



Challenge versus hindrance job demands and well-being: A diary study on the moderating role of job resources

Maja Tadić^{1*}, Arnold B. Bakker^{2,3} and Wido G. M. Oerlemans⁴

¹Institute of Social Sciences Ivo Pilar, Zagreb, Croatia

²Erasmus University Rotterdam, the Netherlands

³Lingnan University, Tuen Mun, Hong Kong

⁴Eindhoven University of Technology, Eindhoven, the Netherlands

The present study among 158 primary school teachers in Croatia integrated the challenge-hindrance stressor framework in job demands–resources (JD–R) theory. We hypothesized that hindrance job demands would be negatively related to well-being and that job resources could buffer this relationship. In addition, we hypothesized that challenge job demands would be positively related to well-being and that job resources would boost this relationship. The study employed a quantitative daily diary methodology. Teachers filled out a background questionnaire and a daily diary booklet for three to five consecutive workdays ($N = 438$ occasions). Results of multilevel analyses showed that daily hindrance job demands had a negative relationship with daily positive affect and work engagement. Daily job resources buffered this relationship. In contrast, daily challenge job demands had a positive relationship with positive affect and work engagement. Daily job resources boosted this relationship. We discuss the implications of these findings for JD–R theory and practice.

Practitioner points

- High daily job resources foster employee's daily work engagement and positive affect at work particularly when daily challenge demands are high.
- High daily job resources buffer the negative impact of high daily hindrance demands on daily work engagement and positive affect at work.
- Guidelines are proposed to enhance teachers' and school principals' education and training, as well to contribute to the more optimal workplace design for teachers.

The direct and interactive effects of job demands and job resources on various work-related outcomes have received considerable research interest (Demerouti & Bakker, 2011; Halbesleben, 2010). The general pattern that emerges is that job demands cost energy and are unique predictors of strain, whereas job resources have motivating potential (cf. Hackman & Oldham, 1980) and are particularly predictive of work engagement (Bakker & Demerouti, 2014). Indeed, job demands–resources (JD–R) theory (Bakker & Demerouti, 2014) proposes that job resources are directly related to positive indicators of work-related well-being, whereas the associations between job demands and

*Correspondence should be addressed to Maja Tadić, Institute of social sciences Ivo Pilar, Marulićev trg 19/1, 10 000 Zagreb, Croatia (email: maja.tadic@pilar.hr).

positive indicators of work-related well-being depend on the nature of the demand (Bakker & Demerouti, 2014; Van den Broeck, Van Ruysseveldt, Vanbelle, & De Witte, 2013). Specifically, in their meta-analysis, Crawford, LePine, and Rich (2010) showed that hindrance job demands have negative relationships with work engagement and that challenge job demands have positive associations with work engagement.

Thus, it is conceivable that job resources play different roles in the relationship between challenge job demands and well-being than in the relationship between hindrance job demands and well-being. Previous research has suggested that job resources – including social support, autonomy, performance feedback, and opportunities for development – can buffer the unfavourable impact of job demands on well-being (Bakker, Demerouti, & Euwema, 2005; Xanthopoulou, Bakker, Dollard *et al.*, 2007). Previous research has also suggested that job resources can become particularly salient when job demands are high and boost work-related well-being (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Bakker, van Veldhoven, & Xanthopoulou, 2010). However, these studies did not differentiate between challenge and hindrance job demands. Do job resources particularly buffer the relationship between hindrance (instead of challenge) job demands and well-being? Do job resources boost well-being particularly under the conditions of challenge demands (but not hindrance demands)?

To gain more insight into these matters, the major goal of the present study is to examine the roles of job resources in the relationship between different types of job demands and positive indicators of work-related well-being, namely work engagement and positive affect. In this way, the current study aims to expand JD–R theory by integrating it with the challenge-hindrance stressor framework (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; LePine, Podsakoff, & LePine, 2005). The challenge-hindrance stressor framework posits that the somewhat inconsistent findings on the association between job demands and work-related well-being could, at least in part, be explained by different types of job demands. Although both types of demands are effortful and can be energy draining, challenge demands can trigger positive emotions and cognitions and increase work engagement and performance, whereas hindrance demands trigger negative emotions and cognitions and seem to undermine work engagement and performance. Thus, challenge demands can be seen as facilitating goals that foster motivation and not only the energetic processes.

The current study aims to make a unique contribution to the literature by integrating the challenge-hindrance stressor framework in JD–R theory and by revealing the different roles of job resources in the interplay between challenge and hindrance job demands and work-related well-being on a within-person level. More concretely, the study employed a daily diary methodology that enabled us to investigate whether teachers experience most positive affect and work engagement on the days they are confronted with high challenge (vs. low) job demands and high job resources, and lowest levels of positive affect and engagement on the days they are confronted with high (vs. low) hindrance demands and low job resources. We used two positive indicators of work-related well-being – positive affect and work engagement – which is in line with Bakker and Oerlemans' (2011) conceptualization of subjective well-being in organizations based of the circumplex model of affect (Russell, 2003). Positive affect and work engagement have been shown to fluctuate substantially on a within-person level and to predict optimal employee functioning (Xanthopoulou, Bakker & Ilies, 2012).

Work engagement has been studied most often as an indicator of work-related well-being (Halbesleben, 2010); however, the JD–R model is a broad model that has been able to predict a range of well-being and attitudinal indicators, including burnout, work

engagement, and commitment (Bakker & Demerouti, 2014). The present study conceptualizes positive affect as an additional important well-being indicator that refers to positive emotional states (e.g., inspired, happy, alert, and satisfied) felt in different degrees during different working days (Watson & Clark, 1992). Positive affect at work has been found to have positive associations with longer-term well-being and positive organizational functioning (Ashkanasy & Humphrey, 2011; Madrid, Patterson, Birdi, Leiva, & Kausel, 2013).

Although these notions are not new as they have been discussed previously (Bakker & Demerouti, 2014), only one study empirically examined the interactions between resources and challenge and hindrance demands on a within-person level. Bakker and Sanz-Vergel (2013) showed that weekly challenge demands strengthened (boosted) the effect of weekly personal resources (i.e., self-efficacy and optimism) on weekly well-being, whereas weekly hindrance demands undermined this effect. The study used employees' interpretations of which demands are considered challenging and which demands are considered hindering and showed that these subjective perceptions are indeed important in assessing the types of demands. However, in the current study, although the interpretation of demands as either challenges or hindrances may be a matter of individual perception to a certain extent, we posit that certain demands are typically perceived as challenges and others as hindrances by most employees (Crawford *et al.*, 2010; LePine *et al.*, 2005). Moreover, Bakker and Sanz-Vergel study focused on *personal* resources in particular and not on *job* resources – As we will do in the present study.

Theoretical background and hypotheses

We conceptualized job demands based on the LePine *et al.* (2005) challenge and hindrance stressor framework. Challenge demands, including workload, job complexity, and time urgency present work tasks and conditions that require effort and energy, but efficient dealing with them can result in growth, learning, and goal attainment. For instance, highly complex work tasks may require high levels of energy investment, but can also promote mastery and competence. In contrast, hindrance demands present work tasks and conditions that require effort and energy, but do not have the growth potential (LePine *et al.*, 2005; Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). Typical hindrance demands are role ambiguity, job insecurity, constraints, and interpersonal conflicts.

