

---

This is an electronic reprint of the original article.  
This reprint may differ from the original in pagination and typographic detail.

Upadyaya, Katja; Vartiainen, Matti; Salmela-Aro, Katariina

## From job demands and resources to work engagement, burnout, life satisfaction, depressive symptoms, and occupational health

*Published in:*  
Burnout Research

*DOI:*  
[10.1016/j.burn.2016.10.001](https://doi.org/10.1016/j.burn.2016.10.001)

Published: 01/01/2016

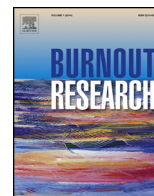
*Document Version*  
Publisher's PDF, also known as Version of record

*Published under the following license:*  
CC BY-NC-ND

*Please cite the original version:*  
Upadyaya, K., Vartiainen, M., & Salmela-Aro, K. (2016). From job demands and resources to work engagement, burnout, life satisfaction, depressive symptoms, and occupational health. *Burnout Research*, 3(4), 101-108.  
<https://doi.org/10.1016/j.burn.2016.10.001>

---

This material is protected by copyright and other intellectual property rights, and duplication or sale of all or part of any of the repository collections is not permitted, except that material may be duplicated by you for your research use or educational purposes in electronic or print form. You must obtain permission for any other use. Electronic or print copies may not be offered, whether for sale or otherwise to anyone who is not an authorised user.



# From job demands and resources to work engagement, burnout, life satisfaction, depressive symptoms, and occupational health<sup>☆</sup>



Katja Upadyaya (Ph.D.)<sup>a,b,\*</sup>, Matti Vartiainen (Ph.D.) (Professor)<sup>a,c</sup>,  
Katariina Salmela-Aro (Ph.D.) (Professor)<sup>a,b</sup>

<sup>a</sup> Cicero Learning, Institute of Behavioral Sciences, University of Helsinki, Finland

<sup>b</sup> Department of Psychology, University of Jyväskylä, P.O. Box 35, 40014, Finland

<sup>c</sup> Department of Industrial Engineering and Management, Aalto University School of Science, P.O. Box 15500, 0076 Aalto, Finland

## ARTICLE INFO

### Article history:

Received 20 January 2016

Received in revised form

29 September 2016

Accepted 1 October 2016

### Keywords:

Work engagement

Burnout

Life satisfaction

Servant leadership

Occupational health

Job demands and resources

## ABSTRACT

This study investigated the cross-lagged associations between work engagement and burnout, and life satisfaction and depressive symptoms, their demands (i.e., workload) and resources (i.e., servant leadership, self-efficacy, resilience) and relationships with occupational health outcomes (i.e., recovery, number of mental health diagnoses, workaholism). This study is a part of an ongoing Occupational Health Study in which 1 415 employees (586 men, 829 women) were followed twice during two years 2011–12 through their occupational health services. The participants filled in a questionnaire on their work engagement, burnout symptoms, well-being, personal and work environmental resources and demands, and occupational health. The results showed that spillover existed, in particular, from work engagement to depressive symptoms (negatively), and to life satisfaction (positively) and from depressive symptoms to work engagement (negatively), and to burnout (positively). Work engagement was also negatively associated with work burnout, and depressive symptoms were negatively associated with life satisfaction. Moreover, servant leadership was positively associated with work engagement, which, in turn, was positively associated with high life satisfaction and recovery, and negatively associated with work burnout and depressive symptoms. High workload, in turn, was positively associated with burnout and depressive symptoms, which, in turn, were further positively associated with increased mental health diagnoses, and negatively associated with recovery.

© 2016 Published by Elsevier GmbH. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Recent research has shown that work engagement and burnout symptoms are negatively associated and may either promote or hinder one's job performance (Taris, 2006), organizational commitment and well-being (Hakanen et al., 2006). According to the job demands-resources (JD-R) model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), different energy-driven and motivational processes are in play between work engagement and burnout

symptoms and related to job demands and resources. For example, increased workload manifests as wearing out and other symptoms of burnout, leading to absenteeism, whereas high resources at work manifest as increased motivation, involvement and low turnover (Bakker, Demerouti, & Schaufeli, 2003; Schaufeli, Bakker, & Van Rhenen, 2009). Work-related engagement and burnout may also spillover to general life satisfaction and depressive symptoms (Hakanen & Schaufeli, 2012) and vice versa (Ahola & Hakanen, 2007; Upadyaya & Salmela-Aro, in press). Different job resources may also predict employees' well-being, which, in turn, may further influence occupational health. For example, servant leadership (Van Dierendonck & Nuijten, 2011) as a social resource has been demonstrated to manifest as an increase employees' job satisfaction (Cerit, 2009) and as a decrease in burnout symptoms (Babakus, Yavas, & Ashill, 2010), and may spill over to life satisfaction and depressive symptoms. However, less is known about the extent to which servant leadership functions as a resource for employees' work engagement and life satisfaction, simultaneously reducing one's burnout and depressive symptoms, and further affecting

<sup>☆</sup> The research reported in this article has been funded by grants from the Finnish Work Environmental Fund (114417), and from the Academy of Finland (139168, 273872). We would also like to thank Susanna Mäkinen and Antti Aro for helping to be able to collect the data

\* Corresponding author at: Cicero Learning, Institute of Behavioral Sciences, Siltaavuorenpenger 1-5, P.O. Box 9, FI-00014 University of Helsinki, Finland.

E-mail addresses: [katja.upadyaya@helsinki.fi](mailto:katja.upadyaya@helsinki.fi) (K. Upadyaya), [matti.vartiainen@aalto.fi](mailto:matti.vartiainen@aalto.fi) (M. Vartiainen), [katariina.salmela-aro@helsinki.fi](mailto:katariina.salmela-aro@helsinki.fi) (K. Salmela-Aro).

employees' occupational health. Consequently, the present study investigates (a) the cross-lagged associations between employees' work engagement and burnout, and depressive symptoms and life satisfaction, (b) the role of workload as job demand and servant leadership, self-efficacy, and resilience as job resources in predicting the above mentioned variables, and (c) occupational health outcomes (e.g., recovery, number of mental health diagnoses from the participants' occupational health services registers, and workaholism) of employees' work engagement, burnout, depressive symptoms and life satisfaction.

### 1.1. Job demands and resources, and occupational health outcomes

According to the Job Demands-Resources (JD-R) Model (Bakker et al., 2003; Bakker & Demerouti, 2006; Demerouti et al., 2001) work engagement and burnout are closely related and reflect one another. For example, increased burnout symptoms negatively affect work engagement (Hakanen et al., 2006). *Work burnout* is typically described as a reaction to chronic occupational stress characterized by exhaustion (i.e., strain and overtaxing from work), cynicism (i.e., loss of interest and distal attitude toward work, not seeing work as meaningful), and feelings of inadequacy as an employee (González-Romá, Schaufeli, Bakker, & Lloret, 2006; Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009; Schaufeli, Salanova, González-Romá, & Bakker, 2002). *Work engagement*, in turn, is defined as a positive, fulfilling, work-related state of mind which is described by experiences of energy, dedication, and absorption at work (Schaufeli et al., 2002). Energy refers to high vigor and mental resilience while working, and to willingness to invest effort and persistence when facing difficulties (Schaufeli et al., 2002). Dedication is characterized by a sense of significance, enthusiasm, inspiration, and pride in one's work (Schaufeli et al., 2002). Absorption, in turn, is described as being fully concentrated and happily engrossed in one's work, so that time passes quickly and it may be difficult to detach oneself from work (Schaufeli et al., 2002). Work burnout and engagement are distinctive albeit negatively associated constructs which both reflect employees' work-related well-being (Hakanen & Schaufeli, 2012).

