Job-Related Affective Well-Being in Emergency Medical Dispatchers: The Role of Workload, Job Autonomy, and Performance Feedback

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ABSTRACT

Protecting affective well-being is especially important for employees working in stressful settings. Building on the job characteristics model and the job demands-resources model, we analyzed the role of job demands and resources in predicting job-related affective well-being of emergency medical dispatchers (EMDs). We concentrated on quantitative workload as an important job demand, and job autonomy and performance feedback as job resources. We also tested the buffering effect of job resources on the relationship between job demands and job-related affective well-being. A sample of 335 EMDs from different Polish emergency dispatch centers, matching the population of EMDs in Poland, filled in a set of questionnaires. We applied multiple regression analysis to test the effects of job demands and resources on job-related affective well-being. We analyzed the interaction effects using the PROCESS macro. The results demonstrated that the higher the EMDs' workload, the lower their job-related affective well-being. The opposite effect occurred for job resources: the higher the job autonomy and performance feedback, the higher the EMDs' affective well-being. However, although these job resources are related positively to job-related affective well-being, they do not reduce the negative effect of quantitative workload. Efforts aimed at designing the work of medical emergency centers such that they offer EMDs access to feedback from managers and colleagues and autonomy at work, together with reducing their job overload are likely to facilitate job-related affective well-being in EMDs. Experiences of high workload are not easily balanced by access to more job resources.

KEYWORDS

affective well-being job demands and resources job autonomy performance feedback quantitative workload

INTRODUCTION

Protecting and promoting affective well-being is especially important for employees working in stressful working conditions. That is particularly vital in case of medical emergency system employees whose affective functioning may impact the effectiveness of emergency actions. Therefore, better understanding of how job characteristics are related to job-related affective well-being of the medical emergency system employees is needed to provide recommendations on how to strengthen and sustain well-being in these important health service professions.

In the current study, we analyzed the job-related affective wellbeing of emergency medical dispatchers (EMDs), members of the medical emergency system. The Polish national medical emergency system is established to carry out tasks ensuring the health and safety of citizens, in particular, to provide assistance to any person in a state of sudden health or life threat (Karski & Nogalski, 2007). EMDs respond to crisis calls for ambulances and are the first and most important lifeguard until the emergency medical team arrives and initiates emergency actions. Often, the health and life of the patient or injured person depends on the decisions made by an EMD. The basic tasks of EMDs include receiving emergency notifications about events/accidents, setting priorities, and immediately dispatching emergency teams at the place of an incident, providing necessary information to first aiders, collecting and archiving up-to-date information, and cooperating with units of the emergency system (Bång et al., 2002). In carrying out these tasks, EMDs must demonstrate efficiency not only in the use of communication devices and the electronic system, but also the ability to conduct effective conversations with people calling for help, in particular, controlling their emotions. Making a decision primarily at a critical moment is based not only on knowledge, experience, and intuition, but also on the use of "common sense" and own current affective state (Bång et al., 2002). Despite the stressful nature of this work and

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of negative consequences of stress at work recognized by researchers (Skuzińska et al., 2020), there are few published studies investigating well-being among EMDs (Shakespeare-Finch et al., 2015). Hence, better understanding of the job-related affective well-being of EMDs provides insights into their professional functioning.

Job-related affective well-being is a domain-specific subjective well-being (as opposed to a general, context-free subjective wellbeing) which is primarily conceptualized as the relative frequency of positive affects compared to negative affects (Taris & Schaufeli, 2014). According to Van Katwyk et al. (2000), the level of job-related affective well-being can be gauged by estimating the frequency of high- and low-pleasure affective experiences related to work. Employees experiencing more frequent high-pleasure and less frequent low-pleasure affective well-being. Estimated this way, global job-related affective well-being was found to be related negatively to job stress and positively to job satisfaction (Van Katwyk et al., 2000). This suggests that specific job characteristics (Hackman & Oldham, 1976; Morgeson & Humphrey, 2006) may be important for employees' job-related affective well-being, including affective well-being of EMDs.

