JAN
Leading Global Nursing Research

How to foster nurses' well-being and performance in the face of work pressure? The role of mindfulness as personal resource

Journal:	*Journal of Advanced Nursing*
Manuscript ID	JAN-2020-0633
Manuscript Type:	Original Research: Empirical research - quantitative
Keywords:	Management, Stress, Burnout, Workforce Issues, Work Organisation, Organisational Behaviour, Organisational Development, Mental Health
Category:	Nursing

Title

How to foster nurses' well-being and performance in the face of work pressure? The role of mindfulness as personal resource

Abstract

Aim: To study the simultaneous relationships of work pressure with the performance and well-being of nurses, and to explore whether mindfulness moderates these relationships.

Design: A cross-sectional survey design.

Method: We conducted a cross-sectional survey of 1021 nurses from 103 Belgian elderly care homes, in 2017. Data was analysed using hierarchical multiple regression and simple slope analyses.

Results: Work pressure was positively associated with empathetic care, job performance and emotional exhaustion, and negatively associated with work engagement. Mindfulness was positively related to empathetic care, job performance, and work engagement, and negatively related to emotional exhaustion. Regarding the moderations, mindfulness moderated the relationships between work pressure and both performance outcomes, as well as between work pressure and work engagement. Contrary to what we expected: (1) mindfulness showed no significant buffering effect of work pressure on emotional exhaustion; (2) the relationship between work pressure and both empathic care and job performance was stronger when mindfulness was low (vs. high); and (3) mindfulness strengthened instead of weakened the negative relationship between work pressure and work engagement. However, in high work pressure settings, more mindful individuals still had better job performance and work engagement outcomes than less mindful individuals.

Conclusion: Our findings explain conflicting outcomes on the effects of work pressure by suggesting that work pressure can function both as a hindrance and a challenge job demand depending on the outcome. Furthermore, by exploring the role of mindfulness as a personal resource, we add to the literature on the role of personal resources in the JD-R-model which is particularly relevant in the context of increasing work pressure.

Impact: Nurses are confronted with increasing work pressure. The present findings indicate that the implementation of mindfulness strategies can be beneficial for nurses dealing with work pressure, contributing to nursing practice and JD-R theory.

KEYWORDS

emotional exhaustion, empathic care, job demands-resources, job performance, mindfulness, nursing profession, personal resources, well-being, work engagement, work pressure

1. INTRODUCTION

Nurses are confronted with increasing work pressure, as the healthcare sector is simultaneously dealing with a growing shortage of nurses (Bargagliotti, 2012; World Health Organization, 2016) in combination with high nurse turnover rates (Duffield, Roche, Homer, Buchan & Dimitrelis, 2014) and increasing nursing care demands due to an aging population (Van der Heijden et al., 2010). As nurses play a crucial role in the provision of healthcare, increasing work pressure can have detrimental effects on patient outcomes such as a decreased quality of care (MacPhee, Dahinten, & Havaei, 2017) or even higher levels of patient mortality (Ball et al., 2018). Moreover, work pressure has been identified as the primary antecedent to job stress in the nursing profession (McVicar, 2016), which in turn might lead to burnout (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), absenteeism (Davey, Cummings, Newburn-Cook, & Lo, 2009), turnover intentions (Moloney, Boxall, Parons & Cheung, 2018) and lower levels of job satisfaction (Zangaro & Soeken, 2007). In order to both nurture the quality of care in our healthcare systems and to ensure nurses' well-being and performance, it is therefore essential to study the employee outcomes of work pressure in the nursing profession.

The initial Job Demands-Resources model (JD-R, see Demerouti et al., 2001) proposes that job demands, such as work pressure, are primarily related to adverse employee outcomes like burnout. However, more recent research on the employee outcomes of work pressure has resulted in seemingly conflicting outcomes, suggesting that work pressure can both have a positive, motivational effect on job performance (e.g. Crawford, LePine, & Rich, 2010; LePine, Podsakoff, & LePine, 2005) and a negative health-impairment effect on employee well-being (e.g. Bakker & Sanz-Vergel, 2013; Van Bogaert et al., 2017). To date, it remains unclear what the simultaneous effect of work pressure is on both well-being and performance, as existing studies have tended to only focus on either one of the relations. We aim to address this shortcoming by simultaneously studying the relationships of work pressure with both well-being and performance.

Personal resources can buffer the negative effects and amplify the positive effects of job demands (Bakker & Demerouti, 2017) and may therefore play a role in explaining the employee outcomes of work pressure. When modifications to the work environment are hardly feasible due to for example budget and staffing constraints, as in the nursing sector, it may be particularly fruitful to focus on the mobilization of personal resources (Avey, Luthans & Jensen, 2009; Bakker & Demerouti, 2014). A personal resource specifically of interest for nurses dealing with high stress levels and work pressure is mindfulness (White, 2014), a state of self-regulated attention to the here and now (Brown & Ryan, 2003; Dane, 2011). A growing body of research shows that mindfulness has the potential to reduce perceived stress (Keng, Smoski & Robins, 2011) and burnout (Suleiman-Martos, 2020), thereby potentially playing a role in the stress-related outcomes of work pressure. However, the role of mindfulness as personal resource in the JD-R model has remained relatively unexplored (Grover, Teo, Pick, & Roche, 2017; Taylor & Millear, 2016). It is thus the second aim of this study to focus on

mindfulness as a personal resource to enhance our understanding of the mechanisms behind the employee outcomes of work pressure.