In studies focusing on occupational health, it is equally important to take into the consideration employees' general well-being in addition to their work-related well-being (see also Ahola et al., 2005). Several studies have shown that spillover exists between work engagement and burnout, and life satisfaction and depressive symptoms (Hakanen & Schaufeli, 2012; Upadyaya & Salmela-Aro, 2016, in press). According to the conservation of resources (COR) theory (Hobfoll, 2001), different gain and loss spirals may exist between work engagement, burnout and related variables (see also Hakanen, Schaufeli, & Ahola, 2008; Hakanen & Schaufeli, 2012). In addition, those who lack resources are not only more vulnerable to resource loss but initial lack of resources also fosters increased future loss (Hobfoll, 2001). Similarly, those who have high initial resources will have more resources available to them later on (Hobfoll, 2001). Thus, work burnout and engagement may spillover to life satisfaction and depressive symptoms. Life satisfaction and depressive symptoms, in turn, may show as increases or decreases in work burnout and engagement.

Supporting the COR theory, previous studies have shown that the development of work engagement is closely associated with life satisfaction among young adults, and that life satisfaction, in particular, positively predicts one's career engagement rather than vice versa (Upadyaya & Salmela-Aro, in press). Study-related burnout, in turn, increases depressive symptoms among students (Salmela-Aro, Savolainen, & Holopainen, 2009). Thus, among students and young adults ontext-free life satisfaction often spills over to study-related engagement, whereas study-related burnout

rather spills over to depressive symptoms. Among employees, both work engagement and burnout typically predict general life satisfaction and depressive symptoms rather than vice versa (Demerouti et al., 2001; Hakanen & Schaufeli, 2012; Hakanen et al., 2008; Innstrand, Langballe, & Falkum, 2012). In addition, some studies have suggested that stability in work engagement is more comparable with the stability in general psychological distress than the stability in work-related burnout symptoms (Seppälä et al., 2012). The conflicting results of the previous research indicate the need for further study.

The JD-R Model (Bakker et al., 2003; Demerouti et al., 2001) further postulates that engagement at work is influenced by multiple job demands and resources. Job demands and resources can be further divided into physical, psychological, social or organizational resources and demands (Salmela-Aro & Upadyaya, 2014; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009).

*Job demands* refer to those aspects of work that require sustained physical and psychological effort and are thus associated with certain physical and psychological costs (Demerouti et al., 2001). Although job demands are not necessarily negative, they may turn into stressors when the effort required to meet them is high and when the number of demands simultaneously present is also high (Bakker et al., 2003). Job demands include, for example, workload, problems with equipment (i.e. computer problems), long working hours and time pressure, and emotional strain (Bakker et al., 2003). Quantitative or qualitative workload is a job environmental demand which manifests as increased burnout symptoms and disengagement (Demerouti et al., 2001). In this study, we investigate the relationship of workload to work engagement and burnout, and life satisfaction and depressive symptoms.

*Job resources* refer to those physical, psychological, social or organizational aspects of job that either/or: (1) reduce job demands and the associated physiological and psychological costs; (2) are functional in receiving work-related goals; (3) stimulate personal growth, learning, and development (Demerouti et al., 2001; Demerouti & Bakker, 2011). In addition, recent research has shown that job resources may buffer the negative influence of job demands on work engagement (Bakker et al., 2007). However, job resources are not only crucial for dealing with job demands but they are also important in their own right. For example, lack of resources may lead to poor work engagement and increased levels of burnout symptoms (Hakanen et al., 2006). Job resources can be identified, for example, in such areas as the employee's personal efficacy, resilience, and quality of supervisory coaching (Bakker et al., 2003). Personal resources include characteristics such as self-efficacy, self-esteem, resilience, and optimism, all of which predict high subsequent work engagement (Bakker & Demerouti, 2008; Salmela-Aro & Upadyaya, 2014; Xanthopoulou et al., 2009). One important social resource in the workplace are leaders and the type of leadership. For example, a recent study (Demerouti, Bakker, & Fried, 2012) showed that feedback from the supervisor was significantly and positively related to enjoyment (flow) in work. It has also been found that authentic leadership, which strengthens followers' identification with both leader and organization, promotes work engagement and subsequent job satisfaction (Giallonardo, Wong, & Iwasiw, 2010). Similarly, servant leadership characterized by stewardship, empowerment, and accountability (Russell & Gregory Stone, 2002) positively predicts job satisfaction (Cerit, 2009) and organizational trust (Joseph & Winston, 2005), and decreases employees' burnout symptoms (Babakus et al., 2010). However, less is known about the extent to which servant leadership serves as a resource for work engagement, how servant leadership may buffer against the negative impact of workload, and how various work resources and demands spill over to ontext-free life satisfaction and depressive symptoms. Thus, the present study examined the role of servant leadership, efficacy beliefs,

and resilience as job resources and quantitative workload as a job demand in predicting work engagement and burnout, and life satisfaction and depressive symptoms. Moreover, the possible reducing effect of servant leadership against the negative association between workload and work engagement and life satisfaction, and positive association between workload and burnout and depressive symptoms was investigated further.

Moreover, according to the JD-R Model, job demands and resources may evoke two different, albeit related energetic and motivational processes that have consequences for an employee's well-being and organizational commitment (Demerouti et al., 2001). The energetic process of wearing out is described by high demands which exhaust employees' physical and psychological resources and may therefore lead to burnout followed by more or less permanent health problems (Schaufeli & Bakker, 2004). The motivational process is characterized by adequate job resources which foster engagement and lead to well-being and organizational commitment (Schaufeli & Bakker, 2004).

The energetic and motivational processes evoked by job demands and resources may lead to several negative/positive occupational health outcomes, such as illness, absenteeism (de Jonge, Vegehel, Shimatzu, Schaufeli, & Dormann, 2010) or, in turn, high recovery from work. Sick absence is often a reaction to distress caused by job demands (Schaufeli et al., 2009). A proactive way for employees to promote job well-being is through recovery from work, which takes place in the evenings after work and during the weekends (Sonnentag, 2003). Recovery has been previously examined as an antecedent of work engagement (Sonntag, 2003); however, it is possible that both work engagement and burnout and satisfaction and depressive symptoms contribute to recovery. For example, for employees with high life satisfaction it might be easy to recover from work, whereas employees who suffer from depressive symptoms might find it more difficult to recover from work, which in turn may further reduce their occupational health. Some highly engaged employees may also suffer from workaholism, the dark side of engagement (Salmela-Aro, 2015), which often leads to impaired job performance and well-being (Shimazu & Schaufeli, 2009). However, less is known about the extent to which work engagement, burnout, life satisfaction, and depressive symptoms contribute to workaholism. In the present study, recovery, number of mental health diagnoses, and workaholism were examined as outcomes of work engagement, burnout, life satisfaction and depressive symptoms.