The current study builds on the job characteristics model (Hackman & Oldham, 1976; Morgeson & Humphrey, 2006) and on the job demands-resources model (Demerouti et al., 2001). The job characteristics model highlights the importance of some job characteristics for work-related outcomes. The job demands-resources model proposes that job characteristics can be classified in two main categories. The first one constitutes job demands and the second - job resources. Each category of job characteristics has unique effects on employee well-being. Taking into account a broad array of job characteristics which may be important for functioning in different professions (Hackman & Oldham, 1976; Morgeson & Humphrey, 2006), in the current study, to predict job-related affective well-being of EMDs, we analyzed the role of workload and two job resources, namely, job autonomy and performance feedback. These job characteristics may be especially vital considering the specificity of EMDs' work within the medical emergency system, explained in detail above.

Workload and Job-Related Affective Well-Being in EMDs

Job demands are the aspects of work that demand energy, require sustained psychological and/or physical effort and skills, and therefore, are associated with various costs. One of the most important job demands is workload (Demerouti et al., 2001). Quantitative workload may be estimated by the volume of work that employees are required to perform in a given time period (Spector & Jex, 1998). Job demands affect employee well-being. They may trigger a health impairment process. If exposure to daily workload transforms into chronic overload over a longer period of time, this may lead to lasting exhaustion and may result in physical health problems (Bakker & Demerouti, 2018). High quantitative workload is confirmed to be a key determining factor of stress and fatigue among employees of different professions (MacDonald, 2003). It is also related to depression (Baka, 2015), to experiences of conflicts between work and family life, and to occupational burnout (Baka & Bazińska, 2016), the risk of which is particularly high in stressful working conditions (Kannenberg, 2022) such as those that EMDs face. Anticipated workload change—the workload increase—poses a threat to employees' emotional well-being and is positively related to their emotional exhaustion (Politis et al., 2022). In contrast, feeling free from time pressure at work is positively associated with employees' mental health (Hardie et al., 2019). Quantitative workload is also negatively related to nurses' affective well-being (Viotti & Converso, 2015). Therefore, high workload was expected to be related to low job-related affective well-being of EMDs:

Hypothesis H1. The higher the quantitative workload, the lower the job-related affective well-being of EMDs.

Job Autonomy, Performance Feedback and Job-Related Affective Well-Being in EMDs

Job resources are the work characteristics that help employees accomplish their goals at work, stimulate their personal growth, and help cope with job demands (Demerouti et al., 2001). Such job resources as job autonomy and performance feedback, considered core job characteristics (Wegman et al., 2018), are motivating and provide meaning to employees. Thus, they may initiate a motivational process contributing positively to work performance and employees' well-being (Morgeson & Humphrey, 2006).

Job autonomy is defined as the degree of freedom and independence provided by the job, which can be reflected in making decisions, scheduling work, and determining work methods and procedures applied (Hackman & Oldham, 1976; Morgeson & Humphrey, 2006). It stimulates the experience of responsibility for outcomes of the work. A large number of studies proved that high job autonomy predicts positive work outcomes such as job satisfaction, internal work motivation (Humphrey et al., 2007), and work engagement (Halbesleben, 2010). It also prevents negative work outcomes like stress and burnout (Humphrey et al., 2007). Moreover, more autonomy at work may protect against severe depression (Heinz et al., 2018).

Performance feedback reflects information about performance, which is provided by the organization's members (supervisors, co-workers etc., Morgeson & Humphrey, 2006). Feedback equips employees with knowledge concerning the actual results of their work. A meta-analysis of 259 studies showed that it is negatively related with turnover intentions, burnout, and stress, whereas it is positively related with job satisfaction, internal work motivation, and job involvement (Humphrey et al., 2007). Recent studies show that feedback is one of the main pillars of teachers' workplace well-being (Kun et al., 2022). Therefore, it is important for employees to know how other evaluate their work and not to function in a feedback-free environment (Morgeson & Humphrey, 2008).

