

## Burnout and work engagement among teachers

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### Abstract

The Job Demands–Resources Model was used as the basis of the proposal that there are two parallel processes involved in work-related well-being among teachers, namely an energetical process (i.e., job demands → burnout → ill health) and a motivational process (i.e., job resources → engagement → organizational commitment). In addition, some cross-links between both processes were hypothesized. Structural equation modeling was used to simultaneously test the hypotheses in a sample of Finnish teachers ( $N=2038$ ). The results confirmed the existence of both processes, although the energetical process seems to be more prominent. More specifically, (1) burnout mediated the effect of high job demands on ill health, (2) work engagement mediated the effects of job resources on organizational commitment, and (3) burnout mediated the effects of lacking resources on poor engagement. The robustness of these findings is underscored by the fact that they were obtained in one half of the sample (using random selection) and cross-validated in the other half. © 2005 Society for the Study of School Psychology. Published by Elsevier Ltd. All rights reserved.

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Teaching is stressful (Borg & Riding, 1991; Travers & Cooper, 1996); for example, it has been estimated that between 5% and 20% of all U.S. teachers are burned out at any given time (Farber, 1991). In comparison with other professions, teachers show high levels

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of exhaustion and cynicism, the core dimensions of burnout (Maslach, Jackson, & Leiter, 1996; Schaufeli & Enzmann, 1998). In Finland, the country where the current study was conducted, educators have the highest burnout levels compared to workers in all other human services and white collar jobs (Kalimo & Hakanen, 2000). However, it is important to note that the majority of teachers are *not* anxious, stressed, unmotivated, or burned-out (Farber, 1984). Quite to the contrary, the vast majority are content and enthusiastic (Kinnunen, Parkatti, & Rasku, 1994; Rudow, 1999) and find their work rewarding and satisfying (Borg & Riding, 1991; Boyle, Borg, Falzon, & Baglioni, 1995). So far in the occupational health psychology literature, the negative aspects of teaching have dominated. Therefore, we have used the Job Demands–Resources Model in the current study in order to include not only teacher burnout and the associated process of energy draining, but also teacher engagement and the positive motivational process involved.

### Balance models of job stress

The point of departure for several models used in the job stress literature is that strain or stress is the result of a disturbance in the equilibrium between the demands that employees are exposed to and the resources that they have at their disposal. For example, according to the well-known and influential demands–control model (DCM; Karasek, 1979), job stress is particularly caused by the combination of high job demands (work overload and time pressure) and low job control. Thus, the DCM focuses only on one type of job demand (psychological workload) and one type of job resource (job control).

In general, one might argue that the strength of this model lies in its simplicity. However, this can also be seen as a weakness, since the complex reality of working organizations is reduced to only a handful of variables. Research on job stress and burnout has produced a laundry list of job demands and (lack of) job resources as potential predictors beyond those in the DCM, including emotional demands, low social support, lack of supervisory support, and lack of performance feedback, to name only a few (see Kahn & Byosiere, 1992; Lee & Ashforth, 1996).

A related point of critique is the static character of the DCM. For instance, in the DCM, it is unclear why autonomy is the most important resource for employees (and additionally social support in the extended demand–control–support model; Johnson & Hall, 1988). Would it not be possible that in certain work situations totally different resources prevail (for example, inspirational leadership in an Internet company, or open communication among reporters of a local TV station)? Similarly, many studies on teachers show that emotional demands, e.g., due to pupil misbehavior, are at least as important predictors of job stress as is work overload. In addition, since the DCM only recognizes few aspects of working conditions, it seems to be too general a starting point for improving working conditions and promoting well-being in most occupations.

### The Job Demands–Resources Model

According to the Job Demands–Resources (JD–R) Model (Bakker, Demerouti, De Boer, & Schaufeli, 2003; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), regardless

of the occupation two broad categories of work characteristics, can be distinguished: job demands and job resources (see Fig. 1).

*Job demands* refer to those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (i.e., cognitive or emotional) effort and are therefore associated with certain physiological and/or psychological costs (Demerouti et al., 2001). Although it has been suggested that job demands might measure the challenges in work rather than the stressful aspects (Steenland, Johnson, & Nowlin, 1997), job demands may become stressors in situations which require high effort to sustain an expected performance level, consequently eliciting negative responses, including burnout. In the current study, we included three job demands that have been identified as major causes of psychological strain among teachers: (1) disruptive pupil behaviors (e.g., Boyle et al., 1995; Evers, Tomic, & Brouwers, 2004; Kinnunen & Salo, 1994), (2) work overload (Borg & Riding, 1991; Burke & Greenglass, 1995; Kinnunen & Salo, 1994), and (3) a poor physical work environment (Bakker, Demerouti, & Euwema, 2005; Farber, 2000; Friedman, 1991).

*Job resources* refer to those physical, psychological, social, or organizational aspects of the job that may (1) reduce job demands and the associated physiological and psychological costs, (2) are functional in achieving work goals, and (3) stimulate personal growth, learning, and development. Hence, job resources are not only necessary to deal with job demands and to “get things done”, but they are also important in their own right. Conversely, a lack of job resources may have negative effects on teachers’ well-being, that is, increase levels of burnout. In the current study, we included five job resources that have been identified either as major motivators that increase commitment or engagement, or that—when lacking—act as factors that increase burnout: (1) job control (see e.g., Taris, Schreurs, & van Iersel-van Silfhout, 2001), (2) access to information (Leithwood, Menzies, Jantzi, & Leithwood, 1999), (3) supervisory support (Coladarci, 1992; Leiter & Maslach, 1988; Rosenholtz & Simpson, 1990), (4) innovative school climate (Rosenholtz, 1989), and (5) social climate (e.g., Friedman, 1991; Kremer-Hayon & Kurtz, 1985). Taken together, the JD–R model proposes that high job demands and a lack of job resources form the breeding ground for burnout and for reduced work engagement, respectively.

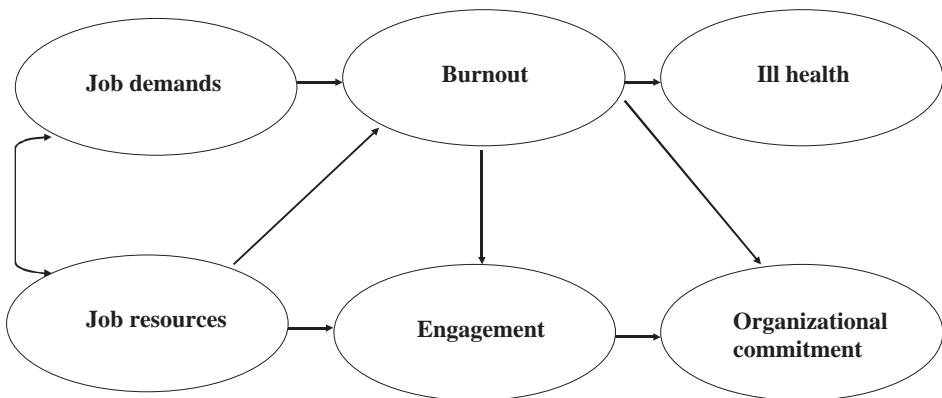


Fig. 1. Hypothesized Job Demands – Resources Model.

