

RESEARCH ARTICLE

The Predictive Value of Individual Factors, Work-Related Factors, and Work–Home Interaction on Burnout in Female and Male Physicians: A Longitudinal Study

Ellen Melbye Langballe^{1*†}, Siw Tone Innstrand², Olaf Gjerløw Aasland^{3,4} & Erik Falkum^{5,6}

¹Division of Mental Health, Norwegian Institute of Public Health, Oslo, Norway

²Research Centre of Health Promotion and Resources HiST/NTNU, Department of Social Work and Health Sciences, Norwegian University of Science and Technology, Trondheim, Norway

³The Research Institute, Norwegian Medical Association, Oslo, Norway

⁴Department of Health Management and Health Economics, Institute of Health and Society, University of Oslo, Norway

⁵Oslo University Hospital HF, Aker, Norway

⁶Institute of Psychiatry, University of Oslo, Norway

Abstract

The purpose of this study was to examine physician burnout in association with individual factors, work characteristics and work–home interaction (job performance-based self-esteem, goal orientation, value congruency, workload, autonomy, work–home conflict and work–home facilitation). This two-wave panel study includes a sample of Norwegian physicians collected in 2003 ($N = 683$) and 2005 ($N = 523$). Hierarchical multiple regression analysis was used to test the assumed effects in male and female physicians separately. The results imply that many of the assumed predictors play significant parts in physician burnout. A noticeable finding was that the pattern and strength of significant effects differed within the separate analyses of men and women. Work–home conflict was a particularly strong burnout predictor in female physicians whereas workload was the strongest burnout predictor in male physicians. The findings may have implications when planning future interventions. Copyright © 2010 John Wiley & Sons, Ltd.

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Keywords

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*Correspondence

Ellen Melbye Langballe, Norwegian Institute of Public Health, Division of Mental Health, P.O. Box 4404 Nydalen, N-0403 Oslo, Norway.

†Email: ellen.melbye.langballe@fhi.no

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Introduction

Norwegian physicians report high and stable job satisfaction (Nylenna, Gulbrandsen, Förde, & Aasland, 2005), but lower life satisfaction (Tyssen *et al.*, 2009), more depression (Tyssen, 2007) and higher suicide rates compared with the general population (Hem *et al.*, 2004). Research also shows that burnout is a relatively prevalent health problem among physicians in different countries all over the world (Balch, Freischlag, & Shanafelt, 2009; Falkum, 2000; Houkes *et al.*, 2008; Schaufeli & Enzmann, 1998; Soler *et al.*, 2008; Wu, Zhu, Li, Wang, & Wang, 2008).

Burnout is a stress-related psychological syndrome in which exhaustion and disengagement may be considered the core elements (Green, Walkey, & Taylor, 1991; Peterson *et al.*, 2008). The burnout process is assumed to start with feelings of exhaustion in response to prolonged exposure to stressful experiences at work (Maslach, 1993). When exhausted, disengagement may occur as a way to cope with the loss of energy and drive. Disengagement often include negative and cynical attitudes (Bakker, Van Emmerik, & Van Riet, 2008). People who are 'burned out' are not only exhausted but may also have lost their capacity for involvement in their work (Leiter, 2008). Hence, physician burnout may have serious consequences not only for the affected individual, but also for people in need of help, as it tends to lead to suboptimal patient care (Gundersen, 2001; Halbesleben & Rathert, 2008; Shanafelt, Bradley, Wipf, & Back, 2002).

Theoretical framework

The relationship between possible burnout risk factors and the burnout process is complex (Leiter & Maslach, 2005). The theoretical view on stress and burnout in this paper is based on Hobfoll's Conservation of Resources (COR) theory. The COR model assumes that people strive to retain, protect and build resources (Hobfoll & Freedy, 1993). According to this theory, stress is defined as a reaction to the environment in which there are perceived threats to one's resources. Burnout is described as a state of extreme resource depletion (Hobfoll & Shirom, 2001). Some researchers consider the COR theory to be the best explanatory model of burnout (Lee & Ashforth, 1996) and recent studies have shown its applicability to the work-home interaction as well (Grandey & Cropanzano, 1999; Innstrand, Langballe, Espnes, Falkum, & Aasland, 2008,

Premeaux, Adkins, & Mossholder, 2007). Men and women may perceive potential stressors differently (Kohler, Munz, & Grawitch, 2006).

According to Frone (2000) work-home interference may have health effects for both genders, but the causal pathways may be different for men and women. Within the COR framework this means that salient gender roles or social identities may be threatened differently in men and women during their juggling of work and home lives.

Even though the gap between genders in Norway is among the smallest in the world when it comes to economic participation and opportunity, educational attainment and political empowerment (Hausmann, Tyson, & Zahidi, 2008) recent research indicates that gender differences in the experience of work-home interference are prevalent (Innstrand, Langballe, Falkum, Espnes, & Aasland, 2009). Whereas a strong work-related identity accompanies with the male breadwinner role, it is not consistent with the female homemaker role (Simon, 1995), possibly producing more guilt and conflict in women (Elvin-Nowak, 1999; Livingston & Judge, 2008). The masculine characteristics of the medical world may make it particularly difficult for women to fit in. On the other hand, these assumed gender differences may not hold among physicians because their work identity is also influenced by socialization in medical schools and work (Houkes *et al.*, 2008). For preventive and treatment purposes, the current increase of female professionals in the medical field generate a need for gender sensitive analysis of burnout among doctors (Houkes *et al.*, 2008).

Individual factors

According to the COR theory, individual resources exist in a resource pool. Several individual factors such as personality and temperament may affect one's resources and play a part in burnout development (Langelaan, Bakker, van Doornen, & Schaufeli, 2006). A study of burnout among Dutch general practitioners found gender differences in individual factors such as active coping, avoidance and perfectionism (Houkes *et al.*, 2008). Any gains or losses in one individual resource may affect other individual resources. Individuals invest in roles that provide a favourable balance of rewards and costs. If family rewards are lower in value than career rewards, it is likely that the individual will invest more in his or her career than in family. A

person's level of role investments are expressed in attitudes and behaviours (Lobel, 1991). Hallsten (1993) has proposed that three key individual factors may serve as either risk factors or protective factors in the burnout-process: job performance-based self-esteem (JPBSE), goal orientation (GO) and value congruency (VC). Traditional utilitarian theories on the motivation behind role investment (Lobel, 1991) elucidate how JPBSE and GO may relate to burnout.

JPBSE is considered to be an identity script in which work performance is the main source of self-esteem and an important motivational role in the burnout process (Hallsten, Josephson, & Torgén, 2005). When an individual's identity is mainly based on achievements at work, the vulnerability for negative health consequences is assumed to be elevated when exposed to negative experiences at work (Crocker, 2002). Empirical evidence indicates that persons with high scores on JPBSE are more vulnerable to stressful work-family interaction (Innstrand, Langballe, Espnes, Aasland, & Falkum, 2010) and burnout (Dahlin, Joneborg, & Runeson, 2007). They tend to bring work home, to reduce lunches, to attend work while sick and to put personal needs aside (Hallsten *et al.*, 2005).

