




Examining the job demands-resources model in a sample of Korean correctional officers

Soohyun Cho¹ · Hyunkyung Noh² · Eunjoo Yang³ · Jayoung Lee⁴ · Narae Lee³ · Wilmar B. Schaufeli^{5,6} · Sang Min Lee⁷ 

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Abstract

There have been numerous studies on the job stress and mental health of correctional officers. Most of them, however, focused on specific symptoms or the simple relations between various stressors and mental health. The purpose of the current study was to investigate the mechanism of the relationship between job characteristics and burnout among correctional officers by integrating basic psychological needs satisfaction into the job-demands resources model. The results, using a representative sample of 3005 correctional officers, indicate that job demands directly influenced burnout, while job resources indirectly influenced burnout via basic psychological needs. These findings suggest that the fulfillment of basic psychological needs plays a pivotal role in preventing burnout among correctional officers. The current study offers several suggestions on how to apply these findings in prison organizations.

Keywords Job demands-resources model · Basic psychological needs · Burnout · Correctional officers

Introduction

A correctional officer (CO) is an individual responsible for the supervision, safety, and security of convicted prisoners in a prison, jail, or similar form of secure custody. However, in the process of maintaining a safe environment in these facilities, COs are often exposed to violent situations that provoke constant feelings of tension and anxiety (Finney et al. 2013). Several empirical studies (e.g., Finney et al. 2013; Reeves 2014) have reported that COs' jobs lead to various physical and emotional

problems that jeopardize their mental health and diminish their job performance. For instance, the rate of suicide among COs is much higher than in other occupations, and many COs experience post-traumatic stress disorder (Brower 2013). In South Korea, COs have also demonstrated higher rates of job burnout (Jung et al. 2014), turnover (La and Lee 2011), and depression and suicide (Korean Ministry of Justice 2016) than other public safety officers such as police officers or firemen.

Given the numerous stressors inherent to COs' working circumstances, it is perhaps unsurprising that their occupational stress has generated considerable interest among researchers within the past few decades (Brough and Williams 2007; Brower 2013; Lambert et al. 2015; Lee 2010; Stichman and Gordon 2015). One review study of burnout among COs (Schaufeli and Peeters 2000) identified several job characteristics relating to occupational stress, such as high workload, a lack of variety in work tasks, and health and safety risks. Moreover, COs are exposed to stressors inherent to their jobs, such as threat of violence from inmates and inmate substance abuse (Gordon and Baker 2017). The various personal characteristics related to occupational stress among COs include gender and age, with female and younger COs experiencing greater stress than their male and older counterparts (Baruch-Feldman et al. 2002; Lambert et al. 2017). Over the past three decades, numerous studies of job stress and well-being interventions for COs have been conducted (e.g., Brower 2013; Higgins et al.

✉ Sang Min Lee
leesang@korea.ac.kr

- ¹ Department of Education, Keimyung University, Daegu, South Korea
- ² Center for Teaching and Learning, Sungkonghoe University, Seoul, South Korea
- ³ Department of Psychology, Korea University, Seoul, South Korea
- ⁴ Counseling Psychology Program, Hanyang Cyber University, Seoul, South Korea
- ⁵ Department of Psychology, Utrecht University, Utrecht, Netherlands
- ⁶ Research Unit Occupational, Organizational Psychology and Professional Learning, KULeuven, Leuven, Belgium
- ⁷ Department of Education, Korea University, Seoul, South Korea

2013). Nevertheless, these studies focused on the specific symptoms of CO stress or merely examined the relationships between stressors and mental health among COs. Few studies have examined the mechanism by which job characteristics contribute to the occupational well-being of COs. To fill these gaps, the present study investigated how job characteristics influence well-being among COs using the job demands and resources model (JD-R), with a focus on specific CO stressors identified through preliminary interviews.

The JD-R model is the dominant model used to explain occupational stress (Demerouti and Bakker 2011). The JD-R is comprehensive, explaining how job demands and resources have unique and multiplicative effects on job burnout and work engagement (Bakker and Demerouti 2014). The JD-R model has been used to predict both negative (i.e., job burnout) and positive job outcomes (i.e., job performance). According to the JD-R, job demands and resources generate two independent processes—an energy-consuming stress process and a motivation-driven process (Bakker 2011; Bakker and Demerouti 2014; Olafsen and Halvari 2017). While job demands such as a high workload contribute to the development of burnout (i.e., the stress process), job resources such as social support contribute to work engagement (motivational process). Numerous studies (Bakker et al. 2010; Demerouti and Bakker 2011; Hu et al. 2017) have supported the JD-R model's proposed dual pathway to employee well-being. The current study focuses on only the stress process, which is responsible for the development of burnout.

However, rather than explaining the underlying psychological mechanisms of how job characteristics influence well-being and stress, the JD-R model merely describes the aforementioned stress and motivational processes; in other words, it is a heuristic and descriptive model. Other psychological theories are needed to explain the underlying psychological processes of this model (Schaufeli and Taris 2014). Therefore, basic psychological needs satisfaction has been introduced as a crucial mediator in the JD-R model. The basic psychological needs are defined within self-determination theory (SDT; Deci and Ryan 2000) as universal and innate needs that motivate an individual's behavior. They are the “essential nutrients” for growth, integrity, and health. In the work and organizational context, several empirical studies have determined that three basic psychological needs—autonomy, competence, and relatedness—should be satisfied to foster an individual's well-being and job performance (Baard et al. 2004; González et al. 2016; Unanue et al. 2017; Van den Broeck et al. 2008; Van Wingerden et al. 2018).

SDT researchers have suggested that the satisfaction of basic psychological needs is essential for individuals to realize their potential and avoid maladaptation. SDT considers there to be three basic psychological needs: Autonomy, competence, and relatedness. The need for autonomy refers to the desire for ownership of one's own behavior and to act under one's own volition. The need for competence is defined as the

desire to feel effective in one's interactions with the environment and have the capability to master challenges. Finally, the need for relatedness refers to the desire to feel a sense of closeness and intimacy with others (Deci and Ryan 2002). An employee's environment predicts the extent of the satisfaction of these basic psychological needs, which in turn influence employee well-being. For instance, when these needs are satisfied, employees tend to be more engaged in and satisfied with their work; in contrast, when they are not satisfied, the employee is more likely to experience burnout (Vander Elst et al. 2012; Vansteenkiste and Ryan 2013). A recent meta-analysis of 119 samples (Van den Broeck et al. 2016) demonstrated that basic psychological needs satisfaction has negative relationships with job demands (e.g., workload, emotional demands, role stressors) and positive relationships with job resources (e.g., social support). Moreover, fulfillment of basic psychological needs was found to be positively related with job satisfaction and negatively related with burnout. By integrating basic psychological needs into the stress-process of the JD-R model, the current study investigates (1) how job characteristics influence job burnout and performance, and (2) the mediating role of basic psychological needs satisfaction in the relationship between job characteristics and organizational outcomes such as job dissatisfaction among COs.

