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The Job Demands-Resources Model and Job Burnout: The Mediating Role of Personal Resources

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Abstract The primary purpose of this study is to test whether the effect of workload on emotional exhaustion (health impairment process) and social support on depersonalization (motivation process) could be mediated by personal resources such as self-efficacy, self-esteem and optimism. Two multiple mediation models are tested separately, and then the point estimate and bias-corrected and accelerated 95 % confidence interval of the total and specific indirect effect are determined using the bootstrap approach with 1000 bootstrapped samples. The results show that workload positively affects emotional exhaustion, whereas social support negatively affects depersonalization, thus further corroborating the health impairment process and motivation process as assumed by the job demands-resources (JD-R) model. The total indirect effect is significant for both models, and self-esteem and optimism are the significant mediators for the health impairment process, whereas only optimism is the significant mediator for the motivation process.

Keywords Burnout · Job demands-resources model · Personal resources · Mediation

Introduction

Job burnout is a psychological syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment that occurs in response to chronic work-related strains (Maslach et al. 2001). Evidence has accumulated that emotional exhaustion and depersonalization constitute the core of job burnout, whereas reduced personal accomplishment plays a less prominent role (Schaufeli et al. 2009; Schaufeli and Taris 2005; Shirom 2003). A number of studies have used the job demands-resources (JD-R) model as a theoretical framework to examine how different job characteristics influence job burnout (Bakker and Demerouti 2007, 2013; Demerouti et al. 2001b; Schaufeli and Taris 2014). It assumes that high job demands trigger a health impairment process leading to emotional exhaustion, while low job resources trigger a motivation process leading to depersonalization. However, the JD-R model focuses exclusively on the work characteristics, whereas the role of employee's personal characteristics as important determinants of job burnout has been largely neglected. As such, there have been increasing calls for the integration of personal resources into the JD-R model (Xanthopoulou et al. 2007, 2009).

The primary purpose of this study is to test whether the effect of workload on emotional exhaustion (health impairment process) and social support on depersonalization (motivation process) could be mediated by personal resources. In previous studies, personal resources have been treated as an aggregate of a set of related variables, such as self-efficacy, self-esteem and optimism (Xanthopoulou et al. 2007, 2009), thus making it impossible to determine the independent effects and relative contributions of specific personal resource variables. Thus, this study contributes to the existing literature by investigating the total and specific mediation effect of a set of individual personal resources (self-efficacy, self-esteem and optimism) on the health impairment process and motivation process of the JD-R model.

JD-R Model and Job Burnout

The JD-R model assumes that job characteristics affecting job burnout can be categorized as either job demands or job

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resources (Bakker and Demerouti 2007, 2013; Demerouti et al. 2001b; Schaufeli and Taris 2014). Job demands are the physical, psychological, social, or organizational aspects of the job that require sustained physical or psychological effort, and thus are associated with physiological or psychological costs; whereas job resources are the physical, psychological, social, or organizational aspects of the job that reduce job demands, facilitate achievement of work goals, and stimulate personal growth, learning, and development (Demerouti et al. 2001b). Two independent psychological processes can be evoked by job demands and resources: First, high job demands initiate a health impairment process, which may exhaust employee's energetic resources and thus could lead to emotional exhaustion, the core dimension of job burnout; Second, low job resources initiate a motivation process that causes individuals to withdraw physically or psychologically from work and thus could lead to depersonalization, the other core dimension of job burnout. The robustness of the JD-R model in predicting job burnout has been supported by a substantial number of cross-sectional studies (Alarcon 2011; Crawford et al. 2010; Lee and Ashforth 1996; Llorens et al. 2006; Schaufeli and Bakker 2004), as well as several longitudinal studies (Hakanen et al. 2008; Lizano and Mor Barak 2012).