GO is described as the active orientation towards long-term goals coupled with a reliance on one's own actions and feelings of personal responsibility for obtaining those goals (Hallsten, 1993). Reliance on one's own actions and abilities is compatible with Bandura's self-efficacy concept (Bandura, 1997). Reduced self-efficacy at work, defined as either professional accomplishment (Maslach, 1993) or professional efficacy (Leiter & Schaufeli, 1996) has been regarded a significant component of burnout. However, whether a lack of professional efficacy is a burnout component in its own right or a personality construct (Cordes & Dougherty, 1993; Shirom, 2003) that puts the person at risk for burnout is an ongoing debate (Schaufeli & Salanova, 2007).

Burnout develops in a social context. Social identity theory emphasises that a person's identification with a social group affects the attitudes and behaviours characterizing the role investments (Lobel, 1991). The way individuals perceive, interpret and construct the work behaviours of others at work may have a great impact on the development and persistence of burnout (Buunk & Schaufeli, 1993). The importance of a congruency between the values of the employees and those of the organization is underscored by a substantial amount of

research (Edwards & Cable, 2009; Meglino, Ravlin, & Adkins, 1992; Siegall & McDonald, 2004), but has only been integrated in a few of the most recent burnout studies. The theoretical conceptualizations and the operationalizations of value congruency are diverse (Laschinger, Heather, Wong, & Greco, 2006; Leiter, 2008; Siegall & McDonald, 2004). Hallsten's (1993) theory is among the few within the burnout field that is based on in-depth interviews, but to the authors' knowledge it has not been empirically tested. Depletion of individual resources over time may cause burnout whereas gain of personal resources may prevent burnout (Hobfoll & Freedy, 1993). Based on these assumptions the following hypotheses were tested in the present study:

H1: High JPBSE predicts increased exhaustion and disengagement (i.e. burnout) in male and female physicians.

H2: High GO and high VC predicts decreased exhaustion and disengagement (i.e. burnout) in male and female physicians.

Work-related factors

Workload and autonomy are found to be consistently and closely related to burnout (Schaufeli & Enzmann, 1998). According to the COR theory, workload may be perceived as a stressor if it constitutes a threat to one's resources. For instance is a high on-call burden associated with high distress level in physicians (Heponiemi *et al.*, 2008). Conversely, the COR model posits that those with greater resources are less vulnerable to resource loss and more capable of resource gain (Hobfoll, 1989, 2001). Autonomy, described as perceived control over schedules and the organisation of work, may act as a resource leading to the gain of new resources and experiences. Control over schedules was the strongest predictor of burnout in a recent study of American physicians (Keeton, Fenner, Johnson, & Hayward, 2007). Accordingly, we examined the following hypothesis:

H3: High perceived workload predicts increased exhaustion and disengagement (i.e. burnout) in male and female physicians.

H4: High autonomy predicts decreased exhaustion and disengagement (i.e. burnout) in male and female physicians.

Work-home interaction

In the literature, the term 'work/non-work interface' is used as a global concept referring to the point where 'work' and 'non-work' meet, either in a negative or positive way (Geurts & Demerouti, 2003). Because employees have a variety of needs and responsibilities beyond those in their nearest family we use the term 'work/home' rather than 'work/family' in the present paper. Research on the work-home interaction during the last 20 years have made significant contributions to the burnout field, but only a few studies of physician burnout have included these perspectives (Adam, Gyorffy, & Susanszky, 2008; Fuß, Nubling, Hasselhorn, Schwappach, & Rieger, 2008; Houkes et al., 2008; Keeton et al., 2007; Montgomery, Panagopoulou, & Benos, 2006; Toyry et al., 2004). Work-to-home conflict occurs when the demands associated with one domain are incompatible with the demands associated with another domain (Perrewe, Hochwarter, & Kiewitz, 1999). Work-to-home conflict seems to be prevalent in physicians (Fuß et al., 2008) and a potential predictor of physician burnout (Adam et al., 2008). In a longitudinal study, Houkes et al. (2008) found that work-family interference was one of the most consistent stress-inducing factors for both male and female general practitioners. However, there is growing agreement in the work-home literature that a comprehensive understanding of the work-home interaction must consider both conflict *and* facilitation. The inclusion of positive determinants is in line with the growth of positive psychology (Seligman, Steen, Park, & Peterson, 2005). Work-home facilitation refers to how participation in one role is made better or easier by participation in the other role (Wayne, Musisca, & Fleeson, 2004). Stress or conflict occurs because resources are lost, threatened or fail to give anticipated returns in the process of juggling both work and home life (Grandey & Cropanzano, 1999). On the other hand, facilitation follows when resources contribute to the exchange of gains between the domains (Wayne, Grzywacz, Carlson, & Kacmar, 2007). To the authors' knowledge, this is the first study of physician burnout that includes both positive and negative aspects of the work-home interaction in both the directions: work-to-home and home-to-work.

H5: High work-home/home-work conflicts predict increased exhaustion and disengagement (i.e. burnout) in male and female physicians.

H6: high work-home/home-work facilitations predict decreased exhaustion and disengagement (i.e. burnout) in male and female physicians.

Material and method

Participants and procedure

This paper is based on data from two survey rounds (2003 and 2005) in a longitudinal study on burnout in different occupational groups, carried out by the Research Institute of the Norwegian Medical Association and Statistics Norway (SN). Data was gathered from eight different occupational groups: lawyers, physicians, nurses, teachers, church ministers, bus drivers, employees in information technology (IT) and advertisement. The main intent of the research project was to learn more about the burnout syndrome and the burnout process in different occupations. This paper is the first in this project that places particular emphasis on burnout in male and female physicians.

For each occupational group, a random sample of 500 women and 500 men was drawn from the central Norwegian registers of employees and employment by SN. Thus, the quota samples were representative of the total population in Norway for each gender in each occupation. The potential respondents were asked to complete the same extensive questionnaire on burnout and related issues on both occasions.

Among the 500 female and 500 male physicians who were asked to participate, 368 (73.6 per cent) females and 315 (63.6 per cent) males responded. The mean age of the female and male respondents were 41.8 (SD = 9.9) and 48.1 (SD = 10.9) years, respectively. Most respondents were married or cohabitant; 66 per cent of the women and 76 per cent of the men. In line with other studies (Keeton et al., 2007; Linzer et al., 2002) the females in this investigation worked less than their male counterparts: 44.4 h (SD = 8.0) versus 48.6 h (SD = 8.3), respectively. Those who responded in the first round were asked to participate again in the second one, and of these 291 (79.1 per cent) female and 232 (73.7 per cent) male physicians responded.

Measures

Burnout was measured by a Norwegian version of the 16-item Oldenburg Burnout Inventory (OLBI),

translated by one of the authors, back-translated by a bilingual German psychiatrist, and then compared with the English and Swedish versions of the instruments. The OLBI contains two burnout dimensions: exhaustion and disengagement from work (Demerouti & Bakker, 2008; Demerouti, Bakker, Vardakou, & Kantas, 2003). A five-point response scale ranging from 'totally disagree' to 'totally agree' was used. In the present Norwegian version, one of the positively-worded disengagement items was given the opposite sign (original item: 'I always find new and interesting aspects in my work'; applied item: 'I am less interested in my job now than in the beginning').