Although Van den Broeck et al. (2008) examined the mediating role of basic psychological need satisfaction in the relationships between job characteristics, burnout, and engagement, their study has the following limitations. First, they included only one component of burnout—exhaustion—whereas the current study includes both core characteristics of burnout (i.e., exhaustion and cynicism; Maslach and Schaufeli 2017). Exhaustion is closely related to stressful job demands, whereas cynicism is more likely to be related to poor job resources. Cynicism is the most significant predictor of job dissatisfaction and turnover intention (Bang and Reio 2017). Therefore, it is important to include cynicism when examining the JD-R model. Second, following the recommendation of Schaufeli and Peeters (2000), it is important to examine the specific job characteristics of COs and the process by which these specific characteristics influence job burnout and dissatisfaction via basic psychological needs satisfaction. The CO-specific job demands include inmate conflict, workload, and physical environment (Schaufeli and Peeters 2000), whereas the job resources included rewards, organizational support, and social support (Liu et al. 2013; Schaufeli and Taris 2014). Third, Van den Broeck et al. (2008) did not examine the direct relation of lack of job resources with job burnout. The current study examines both full and partial mediation models. While a full mediation model would imply that basic psychological needs satisfaction fully explains the association between job characteristics (job demands and resources)

and job burnout, basic psychological needs satisfaction in a partial mediation model would only partially explain the relationships. Finally, Van den Broeck et al. (2008) did not include organizational outcome variables, whereas this study includes job dissatisfaction as an organizational outcome variable, a proxy for job performance (Bakker and Demerouti 2014).

Purpose of this Study

According to the JD-R, stressful job demands and poor job resources of COs lead to emotional exhaustion and cynicism, which diminish their job performance and reduce their job satisfaction. That is, the presence of job demands and the lack of job resources among COs will activate the energy-draining process; thus, they will positively relate to job burnout. More specifically, job demands will drain COs' energy by preventing the satisfaction of their basic psychological needs, which will lead to job burnout. On the other hand, job resources will fuel the satisfaction of COs' basic psychological needs, which will lead to reduced negative outcomes (De Gieter et al. 2018). The purpose of the current study is to investigate the process by which job characteristics predict COs' well-being. Specifically, it is hypothesized that high job demands and low job resources will consume COs' energy and lead to job burnout (exhaustion and cynicism), which in turn will lead to increased job dissatisfaction (see Fig. 1). Age

and gender were controlled for because previous studies have indicated that they can influence COs' well-being (Carlson et al. 2003; Lambert et al. 2017).

Hypotheses

The present study posits the following hypotheses regarding the research questions.

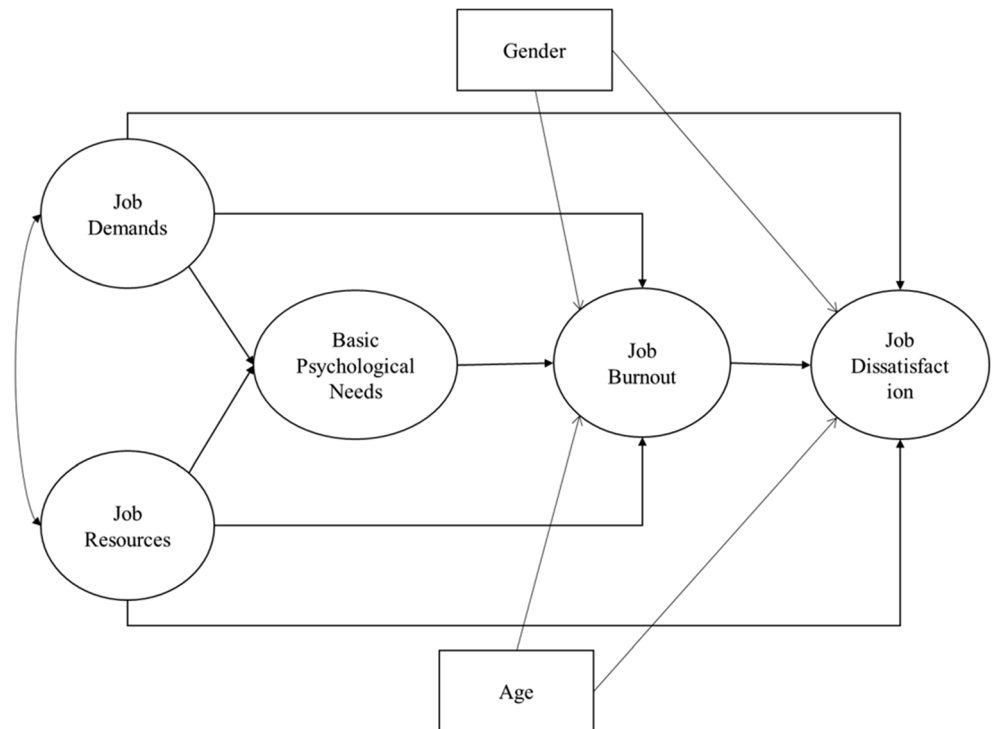
Research Question 1. How do job characteristics influence job burnout and performance?

- HP1a) Job demands will have a positive direct relationship with job burnout and job dissatisfaction.
- HP1b) Job resources will have a negative direct relationship with job burnout and job dissatisfaction.

Research Question 2. Does basic psychological needs satisfaction play a mediating role in the relationships between job characteristics and organizational outcomes, such as job dissatisfaction among COs?

- HP2a) Basic psychological needs satisfaction will play a mediating role in the relationship between job demands and job dissatisfaction via job burnout.
- HP2b) Basic psychological needs satisfaction will play a mediating role in the relationship between job resources and job dissatisfaction via job burnout.