Two meta-analyses have confirmed these notions. LePine *et al.* (2005) analysed 101 different samples and provided support for the distinction between challenge and hindrance job demands by showing that challenge and hindrance demands have differing relationships with strain and motivation consistent with theory. In a similar vein, Crawford *et al.* (2010) investigated 64 different samples and confirmed that although both types of demands were positively related to burnout, challenge demands had strong positive associations with engagement, whereas hindrance demands had strong negative associations with engagement.

Job demands–resources theory

The JD–R theory (Bakker, 2011; Bakker & Demerouti, 2014) posits that two main categories of job characteristics – job demands and job resources – are crucial for work-related well-being, regardless of the occupational setting. Job resources foster learning, development, and goal achievement and are therefore particularly related to motivation

and work engagement. In contrast, job demands require considerable physical and/or psychological efforts and skills and therefore involve physiological and psychological costs, such as exhaustion and burnout (Van den Broeck *et al.*, 2013).

Next to these main effects, JD–R theory posits that job demands and resources have an interactive effect on work-related well-being. Job resources have the capacity to reduce the costs of job demands – This is called the buffer hypothesis. In addition, job resources have particularly a positive impact on work-related well-being when job demands are high – This is called the boost hypothesis (Van den Broeck, Van Ruyseveldt, Smulders, & De Witte, 2010). Despite the progress in our understanding of these interaction effects (Bakker *et al.*, 2010; Hakanen, Bakker, & Demerouti, 2005), it is still unclear under which conditions the buffering effect occurs and under which conditions the boosting effect occurs.

We argue that the effects of interactions between job resources and job demands on work-related well-being depend upon the type of job demands on a day-to-day level. In line with the challenge-hindrance stressor framework, we posit that (1) daily job resources buffer the negative daily relationship between daily hindrance demands and daily work-related well-being and that (2) daily job resources are particularly positively related to daily work-related well-being when combined with high levels of daily challenge demands (but not daily hindrance demands).

The buffer hypothesis

The buffer hypothesis within JD–R theory builds upon the job demands–control Model (Karasek, 1979) stating that the most significant predictor of job strain is the combination of high job demands and low job control and that job control can moderate the negative effects of high demands on well-being. The JD–R theory has widely expanded this idea to incorporate a range of job demands and resources (Bakker & Demerouti, 2014), and the JD–R theory's buffer hypothesis posits that the costs associated with high job demands are lower for employees with sufficient job resources because these job resources enable efficient coping (Bakker *et al.*, 2005).

For instance, using a sizable sample of Finnish dentists, Hakanen *et al.* (2005) showed that the negative relationship between job demands (e.g., unfavourable physical environment) and work engagement was weaker for dentists with many (vs. few) job resources (e.g., positive patient and peer contacts, variability in professional skills). Similarly, in a study involving higher education employees, Bakker *et al.* (2005) found that job resources (e.g., autonomy, performance feedback) buffered the impact of job demands (e.g., work overload, emotional demands) on burnout (i.e., exhaustion, cynicism, reduced professional efficacy). These studies provided considerable support for the buffer hypothesis; however, they also showed that not all possible combinations of job demands and resources had a significant interaction effect (Bakker, Demerouti, & Verbeke, 2004; Hu, Schaufeli, & Taris, 2011). For example, in the study by Xanthopoulou, Bakker, Dollard *et al.* (2007), autonomy did not buffer the negative effect of workload on burnout. This may be because autonomy boosted the impact of workload (typically considered as a challenge demand); however, this could not be examined because the focus of the study was on negative indicators of work-related well-being.

We argue that daily job resources buffer the negative effects of daily hindrance demands on daily work-related well-being. Hindrance demands, such as role conflict and role ambiguity (Crawford *et al.*, 2010; Rodell & Judge, 2009), cost energy and form barriers in reaching organizational goals. On days when employees experience high

hindrance demands, having access to sufficient job resources may undo their negative effects because they enhance willingness to dedicate effort to the work (Meijman & Mulder, 1998). For instance, daily social support can help employees to cope with their daily hindrance job demands by providing them with both instrumental support and protection from consequences of stress. Moreover, by providing specific and accurate information in a positive manner, adequate daily feedback can provide guidance for working efficiently and optimize daily communication between supervisors and employees. This can prevent difficulties in work and relationships. Finally, daily opportunities for growth and learning may increase the likelihood of being successful in achieving one's work goals.

Stated in a more formal way, we formulate our first hypotheses:

Hypothesis 1: Daily job resources moderate the relationship between daily hindrance demands and (a) daily positive affect, and (b) daily work engagement. In particular, the negative relationship between hindrance demands and (a) positive affect and (b) work engagement is weaker for teachers who have high (vs. low) levels of job resources (buffer effect).

The boosting hypothesis

The boosting hypothesis builds upon the conservation of resources theory (Hobfoll, 2002), which acknowledges that resources are not only necessary to deal with job demands, but they are also important in their own right and are particularly relevant when employees are confronted with high job demands. The boosting hypothesis posits that the combination of high job demands and high job resources enhances work motivation and stimulates work-related well-being (Bakker *et al.*, 2007, 2010). A few studies examined whether job resources are indeed particularly salient under highly demanding working conditions. For example, in a cross-sectional study among 12,359 employees working in different types of organizations, Bakker *et al.* (2010) revealed that job resources (e.g., learning opportunities, autonomy) had a positive relationship with work enjoyment and organizational commitment when job demands (e.g., workload, emotional demands) were high (vs. low). Also, in a survey study among Finnish teachers, Bakker *et al.* (2007) reported that job resources positively influenced work engagement when teachers experienced high levels of pupil misbehaviour.

These studies supported the notion that not all job demands are necessarily detrimental; however, these studies did not directly differentiate between hindrance and challenge job demands. Studies that examined the boosting hypothesis on the within-person level are very scarce. One of the few examples is the dairy study by Kühnel, Sonnentag, and Bledow (2012) who followed 114 employees via electronic questionnaires three times a day over the course of one working week. Their findings revealed that on days with higher job control, time pressure was beneficial for work engagement, while on days with lower job control, time pressure was detrimental for work engagement. Note, however, that these authors only studied one specific job demands \times resources interaction.

The current study aims to provide novel information by examining whether daily job resources become particularly salient under the conditions of high daily challenge demands and boost daily work engagement and daily positive affect. We argue that job resources have the highest motivational potential when used in combination with challenge demands because, when confronted with complex problems or very

challenging issues at work, access to sufficient job resources can enhance the sense of competence and prospects that one's work behaviour and effort will have positive results (Widmer, Semmer, Kälin, Jacobshagen, & Meier, 2012). This can foster work engagement and positive affect. In the school context, teachers might be particularly stimulated to mobilize their job resources (e.g., asking colleagues for help, developing a new skills) on days when they experience high challenge demands (e.g., work complexity, high workload) because the combination of high resources and high challenges may foster their learning and involvement in work. This, in turn, might promote their daily work-related well-being. We formulate our second hypotheses accordingly:

Hypothesis 2: Daily job resources moderate the relationship between challenge demands and daily (a) positive affect and (b) work engagement. In particular, the positive relationship between challenge demands and (a) positive affect and (b) work engagement is stronger for teachers who have high (vs. low) levels of job resources available (boosting effect).