We contribute to existing literature in at least two ways. First, we contribute to the literature by studying to what extent work pressure simultaneously relates to performance and well-being outcomes, addressing performance outcomes relevant to the nursing profession (job performance and empathic care). By doing so, we can explain past conflicting outcomes on the negative and positive effects of work pressure (see above). Second, we contribute to the literature by studying the direct and moderating effects of mindfulness as a personal resource in the relationship between work pressure and nurses' outcomes. We thus enhance our understanding of how and when work pressure affects well-being and performance.

2. BACKGROUND

2.1 Work pressure and employee outcomes

The job demands-resources model (Demerouti et al., 2001) proposes that job demands, like work pressure, can instigate a health-impairment process leading to negative outcomes like emotional exhaustion and burnout. Job resources, on the other hand, typically instigate a motivational process, thereby predicting positive outcomes like work engagement and job performance and buffering the negative outcomes of job demands (Bakker & Demerouti, 2017). Interestingly however, LePine et al. (2005) contend that job demands do not solely have adverse outcomes, but may also have a positive motivational effect depending upon whether a job demand functions as a challenge or as a hindrance demand. Although both challenge and hindrance demands are deemed as stressful, challenge demands are evaluated as an opportunity for development and therefore have a motivational effect, while hindrance demands are evaluated as obstructions in the attainment of personal goals and thereby lead to (extra) strain (Cavanaugh, Boswell, Roehling, & Boudreau, 2000).

How a job demand is appraised seems to vary based on personal, occupational and contextual factors (Bakker & Demerouti, 2017; Crawford et al., 2010). Accordingly, prior research indicates that work pressure can be perceived primarily as a challenge demand (LePine et al., 2005; Crawford et al., 2010), primarily as a hindrance demand (Bakker & Sanz-Vergel, 2013), or as both simultaneously in varying levels (Webster, Beehr, & Love, 2011). These mixed prior findings also indicate that individuals might perceive certain facets of the same job demand as opportunities for development, while other facets are perceived as obstacles (Prem, Ohly, Kubicek, & Korunka, 2017). In addition, while challenge demands might lead to positive work-related outcomes, they may still lead to strain and other negative well-being outcomes (Widmer, Semmer, Kälin, Jacobshagen, & Meier, 2012). Therefore we argue that work pressure both has a positive, motivational effect on performance outcomes and a negative health-impairment effect on well-being outcomes.

The present study considers two relevant performance outcomes in the nursing context, namely empathic care and job performance. *Empathic care* captures the empathic facet of the provision of care.

Lamberton, Leana, and Williams (2015, p.1032) describe empathic care as "the manner in which caregivers attend to clients' socioemotional and relational needs". Empathy expressed by healthcare providers can have a therapeutic effect for patients and has been linked to lower levels of patient distress (Olson & Hanchett, 1997) and higher levels of patient satisfaction (Derksen, Bensing, & Lagro-Janssen, 2013). *Job performance*, in its turn, is an aspect of performance that covers "doing things specifically related to one's job description" (Welbourne, Johnson, & Erez, 1998, p.554), such as the effective execution of tasks directly related to the provision of patient care. A meta-analysis by LePine et al. (2005) shows that work pressure, classified as a challenge demand, positively predicts performance outcomes. Therefore we hypothesize that:

Hypothesis 1a. Work pressure is positively related to empathic care.

Hypothesis 1b. Work pressure is positively related to job performance.

Two opposing well-being factors are considered in this study which respectively represent ill-being and well-being: emotional exhaustion and work engagement. Emotional exhaustion, a core-dimension of the burnout syndrome (Lee & Ashforth, 1996), refers to a state of being physically and emotionally depleted as a result of chronic stress (Maslach, Schaufeli, & Leiter, 2001). Work engagement, in its turn, is "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p.74). Vigor refers to high levels of energy, resilience and persistence while working. Dedication describes being highly committed to one's work while experiencing a sense of challenge and significance. Lastly, absorption is characterized by being fully focused on one's work, even to the point of being consumed (Bakker, Schaufeli, Leiter, & Taris, 2008).

By building on the JD-R theory (Demerouti et al., 2001), we propose that a health-impairment process initiated by (too) high levels of work pressure has a negative influence on the well-being of nurses. Being exposed to a disbalance in job demands and resources (i.e. when there is too much work pressure to effectively handle) might lead to the development of strain. This strain can again lead to more perceived work pressure, thereby inflicting a "loss spiral of job demands and exhaustion" (Bakker & Demerouti, 2017, p.277).

Prior research on the JD-R model supports our claim. Two meta-analyses confirmed the respective positive and negative relationships between job demands, including workload – which is conceptually close to work pressure –, and emotional exhaustion (Lee & Ashforth, 1996) and work engagement (Halbesleben, 2010). More recently and in a nursing context, Van Bogaert et al. (2017) found that workload positively affects emotional exhaustion and negatively affects work engagement. As such, we posit that work pressure is negatively related to well-being. Thus:

Hypothesis 2a. Work pressure is positively related to emotional exhaustion.

Hypothesis 2b. Work pressure is negatively related to work engagement.

2.2 Mindfulness as a personal resource and moderator

Personal factors can influence how individuals cope with job demands in a similar way as job resources and can therefore serve to explain the mechanisms behind the outcomes of work pressure. In recent revisions of the JD-R model, these personal factors have been labeled personal resources, defined as "the psychological characteristics or aspects of the self that are generally associated with resiliency and that refer to the ability to control and impact one's environment successfully" (Schaufeli & Taris, 2014, p.49). Like job resources, personal resources can directly affect personal outcomes, alter the perception of job demands and moderate the relationship between job demands and individual outcomes (Bakker & Demerouti, 2017; Schaufeli & Taris, 2014).

