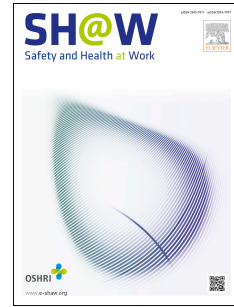


# Journal Pre-proof

The protective effect of fair and supportive leadership against burnout in police employees

Torhild Anita Sørengaard, PhD-candidate, Eva Langvik, PhD



PII: S2093-7911(22)00138-X

DOI: <https://doi.org/10.1016/j.shaw.2022.09.002>

Reference: SHAW 604

To appear in: *Safety and Health at Work*

Received Date: 15 February 2022

Revised Date: 19 August 2022

Accepted Date: 7 September 2022

Please cite this article as: Sørengaard TA, Langvik E, The protective effect of fair and supportive leadership against burnout in police employees, *Safety and Health at Work*, <https://doi.org/10.1016/j.shaw.2022.09.002>.

This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

© 2022 Occupational Safety and Health Research Institute, Published by Elsevier Korea LLC.

# **The protective effect of fair and supportive leadership against burnout in police employees**

Torhild Anita Sørengaard<sup>1\*</sup> (PhD-candidate), & Eva Langvik<sup>1</sup> (PhD)

<sup>1</sup>Department of Psychology, Norwegian University of Science and Technology, Trondheim, Norway.

**Correspondence:**

Torhild Anita Sørengaard  
Department of Psychology  
Norwegian University of Science and Technology  
7491 Trondheim  
Norway  
E-mail: torhild.sorengaard@ntnu.no

**The protective effect of fair and supportive leadership  
against burnout in police employees**

Journal Pre-proof

## Abstract

**Background:** This study investigated the association between fair and supportive leadership and symptoms of burnout and insomnia in police employees. Burnout and insomnia can have negative consequences for health, performance, and safety among employees in the police profession, and risk and protective factors should be thoroughly investigated.

**Methods:** Data were collected in a police district in Norway through questionnaires administered in October 2018 and May 2019. The sample consisted of 206 police employees (52% males) with an average age of 42 years and 16 years of experience in the police occupation.

**Results:** The results showed that a high degree of fair and supportive leadership was associated with lower levels of burnout and insomnia six months later. Fair and supportive leadership explained a greater amount of variance in burnout compared to insomnia. This finding indicates that fair and supportive leadership is a more important buffer factor against burnout, than it is against insomnia. Stress was positively associated with burnout and insomnia, whereas quantitative job demands had no significant association with the concepts.

**Conclusion:** Fair and supportive leadership can help protect employees from adverse consequences of stress and contribute to improved occupational health, whereas a low degree of support and fair treatment from leaders can both represent a stressor by itself and contribute to poorer coping of stressful events at work. The important role of leadership should be incorporated in measures aimed at preventing and reducing burnout and sleep problems.

Key words: Burnout, insomnia, fairness, support, leadership, police

## Introduction

Burnout and insomnia are prevalent in the working population and can affect employee performance, safety and health (1-8). Given that both burnout and insomnia can affect health, performance and the safety of police officers and their surroundings (9, 10), as well as existing as co-morbidities (11-13), it is crucial to keep levels of burnout and insomnia low among employees in the police profession. One way of doing so is to identify shared protective factors in their specific work environment, and to develop health promoting work environments and protective strategies based on this knowledge.

Burnout is often defined as a prolonged response to continuous interpersonal and emotional stressors at work (14), and characterized by high levels of exhaustion and negative attitudes towards work - often resulting in reduced performance and mentally or physically distancing from work (15, 16). Insomnia is a sleep disorder that is increasingly more common in today's society (17), and comprises difficulties with initiating or maintaining sleep with reduced daytime functioning as a consequence (18).

Burnout and insomnia are distinct concepts, but they have several negative consequences in common. Both conditions are associated with reduced health and well-being (19-21), higher risk for sickness absence (22-24), reduced performance and impaired daily functioning (5, 25-28). Finally, burnout and insomnia seem to cause a decline in cognitive functions like attention, memory and concentration (29, 30), making them pervasive conditions that affect all aspects of the individual's life.

Psychosocial work factors, e.g. heavy workload, low social support and low job control and characteristics of the organization are considered the prime predictors of burnout (31, 32). Job resources can work as a buffer against the negative impact of high job demands and reduce the risk of burnout (33, 34). Similar findings are reported in research on police officers, which have found that high demands and low resources are related to increased risk of burnout in this occupation (35-37). Workers often attribute burnout and insufficient sleep to factors at work (38, 39). Numerous organizational factors, e.g. low job satisfaction, social support and control, high emotional and cognitive demands, high job demands, job insecurity and high work intensity, have previously been linked to work-related sleep problems (38, 40-43).

There is growing evidence that fair and supportive leadership can act as a positive buffer factor in the psychosocial work environment (44, 45). According to the job demands-resources model (28, 46, 47), leader support can play a key role by working as a crucial job resource that reduces the negative impact of high job demands on employee well-being (48), and thereby lowers the risk of burnout by reducing or buffering against the overall level of stress (33, 49, 50). Further, previous research has shown that lack of fairness at work can contribute to burnout by causing emotional impairment and exhaustion and a sense of cynicism about the workplace (15). A meta-analytic review on leadership and stress supports that leadership behavior, e.g. hostile supervision, and the relationship between leader and employee, are significant determinants of both stress and burnout in subordinates (51). Fair leadership is, however, positively associated with favorable outcomes related to employee health and well-being, and negatively related to exhaustion (52), which is a central dimension of burnout. Adding to this, employees' level of trust in their leaders can be associated with both burnout and performance (53), further demonstrating the impact of leadership on employee health and well-being.