In addition, recent research has shown that personal resources – individuals' aspects reflecting resiliency and ability to efficiently control and impact upon their environment (Hobfoll, Johnson, Ennis, & Jackson, 2003) – significantly and positively relate to various favourable employee outcomes, such as work-related well-being, commitment, and job performance – Also on a daily basis (Luthans, Norman, Avolio, & Avey, 2008; Xanthopoulou, Bakker, & Fischbach, 2013). Thus, personal resources have been recognized as important predictors in JD–R theory (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007, 2009). To show the unique effect of job resources on both positive affect and work engagement, as well as the unique job resources and challenge and hindrance job demands interaction effects, the current study controlled for personal resources.

Method

Participants

A sample of 158 primary school teachers, 130 women and 28 men, aged 41.09 years on average ($SD = 9.06$), and working throughout Croatia participated in this study. Most of the participants worked full-time, working 33.09 ($SD = 9.32$) hours per week on average. Teachers' tenure ranged from 1 to 34 years ($M = 15.14$, $SD = 10.71$). Participants' socio-economic background was relatively homogeneous as all of the participants hold either a bachelors or a master's degree, and all of them have the Croatian nationality. Most of the teachers reported being either married or in a relationship (83.5%); some of them were single (8.9%), divorced (6.3%), or widowed (1.3%). Altogether, the sample fairly represented the typical sociodemographic distribution of primary school teachers in Croatia as, according to the Croatian Bureau of Statistics (2012), most of the primary school teachers in Croatia are female (77.9%), work full-time (89%), and are above 40 years old (62.2%).

All of the 158 teachers filled in the initial background questionnaire. Among them, 92 teachers filled in the diary at least two times, 79 of them filled it in three times, 65 four times, and 52 teachers filled in the diary five times (total $N = 438$ occasions). The sample size is adequate for a diary study (Ohly, Sonnentag, Niessen, & Zapf, 2010; Scherbaum & Ferreter, 2009), implying that we have sufficient power to test the hypotheses. To check whether there were some systematic differences between participants based on the

amount of diaries they filled in, we performed a dropout analysis. The analysis showed no significant differences between participants who filled out the diary once and those who filled it out more often in any of the background variables, namely age, $F(4, 156) = 0.85$, $p = .43$, weekly work hours, $F(4, 155) = 0.28$, $p = .75$, and tenure, $F(2, 153) = 1.08$, $p = .34$. There were also no significant differences on the day-level variables, namely on the measures of challenge, $F(4, 365) = 0.72$, $p = .58$, and hindrance demands, $F(4, 365) = 0.76$, $p = .55$, job resources, $F(4, 357) = 0.94$, $p = .44$, personal resources, $F(4, 359) = 0.36$, $p = .84$, positive affect, $F(4, 375) = 0.39$, $p = .81$, and work engagement, $F(4, 352) = 0.43$, $p = .77$.

Procedure

We contacted a sample of 95 primary schools' principals throughout Croatia by telephone and e-mail, explained the main aims of the study, and asked the principals to e-mail the invitation for participation in the study on 'well-being at work' to teachers in their school. The invitation included a link to the online questionnaires and specific details about the study, an informed consent form, and a registration form. Most of the contacted principals agreed to forward the invitations (92%). However, we could not determine the precise response rate because we could not establish the number of teachers who received the invitation for participation. We assume that the response rate was low (between 10 and 20%) because the data collection took place at the end of the school year (May and July 2013) when teachers had substantial workload. Relatively low response rates are typical for web-based diary studies without personal contact with participants (Cook, Heath, & Thompson, 2000) as diary studies require considerable time and effort. Nonetheless, bearing in mind that several previous studies revealed that the low response rate did not lead to bias in daily diaries (Bolger, DeLongis, Kessler, & Schilling, 1989) and that the study particularly focuses on within-person fluctuations, we do not think that the low response rate presents a major limitation.

We developed an Internet application designed specifically for this study ('How happy are primary school teachers in Croatia? A work-related well-being diary'). All of the scales were originally in English and were back-translated in Croatian by two independent experts. Participants first responded to a background (trait-level) questionnaire consisting of relevant sociodemographic information, and general feelings and experiences at work. Next, they completed a short diary survey every day after work for five consecutive workdays. On the first screen of the diary survey, teachers reported the current day of the week and rated how they felt during this particular day at work. On the next page, they responded to questions on job demands, job resources, and personal resources. Thereafter, on the final page, teachers rated how engaged they felt at work today. Participants were informed that the data would be treated confidentially and anonymously. The study did not involve any form of deception or risk to the participants beyond that encountered in everyday life and the official research ethics committee of The Ministry of Science, Education and Sports of the Republic of Croatia approved our study.

Measures

Day-level measures

Day-level measures refer to the measures of work-related well-being, challenge and hindrance job demands, self-concordant motivation for work, and personal resources that

were included in the included in the daily diary questionnaire. Using an approach suggested by Shrout and Lane (2012), we computed both within- and between-person reliability coefficients for the work engagement, positive affect, job resources, personal resources, and job demands scales. First, we computed variance component estimates using analysis of variance. Second, building upon generalizability theory, we calculated reliability estimates based on these variance components.

Daily work-related well-being

To capture the teachers' daily well-being at work, we assessed the degree to which teachers experienced positive affective states and how engaged they were during work on a specific day.

Positive affect. Positive affect was measured via the widely used and validated positive and negative affect schedule (PANAS; Mackinnon *et al.*, 1999). Specifically, we used a short form of the positive affect subscale consisting of five items – *Inspired*, *alert*, *excited*, and *attentive* and *determined*. However, we added two additional items: *Happy* and *satisfied*, to capture additional aspects of positive affect as *happy* and *satisfied* represent more passive, pleasurable states (Fredrickson & Branigan, 2005; Russell, 2003). Participants rated how they felt during their work today on a 1 (not at all) to 7 (very much) scale. The reliability analyses showed that both between-person ($R_{KR} = .98$) and within-person reliability were high ($R_C = .86$).

Work engagement. To measure daily work engagement, participants filled in the daily version of the 9-item version of the Utrecht work engagement scale (UWES; Schaufeli, Bakker, & Salanova, 2006), which has been validated in previous studies (Breevaart, Bakker, Demerouti, & Hetland, 2012). Example items are as follows: 'I got carried away when I was working today', and 'Today I felt strong and vigorous in my job'. All items were scored on a 7-point rating scale ranging from 1 (strongly disagree) to 7 (strongly agree). The reliability analyses (Shrout & Lane, 2012) showed that both between-person reliability ($R_{KR} = .98$) and within-person reliability were high ($R_C = .92$).