Workload as one of the most important job demands has been found to be a strong and consistent predictor of burnout, particularly the emotional exhaustion sub-dimension (Arnold B Bakker et al. 2005; Lee and Ashforth 1996; Schaufeli and Enzmann 1998), with the sample-size weighted correlation ranging from 0.40 (Alarcon 2011) to 0.52 (Lee and Ashforth 1996). It is obvious that too much or demanding work requires sustained physical or psychological effort and thus is energy depleting (Schaufeli and Bakker 2004). Individuals working under high workload are more likely to mobilize extra energy to compensate fatigue and maintain a high task performance, resulting in a drainage of his/her energy pool and a persistent sense of mental weariness, and eventually emotional exhaustion (Demerouti et al. 2001b; Hobfoll and Shirom 2001). Demerouti et al. (2001a, b) have found that workload was primarily associated with the physical fatigue component of burnout and only minimally associated with the other two components. Following the health impairment process and previous empirical evidence, we hypothesize that:

> Hypothesis 1: Workload is positively related to emotional exhaustion.

The motivation process of the JD-R model posits that lack of job resources could impact employees' motivation and contributes to disengagement and withdrawal behaviors (Demerouti et al. 2001b). Social support is probably the most extensively studied job resources (Bakker et al. 2004), and there is considerable evidence to suggest that lack of social support is negatively linked to burnout (Halbesleben 2006; Schaufeli and Taris 2014). Support from colleagues and supervisors can help individuals to get the work done and cope successfully with work-related stressors. Thus individuals with less social support from colleagues and supervisors are less capable of dealing with job demands, achieving work goals, and developing further in their job and organization (Hobfoll and Shirom 2001). Previous meta-analysis has also highlighted the importance of social support in predicting job burnout (Alarcon 2011; Halbesleben 2006; Lee and Ashforth 1996). In line with these findings, we hypothesize that:

> Hypothesis 2: Social support is negatively related to depersonalization.

Mediation of Personal Resources

There has been increasing calls for the integration of personal resources into the JD-R model. Personal resources are defined as the aspects of self that are linked to resiliency and individuals' sense of their ability to control and impact upon the environment successfully (Hobfoll et al. 2003; Hobfoll and Shirom 2001), examples of which include self-efficacy, self-esteem and optimism (Schaufeli and Taris 2014). Self-efficacy refers to individuals' perceptions of their ability to organize and execute the courses of action required to produce a given attainment (Bandura 1982). Self-efficacious employees are able to deal more effectively with problematical situations and less anxious and frustrated in the workplace because of their elevated levels of effort and persistence. Self-esteem refers to a positive evaluation of ones' worth, significance and ability as a person (Airila et al. 2014). Individuals with high self-esteem are more likely to view a challenging job as an opportunity which they can master and benefit from, and then cope effectively with work stressors to maintain their positive self-images. Optimism is the tendency to believe that one will experience good outcomes in life (Luthans et al. 2007). Optimistic employees would strive for positive outcomes, and are likely to believe in their potential regardless previous failures. These variables have been recognized as fundamental components of individuals' adaptability (Hobfoll and Shirom 2001). A substantial body of empirical studies has shown that self-efficacy, self-esteem and optimism, independently or combined into a higher order construct, are important predictors of individuals' work-related behaviors, attitudes, and well-being (Prieto et al. 2008; Salanova et al. 2010; Schaufeli and Taris 2014).

In this study, self-efficacy, self-esteem, and optimism are taken as potential mediators of the relationship between JD-R variables and burnout following the suggestion of Schaufeli and Taris (2014). In the JD-R model, the health impairment process can be considered as a resource depletion process, whereby high and chronic job demands exhaust employee's

psychological and physical resources over time. Thus, it is expected that employees working in a demanding work environment (e.g., high job workload) may feel inefficacious, emotionally exhausted, and pessimistic about their future at this organization. In contrast, the motivational process can be considered as a resource gain process, whereby initial resource gain (e.g., high social support) leads to the accumulation of more resources over time. Following this reasoning, self-efficacy, self-esteem and optimism may mediate the relationship between work-related stressors and physical strain. For instance, Xanthopoulou et al. (2007) found that personal resources partially mediated the relationship between job resources and engagement. Similarly, Van den Broeck et al. *motivation process* (2008) reported that satisfaction of basic psychological needs mediated the relations between job demands and exhaustion, between job resources and vigor, and between job resources and exhaustion. Unlike previous studies in which self-efficacy, self-esteem and optimism are combined into a higher order construct representing the general personal resource level, we tested both total and specific mediation effect of self-efficacy, self-esteem and optimism on the health impairment process and motivation process of the JD-R model, making it possible to examine the total mediation role of personal resources and the specific contributions of each personal resource variable.