*Burnout* is usually defined as a syndrome of exhaustion, cynicism, and reduced professional efficacy (Maslach et al., 1996). *Exhaustion* refers to feelings of strain, particularly chronic fatigue resulting from overtaxing work. The second dimension, *cynicism* refers to an indifferent or a distant attitude towards work in general and the people with whom one works, losing one's interest in work and feeling for work has lost its meaning. Finally, lack of *professional efficacy* refers to reduced feelings of competence, successful achievement, and accomplishment both in one's job and the organization. However, during the past decade, evidence has accumulated that lack of professional efficacy plays a divergent role as compared to exhaustion and cynicism (see e.g., Lee & Ashforth, 1996; Leiter, 1993). More specifically, it seems that exhaustion and cynicism constitute the essence or "core" of the burnout syndrome (Green, Walkey, & Taylor, 1991; Schaufeli & Buunk, 2003). Therefore, only these two burnout dimensions were included in the present study.

*Work engagement* is defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption (Schaufeli, Salanova, González-Roma, & Bakker, 2002). Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence also in the face of difficulties. Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge. The third defining characteristic of engagement is called absorption, which is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work. Recent research suggests, however, that vigor and dedication constitute the core dimensions of engagement (González-Roma, Schaufeli, Bakker, & Lloret, in press). More specifically, it seems that vigor and dedication are the opposite poles of the burnout dimensions of exhaustion and cynicism, respectively, whereby vigor and exhaustion span a continuum labeled "energy", and dedication and cynicism span a continuum labeled "identification" (González-Roma et al., in press).

The JD–R model assumes that job demands and job resources may evoke two different, albeit related processes (see Fig. 1): (1) an energetic process of wearing out in which high job demands exhaust employees' mental and physical resources and may therefore lead to burnout, and eventually to ill health; and (2) a motivational process in which job resources foster engagement and concomitant organizational commitment (Schaufeli & Bakker, 2004). The *energetic process* from high job demands through burnout to ill health can be illuminated using Hockey's (1997, 2000) compensatory regulatory-control model. According to this model, employees under stress face a trade-off between the protection of their primary performance goals (benefits) and the mental effort that has to be invested in the job (costs). When job demands increase, regulatory problems occur; that is, compensatory effort has to be mobilized in order deal with the increased demands and to maintain performance levels, and this is associated with physiological and psychological costs (e.g., increased sympathetic activity, fatigue, loss of motivation). Continuous mobilization of compensatory effort drains the employee's energy and might therefore lead to burnout (exhaustion and cynicism) and, in the long run, to ill health (Frankenhaeuser & Johansson, 1986; Gaillard, 2001; Hockey, 1997).

**Hypothesis 1 (H1).** Job demands are related to ill health through burnout. In other words, burnout mediates the relationship between high job demands and ill health.

The *motivational process* links job resources with organizational commitment through work engagement. As follows from our definition, job resources may play either an intrinsic motivational role because they foster employees' growth, learning, and development, or they may play an extrinsic motivational role because they are instrumental in achieving work goals. In the former case, according to self-determination theory (Deci, Vallerand, Pelletier, & Ryan, 1991), any social context that satisfies the basic human needs of autonomy (job control), competence and relatedness (social support) enhances well-being and increases commitment (see also Hackman & Oldham, 1980). In the latter case, for instance because of availability of information or an innovative climate, it is likely that the task will be completed successfully and that the work goal will be attained. In either case, be it through satisfying basic needs or through the achievement of work goals, the outcome for the employee is positive, and engagement—a fulfilling, positive work-related state of mind—is likely to occur. Moreover, it is plausible to assume that engaged employees are committed to the organization because the organization provides them with job resources that not only enable them to achieve their work goals, but that also provide opportunities for learning, growth, and development (Houkes, Janssen, De Jonge, & Nijhuis, 2001).

**Hypothesis 2 (H2).** Job resources are related to organizational commitment through work engagement. In other words, work engagement mediates the relationship between job resources and organizational commitment.

In addition to the two hypothesized processes, four cross-links are assumed (see Fig. 1). Based on ample empirical evidence, we predict that job resources will be negatively related to burnout, and that burnout will be negatively associated with organizational commitment (for overviews, see Lee & Ashforth, 1996; Schaufeli & Buunk, 2003; Schaufeli & Enzmann, 1998).

**Hypothesis 3 (H3).** Job resources are negatively related to burnout.

**Hypothesis 4 (H4).** Burnout is negatively related to organizational commitment.

In addition, we assume that job demands and job resources are negatively correlated (see Bakker et al., 2003; Demerouti et al., 2001; Schaufeli & Bakker, 2004). This follows from the definitions of demands and resources; that is, job demands are expected to be high, especially when resources are lacking, and—vice versa—job demands are expected to be low, when many job resources are available. In other words, jobs are demanding when resources are lacking and—conversely—when enough resources are available, the jobs are easily done.

**Hypothesis 5 (H5).** Job demands and job resources are negatively correlated.

Finally, in addition to a direct positive effect of job resources on engagement, an indirect negative effect is also assumed. That is, when job resources are available they are likely to be associated with engagement, whereas when job resources are lacking they are likely to be associated with burnout, and in turn with poor engagement (see also Schaufeli & Bakker, 2004). The reason is that burnout and engagement are each other's opposites (González-Roma et al., *in press*): when burnout levels are high—either because of high

demands or because of lacking resources – this is associated with low levels of engagement.

**Hypothesis 6 (H6).** Job resources are related to work engagement through burnout. In other words, burnout partly mediates the relationship between job resources and work engagement.

## Method

### *Participants and procedure*

A questionnaire was delivered to all teachers of the Education Department of Helsinki, Finland. Teachers ( $N=2038$ ) from nearly 200 elementary ( $n=843$ ), lower secondary ( $n=497$ ), upper secondary ( $n=278$ ), or vocational schools ( $n=217$ ) returned the questionnaire anonymously in a prepaid envelope to the principal researcher at the Finnish Institute of Occupational Health. Unfortunately, there was no possibility to send reminders to those not responding to the questionnaire. The response rate was 52%. Most participants were female (79%): 4% of the teachers were younger than 25 years old, 30% were between 26 and 35 years, 25% between 36 and 45 years, 27% between 46 and 55 years, and 14% were over 55 years of age. The mean job tenure as a teacher was 13.5 years ( $S.D.=10.1$ ). About 63% of the sample had a permanent job, and 37% had a fixed-term contract. On average, participants worked 36.6 h per week ( $S.D.=8.9$ ).