A study by Jansson and Linton (54) showed that high leader support at baseline decreased the risk for still reporting insomnia one year later, indicating that supportive leadership can have a positive effect on employee sleep. Inadequate social support may, on the other hand, enhance the risk for insomnia (55). Individuals that report less social support, experience longer sleep latency and more fragmented sleep than those who experience good social support (56). Low organizational justice is associated with insomnia, overall sleep problems, sleep onset and maintenance problems and nonrestorative sleep (57, 58), whereas high organizational justice is related to fewer sleep problems and higher performance (59). Perceived stress is associated with poor sleep in police employees (60, 61), and a major contributor to insomnia in both the general and working population (62, 63). Fair and supportive leadership may protect employees from work-related sleep problems through reducing the stress levels associated with injustice, as well as enhancing individual coping of stress by offering social support. This is in accordance with the buffering hypothesis of social support on stress, which states that good interpersonal relationships buffer against stressful experiences (64).

### ***The aim of the present study***

Previous research has demonstrated that insomnia and burnout often are influenced by the same job demands and resources in the work environment. However, earlier studies have to a large degree focused on negative factors that increase the risk for insomnia and burnout, and not on positive organizational factors that can protect police employees from developing these conditions. Fair and supportive leadership may act as a protective buffer under challenging working conditions in the police profession, including high job demands and prolonged work stress. Poor leadership and low perceived support from leaders can contribute to an increased risk of reduced mental health among police employees, and pose a significant threat against employee well-being (65). A recent study on French police officers found that interpersonal relations between leaders and employees influence levels of organizational stress and exhaustion, and that leadership can have complex associations with employee well-being in the police profession (66).

Expanding the knowledge regarding the impact of fair and supportive leadership on health challenges in the police profession can contribute to improved design and implementation of targeted health promoting measures, as well as an increased focus on the importance of good leadership in occupational health. In this study, we investigate the association between fair and supportive leadership and future symptoms of burnout and insomnia in Norwegian police employees. The prospective design of the study enables a more thorough investigation of the possible protective effect of fair and supportive leadership on health outcomes in the police profession in a Nordic country. It also enables development of targeted organizational measures that can prevent the development or worsening of symptoms of burnout and insomnia in this critical occupation. Based on the literature presented above, we propose the following hypotheses:

1. Fair and supportive leadership will be negatively related to future symptoms of burnout and insomnia.
2. Stress will be positively related to future symptoms of burnout and insomnia.
3. High job demands will be positively related to future symptoms of insomnia and burnout.

## Methods

### *Design*

The present study is based on self-reported data from the “Sleep, activity, psychosocial work environment and police health” (SAPPH) study, which includes police and civilian employees in a police district in Norway. Data were collected through an online questionnaire distributed by e-mail to employees in the police district. The baseline data collection (Time 1) was conducted in October 2018 and the follow-up data collection (Time 2) took place in May 2019. The project was approved by the Regional Committee for Medical Research Ethics (REK). The participants provided informed electronic consent and the study was conducted according to The Helsinki Declaration and European general data protection regulations (67-69).

### *Procedure*

The participants were recruited by e-mail sent to all employees in a police district in Norway. The workers employed in the police district were invited to participate in the SAPPH study and received information about the study and a link to the baseline questionnaire in October 2018 (Time 1). At Time 2, the follow-up questionnaire was sent to the participants who registered their e-mail address at Time 1. Up to two reminders were given to those who did not answer the two surveys during the four-week period that they were open. The response rate was 40% (N = 410) at Time 1 and 50% (N = 206) at Time 2.

### *Sample*

The total sample at Time 2 consisted of 100 (48%) females and 106 (52%) males. The mean age was 42.48 years ( $SD = 10.71$ ). The majority was employed in full time positions (99%) and worked 37.90 hours ( $SD = 5.79$ ) per week. A total of 63 (31%) reported that they had leadership responsibilities, whereas 142 (61%) were ordinary employees. On average, the participants had been employed in the police profession for 16.32 years ( $SD = 11.47$ ) and in their current position for 4.78 years ( $SD = 5.77$ ). Their primary assignments were operational tasks (40%), investigation (35%), administrative work (27%) and tasks related to prosecution and law (12%). A total of 95 (46%) worked daytime only, 15



(7%) worked both evening and daytime and 96 (47%) worked rotating shifts (day, evening and nighttime).

### **Measures**

The questionnaires included items measuring demographic variables, insomnia, burnout, job demands, stress and leadership.

**Burnout.** Burnout was measured with the 23-item version of the Burnout Assessment Tool (BAT) (70). This instrument assesses burnout based on the four underlying dimensions: exhaustion (8 items), mental distance (5 items), emotional impairment (5 items) and cognitive impairment (5 items), also referred to as core symptoms of burnout (70). Examples of items are “*After a day at work, I find it harder to recover my energy*” (exhaustion), “*I feel indifferent about my job*” (mental distance), “*At work, I have trouble staying focused*” (cognitive impairment) and “*At work, I feel unable to control my emotions*” (emotional impairment). The answers are given on a 5-point Likert frequency scale ranging from 1 (never) to 5 (always), which are then used to calculate mean scores. The instrument can be used to compute a single total score for burnout as a whole, as well as four separate scores for each dimension. BAT exhibits good convergent, discriminant and divergent validity in two large and representative Dutch and Flemish samples (70, 71). In the present study, we used the single total score for burnout in our analyses. The Norwegian version of BAT used in the present study has undergone thorough translation and back-translation, which is the most recommended technique for instrument translation in cross-cultural research (72). The Norwegian version of the instrument has not yet been validated, but the underlying factor structure is identical to the original version of the instrument (70) and the total burnout scale and sub-dimensions exhibits good to excellent scale reliability. In the present study, the internal consistency for burnout was high ( $\alpha = .92$ ).