To test whether the factor structure of the work engagement and positive affect corresponds to the hypothetical 2-factor model of work-related well-being described in this study, the items from the UWES and PANAS (with two additional items *happy* and *satisfied*) were subjected to confirmatory factor analysis (CFA) using Amos (Arbuckle, 2006). The 2-factor model, constructed by assigning the UWES items to one latent factor and the PANAS items to a second latent factor, was compared to 1-factor model. The chi-square difference test showed that the 2-factor model of work-related well-being fits significantly better to the data than the 1-factor model ($\Delta\chi^2 = 450$, $\Delta df = 1$; $p < .001$). The *RMSEA* of .08 and *CFI* of .97 showed a good overall fit of the 2-factor model, which indicated support for the hypothesized factor structure (Kline, 2011; Schermelleh-Engel, Moosbrugger, & Müller, 2003). The goodness-of-fit indices of the 2-factor model of work-related well-being model showed an acceptable model fit (*CFI* = .97; *IFI* = .97; *RMSEA* = .08; *GFI* = .92), better than 1-factor solution (*CFI* = .93; *IFI* = .93; *RMSEA* = .11; *GFI* = .84), which indicated support for the hypothesized factor structure (Kline, 2011; Schermelleh-Engel *et al.*, 2003).

Daily challenge and hindrance demands

Challenge and hindrance demands were measured using a 16-item scale by Rodell and Judge (2009) that was adapted for the diary study. Participants reported the extent to which they agreed with the statements about their work that may or may not influence their level of stress today, using a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The challenge demands subscale consisted of eight items reflecting the perceived levels of workload, time urgency, job responsibility, and job complexity. Example items included 'Today, my job has required me to work very hard', and 'Today, my job has required me to use a number of complex or high-level skills'. The reliability analyses (Shrout & Lane, 2012) showed that both between-person reliability ($R_{KR} = .97$) and within-person reliability were high ($R_C = .80$). The hindrance demands subscale consisted of eight items assessing excessive bureaucracy, role ambiguity, role conflict, and hassles. Example items included 'Today, I have not fully understood what is expected of me' and 'Today, I have had many hassles to go through to get projects/assignments done'. The between-person reliability of the scale was high ($R_{KR} = .94$); however, within-person reliability was moderate ($R_C = .65$).

We executed CFA to check whether challenge and hindrance demands cover two different constructs. The 2-factor model, constructed by assigning the challenge demands subscale items to one latent factor and the hindrance demands subscale items to a second latent factor, was compared to the 1-factor model. The chi-square difference test showed that the 2-factor model of job demands fits significantly better to the data than the 1-factor model ($\Delta\chi^2 = 162.4$, $\Delta df = 1$; $p < .001$). Also, the goodness-of-fit indices of the 2-factor model of job demands showed an acceptable model fit to the data ($CFI = .93$; $RMSEA = .08$), which supported the hypothesized challenge-hindrance demands factor structure (Kline, 2011; Schermelleh-Engel *et al.*, 2003).

Daily job resources

We measured daily job resources using three items to assess social support from colleagues (e.g., 'I felt valued by my colleagues in my work today. '); three items to assess performance feedback (e.g., 'I received sufficient information about the results of my work today'); four items for assessing supervisor coaching (e.g., 'I felt valued by my supervisor today'); and three items for assessing opportunities for development (e.g., 'My work offered me the possibility to learn new things today'; Bakker *et al.*, 2004). Daily job resources scale showed high between-person ($R_{KR} = .98$) and high within-person reliability ($R_C = .88$).

Daily personal resources

Previous studies showed that personal resources are highly relevant for employees' work-related well-being (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009) and can contribute to increasing employee's commitment and preventing exhaustion over time (Xanthopoulou *et al.*, 2009). The measure of personal resources was the Psychological capital questionnaire (PCQ; Luthans, Avolio, Avey, & Norman, 2007). The PCQ underlies the four dimensions of hope, resilience, optimism, and efficacy and has demonstrated reliability and construct validity (Avey, Reichard, Luthans, & Mhatre, 2011). We used shortened version of the PCQ, consisting of 12 items that were adapted for the diary study. We particularly focused on items that were most likely to vary on a daily basis, as it is often the practice in diary studies (Binnewies & Wörnlein, 2011). The participants were asked to describe how they thought about themselves 'today at work', using a 7-point scale

ranging from 1 (strongly disagree) to 7 (strongly agree). Example items include the following: 'Today I was pretty successful at work' and 'Today, I felt confident in discussions the school's strategies'. Our analyses showed that the shortened scale was highly reliable, both on a between-person ($R_{KR} = .97$) and within-person level ($R_C = .84$).

Data analysis

Bearing in mind that our dataset had a 2-level hierarchical structure with repeated daily measures (level 1) nested within teachers (level 2), we used multilevel linear modelling (MLM) to analyse the data. In the present study, all variables in the analyses were level 1 (daily) variables. We employed a common centring strategy with multilevel models (Enders & Tofghi, 2007; Peugh, 2010; Snijders & Bosker, 1999), namely we centred the level 1 predictor variables – variables that fluctuate on a within-person level – at the respective person mean. We used the SPSS program for MLM (Peugh & Enders, 2005).

Results

Descriptive analyses

Table 1 presents the overall means, standard deviations (*SD*), and zero-order correlations among variables included in the study. Please note that the correlations below the diagonal represent teacher-level correlations and correlations above the diagonal represent day-level correlations.

Multilevel analyses results

Preliminary analyses

To examine whether multilevel analyses were appropriate, we investigated the decomposition of daily positive affect and work engagement variance across the two levels (teachers and days), before testing the hypotheses (Peugh, 2010). The intraclass correlation (ICC) in positive affect at level 1 (within teachers, day level) was 0.47 (0.67/[0.67 + 0.75]; Table 2), and the ICC in work engagement at level 1 (within teachers, day level) was 0.45 (0.88/[1.09 + 0.88]), which is consistent with previous studies (Breevaart

Table 1. Means, standard deviations, and correlations for the study variables ($N = 158$ teachers; $N = 438$ daily reports)

	<i>M</i> (<i>SD</i>)	<i>SD</i> _{wp}	1	2	3	4	5	6
1. Challenge Demands	3.87 (1.28)	0.72		.34**	.23**	.23**	.04	.06
2. Hindrance Demands	2.38 (0.99)	0.56	.48**		.01	-.24**	-.23**	-.23**
3. Job Resources	4.44 (1.16)	0.63	.23**	-.10		.51**	.30**	.50**
4. Personal Resources	5.33 (1.01)	0.59	.28**	-.17**	.63**		.50**	.58**
5. Positive Affect	4.91 (1.17)	0.67	.15**	-.19**	.47**	.63**		.69**
6. Work Engagement	4.72 (1.37)	0.76	.12*	-.25**	.61**	.68**	.78**	

Notes. All listed variables are measured on daily basis and have a range of 1–7. *M* = Mean; *SD* = standard deviation; *SD*_{wp} = within-person standard deviation. Correlations below the diagonal are person-level correlations with correlations, and correlations above the diagonal are within-person correlations. * $p < .05$; ** $p < .01$.