Some authors have suggested that mindfulness may also function as a personal resource (Grover et al., 2017; Taylor & Millear, 2016). Mindfulness can be defined as "a state of consciousness in which attention is focused on present-moment phenomena occurring both externally and internally" (Dane, 2011, p.1000). Individuals with high levels on mindfulness may have better control over their attentional resources and use their attentional resources more efficiently (Good et al., 2016), which may result in a higher sense of control over themselves and the demands from their environment. Furthermore, by being conscious of what is happening internally, mindfulness may play a role in the regulation of stress reactions and promote resilience (Glomb, Duffy, Bono, & Yang, 2011). Therefore we expect mindfulness to enhance empathic care, job performance and work engagement, and to reduce emotional exhaustion.

Prior studies on the workplace effects of mindfulness, while scarce, provide some support for our expectations. Research suggests that mindfulness relates to higher levels of empathy (Dekeyser, Raes, Leijssen, Leysen, & Dewulf, 2008), job performance (Good et al., 2016) and work engagement (Leroy, Anseel, Dimitrova, & Sels, 2013). Lastly, a recent meta-analysis by Suleiman-Martos et al. (2020) found that mindfulness training reduces levels of emotional exhaustion in nurses. Therefore we hypothesize the following:

> ***Hypothesis 3a***. Mindfulness is positively related to empathic care and job performance.
>
> ***Hypothesis 3b***. Mindfulness is negatively related to emotional exhaustion and positively related to work engagement.

Although current research has provided limited support, Bakker & Demerouti (2017) propose that personal resources can boost the positive effects of job demands on motivation, while buffering the negative effects of job demands on strain outcomes. In a similar vein, we expect mindfulness to boost the desirable effect of work pressure on performance and to buffer the undesirable effect of work pressure on well-being, thereby functioning as a moderator. Mindful individuals have been shown to perceive situations as less stressful and participate less in avoidant coping strategies (Weinstein, Brown, & Ryan, 2009). As mindfulness has the potential to reduce stress appraisals and improve efficient coping with stress, we expect mindfulness to reduce hindrance perceptions of job demands, thereby reducing

the negative health-impairment effects of work pressure on well-being. Second, as mindful individuals show more efficient coping strategies, we expect mindfulness to also lessen the adverse outcomes of the remaining experienced stress from job demands. Third, by experiencing less hindrance of job demands, we expect mindfulness to increase challenge perceptions of job demands, boosting the motivational effect of work pressure on performance outcomes.

Prior research on mindfulness in the role of personal resource and moderator in the JD-R model is scarce. To date, and to the best of our knowing, only one study provides some empirical support for our above reasoning. Grover et al. (2017) found that mindfulness buffered the relation between emotional demands – another type of job demands – and psychological stress. We hypothesize the following:

> ***Hypothesis 4***: Mindfulness moderates the relationship between work pressure and performance outcomes (i.e. empathic care (H4a) and job performance (H4b)), such that when mindfulness increases, the positive relationship between work pressure and performance outcomes becomes stronger.
>
> ***Hypothesis 5***: Mindfulness moderates the relationship between work pressure and employee well-being, such that when mindfulness increases, the positive relationship between work pressure and emotional exhaustion (H5a) and the negative relationship between work pressure and work engagement (H5b) will become weaker.

3. THE STUDY

3.1 Aim

The aim of this study was (1) to determine the influence of job demand work pressure on employee performance and well-being of nurses; and (2) to examine whether mindfulness moderates these relationships.

3.2 Design

We contacted a random sample of 1044 nurses from 103 Belgian (Flemish) public elderly care homes, primarily funded by the government. Governmental budget constraints have mandated these elderly care homes to increase their efficiency while simultaneously maintaining the expected quality of provided care, jeopardizing work pressure levels (BLINDED FOR PEER REVIEW). We followed recommendations to combat common-method bias such as guaranteeing anonymized and confidential data collection (Podsakoff, MacKenzie, Lee, & Podsakofff, 2003).

3.3 Participants

In total, 1021 nurses (8.1% male; 91.9% female) participated in the study. Of the 1021 participants, 505 (49.5%) were nurses with a higher education degree, 440 (43.1%) were nurses with a high school degree, 38 (3.7%) held another position (e.g. animator, occupational therapist, etc.) and 38 (3.7%) did not report

their position. Participants' ages ranged from 20 to 63 years, with an average of 38.71 years (SD = 11.37). Tenure in the team ranged from less than one year to 40 years, with an average of 8.42 years (SD = 7.83). Tenure in the job ranged from less than one year to 41 years, with an average of 14.58 years (SD = 10.78).

3.4 Data collection

Data were collected using structured paper-and-pencil questionnaires, which were administered between October-November 2017. We used a Likert-scale ranging from 1 (Totally disagree) to 7 (Totally agree).

3.4.1 Work pressure

Work pressure was measured using six items from a scale developed by Furda (1995) and used in previous research (Demerouti, Le Blanc, Bakker, Schaufeli, & Hox, 2009). A sample item was: 'To what extent does your job require you to work hard'. Cronbach's α of this scale was .77.