### *Measurement instruments*

*Burnout* was measured with the Maslach Burnout Inventory–General Scale (MBI–GS; Schaufeli, Leiter, Maslach, & Jackson, 1996). The factorial validity of the MBI–GS has been confirmed across occupational groups and across nations (Schutte, Toppinen, Kalimo, & Schaufeli, 2000). We used the two scales measuring the core dimensions of burnout, namely exhaustion and cynicism. Both scales consist of five items. Example items are “I feel used up at the end of a working day” (exhaustion), and “I doubt the significance of my work” (cynicism). All items were scored on a seven-point rating scale, ranging from 0 (“never”) to 6 (“daily”). The internal consistencies (Cronbach’s  $\alpha$ ) of both scales were good: .90 for exhaustion, and .85 for cynicism.

*Work Engagement* was assessed with the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2002). The factorial validity of the Finnish version of the UWES has been demonstrated in previous research (Hakanen, 2002). In addition, previous studies carried out in other countries have shown that the UWES has satisfactory psychometric properties (Schaufeli et al., 2002). We used the two scales assessing vigor (six items) and dedication (five items) to assess the core dimensions of engagement. Example items are “When I get up in the morning, I feel like going to work” (vigor), and “I am enthusiastic about my work” (dedication). The engagement items were similarly scored as the items of the MBI–GS. Cronbach’s  $\alpha$  was .80 for vigor, and .86 for dedication.



*Job Demands and Resources* were basically assessed with the Healthy Organization Questionnaire (HOB), a well-validated questionnaire that is widely used in Finnish organizations (Lindström, Hottinen, Kivimäki, & Länsisalmi, 1997). The instrument has also been translated into several languages, and used in many multinational organizations in Finland and elsewhere (Lindström, 1997). Three job demands (pupil misbehavior, work overload, and physical work environment) and five job resources (job control, supervisor support, information, social climate, and innovative climate) were measured. Only pupil misbehavior was measured with a separate six-item scale adapted from Kyriacou and Sutcliffe (1978). An example item is “As a teacher, how great a source of stress for you is the pupils’ lack of respect for teachers?” ( $\alpha = .90$ ). Examples of other job demand items are “How often do you feel pressure with unfinished work tasks?” (*work overload*; three items,  $\alpha = .77$ ), and “How much do the following things bother you in your work: quality of inner air?” (*unfavorable physical work environment*; five items,  $\alpha = .71$ ).

The five job resources were assessed with three questions each: for example, “To what extent are you able to influence matters related to the work in your job?” (*job control*;  $\alpha = .77$ ); “Does your supervisor provide help and support when needed?” (*supervisor support*;  $\alpha = .85$ ); “Do you think that the management shares enough job-related information with the personnel in your organization?” (*information*;  $\alpha = .83$ ); “Do you think the social climate in your workplace is comfortable and relaxed?” (*social climate*;  $\alpha = .87$ ); and “In our organization we continuously make improvements concerning our jobs” (*innovative climate*;  $\alpha = .79$ ). All the HOB items that were used to assess job demands and resources were scored on a five-point scale, ranging from 1 (“hardly ever”) to 5 (“very often”).

*Ill health* was assessed with two questions. *Self-rated health* was measured with the question “How do you rate your health compared with your age peers?” (1 = “much worse”, 5 = “much better”). In several studies self-rated health has been closely related to psychological and somatic complaints, but it has also proved to be a powerful predictor of objective measures of health and even mortality (Idler & Benyamini, 1997; Manderbacka, Lahelma, & Martikainen, 1998).

Following Tuomi, Ilmarinen, Martikainen, Aalto, and Klockars (1997), *work ability* was assessed with one question that could be answered using a scale from 0 to 10: “Assume that your work ability at its best has had a value of 10. How many points would you give your current work ability? (0 means that currently you cannot work at all)”. This work ability item is part of the Work Ability Index, which has been shown to be a valid measure and which has been translated into 19 languages (Ilmarinen & Tuomi, 2004; Tuomi, Ilmarinen, Seitsamo, et al., 1997). The single item has been widely used in Finnish work-life and health surveys.

*Organizational commitment* was measured with two items assessed on a five-point scale (1 = “totally disagree”, 5 = “totally agree”). An example item is “I’m willing to put serious effort into furthering the basic mission of my organization”. Cronbach’s  $\alpha$  was .65.

### Analyses

In order to test all six hypotheses simultaneously, structural equation modeling (SEM) techniques were employed using the AMOS software package (Arbuckle & Wothke,

1999). The maximum likelihood method of estimation was used and the input for each analysis was the covariance matrix of the items or the scale scores. The latent job demands variable was indicated by pupil misbehavior, quantitative workload, and unfavorable physical work environment. The latent job resources variable was indicated by job control (a task-level job resource), social climate and supervisor support (social-level job resources), and information and innovative climate (organization-level job resources). Burnout was indicated by exhaustion and cynicism, whereas work engagement was indicated by vigor and dedication. The two outcomes, ill health and organizational commitment, both had two single-item indicators.

Model modifications are often needed in structural equation modeling in order to increase the fit of the model to the data. However, model respecification increases the risk of change capitalization and thus threatens the validity of the study (MacCallum, Roznowski, & Necowitz, 1992). In order to counteract this risk, the sample was randomly split into two groups of equal size. The hypothesized model (as displayed in Fig. 1) was fitted to the data of the first group of teachers, and after that cross-validated in the second group.

To test the hypotheses, several nested models were compared by means of the Chi-square difference test (Jöreskog & Sörbom, 1986). In addition, the Goodness-of-Fit Index (GFI), the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Normed Fit Index (NFI), and the Tucker–Lewis Index (TLI) were assessed. Values of the RMSEA of about .05 or less would indicate a close fit, whereas values smaller than .08 are still indicative of an acceptable fit, and values greater than 0.1 should lead to model rejection (Cudeck & Browne, 1993). For the other indices, as a rule of thumb, values greater than .90 are considered to indicate a good fit (Hoyle, 1995).

Several previous studies have shown that teacher burnout may be related to particular demographic variables, such as gender and age (Friedman, 1991; Greenglass, Burke, & Ondrack, 1990), and to work-related factors, including teaching experience (Friedman, 1991). Therefore, we also conducted post hoc tests for our final structural model using the multigroup method for the following comparisons: (1) men versus women, (2) those under age 45 versus those over age 45, (3) those with a permanent contract versus a fixed-term contract, and (4) those with job tenure less than 10 years versus those with tenure over 10 years. However, no significant differences in model fit were found between these groups. In addition, since our study included teachers employed in elementary, lower, and upper secondary as well as vocational schools, we also used the multiple group method to compare the model fit according to the school type. Again, there were no differences in the model fit.

