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Promotion or prevention: regulatory foci as moderators in the job demands–resources model

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Abstract

Background Building on the job demands–resources (JD–R) model and regulatory focus theory, this study examined how regulatory foci shaped the effects of different job demands and resources on both negative and positive workplace outcomes among medical staff.

Methods Two independent studies ($N_{\text{Study 1}} = 267$; $N_{\text{Study 2}} = 350$) were designed for cross-validation. Participants completed a battery of measures evaluating job demands (workload, emotional demands, interpersonal stress), job resources (psychological safety, perceived organizational support, servant leadership), and well-being (job burnout, affective commitment, job satisfaction).

Results Multiple linear regression analyses showed employees' well-being was affected by job demands and resources through energetic and motivational processes, respectively. The deleterious effect of emotional demands on job burnout was pronounced in individuals with weak prevention focus ($B = 0.392$, standard error $[SE] = 0.069$, $p < .001$). Psychological safety (Study 1) and servant leadership (Study 2) had stronger positive associations with motivational outcomes among individuals with weak promotion focus than those with strong promotion focus ($B = 0.394$, $SE = 0.069$, $p < .001$; $B = 0.679$, $SE = 0.121$, $p < .001$; and $B = 0.476$, $SE = 0.072$, $p < .001$, respectively).

Conclusion We used two samples to examine and cross-validate the joint effects of job characteristics and personal traits on workplace well-being among Chinese medical staff. Although heterogenous, the results showed regulatory foci were especially important in determining the effects of job demands and resources on well-being when there was (autonomous) self-regulation in the workplace.

Keywords Job demands–resources model, Regulatory focus theory, Well-being, Promotion focus, Prevention focus, Workplace self-regulation

Background

Globally, concerns have been raised about impaired well-being among medical staff and the associated unfavorable individual and organizational outcomes [1, 2]. Excessive workloads, stress, and other job-relevant characteristics impair the well-being of medical staff, reduce the service quality provided [3, 4], and contribute to a shortage of human resources for healthcare institutions worldwide [5]. Therefore, it is critical to examine mechanisms for improving the well-being of medical staff given the inherent high workload and stress in medical settings.

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The job demand–resources (JD–R) model is a well-established framework used in occupational health psychology to explore relationships between job characteristics and employees' well-being [6, 7]. This study included personal motivational factors to clarify how individual sensitivity to job demands and resources influenced the effect of different job demands/resources on well-being among medical staff [8]. In this research area, personal factors are promotion and prevention regulatory foci. Regulatory focus refers to a motivational force that drives individual differences in self-regulatory behaviors, including workplace behaviors, especially when staff encounter fatigue, curiosity, and challenges [9]. A previous systematic review reported there were insufficient studies that integrated the JD–R model with personal traits (e.g., regulatory focus) [10]. To bridge this gap, we investigated the joint effects of regulatory foci and job demands and resources on well-being among medical staff. We aimed to provide cross-cultural and cross-professional evidence for the integration of the JD–R model and regulatory focus theory (RFT) by investigating two samples of Chinese medical staff [11, 12]. We also explored job resources at the organizational level to gain a comprehensive understanding of the effect of job resources from various sources (i.e., personal and organizational) [11, 13].

Literature review and theoretical mechanism

Job demands–resources model

The idea that employees' well-being can be influenced by the characteristics of their work environment (i.e., job demands and job resources) is central to the JD–R model [14]. This model suggests there are distinct processes that contribute to the development of job strain and motivation that are triggered by job demands and resources, respectively [15]. The first is an energetic process that postulates there is a relationship between job demands and health erosion. Common job demands in medical settings include excessive workloads, emotional labor (between medical staff and patients), and professional development and associated competition [16–18]. The JD–R model indicates that job demands that require continuous physical, emotional, or cognitive efforts lead to job burnout because of the gradual exhaustion of an individual's energy resources [19]. Therefore, we formed the following hypothesis.

Hypothesis 1: Job demands are positively related to the outcome of energy consumption (i.e., job burnout).

The second is a motivational process, whereby job resources are linked to motivational outcomes. Medical staff typically work as collaborators, meaning job

resources at the organizational level are essential. Psychological safety is an organizational-level job resource that can help workers express their thoughts freely, trust and appreciate their co-workers, and reduce the fear of failure; therefore, they develop a strong emotional attachment to their organization [20, 21]. Another resource is perceived organizational support (POS), which is important in helping medical staff combat negative scenarios and benefit from positive aspects [22–24]. Staff perception of servant leadership is a further job resource that is critical for maintaining and advancing the long-term benefits of service-orientated organizations (e.g., medical services), especially when there are challenges [25–27]. Therefore, we proposed the following hypothesis.