**Insomnia.** The Bergen Insomnia Scale (BIS) (73) contains six items that assess symptoms of insomnia based on the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders-IV (74). The participants were asked to indicate how many days a week (0–7) during the previous month they had struggled with symptoms of insomnia. The first three items measure sleep onset, sleep maintenance, and early morning wakening insomnia, respectively. The last

three items refer to not feeling adequately rested, experiencing daytime impairment due to poor sleep, and being dissatisfied with their sleep quality. In the present study, we used the continuous version of the scale as a measure of insomnia. The scale has shown good convergent and discriminative validity (73). The internal consistency for insomnia was high ( $\alpha = .84$ ).

**Job demands and fair and supportive leadership.** The General Nordic Questionnaire for Psychological and Social Factors at Work (QPS-Nordic) (75) was used to measure psychosocial factors at work, i.e. quantitative job demands, fair leadership and supervisor support. The questionnaire and its respective scales have shown satisfying reliability and been repeatedly validated in multiple samples (75-77). Examples of questions are “*Do you have too much to do at work?*” (quantitative demands), “*If needed, can you get support and help with your work from your immediate supervisor?*” (support from superior) and “*Does your immediate superior distribute the work fairly and impartially?*” (fair leadership). The answers are given on a five-point Likert-type scale ranging from 1 “very seldom or never” to 5 “very often or always”. The sub-scale mean scores are then calculated through their corresponding items. In the present study, fair leadership and supervisor support were highly correlated ( $r = .69$ ). After conducting an exploratory factor analysis resulting in a single underlying factor, the variables were combined into a single scale labelled “fair and supportive leadership”. The new scale comprised of six items that explained 64% of the variance with factor loadings ranging from .71 to .88. The internal consistency was acceptable for quantitative job demands ( $\alpha = .71$ ), and high for fair and supportive leadership ( $\alpha = .89$ ).

**Stress.** Stress was measured with the Norwegian version of the Perceived Stress Scale (PSS) (78). The PSS is one of the most widely used psychological instruments for measuring the perception of stress. The instrument measures the degree to which current situations in the individual’s life are considered stressful. The PSS consists of both negatively and positively stated items. The participants were asked to indicate how often during the previous month they “*had been able to control irritations*”, “*felt nervous and stressed*”, “*been upset due to unexpected events*” and “*felt that things were going their way*”. The answers were given on a five-point rating scale ranging from “0 = never” to “4 = very often”. After reversing the scoring of the positively stated items, the total score was calculated by summing the answers given to each item. The scale ranges from 0 to 40, and higher

scores indicate high levels of perceived stress. The internal consistency for the stress scale in the present study was high ( $\alpha = .89$ ).

### *Statistical analyses*

The data were analyzed with the Statistical Package for Social Sciences (SPSS) for Windows (version 28.0). An exploratory factor analysis examined the underlying factor structure of fair and supportive leadership before applying the variable. Pearson's correlation analysis was applied to examine the associations between all variables included in the study measured at Time 1 and Time 2. Two separate hierarchical multiple regression analyses were performed with insomnia and burnout measured at Time 2 as dependent variables. Model 1 included age and gender. Model 2 included age, gender, quantitative job demands and stress, whereas Model 3 also included fair and supportive leadership.

### **Results**

Descriptive statistics and correlations for all included variables measured at Time 1 (T1) and Time 2 (T2) are shown in Table 1. Job demands measured at T1 had positive associations to stress and future symptoms of burnout and insomnia. Job demands and stress were negatively correlated to fair and supportive leadership. Fair and supportive leadership measured at baseline was negatively associated with stress, as well as future symptoms of burnout and insomnia. Gender (i.e. being female) was positively associated with stress, burnout and insomnia, and negatively associated with fair and supportive leadership. Except for a negative association to stress, age had no significant relationship to other variables.

[Insert Table 1 here]

Table 2 shows the results from the multiple regression analyses on predictors of insomnia and burnout measured at six-months follow-up (T2). Stress and gender had positive associations to future burnout and insomnia, but only the former remained significant in the final model (Model 3). Fair and supportive leadership measured at baseline was negatively associated with both burnout and insomnia

at T2. Model 2 explained 37% of the variance in burnout ( $F(4, 173) = 27.18, p < .001$ ) and 16% ( $F(4, 180) = 9.48, p < .001$ ) of the variance in insomnia. After adding fair and supportive leadership to the analyses, the final model (Model 3) explained 42% of the variance in burnout ( $F(5, 172) = 26.94, p < .001$ ) and 17% ( $F(5, 179) = 8.86, p < .001$ ) of the variance in insomnia. Thus, fair and supportive leadership explained 5% of the variance in burnout and 1% of the variance in insomnia measured six months later.

[Insert Table 2 here]

### Discussion

Our results showed that the two scales “*support from supervisor*” and “*fair leadership*”, were highly correlated, and an exploratory factor analysis, as well as scale analysis, provided arguments for combining them into a single factor labelled “*fair and supportive leadership*”. Fair and supportive leadership measured at baseline was negatively associated with burnout and insomnia six months later. This finding is in support of Hypothesis 1. Stress had a strong positive association with both burnout and insomnia, whereas job demands had no significant association with the concepts. Hence, Hypothesis 2 was supported, whereas Hypothesis 3 was not. Fair and supportive leadership explained a greater amount of variance in burnout compared to insomnia. This finding indicates that fair and supportive leadership can be a more important buffer factor against burnout, than it is against insomnia. It should be noted that the effect sizes and explained variance of fair and supportive leadership on burnout and insomnia can be considered small (79), and that other work-related factors (e.g. autonomy, control, coping strategies and leisure) may have a greater protective effect. However, the magnitude of the effects found in the present study is not unusual in organizational research, and the effect sizes are similar to other studies on associations between leadership, burnout and insomnia (80-83). Overall, our results show that fair and supportive leadership can have a positive impact on occupational health among police employees. Specifically, fair and supportive leadership may lower the risk for burnout and insomnia, making it an important factor to consider when designing and implementing measures that promote occupational health in the police occupation.

