

# Using the Job Demands–Resources Model to Evaluate Work-Related Outcomes Among Norwegian Health Care Workers

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## Abstract

The job demands-resources (JD-R) model was used to evaluate work-related outcomes among 489 health care professionals working in public health services for children and their families in Norway. In accordance with the JD-R model, the relationship of job demands and job resources with different outcomes (turnover intention, job satisfaction, and service quality) should be mediated through burnout and engagement. The results of the multilevel structural equation model analysis indicated good model fit: The  $\chi^2$ /degrees of freedom ratio was 1.54, the root mean square error of approximation was .033, and the Tucker Lewis index and comparative fit index were both .92. Job demands were positively associated with burnout; job resources were positively related to engagement and negatively related to burnout. Burnout was positively related to turnover intention and negatively related to job satisfaction and service quality. Engagement was inversely related to the outcome variables. Both job demands and job resources are important predictors of employee well-being and organizational outcomes.

## Keywords

job demands-resources model, collaboration, health and social care, SEM, burnout

In Norway, the municipalities are responsible for offering health promotion and prevention services for children, adolescents, and their families (Norwegian Ministry of Health and Care Services, LOV-2011-06-24-30). The municipal and school health care services comprise a range of different services that last from pregnancy, throughout childhood and adolescence, up to the age of 20 years. This comprehensive health promoting and preventive work is conducted by different professionals, such as midwives, health care nurses, GP's, physiotherapists, psychologists, and occupational therapists (Norwegian Health and Social Services Directorate, 2004). In addition to the municipal and school health care services that focus on health promotion and universal prevention, there are also services like the educational psychological counseling service and child protection services that are responsible for offering indicated and selective interventions, respectively. Educational personnel, teachers, social workers, or child protection workers often conduct this work.

There is a growing demand in Norway for workers in the health and social care sector. From 2010 to 2030, approximately 100,000 new nurses and other professionals in the health and social care sector will be needed to keep up with the expected growth (Cappelen et al., 2013). Creating healthy workplaces is therefore important to recruit new employees and reduce turnover, benefiting professionals, users, and

organizations (Spence Laschinger, 2007). Health and social care professionals are also at the leading edge of health promotion and preventive work. They work with children, adolescents, and families delivering counseling and health promoting interventions. They not only need to be well educated and experienced, but, and perhaps more importantly, need to be motivated and engaged in the work they are doing (Bakker, 2015).

The job demands-resources (JD-R) model is widely used to examine predictors of worker well-being, engagement, and individual- and organizational-level outcomes. The JD-R model has several propositions that are summarized in Bakker and Demerouti (2017). The first is that job characteristics can be categorized as either job demands or job resources. Job demands usually result in job strain that requires an effort to cope, while job resources support goal

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achievement and are associated with personal growth (Demerouti et al., 2001). The second proposition of the JD-R model states that job demands are associated with a health-impairment process (exhaustion) and job resources with a motivational process (engagement). Third, job resources buffer the negative effects of job demands on burnout. Job resources have also been found to be particularly important when demands are high because they boost work engagement (Bakker, 2015). Furthermore, job strain is negatively related to job performance, while motivation is related to positive job performance (Bakker & Demerouti, 2017). The theory also describes something that Bakker (2015) refers to as the “loss cycle of job demands and exhaustion” and the “gain cycle of job resources and engagement” (p. 723). Motivated employees work actively to improve their work situation (job crafting behavior), which in turn leads to an increase in resources and higher motivation. Strained employees do the opposite, that is, they weaken their position by showing self-undermining behavior, leading to more job demands and more strain (Bakker & Demerouti, 2017). Considering this, it is in the interest of the organizations, the employees, and also in the interests of the service users, to keep job demands low and to provide employees with enough resources to do their work. A similar study to the present one examined home health care nurses using the JDR-model. The results showed that job demands were positively related to burnout while job resources were negatively related to burnout and positively to engagement (Vander Elst, 2016).

Among the most widely examined and recognized job resources seem to be autonomy at work and social support (Bakker et al., 2005). Collaboration is less frequently studied and also not listed as a job resource in an overview of job demands and resources provided by Schaufeli and Taris (2014). However, because the health promoting and preventive work includes so many different services and stakeholders, good collaboration is not only important to guarantee continuity of care and high-quality services for the users, but might also be seen as a job resource for the employees that helps them to accomplish work-related goals (Bakker et al., 2005).

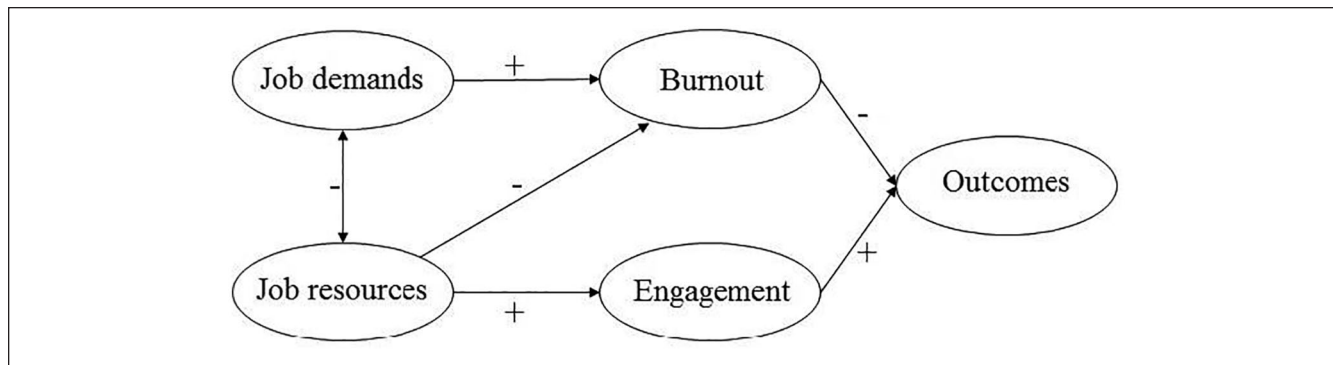
Two previously conducted studies have examined the impact of different job demands and job resources, including collaboration among Norwegian health and social care workers, on employee well-being (exhaustion and engagement) and on the employees' assessment of service quality (Martinussen et al., 2012) and job satisfaction (Martinussen et al., 2017). Martinussen et al. (2012) found that collaboration was the only significant individual predictor for employees' assessment of service quality, while both autonomy at work and social support from colleagues and supervisors were predictors of engagement. Workload and work-family conflict but not work conflict were positive predictors for exhaustion, while autonomy was negatively related to this dimension of burnout. Martinussen et al. (2017), on the other

hand, found that collaboration was a significant predictor for engagement, job satisfaction, and as an interaction term with workload for the employees' assessment of service quality, indicating a stronger negative relationship between workload and service quality with low levels of collaboration. Similar to the other study (Martinussen et al., 2012), workload and work-family conflict, but not work conflict, were positive predictors for exhaustion. Furthermore, autonomy was a significant predictor for engagement and both autonomy and social support predicted job satisfaction (Martinussen et al., 2017).