JPBSE, *GO* and *VC* items were developed for the present study based on Hallsten's burnout theory. The items defining these factors were scored on a five-point scale ranging from 'totally disagree' to 'totally agree'. *JPBSE* was measured by the three items: (1) 'If I fail in my job, I am a failure as a person', (2) 'I must succeed in my work to have a sense of worth' and (3) 'If I don't do a really good job, I will lose the respect of others'. *GO* was measured by the four items (1) 'With my own resources I can easily influence the values and strategies in a work organisation', (2) 'I normally have high ambitions in my work', (3) 'I normally set myself lofty and long-term goals in my work and in general' and (4) 'I have always believed in my own strength and capability'. *VC* was measured by (1) 'My own job values accord well with the values of my work organisation', (2) 'I strongly identify with the goals and frames of my work organisation', (3) 'I often feel that I must compromise with my own values to cope with job demands (scoring reversed)' and (4) 'The congruency between my own goals and the goals of the organisation gives a good feeling of community'. Using Lisrel 8.54 (Jöreskog, Sörbom, & Inc, 1996), a confirmatory factor analysis of all the physicians at T1 (N = 683) and T2 (N = 523) indicated an adequate factorial validity of the individual vulnerability model included in the present study (T1: RMSEA = 0.082, NNFI = 0.92, CFI = 0.94, and IFI = 0.94. T2: RMSEA = 0.084, NNFI = 0.93, CFI = 0.94 and IFI = 0.94).

Workload was assessed by three items (e.g. 'How often do you think you have so many job tasks that it prevents you from working effectively,') and *Autonomy* was assessed by four items (e.g. 'How often do you think you have sufficient possibility to discuss the organisation of your own work,') both using the

response categories 1 = *never* to 5 = *often*. The workload and autonomy scales used in this study were based on the scales used in previous studies conducted by Aasland, Olff, Falkum, Schweder, and Ursin (1997) and Cooper, Rout, and Faragher (1989).

Work-home interaction was measured by 12 items based on Wayne et al.'s study (2004). The respondents expressed their perceptions of their work-home interaction on a five-point scale (1 = *totally disagree*, 5 = *totally agree*). Work-to-home conflict (e.g. 'stress at work makes me irritable at home') and work-to-home facilitation (e.g. 'the skills I use at my job are useful for things I have to do at home') were each composed by three items. Home-to-work conflict was defined by four items (e.g. 'Responsibilities at home reduce the effort I can devote to my job') whereas home-to-work facilitation was measured by two items (e.g. 'Talking with someone at home helps me deal with problems at work').

The control variables of age, marital status (dichotomous: living with a partner or not), number of children under the age of 6 years and working hours were included in the analyses. The latter was assessed by self-reported hours worked during an average week.

Strategy of statistical analysis

By means of SPSS (version 13.0), hierarchical regression analyses were used to test the assumed effects of individual and organizational variables and work-home interaction on exhaustion and disengagement in each gender separately. The two-wave panel design enabled us to examine both lagged (i.e. longitudinal) and synchronous (i.e., cross-sectional) effects, controlling for the dependent variables at Time 1 (T1).

Lagged effects refer to the effects of the independent variables at T1 on the dependent variable at Time 2 (T2) and are usually regarded as the primary source of evidence for causal relationships among variables (Taris, 2000). However, synchronous effects are adequate if the time the predictor needed to cause a change is shorter than the investigated time lag (Finkel, 1995). In the present study, the time lag was 2 years. Synchronous effects refer to the cross-sectional effects by which the dependent variable at T2 is regressed on the predictors at T2.

As suggested by Zapf, Dormann, and Frese (1996), to partial out the stabilities the independent variables are included in the hierarchical regression in the

following order: In the first step, the control variables, exhaustion and disengagement at T1 were included, as well as the T1 measures of the individual variables (JPBSE, GO and VC), work-related variables (workload and autonomy) and work-home interaction (work-home/home-work conflict and facilitation). In the second step we added the individual, work-related and work-home interaction variables at T2.

Results

Table I displays the means and standard deviations of the study variables for men and women separately. Table II displays the Person correlation coefficients and Cronbach's alpha (α). The test-retest values of the study variables were fairly high ranging from 0.51 to 0.67. The internal reliabilities were good with α s over 0.71 for all variables, except for 0.64 at T1 and 0.65 at T2 for work-home conflict.

Table I. Descriptive statistics

	Men		Women	
	Mean	SD	Mean	SD
Time 1				
Exhaustion	2.68	0.71	2.80	0.76
Disengagement	2.14	0.66	2.04	0.68
Age	48.07	10.9	41.73	9.93
Marital status	0.75	0.43	0.66	0.47
Small children (≤ 6 years)	0.36	0.69	0.49	0.72
No. hours worked per week	48.48	8.17	44.53	7.67
JPBSE	2.60	0.82	2.64	0.86
Goal orientation	3.34	0.66	3.33	0.71
Value-congruency	3.32	0.73	3.31	0.69
Workload	3.18	0.84	3.34	0.82
Autonomy	3.17	0.81	2.94	0.80
Work-to-home conflict	2.77	0.82	2.84	0.91
Work-to-home facilitation	2.48	0.77	2.67	0.86
Home-to-work conflict	2.04	0.77	2.21	0.86
Home-to-work facilitation	3.48	0.96	3.66	1.0
Time 2				
Exhaustion	2.62	0.68	2.77	0.77
Disengagement	2.09	0.63	2.07	0.69
JPBSE	2.65	0.78	2.63	0.83
Goal orientation	3.33	0.64	3.32	0.69
Value-congruency	3.40	0.70	3.27	0.71
Workload	3.12	0.86	3.22	0.82
Autonomy	3.29	0.83	3.04	0.83
Work-to-home conflict	2.73	0.80	2.79	0.86
Work-to-home facilitation	2.59	0.77	2.69	0.85
Home-to-work conflict	1.98	0.74	2.24	0.81
Home-to-work facilitation	3.46	0.96	3.59	1.03

Mean and standard deviation for men and woman separately.

To test the longitudinal effects, we examined the incremental R^2 in the regression model (Table III). The first step accounted for a significant proportion of the T2 burnout variables; exhaustion ($\Delta R^2_{\text{men}} = 0.54$, $\Delta R^2_{\text{women}} = 0.38$), and disengagement ($\Delta R^2_{\text{men}} = 0.56$, $\Delta R^2_{\text{women}} = 0.34$). Regarding the male respondents, the control variable of marital status was negatively related to exhaustion. Value congruency and autonomy at T1 had a significant effect on exhaustion at T2 in the opposite than the assumed direction. None of the variables were significantly related to disengagement. In the analysis of the female respondents, long working hours at T1 predicted disengagement at T2 whereas JPBSE at T1 had a significant buffer effect on disengagement at T2. VC significantly predicted exhaustion at T2, and work-to-home facilitation at T1 predicted disengagement at T2. The remaining hypothesized longitudinal relationships were not significant.