Low job resources characterize a high-stress work environment that may lead to low job-related well-being (Demerouti et al., 2001). Accordingly, higher job resources predict higher well-being (Skaalvik & Skaalvik, 2018). Research in health services shows that job autonomy and performance feedback are negatively related to burnout and positively related to job satisfaction in nurse anesthetists (Brown Mahoney et al., 2020). Therefore, job resources were expected to be positively related to job-related affective well-being of EMDs:

Hypothesis H2. The higher the job autonomy (H2a) and performance feedback (H2b), the higher the job-related affective wellbeing of EMDs.

The Buffering Hypothesis

The job demands-resources theoretical framework allows not only to investigate distinct effects of different job characteristics but also to analyze the buffering effects of job resources. The job demands-resources model postulates that job resources can buffer the impact of job demands on negative strain (Bakker & Demerouti, 2007; Demerouti et al., 2001). Consequently, even though job demands and job resources have independent and opposite effects, they also work conjointly. Job resources may serve as a buffer against job demands by equipping employees with the ability to cope with the job demands. This mechanism may lead to enhanced job-related well-being. The buffer hypothesis has stimulated research (e.g., Xu et al., 2020), and recent studies found support for this hypothesis (e.g., Gameiro et al., 2020; Gu & Wang, 2021). Therefore, we expected that job resources would interact with workload in predicting EMDs job-related affective well-being, expecting a moderating effect:

Hypothesis H3. Job resources: job autonomy (H3a) and performance feedback (H3b) are moderators of the effect of quantitative workload on job-related affective well-being of EMDs, such as job resources weaken the relationship between quantitative workload and job-related affective well-being.

METHOD

Procedure

We sent the request for permission to gather data from EMDs to managers of medical emergency centers in Poland before the COVID-19 pandemic. The response rate was 55.8%. The data was gathered from EMDs using paper-and-pencil questionnaires. Participation was voluntary and participants did not receive any reward for taking part in the study. They were assured confidentiality and anonymity. The procedures were in accordance with the Helsinki Declaration as revised in 2013 (World Medical Association, 2013) and were approved by the bioethics committee at the Medical University of Lublin.

A power analysis using G*Power 3.1 (Faul et al., 2009) demonstrated that assuming a small effect size of d = .05, six predictors (including interaction effects, see the Data Analysis section), and power of .95 ($\alpha = .05$, $1-\beta = .95$), the sample size should be no smaller than 262 participants.

Participants

The study involved 335 EMDs employed in emergency dispatch centers located in different parts of Poland (12 voivodeships), matching the population of EMDs in Poland. Participants' age ranged from 26 to 66 years (M = 45.31, SD = 10.03), 49.1% of them were women. Concerning education, most of the participants were medical high school graduates (12.5%), 29.3% were higher medical school graduates, 32% had bach-

elor's degrees, and 26.3% had master's degrees. Overall work tenure of participants ranged from 2 to 45 years (M = 22.88 years, SD = 10.72). The tenure in the current job position ranged from less than 1 year to 43 years (M = 15.15 years, SD = 9.86).

Measures

WORKLOAD

To assess workload in terms of job task quantity, required effort, and pace of work, we used the Quantitative Workload Inventory (Spector & Jex, 1998; Polish version by Baka & Bazińska, 2016). It consists of five items (e.g., "How often does your job leave you with little time to get things done?") which participants answered using five response options ranging from 1 (*less than once per month or never*) to 5 (*several times per day*). Internal consistency (Cronbach's a) of the scale in the present study was .83.

JOB RESOURCES

To measure two job resources (job autonomy and performance feedback) we used the Work Design Questionnaire (Morgeson & Humphrey, 2006; Polish version by Hauk, 2014). Job autonomy was measured with four items (e.g., "The job allows me to make my own decisions about how to schedule my work") whereas three items measured performance feedback (feedback from others, e.g., "I receive a great deal of information from my manager and coworkers about my job performance"). All items are statements describing job and participants refer to them using a 5-point answer scale from 1 (*strongly disagree*) to 5 (*strongly agree*). In the current study, Cronbach's α was .66 for the job autonomy scale and .80 for the performance feedback scale.