Fig. 1 Research model



Method

Participants and Procedures

Participants were recruited by posting an announcement on the intranet of the Korea Correctional Service within the Ministry of Justice of South Korea, which could be accessed by all of the approximately 16,000 COs. If they were interested in participating, they were asked to click the survey link provided in the announcement. The survey link would lead to an online survey webpage, including the informed consent form and questionnaires. Initially, 4544 Korean COs started the online survey, but 1398 did not complete it, leaving 3146 participants. The data of 141 (4.64%) participants were deleted following data screening for age and work experience. For instance, if their age was 35 years but their work experience was 40 years, their data was considered untrustworthy. The data of 3005 COs were eventually included in the analysis (i.e., response rate = 95.5%). Participants were recruited from four different regions of South Korea, including Seoul, Daejeon, Daegu, and Gwangju. The majority (71.8%; $n = 2159$) had experience of at least one incident of a correctional accident. The demographic characteristics of the participants are presented in Table 1.

Measures

The measures were selected based on the review of the literature on Korean COs and the results of a pilot study. Given the necessity of examining the impacts of job-specific characteristics (Schaufeli and Taris 2014; Van den Broeck et al. 2008), the literature review and pilot study were used to identify more relevant factors, especially stressors and resources. The pilot study was conducted with eight COs (seven men and one woman; age range from their 20s to their 50s). The Department of Psychotherapy within the Korean Correctional Service was contacted to recruit the candidates for the pilot study. The participants were referred by their supervisors and provided with the informed consent

procedure. An interview focusing on their work-related stressors, resources, and mental health problems was conducted individually for one hour. The interview was conducted by five co-authors of this study. One was a counseling psychologist in Korea, three were doctoral students, and one was a master's student in counseling psychology. All of the interviews were recorded and transcribed.

The results of the pilot study showed that there were unique stressors and resources associated with COs and resultant mental health concerns. First, the stressors of COs were divided into job-related stressors (e.g., heavy workload and long hours, isolated work environment, negative attitudes toward COs by the general public) and inmate-related stressors (e.g., dealing with inmate complaints, fear of high-risk accidents involving inmates). Because of these stressors, they reported various psychological symptoms including depression, interpersonal vigilance and distrust, irritability, isolation and loneliness, and anger. Secondly, the participants of the pilot study identified emotion-focused copings as resources, including suppression, distraction, seeking social support. They also acknowledged the need for professional help to deal with such psychological problems, however, they expressed concerns for seeking professional help due to stigma and potential disadvantages at work. Based on the findings of the pilot study and the literature review, the questionnaire was composed.

Job Demands Job demands were assessed using the two subscales of the Korean Occupational Stress Scale (KOSS; Chang et al. 2005). This scale was developed and standardized to capture the unique and specific occupational stressors and resources of Korean employees along eight subscales. Among those, the subscales of workload (three items, e.g., "My job has become increasingly overloading") and physical environment (three items, e.g., "I am exposed to dangerous work and the possibility of high risk accidents") were used. Additionally, the inmate conflict subscale (five items, e.g., "I sometimes get angry because of the inmates") of the Job Stress Questionnaire (Ryu 2004) was included because it had been developed specifically for COs. Participants were asked to score all items on a

Table 1 Demographic characteristics ($N = 3,005$)

Age	44.19 years ($SD = 8.09$)		
Work experience	15.67 years ($SD = 9.69$)		
Gender	male = 2708 (90.1%)	female = 297 (9.9%)	
Marital status	single = 452 (15.0%)	married = 2518 (83.8%)	unanswered = 35 (1.2%)
Education level	high school = 512 (17%)	2-years of college = 419 (13.9%)	
	bachelor = 1888 (62.8%)	master = 186 (6.2%)	
Position level	9th = 446 (14.8%)	8th = 647 (21.5%)	
	7th = 1255 (41.8%)	6th = 546 (18.2%)	
	5th = 77 (2.6%)	above 4th = 34 (1.1%)	

Note. The Korean correctional officers' position level is based on the 1–9 level system, which is determined by work experience and job performance; the 1st level is the highest and the 9th is the lowest

four-point Likert scale ranging from *totally disagree* (1) to *totally agree* (4). The Cronbach's alpha coefficients for inmate conflict, workload, and physical environment were .77, .79, and .69, respectively, in the present study.

Job Resources Three job resources were assessed using the subscales of the KOSS (Chang et al. 2005). The resource subscales used in this study were adequate reward (three items, e.g., "I am provided with the opportunity to develop my capacity"), organizational support (four items, e.g., "My organization provides support for job training, facilities, and places required for tasks"), and social support (three items, e.g., "I have someone who understands my difficulties at work"). Participants were asked to score each item on a four-point Likert scale ranging from *totally disagree* (1) to *totally agree* (4). The Cronbach's alpha coefficients for adequate reward, organizational support, and social support were .76, .78, and .68, respectively, in this study.

Basic Psychological Needs Satisfaction The basic psychological needs satisfaction was assessed using the Korean version of the Basic Psychological Need Scale (KBPNS; Lee and Kim 2008). Lee and Kim developed the KBPNS by investigating the factor structure of the translated items of Basic Psychological Need Satisfaction Scale (Deci and Ryan 2000; Gagné 2003) and the items added based on their pilot study. This scale contains three subscales, each with six items: autonomy (e.g., "I generally feel free to express my ideas and opinions"), competence (e.g., "Most days I feel a sense of accomplishment from what I do"), and relatedness (e.g., "I get along with people I come into contact with"). Participants rated each item on a five-point Likert scale ranging from *totally disagree* (1) to *totally agree* (5). In the present study, the Cronbach's alphas coefficients for autonomy, competence, and relatedness were .83, .88, and .89, respectively.

Job Burnout To assess burnout, the Korean version of the Maslach Burnout Inventory-General Survey (MBI-GS; Schaufeli et al. 1996), validated by Shin (2003) was used. The MBI-GS measures an individual's burnout along three dimensions with 15 items—emotional exhaustion, cynicism, and reduced efficacy. Each item is rated on a five-point Likert scale, ranging from *totally disagree* (1) to *totally agree* (5). In the current study, only the emotional exhaustion (e.g., "I feel emotionally drained from my work") and cynicism (e.g., "I doubt the significance of my work") subscales were used to measure the main components of job burnout (Schaufeli et al. 2002). In the present study, the Cronbach's alpha coefficient for emotional exhaustion and cynicism were .93 and .87, respectively.

Job Dissatisfaction Job dissatisfaction refers to the level of dissatisfaction an individual feels with his or her job.

In the present study, job dissatisfaction was measured using four items (e.g., "Overall how much are you satisfied with your job?") from the occupational stress measure developed by Hurrell and McLaney (1988) for the National Institute for Occupational Safety and Health. Each item is rated on a four-point Likert scale from *totally agree* (1) to *totally disagree* (4); the scores were not reversed since higher ratings indicate higher dissatisfaction. The Cronbach's alpha coefficient in this study was .86.