The incremental R^2 for the second step in the regression model (Table III) indicates that the synchronous effects of individual vulnerability, work related factors, and work-home interaction variables accounted for 20 per cent and 30 per cent of the variance in T2 exhaustion for men and woman respectively, and 10 per cent and 22 per cent men and woman respectively in T2 disengagement. As expected, when controlling for all the T1 variables, JPBSE, workload and work-to-home conflict at T2 predicted exhaustion at T2 in male physicians. Conversely, GO at T2 had a buffering effect on exhaustion at T2. VC at T2 had a buffering effect on disengagement at T2, whereas work-to-home conflict at T2 predicted disengagement at T2. Autonomy at T2 had a buffering effect on both exhaustion and disengagement at T2. Home-to-work conflict at T2 predicted disengagement in male physicians at T2.

When controlling for all the T1 variables, JPBSE at T2 predicted both exhaustion and disengagement at T2 for the female physicians, whereas VC at T2 had a relatively strong buffering effect on both burnout variables at T2. Workload at T2 predicted exhaustion at T2 whereas work-to-home facilitation at T2 had a buffering effect on exhaustion at T2. Work-to-home conflict at T2 had the strongest effect and predicted both exhaustion and disengagement at T2. Home-to-work conflict at T2 predicted disengagement at T2, whereas home-to-work facilitation at T2 had a buffering effect in female physicians. The other hypothesized relationships were not significant. The synchronous regression coefficients at T2 are illustrated in Figure 1.

Table II. Person correlations and Cronbach's alpha (α ; on the diagonal) of the study variables for the panel group ($N = 523$)

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Time 1											
1. Exhaustion	0.86										
2. Disengagement	0.54**	0.83									
3. Age	0.03	-0.03									
4. Marital status	-0.07	-0.06	0.09*								
5. Small children (≤ 6 years)	-0.14**	-0.05	-0.44**	0.18**							
6. No. hours worked per week	0.12**	0.01	-0.02	-0.01	-0.06						
7. JPBS	0.30**	0.11**	0.08*	-0.01	-0.08*	0.00	0.80				
8. Goal orientation	-0.14**	-0.24**	-0.01	0.06	0.04	0.15**	0.07	0.74			
9. Value-congruency	-0.30**	-0.40**	0.08	0.07	-0.04	-0.06	-0.07	0.22**	0.79		
10. Workload	0.50**	0.26**	-0.03	-0.02	-0.03	0.26**	0.11**	0.04	-0.29**	0.74	
11. Autonomy	-0.35**	-0.19**	0.13	0.03	-0.03	-0.22**	-0.14**	0.08*	0.33**	-0.43**	0.76
12. Work-to-home conflict	0.49**	0.27**	-0.13**	0.07	0.07	0.21**	0.26**	0.04	-0.21**	0.39**	-0.24**
13. Work-to-home facilitation	-0.26**	-0.27**	-0.05	0.05	-0.01	-0.05	0.01	0.26**	0.23**	-0.09*	0.15**
14. Home-to-work conflict	0.23**	0.21**	-0.23**	-0.04	0.35**	-0.06	0.14**	-0.05	-0.12**	0.13**	-0.10*
15. Home-to-work facilitation	-0.13**	-0.22**	-0.23**	0.17**	0.11**	0.03	-0.03	0.23**	0.15**	0.06	-0.05
Time 2											
16. Exhaustion	0.64**	0.37**	-0.03	-0.08	-0.09	0.12**	0.25**	-0.10*	-0.20**	0.38**	-0.23**
17. Disengagement	0.38**	0.63**	-0.04	-0.07	-0.07	0.10*	0.09*	-0.17**	-0.28**	0.26**	-0.15*
18. JPBS	0.29**	0.13**	0.11	-0.03	-0.07	-0.02	0.64**	0.06	-0.06	0.10*	-0.12**
19. Goal orientation	-0.09*	-0.25**	-0.02	-0.01	0.06	0.18**	0.10*	0.67**	0.17**	0.08	0.00
20. Value-congruency	-0.20**	-0.27**	0.13**	0.05	-0.05	-0.10*	0.01	0.14**	0.55**	-0.26**	0.31**
21. Workload	0.32**	0.19**	-0.09*	-0.10*	-0.04	0.23**	0.16**	0.02	-0.15**	0.51**	-0.26**
22. Autonomy	-0.28**	-0.21**	0.19**	0.05	-0.08	-0.13**	-0.16**	0.11*	0.28**	-0.30**	0.52**
23. Work-to-home conflict	0.36**	0.22**	-0.16**	0.09	0.09*	0.17**	0.20**	0.01	-0.19**	0.33**	-0.16**
24. Work-to-home facilitation	-0.14**	-0.20**	-0.08	0.06	0.03	0.01	0.06	0.24**	0.21**	-0.02	0.13**
25. Home-to-work conflict	0.17**	0.19**	-0.35*	-0.02	0.28**	0.00	0.10*	-0.05	-0.11*	0.15**	-0.09*
26. Home-to-work facilitation	-0.09*	-0.14**	-0.21**	0.19**	0.14**	0.04	-0.02	0.22**	0.12**	0.07	-0.08

Table II. continued

	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.
Time 1															
1.															
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															
11.															
12.	0.65														
13.	-0.12**	0.71													
14.	0.34**	0.03	0.78												
15.	.03	0.35**	0.01	0.79											
Time 2															
16.	0.45**	-0.15**	0.19**	-0.10*	0.86										
17.	0.28**	-0.15**	0.21**	-0.14**	0.57**	0.85									
18.	0.26**	-0.07	0.15**	-0.09*	0.34**	0.19**	0.80								
19.	0.06	0.20**	0.00	0.24**	-0.12**	-0.25**	0.07	0.76							
20.	-0.19**	0.15**	-0.12**	0.01	-0.32**	-0.40**	-0.05	0.18**	0.82						
21.	0.34**	-0.01	0.15**	0.05	0.53**	0.35**	0.15**	0.05	-0.27**	0.76					
22.	-0.17**	0.08	-0.13**	-0.05	-0.42**	-0.32**	-0.17**	0.07	0.41**	-0.45**	0.80				
23.	0.62**	-0.05	0.29**	0.06	0.57**	0.38**	0.29**	0.04	-0.25**	0.40**	-0.28**	0.64			
24.	-0.05	0.55**	0.03	0.30**	-0.19**	-0.20**	0.01	0.26**	0.19**	-0.11*	0.17**	-0.01	0.72		
25.	0.34**	-0.03	0.56**	-0.01	0.25**	0.29**	0.17**	-0.08	-0.10*	0.16**	-0.10*	0.40**	0.07	0.78	
26.	0.06	0.30**	0.06	0.67**	-0.11*	-0.15**	-0.04	0.28**	0.04	-0.01	-0.04	0.09*	0.37**	0.03	0.79

* $p < 0.05$; ** $p < 0.01$.

JPBSE: job performance-based self-esteem.