3.4.2 Mindfulness

We operationalized mindfulness by using the 15-item Mindful Attention and Awareness Scale (MAAS; Brown & Ryan, 2003), which has been validated in Dutch (Schroevers & Nyklícek, 2008). A sample item was: 'I find it difficult to stay focused on what is happening in the present'. Cronbach's α was .86.

3.4.3 Empathic care

Empathic care was measured using the 10-item Empathic Care Scale (ECS; Lamberton et al., 2015). A sample item is: 'I help my clients feel better when they are down'. Cronbach's α was .72.

3.4.4 Job performance

Job performance was assessed using a scale that consisted of four items selected from the Role-Based Performance Scale (RBPS; Welbourne et al., 1998), which measured the quantity, quality and accuracy of the work output and the provided customer service. A sample item was: 'I am customer-focused'. Cronbach's α was .84.

3.4.5 Emotional exhaustion

Emotional exhaustion was measured with five items from the Utrechtse Burnout Schaal (UBOS; Schaufeli & Van Dierendonck, 2000), the Dutch version of the Maslach Burnout Inventory-General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996). An sample item is 'I feel mentally drained because of my work'. Cronbach's α was .90.

3.4.6 Work engagement

Work engagement with three items selected from the Utrecht Work Engagement Scale (UWES3; Schaufeli, Shimazu, Hakanen, Salanova & De Witte, 2019) in accordance with the three dimensions of work engagement: vigour, dedication, and absorption. For each dimension, the most characteristic item

was selected, which were 'At my work, I feel bursting with energy' for vigour, 'I am enthusiastic about my job' for dedication, and 'I am immersed in my work' for absorption. Cronbach's α was .82.

3.4.7 Control variables

For the reason that the participants differed among their job position (i.e., nurses with a higher education degree, nurses with a high school degree, and other nurses), we included job position as a control variable. After exploring the bivariate correlations (Table 1), a significant correlation between job tenure and emotional exhaustion was found. Team tenure was correlated with both emotional exhaustion and empathic care. Furthermore, in a systematic review by Keyko, Cummings, Yonge, and Wong (2016), a negative correlation between team tenure and engagement has been reported. For that reason, we included three control variables, namely team tenure, job tenure and job position, in the study.

3.5 Ethical considerations

No ethical issues were attached to our study. Our research was conducted in line with the ethical code of our university. Agreement from directors, supervisors and employees of the elderly care homes was obtained prior to administering the questionnaires and informed consents were signed by all participants. Participant's rights, e.g. to withdraw at any moment during the study, were clearly stated on the paper-and-pencil questionnaires, as well as additional information about the anonymization of the obtained data.

3.6 Data analysis

We first conducted a factor analysis for each of the six constructs using a principal axis factoring to determine item retention. Subsequently, we conducted a hierarchical multiple regression analysis for each of the four dependent variables to investigate the hypothesized relationships. Additionally, simple slope analyses were used to explore the interaction effects in more detail.

3.7 Validity and reliability

We used validated scales and applied translation-back translation procedure where relevant (Brislin, 1970). Table 1 shows the descriptive statistics and internal consistencies. Cronbach's alphas of the scales were all above the threshold of .70, which indicates an acceptable reliability (Nunnally, 1978). For empathic care, factor loadings ranged from .22 to .74. To ensure a minimal factor loading of .40 (Pituch & Stevens, 2016), four out of ten items were omitted from further analysis, improving Cronbach's alpha from .72 to .74. Factor loadings for mindfulness ranged from .25 to .72. For that reason, two out of fifteen items were excluded from further analysis, improving Cronbach's alpha from .86 to .87.

Tables 1, 2 and 3: about here

4. RESULTS

4.1 Main effects

Results from linear regression analysis (Table 2) showed that work pressure is positively associated with empathic care (β = .21, $p < .001$) and with job performance (β = .15, $p < .001$), herewith supporting hypothesis 1a and 1b. Furthermore, a linear regression analysis for both emotional exhaustion (hypothesis 2a) and work engagement (hypothesis 2b) was conducted. Results (Table 3) showed that work pressure was positively associated with emotional exhaustion (β = .48, $p < .001$) and negatively associated with work engagement (β = -.18, $p < .001$), supporting hypothesis 2. Finally, statistically significant main effects were found between mindfulness and empathic care (β = .15, $p < .001$), job performance (β = .29, $p < .001$), emotional exhaustion (β = -.30, $p < .001$) and work engagement (β = .28, $p < .001$). Hypothesis 3 is therefore supported.

4.2 Moderation effects

With regards to empathic care, the estimated coefficients showed that mindfulness moderated the positive association between work pressure and empathic care (β = -.08, $p = .029$). Results of a simple slope test showed that the effect of work pressure on empathic care was significant for nurses with a higher level of mindfulness (*simple slope* = .09, $p = .004$). However, the simple slope test for nurses with a lower level of mindfulness showed a stronger effect of work pressure on empathic care (*simple slope* = .19, $p < .001$). Figure 1 shows that the relationship between work pressure and empathic care is less positive for nurses with a higher level of mindfulness in comparison with nurses with a lower level of mindfulness, herewith rejecting hypothesis 4a. For job performance, the estimated coefficients showed that mindfulness moderated the positive association between work pressure and job performance (β = -.10, $p = .005$). Results of a simple slope test revealed that the effect of work pressure on job performance was significant for nurses with a lower level of mindfulness (*simple slope* = .20, $p < .001$), but not significant for those with a higher level of mindfulness (*simple slope* = .05, $p = .174$). Figure 2 shows that the relationship between work pressure and job performance is positive for nurses with a lower level of mindfulness. Although a significant interaction effect is found, we found no support that a higher (vs. lower) level of mindfulness strengthens the positive association between work pressure and job performance, thus rejecting hypothesis 4b.