Hypothesis 3: Self-efficacy, self-esteem, and optimisms partially mediate the effect of workload on emotional exhaustion;
Hypothesis 4: Self-efficacy, self-esteem, and optimisms partially mediate the effect of social support on depersonalization.

Method

Procedures and Participants

All participants were full-time Chinese employees working in one of the three large Chinese companies. These companies are located in Hunan Province and Guangdong Province, China, and specialized in software development, electronic engineering, and agricultural products. Participants were approached at the end of routine meetings, and those who showed interest in this study received a packet of questionnaires with a covering letter stating the purposes and procedures of the survey and the assurance of confidentiality and anonymity. A total of 498 participants completed and returned the questionnaires on a voluntary basis. Although an exact response rate was unknown because the total number of meeting participants could not be determined, it was estimated to be over 80 % as there were at most 600 meeting participants. The final sample consisted of 227 males (46 %) and 254 females (51 %), with an average age of 34.67 years ($SD = 7.52$) and an average organizational tenure of 5.55 years ($SD = 3.62$). They held diverse job titles, including human resource management, marketing, customer service, finance, and research and development. Most respondents ($n = 368$, 74 %) had no managerial responsibilities; 17 % ($n = 83$) had a master education or higher, 51 % ($n = 255$) had a university education, 15 % ($n = 76$) had a college education, and 11 % ($n = 55$) had a high school education or lower; the majority of participants ($n = 363$, 73 %) were married, and only 15 % ($n = 73$) were single. There was no significant difference in the demographic and study variables between the three participating companies ($p > .05$).

Measures

Workload Workload was measured with a five-item scale developed by Karasek et al. (1998) that assessed the quantitative and demanding aspects of the job (e.g., *My job requires working very hard*). The Cronbach's alpha was 0.76 in this study.

Social Support Social support was measured with a four-item scale developed by Karasek et al. (1998) (e.g., *If necessary, I can ask my colleagues for help*). The Cronbach's alpha was 0.70 in this study.

Personal Resources Self-efficacy was measured with a 10-item scale developed by Schwarzer et al. (1997). An example item was *I can always manage to solve difficult problems if I try hard enough*. The Cronbach's alpha was 0.85. Self-esteem was measured with a modified scale developed by Pierce and Gardner (2004). An example item was *I am important for the organization I am working for*. The Cronbach's alpha was 0.85. Optimism was measured with a six-item scale developed by Luthans et al. (2007). An example item was *I always look on the bright side of things regarding my job*. The Cronbach's alpha was 0.80.

Job Burnout Job burnout was measured using the Maslach Job burnout Inventory (Maslach et al. 1996) revised by Li and Shi (2003). It consisted of five items measuring emotional exhaustion (e.g., *I feel emotionally drained from my work*; the Cronbach's alpha was 0.80), and four items measuring depersonalization (e.g., *I worry that this job is hardening me emotionally*; the Cronbach's alpha was 0.79)).

Demographic Variables Age, organizational tenure, marital status (0 = single, 1 = married, 2 = others), gender (0 = female, 1 = male), education level (1 = high school or lower, 2 = college, 3 = university, 4 = master or higher), and managerial status (0 = having no managerial responsibility, 1 = having managerial responsibility) were included as control variables.

The questionnaires have been previously translated into Chinese and validated in Chinese settings (Hu and Gu 2014; Jiang et al. 2010). To check the translation quality, we invited two professional translators to compare the Chinese-version questionnaires with the original ones. As we will see in the following sections, the questionnaires used in this study had good psychometric properties. Items measuring workload, social support, self-efficacy, self-esteem, and optimism were scored on a five-point scale from 1 (*totally disagree*) to 5 (*totally agree*); while items measuring emotional exhaustion and depersonalization were scored on a seven-point rating scale from 1 (*never*) to 7 (*always*).