Hypothesis 2: Job resources are positively related to the outcomes of the motivational process (i.e., affective commitment and job satisfaction).

Regulatory focus

To investigate individual differences in different job demands and job resources in terms of the benefits for staff well-being, we introduced promotion and prevention regulatory foci as potential moderators. Regulatory foci play a major role in determining employees' approaches to achieving workplace goals [28]. Swift behavioral and cognitive regulatory responses are needed to manage expectations and alter internal states [29]. RFT proposes that human behavior is motivated by two independent self-regulation systems: promotion focus and prevention focus [30]. Promotion-focused individuals are conscious of the absence/presence of favorable outcomes (i.e., gains vs. non-gains). They are also motivated to maximize the possibility that their current situation, objectives, and ambitions will match their aspirations and ideals (i.e., an "ideal" state). Conversely, prevention-focused individuals are responsive to the absence/presence of negative outcomes (i.e., losses vs. non-losses), and are driven to reduce the likelihood that their existing circumstances will not align with their obligations and duties (i.e., an "ought" state) [31, 32].

Job demands, especially in medical environments where duties and responsibilities are inherently prioritized [33], may be understood as (additional) obligations or limits in the work environment that require prolonged physical or mental efforts [14]. Medical staff may feel obliged to work hard and take responsibility for addressing emotional demands and interpersonal relationships in their work environments. Those with a strong sense of responsibility for their own safety and security are particularly vulnerable to such scenarios. Prevention focus is primarily associated with a sense of obligation and responsibility, in-role performance, valuing safety, and

following rules. In other words, prevention-focused staff only invest effort in attaining goals if these efforts are considered mandatory or easily achieved. Accordingly, prevention-focused medical staff may engage in tasks to avoid negative outcomes and comply with established guidelines [34]. Therefore, we hypothesized that:

Hypothesis 3: Prevention focus may moderate the relationship between job demands and energy outcomes (i.e., job burnout); this effect will be less apparent among individuals with a strong prevention focus than those with a weak prevention focus.

Job resources represent opportunities to support employees in realizing their goals for growing, developing, and accessing additional advantageous results [15]. Promotion focus is associated with aspirations, ideals, the need for growth, and extra-role behaviors [30, 35]. Individuals with a strong promotion focus pay attention to information about job resources in their work environment because these factors are relevant to their success [30]. They also tend to be proactive in seeking desired outcomes, confident in making progress, motivated to provide multiple resolutions, and adherent to tasks that include promotional goals [36]. These individuals also feel fulfilled when they attain their goals and show a desire to persevere [37]. Therefore, we hypothesized that:

Hypothesis 4: Promotion focus may moderate the relationship between job resources and motivational outcomes (i.e., affective commitment and job satisfaction); this effect will be more pronounced among individuals with a strong promotion focus than those with a weak promotion focus.

The present study

This investigation extended previous research by integrating the JD–R model and RFT to analyze associations between job demands, job resources, and workplace well-being (job burnout, affective commitment, and job satisfaction) among medical staff. We also tested the joint effect(s) of regulatory foci (promotion vs. prevention focus). The hypothesized model is summarized in Fig. 1. Two studies were conducted to cross-validate the proposed hypotheses.

Study 1

Methods

Participants

Data for Study 1 were collected in September 2021 from all medical staff (N=334) at a second-grade comprehensive hospital in Jiangsu, China. This research project was approved by [ethical review committee name withheld for

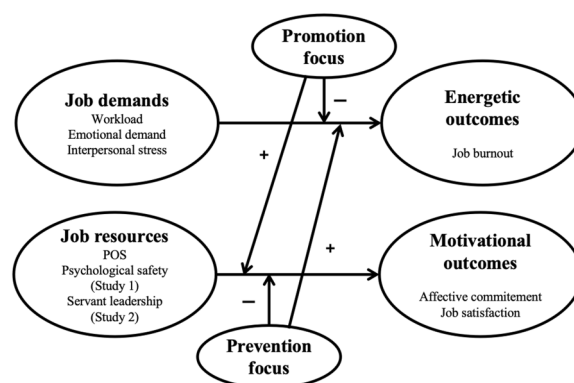


Fig. 1 Hypothesized model. POS perceived organizational support

blind review] (reference number: SJUPN-202104). Before the study started, hospital administrative staff were contacted to confirm informed consent was obtained from all medical staff and coordinate the sampling procedure. All participants were informed of the general purpose, data privacy, and voluntary nature of participation in this study. An online survey was then distributed to all hospital staff, along with an explanation that the survey results would not be associated with their performance assessment in any manner for quality control. We received 267 valid responses (response rate=79.94%), of which 68.2% were from females. Among the sample (see Supplemental Table S1), 74.2% were doctors and nurses, 76.8% had received undergraduate-level education/training, 47.2% were aged 30–39 years, 67.4% worked two or more shifts, and 61.8% were permanent employees.