Fair and supportive leadership was negatively associated with burnout and insomnia measured six months later. Hence, employees who experience fair treatment and good support from their leaders can have a lower risk of developing burnout and insomnia. Social support, both from leaders and co-workers, has emerged as one of the most prominent positive and protective aspects of the psychosocial work environment (84). Employees with greater levels of supervisor support experience less negative and more positive outcomes at work in general compared to employees that report less perceived supervisor support (85). The protective effect of fair and supportive leadership may be multidimensional in nature and contribute to a lower risk of burnout and work-related insomnia through multiple pathways. In addition to the direct association between leadership and the overall level of job demands and job resources in the workplace (48), fair and supportive leadership can also act as a moderating job resource. For example, fair and supportive leadership can weaken the association between stress, burnout, and insomnia by reducing the negative impact, as well as strengthening coping mechanisms for high job demands. This is in accordance with the job demands-resources model, which proposes that job resources (e.g. fair and supportive leadership) mitigate the negative effects of high job demands, and reduce the prevalence and/or consequences of work-related stress (86).

Previous studies have found that leader support is associated with a faster decline in psychological distress, especially after traumatic events (87). This can be particularly important in the police occupation, where potentially traumatic incidents (e.g. life threatening situations and being present at crime scenes) occur more frequently than in the average working population. Experiencing strong support from leaders can contribute to improved coping mechanisms among police employees, which in turn can reduce stress duration and intensity. Unfairness in the workplace can, in addition to being stressful in itself, harm the employees' ability to recover from work demands (88). The results indicate that stress has a more crucial role in the development of burnout compared to insomnia. However, stress is a key triggering cause of both burnout and insomnia (62, 63, 89). Hence, effective prevention, coping and reduction of stress will often have positive effects on the risk for burnout and insomnia. Fair and supportive leadership can aid stress-management and improve the individual's

ability to effectively cope with stress, as well as reduce the number of stressors in the work environment as unfair treatment can create frustration and other negative emotional states.

Our findings indicate that making leaders more aware of the impact their leadership style can have on employee health is crucial not only in the police profession, but also in other occupations and organizations. This study and its findings have highlighted the crucial role soft skills play in the workplace. Soft skills are transferable intrapersonal and interpersonal skills that are not related to one specific job, but skills that help employees thrive in their work environment (90-92). Examples of such skills are social interaction, cooperation, leadership, communication, teamwork, resourcefulness, adaptability, and stress and time management. Soft skills are a vital contribution to ongoing employee health and general well-being, and by extension, have positive impacts on productivity and the maintenance of a sustainable occupational health and safety culture. Organizational strategies like leadership training, increasing collegial support and stimulating teamwork have shown promising results in previous studies (93). Improving the level and quality of leader support and fairness at the workplace may have a protective effect and investing in management training can be a prosperous avenue for interventions aiming at reducing the risk of burnout and insomnia. A completely stress-free work environment is not feasible, but by strengthening job resources like fair and supportive leadership, the individual employee can become better equipped to cope with daily demands and stress. However, the amount of stress experienced by the leader significantly influences leadership behavior, which in turn impacts the employees' level of stress (51). Lastly, a high degree of fair and supportive leadership can have positive ripple effects throughout the organization and help establish healthy norms for organizational culture and increased productivity. Overall, a crucial key to health promoting workplaces can be leaders who acknowledge their impact on employee health and well-being, and that the organization enables leaders to achieve this objective by providing necessary resources. In addition, measures for establishing healthy norms in the workplace should be included as key performance indicators of leaders.

### ***Strengths and limitations***

The sample consisted of police employees in a single police district in Norway, and a selection bias was most likely present (94). Due to the use of self-reporting questionnaires, the results and conclusions of this study might have been influenced by common method and self-report bias (95, 96). The psychometric qualities of scales “*fair leadership*” and “*leadership support*” used as the new scale “*fair and supportive leadership*” might be sample-specific and should be evaluated before being used in the same manner in future studies. Further, the Norwegian version of the BAT (70) has not yet been validated. However, the Norwegian version of the BAT exhibits identical factor structure and similar reliability coefficients as the original instrument, indicating that the same underlying constructs are being measured. The present study follows a prospective design with repeated measures, which strengthens the value of the findings. Although the response rate at Time 1 was 40%, previous studies underline that this magnitude of response rate is common and acceptable in occupational research (98). Moreover, the average age and gender distribution reflects characteristics of the Norwegian police force (97). The sample in the present study can therefore be regarded as representative for the targeted population. Future studies are encouraged to investigate moderating and mediating associations, which can broaden the knowledge of underlying mechanisms that can explain the relationship between leadership and health outcomes in the police profession. Lastly, police employees on sick leave due to serious burnout, insomnia or other illnesses did most likely not participate in this study. Hence, the results from this study can be more relevant for high functioning police employees with an increased risk for burnout or insomnia due to their work, rather than individuals already suffering from these conditions.