Other, less frequently studied job resources in the JD-R model are team climate and leadership. In the current study, collaboration refers to how the employees assess collaboration with professionals from other services, while team climate refers to how the employees rate the teamwork within their team or their work group. Clausen et al. (2012) conducted a longitudinal study among 7921 employees working in the eldercare services in Danish municipalities and found that different job demands (emotional demands and role conflict) and all job resources (team climate, leadership, and influence at work) were related to absence due to sickness but in the opposite direction. Furthermore, team climate has been found to be negatively related to exhaustion (Cheng et al., 2013) and turnover intention (Cheng et al., 2013; Kivimäki et al., 2007) and positively to job satisfaction (Heponiemi et al., 2014; Proudfoot et al., 2007), and service quality as assessed by employees (Cheng et al., 2013) and patients (Proudfoot et al., 2007). Leadership has been found to be a significant predictor of service quality but not for exhaustion, engagement, and job satisfaction in Martinussen et al. (2017). Leadership was also associated with engagement in a study from Breevaart et al. (2014), and with organizational outcomes, especially with commitment and performance, as found by Schaufeli (2015). A related construct to team climate is organizational climate, which, in a study of nurses, included several aspects, such as communication, autonomy, team cohesion, and leader support (Giorgi et al., 2016). In this study, which had a focus on bullying, the impact of organizational climate on burnout was primarily mediated by bullying.

Other examples of outcome variables that can be predicted by JD-R model include absenteeism, accidents, physical ill health, and innovativeness (Schaufeli & Taris, 2014). A study conducted among health care students found that work-related stress affected the mental health of the students (Mucci et al., 2014).

The present study focused on employees' intention to quit, job satisfaction, and perceived service quality as these outcomes are not only important for the employees and the organizations, but possibly also for the children and families that use the services. Turnover intention and job satisfaction are negatively related (Galletta et al., 2016; Karanikola et al., 2014; Roulin et al., 2014) and important to organizations because keeping employees in their job is generally



**Figure 1.** The job demands-resources model.

desirable. Turnover among employees is associated with direct and indirect costs for the organization due to selection, recruitment, and training expenditures for replacements (Staw, 1980), and possible productivity losses (Hayes et al., 2012). Turnover can also affect other employees because of possible interdependence when solving work-related tasks (Staw, 1980), or because of staffing shortages and higher subsequent workloads for those who have to step in. Studies of medical professionals have found that turnover was related to medical and medication errors and reduced quality of care (Hayes et al., 2012). Job satisfaction, on the other hand, is defined as a “pleasurable emotional state resulting from the appraisal of one’s job as achieving or facilitating the achievement of one’s job values” (Locke, 1969, p. 316); it has been found to be positively related to engagement (Martinussen et al., 2017), work performance (Judge et al., 2001), and service quality (Martinussen et al., 2017; Rafferty et al., 2001).

The aim of this study was to use the JD-R model to examine how job demands (workload, work conflict, and work-family conflict) and job resources (autonomy, social support, collaboration, leadership, and team climate) relate to turnover intention, job satisfaction, and service quality, mediated by burnout and engagement. The model is presented in Figure 1. In accordance with the JD-R model, job demands are expected to be negatively related to burnout and burnout negatively to the outcomes variables, that is, burnout should be negatively related to job satisfaction and service quality and positively to turnover intention. Job resources, on the other hand, should be negatively related to burnout, positively to engagement, and engagement, in turn, should be positively related to the outcome variables. In other words, engagement is expected to be positively related to job satisfaction and service quality and negatively related to turnover intention.

## Method

### Participants

Services were recruited from 21 municipalities in all regions of Norway in 2015 and 2016. All employees who worked at

the services were invited to participate. A total of 489 employees responded to the survey (response rate about 56%).

### Ethical Considerations

The scales included in the current survey have been used for many years in similar studies in Norway (Martinussen et al., 2012), and no negative effects have been reported. The participating municipalities were offered feedback and additional support if needed, and both services and individuals could contact the research team with questions and comments. All participants received written information about the study including information that participation was voluntary. The study was approved by the Data Protection Official for Research, NSD-Norwegian Centre for Research Data.

### Measures

The questionnaire consisted of a range of questions and scales including demographic characteristics such as age, gender, and years in occupation. The following section describes the scales that were used in the present study in more detail. In accordance with the guidelines from the European Federation of Psychologists’ Associations (2013), Cronbach’s alphas are considered adequate when they are equal to or greater than .70, good when they are equal to or greater than .80, and excellent when they are equal to or greater than .90.

**Job demands.** Job demands included workload, work conflict, and work-family conflict. Workload was measured by eight items (e.g., “How stressful is your job?”) rated on a 7-point scale (1 = *not at all*, 7 = *to a very large extent*) from the Total Workload Questionnaire (TWQ; Frankenhaeuser et al., 1989). The psychometric properties of the TWQ have been examined and supported in a Norwegian context (Østlyngen et al., 2003). For the current study, Cronbach’s alpha was .82.

Work conflict (e.g., “I often experience conflicts with other colleagues at work”), and work-family conflict (e.g., “I

often feel a conflict between my work and my family roles”) were assessed by two items each (McKeen & Burke, 1991). The scales have been found to have adequate internal reliability in different Norwegian studies (Martinussen et al., 2007, 2011, 2012). Furthermore, the scaling of both scales was changed from a 5-point scale that has been used in the previous studies to a 7-point scale for the current study (1 = *not at all*, 7 = *to a very large extent*). Cronbach’s alpha for the scale work conflict was .66 and .85 for work-family conflict.

**Job resources.** Job resources included autonomy, social support, collaboration, leadership, and team climate. Autonomy consisted of seven items (e.g., “To what extent can you, on your own initiative, realize your own ideas in your job?”) from the TWQ. Cronbach’s alpha was .86.