Strategy of Analysis

Two multiple mediation models were tested independently using the procedures and SPSS macro developed by Preacher and Hayes (2008). In model A, workload was hypothesized to be related to emotional exhaustion through self-efficacy, self-esteem and optimism; In model B, social support was hypothesized to be related to depersonalization through self-efficacy, self-esteem and optimism. Demographic variables were not controlled as covariates in both models as they were not significantly correlated with emotional exhaustion and depersonalization. An advantage of the multiple mediation approach is that it allows the assessment of the total indirect effect through a set of putative mediators and the specific indirect effect through a given mediator. In addition, the bootstrap approach with 1000 bootstrapped samples was used to determine the point estimate and bias-corrected and accelerated 95 % confidence interval of the total and specific indirect effect, and a pairwise contrast of two significant indirect effects was also conducted. A bootstrapped 95 % confidence interval that does not contain zero is indicated as statistically significant at $p < .05$.

Results

Descriptive Statistics

The means, standard deviations, correlations between variables under study, and the internal consistencies of the scales are shown in Table 1. It shows that all Cronbach's alpha coefficients are higher than 0.70, thus the scales used in the present study are considered to have an adequate internal consistency. It has been suggested that for the mediation effect to be valid, the predictors must be significantly related to the outcomes and mediators, and the mediators must also be significantly related to the outcomes. Table 1 shows that the correlations between all variables are significant ($p < .05$) and in the expected direction, thus the prerequisite for the analysis of mediation effect is satisfied, which allows us to proceed with the test of the multiple mediation models as specified in the introduction.

Multiple Mediator Analysis

Figure 1 shows the effect of (A) work overload on emotional exhaustion (health impairment process); and (B) social support on depersonalization (motivation process) through self-efficacy, self-esteem, and optimism. In Model A, the overall mediation model is significant ($R^2 = 0.15$, F (4, 493) = 22.38, $p < .001$) (Table 2), indicating that this model accounts for 15 % of the variance in predicting emotional exhaustion. The total indirect effect is significant for workload on emotional exhaustion (95 % CI = 0.0375, 0.1063; $p < .05$). When self-efficacy, self-esteem and optimism are entered into the model as mediators, the direct effect of workload on emotional exhaustion is significantly reduced, suggesting a partial mediating effect. Of the proposed mediators, the specific indirect effects are significant for self-esteem (95 % CI = 0.0120, 0.0617; $p < .05$) and optimism (95 % CI = 0.0073, 0.0514; $p < .05$), but not for self-efficacy (95 % CI = −0.0113, 0.0396; $p < .05$). Furthermore, the difference between the

Table 1 Means, standard deviation, correlations, and internal consistencies ($n = 498$)

	M	SD	1	2	3	4	5	6	7
1. Workload	3.10	0.74	0.76						
2. Social support	2.90	0.82	−0.33**	0.70					
3. Self-efficacy	3.23	0.76	−0.21**	0.26**	0.85				
4. Self-esteem	3.28	0.74	−0.20**	0.25**	0.57**	0.85			
5. Optimism	3.27	0.80	−0.17**	0.25**	0.49**	0.47**	0.80		
6. Emotional exhaustion	4.02	1.08	0.27**	−0.28**	−0.26**	−0.30**	−0.27**	0.80	
7. Depersonalization	4.00	1.08	0.24**	−0.29**	−0.22**	−0.19**	−0.23**	0.49**	0.79