Figure 1, 2 and 3: about here

For emotional exhaustion, the estimated coefficients showed that mindfulness did not moderate the positive association between work pressure and emotional exhaustion (β = .01, $p = .815$), hereby rejecting hypothesis 5a. With regards to work engagement, the estimated coefficients showed that mindfulness moderated the negative association between work pressure and work engagement (β = -.10, $p = .004$). Results of a simple slope test revealed a significant negative effect of work pressure on

work engagement for nurses with a higher level of mindfulness (*simple slope* = -.27, $p < .001$), and a non-significant effect for those with a lower level of mindfulness (*simple slope* = -.08, $p = .091$). Figure 3 shows that a higher level of mindfulness does not buffer the detrimental effect of work pressure on work engagement, herewith rejecting hypothesis 5b.

5. DISCUSSION

The combination of an ageing population, a growing staffing shortage, and continuously high work pressure in the nursing sector, highlights the pressing need for personal resources in order to prevent detrimental effects of work pressure on the well-being and performance of nurses. This study addresses that need by drawing on the JD-R-theory and placing mindfulness as a personal resource in the relationship between work pressure and both well-being and performance outcomes, which responds to calls for research on personal resources (Bakker & Demerouti, 2017).

Our first contribution pertains to increasing our understanding of the simultaneous effect of work pressure on both job performance and employee well-being. In recent years, studies on employee outcomes of work pressure found seemingly conflicting outcomes (e.g. Crawford, et al., 2010; Bakker & Sanz-Vergel, 2013; Van Bogaert et al., 2017). We add to the literature by studying work pressure simultaneously in relation with two types of employee outcomes: job performance and employee well-being outcomes. In the JD-R model (Bakker & Demerouti, 2017), two types of demands can be distinguished: challenge demands and hindrance demands (LePine et al., 2005). When a job demand, like work pressure, is seen as a challenge demand, a motivational process instigates and as such, positively affects various performance outcomes (LePine et al., 2005). In line with a meta-analysis from LePine et al. (2005) our study found a positive relationship between work pressure and job performance, as well as between work pressure and empathic care, thus implying that, with regards to performance outcomes, work pressure can be perceived as a challenge demand. Nevertheless, when nurses experience more work pressure than they can effectively handle (i.e. an imbalance between job demands and available resources), a health-impairment process (Bakker & Demerouti, 2017) – instead of a motivational process – is set in motion. In line with previous research (meta-analysis by Alarcon, 2011; review by Bakker et al., 2014), we found a positive relationship between work pressure and emotional exhaustion. With the same health-impairment process in mind, we hypothesized that work pressure would negatively affect work engagement, which was supported by our results, and in line with a previous study from Van Bogaert et al. (2017).

Our second contribution pertains to enhancing our understanding of how and when work pressure affects well-being and performance by studying the moderating effect of mindfulness. Considering its favorable effects, mindfulness might have the potential to offer solace in settings where reducing work pressure is almost impossible (e.g. nursing sector). However, while there is ample evidence for the effects of mindfulness in general (e.g., Good et al., 2016), the current study adds to previous literature by studying the moderating effect of mindfulness as a personal resource in the JD-R

model (Grover et al. 2017). We found support for a moderating effect of mindfulness on the relationships between work pressure on the one hand, and empathic care, and work engagement on the other hand. Interestingly though, the direction of these moderation effects did not unfold as hypothesized. We expected mindfulness to strengthen the positive relationship between work pressure and both empathic care and job performance. For empathic care, we found a positive, strengthening effect of mindfulness in the relationship between work pressure and empathic care. However, we should mention that this effect is very small and that, contrary to what we expected, nurses with a lower level of mindfulness experienced a more positive effect of higher work pressure on empathic care. With regards to job performance, we found that nurses with a higher level of mindfulness did not experience a significant strengthening effect of higher work pressure on their job performance. Furthermore, our data indicated that nurses with a lower level of mindfulness experienced a significant positive effect of higher work pressure on their job performance. The results show that, for less mindful individuals, higher work pressure offers an opportunity to perform better. This result might be explained by the fact that being less mindful increases automatic behavior (Brown & Ryan, 2003). For less mindful individuals, operating on automatic pilot might be an advantage in high work pressure settings: nurses who are less mindful pay less attention to how the tasks, described in one's job description, should be done (job performance) or doubt less whether there is still enough time to chat with that one patient (empathic care). It seems that instead of hesitating whether they should do it or how they should do it, less mindful individuals just do it, which, in a high (vs. low) work pressure context, seems to result in better performance outcomes. However, our data indicated that, in the context of high work pressure settings, more mindful individuals still had better job performance outcomes than less mindful people.