Social support included a total of eight items (Himle et al., 1991). Four items measured social support from colleagues (e.g., “How true is it that your coworkers are warm and friendly when you have problems?”) and four items measured social support from supervisors (e.g., “How true is it that your supervisor is warm and friendly when you have problems?”). The questions were rated on a 4-point scale (1 = *not at all true*, 4 = *very true*). This scale has been used previously in Norwegian studies and internal consistency was found to be good (Martinussen et al., 2007) to excellent (Martinussen et al., 2011). Cronbach’s alpha for the current study was .88.

Eight items measured collaboration between professionals from other services. The questions were developed for a similar study of health and social care providers in different Norwegian municipalities (Martinussen et al., 2012) and are displayed in the appendix. They were rated on a 5-point scale ranging from 1 = *not at all* to 5 = *to a very large extent*. Exploratory factor analyses suggested a one-factor solution and Cronbach’s alpha was adequate (Martinussen et al., 2012). Cronbach’s alpha for the current study was .78.

Leadership was assessed by seven items adapted from the Leadership Scale (Shipton et al., 2008 e.g., “The immediate superior describes the objectives of the service clearly to the staff” or “The immediate leader builds strong, co-operative links with other services for children and youths”). Answer categories ranged from 1 = *not at all* to 5 = *a great deal*. An exploratory factor analysis indicated one factor and Cronbach’s alpha was excellent (Martinussen et al., 2017). Cronbach’s alpha was .91 in the current study.

Team climate was assessed with the short version of the Team Climate Inventory (Kivimaki & Elovainio, 1999) that consists of 14 items (e.g., “How far are you in agreement with the teams objectives?” or “People feel understood and accepted by each other”). The items were measured on a 5-point scale with different answer categories (e.g., 1 = *strongly disagree*, 5 = *strongly agree*). The factor structure and the psychometric properties have been examined and

supported in a Norwegian context (Kaiser et al., 2016). Cronbach’s alpha was .93 in the current study.

**Worker well-being.** To measure worker well-being, emotional exhaustion (the core dimension of burnout) and engagement were used in the analysis. Emotional exhaustion was assessed by five items (e.g., “I feel used up at the end of the workday”) from the Maslach Burnout Inventory–General Survey (Maslach et al., 1996) and engagement by nine items (e.g., “At my work, I feel bursting with energy”) from the short version of the Utrecht Work Engagement Scale (Schaufeli et al., 2006). Both scales were rated on a 7-point scale ranging from 0 = *never* to 6 = *every day*. The factor structure and the psychometric properties for burnout (Richardson & Martinussen, 2005) and engagement (Nerstad et al., 2010) have been examined and supported in a Norwegian context. Cronbach’s alpha was .88 for burnout and .92 for engagement in the current study.

**Outcomes.** Outcomes included turnover intention, job satisfaction, and service quality. A total of five items comprised turnover intention (e.g., “I often think about quitting my present job”; Khatri et al., 2001; Kuvaas, 2006). The scale was rated on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). An exploratory factor analysis was conducted based on the current sample, indicating one factor. Cronbach’s alpha was .91.

Job satisfaction was measured by four items from the TWQ (e.g., “How satisfied are you with your current job?”) and were rated on a 7-point scale (1 = *not at all* to 7 = *to a very large extent*). Cronbach’s alpha was .82.

Service quality included three items (“I do believe that the users experience our services as;,” “Services for children and young people given by my service are;,” and “The quality of the services offered by our service to children and their families are;”), of which the latter two questions were inspired by Rafferty et al. (2001). The items were rated on a 5-point scale ranging from 1 = *very bad* to 5 = *very good*. Exploratory factor analysis indicated one factor and Cronbach’s alpha was adequate (Martinussen et al., 2017). In the current study, Cronbach’s alpha was .82.

## Procedure

The current study was part of a study called Collaboration and Service Quality in Healthcare Services for Children, Youths, and their Families (SKO-study) that conducted employee and user satisfaction surveys in municipal health and social care services for children, adolescents, and their families in Norway. Examples of services that were included were maternity care services, health care centers, educational psychological counseling services, and child welfare services sometimes organized in a unit for children and families or as a Family’s house/family center. The electronic questionnaires and information about the study were distributed

to the professionals via Questback. One reminder was sent approximately 1 week after the first contact.

### Data Analyses

The descriptive statistics, Cronbach's alpha values, normal distribution, and missing value analyses were calculated using SPSS version 23. Multilevel structural equation model (SEM) analysis was used to examine the relationship between work-related outcomes and different job demands and resources, which were mediated by burnout and engagement, using the JD-R model. Mplus version 7.3 was used to conduct the analysis using weighted least squares estimator (WLSMV), with municipality as the cluster variable. SEM model fit was evaluated by using  $\chi^2$ /degrees of freedom ratio, root mean square error of approximation (RMSEA), Tucker Lewis index (TLI), and comparative fit index (CFI). Values smaller than 5.00 are recommended to indicate good model fit according to the  $\chi^2$ /degrees of freedom ratio (Hooper et al., 2008). For the RMSEA, values should be less than .06 or .07 (Hu & Bentler, 1999; Steiger, 2007). For the CFI and TLI, values should be higher than .90 or .95 (Hooper et al., 2008; Hu & Bentler, 1999). In addition to overall model fit, total indirect and specific indirect effects were examined in the model; for example, paths from job demands and job resources to each of the outcome variables (turnover intention, job satisfaction, and service quality).

## Results

### Sample Characteristics

A total of 489 health and social care professionals were clustered in 21 different Norwegian municipalities with a range of seven to 59 employees per cluster. Most employees were female (92%), between the age of 41 and 50 years (35%), and worked full-time (75%). The mean number of years in the current occupation was 11.11 years ( $SD = 8.14$ ). Most employees worked in the child protection service (27%) followed by the health care center for 0- to 6-year-old children (15%) and the educational psychological counseling service (13%). The remaining employees worked at different services such as the school health care (10%), the maternity care service (3%), the open kindergarten (2%), or as the community psychologist (2%).

### Descriptive Statistics

The scales were approximately normally distributed with skewness and kurtosis values of less than  $\pm 1.5$ , except for the scale work conflict (skewness = 1.93 and kurtosis = 4.35), which about 87% of the employees rated as 1 (*not at all*) or 2 on a 7-point scale, suggesting a low degree of work conflict. Although skewness and kurtosis was high for work conflict, the WLSMV estimator has performed well under

various simulated conditions of skewness and kurtosis, especially with sample sizes over 200 (Flora & Curran, 2004; Muthén et al., 1997). The Little's MCAR test was significant,  $\chi^2(85) = 108.26$ ,  $p = .045$ , indicating that the data were not completely missing at random. However, there were less than 5% missing values and therefore the precision of the estimation for the missing values should not bias results (Tabachnick & Fidell, 2007).