## 1.2. Aims and hypotheses

Following the JD-R Model (Bakker et al., 2003; Demerouti et al., 2001) and the COR theory (Hobfoll, 2001) the present study aims at investigating (a) the cross-lagged associations between work engagement and burnout, and life satisfaction and depressive symptoms; (b) the role of workload as job demand and servant leadership, self-efficacy, and resilience as job resources in predicting both work engagement, burnout and life satisfaction and depressive symptoms; and (c) occupational health outcomes (i.e., recovery, number of mental health diagnoses, workaholism) of employees' work engagement, burnout, depressive symptoms and life satisfaction.

We expect that spillover would occur between work-related engagement and burnout and life satisfaction and depressive symptoms. In particular, we expected that positive associations would be found between work engagement and life satisfaction, which would both be negatively associated with work burnout and depressive symptoms (H1). Further, we expected that positive associations would be found between work burnout and depressive symptoms (H2). In addition, we expect that high servant leadership, self-efficacy and resilience would serve as resources for employees'

work engagement and life satisfaction and hinder the occurrence of burnout and depressive symptoms (H3), whereas workload would be negatively associated with employees' work engagement and life satisfaction and increase the occurrence of burnout and depressive symptoms (H4). Moreover, we expected that servant leadership would reduce the negative association between workload and work engagement and life satisfaction (H5). Finally, we expected that work engagement and life satisfaction would show positive associations with recovery from work, negative associations with number of mental health diagnoses, and negative associations with workaholism whereas burnout and depressive symptoms would show negative associations with recovery and positive associations with number of mental health diagnoses and workaholism (H6).

## 2. Method

This study is a part of an ongoing Occupational Health Study in which 1 415 employees (586 men, 829 women) were followed twice (spring 2011 and 2012) through their occupational health services. At both measurement times, the participants filled in an e-mail questionnaire concerning their work engagement, burnout symptoms, well-being, perceptions of demands and resources, and occupational health. At the second measurement time, the number of mental health diagnoses, such as anxiety and mood disorder, was gathered from the occupational health service registers. The average age of the participants was 44 (range 20–64; 22% of the participants were 20–35 years old; 30% were 36–45 years old; 38% were 46–55 years old and 19% were 56–65 years old). Three organizations (a multinational network service provider, a public sector administration official, and a global water chemistry company) were chosen to the study by their large size (employing over 500 people) and by their occupational health service provider, through which the data were collected. The response rate from the three organizations varied between 34% and 39%. The educational distribution of the participants was university degree (44%), polytechnic degree (37%), vocational degree (9%), compulsory education (5%), and double degree (3%). The participants' role in their organization was as follows: workers in customer services (19%), specialists (64%), immediate supervisors (7%), middle management (8%), and corporate management (2%).

### 2.1. Measures

*Work Engagement* (Times 1 and 2) was measured with a short version of the Utrecht Work Engagement Scale, UWES-S (Schaufeli et al., 2002; see also Schaufeli et al., 2006). The scale consists of 9 items measuring energy (e.g., 'When I work, I feel that I am bursting with energy'), dedication (e.g., 'I am enthusiastic about my work'), and absorption (e.g., 'Time flies when I'm working') at work. The responses were rated on a 7-point scale (0 = not at all; 6 = daily). Previous research has supported the use of an overall measure of work engagement (Schaufeli, Bakker, & Salanova, 2006), thus, a sum score was formed to measure the participants' overall engagement at work. The Cronbach's alpha reliabilities were 0.95 (Time 1) and 0.96 (Time 2).

*Work Burnout* (Times 1 and 2) was measured with the Bergen Burnout Inventory (Näätänen, Matthiesen, & Salmela-Aro, 2003; Salmela-Aro, Näätänen, & Nurmi, 2004) which consists of 15 items measuring three factors of job burnout: (1) exhaustion at work (e.g., 'I feel overwhelmed by my work'); (2) cynicism about the meaning of work (e.g., 'I feel lack of motivation in my work and often think of giving up'), and (3) sense of inadequacy (e.g., 'I often have feelings of inadequacy in my work') to be rated on a 6-point scale (1 = strongly disagree; 6 = strongly agree). Previous research has supported the



use of an overall job burnout indicator (Schaufeli et al., 2002), thus sum scores were formed. Cronbach's alphas for overall job burnout were 0.90 (Time 1) and 0.90 (Time 2).

*Depressive Symptoms* (Times 1 and 2) were measured with nine questions on the frequency of depressive symptoms. The items (e.g., 'Feeling down, depressed, hopeless') were rated on a 4-point scale (1 = not at all; 4 = almost every day). The Cronbach's alpha reliability for the sum scores were 0.84 and 0.85.

*Life Satisfaction* (Times 1 and 2) was assessed using the five-item Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). The items (e.g., 'I am satisfied with my life') were rated on a 5-point scale ranging from 1 (I totally disagree) to 5 (I totally agree). A sum score was calculated from all 5 items. The Cronbach's alpha's for the life satisfaction sum scores at Time 1 and Time 2 were 0.87 and 0.90.

*Servant Leadership* (Time 1) was measured with an abbreviated scale consisting of 16 items measuring empowerment, standing back, accountability, forgiveness, courage, authenticity, humility, and stewardship of the work leaders (Van Dierendonck & Nuijten, 2011). The items with the strongest loadings in the original report were included in the shortened version, which was translated into Finnish by an independent translator. Examples of items are: 'My manager helps me to further develop myself' (empowerment) and 'My manager has a long-term vision' (stewardship). A sum score was formed to measure the participants' perceptions of servant leadership in their workplace. Items were rated on a 5-point scale ranging from 1 (I totally disagree) to 5 (I totally agree). The Cronbach's alpha reliability was 0.90.

*Work-related Self-Efficacy Beliefs* (Time 1) were measured with 8 questions (Scholz, Doña, Sud, & Schwarzer, 2002) on having an optimistic sense of personal competence at work (e.g., 'If I come up against difficulties at work, I usually figure out a way'). The responses were rated on a 5-point scale (1 = totally disagree; 5 = totally agree). The Cronbach's alpha reliability for the sum scores was 0.86.

*Resilience* (Time 1) was measured with a questionnaire consisting of 6 items assessing the ability to bounce back after difficulties (e.g., 'I recover quickly from difficult situations.', 'It doesn't take long for me to recover from stressful situations.')(Smith et al., 2008). The responses were rated on a 5-point scale (1 = totally agree; 5 = totally disagree). The Cronbach's alpha reliability for the sum score was 0.87.