Table 2. Multilevel analysis of indirect effects of daily challenge and hindrance demands and daily job resources on daily positive affect

Parameter	Daily positive affect				
	Null Model	Model 1	Model 2	Model 3	Model 4
Fixed Effects					
Level 2 (Teacher)					
Intercept	4.83 (.09) ^{***}	4.88 (.09) ^{***}	4.88 (.09) ^{***}	4.86 (.09) ^{***}	4.85 (.09) ^{***}
Level 1 (Day)					
Challenge Demands		0.13 (.06) [*]	0.06 (.06)	0.05 (.06)	-0.05 (.06)
Hindrance Demands		-0.34 (.08) ^{***}	-0.32 (.08) ^{***}	-0.32 (.08) ^{***}	-0.13 (.08)
Job Resources			0.30 (.06) ^{***}	0.31 (.06) ^{***}	0.08 (.06)
CD*JR				0.17 (.10)	0.23 (.09) ^{**}
HD*JR				-0.19 (.13)	-0.26 (.11) [*]
0.54 (.08) ^{***}					0.54 (.08) ^{***}
Personal Resources					
Variance-Covariance Estimates					
Level 2 variance	0.75 (.13) ^{***}	0.73 (.13) ^{***}	0.77 (.13) ^{***}	0.76 (.13) ^{***}	0.81 (.13) ^{***}
Level 1 variance	0.67 (.06) ^{***}	0.61 (.06) ^{***}	0.48 (.04) ^{***}	0.55 (.05) ^{***}	0.46 (.04) ^{***}
-2 Log Likelihood	1101.49	1029.08	996.42	992.86	944.69
Diff-2 Log		72.41 ^{***}	32.66 ^{***}	3.56	48.17 ^{***}
Df		2	1	2	1

Notes. Standard errors are in parentheses. N = 438 occasions. CD = Challenge demands; HD = Hindrance demands; JR = Job resources. *p < .05; **p < .01; ***p < .001.

et al., 2012; Sonnentag, Dormann, & Demerouti, 2010). These ICC values can be considered high and multilevel analysis is therefore appropriate, also to avoid an inflated type I error rate (Snijders & Bosker, 1999).

We performed separate analyses for daily positive affect (Table 2) and daily work engagement (Table 3). In Model 1, we examined whether daily challenge and hindrance demands were related to daily positive affect and work engagement. In Model 2, we entered daily job resources (that might theoretically account for and/or alter the association between different daily job demands and daily work-related well-being). Thereafter, in Model 3, we entered the interactions between daily job resources on the one hand and daily challenge/hindrance demands on the other hand. In Model 4, we also entered the control variable, daily personal resources, in the last step, as suggested by Spector and Brannick (2011). We tested the improvement of each of the subsequent model over the previous one by computing the differences of the respective log likelihood statistic $-2 \times \log$ and submitting this difference to a chi-square-test, which can be seen in Tables 2 and 3.

Results from Model 1 indicated that the more the challenge demands teachers encountered during their workday, the more positive affect, $t(250.15) = 2.08, p = .04$, and work engagement, $t(234.07) = 2.19, p = .03$, teachers experienced on that particular day. In addition, the more hindering demands teachers encountered during their workday, the less positive affect, $t(250.15) = -4.31, p < .001$, and work engagement, $t(238.19) = -4.07, p < .001$, teachers experienced on that particular day. Model 2 showed that the more job resources teachers perceived to have during their workday, the more positive affect, $t(245.57) = 4.69, p < .001$, and the more work engagement they experienced, $t(232.91) = 8.86, p < .001$, during that workday.

Hypotheses testing

The overall hypothesized research model is presented in Figure 1, and the results of multilevel modelling analyses are shown in Tables 2 (daily positive affect) and 3 (daily work engagement). Hypothesis 1 stated that daily job resources will buffer the negative effects of daily hindrance demands on two daily work-related well-being indicators; positive affect and work engagement. Hypothesis 2 stated that daily challenge demands will boost the positive effects of daily job resources on positive affect and work engagement.

As can be seen in Tables 2 and 3, Model 3 showed that the interaction between daily job resources and daily hindrance demands was not significant for daily positive affect, $t(281.99) = -1.51, p = .13$, and daily work engagement, $t(257.90) = -1.80, p = .08$. The interaction between daily job resources and daily challenge demands was also not significant for daily positive affect, $t(310.99) = 1.67, p = .09$, but it was significant for daily work engagement, $t(284.72) = 2.04, p = .04$.

However, when we entered daily personal resources – the control variable – within Model 4 in the last step (Spector & Brannick, 2011), the results in Tables 2 and 3 showed that the interaction between daily job resources and daily hindrance demands was significant for daily positive affect, $t(272.71) = -2.22, p = .02$, and daily work engagement, $t(253.79) = -2.57, p = .01$. The interaction between daily job resources and daily challenge demands was also significant for both positive affect, $t(299.53) = 2.49, p = .01$, and work engagement, $t(276.46) = 2.97, p = .003$. To examine whether these interaction patterns were in the hypothesized direction, we conducted simple slope tests for multilevel models as suggested by Preacher, Curran, and Bauer (2006).

Table 3. Multilevel analysis of indirect effects of daily challenge and hindrance demands and daily job resources on daily work engagement

Parameter	Daily work engagement				
	Null Model	Model 1	Model 2	Model 3	Model 4
Fixed Effects					
Level 2 (Teacher)					
Intercept	4.61 (.11)***	4.60 (.11)***	4.58 (.11)***	4.56 (.11)***	4.55 (.11)***
Level 1 (Day)					
Challenge Demands		0.16 (.07)*	0.03 (.06)	0.02 (.06)	0.09 (.06)
Hindrance Demands		-0.38 (.09)***	-0.32 (.08)***	-0.32 (.08)***	-0.11 (.08)
Job Resources			0.61 (.07)***	0.61 (.07)***	0.37 (.07)***
CD*JR				0.22 (.11)*	0.30 (.09)***
HD*JR				-0.24 (.13)	-0.31 (.12)*
0.58 (.08)***					
Personal Resources					
Variance-Covariance Estimates					
Level 2 variance	1.09 (.20)***	1.14 (.20)***	1.26 (.21)***	1.28 (.21)***	1.34 (.21)***
Level 1 variance	0.88 (.08)***	0.81 (.08)***	0.60 (.06)***	0.69 (.05)***	0.48 (.04)***
-2 Log Likelihood	1136.53	1120.06	1052.20	1047.02	999.13
Diff-2 Log		16.47***	67.86***	5.18	47.89***
Df		2	1	2	1

Notes. Standard errors are in parentheses. N = 366 occasions. CD = Challenge demands; HD = Hindrance demands; JR = Job resources. *p < .05; **p < .01; ***p < .001.