For work engagement, we expected mindfulness to weaken the negative relationship between work pressure and work engagement. Once again, the contrary was found, where mindfulness strengthens – instead of weakens – the negative relationship. Our data indicated that nurses with a lower level of mindfulness did not experience a significant effect of higher work pressure on their work engagement. When being less mindful, work pressure does not appear to have a detrimental effect on work engagement, where, for those being more mindful, work pressure seems to reduce work engagement. This unexpected, moderating effect of mindfulness can be explained by drawing upon the same rationale as for job performance: when someone is more mindful, automatic behavior diminishes, resulting in a more present experience of one's actions and the impact of those actions (Brown & Ryan, 2003). This might result in a more mindful and 'real' experience of work pressure and stress, as well as the impact of that experienced stress on patients, colleagues, etc., leading to lower work engagement. When one operates on automatic pilot (i.e. being less mindful), less attention might be paid to work pressure and stress, making the adverse effects of work pressure and stress less noticeable. Nevertheless, despite this decline in work engagement, we still see that, when work pressure is high, nurses with a higher level of mindfulness are more engaged than those with a lower level of mindfulness.

6. LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Despite the strengths of our research, our study also has several limitations that should be mentioned here. First, we used single source, self-reported data, which could, as a result of common method bias, potentially harm the reliability of the effect sizes of our direct relationships (Podsakoff, MacKenzie, & Podsakoff, 2012). To counter the possible negative impact of common method bias, we followed the advised, procedural steps of Podsakoff et al. (2012). Furthermore, previous research affirmed that interaction effects can never be by-products of common method-bias (Siemsen, Roth & Oliveira, 2010). Second, the cross-sectional design of our study limits the opportunity to draw causal conclusions (Podsakoff et al., 2003). Third, our research focused on nurses in elderly care homes. Depending on the sector in which one works, work pressure is either perceived as a challenge or a hindrance demand (Bakker & Sanz-Vergel, 2013). Finally, this study focused on work pressure, which is one of the many job demands nurses have to deal with. Further research could explore whether mindfulness could act as a personal resource in the context of other job demands, such as role conflict or role stress (Bakker, Demerouti, & Sanz-Vergel, 2014).

7. CONCLUSION

This study explored the relationship between work pressure and both performance and well-being outcomes, and the moderating effect of mindfulness in these relationships. Our hypothesized main effects between work pressure and the four outcome variables were supported, which strengthens the robustness of the JD-R model and shows that depending on the outcomes, work pressure can be perceived as a hindrance or a challenge demand. Furthermore, the results supported the relevance of mindfulness for each of the four outcome variables. In addition, even though we did not find support for the anticipated reinforcing or buffering effects of mindfulness, being mindful did not function as a disadvantage: in a high work pressure context, people with a higher level of mindfulness still had better job performance and work engagement outcomes than those with a lower level of mindfulness, thus implying that the implementation of mindfulness strategies is still useful in the context of nurses' high work pressure settings.

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

REFERENCES

[BLINDED FOR PEER REVIEW]

Alarcon, G. M. (2011). A meta-analysis of burnout with job demands, resources, and attitudes. *Journal of Vocational Behavior, 79*(2), 549-562. https://doi.org/10.1016/j.jvb.2011.03.007

Avey, J. B., Luthans, F., & Jensen, S. M. (2009). Psychological capital: A positive resource for combating employee stress and turnover. *Human Resource Management*, *48*(5), 677-693. https://doi.org/10.1002/hrm.20294

Bakker, A.B. & Demerouti, E. (2014). Job demands-resources theory. In Chen, P.Y. and Cooper, C.L. (Eds.), *Work and Wellbeing: Wellbeing: A Complete Reference Guide* (Volume III; pp. 37-64). Chichester, UK: Wiley-Blackwell. https://doi.org/10.1002/9781118539415.wbwell019

Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: taking stock and looking forward. *Journal of Occupational Health Psychology, 22*(3), 273-285. https://doi.org/10.1037/ocp0000056

Bakker, A. B., & Sanz-Vergel, A. I. (2013). Weekly work engagement and flourishing: The role of hindrance and challenge job demands. *Journal of Vocational Behavior, 83*(3), 397-409. https://doi.org/10.1016/j.jvb.2013.06.008

Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. I. (2014). Burnout and work engagement: The JD–R approach. *Annual Review of Organizational Psychology and Organizational Behavior, 1*, 389–411. https://doi.org/10.1146/annurev-orgpsych-031413-091235

Bakker, A. B., Schaufeli, W. B., Leiter, M. P., & Taris, T. W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & Stress, 22*(3), 187-200. https://doi.org/10.1080/02678370802393649

Ball, J. E., Bruyneel, L., Aiken, L. H., Sermeus, W., Sloane, D. M., Rafferty, A. M., ... & Griffiths, P. (2018). Post-operative mortality, missed care and nurse staffing in nine countries: A cross-sectional study. *International Journal of Nursing Studies, 78*, 10-15. https://doi.org/10.1016/j.ijnurstu.2017.08.004

Bargagliotti, L. A. (2012). Work engagement in nursing: a concept analysis. *Journal of Advanced Nursing, 68*(6), 1414-1428. https://doi.org/10.1111/j.1365-2648.2011.05859.x

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1*(3), 185-216. https://doi.org/10.1177%2F135910457000100301

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*(4), 822-848. https://doi.org/10.1037/0022-3514.84.4.822

Cavanaugh, M. A., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An empirical examination of self-reported work stress among US managers. *Journal of Applied Psychology, 85*(1), 65-74. https://doi.org/10.1037/0021-9010.85.1.65

Crawford, E. R., LePine, J. A., & Rich, B. L. (2010). Linking Job Demands and Resources to Employee Engagement and Burnout: A Theoretical Extension and Meta-Analytic Test. *Journal of Applied Psychology, 95*(5), 834-848. https://doi.org/10.1037/a0019364