*Workload* (Time 1) was measured with 9 questions measuring employees' workload in relation to different aspects of their work (e.g., switching between different workstations, time schedules, working between different time zones, problems related to project work, and social problems in the workplace). The responses were rated on an 8-point scale (0 = no workload at all; 7 = extremely high workload). A sum score was formed to measure the employees' overall workload. The Cronbach's alpha reliability for the sum score was 0.82.

*Recovery* (Time 2) was measured two questions concerning the employees' recovery from work during the workdays (e.g., 'How well do you recover during the workdays?'), and during the weekend (e.g., 'How well do you recover during the weekends?'). The responses were rated on a 5-point scale (1 = badly; 5 = well). The Cronbach's alpha reliability for the sum score was 0.74.

*Workaholism* (Time 2) was measured with four statements adapted from the Work Addiction Risk Test (Robinson, 1999). Two statements assessed excessive working ('I seem to be in a hurry and racing against the clock') and two questions measured compulsion tendency ('I feel guilty if I don't work all the time'). The responses were rated on a 7-point scale (0 = never; 6 = daily). The Cronbach's alpha for the sum score was 0.80.

*Number of Mental Health Diagnoses* (Time 2) (e.g., depression, anxiety, mood disorder, adjustment disorder, psychosis) were gath-

ered through the participants' occupational health services. The responses varied between 0 and 4.

## 2.2. Analysis strategy

The research questions were analyzed using cross-lagged path modeling. The tested model included stability coefficients for work engagement, burnout, depressive symptoms, and life satisfaction, as well as cross-lagged paths from each of these variables at Time 1 to each subsequent variable at Time 2. All the endogenous variables were allowed to co-vary. Servant leadership, efficacy beliefs, resilience, workload, and the interaction between work environmental demands and resources (e.g., workload and servant leadership) were included in the model as antecedents of work engagement, burnout, depressive symptoms, and life satisfaction (at Time 1). Recovery, number of mental health diagnoses, and workaholism were added in the model as outcomes. To identify the final model, all of the statistically non-significant paths were set to zero.<sup>1</sup>

The statistical analyses were performed using the Mplus statistical package (Version 6; Muthén & Muthén, 1998–2016) with the missing data method. The missing data method uses all the data that are available in order to estimate the model without imputing data. Because the distributions of the variables were skewed, the model parameters were estimated using the MLR estimator (Muthén & Muthén, 1998–2015). Goodness-of-fit was evaluated using five indicators:  $\chi^2$  test, Comparative Fit Index (CFI), Tuckey-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Because the  $\chi^2$ -test is sensitive to sample size, relative goodness-of-fit indices were also used to evaluate the model fit: CFI and TLI. According to Hu and Bentler (1999), cutoff values close to 0.95 for CFI and TLI, cutoff values close or below to 0.06 for the RMSEA, and a cutoff value close or below to 0.08 for the SRMR can be considered as indicating a good fit between the hypothesised model and the observed data.

## 3. Results

Means, variances, and correlations are presented in Table 1. A path model was constructed to examine the cross-lagged associations between employees' work engagement, burnout, depressive symptoms, and life satisfaction, and their antecedents and consequences. After the non-significant paths were set to zero, the final model fitted the data well ( $\chi^2(63, N = 1414) = 111.86, p = 0.00, CFI = 0.99, TLI = 0.99, RMSEA = 0.02, SRMR = 0.03$ ; Fig. 1). The results showed that, as expected, despite the high stability of the dependent variables, several cross-lagged paths were identified between the variables.

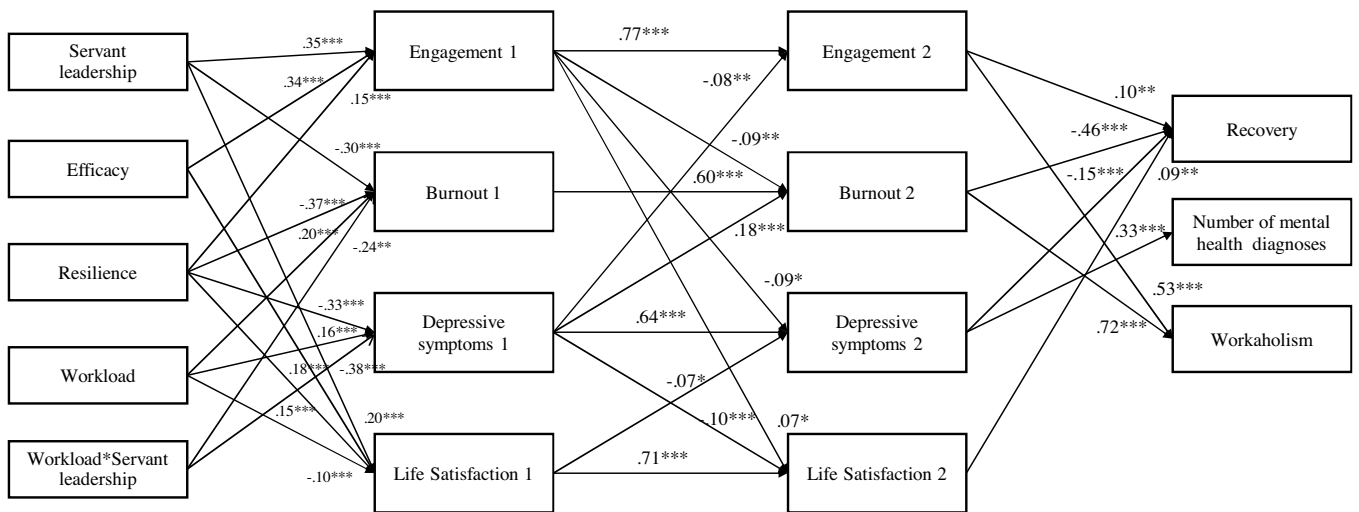
Findings on relationships of work engagement, burnout, life satisfaction, and depressive symptoms showed the variables were relatively stable between Time 1 and Time 2. However, high work engagement was negatively associated with subsequent work burnout and depressive symptoms, and positively associated with subsequent life satisfaction. Moreover, depressive symptoms at Time 1 were negatively associated with subsequent work engagement and life satisfaction and positively associated with burnout symptoms. High life satisfaction (Time 1), in turn, was negatively associated with subsequent depressive symptoms.

<sup>1</sup> Another model in which the antecedents of the current model were predicting also the Time 2 work engagement, burnout, life satisfaction, and depressive symptoms was also tested. In this model, none of the predictions between the antecedents and dependent variables at Time 2 were statistically significant. Consequently, the final model was constructed without these associations.