Analysis

To examine the descriptive statistics such as the means, standard deviations, and bivariate correlations among the research variables, SPSS 21.0 was used. Next, structural equation modeling (SEM) was performed using Mplus 6 (Muthén and Muthén 2010) to assess the measurement models of the latent factors and the structural relationships between these factors. SEM can be described as a combination of confirmatory factor analysis and path analysis (Swartout 2013). Latent variables were used for all study variables except the control variables (age and gender). SEM is superior to regular multiple stepwise regression models because it incorporates the latent variables (Stieger et al. 2010). A sequential mediation model comprising job characteristics, basic psychological needs satisfaction, job burnout, and job dissatisfaction was tested. To test whether the indirect effects were significant, the Model Indirect and VIA commands of Mplus were used. Confidence intervals (95% CIs) were generated using the bootstrapping method (with 2000 re-samples). Bootstrapping is a nonparametric re-sampling procedure that generates CIs for statistical inference when normality assumptions about the sample distribution are not required (Hamilton et al. 2015). It is recommended for mediation analysis, including serial multiple mediation models.

The goodness-of-fit of the model was evaluated using the following fit indices: χ^2 , the root mean square error of approximation (RMSEA), comparative fit index (CFI), the Tucker-Lewis index (TLI), and Akaike Information Criterion (AIC). A significant model χ^2 implies a poor model fit, but this statistic is insufficient for concluding that the model should be rejected or re-specified (Jöreskog 1969). Other fit indices should be considered as well. For the RMSEA, values $\leq .05$ are regarded as a good fit, between .05 and .08 an adequate fit, and between .08 and .10 a mediocre fit (Browne and Cudeck 1993). The CFI assesses the relative model improvement compared to a baseline model, and the minimum recommendation is .90 (Hu and Bentler 1999). A TLI above .90 is also usually considered acceptable (Kline 1998). Finally, a lower value in AIC indicates a better model (Snipes and Taylor 2014).

Results

Preliminary Analysis

Table 2 shows the descriptive statistics of the research variables. The three components of job demands were positively correlated with each other, with correlation coefficients ranging from $r = .44$ ($p < .01$) to $.61$ ($p < .01$). All three components were also positively related to each component of job burnout and dissatisfaction. The three components of job resources were positively correlated with each other ($r = .54$ [$p < .01$] to $r = .69$ [$p < .01$]) and negatively related to job burnout and dissatisfaction. Basic psychological needs satisfaction was positively related to job resources and negatively related to job dissatisfaction, demands, and burnout. Of the three basic psychological needs, autonomy had the strongest relationships with all components of job demands and resources.

All research variables in the present study were measured at the same point (i.e., this is a cross-sectional study) and involved the measurement of contextual effects through a self-report survey among COs, thus indicating the possibility of such common rater effects as social desirability bias, which is a tendency

to answer questionnaires based on a desire to seem more socially acceptable than one's true perception. COs are likely to be more sensitive to social norms (i.e., social desirability) since their tasks involve training and supervising inmates, a socially deviant population. Considering these characteristics of the respondents and measurement, artifactual variances among measured variables may be produced that might confound the results. These measurement errors can be described as common method variance (CMV), that is, systematic measurement errors due to the measurement method rather than the theoretical construct designed by the measures (Podsakoff et al. 2003, 2012). In light of this concern, two tests were employed to check the extent of common method variance (CMV). First, a Harman's single-factor analysis with all observed variables imputed showed that all observed variables captured 40.64% of the variance in the present data, which is less than 50%, indicating no problematic issues of method bias. Second, additional analyses with single unmeasured latent method factor (Carlson and Kacmar 2000; Podsakoff et al. 2003) indicated that the method factor accounted for 9.06% of the total variance, which suggests that common method variance in the current data is not a potential contaminant for investigating the research model.

Table 2 Descriptive statistics and intercorrelations among study variables ($N = 3005$)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gender														
2. Age	-.09**	–												
Job demands														
3. Inmate C	-.01**	-.02**	–											
4. Workload	-.05**	-.04**	-.61**	–										
5. Physical E	-.03**	-.01**	-.44**	-.55**	–									
Job resources														
6. Appropriate R	-.03	-.02**	-.45**	-.45**	-.44**	–								
7. Organizational S	-.01	-.01**	-.50**	-.51**	-.53**	.69**	–							
8. Social S	-.02*	-.12**	-.29**	-.30**	-.34**	.54**	.55**	–						
BPN														
9. Autonomy	-.02**	-.06**	-.37**	-.38**	-.35**	.48**	.44**	-.37**	–					
10. Competence	-.02**	-.05**	-.15**	-.14**	-.15**	.30**	.21**	-.20**	-.49**	–				
11. Relatedness	-.07**	-.07**	-.17**	-.17**	-.21**	.34**	.25**	-.34**	-.45**	-.63**	–			
Job burnout														
12. Emotional E	-.06**	-.10**	-.48**	-.54**	-.41**	-.49**	-.47**	-.36**	-.60**	-.34**	-.34**	–		
13. Cynicism	-.02**	-.18**	-.33**	-.34**	-.32**	-.49**	-.42**	-.36**	-.59**	-.51**	-.46**	-.64**	–	
14. Job Dis	-.05**	.11**	.45**	.42**	.39**	-.52**	-.46**	-.37**	-.44**	-.28**	-.32**	.54**	.44**	–
Mean	1.10	44.17	3.10	2.94	2.57	2.40	2.29	2.84	3.20	3.51	3.66	2.99	2.53	2.63
Standard Deviation	.30	8.09	.47	.55	.53	.53	.49	.43	.65	.59	.61	.84	.74	.68
Skewness	2.69	-.18	-.32	-.21	.08	-.30	-.22	-.86	-.09	-.05	-.12	.19	.53	-.04
Kurtosis	5.24	-.80	.84	-.08	.28	.18	.26	3.18	.42	.85	.43	-.17	.68	-.26
Cronbach's α			.77	.79	.69	.76	.78	.68	.83	.88	.89	.93	.87	.86

Inmate C inmate conflict, *Physical E* physical environment, *Appropriate R* appropriate rewards, *Organizational S* organizational support, *Social S* social support, *BPN* basic psychological needs, *Emotional E* emotional exhaustion, *Job Dis* job dissatisfaction. * $p < .05$, ** $p < .01$

The fit indices of the measurement model of the present study, which contained 17 observed variables (2 control, 6 job characteristics, 3 basic needs, 2 burnout dimensions, and 4 job dissatisfaction items) and 5 latent variables, indicated a good model fit ($\chi^2 = 2392.132$, $df = 110$, $p < .001$; CFI = .905, TLI = .882; RMSEA = .083 [.080, .086]). Figure 2 displays the factor loadings of the measurement model. All observed variables showed significant loadings onto each latent variable (ranging from .62 to .88, $p < .001$).