### Conclusion

In this prospective study, a large degree of support and fair treatment from leaders predicted lower levels of employee burnout and insomnia at the follow-up investigation six months later. As expected, stress was the strongest predictor of future burnout and insomnia. Quantitative job demands had, however, no significant association with the concepts. Although limitations apply, the results indicate that fair and supportive leadership can contribute to lower incidence of burnout and insomnia among police employees. Fair and supportive leadership may reduce the overall stress levels, as well as better enable the employees to manage daily stressors more effectively. Lastly, this study has highlighted the

importance of cultivating soft skills in the workplace. Improving the level and quality of leader support and fairness at the workplace through education and leadership training may have positive ripple effects throughout the organization, including heightening performance and stimulating good occupational health.

### **Conflict of interest**

The authors hereby declare that the submitted manuscript was not carried out in the presence of any personal, professional or financial relationships that could potentially be construed as a conflict of interest.

### **References**

1. Norlund S, Reuterwall C, Höög J, Lindahl B, Janlert U, Birgander LS. Burnout, working conditions and gender-results from the northern Sweden MONICA Study. *BMC public health*. 2010;10(1):326.
2. Kronholm E, Partonen T, Härmä M, Hublin C, Lallukka T, Peltonen M, et al. Prevalence of insomnia-related symptoms continues to increase in the Finnish working-age population. *Journal of Sleep Research*. 2016;25(4):454-7.
3. Gómez-Urquiza JL, Emilia I, Albendín-García L, Vargas-Pecino C, Ortega-Campos EM, Cañadas-De la Fuente GA. Prevalence of burnout syndrome in emergency nurses: A meta-analysis. *Critical care nurse*. 2017;37(5):e1-e9.
4. Shanafelt TD, Hasan O, Dyrbye LN, Sinsky C, Satele D, Sloan J, et al., editors. Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. *Mayo Clinic Proceedings*; 2015: Elsevier.
5. Kessler RC, Berglund PA, Coulouvrat C, Hajak G, Roth T, Shahly V, et al. Insomnia and the performance of US workers: results from the America insomnia survey. *Sleep*. 2011;34(9):1161-71.
6. Yong LC, Li J, Calvert GM. Sleep-related problems in the US working population: prevalence and association with shiftwork status. *Occupational & Environmental Medicine*. 2016;74(2):93-104.



7. Weber A, Jaekel-Reinhard A. Burnout syndrome: a disease of modern societies? *Occupational medicine*. 2000;50(7):512-7.
8. Jun J, Ojemeni MM, Kalamani R, Tong J, Crecelius ML. Relationship between nurse burnout, patient and organizational outcomes: systematic review. *International journal of nursing studies*. 2021;119:103933.
9. Rajaratnam SM, Barger LK, Lockley SW, Shea SA, Wang W, Landrigan CP, et al. Sleep disorders, health, and safety in police officers. *Jama*. 2011;306(23):2567-78.
10. Kop N, Euwema M, Schaufeli W. Burnout, job stress and violent behaviour among Dutch police officers. *Work & Stress*. 1999;13(4):326-40.
11. Armon G, Shirom A, Shapira I, Melamed S. On the nature of burnout–insomnia relationships: A prospective study of employed adults. *Journal of Psychosomatic Research*. 2008;65(1):5-12.
12. Jansson-Fröjmark M, Lindblom K. Is there a bidirectional link between insomnia and burnout? A prospective study in the Swedish workforce. *International journal of behavioral medicine*. 2010;17(4):306-13.
13. Ekstedt M, Söderström M, Akerstedt T, Nilsson J, Søndergaard H-P, Aleksander P. Disturbed sleep and fatigue in occupational burnout. *Scandinavian journal of work, environment & health*. 2006;32(2):121-31.
14. Maslach C, Leiter M. *Burnout. Stress: Concepts, Cognition, Emotion, and Behavior*: Elsevier; 2016. p. 351-7.
15. Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annual review of psychology*. 2001;52(1):397-422.
16. Edú-Valsania S, Laguía A, Moriano JA. Burnout: A review of theory and measurement. *International Journal of Environmental Research and Public Health*. 2022;19(3):1780.
17. Pallesen S, Sivertsen B, Nordhus IH, Bjorvatn B. A 10-year trend of insomnia prevalence in the adult Norwegian population. *Sleep Medicine*. 2014;15(2):173-9.
18. Association AP. *Diagnostic and statistical manual of mental disorders (DSM-5®)*: American Psychiatric Pub; 2013.
19. Sivertsen B, Lallukka T, Salo P, Pallesen S, Hysing M, Krokstad S, et al. Insomnia as a risk factor for ill health: results from the large population-based prospective HUNT Study in Norway. *Journal of Sleep Research*. 2014;23(2):124-32.
20. Peterson U, Demerouti E, Bergström G, Samuelsson M, Åsberg M, Nygren Å. Burnout and physical and mental health among Swedish healthcare workers. *Journal of advanced nursing*. 2008;62(1):84-95.
21. Bayes A, Tavella G, Parker G. The biology of burnout: Causes and consequences. *The World Journal of Biological Psychiatry*. 2021;22(9):686-98.
22. Borritz M, Rugulies R, Christensen K, Villadsen E, Kristensen T. Burnout as a predictor of self-reported sickness absence among human service workers: prospective findings from three year follow up of the PUMA study. *Occupational and environmental medicine*. 2006;63(2):98-106.
23. Sivertsen B, Björnsdóttir E, Øverland S, Bjorvatn B, Salo P. The joint contribution of insomnia and obstructive sleep apnoea on sickness absence. *Journal of Sleep Research*. 2013;22(2):223-30.
24. Hallsten L, Voss M, Stark S, Josephson M. Job burnout and job wornout as risk factors for long-term sickness absence. *Work*. 2011;38(2):181-92.
25. Swider BW, Zimmerman RD. Born to burnout: A meta-analytic path model of personality, job burnout, and work outcomes. *Journal of Vocational Behavior*. 2010;76(3):487-506.