**Table 1**  
Means, Variances, and Pearson Correlation Coefficients.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Engagement <sup>a</sup>															
2. Engagement <sup>b</sup>	0.80 <sup>***</sup>														
3. Burnout <sup>a</sup>	-0.55 <sup>***</sup>	-0.49 <sup>***</sup>													
4. Burnout <sup>b</sup>	-0.50 <sup>***</sup>	-0.61 <sup>***</sup>	0.77 <sup>***</sup>												
5. Depression <sup>a</sup>	-0.42 <sup>***</sup>	-0.40 <sup>***</sup>	0.65 <sup>***</sup>	0.60 <sup>***</sup>											
6. Depression <sup>b</sup>	-0.39 <sup>***</sup>	-0.47 <sup>***</sup>	0.51 <sup>***</sup>	0.65 <sup>***</sup>	0.70 <sup>***</sup>										
7. Life Satisfaction <sup>a</sup>	0.45 <sup>***</sup>	0.42 <sup>***</sup>	-0.46 <sup>***</sup>	-0.41 <sup>***</sup>	-0.45 <sup>***</sup>	-0.41 <sup>***</sup>									
8. Life Satisfaction <sup>b</sup>	0.43 <sup>***</sup>	0.50 <sup>***</sup>	-0.43 <sup>***</sup>	-0.50 <sup>***</sup>	-0.45 <sup>***</sup>	-0.52 <sup>***</sup>	0.79 <sup>***</sup>								
9. Servant leadership	0.46 <sup>***</sup>	0.39 <sup>***</sup>	-0.42 <sup>***</sup>	-0.34 <sup>***</sup>	-0.27 <sup>***</sup>	-0.20 <sup>***</sup>	0.30 <sup>***</sup>	0.29 <sup>***</sup>							
10. Efficacy	0.52 <sup>***</sup>	0.44 <sup>***</sup>	-0.39 <sup>***</sup>	-0.38 <sup>***</sup>	-0.31 <sup>***</sup>	-0.28 <sup>***</sup>	0.36 <sup>***</sup>	0.29 <sup>***</sup>	0.22 <sup>***</sup>						
11. Resilience	0.44 <sup>***</sup>	0.39 <sup>***</sup>	-0.51 <sup>***</sup>	-0.48 <sup>***</sup>	-0.42 <sup>***</sup>	-0.37 <sup>***</sup>	0.35 <sup>***</sup>	0.30 <sup>***</sup>	0.20 <sup>***</sup>	0.66 <sup>***</sup>					
12. Workload	-0.28 <sup>***</sup>	-0.27 <sup>***</sup>	0.43 <sup>***</sup>	0.40 <sup>***</sup>	0.33 <sup>***</sup>	0.25 <sup>***</sup>	-0.27 <sup>***</sup>	-0.24 <sup>***</sup>	-0.24 <sup>***</sup>	-0.30 <sup>***</sup>	-0.41 <sup>***</sup>				
13. Number of Diagnoses	-0.11 <sup>***</sup>	-0.12 <sup>***</sup>	0.18 <sup>***</sup>	0.19 <sup>***</sup>	0.26 <sup>***</sup>	0.33 <sup>***</sup>	-0.26 <sup>***</sup>	-0.18 <sup>***</sup>	-0.00	-0.15 <sup>***</sup>	-0.21 <sup>***</sup>	0.06			
14. Workaholism	0.13 <sup>***</sup>	0.10 <sup>***</sup>	0.31 <sup>***</sup>	0.40 <sup>***</sup>	0.21 <sup>***</sup>	0.22 <sup>***</sup>	-0.09 <sup>***</sup>	-0.06	0.05	0.03	-0.09 <sup>***</sup>	0.10 <sup>***</sup>	0.06		
15. Recovery	0.38 <sup>***</sup>	0.49 <sup>***</sup>	-0.55 <sup>***</sup>	-0.66 <sup>***</sup>	-0.48 <sup>***</sup>	-0.54 <sup>***</sup>	0.39 <sup>***</sup>	0.43 <sup>***</sup>	0.26 <sup>***</sup>	0.30 <sup>***</sup>	0.38 <sup>***</sup>	0.38 <sup>***</sup>	-0.20 <sup>***</sup>	-0.42 <sup>***</sup>	
M	3.49	3.50	2.62	2.54	1.46	1.43	3.57	3.58	3.22	3.86	3.60	3.00	0.16	2.65	3.52
Var	1.47	1.59	0.75	0.76	0.21	0.20	0.62	0.73	0.39	0.33	0.53	1.54	0.22	1.47	0.90

\* p < 0.05.  
 \*\* p < 0.01.  
 \*\*\* p < 0.001.  
<sup>a</sup> Time 1.  
<sup>b</sup> Time 2.



**Fig. 1.** Cross-Lagged Associations between Work Engagement and Burnout, and Life Satisfaction and Depressive Symptoms, Their Demands, Resources, and Occupational Health Outcomes.  
 Note. \*\*\*p < 0.001; \*\*p < 0.01; \*p < 0.05.

The results on the role of resources and demands showed that servant leadership showed positive associations with work engagement and life satisfaction, and negative associations with burnout symptoms. High workload, in turn, was positively associated with burnout and depressive symptoms and negatively associated with life satisfaction. The results for the interaction between workload and servant leadership showed that when the workload was high, servant leadership slightly reduced its positive associations with burnout and depressive symptoms. Moreover, high efficacy beliefs and resilience were positively associated with work engagement and life satisfaction. High resilience was also negatively associated with burnout and depressive symptoms.

Further, the results for outcomes showed that high work engagement and life satisfaction were positively related, whereas high burnout and depressive symptoms were negatively related to recovery. In addition, depressive symptoms were positively related to the increased number of mental health diagnoses. Finally, with burnout symptoms, work engagement was positively related to workaholism.

Overall, the results suggest that spill over exists between work engagement and burnout, and life satisfaction and depressive symptoms. In addition, job demands (i.e., workload) and resources (i.e., servant leadership, self-efficacy, resilience) showed positive/negative associations both with work engagement and burnout, and with life satisfaction and depressive symptoms. Both work engagement and burnout, and life satisfaction and depressive symptoms, in turn, were further associated with occupational health outcomes (i.e., recovery, workaholism, number of mental health diagnoses).

**4. Discussion**

This study investigated the cross-lagged associations between work engagement and burnout, and life satisfaction and depressive symptoms, their demands (e.g., workload) and resources (e.g., servant leadership, self-efficacy, resilience) and effects on occupational health outcomes. The results showed that high work engagement, in particular, was positively associated with employees' life satisfaction and negatively associated with depressive symptoms. Depressive symptoms, in turn, were negatively asso-

ciated with work engagement and positively associated with work burnout. In addition, high work engagement was negatively associated with work burnout and depressive symptoms and positively associated with life satisfaction. These results suggest that, in particular, work engagement rather than work burnout spills over to life satisfaction and depressive symptoms, whereas depressive symptoms rather than life satisfaction spills over to work engagement and burnout. Further, the results suggested that different gain and loss cycles from job demands and resources to work engagement and burnout and to life satisfaction and depressive symptoms and to indicators of occupational health may exist (see also Hakanen & Schaufeli, 2012; Hakanen et al., 2008). Servant leadership, in particular, was positively associated both with high work engagement and life satisfaction, which were further associated with better recovery from work and lesser number of mental health diagnoses.