## Results

### *Descriptive statistics*

The means, standard deviations, and intercorrelations of all study variables are presented for the two random groups of teachers separately in Table 1. All the significant relationships between the variables were in the expected direction. Job demands were



Table 1

Descriptive statistics and inter-correlations of the study variables in two randomized teacher groups, total  $N=2038$ 

	$\alpha$	Means in G 1	Means in G 2	S.D. in G 1	S.D. in G 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Job Demands and Resources</i>																				
1. Pupil misbehavior	.90	3.05	3.12	0.98	0.96	–	.24	.40	–.13	–.03	–.02	–.02	–.06	.33	.34	–.21	–.23	–.11	–.16	–.15
2. Workload	.77	3.59	3.54	0.86	0.89	.17	–	.30	–.32	–.13	–.18	–.15	–.06	.44	.26	–.19	–.14	–.21	–.27	–.07
3. Physical work environment	.71	2.77	2.74	0.76	0.75	.38	.25	–	–.25	–.24	–.23	–.21	–.18	.32	.29	–.19	–.21	–.09	–.26	–.19
4. Job control	.77	3.37	3.46	0.79	0.81	–.07	–.28	–.20	–	.28	.30	.34	.26	–.32	–.28	.23	.28	.19	.29	.23
5. Supervisory support	.85	3.05	3.11	1.03	1.00	–.02	–.07	–.17	.34	–	.52	.59	.58	–.16	–.22	.21	.22	.06	.22	.26
6. Information	.83	3.54	3.59	0.70	0.67	–.04	–.19	–.19	.29	.51	–	.55	.54	–.22	–.25	.22	.21	.14	.26	.27
7. Social climate	.87	3.61	3.71	0.95	0.95	.04	–.14	–.13	.33	.57	.58	–	.63	–.26	–.31	.20	.24	.11	.29	.28
8. Innovative climate	.79	3.15	3.19	0.75	0.75	–.03	–.00	–.12	.21	.59	.48	.58	–	–.14	–.23	.21	.25	.07	.21	.30
<i>Well-being</i>																				
9. Exhaustion	.90	2.10	2.01	1.38	1.35	.28	.44	.24	–.29	–.19	–.24	–.24	–.12	–	.66	–.37	–.40	–.27	–.47	–.28
10. Cynicism	.85	1.73	1.62	1.36	1.35	.29	.26	.25	–.25	–.31	–.29	–.36	–.26	.64	–	–.44	–.55	–.21	–.49	–.42
11. Vigor	.80	4.50	4.53	1.00	0.98	–.20	–.18	–.18	.26	.18	.23	.20	.18	–.37	–.43	–	.76	.29	.39	.41
12. Dedication	.86	4.71	4.72	1.14	1.10	–.27	–.16	–.20	.27	.24	.27	.25	.25	–.37	–.54	.76	–	.20	.36	.50
<i>Health and commitment</i>																				
13. Self-rated health	–	3.33	3.32	0.78	0.74	–.06	–.19	–.07	.18	.06	.06	.06	.01	–.29	–.17	.25	.19	–	.43	.08
14. Work ability	–	8.25	8.36	1.45	1.37	–.15	–.15	–.20	.21	.15	.19	.19	.14	–.46	–.44	.43	.40	.36	–	.26
15. Organizational commitment	.65	4.28	4.31	0.63	0.61	–.19	–.05	–.14	.16	.24	.26	.25	.22	–.29	–.45	.42	.47	.07	.33	–

The inter-correlations of the study variables are presented below the diagonal for the first teacher group (model specification group) and above the diagonal for the second teacher group (cross-validation group). Correlations between 0.07 and 0.08 are statistically significant,  $p < .05$ ; correlations between 0.09 and 0.11 are statistically significant,  $p < .01$ ; correlations  $\geq .12$  are statistically significant,  $p < .001$ .

positively related to burnout and ill health, whereas job resources were positively related to engagement and organizational commitment, and negatively related to burnout. In addition, burnout symptoms were negatively related to organizational commitment and positively related to ill health, whereas engagement was positively associated with organizational commitment.

### Test of the Job Demands–Resources Model

The hypothesized model was fitted to the data for the first random group of teachers ( $N=1019$ ). As can be seen from the first row of Table 2, the proposed model (M1) fits reasonably well to the data. Although the fit is not perfect, the RMSEA meets the satisfactory criterion of .08, and the CFI, NFI, and TLI approach the criterion value of .90.

In the next series of analyses, we tested the mediating roles of burnout (H1) and work engagement (H2). First, we assessed the direct effects model ( $M2_{dir}$ ), in which job demands and job resources are assumed to have *direct* effects on ill health and organizational commitment, respectively.  $M2_{dir}$  does not include burnout and engagement. The standardized coefficient of the direct path from job demands to ill health was .39 ( $p<.001$ ), and the coefficient of the direct path from job resources to organizational commitment had an identical value of .39 ( $p<.001$ ). This shows that there were significant relationships between the predictors and the outcomes, a prerequisite for mediation to exist (Baron & Kenny, 1986). In the second step, we compared the full

Table 2

Fit indices of the structural equation models in two teacher groups; model specification group ( $N_1=1019$ ) and cross-validation group ( $N_2=1019$ )

	Model description	$\chi^2$	<i>df</i>	GFI	CFI	NFI	TLI	RMSEA (CI and sig. <sup>a</sup> )
M1	Hypothesized model	648.30	96	.91	.89	.88	.86	.08 (.073–.085; $p=.00$ )
$M2_{dir}$	Direct effects model (without burnout and engagement as mediators)	376.04	51	.94	.87	.86	.84	.08 (.075–.091; $p=.00$ )
$M2_{par}$	Partial mediation model	644.25	94	.91	.89	.88	.86	.08 (.074–.086; $p=.00$ )
M0	Null Model	5195.07	120	.45	–	–	–	.21 (.209–.219; $p=.00$ )
$M3_{cross1}$	Cross-validation by fitting the model to Group 2	597.11	96	.92	.91	.89	.88	.08 (.070–.081; $p=.00$ )
M0	Null Model	5494.87	120	.43	–	–	–	.22 (.215–.225; $p=.00$ )
$M3_{cross2}$	Cross-validation by constraining regression paths between latent variables to be equal in two teacher groups	1252.06	200	.92	.90	.88	.88	.05 (.051–.056; $p=.02$ )
$M3_{cross3}$	$M3_{cross2}$ +factor loadings constrained to be equal in two teacher groups	1258.33	210	.92	.90	.88	.89	.05 (.049–.055; $p=.11$ )
M0	Null Model	10689.95	240	.44	–	–	–	.15 (.151–.156; $p=.00$ )

<sup>a</sup> CI=90% confidential limits (for testing  $RMSEA \leq .05$ ).