Causality Concerns

A power analysis was conducted to ensure that the sample size caused no limitations on interpreting the causal paths in the research model. G power analysis assuming four predictors indicated $n = 652$ as the required sample size for the present model (Cohen 2013). That is, the present sample size of 3005 is sufficient not to limit interpretation of the current results.

Concerns regarding limitations in the cross-sectional design motivated us to perform two pre-tests (Mao et al. 2019) in order to (1) identify a consistent causality among variables suggested in the JD-R model and (2) then investigate whether the sequential paths in the current model are valid. First, a reversed model (Reversed causality A) was analyzed by switching the job demands and resources with job burnout and dissatisfaction with basic psychological needs as a mediator included. That is, all research variables in the reversed model were on the reversed order. The results supported the original model with higher explanatory power (i.e., χ^2) than the reversed one at the same level of parsimony (i.e., df): For the original model as presented in Fig. 1, $\chi^2 = 1883.220$ ($df = 106$), versus the Reversed causality A $\chi^2 = 1951.97$ ($df = 106$). Other

model fit indices indicated the reversed model is poorer than the original model (i.e., research model): the Reversed causality A, CFI = .923, TLI = .901, RMSEA = .076, AIC = 63,891.52. Additional analysis with other reversed model (Reversed causality B) that switches basic psychological needs with job burnout in the research model also supported the research model: the Reversed causality B $\chi^2 = 2019.751$ ($df = 106$), CFI = .920, TLI = .898, RMSEA = .078, AIC = 63,959.30, $\Delta\chi^2 = 136.531$, $\Delta df = 0$. Hence, the research model based on the JD-R model indicated a better explanation of causality among the research variables.

Second, model comparisons were conducted to verify the sequential paths in the present study among three models: Partial mediation in the research model (M1); full mediation toward job burnout, omitting the paths from job characteristics (i.e., job demands and resources) to job burnout (M2); and full mediation toward job dissatisfaction, omitting the path from job characteristics to job dissatisfaction (M3).

As presented in Table 3, a model comparison for full mediation supported M3, with no direct relations between job characteristics and job dissatisfaction due to its higher explanatory power than M2 with the same degree of parsimony ($df = 108$). Other model fit indices also supported M3 than M2 (CFI = .921, TLI = .902, RMSEA = .080, AIC = 63,919.50). Next, the model comparison between M1 and M3 favored M1 with its significantly higher explanatory power and decrease in model simplicity ($\Delta\chi^2 = 100.731$, $\Delta df = 2$) with better model fit indices (CFI = .925, TLI = .905, RMSEA = .075, AIC = 63,822.77). Based on the model comparisons, the research model was confirmed and the hypotheses tested.

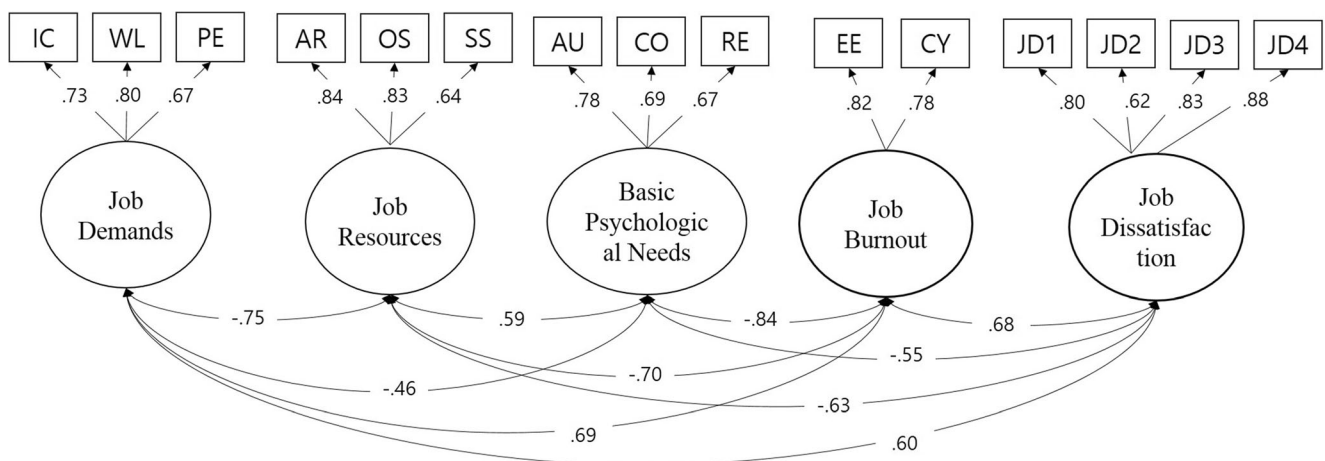


Fig. 2 Measurement model. Note. IC = inmate conflict, WL = workload, PE = physical environment, AR = appropriate rewards, OS = organizational support, SS = social support, AU = autonomy, CO = competence, RE = relatedness, EE = emotional exhaustion, CY =

cynicism, JD = job dissatisfaction; standardized values are presented. Control variables such as age and gender were omitted for the parsimony of figure

Table 3 Model comparisons for mediation

	χ^2	df	CFI	TLI	RMSEA	AIC
M1	1883.220	106	.925	.905	.075	63,822.77
M2	2178.498	108	.913	.891	.080	64,114.05
M3	1983.951	108	.921	.902	.076	63,919.50

M1 partial mediation, M2 full mediation, omitting the paths from job demands and resources to burnout, M3 full mediation, omitting the paths from job demands and resources to job dissatisfaction

Model Testing

The fit indices for the research model were good ($\chi^2 = 1883.220$, $df = 106$, $p < .001$; CFI = .925, TLI = .905; RMSEA = .075 [.072–.078]). Figure 3 shows that all direct relations except two (i.e., job demands to basic psychological needs satisfaction and job resources to job burnout) were significant. Although job demands did not show a significant relation with basic psychological needs satisfaction, job

resources influenced both basic psychological need satisfaction ($\beta = .58$, $p < .001$) and job dissatisfaction ($\beta = -.20$, $p < .001$). Basic psychological needs satisfaction also affected job burnout ($\beta = -.63$, $p < .001$), and job burnout influenced job dissatisfaction ($\beta = .47$, $p < .001$). Regarding the testing of this study’s hypotheses, job demands influenced both job burnout ($\beta = .35$, $p < .001$) and job dissatisfaction ($\beta = .14$, $p < .001$), which fully supported HP1a (*Job demands will have a positive direct relationship with burnout and job dissatisfaction*). Job resources did not show a significant relation with job burnout, which partially supported HP1b (*Job resources will have a negative direct relationship with burnout and job dissatisfaction*).