#### 4.1. Cross-Lagged associations between work engagement, burnout, life satisfaction, and depressive symptoms

The results indicated, first, that despite the high stability of the dependent variables, several cross-lagged paths were identified between the variables. Work engagement, in particular was related to decreased subsequent burnout and depressive symptoms, and increased life satisfaction. Similar results on the role of work engagement in reducing depressive symptoms and increasing life satisfaction have been reported earlier (Hakanen & Schaufeli, 2012; Innstrand et al., 2012). These results show that work engagement and burnout are negatively associated over time and that high work engagement is negatively associated with subsequent burnout symptoms even after controlling for the previous level of burnout. Similar findings have been reported previously (Schaufeli & Bakker, 2004). The results also suggest that engagement at work is an important element in maintaining life satisfaction reducing also work burnout and depressive symptoms.

The results showed further that depressive symptoms, in turn, were related to increased burnout and decreased work engagement and life satisfaction. These results are in line with previous research showing that depressive symptoms are positively associated with work burnout (Ahola et al., 2005), and that employees who suffer from depressive symptoms may perceive their work and well-being more negatively than employees without such symptoms (Ahola & Hakanen, 2007), which further shows as a decrease in their engagement and life satisfaction. It may be that employees with depressive symptoms have fewer resources to meet the demands of their job, which further increases their burnout symptoms (Ahola & Hakanen, 2007) and decreases their work engagement. Interestingly, a high level of life satisfaction may serve as a protective factor against depressive symptoms, as our results further showed. Similarly, previous research has shown that people who are satisfied with life may feel anxious but seldom suffer from depressive symptoms (Headley, Kelley, & Wearing, 1993).

These results partly supported our hypotheses (H1 and H2) by showing positive associations between work engagement and life satisfaction, and between work burnout and depressive symptoms, and negative associations from work engagement and life satisfaction to burnout and depressive symptoms (and vice versa).

#### 4.2. Demands, resources, and occupational health outcomes

In line with some previous studies and supporting our expectations (H4), the results showed that high workload was positively associated with work burnout (see also Bakker et al., 2003; Leiter & Maslach, 2009) and depressive symptoms and negatively associated with life satisfaction. The results showed, next, that employees' perceptions of servant leadership was a strong resource

in promoting both work engagement and life satisfaction. Servant leadership was also associated with reduced burnout symptoms (see also Babakus et al., 2010) and it slightly reduced the positive association between workload and depressive symptoms. These results supported our hypotheses (H3 and H5). Previous research has already shown that the supervisor feedback predicts flow and enjoyment in work (Demerouti et al., 2012; Demerouti, 2006). This study adds the role of interaction content of employees and leaders in producing well-being outcomes. Similarly, recent studies have reported that servant leadership promotes employees' job satisfaction (Cerit, 2009) and hinders their burnout symptoms (Babakus et al., 2010). Servant leadership was measured as a sum score of eight aspects (empowerment, standing back, accountability, forgiveness, courage, authenticity, humility, and stewardship) focusing on both the 'people' and the 'leader' sides of servant leadership. Servant leaders are typically more focused on the needs of the individual than on those of the organization (Parolini, Patterson, & Winston, 2009) and they seek to create opportunities for their followers to grow (Luthans & Avolio, 2003), which may serve as an important resource for employees' work engagement and life satisfaction and buffer against work burnout and depressive symptoms, as our results showed. These new results on servant leadership highlight the importance of servant leadership in employees' work engagement and life satisfaction, and suggest that servant leadership is an important resource which should be taken into the account in future research on employee well-being and occupational health.

As expected (H3), high efficacy beliefs and resilience when facing stressful situations at work served as personal resources which were positively associated with employees' work engagement and life satisfaction. Previous research has found that high self-efficacy promotes high work engagement (Xanthopoulou et al., 2009) and that high study-related self-efficacy promotes high study engagement (Salmela-Aro & Upadyaya, 2014). The present results add to the previous findings by showing that high self-efficacy at work spills over to employees' life satisfaction. It is possible that employees' high self-efficacy increases their career satisfaction, which further shows as higher life satisfaction. Moreover, partly supporting our expectations (H3), high resilience (but not high efficacy) was negatively associated with burnout and depressive symptoms. These results further suggest that resilience at work is an important personal resource which promotes both work engagement and general life satisfaction (Bakker & Demerouti, 2008) and hinders the appearance of burnout and depressive symptoms. It is possible that workers high in resilience are effective in adapting to changing situations both at work (Bakker & Demerouti, 2008) and in their free time, which manifests as high overall well-being.

The results concerning the outcomes showed that high work engagement and life satisfaction were positively, and high burnout and depressive symptoms negatively, associated with employees' recovery. Recovery that occurs in the evening after work and during the weekends is important in maintaining general well-being and performance (Sonnentag, 2003), and our results suggest that both work engagement and life satisfaction contribute to employees' recovery from work (see also Sonnentag, 2001). In addition, depressive symptoms were positively associated with the number of mental health diagnoses, and together with burnout symptoms work engagement were positively associated with workaholism. Similarly, recent research has shown that work engagement and burnout are positively associated with workaholism, which, in turn, often increases ill-health (Schaufeli, Taris, & Van Rhenen, 2008; Shimazu, Schaufeli, Kamiyama, & Kawakami, 2015). These associations may also reflect the 'dark side' of engagement (Bakker, Albrecht, & Leiter, 2011; Salmela-Aro, 2015; Sonnentag, 2011). Work engagement and workaholism both refer to heavy work investment; however, the main difference between the two is



that employees who experience high workaholism also suffer from work burnout (Shimazu et al., 2015). In our study, the associations between work engagement, burnout and workaholism were relatively strong, which may reflect the fact that all these variables were measured at the same measurement time. These results partly supported our hypotheses (H6) and further suggest that high work engagement alone is not a sufficient measure of work-related well-being, and that when examining employees' well-being it is important to take into consideration other indicators that may reflect reduced work-related well-being, such as burnout symptoms (see also Hakanen & Schaufeli, 2012).

#### 4.3. Strengths, limitations, and conclusions

Several limitations should be taken into consideration when generalizing the results of this study. First, the sample was slightly female-dominated and the response rate from the three organizations was relatively low. Moreover, most of the measures used in the present study were self-reports, which might have partly influenced the results. In addition, some of the Cronbach's alpha reliabilities were relatively high, which might have influenced the results. The strength of the study was that the occupational health measures used included mental health diagnoses gathered via the respondents' occupational health services. However, the fact that clinical depression was included in the number mental health diagnoses may partly explain the relatively strong association between employees' self-perceptions of their depressive symptoms and the number of mental health diagnoses gathered via the occupational health services. Second, another strength of the study was that it provided information on the longitudinal associations between work engagement and burnout, and life satisfaction and depressive symptoms; however, more longitudinal studies, examining similar associations with more time points, with intensive data collection as well as longer intervals between the measurement times, and using varying statistical methods are needed. For example, research using person-oriented approaches would be able to capture possible subgroups of employees with varying levels of work engagement, burnout, life satisfaction, and depressive symptoms.