Materials

Job demands. Based on previous research and the occupational characteristics of the target population, three factors were used to approximate job demands: workload, emotional demands, and interpersonal stress. As a preliminary exploration, Study 1 assessed workload using two face-valid items (e.g., “How much control do you have over your workload?”), emotional demand using two face-valid items (e.g., “Work has a great influence on my mood”), and interpersonal stress using two face-valid items (e.g., “The way colleagues deal with others make me feel the pressure”). Responses were on a 7-point Likert scale (1 = *completely disagree* to 7 = *completely agree*).

Job resources. Job resources were reflected by psychological safety and POS. Psychological safety was measured using three items adapted from Detert and Burriss [38, 39] (e.g., “If you make a mistake on this team, it is often held against you”). POS was measured using the scale developed by Eisenberger [40, 41] (e.g., “My organization really cares about my well-being”). Responses

were on a 7-point Likert scale (1 = *completely disagree* to 7 = *completely agree*).

Regulatory foci. Regulatory foci were measured using the Regulation Focus Questionnaire [42], which is evaluated using a 5-point Likert scale (1 = *completely disagree* to 5 = *completely agree*). Example items are: “In general, I am focused on achieving positive outcomes in my life” (promotion focus) and “In general, I am focused on preventing negative events in my life” (prevention focus).

Workplace well-being. Workplace well-being was evaluated by job burnout, affective commitment, and job satisfaction. Job burnout was measured using the Maslach Burnout Inventory-Human Service Survey [43, 44], with responses on a 7-point Likert scale (1 = *never* to 7 = *every day*). Example items are: “I feel burned out from my work” (emotional exhaustion); “In my work, I deal with emotional problems very calmly” (personal accomplishment); and “I worry that this job is hardening me emotionally” (depersonalization). Affective commitment was assessed with Meyer and Allen’s instrument [45] (e.g., “I really feel as if this organization’s problems are my own”), with responses on a 7-point scale (1 = *completely disagree* to 7 = *completely agree*). Job satisfaction was assessed with the short form of Minnesota Satisfaction Questionnaire [46] (e.g., “I have the chance to do something that make use of my ability”). Responses were on a 5-point Likert scale (1 = *very dissatisfied* to 5 = *very satisfied*).

Control variables. Demographic information (age, gender, educational level) and occupation-related information (shift, employment form, occupation) were collected at the end of the survey for both studies.

Analytical scheme

Before hypothesis testing, the psychometric properties of the questionnaires were examined. Construct and discriminant validity were assessed using confirmatory factor analyses, and a comparison of the average variance extracted (AVE) [47]. Consistency reliability was assessed using Cronbach’s α coefficient. Multiple linear regression analyses were then performed to test the hypotheses. In our analyses of moderation effects, continuous variables were mean-centered before creating moderation terms. Simple slope analyses were conducted as applicable, and the Johnson–Neyman (J–N) technique [48–51] was adopted to visualize the significant main effect interval(s).

Study 1 results

The psychometric examination showed the data fit the theoretical scale structures well (Supplementary Table S3). The descriptive statistics, Cronbach’s α values, AVEs, and bivariate correlations of key variables are summarized in Table 1. All scales exhibited acceptable

reliability (Cronbach’s $\alpha \geq 0.617$), and showed content and discriminant validity [52]. A Harman’s single-factor test revealed there was no substantial common method bias among the self-report measures (34.92%). Similarly, a one-factor model showed poor fit indices (see Supplementary Table S3).

Job demands had less adverse effects on job burnout in more prevention-focused individuals

Among the control variables, only employment type (0 = contract employee and 1 = permanent employee) was significantly associated with job burnout (Model 1, Table 2; $R^2 = 2.70\%$), with contract employees displaying more job burnout than permanent employees. All three job demands types (i.e., workload, emotional demands, and interpersonal stress) were positively associated with job burnout. Emotional demands were the most prominent contributor. Prevention focus was positively (and strongly) associated with job burnout, but promotion focus was negatively associated with burnout (Model 2, Table 2; $R^2 = 71.20\%$). However, only the interaction between emotional demands and prevention focus was statistically significant (Model 3, Table 2; $R^2 = 1.80\%$).