Table III. Hierarchical multiple regression analysis for men and women separately

Model	Men				Women			
	Exhaustion T2		Disengagement T2		Exhaustion T2		Disengagement T2	
	Beta [†]	ΔR^2	Beta [†]	ΔR^2	Beta [†]	ΔR^2	Beta [†]	ΔR^2
Step 1								
Control variables								
Age T1	0.03		0.07		0.08		0.06	
Marital status T1	-0.11*		-0.01		0.03		-0.01	
Small children (≤ 6 years) T1	0.10		-0.06		-0.06		-0.08	
No. hours worked per week T1	0.03		-0.03		-0.01		0.16**	
Dependent variable T1	0.54***		0.58***		0.38***		0.47***	
Individual variables								
JPBSE T1	-0.05		-0.02		-0.09		-0.15*	
Goal orientation T1	0.05		-0.02		0.04		0.08	
Value congruency T1	0.12*		0.10		0.11*		0.06	
Work related variables								
Workload T1	-0.07		0.01		0.02		-0.03	
Autonomy T1	0.15**		0.08		0.07		0.09	
Work-home interaction								
Work-to-home conflict T1	-0.09		-0.04		-0.02		-0.03	
Work-to-home facilitation T1	0.03		-0.05		-0.10		0.18**	
Home-to-work conflict T1	-0.07		-0.00		-0.02		-0.01	
Home-to-work facilitation T1	-0.01		-0.04		-0.01		0.09	
		0.54***		0.56***		0.38***		0.34***
Step 2								
Individual variables								
JPBSE T2	0.17***		0.02		0.14*		0.14*	
Goal orientation T1	-0.15**		-0.08		-0.05		-0.13	
Value congruency T1	.01		-0.20***		-0.20***		-0.18**	
Work related variables								
Workload T2	0.31***		0.06		0.17***		0.06	
Autonomy T2	-0.22***		-0.15*		-0.07		-0.10	
Work-home interaction								
Work-to-home conflict T2	0.22***		0.12		0.38***		0.25***	
Work-to-home facilitation T2	-0.09		0.06		-0.11*		-0.09	
Home-to-work conflict T2	0.06		0.14*		0.07		0.15**	
Home-to-work facilitation T2	-0.01		0.02		-0.08		-0.18*	
		0.20***		0.10***		0.30***		0.22***
	$R^2 = 0.71$		$R^2 = 0.61$		$R^2 = 0.64$		$R^2 = 0.52$	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

[†]The (standardized) beta values are the coefficients from the finale stage of the analysis.

Notes: Lagged and synchronous effects of individual, work-related, and work-home interaction variables on burnout (exhaustion and disengagement). Marital status: 0 = single, 1 = married/partnered.

ΔR^2 : R^2 change; represents the incremental proportion of variance accounted by the set of variables entered at that step. R^2 : adjusted R square; T1: time one; T2: time two; JPBSE: job performance-based self-esteem.

Discussion

Physicians treat sick people and save lives and are likely to receive more social support and acknowledgment for their job achievements than many other professions (Gjerberg, 2003; Gundersen, 2001). This may make it easier to neglect home duties in favour of work

responsibilities. It may also imply that physicians are particularly prone to spillover effects from work to other domains of life (Montgomery et al., 2006). In this study, the predictive value of individual factors (JPBSE, GO and VC), work-related factors (workload and autonomy), and work-home/home-work interaction (conflict and facilitation) were investigated in

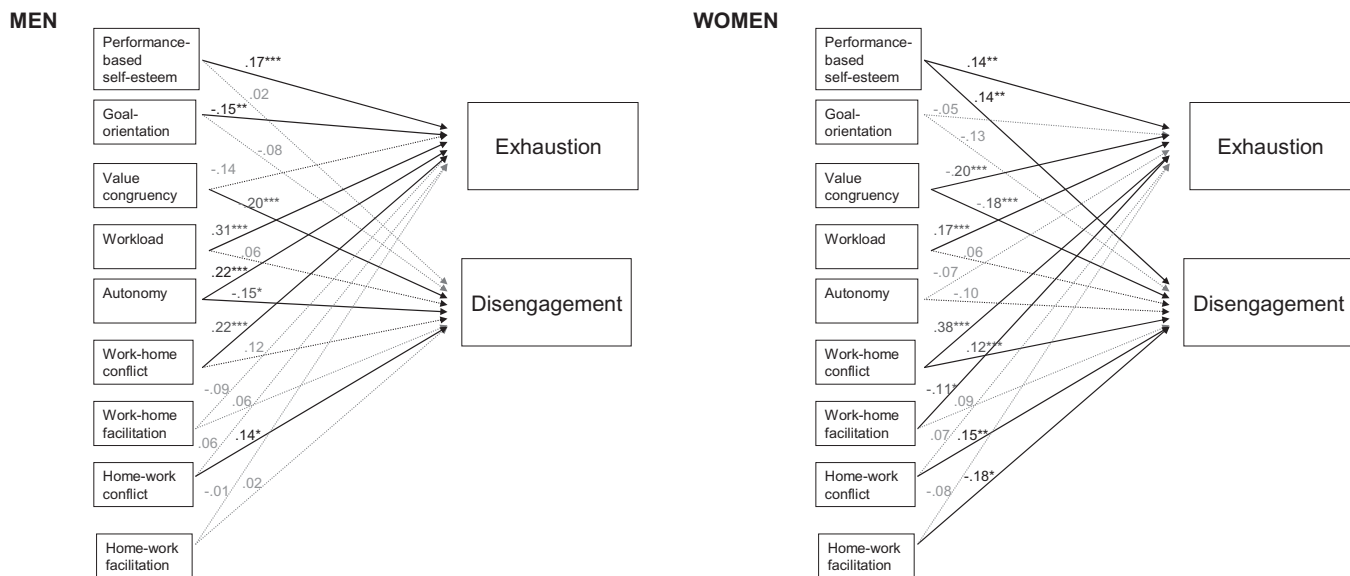


Figure 1 Hierarchical multiple regression analysis in each gender separately. Synchronous effects of individual, work-related, and work-home interaction variables on the two burnout variables exhaustion and disengagement at Time 2 controlling for the control variables and the dependent and independent variables at Time 1

Note: The (standardized) beta values are the coefficients from the finale stage of the analysis. Synchronous effects refer to the effects of the independent variables at T2 on the dependent variable T2. The significant relationships are marked either as * $p < 0.05$; ** $p < 0.01$ or *** $p < 0.001$. Non-significant relationships are in gray, dotted lines.

representative samples of Norwegian female and male physicians. The theoretical framework of this study was built on the COR theory assuming that burnout can be described as a state of extreme resource depletion (Hobfoll & Shirom, 2001). The hypothesized relationships were examined using a longitudinal panel design enabling us to examine both lagged and synchronous (i.e. cross-sectional) effects. The six hypotheses were mainly supported, but interestingly, the patterns of relationships were quite different within each gender.