Overall, the results suggest that spill over exists between work engagement and burnout, and life satisfaction and depressive symptoms, and that several positive (or negative) gain cycles may exist between employees' well-being and work environment-related (e.g., servant leadership, workload) and personal (e.g., resilience, recovery, workaholism) resources and outcomes. Together with previous studies (Hakanen & Schaufeli, 2012; Schaufeli et al., 2009; Seppälä et al., 2012) these results suggest that work engagement has positive consequences on health and well-being. In addition, servant leadership appears to be a crucial social resource for employees' work engagement and life satisfaction which also slightly reduced the positive associations between workload and burnout and depressive symptoms. However, the reported associations between the antecedents and outcomes of our study were cross-sectional, thus, more studies are needed to investigate these associations in a longitudinal design. For example, more research would be needed on the longitudinal impact of servant leadership on employee well-being and occupational health, and on the direction between the associations of burnout, workaholism, and other variables. It is possible that some of these associations are reversed (e.g., workaholism increases burnout). Moreover, our results showed that both work engagement and burnout are positively associated with workaholism, probably reflecting the dark side of engagement (Bakker et al., 2011; Salmela-Aro, 2015; Sonnentag, 2011). However, it is possible that variation exists in the associations between the separate engagement (e.g., energy, absorption, and dedication) and burnout dimensions (e.g., exhaustion, cynicism, feelings of inadequacy) and

life satisfaction and depressive symptoms. Future studies would be needed to study these associations further. Moreover, it is possible that various homogeneous groups of workers exist with different levels of engagement, burnout, and workaholism. Future studies applying a person-oriented approach are needed to examine these questions further (Innanen, Tolvanen, & Salmela-Aro, 2014).

Taken together, the results suggested that it would be important for researchers, practitioners, and other professionals in the field to take into account different sides (e.g., work and personal) of a person's life when examining their well-being and/or ill-health in various contexts. Spillover occurs from one side of life to another side, affecting one's well-being as a whole. Recognizing and building on some important personal, social, and contextual resources/characteristics (e.g., high engagement, servant leadership) may also help in improving one's well-being.

#### Acknowledgements

We would like to thank Susanna Mäkinen and Antti Aro for helping to be able to collect the data.

#### References

- Ahola, K., Honkonen, T., Isometsä, E., Kalimo, R., Nykyri, E., Aromaa, A., et al. (2005). The relationship between job-related burnout and depressive disorders—results from the Finnish Health 2000 Study. *Journal of Affective Disorders*, 88(1), 55–62. <http://dx.doi.org/10.1016/j.jad.2005.06.004>
- Ahola, K., & Hakanen, J. (2007). Job strain, burnout, and depressive symptoms: a prospective study among dentists. *Journal of Affective Disorders*, 104(1), 103–110. <http://dx.doi.org/10.1016/j.jad.2007.03.004>
- Babakus, E., Yavas, U., & Ashill, N. J. (2010). Service worker burnout and turnover intentions: Roles of person-job fit, servant leadership, and customer orientation. *Services Marketing Quarterly*, 32(1), 17–31. <http://dx.doi.org/10.1080/15332969.2011.533091>
- Bakker, A. B., & Demerouti, E. (2006). The Job Demands-Resources model: State of art. *Journal of Managerial Psychology*, 22(3), 309–328. <http://dx.doi.org/10.1108/02683940710733115>
- Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International*, 13(3), 209–223. <http://dx.doi.org/10.1108/13620430810870476>
- Bakker, A., Demerouti, E., & Schaufeli, W. (2003). Dual processes at work in a call centre: An application of the job demands-resources model. *European Journal of Work and Organizational Psychology*, 12(4), 393–417. <http://dx.doi.org/10.1080/13594320344000165>
- Bakker, A. B., Albrecht, S. L., & Leiter, M. P. (2011). Work engagement: Further reflections on the state of play. *European Journal of Work and Organizational Psychology*, 20(1), 74–88. <http://dx.doi.org/10.1080/1359432X.2010.546711>
- Cerit, Y. (2009). The effects of servant leadership behaviours of school principals on teachers' job satisfaction. *Educational Management Administration & Leadership*, 37(5), 600–623. <http://dx.doi.org/10.1177/1741143209339650>
- Demerouti, E., & Bakker, A. B. (2011). The job Demands-Resources model: Challenges for future research. *SA Journal of Industrial Psychology/SA Tydskrif Vir Bedryfsielkunde*, 37(2) <http://dx.doi.org/10.4102/sajip.v37i2.974>. Art. #974, 9 pages
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499. <http://dx.doi.org/10.1037/0021-9010.86.3.499>
- Demerouti, E., Bakker, A. B., & Fried, Y. (2012). Work orientations in the job demands-resources model. *Journal of Managerial Psychology*, 27(6), 557–575. <http://dx.doi.org/10.1108/02683941211252428>
- Demerouti, E. (2006). Job resources, work-related flow and performance. *Journal of Occupational Health Psychology*, 11(3), 266–280. <http://dx.doi.org/10.1037/1076-8998.11.3.266>
- Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. <http://dx.doi.org/10.1207/s15327752jpa4901.13>
- Giallonardo, L. M., Wong, C. A., & Iwasiw, C. L. (2010). Authentic leadership of preceptors: Predictor of new graduate nurses' work engagement and job satisfaction. *Journal of Nursing Management*, 18(8), 993–1003. <http://dx.doi.org/10.1111/j.1365-2834.2010.01126.x>
- González-Romá, V., Schaufeli, W. B., Bakker, A. B., & Lloret, S. (2006). Burnout and work engagement: Independent factors or opposite poles? *Journal of Vocational Behavior*, 68(1), 165–174. <http://dx.doi.org/10.1016/j.jvb.2005.01.003>
- Hakanen, J. J., & Schaufeli, W. B. (2012). Do burnout and work engagement predict depressive symptoms and life satisfaction? A three-wave seven-year prospective study. *Journal of Affective Disorders*, 141(2), 415–424. <http://dx.doi.org/10.1016/j.jad.2012.02.043>
- Hakanen, J. J., Schaufeli, W. B., & Ahola, K. (2008). The Job Demands-Resources model: A three-year cross-lagged study of burnout, depression, commitment,