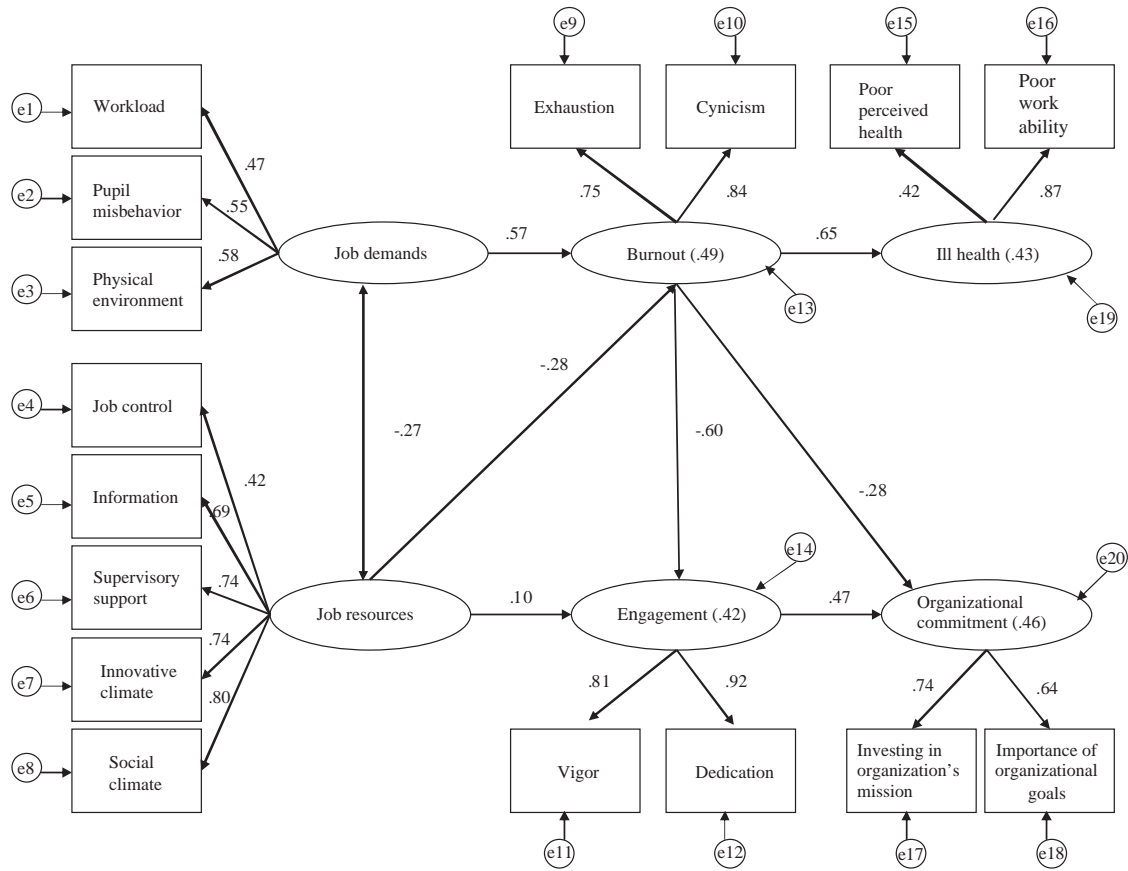


Fig. 2. Constrained parameter estimates (maximum likelihood estimates) of the final, cross-validated model in two teacher groups ( $N_1=1019$  and  $N_2=1019$ ).

mediation model (M1) with the partial mediation model (M2<sub>par</sub>), including the *direct* paths from job demands to ill health and from job resources to organizational commitment as well. The results showed that these additional paths did *not* improve the model fit ( $\Delta\chi^2(2)=4.05$ ,  $p=.13$ ). Consistent with this finding, inspection of the AMOS-output revealed that the path from job demands to ill health was nonsignificant ( $\beta=.05$ ), whereas the direct path from job resources to organizational commitment was marginal ( $\beta=.09$ ,  $p=.045$ ). Thus, the results of the analyses of the data for the first random group of teachers confirm that burnout mediates the relationship between job demands and ill health (cf. H1), and that work engagement mediates the relationship between job resources and organizational commitment (cf. H2).

### Cross-validation

The final step in the analyses was to cross-validate the findings for the first random group of teachers in the second group of teachers. More specifically, we first tested the proposed JD–R model (M1) in the second group of teachers and allowed the parameter estimates to vary freely (M3<sub>cross1</sub>). Again, for this second group the fit indices were acceptable and even slightly better than those for the first group of teachers (see Table 2). Furthermore, the largest difference between the standardized path coefficients for the two groups was only .10 (–.33 in the first group vs. –.23 in the second group for the path between job resources and burnout), thus showing the similarity of the model associations for both groups.

In the second step of the cross-validation, we performed multiple group analyses. The regression paths between the latent variables in our model were constrained to be equal for both groups. This constrained model (M3<sub>cross2</sub>) was compared with the free model, in which the parameter estimates were allowed to vary freely in both groups. The Chi-square difference test showed that there were no significant differences between the groups ( $\Delta\chi^2(8)=6.65$ ,  $p=.58$ ). This means that our hypothetical model fits equally well to the data for both samples.

Finally, in addition to constraining the regression paths between the latent variables, the factor loadings were constrained to be equal for both groups (M3<sub>cross3</sub>), and this model was compared with the free model. A model comparison showed that the factor loadings were invariant across the two groups as well ( $\Delta\chi^2(18)=12.92$ ,  $p=.80$ ).

Taken together, these findings lend support for the proposed JD–R model. The hypothesized model was confirmed and could be cross-validated in two samples of teachers. The results of the final, constrained model (M3<sub>cross3</sub>) are graphically displayed in Fig. 2. Job demands are related to ill health through burnout (H1), whereas work engagement mediates the relationship between job resources and organizational commitment (H2). In addition, job resources and burnout are negatively related (H3), just like burnout and organizational commitment (H4). As expected, job demands and job resources are negatively associated as well (H5). Finally, burnout mediates the relationship between job resources and engagement (H6). The model explains somewhat more of the variance in burnout (49%) than in work engagement (42%). Finally, the model explains 43% of the variance in ill health, and 46% of the variance in organizational commitment.

## Discussion

The current study used the Job Demands–Resources (JD–R) Model (Bakker et al., 2003; Demerouti et al., 2001) to examine how teachers' working conditions are related through work-related well-being – i.e. through burnout and work engagement – to their health problems and to organizational commitment. More specifically, we predicted that teachers' job demands (pupil misbehavior, workload, and physical work environment) would predict ill health through their impact on burnout, and that teachers' job resources (job control, supervisory support, information, social climate, and innovativeness) would predict organizational commitment through work engagement. In addition, we hypothesized that job resources would be inversely related to burnout, and that burnout, in turn, would be inversely related to work engagement and to organizational commitment. Thus, in line with the positive psychology approach (Luthans, 2002; Sheldon & King, 2001), we extended the focus on employee well-being to include not only stressors and threats to teachers' well-being, but positive aspects of teachers' work as well. In addition, this is one of the first studies testing the JD–R model outside The Netherlands, where the model was developed. Moreover, we were able to integrate and study simultaneously in one model many different general as well as *profession-specific* job demands and resources that are known from previous studies to influence teachers' well-being.

The results provide support for the JD–R model among a large sample of Finnish teachers. The alternative model, in which job demands have a *direct* relationship with ill health and job resources have a *direct* relationship with organizational commitment, did not fit better to the data than the proposed model. The statistical procedure we followed, i.e., where the results were first obtained for one half of the randomly split sample and then cross-validated with the other sample, underscores the robustness of our findings.