Note: * $p < .05$; ** $p < .01$

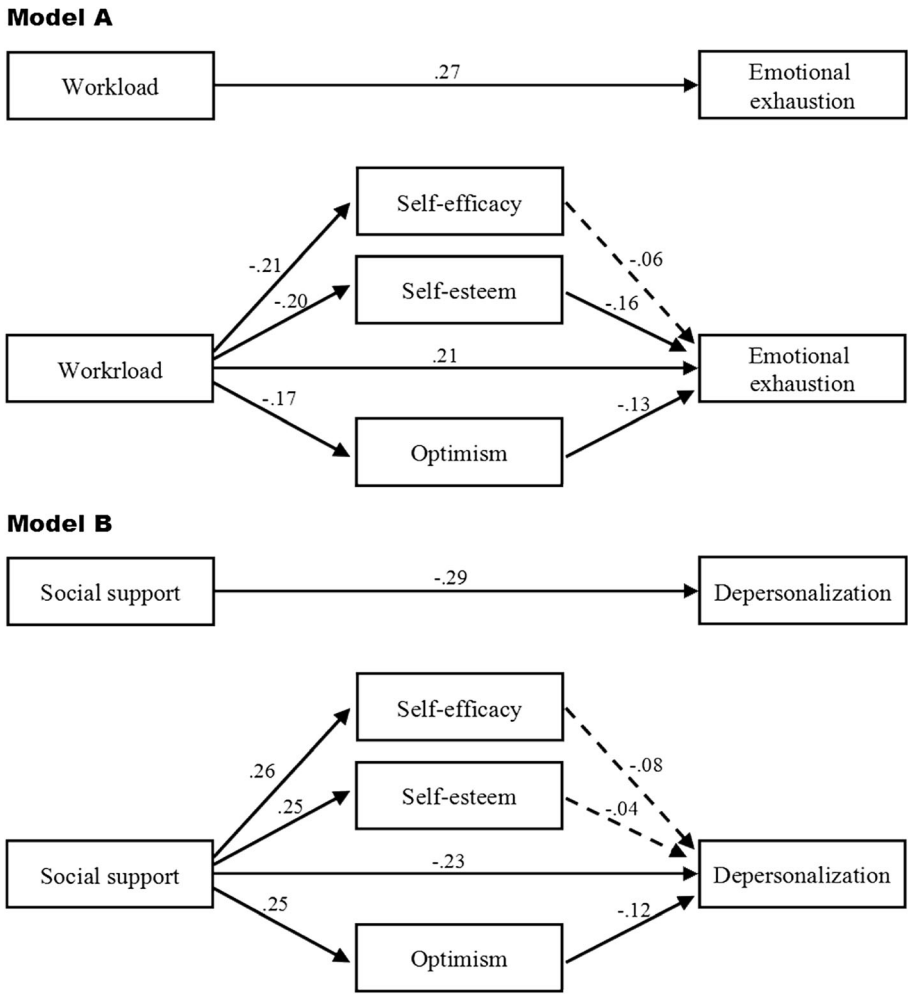

Fig. 1 Multiple mediation models showing the effect of (**a**) work overload on emotional exhaustion (health impairment process); and (**b**) social support on depersonalization (motivation process) through self-efficacy, self-esteem, and optimism. Standardized coefficients are presented. *Solid arrows* represent significant effect ($p < .05$), whereas *dashed arrows* represent non-significant effect ($p > .05$)

Table 2 The effect of work overload on emotional exhaustion and social support on depersonalization as mediated by self-efficacy, self-esteem, and optimism

	Point estimate	BC point estimate	Standard error	Lower 95 % CI	Upper 95 % CI
Model A					
Total indirect effect	0.0664	0.0663	0.0169	0.0375	0.1063
Specific indirect effect					
Self-efficacy	0.0122	0.0125	0.0128	−0.0113	0.0396
Self-esteem	0.0318	0.0318	0.0125	0.0120	0.0617
Optimism	0.0224	0.0220	0.0107	0.0073	0.0514
Contrast					
Self-esteem vs. optimism	0.0093	0.0098	0.0167	−0.0229	0.0456
Model B					
Total indirect effect	−0.0603	−0.0613	0.0158	−0.0921	−0.0284
Specific indirect effect					
Self-efficacy	−0.0212	−0.0222	0.0141	−0.0522	0.0043
Self-esteem	−0.0088	−0.0084	0.0130	−0.0358	0.0135
Optimism	−0.0303	−0.0307	0.0147	−0.0616	−0.0039

Note: A bootstrapped 95 % CI that does not contain zero is considered statistically significant at $p > .05$

indirect effects of self-esteem and optimism is not significant (95 % CI = −0.0229, 0.0456; $p > .05$).