- and work engagement. *Work & Stress*, 22(3), 224–241. <http://dx.doi.org/10.1080/02678370802379432>
- Headey, B., Kelley, J., & Wearing, A. (1993). Dimensions of mental health: Life satisfaction, positive affect, anxiety and depression. *Social Indicators Research*, 29(1), 63–82. <http://dx.doi.org/10.1007/BF01136197>
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology*, 50(3), 337–421. <http://dx.doi.org/10.1111/1464-0597.00062>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <http://dx.doi.org/10.1080/10705519909540118>
- Innstrand, S. T., Langballe, E. M., & Falkum, E. (2012). A longitudinal study of the relationship between work engagement and symptoms of anxiety and depression. *Stress and Health*, 28(1), 1–10. <http://dx.doi.org/10.1002/smi.1395>
- Innanen, H., Tolvanen, A., & Salmela-Aro, K. (2014). Burnout, work engagement and workaholism among highly educated employees: Profiles, antecedents and outcomes. *Burnout Research*, 1(1), 38–49. <http://dx.doi.org/10.1016/j.burn.2014.04.001>
- Joseph, E. E., & Winston, B. E. (2005). A correlation of servant leadership, leader trust, and organizational trust. *Leadership & Organization Development Journal*, 26(1), 6–22. <http://dx.doi.org/10.1108/01437730510575552>
- Leiter, M. P., & Maslach, C. (2009). Nurse turnover: The mediating role of burnout. *Journal of Nursing Management*, 17(3), 331–339. <http://dx.doi.org/10.1111/j.1365-2834.2009.01004.x>
- Luthans, F., & Avolio, B. J. (2003). Authentic leadership: A positive developmental approach. In K. S. Cameron, J. E. Dutton, & R. E. Quinn (Eds.), *Positive organizational scholarship* (pp. 241–261). San Francisco: Barrett-Koehler.
- Näätänen, P., Aro, A., Matthisen, S., & Salmela-Aro, K. (2003). *Bergen Burnout Indicator 15*. Edita, Helsinki.
- Parolini, J., Patterson, K., & Winston, B. (2009). Distinguishing between transformational and servant leadership. *Leadership & Organization Development Journal*, 30(3), 274–291. <http://dx.doi.org/10.1108/01437730910949544>
- Robinson, B. E. (1999). The work addiction risk test: Development of a tentative measure of workaholism. *Perceptual and Motor Skills*, 88(1), 199–210. <http://dx.doi.org/10.2466/pms.1999.88.1.199>
- Russell, R. F., & Gregory Stone, A. (2002). A review of servant leadership attributes: Developing a practical model. *Leadership & Organization Development Journal*, 23(3), 145–157. <http://dx.doi.org/10.1108/014377302104>
- Salmela-Aro, K. (2015). *Toward a new science of academic engagement*. *Research in Human Development*, 24.
- Salmela-Aro, K., Näätänen, P., & Nurmi, J. E. (2004). The role of work-related personal project during two burnout interventions: a longitudinal study. *Work & Stress*, 18(3), 208–230. <http://dx.doi.org/10.1080/0267837041233131748>
- Salmela-Aro, K., Savolainen, H., & Holopainen, L. (2009). Depressive symptoms and school burnout during adolescence: Evidence from two cross-lagged longitudinal studies. *Journal of Youth and Adolescence*, 38(10), 1316–1327. <http://dx.doi.org/10.1007/s10964-008-9334-3>
- Salmela-Aro, K., & Upadaya, K. (2014). School burnout and engagement in the context of demands–resources model. *British Journal of Educational Psychology*, 84(1), 137–151. <http://dx.doi.org/10.1111/bjep.12018>
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71–92. <http://dx.doi.org/10.1023/A:1015630930326>
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior*, 25(3), 293–315. <http://dx.doi.org/10.1002/job.248>
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire a cross-national study. *Educational and Psychological Measurement*, 66(4), 701–716. <http://dx.doi.org/10.1177/0013164405282471>
- Schaufeli, W. B., Taris, T. W., & Van Rhenen, W. (2008). Workaholism, burnout, and work engagement: three of a kind or three different kinds of employee well-being? *Applied Psychology*, 57(2), 173–203. <http://dx.doi.org/10.1111/j.1464-0597.2007.00285.x>
- Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behavior*, 30(7), 893. <http://dx.doi.org/10.1002/job.595>
- Scholz, U., Doña, B. G., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment*, 18(3), 242–251. <http://dx.doi.org/10.1027/1015-5759.18.3.242>
- Seppälä, P., Mauno, S., Kinnunen, M. L., Feldt, T., Juuti, T., Tolvanen, A., & Rusko, H. (2012). Is work engagement related to healthy cardiac autonomic activity? Evidence from a field study among Finnish women workers. *The Journal of Positive Psychology*, 7(2), 95–106. <http://dx.doi.org/10.1007/s00420-012-0732-1>
- Shimazu, A., & Schaufeli, W. B. (2009). Is workaholism good or bad for employee well-being? The distinctiveness of workaholism and work engagement among Japanese employees. *Industrial Health*, 47(5), 495–502. <http://dx.doi.org/10.2486/indhealth.47.495>
- Shimazu, A., Schaufeli, W. B., Kamiyama, K., & Kawakami, N. (2015). Workaholism vs. work engagement: The two different predictors of future well-being and performance. *International Journal of Behavioral Medicine*, 22(1), 18–23. <http://dx.doi.org/10.1007/s12529-014-9410-x>
- Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, 15, 194–200. <http://dx.doi.org/10.1007/s10869-010-9194-1>
- Sonnentag, S. (2001). Work, recovery activities, and individual well-being: A diary study. *Journal of Occupational Health Psychology*, 6(3), 196. <http://dx.doi.org/10.1037/1076-8998.6.3.196>
- Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology*, 88(3), 518. <http://dx.doi.org/10.1037/0021-9010.88.3.518>
- Sonnentag, S. (2011). Research on work engagement is well and alive. *European Journal of Work and Organizational Psychology*, 20(1), 29–38. <http://dx.doi.org/10.1080/1359432X.2010.510639>
- Taris, T. W. (2006). Is there a relationship between burnout and objective performance? A critical review of 16 studies. *Work & Stress*, 20(4), 316–334. <http://dx.doi.org/10.1080/02678370601065893>
- Upadaya, K., & Salmela-Aro, K. Developmental dynamics between young adults' life satisfaction and engagement with studies and work. *Longitudinal and Life Course Studies*. (in press).
- Upadaya, K., & Salmela-Aro, K. (2016). Development of early vocational behavior: Parallel associations between career engagement and satisfaction. *Journal of Vocational Behavior*, 90, 66–74.
- Van Dierendonck, D., & Nuijten, I. (2011). The servant leadership survey: Development and validation of a multidimensional measure. *Journal of Business and Psychology*, 26(3), 249–267. <http://dx.doi.org/10.1007/s10869-010-9194-1>
- Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Reciprocal relationships between job resources, personal resources, and work engagement. *Journal of Vocational Behavior*, 74(3), 235–244. <http://dx.doi.org/10.1016/j.jvb.2008.11.003>
- de Jonge, J., van Vegchel, N., Shimazu, A., Schaufeli, W., & Dormann, C. (2010). A longitudinal test of the demand-control model using specific job demands and specific job control. *International Journal of Behavioral Medicine*, 17(2), 125–133. <http://dx.doi.org/10.1007/s12529-010-9081-1>