A J–N plot revealed the positive impact of emotional demands on job burnout was only significant for participants with a (centered) prevention focus score below 1.24 (Fig. 2). A simple slope analysis revealed that for individuals with a weak prevention focus ($M - 1$ standard deviation [SD]), every unit increase in emotional demands resulted in a 0.392 unit increase in job burnout ($B = 0.392$, standard error [SE] = 0.069, $p < 0.001$). For individuals with a strong prevention focus ($M + 1$ SD), every unit increase in emotional demands resulted in an increase of 0.196 units in job burnout ($B = 0.196$, $SE = 0.072$, $p < 0.001$; Supplementary Figure S1).

Job resources had more beneficial effects on affective commitment in individuals with weak promotion focus

Psychological safety was positively associated with affective commitment and job satisfaction. POS was positively related to job satisfaction, but not affective commitment. Promotion focus was positively associated with both affective commitment and job satisfaction, but the associations for prevention focus were negative (Model 2, Table 3; $R^2 = 46.40\%$ for affective commitment and $R^2 = 62.60\%$ for job satisfaction). Only the interaction between psychological safety and promotion focus on affective commitment was significant (Model 3, Table 3; $R^2 = 3.80\%$ for affective commitment and $R^2 = 0.70\%$ for job satisfaction). A J–N plot showed psychological safety only had a significant positive effect on affective commitment among employees with a (centered) promotion focus score < 0.45

Table 1 Means, standard deviations, bivariate correlations, and reliability and validity indices for the key variables

Variables	M	SD	Cronbach's α	1	2	3	4	5	6	7	8	9	10
Study 1													
1 Psychological safety	5.220	1.159	0.696	(0.466)									
2 POS	5.376	1.111	0.902	0.085	(0.567)								
3 Workload ^a	2.412	0.918	0.635	-0.547	-0.176	-							
4 Emotional demand ^a	2.689	1.075	0.617	-0.464	-0.237	0.592	-						
5 Interpersonal stress ^a	2.369	1.079	0.679	-0.294	-0.186	0.336	0.637	-					
6 Job burnout	2.904	0.843	0.920	-0.455	-0.209	0.576	0.765	0.699	(0.444)				
7 Affective commitment	5.747	1.166	0.920	0.445	0.103	-0.517	-0.524	-0.410	-0.628	(0.793)			
8 Job satisfaction	3.901	0.670	0.970	0.624	0.176	-0.826	-0.578	-0.421	-0.679	0.612	(0.631)		
9 Promotion focus	3.932	0.611	0.916	0.565	0.101	-0.631	-0.422	-0.339	-0.518	0.443	0.739	(0.554)	
10 Prevention focus	3.430	0.802	0.862	0.058	-0.043	-0.115	0.114	0.114	0.172	-0.208	0.098	0.367	(0.542)
Square root of AVE	-	-	-	0.682	0.752	-	-	-	0.666	0.890	0.794	0.744	0.735
Study 2													
1 Servant leadership	3.826	0.867	0.843	(0.443)									
2 POS	4.741	0.828	0.838	-0.018	(0.436)								
3 Workload	3.237	0.757	0.704	-0.139	0.016	(0.486)							
4 Emotional demand	2.449	0.691	0.775	-0.134	0.021	0.348	(0.387)						
5 Interpersonal stress	1.164	0.384	0.860	-0.369	-0.122	0.290	0.244	(0.638)					
6 Job burnout	3.001	0.765	0.906	-0.395	0.022	0.262	0.508	0.308	(0.650)				
7 Affective commitment	5.250	1.216	0.909	0.423	-0.002	-0.152	-0.257	-0.162	-0.584	(0.769)			
8 Job satisfaction	3.980	0.787	0.870	0.494	-0.011	-0.230	-0.380	-0.299	-0.673	0.711	(0.708)		
9 Promotion focus	3.735	0.544	0.844	0.430	-0.029	-0.034	-0.147	-0.155	-0.463	0.468	0.502	(0.387)	
10 Prevention focus	3.152	0.674	0.799	-0.074	0.007	0.180	0.264	0.131	0.332	-0.110	-0.209	0.146	(0.340)
Square root of AVE	-	-	-	0.666	0.660	0.697	0.622	0.799	0.806	0.877	0.841	0.622	0.583

*N*_{Study 1} = 267; and *N*_{Study 2} = 350. Values on the diagonal represent the AVE. Correlations with absolute values ≥ 0.131 were significant at *p* < 0.05. ^a Cronbach's α for workload, emotional demand, and interpersonal stress were the bivariate correlation between corresponding measurement items

AVE average variance extracted; M mean; SD standard deviation; POS perceived organizational support

(Fig. 3). Contrary to our expectations, among individuals with weak promotion focus, every unit increase in psychological safety was associated with a 0.394 unit increase in affective commitment (*B* = 0.394, *SE* = 0.069, *p* < 0.001; Supplementary Figure S2). This association was not significant among those with a strong promotion focus (*B* = 0.084, *SE* = 0.069, *p* = 0.228).