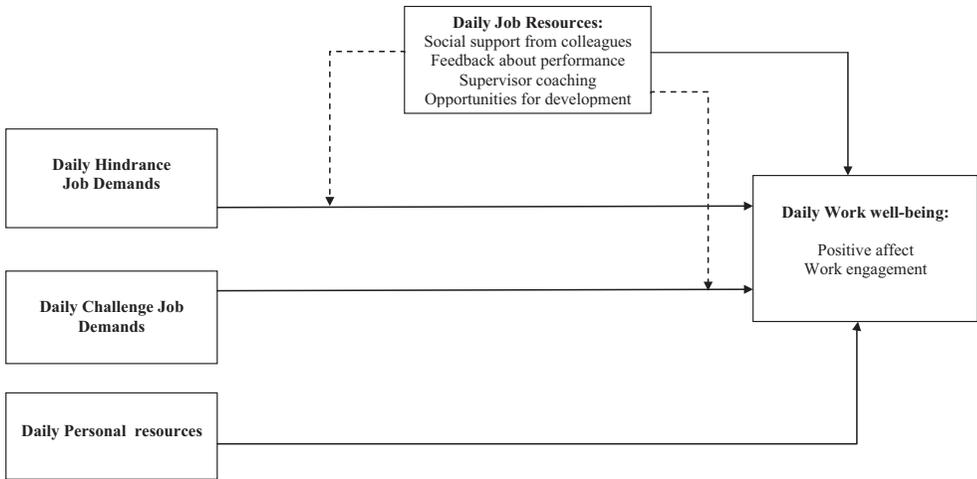


Figure 1. Hypothesized overall model (dashed lines refer to indirect effects).

Figures 2–5 present the significant interaction patterns. In line with the first hypothesis, Figure 2 shows that daily hindrance demands were negatively related to positive affect when job resources were low (1 SD below the mean, $\gamma = -0.98$, $SE = .39$, $z = -2.49$, $p < .001$). However, when combined with high daily job resources (1 SD above the mean), the negative association of daily hindrance demands and daily positive affect was weaker, although the effect was still significant and negative ($\gamma = -1.58$, $SE = .66$, $z = -2.38$, $p = .02$). Similarly, Figure 3 demonstrated that daily hindrance demands were negatively related to work engagement when daily job resources were low (1 SD below the mean; $\gamma = -1.14$, $SE = .41$, $z = -2.79$, $p = .01$). However, when daily

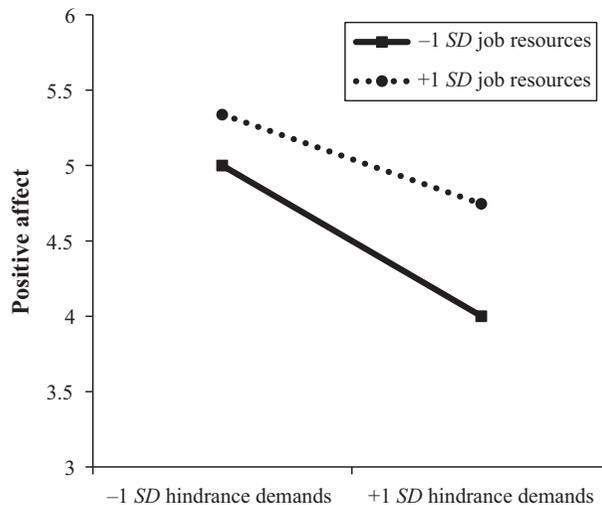


Figure 2. The buffering effect of daily job resources on the relationship between daily hindrance demands and daily positive affect.
 Note. -1 SD = 1 standard deviation below the mean. +1 SD = 1 standard deviation above the mean.

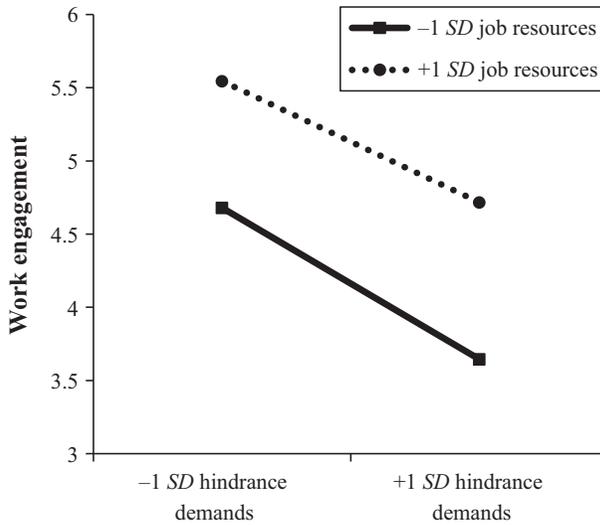


Figure 3. The buffering effect of daily job resources in the relationship between daily hindrance demands and daily work engagement.

Note. -1 SD = 1 standard deviation below the mean. +1 SD = 1 standard deviation above the mean.

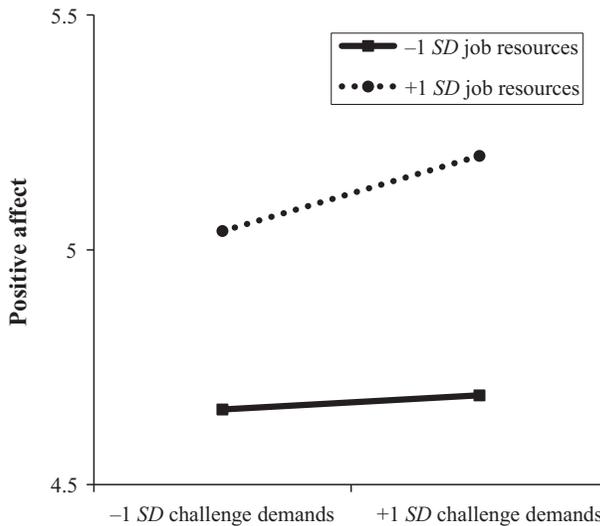


Figure 4. The boosting effect of daily challenge demands in the relationship between daily job resources and daily positive affect.

Note. -1 SD = 1 standard deviation below the mean. +1 SD = 1 standard deviation above the mean.

job resources were high (1 SD above the mean), the relationship between daily hindrance demands and daily work engagement was weaker, although the effect was still significant and negative ($\gamma = -1.86, SE = .68, z = -2.71, p = .01$). This confirms our first hypothesis for both (a) positive affect and (b) work engagement: Daily job resources buffered the negative relationship between daily hindrance demands and daily positive

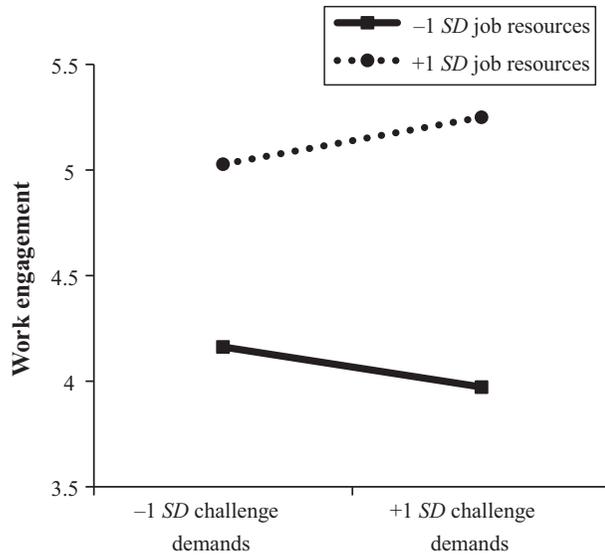


Figure 5. The boosting effect of daily challenge demands in the relationship between daily job resources and daily work engagement.