Dane, E. (2011). Paying attention to mindfulness and its effects on task performance in the workplace. *Journal of Management, 37*(4), 997-1018. https://doi.org/10.1177%2F0149206310367948

Davey, M. M., Cummings, G., Newburn-Cook, C. V., & Lo, E. A. (2009). Predictors of nurse absenteeism in hospitals: a systematic review. *Journal of Nursing Management, 17*(3), 312-330. https://doi.org/10.1111/j.1365-2834.2008.00958.x

Dekeyser, M., Raes, F., Leijssen, M., Leysen, S., & Dewulf, D. (2008). Mindfulness skills and interpersonal behaviour. *Personality and Individual Differences, 44*(5), 1235-1245. https://doi.org/10.1016/j.paid.2007.11.018

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499-512. https://doi.org/10.1037/0021-9010.86.3.499

Demerouti, E., Le Blanc, P. M., Bakker, A. B., Schaufeli, W. B., & Hox, J. (2009). Present But Sick: A Three-Wave Study on Job Demands, Presenteeism and Burnout. *Career Development International, 14*(1), 50-68. https://doi.org/10.1108/13620430910933574

Derksen, F., Bensing, J., & Lagro-Janssen, A. (2013). Effectiveness of empathy in general practice: a systematic review. *British Journal of General Practice, 63*(606), e76-e84. https://doi.org/10.3399/bjgp13X660814

Duffield, C. M., Roche, M. A., Homer, C., Buchan, J., & Dimitrelis, S. (2014). A comparative review of nurse turnover rates and costs across countries. *Journal of Advanced Nursing*, *70*(12), 2703-2712. https://doi.org/10.1111/jan.12483

Furda, J. (1995). Werk, persoon en welzijn: een toets van het JD-C model [Work, personality, and wellbeing: a test of the JD-C model]. Unpublished doctoral dissertation, Utrecht University, Utrecht, The Netherlands.

Glomb, T. M., Duffy, M. K., Bono, J. E., & Yang, T. (2011). Mindfulness at work. *Research in Personnel and Human Resource Management, 30*, 115–157. https://doi.org/10.1108/S0742-7301(2011)0000030005

Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., ... & Lazar, S. W. (2016). Contemplating mindfulness at work: An integrative review. *Journal of Management, 42*(1), 114-142. https://doi.org/10.1177%2F0149206315617003

Grover, S. L., Teo, S. T., Pick, D., & Roche, M. (2017). Mindfulness as a personal resource to reduce work stress in the job demands-resources model. *Stress and Health, 33*(4), 426-436. https://doi.org/10.1002/smi.2726

Halbesleben, J. R. B. (2010). A meta-analysis of work engagement: Relationships with burnout, demands, resources, and consequences. In M. P. Leiter & A. B. Bakker (Eds.), *Work engagement: A handbook of essential theory and research* (pp. 102–117). New York, NY: Psychology Press.

Keng, S. L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review*, *31*(6), 1041-1056.

Keyko, K., Cummings, G. G., Yonge, O., & Wong, C. A. (2016). Work Engagement in Professional Nursing Practice: A Systematic Review. *International Journal of Nursing Studies, 61*, 142-164. https://doi.org/10.1016/j.ijnurstu.2016.06.003

Kuvaas, B. (2008). An exploration of how the employee–organization relationship affects the linkage between perception of developmental human resource practices and employee outcomes. *Journal of Management Studies, 45*(1), 1-25. https://doi.org/10.1111/j.1467-6486.2007.00710.x

Lamberton, C. M., Leana, C. R., & Williams, J. M. (2015). Measuring empathetic care: Development and validation of a self-report scale. *Journal of Applied Gerontology, 34*(8), 1028-1053. https://doi.org/10.1177/0733464813507131

Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology, 81*(2), 123-133. https://doi.org/10.1037/0021-9010.81.2.123

LePine, J. A., Podsakoff, P., & LePine, M. A. (2005). A Meta-Analytic Test of the Challenge Stressor-Hindrance Stressor Framework: An Explanation for Inconsistent Relationships among Stressors and Performance. *Academy of Management Journal, 48*(5), 764-775. https://doi.org/10.5465/amj.2005.18803921

Leroy, H., Anseel, F., Dimitrova, N. G., & Sels, L. (2013). Mindfulness, authentic functioning, and work engagement: A growth modeling approach. *Journal of Vocational Behavior, 82*(3), 238-247. https://doi.org/10.1016/j.jvb.2013.01.012

MacPhee, M., Dahinten, V. S., & Havaei, F. (2017). The impact of heavy perceived nurse workloads on patient and nurse outcomes. *Administrative Sciences, 7*(1), 7. https://doi.org/10.3390/admsci7010007

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology, 52*(1), 397-422. https://doi.org/10.1146/annurev.psych.52.1.397

McVicar, A. (2016). Scoping the common antecedents of job stress and job satisfaction for nurses (2000–2013) using the job demands–resources model of stress. *Journal of Nursing Management, 24*(2), E112-E136. https://doi.org/10.1111/jonm.12326

Moloney, W., Boxall, P., Parsons, M., & Cheung, G. (2018). Factors predicting Registered Nurses' intentions to leave their organization and profession: A job demands-resources framework. *Journal of Advanced Nursing*, *74*(4), 864-875. https://doi.org/10.1111/jan.13497

Nunnally, J. (1978). Psychometric theory. New York,NY: McGraw Hill.