Study 2

Methods

Participants

Study 2 involved another convenience sample of staff from a tertiary traditional Chinese medicine hospital and secondary comprehensive hospital in Shanghai, China. Data were collected in March 2023. We received 350 valid responses (response rate = 79.00%), of which 74.3% were from women. Among the sample, 62.2% were doctors and nurses, 65.1% had received undergraduate-level education/training, 44.3% were aged 30–39 years, 51.1% worked two or more shifts, and 54.9% were permanent employees (Supplemental Table S2).

Materials

All self-report scales used and demographic data collected were the same as in Study 1, with the following exceptions.

Job demands. Workload was measured using a 3-item scale drawn from Bakker et al. [53, 54] (e.g., “Do you have too much work to do?”). Emotional demand was measured by a 5-item scale drawn from van Veldhoven et al. [55, 56] (e.g., “Are you in your work confronted with things that really upset you emotionally?”). Interpersonal stress was measured by a 4-item scale drawn from Spector et al. [57, 58] (e.g., “How often are there emotional conflicts between you and your colleagues?”). Responses to all items were on 5-point Likert scales (1 = *never* to 5 = *always*).

Job resources. Job resources were measured with POS and perceived servant leadership. Servant leadership was evaluated with a 7-item measure of global servant leadership (SL-7) [59] (e.g., “My leader can tell if something work-related is going wrong”). Responses were on a 5-point Likert scale (1 = *completely disagree*

Table 2 Job burnout predicted by job demands and regulatory foci (Study 1)

Variables	Model 1			Model 2			Model 3			VIF		
	B	S.E	β	p	B	S.E	β	p	B		S.E	β
(Intercept)	3.079	0.083		<0.001	2.044	0.304		<0.001	3.014	0.045		<0.001
Employment type ^a	-0.283	0.105	-0.163	0.008	-0.108	0.056	-0.062	0.054	-0.108	0.054	-0.062	0.049
Workload	-	-	-	-	0.110	0.043	0.120	0.011	0.113	0.043	0.123	0.009
Emotional demand	-	-	-	-	0.272	0.039	0.346	<0.001	0.294	0.042	0.374	<0.001
Interpersonal stress	-	-	-	-	0.254	0.033	0.325	<0.001	0.264	0.034	0.338	<0.001
Promotion focus	-	-	-	-	-0.355	0.063	-0.257	<0.001	-0.296	0.065	-0.214	<0.001
Prevention focus	-	-	-	-	0.211	0.038	0.201	<0.001	0.162	0.043	0.154	<0.001
Promotion focus x workload	-	-	-	-	-	-	-	-	0.074	0.069	0.050	0.285
Prevention focus x workload	-	-	-	-	-	-	-	-	0.035	0.051	0.036	0.492
Promotion focus x emotional demand	-	-	-	-	-	-	-	-	-0.013	0.063	-0.013	0.833
Prevention focus x emotional demand	-	-	-	-	-	-	-	-	-0.121	0.057	-0.131	0.034
Promotion focus x interpersonal stress	-	-	-	-	-	-	-	-	0.006	0.053	0.006	0.904
Prevention focus x interpersonal stress	-	-	-	-	-	-	-	-	-0.047	0.049	-0.051	0.342
R ² (ΔR ²)	0.027				0.739 (0.712)				0.757 (0.018)			
F	7.260**				122.449***				66.168***			

N = 267. ^a Employment type: 0 = contract employee, 1 = permanent employee. Significant effects are in bold