JOB-RELATED AFFECTIVE WELL-BEING

We used the Job-related Affective Well-Being Scale (JAWS) to measure job-related affective well-being (Van Katwyk et al., 2000; Polish version by Basińska et al., 2014). The scale includes 20 items. Each item is a statement which reflects different feelings about the job (e.g., "My job made me feel enthusiastic"). Participants indicate how often they have experienced these emotions in the past 30 days using five answer options from 1 (*never*) to 5 (*extremely often*). For calculating the total cumulative score of the job-related affective well-being, the negative emotion items were reverse-scored and added to the positive emotion items (Van Katwyk et al., 2000). The higher the score, the higher (more positive) the job-related affective well-being. Cronbach's a in the present study was .92.

Data Analysis

Data analysis was conducted using IBM SPSS v. 27 software. First, we checked if the data suffered from the problem of common method variance. For this purpose, the Harman's single factor test was employed (Podsakoff et al., 2012), which is the technique recognized as the most simple and effective method for examining common method variance (Fuller et al., 2016). It is possible to apply this test by conducting an exploratory factor analysis (EFA). The results of further analyses would suf-

fer from the common method variance if one factor which explains more than 50-60% of the variance is revealed in the EFA (Fuller et al., 2016).

In the next step, descriptive statistics and correlations between the variables were examined. Finally, to test our hypotheses, multiple regression analysis was conducted. We controlled for the potential effects of EMDs' gender and age in these analyses, as these variables might be important for affective functioning at work (Wilks & Neto, 2013). Workload and two job resources, job autonomy and performance feedback, were introduced as predictors of job-related affective wellbeing in subsequent models, as well as the interaction effects between workload and each of the two job resources. To additionally examine the interaction effects, we applied the bootstrap technique using the PROCESS macro for SPSS (Hayes, 2022).

RESULTS

Common Method Variance Test

To check if the data does not suffer from the common method bias, we applied Harman's single factor test (Podsakoff et al., 2003). To do this, we loaded all items from all measures used in the study into an EFA. The unrotated solution was employed and one factor was fixed to be extracted. The results demonstrated that the single factor solution explained 26.60% of variance. Hence, it did not exceed 50% (Fuller et al., 2016). Therefore, controlling for common method variance in all further analyses was not necessary

Hypotheses Testing

Descriptive statistics and Pearson's r correlations between the variables are shown in Table 1. Quantitative workload was statistically significantly and negatively correlated with job-related affective well-being (r = -.21), and the higher the job resources, the higher the job-related affective well-being reported by EMDs (r = .21 for job autonomy and r = .30 for performance feedback).

To test our hypotheses, we built five multiple regression models (see Table 2). Model 1 included two control variables, and the results showed that neither gender ($\beta = -.11$, p = .080) nor age ($\beta = -.05$, p= .389) were statistically significant predictors of EMD's job-related affective well-being. Nevertheless, these variables were controlled for in all subsequent models. In Model 2, workload and the first of job resources-job autonomy-were entered. Both job characteristics occurred to be statistically significant predictors, with workload negatively (β = -.22, *p* < .001), and job autonomy positively (β = .22, *p* < .001) related to EMD's job-related well-being. The model explained 10% of the variance. In Model 3, interaction effect between these two variables was added. The results showed that this interaction effect was not statistically significant ($\beta = .05$, p = .386). In the next analysis, the role of the second job resource-performance feedback-was tested. In Model 4, it was introduced together with the control variables and workload. Performance feedback was a statistically significant and positive predictor of EMDs' job-related affective well-being ($\beta = .29, p < .001$) while workload was negatively related to well-being ($\beta = -.14$, p = .007). The

TABLE 1.

Descriptive Statistics and Correlations

Variable	М	SD	α	1	2	3	4
1. Workload	3.82	1.00	.83	1			
2. Job autonomy	3.37	0.85	.66	.06	1		
3. Performance feedback	3.07	1.00	.80	22***	.23***	1	
4. Job-related affective well- being	2.97	0.63	.92	21***	.21***	.30***	1

Note. N = 335; scores range of all variables is 1-5; Pearson's *r* correlations are reported; $\alpha = \text{Cronbach's } \alpha$ reliability; ***p < .001 (two tailed).

variables included in this model explained 13% of the variance. Also, when these two variables were entered into the equation, a gender effect was revealed (see Table 2, Model 4): Female gender was connected to lower job-related affective well-being ($\beta = -.13$, p = .031). In Model 5, the interaction effect between workload and performance feedback was added, and this effect showed no statistically significant relationship with EMDs' job-related affective well-being ($\beta = .01$, p = .903).