Descriptive statistics, correlations, and Cronbach's alphas for the different scales are presented in Table 1. All correlations were in the expected directions, and Cronbach's alphas were adequate to excellent for all scales except for the work conflict scale where the Cronbach's alpha was low ( $\alpha = .66$ ) (Table 1; European Federation of Psychologists' Associations, 2013).

### The Job Demands-Resources Model

The JD-R model describes how job demands and job resources are related to organizational outcomes, in our case turnover intention, job satisfaction, and service quality, mediated by burnout and engagement. The structural model of the JD-R model and the standardized path coefficients are presented in Figure 2. All coefficients were significant, except for the relation between burnout and engagement ( $p = .463$ ). The fit indices of the multilevel analysis indicated acceptable model fit: The  $\chi^2$ /degrees of freedom ratio was 1.54,  $\chi^2(3219) = 4949.69$ ,  $p < .001$ , the RMSEA was .033 (90% CI = .031 to .035), and the TLI and the CFI were both .92.

As presented in Figure 2, Autonomy ( $\beta_{std} = .85$ ,  $p < .001$ ), social support ( $\beta_{std} = .80$ ,  $p < .001$ ), and leadership ( $\beta_{std} = .78$ ,  $p < .001$ ) had the highest loadings on the job resources factor. The highest loadings on job demands came from work conflict ( $\beta_{std} = .80$ ,  $p < .001$ ) and workload ( $\beta_{std} = .77$ ,  $p < .001$ ). The association between job demands and burnout ( $\beta_{std} = .59$ ,  $p < .001$ ) was slightly stronger than the association between job resources and engagement ( $\beta_{std} = .48$ ,  $p < .001$ ). Burnout had negative associations with job satisfaction ( $\beta_{std} = -.67$ ,  $p < .001$ ) and service quality ( $\beta_{std} = -.56$ ,  $p < .001$ ), and a positive association with turnover intention ( $\beta_{std} = .59$ ,  $p < .001$ ). Engagement had weaker associations with the outcome variables and the coefficients were in the expected direction: job satisfaction ( $\beta_{std} = .37$ ,  $p < .001$ ), service quality ( $\beta_{std} = .13$ ,  $p < .01$ ), and turnover intention ( $\beta_{std} = -.19$ ,  $p < .001$ ). The model explained 84% of the variance in burnout, 34% in engagement, 50% in turnover intention, 86% in job satisfaction, and 40% in service quality.

The sum of the indirect effects from job demands or job resources to the outcome variables were approximately equivalent in absolute values. As an example, the sum of the indirect effects from job demands to service quality were  $\beta_{std} = -.34$ ,  $p < .001$  versus  $\beta_{std} = .29$ ,  $p < .001$  from job resources to service quality. Examining the specific indirect

**Table 1.** Descriptive Statistics and Correlations ( $N = 483\text{--}489$ ).

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	-
<b>Job demands</b>															
1. Workload	4.29	0.96	<i>.82</i>												
2. Work conflict	1.68	0.94	.22	<i>.66</i>											
3. Work family conflict	2.94	1.56	.58	.28	<i>.85</i>										
<b>Job resources</b>															
4. Autonomy	5.24	0.90	-.43	-.33	-.33	<i>.86</i>									
5. Social support	3.34	0.57	-.28	-.50	-.20	.47	<i>.88</i>								
6. Collaboration	3.23	0.49	-.24	-.21	-.22	.30	.29	<i>.78</i>							
7. Leadership	3.73	0.73	-.20	-.44	-.15	.43	.66	.33	<i>.91</i>						
8. Team climate	3.80	0.59	-.22	-.40	-.18	.49	.53	.31	.58	<i>.93</i>					
<b>Worker well-being</b>															
9. Burnout	1.71	1.25	.59	.37	.55	-.47	-.36	-.28	-.30	-.33	<i>.88</i>				
10. Engagement	4.42	1.01	-.33	-.25	-.27	.55	.35	.20	.33	.35	-.46	<i>.92</i>			
<b>Outcomes</b>															
11. Turnover intention	1.93	1.06	.34	.38	.32	-.45	-.38	-.19	-.41	-.38	.52	-.42	<i>.91</i>		
12. Job satisfaction	5.54	0.99	-.33	-.46	-.27	.73	.62	.29	.60	.55	-.52	.60	-.60	<i>.82</i>	
13. Service quality	3.88	0.49	-.27	-.20	-.18	.46	.34	.31	.46	.43	-.26	.31	-.29	.44	<i>.82</i>

Note. Cronbach's alpha are displayed in italics on the diagonal. All correlations were significant at  $p < .001$ , except for the correlation between work-family conflict and leadership ( $p < .01$ ; two-tailed).

effects revealed that the strongest relations for both job demands and job resources and the outcome variables were mediated by burnout. The strongest indirect effects came from job demands via burnout to job satisfaction ( $\beta_{\text{std}} = -.40$ ,  $p < .001$ ), turnover intention ( $\beta_{\text{std}} = .34$ ,  $p < .001$ ), and service quality ( $\beta_{\text{std}} = -.33$ ,  $p < .001$ ), and from job resources via burnout to job satisfaction ( $\beta_{\text{std}} = .28$ ,  $p < .001$ ), turnover intention ( $\beta_{\text{std}} = -.24$ ,  $p < .001$ ), and service quality ( $\beta_{\text{std}} = .23$ ,  $p < .001$ ). The strongest indirect effects via engagement came from job resources to job satisfaction ( $\beta_{\text{std}} = .18$ ,  $p < .001$ ), to turnover intention ( $\beta_{\text{std}} = -.09$ ,  $p < .001$ ), and to service quality ( $\beta_{\text{std}} = .06$ ,  $p < .05$ ).