Note. $-1 SD = 1$ standard deviation below the mean. $+1 SD = 1$ standard deviation above the mean.

affect and buffered the negative relationship between daily hindrance demands and daily work engagement.

Our second hypothesis stated that daily job resources are particularly positively related to daily (a) positive affect and (b) work engagement when combined with high daily challenge demands. Figure 4 demonstrated that daily challenge demands and daily positive affect were significantly and positively related when daily job resources were low (1 *SD* below the mean; $\gamma = 0.70$, $SE = .30$, $z = 2.29$, $p = .02$). However, daily challenge demands were more strongly related to daily positive affect when daily job resources were high (1 *SD* above the mean; $\gamma = 1.24$, $SE = .51$, $z = 2.38$, $p = .01$). Similarly, as illustrated in Figure 5, the association between daily challenge demands and daily work engagement was positive when daily job resources were low (1 *SD* below the mean; $\gamma = 0.88$, $SE = .33$, $z = 2.67$, $p = .01$). Yet, the relationship between daily challenge demands and daily work engagement was stronger when daily job resources were high (1 *SD* above the mean; $\gamma = 1.57$, $SE = .56$, $z = 2.81$, $p = .01$). The nature of these interactions confirmed our second hypothesis for both work-related well-being indicators: High (vs. low) daily job resources significantly and positively boosted the relationships between daily challenge demands and (a) daily positive affect and (b) daily work engagement.

In addition, the findings revealed that the more personal resources teachers perceived to have during their workday, the more positive affect, $t(243.83) = 6.93$, $p < .001$, and the more work engagement they experienced, $t(234.73) = 7.28$, $p < .001$, during that workday. Also, when we entered daily personal resources in the model, the main effect of daily job resources on positive affect (estimate = 0.08, $SE = .06$, $p = .23$) was no longer significant, and the main effects of daily hindrance demands on positive affect (estimate = -0.13 , $SE = .08$, $p = .10$) and on daily work engagement (estimate = -0.11 , $SE = .08$, $p = .15$) were insignificant as well. This indicated a mediation effect. To further test this mediation effect, we used the Monte Carlo method for assessing mediation

(MCMAM; Selig & Preacher, 2008). Results of the MCMAM showed that the distribution interval of the indirect effect did not include zero at a 95% confidence interval (*lower level* [LL] = 0.15, *upper level* [UP] = 0.39) only for the mediation effect of daily personal resources in the association between daily job resources and daily positive affect, which demonstrated that that was the only significant mediation effect (Selig & Preacher, 2008).

Finally, we would also like to note that we tested the interaction between personal resources and different types of job demand; however, the results showed that the interaction between daily personal resources and daily hindrance demands was not significant for daily positive affect (estimate = 0.05, *SD* = 0.13), $t(274.74) = 0.42$, $p = .68$, as well as for daily work engagement (estimate = -0.03 , *SD* = 0.13), $t(255.56) = -0.21$, $p = .84$. In a similar vein, the results also showed that the interaction between daily personal resources and daily challenge demands was not significant for daily positive affect (estimate = 0.07, *SD* = 0.11), $t(281.95) = 0.58$, $p = .56$, and daily work engagement (estimate = -0.05 , *SD* = 0.12), $t(260.40) = -0.45$, $p = .66$. Although the personal resources did not moderate the relationships of hindrances or challenges with work engagement, we mention these results as they may be interesting and informative for other scholars.

Discussion

Building upon previous research findings within JD–R theory (Bakker & Demerouti, 2014) and the challenge-hindrance stressor framework (LePine *et al.*, 2005), the main aim of the present study was twofold. First, we predicted that daily job resources would buffer the negative impact of daily hindrance demands on daily work-related well-being indicators (i.e., positive affect and work engagement). Second, we predicted that daily job resources would boost the relationship between daily challenging job demands and daily well-being (i.e., positive affect and work engagement). We conducted a diary study among 158 primary school teachers. The findings fully confirmed our hypotheses; however, they revealed that daily personal resources also have an important role in the interplay between job demands, job resources, and work-related well-being. Specifically, daily job resources acted as a buffer against the unfavourable impact of daily hindering job demands on daily well-being (i.e., daily positive affect and daily work engagement). Moreover, daily job resources significantly and positively boosted the daily relationships between challenge demands and well-being.

Theoretical contributions

The results of the present study make several important contributions to the existing literature and broaden our understandings on the conditions that may foster or undermine work-related well-being of employees. First, the findings in the present study refine JD–R theory by showing that not only the level of job demands, but also the different types of demands that employees encounter in their everyday work life are important when examining work-related well-being of employees. All demands can be stressful because they require effort and energy, especially if employees have to deal with them for prolonged periods of time without adequate recovery (Sonnentag, 2003). However, as our study shows, job resources foster well-being, especially under conditions of high challenge (but not hindrance) demands.

In line with the JD–R theory, the present study demonstrates that job resources can provide the instrumental (e.g., colleague's advices on efficient task performing), cognitive (e.g., discussing work can help to gain different perspective on the issue), and emotional (e.g., colleague's support after dealing with pupils' misbehaviour) assets for dealing with both challenge and hindrance demands. In the case of hindrance demands, job resources predominantly act as buffers by weakening their negative effects. For example, experiencing highly conflicting daily work obligations or role ambiguity does not have goal attainment potential for teachers. Dealing with these hindrance demands will not help pupils attain a better education or feel better at school on that day. Rather, dealing with these demands will only enable teachers to 'clear out the way for working on achieving the desired work goals of that day.

Accordingly, daily hindrance demands tend represent barriers that are unnecessary for goal attainment, yet employees have to deal with them to move on with their work (Crawford *et al.*, 2010). Thus, hindrance demands thwart daily work-related well-being because, aside from the energy and time needed to attain work goals, they require additional investment of energy and effort (LePine *et al.*, 2005). However, as the current study shows, high levels of daily job resources can provide means to ease the process of handling hindrance demands.

Nonetheless, under conditions of high challenge demands, job resources seem to be motivators that foster the positive potential of challenge demands, and in turn, promote work-related well-being by (boost hypothesis). Our findings suggest there is a need for a specific kind of demand (i.e., challenge) in order for job resources to be translated into enhanced work-related well-being (Bakker *et al.*, 2010). Workdays that give rise to high challenge demands foster employees to proactively look for and use the job resources that are available (i.e., ask colleagues for help, learning a new skill), which promotes daily positive affect and work engagement (Demerouti & Bakker, 2011). This may be because challenge demands encompass a sense of competence and stimulation, and signal moving forward in accomplishing desired work goals; while job resources provide the means for it. Challenge demands may not really be manageable on days teachers have no resources available.