### *Energetical and motivational processes*

Taken together, our theoretical framework (Demerouti et al., 2001; Schaufeli & Bakker, 2004) was successful in revealing two simultaneous underlying processes in teachers' work. The first process can be called “energetical”, where job demands predict health problems through burnout. The second process can be called “motivational”, in which job resources are important predictors of organizational commitment through work engagement. Interestingly, conceptually similar processes have been described in the teaching literature. Rudow (1999) argued that teachers' cognitive and emotional workload may evoke chronic stress, over fatigue and finally burnout, which may lead to psychosomatic disorders and complaints as well as restrictions in pedagogical performance. Others (Leithwood et al., 1999) have suggested that schools can develop commitment to the collectively held goals of the organization by providing teachers opportunities to become increasingly competent and by developing shared decision-making possibilities (i.e., job resources). These job resources, in turn, encourage personal investment in the work and success of the organization, the antithesis of depersonalization. However, to our knowledge, this is the first time that the energetical and the motivational processes have been tested empirically among teachers.

The teaching profession is known for having many job demands (Kyriacou & Sutcliffe, 1978; Travers & Cooper, 1996) which also in this study were strongly associated with burnout. In addition, our results emphasize the *dual role* of job resources. Teachers who are able to draw upon job resources like job control, supervisory support, and innovativeness may become more vigorous and dedicated, i.e., engaged in their work, and may feel stronger commitment. On the other hand, our findings show that lack of important job resources to meet the job demands may be associated with burnout, which may further undermine work engagement and lead to lower organizational commitment. Thus, the energetical and the motivational processes may also intertwine, since job resources and job demands are unlikely to exist completely independently (Halbesleben & Buckley, 2004; Schaufeli & Bakker, 2004).

In all, these results among teachers replicate and expand previous findings gained using the JD–R model among other occupational groups. Schaufeli and Bakker (2004) showed in their four-sample study that burnout mediated the relationship between job demands and health problems, whereas work engagement mediated the relationship between job resources and turnover intentions. In addition, the energy-driven process (i.e., job demands leading to job strain) has been found to predict absence duration among production personnel (Bakker et al., 2003) and (reduced) in-role performance among human service professionals (Bakker, Demerouti, & Verbeke, 2004). In contrast, in these studies, in line with the motivation-driven process, job resources predicted (reduced) absence frequency and (increased) extra-role performance.

The current results indicate that—among teachers—the energetical process is more prominent than the motivational process. One possible explanation for this finding is offered by conservation of resources theory (COR; Hobfoll, 1989, 2001). COR theory suggests that psychological strain occurs under one of three conditions: (1) when resources are threatened, (2) when resources are lost, and (3) when individuals invest resources and do not gain the anticipated level of return. Furthermore, loss of resources is assumed to be of primary importance compared with the option of gaining resources. This implies that employees are more sensitive to working conditions that translate into losses for them. Thus, according to COR theory, the energetical process as a loss process is expected to be more prominent than the gain process, i.e., the motivational process. The importance of resource loss is further underscored by the fact that poor job resources were directly associated with burnout and were indirectly associated with lower levels of work engagement.

#### *Study limitations and directions for future research*

The current study has some limitations that should be mentioned. Most importantly, the findings come from a study of cross-sectional design. Therefore, although we have claimed to study processes in teachers' well-being, it is not possible to draw final conclusions about the causal relationships between the study variables. Longitudinal study designs are needed to examine the proposed processes. A second limitation is that all the data were based on self-reports. Objective indicators of health status and commitment to the job and the organization should be employed to rule out the potential effects of common method variance. Observer ratings have been successfully used to study working



conditions and their relationships with burnout (Demerouti et al., 2001). It would therefore be interesting for future studies to expand on the present study by testing the relationships between objective demands and resources on the one hand, and work engagement on the other. In addition, indicators of ill health in the structural equation models were single items. The reliability and the validity of single items are often difficult to show, but we used health items that have been previously validated and used in several epidemiological and occupational health studies.

The somewhat different natures of the variables measuring the two categories for working conditions of teachers may also partly explain the secondary importance of the motivational process compared with the energetical process observed in this study. The job demands in this study included emotional as well as physical stressors, which are mainly confronted in the “heart” of teachers’ daily work, i.e., in the classroom. In contrast, most of the job resources we measured were *organizational* and out-of-the-classroom resources. We did not measure, for example, pupil-related emotional resources (e.g., rewarding pupil contacts). It is often stated that the main attractions of teaching are the intrinsic rewards that come from interacting with pupils and enjoying pupils’ achievements (Woods, 1999). Job resources that would capture the positive aspects of daily teaching and interaction with pupils are needed in future studies to more thoroughly explore the motivational process of well-being among teachers. In this respect, the JD–R model is a very promising approach for the examination of working conditions and their impact, since it enables the incorporation of various kinds of work characteristics into one parsimonious model.

Finally, teaching is traditionally viewed as a profession with high initial commitment to the extent that teaching can be said to be a *calling* for many entering the profession. Although today’s teachers have many different motives for working in the classroom, in the present study it was not possible to take into account individual differences, e.g., intrinsic motivation or strong feelings to work as a teacher (Woods, 1999). Prospective studies that follow up teachers from the start of their vocation through to becoming experienced professionals would be of utmost value.

### *Practical implications*

Burnout and decreasing commitment have been regarded as major problems in teaching (Borg & Riding, 1991; Rudow, 1999). The Job Demands–Resources Model examined in this study addresses these issues, and furthermore, points out two options to foster teachers’ well-being, health, and commitment. The results here suggest that efforts aiming at the reduction of job demands and the prevention of burnout should be of primary concern for schools and other organizations. The other important and parallel route consists of activities to increase job resources which potentially lead to higher levels of work engagement, lower levels of burnout, and stronger career commitment.

In reality, schools like any work environments include “givens” and “alterables” (Cooley & Yovanoff, 1996). “Givens” are things that are relatively inherent to the situation and not subject to much change except perhaps in the long term via large-scale systemic efforts. By contrast, “alterables” are characteristics that appear more alterable also in the short term. For teachers the typical “givens” are challenging pupil characteristics, material

shortages, and job requirements, whereas “alterables” include collegial interactions, support, etc. (Cooley & Yovanoff, 1996).

From this perspective, job demands appear to be more like “givens” and job resources more like “alterables”. Therefore, interventions to develop task-level, social, and organizational job resources seem to be a promising starting point for improvements at schools. The results of the current study, however, emphasize the need for interventions aiming at “givens”, for example, facing the demanding nature of pupil interaction, reducing high workloads, and improving school environments.

Obviously, the best option is to apply organizational and individual interventions to simultaneously affect both processes examined in this study, i.e., the energetical and the motivational processes. For example, in Finland as well as in many other countries, there are novice teachers who leave the profession after a few years, and an even bigger problem is the early retirement of senior teachers. Enhancing job resources and preventing teachers from burning out, and thereby increasing teachers’ job commitment, seems to be one promising approach in tackling the issue of attrition in teaching.