Most of the significant effects of the individual factors on the two burnout components were moderate to relatively strong in each gender in the synchronous analysis. H1 was mainly supported. JPBSE predicted exhaustion in both men and women, and disengagement in the women. These results confirm a previous study of physicians, showing that self-esteem that is too closely based on performance at work can indicate vulnerability for entering a negative process of resource depletion, which can then result in burnout (Dahlin et al., 2007). In line with H2, VC had a relatively strong buffering effect on disengagement in both genders as well as on exhaustion in female physicians. Compared with the strength of the significant effects within each

gender-specific analysis, these findings indicate that a congruency between the values of the employee and the workplace is an important individual factor to prevent burnout in both male (i.e. disengagement) and female physicians (i.e. exhaustion and disengagement). GO had a buffering effect on exhaustion in male physicians only. Thus, an active orientation towards long-term goals, in combination with reliance on one's actions and feelings of personal responsibility to obtain these goals, may be important to preventing exhaustion in male physicians.

Considering the work-related factors effect on physician burnout in this study, the hypothesised effects were mainly supported for male, but only partly for female physicians. In male physicians, workload was the strongest predictor for exhaustion and only autonomy had a significant buffering effect on both burnout variables. In female physicians, workload had a moderate effect on exhaustion; otherwise the hypothesized work-related relationships were not significant. The finding that workload predicted exhaustion in both genders in the cross-sectional analysis is in line with several previous studies (Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998). Since work factors and particularly workload and autonomy are considered the main burnout risk factors

in the general burnout literature (Maslach, Schaufeli, & Leiter, 2001; Schaufeli & Enzmann, 1998), the lack of significant effects of work factors on the burnout variables in female physicians was surprising.

The hypotheses assuming that work-home/home-work conflict and facilitation affects physician burnout were partly supported in this study. The findings revealed noteworthy differences in the effect of these factors within the separate analyses of men and women. Work/home conflict had the strongest effect of all the investigated predictors in female physicians. In male physicians, work/home conflict was also a strong predictor of exhaustion, but not as strong as workload. In Norway, half of the male doctors' spouses work part-time or are full-time homemakers, whereas almost all the spouses of the female doctors work full-time (Gjerberg, 2003). This is consistent with Kinnunen, Geurts, and Mauno (2004) who found that the combination of having a family and highly demanding job was challenging for women but not for men in terms of work-family balance. Overall, our results are in line with previous findings where strong direct effects between work-to-home interaction and exhaustion have been demonstrated (Innstrand *et al.*, 2008; Linzer *et al.*, 2001). Work-home facilitation had a significant and protective effect on exhaustion in woman only. The classical asymmetrical boundary theory suggests that the family role is allowed to intrude in to the work role more for women than for men (Pleck, 1977). The findings in this study indicate that the integration of domains in woman may lead to more potential for conflict on the negative side, but also facilitation on the positive side. Hence, juggling the work/home life may have different effects on burnout in male and female physicians.

In contrast to the hypotheses and the significant findings from the cross-sectional analyses, the lagged effect of T1 autonomy on T2 exhaustion was positive in male physicians. In female physicians in the cross-lagged analysis the effect of T1 VC was increased T2 exhaustion, the effect of T1 JPBSE was decreased T2 disengagement, and the effect of T1 work-to-home facilitation was increased T2 disengagement. Although autonomy is thought of as something desirable in a work setting, a boundless work life that can accompany high degree of autonomy may lead to exhaustion in the long run. A high degree of VC between the employee and the workplace, in this case in female physicians, can perhaps make the employee invest too much time and energy

into work that may result in exhaustion. It is also likely that a high degree of JPBSE may prevent disengagement. However, an alternative explanation for these findings is the possible presence of suppression among the variables. A negative or net suppressor effect indicates a variable that has a positive correlation with the dependent variable, but negative beta weights in a regression equation (Tabachnick, Fidell, & Osterlind, 2001). In this study, an examination of the zero-order correlations supports this assumption. Overall, the synchronous analyses provided more significant relationships than the longitudinal did.

Strength and limitations

The strengths of the present study include the use of a large sample of Norwegian male and female physicians and the longitudinal design for investigating possible causal relationships for physician burnout. A total of 1000 randomly selected Norwegian physicians were asked to participate in the first survey in 2003. The response rates were different among male and female physicians in both survey rounds, a fact that may affect the generalizability of the findings. Missing data are almost always a problem in longitudinal research. However, after the data collection was completed Statistics Norway concluded that the sample did not deviate significantly from the total population of physicians (Skaare, 2006). By collecting data at the same time of the year in both rounds we avoided seasonal variation.

Some limitations of this research should be noticed. Finding the optimal time lag between measurements is a general problem in longitudinal research. True time-lag may differ across samples and relationships (Houkes *et al.*, 2008) and it is not possible from a theoretical standpoint to estimate the optimal time-lag or study period when investigating predictors of burnout. Time lags that are too short may imply that actual relationships are not discovered, whereas time lags that are too long may produce underestimations of true causal impact (Zapf *et al.*, 1996). Like Houkes *et al.* (2008) who studied burnout in general practitioners with a 2-year interval between measurements we assumed that this time lag is an appropriate distance between measurements to assess possible changes in individual scores, but not too long considering the risk of non-response in the second wave. However, some of the findings in the cross-sectional analysis were not

significant in the cross-lagged analyses indicating that a 2-year time lag may have been too long for some of the independent variables used in the present study. As in previous studies the burnout variables were rather stable. This may explain why so few of the effects were significant in the lagged analysis, but also indicate that burnout can be more of a chronic than a transient phenomenon (Schaufeli & Enzmann, 1998). Additionally, the individual variables were developed for the present study based on Hallsten's theory (Hallsten, 1993), making precise comparisons with other studies difficult. More research is needed to investigate the construct validation of these scales and measures and the predictive validity of these factors in different occupational groups. Finally, the characteristics of physicians' work vary between the different medical fields (Gjerberg, 2003). The design of the present study did not allow for comparisons of physicians in different specialties.

Conclusion

This study on burnout in female and male physicians in Norway implies that individual factors, work factors and work/home interference play significant parts in burnout, but the relationship patterns between predictors and burnout may differ by gender. In female physicians, the effects of work-to-home conflict on exhaustion and disengagement were much stronger than any of the other investigated associations. In male physicians the effects of workload on exhaustion were particularly high. The demonstrated associations are strong enough to be taken into consideration in the implementation of preventive and therapeutic interventions among physicians, for instance by incorporating burnout prevention programmes in graduate and post-graduate training.