26. Bakker AB, Costa PL. Chronic job burnout and daily functioning: A theoretical analysis. *Burnout Research*. 2014;1(3):112-9.
27. Ustinov Y, Lichstein KL, Vander Wal GS, Taylor DJ, Riedel BW, Bush AJ. Association between report of insomnia and daytime functioning. *Sleep Medicine*. 2010;11(1):65-8.
28. Schaufeli WB. Applying the job demands-resources model. *Organizational Dynamics*. 2017;2(46):120-32.
29. Fortier-Brochu É, Beaulieu-Bonneau S, Ivers H, Morin CM. Insomnia and daytime cognitive performance: a meta-analysis. *Sleep medicine reviews*. 2012;16(1):83-94.
30. Deligkaris P, Panagopoulou E, Montgomery AJ, Masoura E. Job burnout and cognitive functioning: A systematic review. *Work & stress*. 2014;28(2):107-23.
31. Leiter MP, Bakker AB, Maslach C. *Burnout at work: A psychological perspective*: Psychology Press; 2014.
32. Maslach C. *Burnout: A multidimensional perspective*. *Professional burnout*: Routledge; 2017. p. 19-32.
33. Bakker AB, Demerouti E, Euwema MC. Job resources buffer the impact of job demands on burnout. *Journal of occupational health psychology*. 2005;10(2):170.
34. Bakker AB, Demerouti E. Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*. 2017;22(3):273.
35. Hu Q, Schaufeli WB, Taris TW. How are changes in exposure to job demands and job resources related to burnout and engagement? A longitudinal study among Chinese nurses and police officers. *Stress and Health*. 2017;33(5):631-44.
36. Martinussen M, Richardsen A, Burke RJ. Job demands, job resources, and burnout among police officers. *Journal of criminal justice*. 2007;35(3):239-49.
37. Burke RJ, Mikkelsen A. Burnout among Norwegian police officers: Potential antecedents and consequences. *International Journal of stress management*. 2006;13(1):64.
38. Linton SJ, Kecklund G, Franklin KA, Leissner LC, Sivertsen B, Lindberg E, et al. The effect of the work environment on future sleep disturbances: A systematic review. *Sleep Medicine Reviews*. 2015;23:10-9.
39. Aronsson G, Theorell T, Grape T, Hammarström A, Hogstedt C, Marteinsdottir I, et al. A systematic review including meta-analysis of work environment and burnout symptoms. *BMC public health*. 2017;17(1):264.
40. Park JB, Nakata A, Swanson NG, Chun H. Organizational factors associated with work-related sleep problems in a nationally representative sample of Korean workers. *International archives of occupational environmental health*. 2013;86(2):211-2241.
- Nordin M, Knutsson A, Sundbom E, Stegmayr BJJ<sub>o</sub>OHP. Psychosocial factors, gender, and sleep. 2005;10(1):54.
42. Åkerstedt T, Garefelt J, Richter A, Westerlund H, Magnusson Hanson LL, Sverke M, et al. Work and sleep-A prospective study of psychosocial work factors, physical work factors, and work scheduling. *Sleep*. 2015;38(7):1129-36.
43. Van Laethem M, Beckers DG, Kompier MA, Dijksterhuis A, Geurts SA. Psychosocial work characteristics and sleep quality: A systematic review of longitudinal and intervention research. *Scandinavian Journal of Work, Environment & Health*. 2013;39(6):535-49.
44. Specchia ML, Cozzolino MR, Carini E, Di Pilla A, Galletti C, Ricciardi W, et al. Leadership styles and nurses' job satisfaction. Results of a systematic review. *International journal of environmental research and public health*. 2021;18(4):1552.
45. Zou X, Liu S, Li J, Chen W, Ye J, Yang Y, et al. Factors associated with healthcare workers' insomnia symptoms and fatigue in the fight against COVID-19, and the role of organizational support. *Frontiers in Psychiatry*. 2021;12:356.

46. Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB. The job demands-resources model of burnout. *Journal of Applied psychology*. 2001;86(3):499-512.
47. Bakker AB, Demerouti E. The job demands-resources model: State of the art. *Journal of managerial psychology*. 2007;22(3):309-28.
48. Tummers LG, Bakker AB. Leadership and job demands-resources theory: A systematic review. *Frontiers in psychology*. 2021;12.
49. Gibson JA, Grey IM, Hastings RP. Supervisor support as a predictor of burnout and therapeutic self-efficacy in therapists working in ABA schools. *Journal of autism and developmental disorders*. 2009;39(7):1024.
50. Charoensukmongkol P, Moqbel M, Gutierrez-Wirsching S. The role of co-worker and supervisor support on job burnout and job satisfaction. *Journal of Advances in Management Research*. 2016;13(1):4-22.
51. Harms P, Credé M, Tynan M, Leon M, Jeung W. Leadership and stress: A meta-analytic review. *The Leadership Quarterly*. 2017;28(1):178-94.
52. Perko K, Kinnunen U, Tolvanen A, Feldt T. Back to basics: The relative importance of transformational and fair leadership for employee work engagement and exhaustion. 2016.
53. Mo S, Shi J. Linking ethical leadership to employee burnout, workplace deviance and performance: Testing the mediating roles of trust in leader and surface acting. *Journal of Business Ethics*. 2017;144(2):293-303.
54. Jansson M, Linton SJ. Psychosocial work stressors in the development and maintenance of insomnia: A prospective study. *Journal of Occupational Health Psychology*. 2006;11(3):241-8.
55. Kim H-C, Kim B-K, Min K-B, Min J-Y, Hwang S-H, Park S-G. Association between job stress and insomnia in Korean workers. *Journal of occupational health*. 2011;1103110175-.
56. Troxel WM, Buysse DJ, Monk TH, Begley A, Hall M. Does social support differentially affect sleep in older adults with versus without insomnia? *Journal of Psychosomatic research*. 2010;69(5):459-66.
57. Elovainio M, Ferrie JE, Gimeno D, De Vogli R, Shipley M, Brunner EJ, et al. Organizational justice and sleeping problems: the Whitehall II study. *Psychosomatic Medicine*. 2009;71(3):334-40.
58. Greenberg J. Losing sleep over organizational injustice: Attenuating insomniac reactions to underpayment inequity with supervisory training in interactional justice. *Journal of applied psychology*. 2006;91(1):58.
59. Hietapakka L, Elovainio M, Heponiemi T, Pesseau J, Eccles M, Aalto A-M, et al. Do nurses who work in a fair organization sleep and perform better and why? Testing potential psychosocial mediators of organizational justice. *Journal of occupational health psychology*. 2013;18(4):481.
60. Gerber M, Hartmann T, Brand S, Holsboer-Trachsler E, Pühse U. The relationship between shift work, perceived stress, sleep and health in Swiss police officers. *Journal of Criminal Justice*. 2010;38(6):1167-75.
61. Charles LE, Slaven JE, Mnatsakanova A, Ma C, Violanti JM, Fekedulegn D, et al. Association of perceived stress with sleep duration and sleep quality in police officers. *International journal of emergency mental health*. 2011;13(4):229.
62. Yang B, Wang Y, Cui F, Huang T, Sheng P, Shi T, et al. Association between insomnia and job stress: A meta-analysis. *Sleep and Breathing*. 2018;22(4):1221-31.
63. Kalmbach DA, Anderson JR, Drake CL. The impact of stress on sleep: Pathogenic sleep reactivity as a vulnerability to insomnia and circadian disorders. *Journal of Sleep Research*. 2018;27(6):e12710.