For example, in the context of teachers, challenge demands such as having to use highly complex skills and having a high workload (i.e., teaching, parental meetings, doing projects with pupils) can be stressful because it requires a lot of time and effort, but it is also necessary to accomplish work goals (i.e., provide the best possible education, and support for pupils). However, when these demands are accompanied with high levels of job resources, such as adequate performance feedback from the school principal and social support from colleagues, dealing with them can actually foster positive affect and work engagement because teachers can feel supported, appreciated, and have a sense that what they are doing is valuable and meaningful, not only for themselves, but also for their pupils (Jennings & Greenberg, 2009).

Second, within the JD–R theory, the buffer and boost hypotheses are usually framed using different outcomes. Empirical investigations of the boosting hypothesis mainly used work engagement as an outcome. However, studies testing the buffer hypothesis most often explored job resources as buffers against the adverse effects of high job demands on burnout on a between-person level (Bakker *et al.*, 2005; Xanthopoulou, Bakker, Dollard *et al.*, 2007), although Hakanen *et al.* (2005) tested it for work engagement. Thus, the current study adds to the existing literature by exploring both buffer and boost hypotheses using positive work-related well-being indicators on a day-to-day basis, which

provides more insight into the different functions of job resources on a within-person level.

Third, the study shows that challenge and hindrance demands fluctuate significantly on a within-person level. On some days, employees encounter higher levels of hindrance or challenge demands than on other days. These results are important because within-person level fluctuations of challenge and hindrance job demands have rarely been empirically examined, and situational, daily variables are necessary to accurately predict why such fluctuations occur in the first place. To the best of our knowledge, only two previous studies investigated challenge and hindrance demands on a within-person level (Bakker & Sanz-Vergel, 2013; Rodell & Judge, 2009). Our findings are in line with these previous findings (Crawford *et al.*, 2010); however, our study further expands the existing knowledge base by revealing the dynamic complexities of differential outcomes of challenge and hindrance demands on work-related well-being and the role of job resources in those outcomes on a within-person level.

In addition, it is important to note that the participants in the study were a relatively homogenous sample of Croatian primary school teachers. Based on previous studies, such as Bakker and Sanz-Vergel's (2013) study among nurses, we expect that these results would be highly similar across different populations. Nevertheless, to ascertain the generalizability of the findings, it is necessary to replicate them in different work settings.

Limitations

The findings support our hypotheses; nevertheless, our research design had some limitations that could be addressed in future studies. First, the variables under study refer to rather subtle intrapersonal processes, and it is possible that the involvement in this study made our participants more aware of their work-related experiences, which might have influenced their responses. However, our study confirms that daily job resources indeed have differential functions in the associations between daily challenge and hindrance demands and daily work-related well-being among teachers and that they can be captured using diary methodology.

Second, the present study moved forward from cross-sectional research design by using diary methodology; however, some improvements of the design can be recommended. Future research could benefit from the use of longer-term longitudinal multimethod data collection (e.g., multiple information sources from colleagues, pupils) to develop and test models capturing the dynamic relations in employees' experiences of challenge and hindrance demands, job resources, and work-related well-being over time. To expand and further investigate the differential roles of job resources, in addition to work-related well-being measures, other work outcomes might be assessed, such as performance indicators. Based on previous findings (Crawford *et al.*, 2010), we expect that high daily hindrance demands would lower daily performance and that high daily job resources would buffer this negative effect, whereas high daily challenge demands would enhance daily performance when combined with high daily job resources.

Third, although the present study involves longitudinal data, it does not allow for any causal interpretations as we only tested cross-sectional effects using concurrent measures. Future studies could benefit from examining lagged effects to gain more opportunities for assessing potential causal associations. Fourth, we did not use negative indicators of work-related well-being (e.g., burnout) as outcomes in this study because most of the previous studies focused on them. Based on these previous

findings (Crawford *et al.*, 2010), we assume that the relationship between both daily challenge and daily hindrance demands and negative indicators of daily work-related well-being (e.g., exhaustion, strain) would be positive and that daily job resources would buffer this positive relationship.

Future directions and practical implications

The existing literature emphasizes that hindrance demands thwart goal attainment and do not have the potential for gains. Our study confirms these notions and shows that hindrance demands indeed lower work-related well-being, particularly when job resources are low. However, it may be possible that some coping strategies are more efficient than others. Hence, future studies could examine which strategies provide best coping with hindrance demands and enable more positive outcomes both within an individual employee and within organization.

In addition, although studies provided evidence for both buffer and boost effects of job resources, some of them failed to find significant interaction effects. For instance, Xanthopoulou, Bakker, Dollard *et al.* (2007) showed that autonomy did not interact with workload and that autonomy, social support, and feedback did not interact with physical demands in predicting dimensions of burnout. Also, Hu *et al.* (2011) revealed that high job demands coincided with high levels of burnout, but only when job resources were low only among health professionals, but not among blue-collar workers. These insignificant interactions occurred among demands that are typically considered to be challenges (e.g., workload) as well as among those that are typically considered hindrances (e.g., emotional demands). Hence, future research could examine in more detail (a) which specific job resources (e.g., autonomy, social support) provide the best buffer against which specific hindrance demands (e.g., conflicting work tasks, insufficient material resources); and (b) which combination of specific job resources (e.g., autonomy, social support) and specific challenge demands represents the best situation for daily work-related well-being.

A recent study by Bakker and Sanz-Vergel challenged the popular view that the same demands can be considered challenges and hindrances across different occupational settings and showed that it is crucial to ask the employees themselves on their subjective experiences of specific job demands. The authors found that, among nurses, work pressure acts more as a hindrance than as a challenge, whilst emotional demands act more as a challenge than as a hindrance, which is inconsistent with previous research among other occupations (Rodell & Judge, 2009). Thus, further research should explore the appraisal of specific job demands and their associations with well-being more extensively and in different occupational settings.

The current diary study also contributes to practice by providing empirical evidence that could be used in work-related well-being enhancement interventions. The findings could be implemented within future teachers' and school principals' trainings by: (1) emphasizing the importance of providing additional job resources that could reduce the negative impact of high hindrance job demands and prevent teachers from developing high levels of burnout when these high demands cannot be limited; (2) limiting the hindrance demands the teachers have to cope with, because previous research has shown that teachers, due to the unique demands of their job, are highly susceptible to burnout (Hakanen, Bakker, & Schaufeli, 2006); and (3) training teachers to build and strengthen their own work motivation, personal and job resources, for example, through job crafting (Tims, Bakker, & Derks, 2013).

Conclusion

Altogether, by providing empirical evidence for the significant interaction effects between different types of job demands and job resources, the current study increases our insight into the mechanisms that foster (vs. thwart) work-related well-being on a daily basis. These findings are important because they can account for inconsistencies in associations between job demands and work-related well-being found in previous studies. Also, these findings can contribute to the more optimal workplace design for teachers.

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