**p < .01

***p < .001

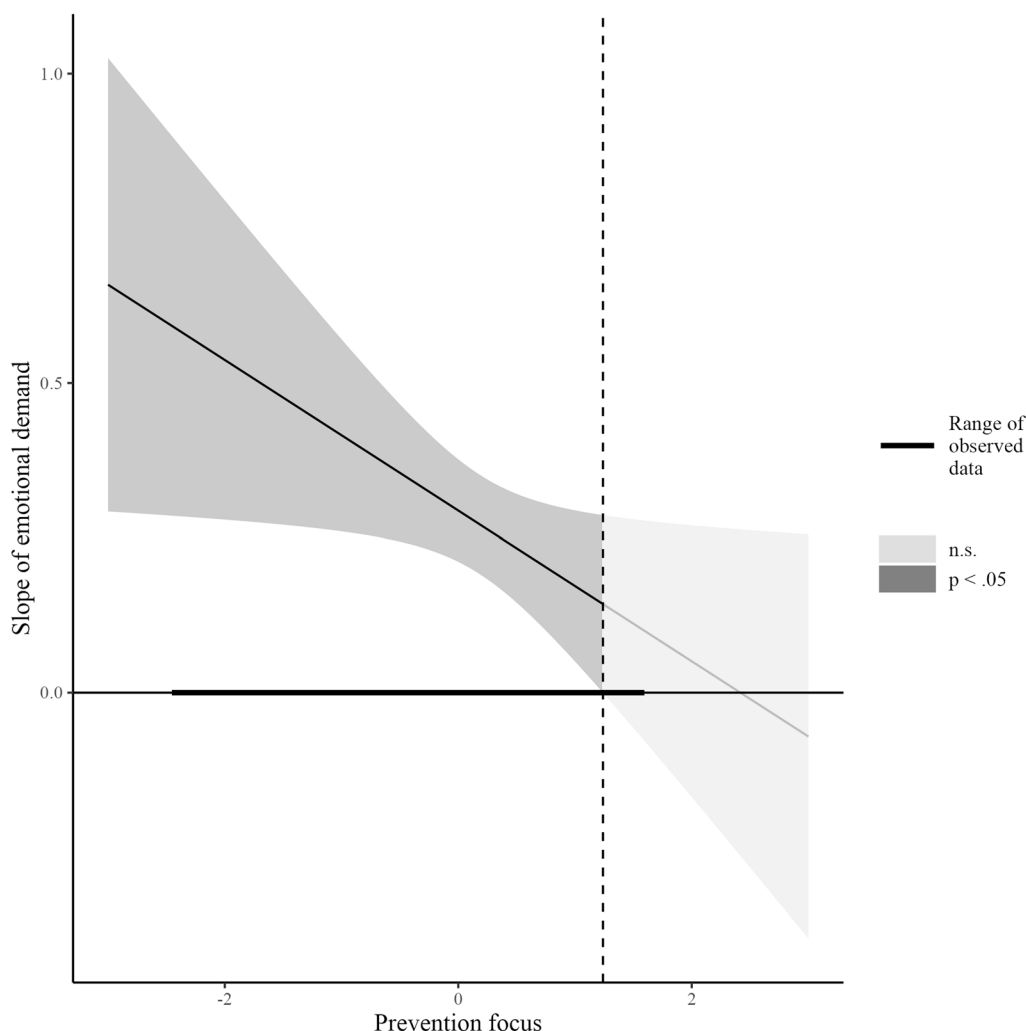


Fig. 2 Prevention focus decreased the effect of emotional demand on job burnout (Study 1). Conditional effect of emotional demands on job burnout at different levels of prevention focus. When the prevention focus was -2.43 to 1.24 , the slope of emotional demand on job burnout was significant. Emotional demand and prevention focus are mean-centered; gray areas denote confidence intervals

to 5 = *completely agree*). The Chinese version of the SL-7 was reported to have good reliability (>0.80) [60].

Study 2 results

Similar to Study 1, all scales displayed acceptable psychometric properties (lower panel in Table 1). A Harman’s single-factor test revealed no substantial common method bias (23.18%) (see Supplementary Table S3).

Job demands were not moderated by regulatory foci in predicting job burnout

All three types of job demands (i.e., workload, emotional demands, and interpersonal stress) were positively associated with job burnout. Both promotion and prevention focus were negatively associated with job burnout, which

partially replicated the Study 1 results (Model 2, Table 4; $R^2=52.40\%$). No interaction effect was found between the three job demands types and regulatory foci (Model 3, Table 4; $R^2=0.60\%$).

Individuals with weak promotion focus benefited regarding affective commitment

Servant leadership was positively associated with affective commitment and job satisfaction, whereas POS was not significantly related to either variable. Promotion focus was positively associated with both affective commitment and job satisfaction, whereas these associations were negative for prevention focus; these results partially replicated those in Study 1 (Model 2, Table 5; $R^2=30.50\%$ for affective commitment and $R^2=39.90\%$ for

Table 3 Affective commitment (upper panel) and job satisfaction (lower panel) predicted by job resources and regulatory foci (Study 1)