64. Cohen S, McKay G. Social support, stress and the buffering hypothesis: A theoretical analysis. *Handbook of psychology and health (Volume IV)*: Routledge; 2020. p. 253-67.
65. Farr-Wharton B, Xerri M, Saccon C, Brunetto Y. Leadership matters to the police: Managing emotional labour through authentic leadership. *Public Money & Management*. 2021;1-9.
66. Molines M, El Akremi A, Storme M, Celik P. Beyond the tipping point: the curvilinear relationships of transformational leadership, leader–member exchange, and emotional exhaustion in the French police. *Public Management Review*. 2022;24(1):80-105.
67. Voigt P, Von dem Bussche A. *The eu general data protection regulation (gdpr). A Practical Guide, 1st Ed*, Cham: Springer International Publishing. 2017.
68. World Medical Association. World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*. 2013;310(20):2191-4.
69. World Medical Association. World Medical Association Declaration of Helsinki. Ethical principles for medical research involving human subjects. *Bulletin of the World Health Organization*. 2001;79(4):373.
70. Schaufeli W, De Witte H, Desart S. *Manual Burnout Assessment Tool (BAT)*. KU Leuven, Belgium; 2020.
71. Schaufeli WB, Desart S, De Witte H. Burnout Assessment Tool (BAT)—development, validity, and reliability. *International journal of environmental research and public health*. 2020;17(24):9495.
72. Maneesriwongul W, Dixon JK. Instrument translation process: a methods review. *Journal of advanced nursing*. 2004;48(2):175-86.
73. Pallesen S, Bjorvatn B, Nordhus IH, Sivertsen B, Hjørnevik M, Morin CM. A new scale for measuring insomnia: the Bergen Insomnia Scale. *Perceptual and Motor Skills*. 2008;107(3):691-706.
74. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders, (DSM-4®)*. 4th ed. Washington, DC: American Psychiatric Association 1994.
75. Lindstrøm K, Elo A-L, Skogstad A, Dallner M, Gamberale F, Hottinen V, et al. User's guide for the QPSNordic: General Nordic Questionnaire for psychological and social factors at work: Nordic Council of Ministers; 2000.
76. Elo A-L, Dallner M, Gamberale F, Hottinen V, Knardahl S, Lindström K, et al. Validation of the Nordic Questionnaire for Psychological and Social Factors at Work—QPSNordic. In: Vartiainen M, Avallone F, Anderson N, editors. *Innovative theories, tools, and practices in work and organizational psychology* Hogrefe & Huber Publishers; 2000. p. 47-57.
77. Wännström I, Peterson U, Åsberg M, Nygren Å, Gustavsson JP. Psychometric properties of scales in the General Nordic Questionnaire for Psychological and Social Factors at Work (QPSNordic): Confirmatory factor analysis and prediction of certified long-term sickness absence. *Scandinavian Journal of Psychology*. 2009;50(3):231-44.
78. Cohen S. *Perceived stress scale*. Mind Garden Inc 1994.
79. Funder DC, Ozer DJ. Evaluating effect size in psychological research: Sense and nonsense. *Advances in Methods and Practices in Psychological Science*. 2019;2(2):156-68.
80. Kanste O, Kyngäs H, Nikkilä J. The relationship between multidimensional leadership and burnout among nursing staff. *Journal of nursing management*. 2007;15(7):731-9.
81. Hildenbrand K, Sacramento CA, Binnewies C. Transformational leadership and burnout: The role of thriving and followers' openness to experience. *Journal of occupational health psychology*. 2018;23(1):31.