The results and conclusions of this study have been discussed in several seminars with the teachers, principals, and the administrative personnel involved in the study in order to make action plans for improving the working conditions of teachers and other staff at schools. One remarkable aspect of these seminars has been that since the teachers’ perspective on their own working conditions and well-being has predominantly been focused on stress and strain, by enabling a shift towards the positive aspects of their work, e.g., the importance of job resources and engagement, encouraged responses have been generated. We believe that since the JD–R model comprehensively and dynamically captures both the well-known stressful aspects of teaching and the often less well-articulated motivational and enjoyable potentials, the model can operate as a realistic and useful practical tool for schools to use to increase the well-being of teachers. Most importantly, healthy and engaged teachers are likely to perform and achieve educational goals better than their colleagues with burnout symptoms (Guglielmi & Tatrow, 1998; Rudow, 1999). In addition, teachers exhibiting greater amounts of enthusiasm seem to be effective in mobilizing interest, energy, excitement, and curiosity among pupils (Bakker, 2005; Patrick, Hisley, & Kempler, 2000). We hope that our study has made a contribution to a better understanding of teachers’ occupational well-being, and has brought new insights into human strengths and potentials in the teaching arena.

## References

- Arbuckle, J. L., & Wothke, W. (1999). *Amos 4.0 user’s guide*. Chicago: Smallwaters.
- Bakker, A. B. (2005). Flow among music teachers and their students: The crossover of peak experiences. *Journal of Vocational Behavior*, *66*, 26–44.
- Bakker, A. B., Demerouti, E., de Boer, E., & Schaufeli, W. B. (2003). Job demands and job resources as predictors of absence duration and frequency. *Journal of Vocational Behavior*, *62*, 341–356.
- Bakker, A. B., Demerouti, E., & Euwema, M. (2005). Job resources buffer the impact of job demands on burnout. *Journal of Occupational Health Psychology*, *10*, 170–180.
- Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the Job Demands – Resources Model to predict burnout and performance. *Human Resource Management*, *43*, 83–104.

- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.
- Borg, M. G., & Riding, R. J. (1991). Occupational stress and satisfaction in teaching. *British Educational Research Journal*, *17*, 263–281.
- Boyle, G. J., Borg, M. G., Falzon, J. M., & Baglioni, A. J. (1995). A structural model of the dimensions of teacher stress. *British Journal of Educational Psychology*, *65*, 49–67.
- Burke, R. J., & Greenglass, E. (1995). A longitudinal study of psychological burnout in teachers. *Human Relations*, *48*, 187–202.
- Coladarci, T. (1992). Teachers' sense of efficacy and commitment to teaching. *Journal of Experimental Education*, *60*, 323–337.
- Cooley, E., & Yovanoff, P. (1996). Supporting professionals-at-risk: Evaluating interventions to reduce burnout and improve retention of special educators. *Exceptional Children*, *62*, 336–355.
- Cudeck, R., & Browne, M. W. (1993). Alternative ways of assessing model fit. In K. A. Bollen, & J. Scott Long (Eds.), *Testing structural equation models* (pp. 1–9). Newbury Park, CA: Sage.
- Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational Psychologist*, *26*, 325–346.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The Job Demands – Resources Model of burnout. *Journal of Applied Psychology*, *86*, 499–512.
- Evers, W. J. G., Tomic, W., & Brouwers, A. A. (2004). Burnout among teachers: Students' and teachers' perceptions compared. *School Psychology International*, *25*, 131–148.
- Farber, B. A. (1984). Stress and burnout in suburban teachers. *Journal of Educational Research*, *77*, 325–331.
- Farber, B. A. (1991). *Crisis in education: Stress and burnout in the American teacher*. San Francisco: Jossey-Bass.
- Farber, B. A. (2000). Treatment strategies for different types of teacher burnout. *Journal of Clinical Psychology*, *56*, 675–689.
- Frankenhaeuser, M., & Johansson, G. (1986). Stress at work: Psychobiological and psychosocial aspects. *International Review of Applied Psychology*, *35*, 287–299.
- Friedman, I. A. (1991). High- and low-burnout schools: School culture aspects of teacher burnout. *Journal of Educational Research*, *84*, 325–333.
- Gaillard, A. W. K. (2001). Stress, workload, and fatigue as three biobehavioral states: A general overview. In P. A. Hancock, & P. A. Desmond (Eds.), *Stress, workload, and fatigue. Human factors in transportation* (pp. 623–639). Mahwah: Lawrence Erlbaum Associates.
- González-Roma, V., Schaufeli, W.B., Bakker, A.B., & Lloret, S. (in press). Burnout and engagement: Independent factors or opposite poles? *Journal of Vocational Behaviour*.
- Green, D. E., Walkey, F. H., & Taylor, A. J. W. (1991). The three-factor structure of the Maslach Burnout Inventory: A multicultural, multinational confirmatory study. *Journal of Social Behavior and Personality*, *6*, 453–472.
- Greenglass, E. R., Burke, R. J., & Ondrack, M. (1990). A gender-role perspective of coping and burnout. *Applied Psychology: An International Review*, *39*, 5–27.
- Guglielmi, R. S., & Tatrow, K. (1998). Occupational stress, burnout, and health in teachers: A methodological and theoretical analysis. *Review of Educational Research*, *68*, 61–99.
- Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, Massachusetts: Addison-Wesley.
- Hakanen, J. (2002). Työuupumuksesta työn imuun—positiivisen työhyvinvointikäsitteen ja-menetelmän suomalaisen version validointi opetusalan organisaatiossa [From burnout to job engagement—validation of the Finnish version of an instrument for measuring job engagement (UWES) in an educational organization]. *Työ ja Ihminen*, *16*, 42–58.
- Halbesleben, J. R. B., & Buckley, M. R. (2004). Burnout in organizational life. *Journal of Management*, *30*, 859–879.
- 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 theory. *Applied Psychology: An International Review*, *50*, 337–370.