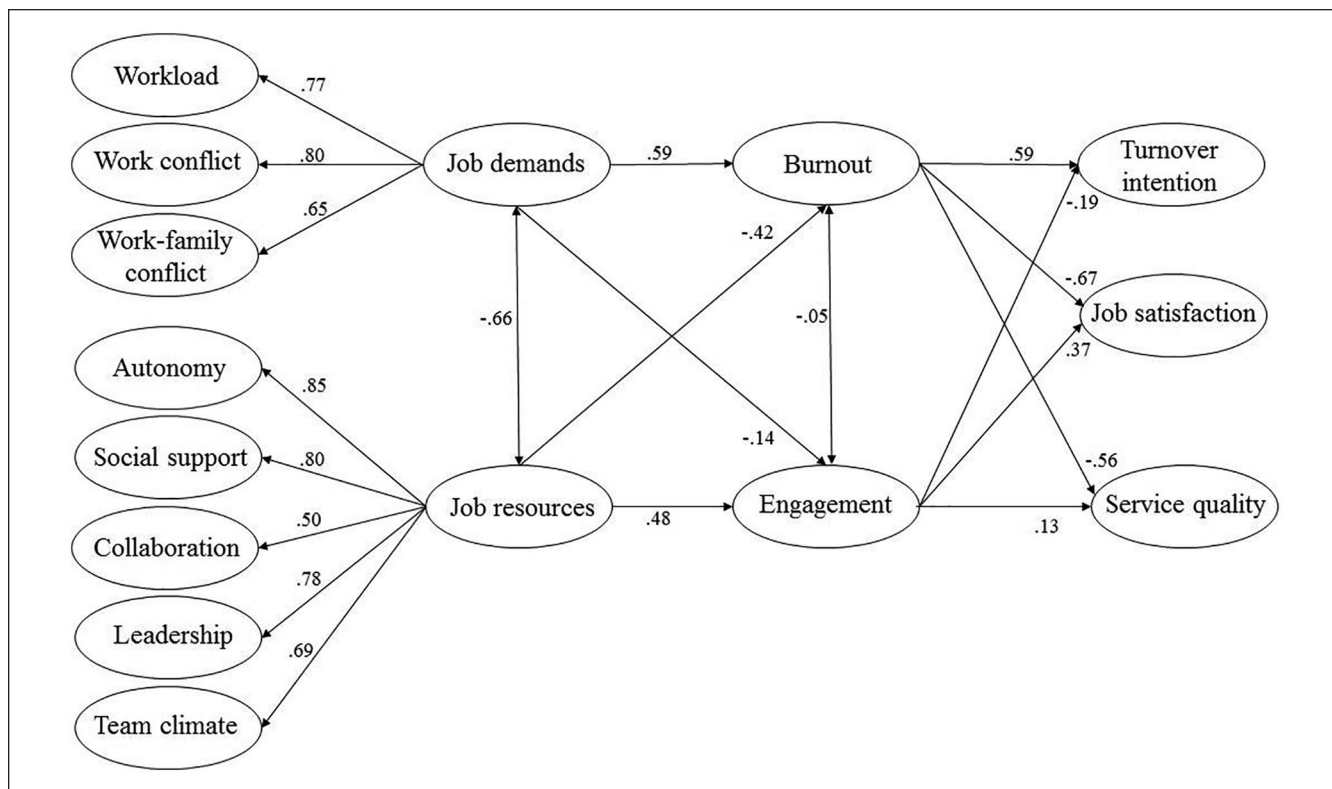
## Discussion

The aim of this study was to examine predictors of worker well-being and different outcomes for health and social care providers working with children and their families in Norway, by using the JD-R model. Overall, the results of the structural equation model analyses were in accordance with the JD-R theory. Job demands were positively associated with burnout, and job resources were positively related to engagement and negatively to burnout. Burnout was positively related to turnover intention and negatively to job satisfaction and service quality. Engagement was inversely related to the three outcome variables. Furthermore, there was a significant negative relation between job demands and resources, and job demands were negatively associated with engagement.

There was a slightly stronger negative relationship between job demands and burnout compared with the strength of the relationship between job resources and engagement. Even

larger differences were found between burnout and the outcome variables, compared with engagement and the outcomes. Hakanen et al. (2006) used the JD-R model among Finnish teachers and found even larger differences between the path coefficients for job demands and burnout than for job resources and engagement. Burnout and engagement predicted ill health and organizational commitment. Hakanen et al. (2006) used the Conservation of Resources Theory to explain their findings and concluded that the process between job demands, burnout, and health problems, also referred to as the energetic process, was "expected to be more prominent" (p. 508) compared with the process between job resources, engagement, and organizational commitment (motivational process) because employees "are more sensitive to working conditions that translate into losses for them" (Hakanen et al., 2006, p. 508).

Schaufeli and Bakker (2004) used the JD-R model to predict health problems and turnover intention in four different samples from commercial and human service organizations. Their model explained between 29% and 72% of the variance in burnout, between 26% and 28% in engagement, between 9% and 24% in turnover intention, and between 33% and 42% in health problems. Based on the explained variance, they too concluded that the "energetic process is more pervasive than the motivational process" (Schaufeli & Bakker, 2004, p. 308). Furthermore, they stated that "from a preventive point of view, decreasing job demands is to be preferred above increasing job resources" (Schaufeli & Bakker, 2004, p. 311). In the current study, the model explained the majority of the variance in burnout (84%) and between 40% and 86% in the three outcome variables. Only 34% of the variance in engagement was explained. Although



**Figure 2.** The job demands–resources model and the standardized path coefficients of the structural model ( $N = 489$ , number of clusters = 21).

Note. All coefficients were significant at  $p < .001$ , except for the paths between job demands and engagement ( $p = .030$ ), between burnout and engagement ( $p = .463$ ), and between engagement and service quality ( $p = .004$ ).

a wide range of different job resources was included in the model, this result suggests that there may be other sources of employee engagement that were not captured in the present study. Other important job resources that may contribute to engagement for health and social care workers could be rewarding client contact, variety of tasks, or opportunities for professional development (Schaufeli & Taris, 2014). Other factors influencing employee engagement might be personal resources (Mastenbroek et al., 2014) or job-related positive affect (Balducci et al., 2011). The percentage of explained variance in engagement in the present study was comparable to that found by Schaufeli and Bakker (2004) and Hakanen et al. (2006), where 42% of the variance in engagement were explained.

Based on the indirect and specific indirect effects, it seems that burnout was a more important mediator between both job demands and job resources and the outcomes compared with engagement. This could be connected to the type of outcome variables that were used in the current study. The relatively weak but still significant relationship between engagement and service quality could be explained by the fact that this construct assesses the employees' ratings of the quality of the service delivered to children and their families, and not how the employees rate their individual performance. Several previously conducted studies found a relationship

between engagement and performance (Bakker & Bal, 2010; Bakker et al., 2004; Mastenbroek et al., 2014; Xanthopoulou et al., 2009). Compared with burnout, there was also a relatively weak relationship between engagement and turnover intention. However, the strength of the relationship between engagement and burnout and turnover intention were comparable to the findings from Schaufeli and Bakker (2004).