Variables	Model 1				Model 2				Model 3				VIF	
	B	S.E	β	p	B	S.E	β	p	B	S.E	β	p		
	(Intercept)	5.569	0.115		<0.001	0.976	0.440		0.028	0.976	0.440			0.028
Employment type ^a	0.290	0.146	0.121	0.048	0.150	0.108	0.063	0.165	0.128	0.105	0.053	0.225	1.024	
Psychological safety	-	-	-	-	0.231	0.056	0.229	<0.001	0.239	0.055	0.237	<0.001	1.595	
POS	-	-	-	-	0.064	0.048	0.061	0.181	0.063	0.047	0.060	0.177	1.060	
Promotion focus	-	-	-	-	1.051	0.114	0.550	<0.001	1.019	0.113	0.533	<0.001	1.850	
Prevention focus	-	-	-	-	-0.243	0.071	-0.167	0.001	-0.234	0.079	-0.161	0.003	1.580	
Promotion focus x psychological safety	-	-	-	-	-	-	-	-	-0.254	0.068	-0.184	<0.001	1.272	
Prevention focus x psychological safety	-	-	-	-	-	-	-	-	0.036	0.060	0.033	0.549	1.643	
Promotion focus x POS	-	-	-	-	-	-	-	-	0.053	0.053	0.031	0.489	1.090	
Prevention focus x POS	-	-	-	-	-	-	-	-	0.090	0.090	0.085	0.058	1.072	
R ² (ΔR^2)	0.015				0.479 (0.464)				0.517 (0.038)					
F	3.936*				47.921***				30.568***					
(Intercept)	3.816	0.066		<0.001	0.502	0.207		0.016	0.421	0.217		0.054		
Employment type ^a	0.139	0.084	0.101	0.101	0.047	0.052	0.034	0.369	0.041	0.052	0.030	0.426	1.024	
Psychological safety	-	-	-	-	0.154	0.027	0.266	<0.001	0.163	0.027	0.282	<0.001	1.596	
POS	-	-	-	-	0.048	0.023	0.079	0.038	0.052	0.023	0.086	0.026	1.060	
Promotion focus	-	-	-	-	0.693	0.055	0.632	<0.001	0.673	0.056	0.614	<0.001	1.851	
Prevention focus	-	-	-	-	-0.121	0.034	-0.145	<0.001	-0.090	0.039	-0.107	0.023	1.580	
Promotion focus x psychological safety	-	-	-	-	-	-	-	-	-0.026	0.033	-0.033	0.440	1.273	
Prevention focus x psychological safety	-	-	-	-	-	-	-	-	-0.041	0.030	-0.065	0.173	1.643	
Promotion focus x POS	-	-	-	-	-	-	-	-	-0.010	0.037	-0.011	0.783	1.090	
Prevention focus x POS	-	-	-	-	-	-	-	-	0.027	0.023	0.045	0.243	1.072	
R ² (ΔR^2)	0.010				0.636 (0.626)				0.643 (0.007)					
F	2.711				91.226***				51.505***					

N = 267. ^a Employment type: 0 = contract employee, 1 = permanent employee. Significant effects are indicated in bold