In Model B, the overall mediation model is also significant ($R^2 = 0.12$, F (4, 493) = 16.48, $p < .001$). The total indirect effect is significant (95 % CI = −0.0921, −0.0284; $p < .05$). However, when self-efficacy, self-esteem and optimism are entered into the model as mediators, the direct effect of social support on depersonalization is significantly reduced, suggesting a partial mediating effect. Of the proposed mediators, the specific indirect effects are significant only for optimism (95 % CI = −0.0616, −0.0039; $p < .05$), but not for self-efficacy (95 % CI = −0.0522, 0.0043; $p > .05$) and self-esteem (95 % CI = −0.0358, 0.0135; $p < .05$).[1]

Discussion

This study contributes to existing knowledge about the JD-R model by further investigating the mediation role of personal resources (self-efficacy, self-esteem, and optimism) in a Chinese population. The results of multiple mediation analysis show a significant total indirect effect of workload on emotional exhaustion (health impairment process) and social support on depersonalization (motivation process) via through self-efficacy, self-esteem, and optimism. However, it is also noted that not all specific indirect effects are significant. Of the three personal resource variables, self-esteem and optimism are the significant mediators for the health impairment process, whereas only optimism is the significant mediator for the motivation process.

The mediation of personal resources may help to explain the underlying psychological mechanism of the development of job burnout. It is well known that individuals are intrinsically motivated to build, maintain, and develop resources that they value, and they will experience great stress when these resources are threatened with loss or actually lost, or investment of resources fails to produce an anticipated return (Hobfoll and Shirom 2001). A harsh working environment with high job workload and low social support may bring about a negative change in employees themselves, impair their resiliency beliefs, and lead to more pessimistic appraisals of stress situations. Thus, they tend to experience great stress and then develop the feelings of burnout. In contrast, a resourceful working environment is instrumental to activate employees' self-efficacy, self-esteem, and optimism, and they will feel more capable of controlling their working environment, more confident and proud of the work they do, and consequently experience less job burnout. Pierce and Gardner (2004) have found that organization-based self-esteem mediated the relationship between job resources (e.g., fairness, support) and motivation, attitudes and performance. Feldt et al. (2000) have showed that sense of coherence, a concept close to optimism, mediated the relationship between job security and occupational well-being. Luthans et al. (2007) have showed that a resourceful work environment activated employees' psychological capital, a construct that incorporates positive psychological resources such as self-efficacy, hope, optimism and resiliency, which in turn may bring financial profit.

However, the present study also suggests that not all personal resources can mediate the relationship between JD-R model and job burnout. For example, self-efficacy could not mediate the positive effect of workload on emotional exhaustion; and self-efficacy and self-esteem could not mediate the negative effect of social support on depersonalization. This may be attributed to that self-efficacy, self-esteem and optimism are highly correlated with the correlation coefficients ranging from 0.47 to 0.57, suggesting that some variables may be redundant and it would be sufficient to include a smaller number of variables in the model. The supplementary analysis indicate that deletion of insignificant mediators (self-efficacy in model A, and self-efficacy and self-esteem in model B) does not result in a significant decrease in the total indirect effects in both models. This implies that optimism seems to play a more important role in mediating the effect of job characteristics on job burnout. However, more research is needed to further elucidate the mediation role of personal resource in the JD-R model.