- Hockey, G. R. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive–energetical framework. *Biological Psychology*, *45*, 73–93.
- Hockey, G. R. J. (2000). Work environments and performance. In N. Chmiel (Ed.), *Introduction to work and organizational psychology: A European perspective* (pp. 206–230). Malden: Blackwell.
- Houkes, I., Janssen, P. P. M., Jonge, J. d., & Nijhuis, F. J. N. (2001). Specific relationships between work characteristics and intrinsic work motivation, burnout and turnover intention: A multi-sample analysis. *European Journal of Work and Organizational Psychology*, *10*, 1–23.
- Hoyle, R. H. (1995). The structural equation modeling approach: Basic concepts and fundamental issues. In R. H. Hoyle (Ed.), *Structural equation modeling, concepts, issues, and applications* (pp. 1–15). Thousand Oaks, CA: Sage.
- Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior*, *38*, 21–37.
- Ilmarinen, J., & Tuomi, K. (2004). Past, present, and future of work ability. *People and Work Research Reports*, *65*, 1–25.
- Johnson, J. V., & Hall, E. M. (1988). Job strain, work place social support and cardiovascular disease: A cross-sectional study of a random sample of the Swedish working population. *American Journal of Public Health*, *78*, 1336–1342.
- Jöreskog, K. G., & Sörbom, D. (1986). *LISREL user guide version VI* (4th. ed.). Mooresville, Ill: Scientific Software International.
- Kahn, R., & Byosiére, P. (1992). Stress in organizations. In M. D. Dunnette, & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology (2nd ed.)*, vol. 3. (pp. 571–650) Palo Alto: Consulting Psychologists Press.
- Kalimo, R., & Hakanen, J. (2000). Työuupumus [Work and Health in Finland: Burnout]. In S. Virtanen (Ed.), *Työ ja terveys Suomessa v. 2000* (pp. 119–126). Helsinki: Työterveyslaitos.
- Karasek, R. A. (1979). Job demand, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, *24*, 285–309.
- Kinnunen, U., Parkatti, T., & Rasku, A. (1994). Occupational well-being among aging teachers in Finland. *Scandinavian Journal of Educational Research*, *38*, 315–332.
- Kinnunen, U., & Salo, K. (1994). Teacher stress: An eight-year follow-up study on teachers' work, stress, and health. *Anxiety, Stress, and Coping*, *7*, 319–337.
- Kremer-Hayon, L., & Kurtz, H. (1985). The relation of personal and environmental variables to teacher burnout. *Teaching and Teacher Education*, *1*, 243–249.
- Kyriacou, C., & Sutcliffe, J. (1978). Teacher stress: Prevalence, sources, and symptoms. *British Journal of Educational Psychology*, *48*, 159–167.
- 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. (1993). Burnout as a developmental process: Consideration of models. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 237–250). Washington, DC: Taylor & Francis.
- Leiter, M. P., & Maslach, C. (1988). The impact of interpersonal environment on burnout and organizational commitment. *Journal of Organizational Behavior*, *9*, 297–308.
- Leithwood, K. A., Menzies, T., Jantzi, D., & Leithwood, J. (1999). Teacher burnout: A critical challenge for leaders of restructuring schools. In A. M. Huberman (Ed.), *Understanding and preventing teacher burnout: A sourcebook of international research and practice* (pp. 85–114). New York: Cambridge University Press.
- Lindström, K. (1997). Assessing and promoting healthy work organizations. In P. Seppälä, T. Luopajarvi, C. Nygard, & M. Mattila (Eds.), *From experience to innovation* (pp. 504–506). Helsinki: Finnish Institute of Occupational Health.
- Lindström, K., Hottinen, V., Kivimäki, M., & Länsisalmi, H. (1997). Terve Organisaatio-kysely. Menetelmän perusrakenne ja käyttö [The healthy organization barometer]. Helsinki: Työterveyslaitos, Psykologian osasto.
- Luthans, F. (2002). The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior*, *23*, 695–706.

- MacCallum, R. C., Roznowski, M., & Necowitz, L. B. (1992). Model modifications in covariance structure analysis: The problem of capitalization on chance. *Psychological Bulletin*, *111*, 490–504.
- Manderbacka, K., Lahelma, E., & Martikainen, P. (1998). Examining the continuity of self-rated health. *International Journal of Epidemiology*, *27*, 208–213.
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach burnout inventory manual* (3rd ed.). Palo Alto: Consulting Psychologists Press.
- Patrick, B. C., Hisley, J., & Kempler, T. (2000). “What’s everybody so excited about?”: The effects of teacher enthusiasm on student intrinsic motivation and vitality. *Journal of Experimental Education*, *68*, 217–236.
- Rosenholtz, S. J. (1989). *Teachers’ workplace: A social organizational analysis*. White Plains, NY: Longman.
- Rosenholtz, S. J., & Simpson, C. (1990). Workplace conditions and the rise and fall of teachers’ commitment. *Sociology of Education*, *63*, 241–257.
- Rudow, B. (1999). Stress and burnout in the teaching profession: European studies, issues, and research perspectives. In A. M. Huberman (Ed.), *Understanding and preventing teacher burnout: A sourcebook of international research and practice* (pp. 38–58). New York: Cambridge University Press.
- Schaufeli, W., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement. *Journal of Organizational Behavior*, *25*, 293–315.
- Schaufeli, W., & Buunk, B. P. (2003). Burnout: An overview of 25 years of research and theorizing. In M. J. Schabracq, J. A. M. Winnubst, & C. L. Cooper (Eds.), *Handbook of work and health psychology* (pp. 383–425). Chichester: Wiley.
- Schaufeli, W., & Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*. London: Taylor & Francis.
- Schaufeli, W., Salanova, M., González-Roma, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *The Journal of Happiness Studies*, *3*, 71–92.
- Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). The MBI-General Survey. In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.), *Maslach burnout inventory manual* (3rd ed.). Palo Alto: Consulting Psychologists Press.
- Schutte, N., Toppinen, S., Kalimo, R., & Schaufeli, W. (2000). The factorial validity of the Maslach Burnout Inventory–General Survey (MBI–GS) across occupational groups and nations. *Journal of Occupational and Organizational Psychology*, *73*, 53–66.
- Sheldon, K. M., & King, L. (2001). Why positive psychology is necessary. *American Psychologist*, *56*, 216–217.
- Steenland, K., Johnson, J., & Nowlin, S. (1997). A follow-up study of job strain and heart disease among males in the NHANES1 population. *American Journal of Industrial Medicine*, *31*, 256–260.
- Taris, T. W., Schreurs, P. J. G., & van Iersel-van Silfhout, I. J. (2001). Job stress, job strain, and psychological withdrawal among Dutch staff: Towards a dual-process model for the effects of occupational stress. *Work and Stress*, *15*, 283–296.
- Travers, C. J., & Cooper, C. L. (1996). *Teachers under stress. Stress in the teaching profession*. London: Routledge.
- Tuomi, K., Ilmarinen, J., Martikainen, R., Aalto, L., & Klockars, M. (1997). Aging, work, life-style and work ability among Finnish municipal workers in 1981–1992. *Scandinavian Journal of Work, Environment and Health*, *23*(Suppl 1), 58–65.
- Tuomi, K., Ilmarinen, J., Seitsamo, J., Huuhtanen, P., Martikainen, R., Nygård, C. H., et al. (1997). Summary of the Finnish research project (1981–1992) to promote the health and work ability of aging workers. *Scandinavian Journal of Work, Environment and Health*, *23*(Suppl 1), 66–71.
- Woods, P. (1999). Intensification and stress in teaching. In A. M. Huberman (Ed.), *Understanding and preventing teacher burnout: A sourcebook of international research and practice* (pp. 115–138). New York: Cambridge University Press.