To further test the interaction effects, we used the PROCESS macro v. 3.5 (Hayes, 2022). This procedure allows to estimate interaction effects by applying a bootstrap technique. We used bootstrapping with 5,000 repetitions, which means that 5,000 samples were randomly generated from the total sample. Model 1 from the PROCESS macro was applied and gender and age were included in the analyses as covariates. The results demonstrated, that – similarly to the results of the multiple regression – neither of two interaction effects were statistically significant, namely, neither job autonomy × workload interaction (B = .03, p = .386, 95% CI [-0.04, 0.11]) nor performance feedback × workload interaction (B = .004, p = .903, 95% CI [-0.06, 0.07]). This again documents that job resources such as job autonomy and performance feedback do not moderate the relation between workload and EMDs' job-related affective well-being.

Summing up, H1 was supported: the higher the quantitative workload, the lower the job-related affective well-being of EMDs. H2 was supported as well: both job resources, job autonomy, and performance feedback were positively related to EMDs' job-related affective wellbeing. However, job resources did not moderate (buffer) the negative effect of quantitative workload on EMDs' job-related affective wellbeing. These findings disconfirm H3.

DISCUSSION

Applying the job characteristics model (Hackman & Oldham, 1976; Morgeson & Humphrey, 2006) and the job demands–resources model (Demerouti et al., 2001) we tested independent effects of workload as a job demand and job autonomy and performance feedback as job resources on EMDs' job-related affective well-being. We also investigated the buffering effect of job resources on the relationship between job demands and EMDs' job-related affective well-being.

TABLE 2.

Results of Regression Analysis Predicting Job-related Affective Well-Being

	Mod	el 1	Model 2		Model 3		Model 4		Model 5	
Variables	β	SE	β	SE	β	SE	β	SE	β	SE
Intercept	3.33***	.16	3.29***	.15	3.28***	.15	3.42***	.15	3.41***	.15
Gender (1 male, 2 female)	11	.08	09	.07	09	.08	13*	.07	13*	.07
Age	05	.00	06	.00	05	.00	07	.00	07	.00
Workload			22***	.03	22***	.03	14**	.03	15*	.04
Job autonomy			.22***	.03	.22***	.03				
Job autonomy × Workload					.05	.03				
Performance feedback							.29***	.03	.29***	.03
Performance feedback × Workload									.01	.03
Model fit										
F	3.46*		10.27***		8.36***		13.61***		10.86***	
<i>R</i> ² (adjusted)	.01		.10		.10		.13		.13	
ΔR^2			.09***		.00		.12***		.00	

Note. β = standardized coefficients (except for the intercept, unstandardized B coefficients are reported); SE = standard error; *** p < .001, ** p < .01, * p < .05 (two-tailed).

The results of this study demonstrated that the higher the quantitative workload, the lower the job-related affective well-being of EMDs. Thus, workload as demanding energy and causing time pressure may trigger a health-impairment process, as postulated by the job demands-resources model (Demerouti et al., 2001). Quantitative workload is related to more frequent experiences of low-pleasure affects and less frequent experiences of high-pleasure affects at work, which goes in hand with stress, which is especially prominent in EMDs who are routinely exposed to stressors and potentially traumatizing events (Shakespeare-Finch et al., 2015). EMDs who feel overworked and depressed or anxious at work rather than experiencing positive affect are more likely to make mistakes, which has a negative impact on their effective functioning (Bakker & Demerouti, 2018).

The opposite effect was revealed when job resources were taken into account. The higher the job autonomy and performance feedback received at work, the higher the job-related affective well-being of EMDs. This adds to existing evidence showing positive effects of working in a resource-rich environment (for a review, see Bakker & Demerouti, 2018; Bakker & de Vries, 2021).