The weakest factor loadings on job resources came from collaboration followed by team climate, indicating that those resources were less important job resources compared with autonomy and social support, which had the highest loadings. The coefficients for collaboration and team climate were significant, however, indicating that they are important resources related to the work health and social care professionals do. Another possibility is that collaboration and team climate may be more important for other outcome variables such as patient health and satisfaction as indicated in studies from hospitals and general practices (Boev & Xia, 2015; Proudfoot et al., 2007; Virtanen et al., 2009).

### Limitations

This study was based on self-report measures, which may cause certain biases (Donaldson & Grant-Vallone, 2002). The participants may have given socially desirable responses

and underreported inappropriate behavior, leading to self-report bias. Alternatively, the survey may have led to common method bias, where variance is systematically shared among the variables when both independent and dependent variables are measured simultaneously using the same method (Donaldson & Grant-Vallone, 2002; Jakobsen & Jensen, 2015). Furthermore, the study was cross-sectional and one cannot draw firm conclusions about causal relationships. Unfortunately, there was not enough data to compare the model between different occupational subgroups. It would have been interesting to compare the JD-R model between child protection workers, nurses, or preschool teachers to determine model consistency for each of the groups. The internal reliability of the scale work conflict was low ( $\alpha = .66$ ); however, it consisted of two items only, and for the remaining scales Cronbach's alpha was adequate to excellent (European Federation of Psychologists' Associations, 2013). The response rate was about 56%, which is about the same as the average response rate (50%) of surveys reported in a meta-analysis of response rates (van Horn et al., 2009).

## Conclusion

The current study is one of very few studies on health and care personnel that has been conducted in a community health and social care setting and not in a hospital. It is also one of few studies that has examined the importance of collaboration, teamwork, and leadership as job resources using the JD-R Model. Creating healthy workplaces is especially important in the health and social care sector for the employees to maintain their physical and mental health, and to be able to provide high-quality services for children and their families (Spence Laschinger, 2007). Overall, the results of this study indicate that both job demands and job resources are important in predicting employee well-being: especially burnout, and organizational outcomes like turnover intention, job satisfaction, and service quality. The crosslink between job resources and burnout was almost equally strong compared with the relation between job resources and engagement, underlining the twofold importance of job resources for employee well-being. Leaders of services in the social care sector should therefore not only focus on reducing job demands but also on providing enough resources for the employees. This is important to retain health care workers and to make the job more attractive for new employees so that there are enough health and social care workers to meet future demands placed on the system (Cappelen et al., 2013). In unusual situations, such as a national crisis, primary health care personnel are the frontline workers who may experience an increase in workload and work-family conflict, changes in tasks, as well as facing families with increased needs and financial difficulties. Whether or not this may have an impact on the relationships in the JD-R model is uncertain, but creating supportive work places may be the

best way to ensure that health and care personnel are able to provide services to the public even in situations with a steep increase in work demands.

In sum, the present study adds to the literature by conducting a comprehensive examination of the JDR-model with many different and rarely examined job resources among a sample that is not often studied: health care workers working in the primary health care services (Kaiser et al., 2018). The study leads to a better understanding of what adds to engagement and to burnout among this group. This is important, as these workers provide care to children and young people on a broad spectrum.

## Appendix

### Collaboration Between Different Services

The following questions assess collaboration between professionals from different services for children, adolescents, and their families. The scale consists of eight items: four are positively worded and four negatively. Respondents are asked to reply on a 5-point scale (1 = *not at all*, 2 = *a minor extent*, 3 = *to some extent*, 4 = *to a large extent*, 5 = *to a very large extent*).

1. It is easy to get help from other services in working with children or adolescents and their families.
2. The services frequently state that it is not their responsibility.
3. There are not enough forums for interprofessional collaboration and communication.
4. There is a common understanding between the services about problems and how to implement interventions.
5. The different services do not know what the others are doing.
6. Collaboration is difficult because of a lack of resources (e.g., lack of time).
7. The different services have a good knowledge of each other's expertise.
8. Collaboration between the services is characterized by mutual respect.

