables will reveal either a single factor with an eigenvalue over 1 or one general factor accounting for more than 50 per cent of the covariance among measures (Podsakoff *et al.*, 2003). Satisfactorily, none of these conditions was fulfilled in our study: there were three factors with eigenvalue over 1, and the largest factor accounted for 33 per cent of the covariance.

It should also be noted that there are no objective means to determine an appropriate number of clusters for a given sample. We initially tested a six-cluster solution but found it statistically motivated to modify the number of clusters to four. Further, the post-hoc tests of the outcome measures for work stressors and stress gave two higher-order clusters, one of which (the Vague Leader) was significantly more negative regarding perception of work stressors and stress compared to the other (comprising the "Super" Leader, Middle-of-the-Roader and Gardener profiles). Thus, it is apparent that selection of the most valid cluster solution should be based on both theoretical and practical considerations. Notably, the characteristics of the four clusters we chose corresponded very well to four of the leadership profiles described by other investigators (Ekvall and Arvonen, 1994). This seems to enhance the construct validity of the four-cluster solution and also indicates that this is indeed a suitable approach, because it enables comparisons of different studies. Moreover, it could be argued that, for practitioners, using four distinct clusters (rather than one distinct and one general cluster) offers the advantage of facilitating tailored interventions for targeted groups.

In conclusion, the present study demonstrated that the way healthcare managers rated their own leadership behavior could be clustered into distinct leadership profiles, and these profiles discriminated the managers' perceptions of work stressors and work stress. The differences in perception of the work stressors and stress could not be explained by demographic variables, such as age, gender or tenure. Therefore, we propose that leadership profile represents an individual factor that is involved in the stress process that includes work stressors and stress reactions. One leadership profile in particular differed from other profiles by exhibiting a pattern with more negative ratings, which indicates that it would be beneficial to focus special attention on healthcare managers in this specific profile.

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