Burnout has been acknowledged as a phenomenon of global significance (Maslach et al. 2001). China has undergone a rapid economic growth and radical social change over the past decades, which bring with them great psychological pressures that may translate into burnout (Schaufeli et al. 2009). More importantly, Chinese employees may have different work attitudes and behaviors from their western counterparts. For instance, Chinese culture is characterized as low on individualism and high on collectivism, the emphasis of group belongingness may motivate employees to sacrifice personal interests for the attainment of collective interests. In return for their loyalty, individuals are provided with security and protection by the groups in front of difficult and unpleasant situations. In contrast, in individualistic cultures, individuals are supposed to take care of themselves, and they are primarily left alone to

[1] In model A, the indirect effect of workload on emotional exhaustion via self-efficacy is not significant, thus the multiple mediator analysis was reran using self-esteem and optimism as the mediators. The results shows that the total indirect effect (95 % CI = 0.0359, 0.0963; $p < .05$), as well as the specific indirect effects via self-esteem (95 % CI = 0.0178, 0.0673; $p < .05$) and optimism (95 % CI = 0.0088, 0.0516; $p < .05$), is significant, indicating that self-esteem and optimism are reliable mediators of the health impairment process. Similarly, in model B, the multiple mediator analysis using optimism as the mediator shows that the total indirect effect (which is also the specific indirect effect of optimism) is significant (95 % CI = −0.0761, −0.0206; $p < .05$), indicating that optimism is a reliable mediator of the motivational process. The results also indicate that deletion of insignificant mediators does not result in a significant decrease in the total indirect effects in both models.

cope and handle such situations. Thus, it may be possible that individuals from individualistic and collectivistic cultures would respond differently to chronic job stress. This study provides a preliminary insight into how working environment affects employees' self-concept and appraisal, which in turn affects their feelings of burnout in the collectivistic Chinese culture. It would be of interest to conduct a cross-cultural study to examine the extent to which the present study is generalizable to different cultural contexts.

Limitations

The contributions of this study should be interpreted in light of its limitations. The first limitation concerns the common method bias due to the exclusive use of self-report measures (Podsakoff et al. 2012). It has been suggested that job demands and resources can be measured in an objective way. For instance, future studies could investigate the effect of objective demands (e.g., number of hours worked per week) or resources (e.g., personal budget for training and development). Second, a cross-sectional design used in this study does not allow for causal inferences, and it is recommended to use a longitudinal design in future research to make more valid conclusions. The third limitation is that only workload and social support are considered, it would seem important to examine the applicability of the JD-R model for different sets of job characteristics in future research (Bakker et al. 2010). Fourth, research on the role of personal resources in the JD-R model is still in its infancy. Future research may consider other roles that personal resources might play in the JD-R model. For instance, it is proposed that personal resources may also function as moderators in the relationship between environmental factors and organizational outcomes, or they may even determine the way people comprehend the environment, formulate it, and react to it (Judge et al. 1997).

Practical Implications

The present study might be of value for the intervention aimed at reducing emotional exhaustion and depersonalization. It has been implied that organizations should offer their employees adequate job resources and avoid overwhelming job demands, since these are the main predictors of emotional exhaustion and depersonalization, respectively. In addition, it may be equally important to suggest that increasing individual's personal resources could be influential in mitigating job burnout. Bakker and Demerouti (2013) have devised a JD-R model-based intervention strategy, including job redesign, job crafting, training, and strengths-based intervention. These interventions can be organized on two dimensions: (1) *intervention level*: individual versus organization; and (2) *intervention target*: work environment (job demands and resources) versus individual (personal resources). Job redesign is an organizational-level intervention aimed at changing individual's job demands and job resources; Job crafting is an individual-level intervention actively initiated by employees themselves to change their jobs; Training is an organizational-level intervention to enable the employees to acquire new skills, knowledge, and problem-solving abilities; while strengths-based interventions can be seen as an individual-level intervention to increase personal resources. From this perspective, it is important to improve both job characteristics and personal attributes in the prevention and intervention of job burnout.

Conclusion

Workload positively affects emotional exhaustion, whereas social support negatively affects depersonalization, thus further corroborating the health impairment process and motivation process as assumed by the JD-R model. The total indirect effect is significant for both workload on emotional exhaustion and social support on depersonalization, and self-esteem and optimism are the significant mediators for the health impairment process, whereas only optimism is the significant mediator for the motivation process.

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