Although we found evidence that job resources contribute to EMDs' job-related affective well-being, we found little persuasive evidence that they serve as buffers reducing the damaging effect of high job demands. This finding contradicts what would be expected on the basis of the job demands-resources model (Demerouti et al., 2001), which postulates such a buffering effect, especially in demanding work environments. Support for the buffer hypothesis was found in research using the person-centered approach (Gameiro et al., 2020). However, buffering relationships between job resources and job demands seem more complex (Xu et al., 2020). Despite the fact job resources may stimulate motivational processes and affective experiences leading to work engagement (Laguna et al., 2017), in case of EMDs, they did not reduce the negative effects of quantitative workload on the job-related affective well-being. A similar effect was detected in a study of nurses: job resources (skill discretion) did not moderate the relationship between their quantitative work demands and affective well-being (Viotti

& Converso, 2015). Therefore, the detrimental effects of workload on job-related affective well-being may be so prominent that even EMDs (and potentially other medical system employees) working in a resource-rich environment experience low job-related affective wellbeing when suffering from high job overload. This demonstrates that job demands may not be easily balanced by offering employees access to job resources. Thus, careful job design by reducing work overload is needed to reduce work stress and stimulate employees' job-related affective well-being. This confirms that EMDs' work is demanding and may be a source of considerable psychological strain (Shakespeare-Finch et al., 2015) even if it is also highly rewarding and offers purpose and meaning (as through their work, EMDs may have a positive impact on people in need, thus saving their lives).

The current study extends scarce findings concerning the wellbeing of EMDs, which found that their eudaimonic well-being is positively related to receiving social support and to self-efficacy, an important personal resource (Shakespeare-Finch et al., 2015). The results of our study show that job resources play a similar role (Bakker & Demerouti, 2018). This demonstrates that not only self-beliefs but also job characteristics are related to EMDs' job-related affective well-being. Thus, by appropriately designing work environments on the one hand (i.e., ensuring access to job resources and balancing job demands by efficient organization of work) and by job crafting (i.e., the proactive changes which employees make in performing their work tasks and their relationships at work) on the other hand, medical emergency centers may help their employees not only to boost their motivation at work, and in consequence, their job performance (Bakker & Demerouti, 2018), but also to enhance their job-related affective wellbeing. It has been acknowledged by scientists and managers that high job effectiveness, although highly desirable, should not be achieved at the cost of employees' well-being (Bakker & Demerouti, 2018).

The cross-sectional and self-report design of the current study may diminish its generalizability (Bauhoff, 2011). Self-report studies may introduce bias as respondents may hold biases in their evaluations, or respondents may wish to present in a socially desirable manner when answering (Bauhoff, 2011). However, self-report was the most accurate way to measure subjective evaluations of work demands and resources, and especially of job-related affective well-being. Moreover, the anonymity of responses is assumed to reduce the potential for self-report bias. Although the cross-sectional study design limits the inference of causal relationships, the use of well-validated measures helped maintain the accuracy of the results. As organizations are complex systems and social relationships between their members are important for employees' job-related affective well-being (Laguna et al. 2021), future studies may investigate multilevel and dynamic relationships between organizational design and/or job crafting initiatives and EMDs' well-being.

CONCLUSIONS

EMDs responding to crisis calls for ambulance provide vital emotional and medical first assistance to callers. Despite the stressful nature of their work, there are few studies investigating their job-related wellbeing (Shakespeare-Finch et al., 2015). The current study contributes to existing literature investigating the role of job demands and job resources in predicting job-related affective well-being of EMDs. The results suggest that efforts aimed at designing the work of medical emergency centers such that they offer EMDs access to feedback from managers and colleagues and autonomy at work, together with reducing their job overload, are likely to facilitate job-related affective well-being in EMDs. As experiences of high workload are not easily balanced by access to more job resources, actions aimed at decreasing qualitative job overload of EMDs may result in their more positive affect towards work, in consequence, increasing job satisfaction, retention, and job performance (Bakker & Demerouti, 2018). The findings of this study also highlight the need to provide education and to develop policy concerning the job design of medical emergency centers in order to facilitate the well-being of EMDs. Nowadays not only employees but also managers and policy makers have started to appreciate job-related affective well-being as an important determinant of human functioning at work.

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DATA AVAILABILITY

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

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