82. Klingaman EA, Brownlow JA, Boland EM, Mosti C, Gehrman PR. Prevalence, predictors and correlates of insomnia in US army soldiers. *Journal of sleep research*. 2018;27(3):e12612.
83. Sianoja M, Crain TL, Hammer LB, Bodner T, Brockwood KJ, LoPresti M, et al. The relationship between leadership support and employee sleep. *Journal of occupational health psychology*. 2020;25(3):187.
84. Bakker AB, Demerouti E. Job demands–resources theory. In: Chen PY, Cooper CL, editors. *Wellbeing: A complete reference guide*: Wiley Blackwell; 2014. p. 37-64.
85. Hall DS. The relationship between supervisor support and registered nurse outcomes in nursing care units. *Nursing Administration Quarterly*. 2007;31(1):68-80.
86. Schaufeli WB, Taris TW. A critical review of the job demands-resources model: Implications for improving work and health. *Bridging occupational, organizational and public health*: Springer; 2014. p. 43-68.
87. Birkeland MS, Nielsen MB, Hansen MB, Knardahl S, Heir T. Like a bridge over troubled water? A longitudinal study of general social support, colleague support, and leader support as recovery factors after a traumatic event. *European journal of psychotraumatology*. 2017;8(1):1302692.
88. Michailidis E, Cropley M. Exploring predictors and consequences of embitterment in the workplace. *Ergonomics*. 2017;60(9):1197-206.
89. Maslach C, Schaufeli WB. Historical and conceptual development of burnout. *Professional burnout*: Routledge; 2017. p. 1-16.
90. Laker DR, Powell JL. The differences between hard and soft skills and their relative impact on training transfer. *Human resource development quarterly*. 2011;22(1):111-22.
91. Dixon J, Belnap C, Albrecht C, Lee K. The importance of soft skills. *Corporate finance review*. 2010;14(6):35.
92. Balcar J. Is it better to invest in hard or soft skills? *The Economic and Labour Relations Review*. 2016;27(4):453-70.
93. Olson K, Marchalik D, Farley H, Dean SM, Lawrence EC, Hamidi MS, et al. Organizational strategies to reduce physician burnout and improve professional fulfillment. *Current problems in pediatric and adolescent health care*. 2019;49(12):100664.
94. Nohr EA, Liew Z. How to investigate and adjust for selection bias in cohort studies. *Acta obstetrica et gynecologica Scandinavica*. 2018;97(4):407-16.
95. Podsakoff PM, MacKenzie SB, Lee JY, Podsakoff NP. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*. 2003;88(5):879-903.
96. Donaldson SI, Grant-Vallone EJ. Understanding self-report bias in organizational behavior research. *Journal of Business and Psychology*. 2002;17(2):245-60.
97. Directorate NNP. Personalrapport for politiet 2013-2017. Personell report for the Norwegian police force 2013-2017. Norway: Oslo: National Police Directorate; 2017.
98. Baruch Y, Holtom BC. Survey response rate levels and trends in organizational research. *Human Relations*. 2008;61:1139-60.

Table 1. Descriptive statistics and correlations for all variables (N = 206)

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
1. Gender <sup>a</sup>	-						
2. Age	-.09	-					
3. Job demands T1	.09	-.09	-				
4. Stress T1	.25**	-.19**	.29**	-			
5. Fair and supportive leadership T1	-.19**	-.10	-.09	-.27**	-		
6. Burnout T2	.21**	-.13	.16*	.62**	-.38**	-	
7. Insomnia T2	.17*	-.04	.17*	.40**	-.25**	.45**	-
Mean (SD)	.49 (.50)	42.48 (10.71)	3.09 (.68)	12.53 (5.91)	3.98 (.82)	2.04 (.47)	10.63 (8.51)

\* $p < .05$  \*\* $p < .01$  T1 = Time 1, T2 = Time 2. <sup>a</sup> 0 = male, 1 = female.



Table 2. Hierarchical regression analysis on baseline variables associated with burnout and insomnia at six-months follow-up

		Outcome									
		Burnout T2 (N = 177)					Insomnia T2 (N = 184)				
		$\beta$	<i>SE B</i>	p	95%CI B	R <sup>2</sup>	$\beta$	<i>SE B</i>	p	95%CI B	R <sup>2</sup>
Model 1					.05						.04
	Gender <sup>a</sup>	.21	.07	.004	[.07, .34]		.20	1.25	.006	[1.00, 5.93]	
	Age	-.12	.00	.096	[-.01, .00]		-.06	.06	.042	[-.16, .07]	
Model 2					.37						.16
	Gender <sup>a</sup>	.07	.06	.260	[-.05, .18]		.12	1.20	.093	[-.34, 4.40]	
	Age	-.03	.00	.659	[-.01, .00]		.00	.06	.971	[-.11, .11]	
	Job demands	-.03	.04	.686	[-.10, -.07]		.07	.90	.359	[-.94, 2.58]	
	Stress	.60	.01	<.001	[.04, .06]		.35	.11	<.001	[30, .72]	
Model 3					.42						.17
	Gender <sup>a</sup>	.04	.06	.506	[-.07, .15]		.10	1.20	.154	[-.65, 4.08]	
	Age	-.07	.00	.238	[-.01, .00]		-.02	.06	.749	[-.13, .09]	
	Job demands	-.02	.04	.704	[-.10, .07]		.06	.89	.368	[-.95, 2.55]	
	Stress	.54	.01	<.001	[.03, .05]		.31	.11	<.001	[.24, .67]	
	Fair and supportive leadership	-.25	.03	<.001	[-.21, -.07]		-.15	.73	.033	[-3.02, -.13]	

<sup>a</sup>0 = male, 1 = female.

Regarding the manuscript entitled “*The protective effect of fair and supportive leadership on burnout and insomnia in police employees.*”

The authors declare that there are no financial or other relationships that lead to conflict of interest.

*Authors*

Torhild Anita Sørengaard<sup>1\*</sup> & Eva Langvik<sup>1</sup>

<sup>1</sup>Department of Psychology, Norwegian University of Science and Technology, Trondheim, Norway.

Journal Pre-proof