Based on these significant paths, four potential mediation paths were identified. The significance of these mediation paths was examined with bootstrapping. Table 4 shows that all four mediation paths were significant. Specifically, the path from job resources to basic psychological needs satisfaction to job burnout was significant ($\beta = -.37$, $p < .001$, 95% CI [-.42, -.31]). Furthermore, the path from basic psychological needs

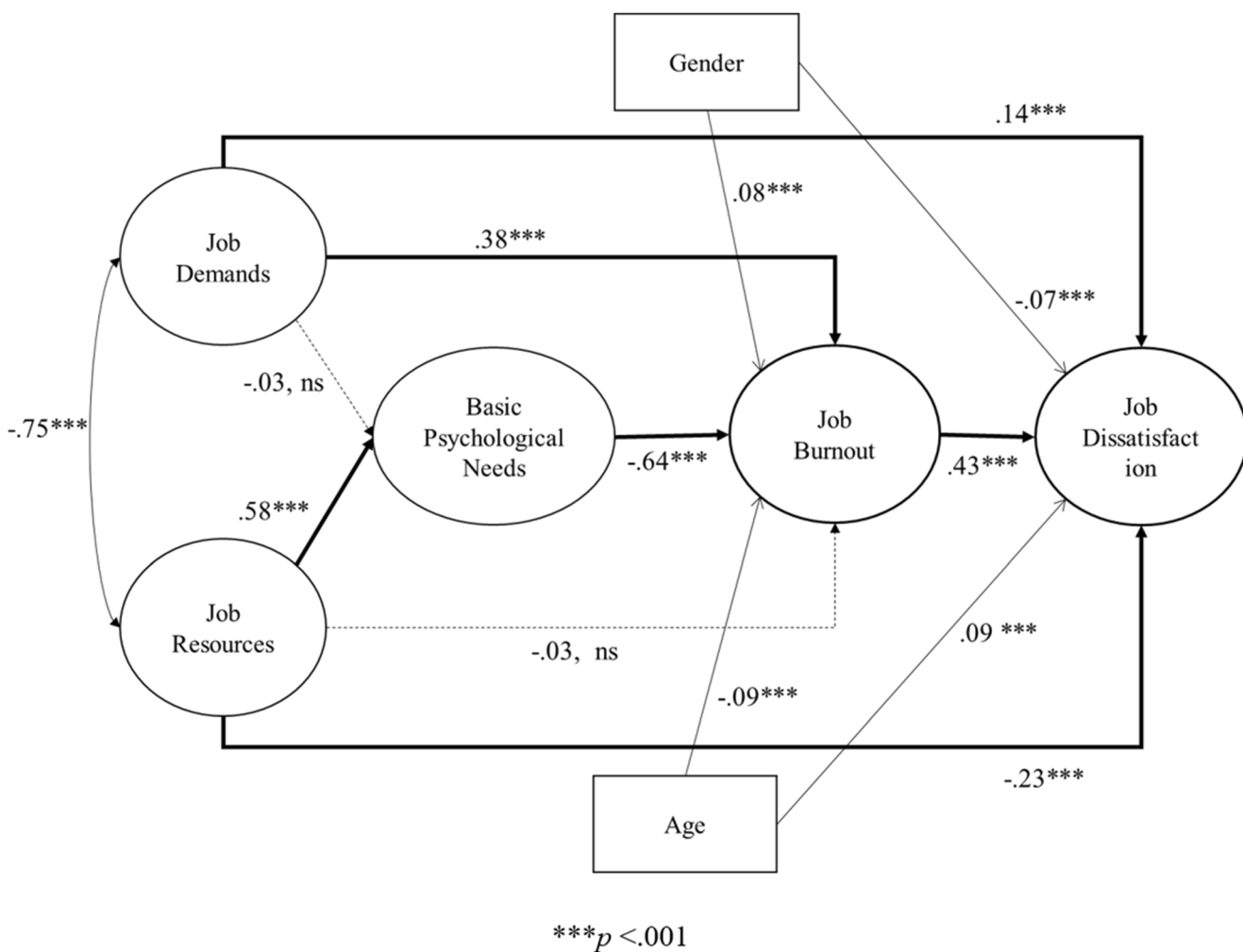


Fig. 3 Structural equation model of JD-R

Table 4 Standardized beta coefficients for indirect paths ($N = 3,005$)

	Indirect effect	Total Indirect Effect
Job demands → BPN → Job burnout	.01 [-.03, .06]*	
Job resources → BPN → Job burnout	-.37*** [-.42, -.31]*	
BPN → Job burnout → Job dissatisfaction	-.30*** [-.34, -.26]*	
Job demands → Job burnout → Job dissatisfaction	.17*** [.13, .20]*	.17*** [.13, .21]*
Job demands → BPN → Job burnout → Job dissatisfaction	.01 [-.02, .03]*	
Job resources → Job burnout → Job dissatisfaction	-.03 [-.07, .01]*	-.17*** [-.24, -.16]*
Job resources → BPN → Job burnout → Job dissatisfaction	-.17*** [-.20, -.14]*	

Note. *BPN* = Basic psychological needs. Bold numbers indicates significance

*** $p < .001$

satisfaction to job burnout to job dissatisfaction was also significant ($\beta = -.30$, $p < .001$, 95% CI: [-.32, -.26]). The third mediation path, from job demand to job burnout to job dissatisfaction, was also significant ($\beta = .17$, $p < .001$, 95% CI [.13, .20]); conversely, the path from job resources to job burnout then to job dissatisfaction was *not* significant. Finally, serial mediational paths were investigated to test the hypotheses. The path from job resources to basic psychological need satisfaction to job burnout and ultimately to job dissatisfaction was significant ($\beta = -.17$, $p < .001$, 95% CI [-.20, -.14]). This final significant path supported HP2b (*Basic needs satisfaction will play a mediating role in the relationship between job resources and dissatisfaction via job burnout*) and showed sequential mediation, in that there were two mediators (basic psychological need satisfaction and job burnout) between job resources and job dissatisfaction. The HP2a addressing *Basic psychological needs satisfaction will play a mediating role in the relationship between job demands and job dissatisfaction via job burnout* was rejected due to there being no significant direct relation from job demands to basic psychological needs satisfaction.