REFERENCE

- Aasland, O.G., Olf, M., Falkum, E., Schweder, T., & Ursin, H. (1997). Health complaints and job stress in Norwegian physicians: the use of an overlapping questionnaire design. *Social Science & Medicine*, *45*, 1615–1629.
- Adam, S., Gyorffy, Z., & Susanszky, E. (2008). Physician burnout in Hungary—A potential role for work-family conflict. *Journal of Health Psychology*, *13*, 847–856.
- Bakker, A.B., Van Emmerik, H., & Van Riet, P. (2008). How job demands, resources, and burnout predict objective performance: A constructive replication. *Anxiety, Stress & Coping*, *21*, 309–324.
- Balch, C.M., Freischlag, J.A., & Shanafelt, T.D. (2009). Stress and burnout among surgeons: Understanding and managing the syndrome and avoiding the adverse consequences. *Archives of Surgery*, *144*, 371–376.
- Bandura, A. (1997). *Self-efficacy. The exercise of control*. New York: W. H. Freeman and Company.
- Buunk, B.P., & Schaufeli, W.B. (1993). Burnout: A perspective from social comparison theory. In W. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 53–69). Washington, DC: Taylor & Francis.
- Cooper, C.L., Rout, U., & Faragher, B. (1989). Mental health, job satisfaction, and job stress among general practitioners. *British Medical Journal*, *298*, 366–370.
- Cordes, C.L., & Dougherty, T.W. (1993). A review and an integration of research on job burnout. *Academy of Management Review*, *18*, 621–656.
- Crocker, J. (2002). The cost of seeking self-esteem. *Journal of Social Issues*, *58*, 597–615.
- Dahlin, M., Joneborg, N., & Runeson, B. (2007). Performance-based self-esteem and burnout in a cross-sectional study of medical students. *Medical Teacher*, *29*, 43–48.
- Demerouti, E., & Bakker, A.B. (2008). The Oldenburg Burnout Inventory: A good alternative to measure burnout and engagement. In J.R.B. Halbesleben (Ed.), *Handbook of stress and burnout in health care*. Hap-pauge, NY: Nova Science Publisher.
- Demerouti, E., Bakker, A.B., Vardakou, I., & Kantas, A. (2003). The convergent validity of two burnout instruments—A multitrait-multimethod analysis. *European Journal of Psychological Assessment*, *19*, 12–23.
- Edwards, J.R., & Cable, D.M. (2009). The value of value congruence. *The Journal of applied psychology*, *94*, 654–677.
- Elvin-Nowak, Y. (1999). The meaning of guilt: A phenomenological description of employed mothers' experiences of guilt. *Scandinavian Journal of Psychology*, *40*, 73–83.
- Falkum, E. (2000). Hva er utbrentet? [What is burnout?]. *Tidsskr Nor Lægeforen*, *120*, 1122–1128.
- Finkel, S.E. (1995). *Causal analysis with panel data*. Thousand Oaks, CA: Sage.
- Frone, M.R. (2000). Work-family conflict and employee psychiatric disorders: The National Comorbidity Survey. *J Appl Psychol*, *85*, 888–895.
- Fuß, I., Nubling, M., Hasselhorn, H.M., Schwappach, D., & Rieger, M. (2008). Working conditions and Work-Family Conflict in German hospital physicians: Psycho-social and organisational predictors and consequences. *Bmc Public Health*, *8*, 353.
- Geurts, S.A.E., & Demerouti, E. (2003). Work/non-work interface: A review of theories and findings. In M.J.

- Schabracq, J.A.M. Winnubst, & C.L. Cooper (Eds), *The handbook of work and health psychology* (pp. 279–312). New York: John Wiley & Sons.
- Gjerberg, E. (2003). Women doctors in Norway: The challenging balance between career and family life. *Social Science and Medicine*, *57*, 1327–1341.
- Grandey, A.A., & Cropanzano, R. (1999). The conservation of resources model applied to work/family conflict and strain. *Journal of Vocational Behavior*, *54*, 350–370.
- Green, D.E., Walkey, F.H., & Taylor, A.J.W. (1991). The 3-Factor Structure of the Maslach Burnout Inventory—A multicultural, multinational confirmatory study. *Journal of Social Behavior and Personality*, *6*, 453–472.
- Gundersen, L. (2001). Physician burnout. *Annals of Internal Medicine*, *135*, 145–148.
- Halbesleben, J.R.B., & Rathert, C. (2008). Linking physician burnout and patient outcomes: Exploring the dyadic relationship between physicians and patients. *Health Care Management Review*, *33*, 29–39.
- Hallsten, L. (1993). Burning out: A framework. In W.B.Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 95–113). Washington, DC: Taylor & Francis.
- Hallsten, L., Josephson, M., & Torgén, M. (2005). *Performance-based self-esteem. A driving force in burnout processes and its assessment* (Rep. No. 2005:4). Stockholm, Sweden: National Institute of Working Life.
- Hausmann, R., Tyson, L.D., & Zahidi, S. (2008). The global gender gap report 2008. *World Economic Forum*.
- Hem, E., Haldorsen, T., Aasland, O.G., Tyssen, R., Vaglum, P., & Ekeberg, I. (2004). Suicide rates according to education with a particular focus on physicians in Norway 1960–2000. *Psychological Medicine*, *35*, 873–880.
- Heponiemi, T., Kouvonen, A., Vanska, J., Halila, H., Sinervo, T., Kivimaki, M., Elovainio, M. (2008). Effects of active on-call hours on physicians' turnover intentions and well-being. *Scandinavian Journal of Work, Environment, and Health*, *34*, 356–363.
- Hobfoll, S.E. (1989). Conservation of resources. A new attempt at conceptualizing stress. *American Psychologist*, *44*, 513–524.
- Hobfoll, S.E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources. *Applied Psychology*, *50*, 337–421.
- Hobfoll, S.E., & Freedy, J. (1993). Conservation of resources: A general stress theory applied to burnout. *Professional burnout: Recent developments in theory and research*, 115–129.
- Hobfoll, S.E., & Shirom, A. (2001). Conservation of resources theory: Applications to stress and management in the workplace. *Public Administration and Public Policy*, *87*, 57–80.
- Houkes, I., Winants, Y.H.W.M., & Twellaar, M. (2008). Specific determinants of burnout among male and female general practitioners: A cross-lagged panel analysis. *Journal of Occupational and Organizational Psychology*, *81*, 249–276.
- Innstrand, S.T., Langballe, E.M., Espnes, G.A., Aasland, O.G., & Falkum, E. (2010). Personal vulnerability and work-home interaction: The effect of job performance-based self-esteem on work/home conflict and facilitation. *Scandinavian Journal of Psychology*. DOI: 10.1111/j.1467-9450.2010.00816.x.
- Innstrand, S.T., Langballe, E.M., Espnes, G.A., Falkum, E., & Aasland, O.G. (2008). Positive and negative work-family interaction and burnout: A longitudinal study of reciprocal relations. *Work & Stress*, *22*, 1–15.
- Innstrand, S.T., Langballe, E.M., Falkum, E., Espnes, G.A., & Aasland, O.G. (2009). Gender-specific perceptions of four dimensions of the work/family interaction. *Journal of Career Assessment*, *17*, 402–416.
- Jöreskog, K.G., Sörbom, D., & Inc, S. (1996). *LISREL 8: User's reference guide*. Scientific Software. Chicago: Scientific Software International.
- Keeton, K., Fenner, D.E., Johnson, T.R.B., & Hayward, R.A. (2007). Predictors of physician career satisfaction, work-life balance, and burnout. *Obstetrics and Gynecology*, *109*, 949–955.
- Kinnunen, U., Geurts, S., & Mauno, S. (2004). Work-to-family conflict and its relationship with satisfaction and well-being: A one-year longitudinal study on gender differences. *Work and Stress*, *18*, 1–22.
- Kohler, J.M., Munz, D.C., & Grawitch, M.J. (2006). Test of a dynamic stress model for organisational change: Do males and females require different models? *Applied Psychology*, *55*, 168–191.
- Langelan, S., Bakker, A.B., van Doornen, L.J.P., & Schaufeli, W.B. (2006). Burnout and work engagement: Do individual differences make a difference? *Personality and Individual Differences*, *40*, 521–532.
- Laschinger, S., Heather, K., Wong, C.A., & Greco, P. (2006). The impact of staff nurse empowerment on person-job fit and work engagement/burnout. *Nursing Administration Quarterly*, *30*, 358–368.
- Lee, R.T., & Ashforth, B.E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, *81*, 123–133.
- Leiter, M. P. (2008). A two process model of burnout and work engagement: Distinct implications of demands and values. *Giornale Italiano di Medicina del Lavoro ed Ergonomia*, *30*, A52–A58.
- Leiter, M.P., & Maslach, C. (2005). A mediation model of job burnout. In A. Antoniou, & C. Cooper (Eds), *Research*