Olson, J., & Hanchett, E. (1997). Nurse-expressed empathy, patient outcomes, and development of a middle-range theory. *Image: the Journal of Nursing Scholarship, 29*(1), 71-76. https://doi.org/10.1111/j.1547-5069.1997.tb01143.x

Pituch, K. A, & Stevens, J. P. (2016). *Applied multivariate statistics for the social sciences : analyses with SAS and IBM's SPSS* (6th ed.). New York, NY: Routledge.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 63*, 539-569. https://doi.org/10.1146/annurev-psych-120710-100452

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903. https://doi.org/10.1037/0021-9010.88.5.879

Prem, R., Ohly, S., Kubicek, B., & Korunka, C. (2017). Thriving on challenge stressors? Exploring time pressure and learning demands as antecedents of thriving at work. *Journal of Organizational Behavior, 38*(1), 108-123. https://doi.org/10.1002/job.2115

Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). Maslach Burnout Inventory–General Survey. In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.), *The Maslach Burnout Inventory: Test manual* (3rd ed., pp. 22–26). Palo Alto, CA: Consulting Psychologists Press.

Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the Job Demands-Resources Model: Implications for improving work and health. In G. Bauer & O. Hämmig (Eds.), *Bridging occupational, organizational and public health* (pp. 43– 68). Dordrecht, the Netherlands: Springer.

Schaufeli, W. B., & Van Dierendonck, D. (2000). Handleiding van de Utrechtse Burnout Schaal (UBOS) [Manual Utrecht Burnout Scale]. Lisse, the Netherlands: Swets Test Services. Retrieved from http://www.schaufeli.com

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. https://doi.org/10.1023/A:1015630930326

Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2019). An Ultra-Short Measure for Work Engagement: The UWES-3 validation across five countries. *European Journal of Psychological Assessment, 35*(4), 577-591. https://doi.org/10.1027/1015-5759/a000430

Schroevers, M., & Nyklicek, I. (2008). Validatie van de Nederlandse versie van de Mindful Attention Awareness Scale (MAAS) [Validation of the Dutch version of the Mindful Attention Awareness Scale (MAAS)]. *Gedragstherapie*, *41*, 225-240. Retrieved from http://studeren-met-aandacht.nl

Siemsen, E., Roth, A., & Oliveira, P. (2010). Common method bias in regression models with linear, quadratic, and interaction effects. *Organizational Research Methods, 13*(3), 456–476. https://doi.org/10.1177/1094428109351241

Suleiman-Martos, N., Gomez-Urquiza, J.L., Aguayo-Estremera, R., Cañadas-De La Fuente, G.A., De La Fuente-Solana, E.I. and Albendín-García, L. (2020). The effect of mindfulness training on burnout syndrome in nursing: a systematic review and meta-analysis. *Journal of Advanced Nursing*. Accepted Author Manuscript. https://doi.org/10.1111/jan.14318

Taylor, N. Z., & Millear, P. M. R. (2016). The contribution of mindfulness to predicting burnout in the workplace. *Personality and Individual Differences, 89*, 123-128. https://doi.org/10.1016/j.paid.2015.10.005

Van Bogaert, P., Peremans, L., Van Heusden, D., Verspuy, M., Kureckova, V., Van de Cruys, Z., & Franck, E. (2017). Predictors of burnout, work engagement and nurse reported job outcomes and quality of care: a mixed method study. *BMC Nursing, 16*, 5. https://doi.org/10.1186/s12912-016-0200-4

Van der Heijden, B. I. J. M., Kümmerling, A., Van Dam, K., Van der Schoot, E., Estryn-Béhar, M., & Hasselhorn, H. M. (2010). The impact of social support upon intention to leave among female nurses in Europe: Secondary analysis of data from the NEXT survey. *International Journal of Nursing Studies, 47*(4), 434-445. https://doi.org/10.1016/j.ijnurstu.2009.10.004

Webster, J. R., Beehr, T. A., & Love, K. (2011). Extending the challenge-hindrance model of occupational stress: The role of appraisal. *Journal of Vocational Behavior, 79*(2), 505-516. https://doi.org/10.1016/j.jvb.2011.02.001

Weinstein, N., Brown, K. W., & Ryan, R. M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal of Research in Personality, 43*(3), 374-385. https://doi.org/10.1016/j.jrp.2008.12.008

Welbourne, T. M., Johnson, D. E., & Erez, A. (1998). The Role-Based Performance Scale: Validity Analysis of a Theory-Based Measure. *Academy of Management Journal, 41*(5), 540-555. https://doi.org/10.5465/256941

White, L. (2014). Mindfulness in nursing: An evolutionary concept analysis. *Journal of Advanced Nursing, 70*(2), 282-294. https://doi.org/10.1111/jan.12182

Widmer, P. S., Semmer, N. K., Kälin, W., Jacobshagen, N., & Meier, L. L. (2012). The ambivalence of challenge stressors: Time pressure associated with both negative and positive well-being. *Journal of Vocational Behavior, 80*(2), 422-433. https://doi.org/10.1016/j.jvb.2011.09.006

World Health Organization (2016). Global strategy on human resources for health: Workforce 2030. Retrieved from: http://www.who.int/hrh/resources/16059_Global_strategyWorkforce2030.pdf?ua=1&ua=1

Zangaro, G. A., & Soeken, K. L. (2007). A meta-analysis of studies of nurses' job satisfaction. *Research in Nursing & Health, 30*(4), 445-458. https://doi.org/10.1002/nur.20202