Discussion

The present study was designed to investigate the mechanism of the stress process of the JD-R model among COs, inspired by the study of Van den Broeck et al. (2008). They focused on the role of basic psychological needs satisfaction and employed a heterogeneous sample to ensure generalizability. The present study employed a homogeneous sample of Korean COs and examined the effects of the specific job demands and resources. These specific job demands and resources were identified through the preliminary interviews

based on a literature review that constituted the basis of the questionnaires for the present study. First, the existence of the energy-draining process of the JD-R model was confirmed among COs (Schaufeli and Bakker 2004). Second, this was the first study to uncover the psychological mechanism responsible for “translating” COs’ job characteristics into well-being. More specifically, this study confirms the mediating role of basic psychological needs satisfaction among COs. Although poor job resources were indirectly related to burnout via low basic psychological needs satisfaction, as expected, job demands showed only a direct effect on burnout, but no indirect effect.

The Stress Process among COs

Among Korean COs, model comparisons demonstrated that job burnout partially accounted for the relationship between job demands and job dissatisfaction. This is known as the stress process in the JD-R model (Schaufeli and Bakker 2004), and may also be defined as an energy-draining process (Hakanen et al. 2008). Specifically, chronic job demands (e.g., work overload, physical demands) exhaust workers’ psychological or physical resources and deplete their energy, leading to a state of burnout (Bakker and Demerouti 2007). There is also empirical support for the stress process from studies that tested the mediating paths from job demands to various job outcomes such as job satisfaction and turnover intention via burnout (Hakanen et al. 2008; Schaufeli et al. 2009).

Sequential Mediation from Job Resources to Job Dissatisfaction

A sequentially mediational path was found from job resources to job dissatisfaction via basic psychological needs

satisfaction and burnout. Furthermore, job resources did not have a direct effect on burnout. These results in part explain the mechanism by which job resources influence burnout and job dissatisfaction. More specifically, the lack of job resources (e.g., appropriate rewards and social support) hinders the satisfaction of basic psychological needs, which can lead to burnout. Burnout in turn can influence job dissatisfaction. Hence, the fulfillment of basic psychological needs among COs may be a key factor in the relations between job resources, burnout, and dissatisfaction. This means that the fulfillment of basic psychological needs is important to prevent burnout and dissatisfaction not only in other occupational settings (e.g., teachers, business workers) but also among COs. In particular, COs are reported to work with limited resources such as low rewards and lack of organizational support (Finney et al. 2013). Therefore, it is necessary to improve COs' basic psychological needs (i.e., competence and relatedness) with limited resources.

No Direct Relations of Job Demands with Basic Psychological Needs Satisfaction

Job demands showed no direct relations with basic psychological needs satisfaction, which is not consistent with the results of previous studies (Van den Broeck et al. 2008, 2016; Vansteenkiste and Ryan 2013). It is possible that each of the three basic psychological needs has a different relationship with each factor constituting job demands. Grouping them as a single latent factor could thus have masked possible relations between job demands and basic psychological needs due to not adequately reflecting the specifics of the work situation of COs. For instance, COs might experience rather little autonomy in performing their tasks due to work overload. Conflicts with inmates might not jeopardize the satisfaction of their need for relatedness, which might depend much more on relationships with their colleagues (Van den Broeck et al. 2010). The differentiated associations among the three types of basic needs with job demands might support this speculation (Fernet et al. 2013).

In addition, this may be the result of the strong associations between job demand and job resources. Although the findings of the current study agree with the basic tenets of the JD-R model, unlike previous studies the present study revealed much stronger relations between job demands and job resources. That is, past studies generally found low to medium correlations between job resources and job demands (Hu et al. 2016; Xanthopoulou et al. 2007), whereas this study showed a strong correlation ($r = -.75$). This could be attributed to the nature of the research sample, COs. For instance, improvements in the physical environment as job demands can conduce to a rise in perceived organizational support as job resources (Steiner and Wooldredge 2017). Taken together, these findings suggest that the job resources of COs are closely linked to their job

demands, which might block the negative effect of job demands on the fulfillment of basic psychological needs.

Control Variables

Gender and age showed distinct results as control variables. Compared to male COs, female COs reported less burnout and higher job dissatisfaction. Moreover, younger COs reported higher burnout levels and lower job dissatisfaction. However, the path coefficients of gender to job burnout and dissatisfaction were quite low (i.e., $-.05$ and $.08$, respectively), suggesting that the results should be interpreted with caution. Furthermore, some past research has pointed out inconsistent effects of age and gender on job outcomes and burnout. Some studies reported that female COs had less job dissatisfaction, whereas others reported that female COs tended to have higher job dissatisfaction; the same inconsistency has been reported for age as well (Butler et al. 2019). As for burnout, a previous study indicated that female COs experienced less burnout in the sense that they showed higher job-related accomplishments (Carlson et al. 2003), but a meta-analysis of the relation between age and burnout reported only a small negative correlation, and only for exhaustion (Baruch-Feldman et al. 2002). These imply that gender and age are not major contributors to burnout.

Theoretical Implications

The present findings replicated among COs the stress process postulated by the JD-R model—namely, that job demands influence job dissatisfaction via burnout (Schaufeli and Bakker 2004). Additionally, no direct relation of job demands with basic psychological needs satisfaction was observed, which shows that job demands have only a direct relation with burnout without passing through basic psychological needs. This highlights job demands as a trigger for the energy-consuming process among COs.

Second, the present study contributed to specifying the mechanism by which job characteristics influence job burnout and dissatisfaction. The finding was replicated that when the basic psychological needs for autonomy, competence, and relatedness are not satisfied, job characteristics could lead to burnout (Schaufeli and Taris 2014). Furthermore, satisfying basic psychological needs among COs influenced job dissatisfaction as well as burnout, thus emphasizing the critical role of these needs for job outcomes. The key role of basic needs satisfaction for COs' well-being is in line with the SDT literature (Deci et al. 2017; Van den Broeck et al. 2008).