- companion to organizational health psychology (pp. 544–564). Northampton, MA: Edward Elgar Publishing.
- Leiter, M.P., & Schaufeli, W.B. (1996). Consistency of the burnout construct across occupations. *Anxiety, Stress and Coping*, 9, 229–243.
- Linzer, M., McMurray, J.E., Visser, M.R., Oort, F.J., Smets, E., & De Haes, H.C. (2002). Sex differences in physician burnout in the United States and The Netherlands. *JAMWA*, 57, 191–193.
- Linzer, M., Visser, M.R.M., Oort, F.J., Smets, E.M.A., McMurray, J.E., & de Haes, H.C.J.M. (2001). Predicting and preventing physician burnout: Results from the United States and the Netherlands. *The American Journal of Medicine*, 111, 170–175.
- Livingston, B.A., & Judge, T.A. (2008). Emotional responses to work-family conflict: An examination of gender role orientation among working men and women. *Journal of Applied Psychology*, 93, 207–215.
- Lobel, S.A. (1991). Allocation of investment in work and family roles: Alternative theories and implications for research. *Academy of Management Review*, 16, 507–521.
- Maslach, C. (1993). Burnout: A multidimensional perspective. In W.B. Schaufeli, C. Maslach, & T. Marek (Eds), *Professional burnout: recent developments in theory and research* (pp. 19–32). Washington, DC: Taylor & Francis.
- Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397–422.
- Meglino, B.M., Ravlin, E.C., & Adkins, C.L. (1992). The measurement of work value congruence: A field study comparison. *Journal of Management*, 18, 33–43.
- Montgomery, A.J., Panagopolou, E., & Benos, A. (2006). Work-family interference as a mediator between job demands and job burnout among doctors. *Stress and Health*, 22, 203–212.
- Nylenna, M., Gulbrandsen, P., Förde, R., & Aasland, O.G. (2005). Unhappy doctors? A longitudinal study of life and job satisfaction among Norwegian doctors 1994–2002. *BMC Health Services Research*, 5, 44.
- Perrewe, P.L., Hochwarter, W.A., & Kiewitz, C. (1999). Value attainment: An explanation for the negative effects of work-family conflict on job and life satisfaction. *Journal of Occupational Health Psychology*, 4, 318–326.
- Peterson, U., Demerouti, E., Bergstrom, G., Samuelsson, M., Aasberg, M., & Nygren, A. (2008). Burnout and physical and mental health among Swedish healthcare workers. *Journal of Advanced Nursing*, 62, 84–95.
- Pleck, J.H. (1977). The work-family role system. *Social Problems*, 24, 417–427.
- Premeaux, S.F., Adkins, C.L., & Mossholder, K.W. (2007). Balancing work and family: A field study of multi-dimensional, multi-role work-family conflict. *Journal of Organizational Behavior*, 28, 705–727.
- Schaufeli, W., & Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*. London: Taylor & Francis.
- Schaufeli, W.B., & Salanova, M. (2007). Efficacy or inefficacy, that's the question: Burnout and work engagement, and their relationships with efficacy beliefs. *Anxiety, Stress, and Coping*, 20, 177–196.
- Seligman, M.E.P., Steen, T.A., Park, N., & Peterson, C. (2005). Positive psychology progress. *American Psychologist*, 60, 410–421.
- Shanafelt, T.D., Bradley, K.A., Wipf, J.E., & Back, A.L. (2002). Burnout and self-reported patient care in an internal medicine residency program. *Annals of Internal Medicine*, 136, 358–367.
- Shirom, A. (2003). Job related burnout: A review. In J.C.Quick, & L.E. Tetrick (Eds), *Handbook of occupational health psychology* (pp. 245–264). Washington, DC: American Psychological Association.
- Siegal, M., & McDonald, T. (2004). Person-organization value congruence, burnout and diversion of resources. *Personnel Review*, 33, 291–301.
- Simon, R. W. (1995). Gender, multiple roles, role meaning, and mental-health. *Journal of Health and Social Behavior*, 36, 182–194.
- Skaare, S. (2006). *Undersøkelse om «Utbrenthet i enkelte yrker» 2005: dokumentasjonsrapport [A study on burnout in different occupational groups in Norway]* Oslo: Statistisk sentralbyrå.
- Soler, J.K., Yaman, H., Esteve, M., Dobbs, F., Asenova, R.S., Katic, M. et al. (2008). Burnout in European family doctors: the EGPRN study. *Family Practice*, 25, 245–265.
- Tabachnick, B.G., Fidell, L.S., & Osterlind, S.J. (2001). *Using multivariate statistics* (4th edn.). Boston, MA: Allyn & Bacon.
- Taris, T.W. (2000). *A primer in longitudinal data analysis*. London: Sage.
- Toyru, S., Kalimo, R., Aarimaa, M., Juntunen, J., Seuril, M., & Rasanen, K. (2004). Children and work-related stress among physicians. *Stress and Health*, 20, 213–221.
- Tyssen, R. (2007). Health problems and the use of health services among physicians: A review article with particular emphasis on Norwegian studies. *Industrial Health*, 45, 599–610.
- Tyssen, R., Hem, E., Gude, T., Gronvold, N.T., Ekeberg, O., & Vaglum, P. (2009). Lower life satisfaction in physicians compared with a general population sample A 10-year longitudinal, nationwide study of course and predictors. *Social Psychiatry and Psychiatric Epidemiology*, 44, 47–54.

- Wayne, J.H., Grzywacz, J.G., Carlson, D.S., & Kacmar, K.M. (2007). Work-family facilitation: A theoretical explanation and model of primary antecedents and consequences. *Human Resource Management Review*, *17*, 63–76.
- Wayne, J.H., Musisca, N., & Fleeson, W. (2004). Considering the role of personality in the work-family experience: Relationships of the big five to work-family conflict and facilitation. *Journal of Vocational Behavior*, *64*, 108–130.
- Wu, S., Zhu, W., Li, H., Wang, Z., & Wang, M. (2008). Relationship between job burnout and occupational stress among doctors in China. *Stress and Health*, *24*, 143–149.
- Zapf, D., Dormann, C., & Frese, M. (1996). Longitudinal studies in organizational stress research: A review of the literature with reference to methodological issues. *Journal of Occupational Health Psychology*, *1*, 145–169.