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## References

- Bakker, A. B. (2015). A job demands-resources approach to public service motivation. *Public Administration Review*, *75*, 723–732. <http://dx.doi.org/10.1111/puar.12388>
- Bakker, A. B., & Bal, M. P. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology*, *83*, 189–206. <http://dx.doi.org/10.1348/096317909X402596>
- Bakker, A. B., & Demerouti, E. (2017). Job demands-resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, *22*, 273–285. <http://dx.doi.org/10.1037/ocp0000056>
- Bakker, A. B., Demerouti, E., & Euwema, M. C. (2005). Job resources buffer the impact of job demands on burnout. *Journal of Occupational Health Psychology*, *10*, 170–180. <http://dx.doi.org/10.1037/1076-8998.10.2.170>
- 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. <http://dx.doi.org/10.1002/hrm.20004>
- Balducci, C., Schaufeli, W. B., & Fraccaroli, F. (2011). The job demands–resources model and counterproductive work behaviour: The role of job-related affect. *European Journal of Work & Organizational Psychology*, *20*, 467–496. <http://dx.doi.org/10.1080/13594321003669061>
- Boev, C., & Xia, Y. (2015). Nurse-physician collaboration and hospital-acquired infections in critical care. *Critical Care Nurse*, *35*, 66–72. <http://dx.doi.org/10.4037/ccn2015809>
- Breevaart, K., Bakker, A., Hetland, J., Demerouti, E., Olsen, O. K., & Espevik, R. (2014). Daily transactional and transformational leadership and daily employee engagement. *Journal of Occupational and Organizational Psychology*, *87*, 138–157. <http://dx.doi.org/10.1111/joop.12041>
- Cappelen, Å., Gjefsen, H., Gjelsvik, M., Holm, I., & Stølen, N. M. (2013). *Forecasting demand and supply of labour by education*. [https://www.ssb.no/en/arbeid-og-lonn/artikler-og-publikasjoner/\\_attachment/144096?\\_ts=141cb387d78](https://www.ssb.no/en/arbeid-og-lonn/artikler-og-publikasjoner/_attachment/144096?_ts=141cb387d78)
- Cheng, C., Bartram, T., Karimi, L., & Leggat, S. G. (2013). The role of team climate in the management of emotional labour: Implications for nurse retention. *Journal of Advanced Nursing*, *69*, 2812–2825. <http://dx.doi.org/10.1111/jan.12202>
- Clausen, T., Nielsen, K., Carneiro, I. G., & Borg, V. (2012). Job demands, job resources and long-term sickness absence in the Danish eldercare services: A prospective analysis of register-based outcomes. *Journal of Advanced Nursing*, *68*, 127–136. <http://dx.doi.org/10.1111/j.1365-2648.2011.05724.x>
- 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. <http://dx.doi.org/10.1037/0021-9010.86.3.499>
- Donaldson, S. I., & Grant-Vallone, E. J. (2002). Understanding self-report bias in organizational behavior research. *Journal of Business and Psychology*, *17*, 245–260. <http://dx.doi.org/10.1023/A:1019637632584>
- European Federation of Psychologists' Associations. (2013). *EFPA review model for the description and evaluation of psychological and educational tests (version 4.2.6)*. <http://www.efpa.eu/professional-development/assessment>
- Flora, D. B., & Curran, P. J. (2004). An empirical evaluation of alternative methods of estimation for confirmatory factor analysis with ordinal data. *Psychological Methods*, *9*, 466–491. <http://dx.doi.org/10.1037/1082-989x.9.4.466>
- Frankenhaeuser, M., Lundberg, U., Fredrikson, M., Melin, B., Tuomisto, M., Myrsten, A.-L., . . . Wallin, L. (1989). Stress on and off the job as related to sex and occupational status in white-collar workers. *Journal of Organizational Behavior*, *10*, 321–346. <http://dx.doi.org/10.1002/job.4030100404>
- Galletta, M., Portoghese, I., Carta, M. G. D., Aloja, E., & Campagna, M. (2016). The effect of nurse-physician collaboration on job satisfaction, team commitment, and turnover intention in nurses. *Research in Nursing & Health*, *39*, 375–385. <http://dx.doi.org/10.1002/nur.21733>
- Giorgi, G., Mancuso, S., Perez, F. F. D., Antonio, A. C., Mucci, N., Cupelli, V., & Arcangeli, G. (2016). Bullying among nurses and its relationship with burnout and organizational climate. *International Journal of Nursing Practice*, *22*, 160–168. <http://dx.doi.org/10.1111/ijn.12376>
- Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, *43*, 495–513. <http://dx.doi.org/10.1016/j.jsp.2005.11.001>
- Hayes, L. J., O'Brien-Pallas, L., Duffield, C., Shamian, J., Buchan, J., Hughes, F., . . . North, N. (2012). Nurse turnover: A literature review—An update. *International Journal of Nursing Studies*, *49*, 887–905. <http://dx.doi.org/10.1016/j.ijnurstu.2011.10.001>
- Heponiemi, T., Aalto, A. M., Puttonen, S., Vanska, J., & Elovainio, M. (2014). Work-related stress, job resources, and well-being among psychiatrists and other medical specialists in Finland. *Psychiatric Services*, *65*, 796–801. <http://dx.doi.org/10.1176/appi.ps.201300200>
- Himle, D. P., Jayaratne, S., & Thyne, P. (1991). Buffering effects of four social support types on burnout among social workers. *Social Work Research and Abstracts*, *27*, 22–27. <http://dx.doi.org/10.1093/swra/27.1.22>
- Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, *6*, 53–60.
- 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*, 1–55. <http://dx.doi.org/10.1080/10705519909540118>
- Jakobsen, M., & Jensen, R. (2015). Common method bias in public management studies. *International Public Management Journal*, *18*, 3–30. <http://dx.doi.org/10.1080/10967494.2014.997906>
- Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, *127*, 376–407. <http://dx.doi.org/10.1037/0033-2909.127.3.376>
- Kaiser, S., Ekelund, B. Z., Patras, J., & Martinussen, M. (2016). Psychometric properties of the Norwegian short version of the Team Climate Inventory (TCI). *Scandinavian Journal of Organizational Psychology*, *8*, 18–28.
- Kaiser, S., Patras, J., & Martinussen, M. (2018). Linking interprofessional work to outcomes for employees: A meta-analysis. *Research in Nursing & Health*, *41*, 265–280. <http://dx.doi.org/10.1002/nur.21858>