Third, the current study added empirical evidence with a comprehensive model to verify the JD-R model in a specific sample of COs. The present study employed exhaustion and cynicism as core dimensions of burnout for the comprehensive model reflected in burnout research (Bang and Reio

2017) and identified the stress process model of JD-R among COs. Contrariwise, Van den Broeck et al. (2008) only identified the bridging role of basic psychological needs satisfaction in the relations between job characteristics and exhaustion without cynicism. On the other hand, COs experience higher levels of work stress due to their unique working circumstances, for instance the closedness of the workplace and safety issues relating to inmate supervision, than other job settings (U.S. Department of Justice's Programs Diagnostic Center, 2014). Besides COs, the JD-R model has been studied among a variety of occupational groups (e.g., health care workers, teachers, business workers) (Dicke et al. 2018; Fragoso et al. 2016; Hu and Schaufeli 2011). The JD-R model is heuristic and contextual, which highlights its extensive applicability to diverse samples with distinctive job characteristics such as COs (Schaufeli and Peeters 2000).

Additionally, Van den Broeck et al. (2008) ignored the relations of job resources with burnout. They sought only to investigate the distinctive relations of job characteristics and well-being without including interactive relations between job resources and burnout. On the other hand, the present study specified the indirect relations of job resources with job dissatisfactions among COs via basic psychological needs and burnout through a model comparison. This also could be explained by characteristics of COs.

In this vein, the current study extensively applied the JD-R model to COs by including two core dimensions of burnout (exhaustion and cynicism) and heuristically reflecting COs' job characteristics of inmate conflict and physical environment, whereas Van den Broeck et al. (2008) only investigated the relations of basic psychological needs with general job characteristics and workers' wellbeing in a heterogeneous sample.

Practical Implications

These findings suggest that, in order to decrease burnout levels in COs, prison organizations should aim to (1) decrease job demands, as these are directly associated with burnout; (2) increase job resources, as these are indirectly associated with burnout; (3) and foster COs' basic psychological needs satisfaction. However, it is likely not feasible to decrease job demands due to the physical environment, inmate conflict, and workload because a systematic and organizational approach taking a long-term perspective seems to be needed to reduce COs' perceived job demands. Rather, it seems more realistic to focus on improving job resources such as organizational support (e.g., use of performance feedback and fairness; Paoline III et al. 2018). This might be done, for instance, by respecting COs and ensuring procedural justice. When an organization listens to its employees and treats them with dignity and respect during the administrative process, employees are more apt to perceive their contributions as valued by the

organization; this in turn leads to a greater perception of organizational support (Kurtessis et al. 2017). The third recommendation might be achieved by fostering an engaging leadership style. Recently, Schaufeli (2015) introduced the concept of engaging leadership, which is rooted in SDT. By inspiring, connecting, and strengthening their followers, engaging leaders can satisfy employees' basic needs for autonomy, relatedness, and competence, respectively. Previous research has demonstrated that a lack of satisfaction of such needs is related to burnout (Van den Broeck et al. 2008), and the current study confirmed that this is also the case for COs. Notably, considering the identified serial mediational process via basic psychological needs and job burnout from job resources to dissatisfaction, an all-embracing intervention strategy will be effective. Job resources are related to job burnout only when fulfilling the basic needs of autonomy, competence, and relatedness. That is, when HR or counselors attempt to alleviate COs' burnout, they should take care of COs' basic needs satisfaction as well as job resources. For instance, the organization of the Ministry of Justice could enhance COs' well-being by developing a peer supporter program, which ultimately fosters social support as job resources and further relatedness as basic needs. Certain regions such as Rhode Island, California, and Oregon in the US have already provided peer supporter programs among COs suffering from psychological ill-being due to corrective accidents and PTSD (Finn 2000; Jaegers et al. 2019).

Limitations and Future Research Directions

Although the current study supports the JD-R model among COs, it nevertheless also has some limitations. First, in order to specify how job characteristics are related with job outcomes in the JD-R model, the present study investigated only the stress process. The JD-R model postulates two independent processes, the process by which job demands lead to burnout (energy-draining process) and the process by which job resources lead to job engagement (motivation-driven process) (Schaufeli and Taris 2014). Therefore, further research attempting to fit basic psychological need satisfaction into the JD-R model should embrace work engagement as well.

Second, the present study used a cross-sectional design that bears the causal inferences suggested in the JD-R model (Schaufeli and Taris 2014). This could raise measurement issues. As mentioned earlier, a cross-sectional design to measure all research variables at the same time can produce common method biases as systematic measurement errors, thereby generating artifactual covariance (Podsakoff et al. 2012). The measurement issues in the current study still remain unclear, although preliminary analyses with Harman's single factor test and then single unmeasured latent method factor were conducted which eased the worry of method biases. Additionally, the present study tested mediational paths within a cross-

sectional study, which potentially ignores the effects of other relevant variables on the research variables as well as each other at earlier times and fails to specify the length of time that effects last in terms of the magnitude of the effects in the relations among research variables (Gollob and Reichardt 1987). This measurement issue may also bias the results. Taken together, in order to uncover and to clarify these potential measurement issues, a longitudinal research design is needed that allows auto-regressive effects and unfolding changes among the research variables over time (Cole and Maxwell 2003; Maxwell and Cole 2007).

Moreover, the present study included the job level but did not consider it a control variable due to its uneven distribution. The heuristic features of the JD-R model often suggest the possibilities of various employment characteristics, such as tenure, job position, or the organizational level at which employees are working, that could affect the relations among variables (Schaufeli and Taris 2014). Thus, a variety of employment factors should be considered in future studies.

Finally, the unexpected indirect relation of job demands with basic psychological needs satisfaction calls for further research. One reason for this might be that demands can be categorized into challenges (e.g., workload, responsibility, and time pressure) and hindrances (e.g., role conflict, role ambiguity), which could have differential effects on outcome variables (Crawford et al. 2010). Challenges might promote personal growth and development and therefore induce work engagement, presumably through psychological needs satisfaction. In contrast, hindrances might thwart personal growth and development and therefore frustrate psychological needs satisfaction, leading to burnout. Recently, Vansteenkiste and Ryan (2013) have argued that needs thwarting differs fundamentally from the lack of the satisfaction of those needs and have insisted on considering it as a separate concept related to “ill-being.” Therefore, in addition to distinguishing between challenge and hindrance demands, future research should include both the satisfaction and frustration of basic psychological needs as independent variables.

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