- Karanikola, M. N., Albarran, J. W., Drigo, E., Giannakopoulou, M., Kalafati, M., Mpouzika, M., . . . Papanthanasoglou, E. D. (2014). Moral distress, autonomy and nurse-physician collaboration among intensive care unit nurses in Italy. *Journal of Nursing Management*, *22*, 472–484. <http://dx.doi.org/10.1111/jonm.12046>
- Khatri, N., Fern, C. T., & Budhwar, P. (2001). Explaining employee turnover in an Asian context. *Human Resource Management Journal*, *11*, 54–74. <http://dx.doi.org/10.1111/j.1748-8583.2001.tb00032.x>
- Kivimäki, M., & Elovainio, M. (1999). A short version of the Team Climate Inventory: Development and psychometric properties. *Journal of Occupational and Organizational Psychology*, *72*, 241–246. <http://dx.doi.org/10.1348/096317999166644>
- Kivimäki, M., Vanhala, A., Pentti, J., Lansisalmi, H., Virtanen, M., Elovainio, M., & Vahtera, J. (2007). Team climate, intention to leave and turnover among hospital employees: Prospective cohort study. *BMC Health Services Research*, *7*, Article 170. <http://dx.doi.org/10.1186/1472-6963-7-170>
- Kuvaas, B. (2006). Performance appraisal satisfaction and employee outcomes: Mediating and moderating roles of work motivation. *The International Journal of Human Resource Management*, *17*, 504–522. <http://dx.doi.org/10.1080/09585190500521581>
- Locke, E. A. (1969). What is job satisfaction? *Organizational Behavior and Human Performance*, *4*, 309–336. [http://dx.doi.org/10.1016/0030-5073\(69\)90013-0](http://dx.doi.org/10.1016/0030-5073(69)90013-0)
- Martinussen, M., Adolfsen, F., Lauritzen, C., & Richardsen, A. M. (2012). Improving interprofessional collaboration in a community setting: Relationships with burnout, engagement and service quality. *Journal of Interprofessional Care*, *26*, 219–225. <http://dx.doi.org/10.3109/13561820.2011.647125>
- Martinussen, M., Borgen, P.-C., Richardsen, A. M., Mandy, A., Pavlakis, A., Raftopoulos, V., & Cossman, L. (2011). Burnout and engagement among physiotherapists. *International Journal of Therapy & Rehabilitation*, *18*, 80–89. <http://dx.doi.org/10.12968/ijtr.2011.18.2.80>
- Martinussen, M., Kaiser, S., Adolfsen, F., Patras, J., & Richardsen, A. M. (2017). Reorganization of health care services for children and families: Improving collaboration, service quality, and worker well-being. *Journal of Interprofessional Care*, *31*, 487–496. <http://dx.doi.org/10.1080/13561820.2017.1316249>
- Martinussen, M., Richardsen, A. M., & Burke, R. J. (2007). Job demands, job resources, and burnout among police officers. *Journal of Criminal Justice*, *35*, 239–249. <http://dx.doi.org/10.1016/j.jcrimjus.2007.03.001>
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *The Maslach Burnout Inventory* (3rd ed.). Consulting Psychologists Press.
- Masterbroek, N. J. J. M., Jaarsma, A. D. C., Scherpbier, A. J. J. A., van Beukelen, P., & Demerouti, E. (2014). The role of personal resources in explaining well-being and performance: A study among young veterinary professionals. *European Journal of Work & Organizational Psychology*, *23*, 190–202. <http://dx.doi.org/10.1080/1359432x.2012.728040>
- McKeen, C. A., & Burke, R. J. (1991). Work experiences and career success of managerial and professional women: Study design and preliminary findings. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, *8*, 251–258. <http://dx.doi.org/10.1111/j.1936-4490.1991.tb00569.x>
- Mucci, N., Giorgi, G., Cupelli, V., & Arcangeli, G. (2014). Future health care workers-mental health problems and correlates. *World Applied Sciences Journal*, *30*, 710–715. <http://dx.doi.org/10.5829/idosi.wasj.2014.30.06.8244>
- Muthén, B. O., Toit, S. H. C., & Damir, S. (1997). *Robust inference using weighted least squares and quadratic estimating equations in latent variable modeling with categorical and continuous outcomes*. [https://www.statmodel.com/download/Article\\_075.pdf](https://www.statmodel.com/download/Article_075.pdf)
- Nerstad, C. G. L., Richardsen, A. M., & Martinussen, M. (2010). Factorial validity of the Utrecht Work Engagement Scale (UWES) across occupational groups in Norway. *Scandinavian Journal of Psychology*, *51*, 326–333. <http://dx.doi.org/10.1111/j.1467-9450.2009.00770.x>
- Norwegian Health and Social Services Directorate. (2004). *Kommunenes helsefremmende og forebyggende arbeid i helsestasjons- og skolehelsetjenesten* [Municipalities health promotion and prevention work in healthcare and school healthcare services]. <https://helsedirektoratet.no/Lists/Publikasjoner/Attachments/388/veileder-til-forskrift-kommunens-helsefremmende-og-forebyggende-arbeid-i-helsestasjons-og-skolehelsetj-.pdf>
- Norwegian Ministry of Health and Care Services. (LOV-2011-06-24-30). *Lov om kommunale helse- og omsorgstjenester m.m* [Municipal Health and Care Services Act]. <https://lovdata.no/dokument/NL/lov/2011-06-24-30>
- Østlyngen, A., Storjord, T., Steller, B., & Martinussen, M. (2003). En undersøkelse av total arbeidsbelastning og tilfredshet for psykologer i Norge [A survey of total workload and work satisfaction among Norwegian psychologists]. *Tidsskrift for Norsk Psykologforening*, *40*, 570–581.
- Proudfoot, J., Jayasinghe, U. W., Holton, C., Grimm, J., Bubner, T., Amoroso, C., . . . Harris, M. F. (2007). Team climate for innovation: What difference does it make in general practice? *International Journal for Quality in Health Care*, *19*, 164–169. <http://dx.doi.org/10.1093/intqhc/mzm005>
- Rafferty, A. M., Ball, J., & Aiken, L. H. (2001). Are teamwork and professional autonomy compatible, and do they result in improved hospital care? *Quality in Health Care*, *10*, ii32–ii37. <http://dx.doi.org/10.1136/qhc.0100032>
- Richardsen, A. M., & Martinussen, M. (2005). Factorial validity and consistency of the MBI-GS across occupational groups in Norway. *International Journal of Stress Management*, *12*, 289–297. <http://dx.doi.org/10.1037/1072-5245.12.3.289>
- Roulin, N., Mayor, E., & Bangerter, A. (2014). How to satisfy and retain personnel despite job-market shortage: Multilevel predictors of nurses' job satisfaction and intent to leave. *Swiss Journal of Psychology*, *73*, 13–24. <http://dx.doi.org/10.1024/1421-0185/a000123>
- Schaufeli, W. B. (2015). Engaging leadership in the job demands-resources model. *Career Development International*, *20*, 446–463. <http://dx.doi.org/10.1108/Cdi-02-2015-0025>
- 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*, 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, 701–716. <http://dx.doi.org/10.1177/0013164405282471>
- Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the job demands-resources model: Implications for improving work and health. In G. F. Bauer & O. Hämming (Eds.), *Bridging occupational, organizational and public health: A transdisciplinary approach* (pp. 43–68). Springer Netherlands. [http://dx.doi.org/10.1007/978-94-007-5640-3\\_4](http://dx.doi.org/10.1007/978-94-007-5640-3_4).
- Shipton, H., Armstrong, C., West, M., & Dawson, J. (2008). The impact of leadership and quality climate on hospital performance. *International Journal for Quality in Health Care*, 20, 439–445. <http://dx.doi.org/10.1093/intqhc/mzn037>
- Spence Laschinger, H. K. (2007). *Building healthy workplaces: Time to act on the evidence* (Healthcare Papers, 7 Spec No. 42–45). <http://dx.doi.org/10.12927/hcpap..18671>
- Staw, B. M. (1980). The consequences of turnover. *Journal of Occupational Behavior*, 1, 253–273.
- Steiger, J. H. (2007). Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences*, 42, 893–898. <http://dx.doi.org/10.1016/j.paid.2006.09.017>
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Pearson Education.
- Vander Elst, T. (2016). Job demands-resources predicting burnout and work engagement among Belgian home health care nurses: A cross-sectional study. *Nursing Outlook*, 64, 542–556. <http://dx.doi.org/10.1016/j.outlook.2016.06.004>
- van Horn, P. S., Green, K. E., & Martinussen, M. (2009). Survey response rates and survey administration in counseling and clinical psychology: A meta-analysis. *Educational and Psychological Measurement*, 69, 389–403. <http://dx.doi.org/10.1177/0013164408324462>
- Virtanen, M., Kurvinen, T., Terho, K., Oksanen, T., Peltonen, R., Vahtera, J., . . . Kivimäki, M. (2009). Work hours, work stress, and collaboration among ward staff in relation to risk of hospital-associated infection among patients. *Medical Care*, 47, 310–318. <http://dx.doi.org/10.1097/MLR.0b013e3181893c64>
- Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology*, 82, 183–200. <http://dx.doi.org/10.1348/096317908X285633>