POS perceived organizational support

**p < .01

***p < .001

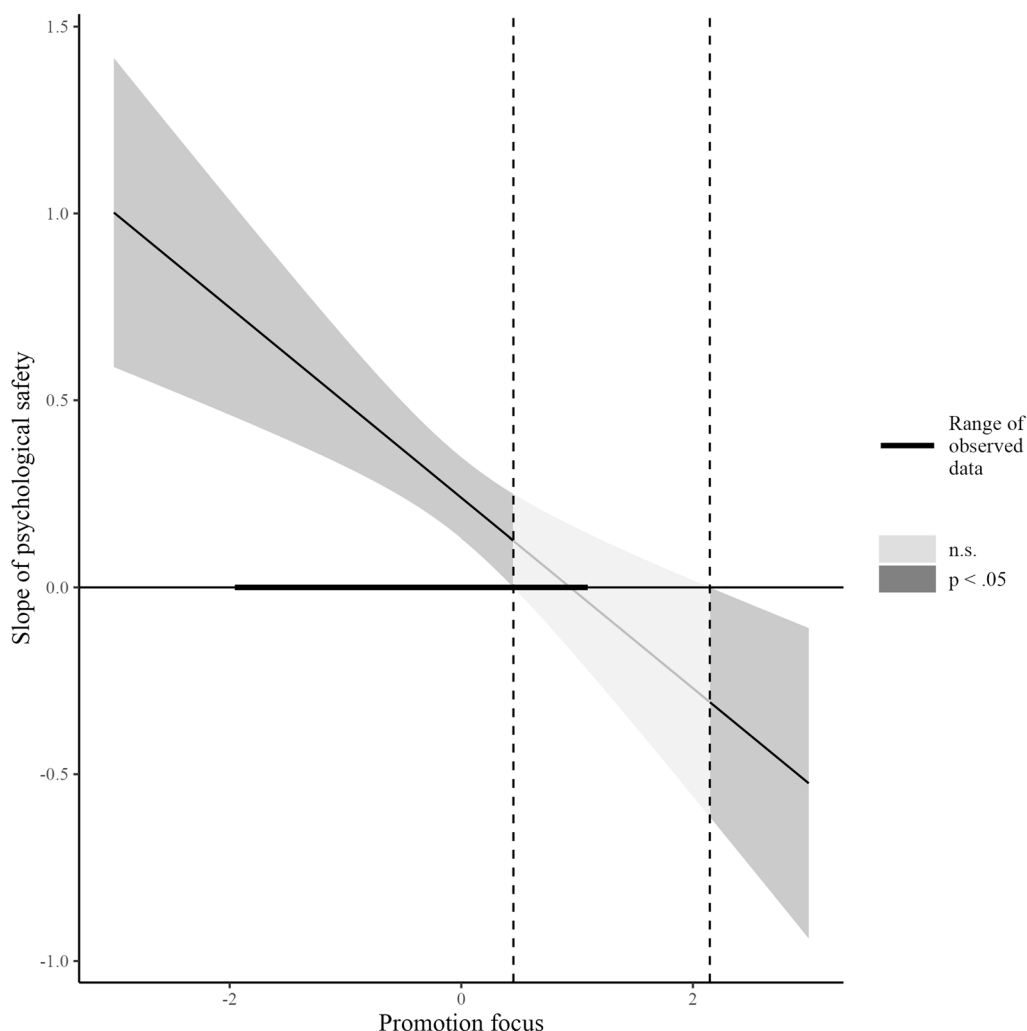


Fig. 3 Promotion focus decreased the effect of psychological safety on affective commitment (Study 1). Conditional effect of psychological safety on affective commitment at different levels of promotion focus. When promotion focus was -1.93 to 0.45 , the slope of psychological safety on affective commitment was significant. Psychological safety and promotion focus are mean-centered; gray areas denote confidence intervals

job satisfaction). Significant interactions were observed between promotion focus and perceived servant leadership for both outcome variables (Model 3, Table 5; $R^2=1.80\%$ for affective commitment and $R^2=1.90\%$ for job satisfaction).

J–N plots revealed the positive impacts of perceived servant leadership on affective commitment and job satisfaction were only significant for participants with a (centered) promotion focus score (<0.61 and >0.74 for the two outcomes, respectively; Figs. 4 and 5). Simple slope analyses revealed that at low levels of promotion focus ($M -1 SD$), every unit increase in servant leadership increased affective commitment by 0.679 units ($B=0.679, SE=0.121, p<0.001$) and job satisfaction by 0.476 units ($B=0.476, SE=0.072, p<0.001$). The results

were more pronounced for employees with low promotion focus than for those with high promotion focus ($M +1 SD$; see Supplementary Figures S3 and S4).

Discussion

This study applied the JD–R model and RFT to examine the relationships between job characteristics, personal motivational traits, and well-being among Chinese medical staff using two cross-validation samples. Consistent with earlier studies using the JD–R, job resources (Study 1: psychological safety; Study 2: servant leadership) were positively associated with affective commitment and job satisfaction following the motivational process. Conversely, job demands (workload, emotional demand, and interpersonal stress) were positively associated with job

Table 4 Job burnout predicted by job demands and regulatory foci (Study 2)

Variables	Model 1			Model 2			Model 3			VIF		
	B	S.E	β	p	B	S.E	β	p	B		S.E	β
(Intercept)	3.001	0.085		<0.001	2.935	0.269		<0.001	2.958	0.272		<0.001
Professional title												
Unrated title	Ref											
Junior	-0.083	0.152	-0.053	0.585	-0.011	0.105	-0.007	0.919	0.006	0.107	0.004	0.954
Intermediate	0.040	0.150	0.026	0.789	-0.040	0.104	-0.026	0.699	-0.016	0.106	-0.010	0.880
Senior	-0.321	0.172	-0.144	0.064	-0.443	0.121	-0.199	<0.001	-0.412	0.123	-0.186	<0.001
Shift												
Day shift only	Ref											
Two shifts	-0.076	0.099	-0.044	0.444	-0.173	0.068	-0.102	0.011	-0.177	0.069	-0.104	0.010
Three shifts	-0.010	0.106	-0.006	0.922	-0.159	0.073	-0.089	0.031	-0.162	0.074	-0.091	0.029
Workload	-				0.082	0.041	0.081	0.049	0.088	0.042	0.087	0.036
Emotional demand	-				0.378	0.046	0.341	<0.001	0.368	0.048	0.331	<0.001
Interpersonal stress	-				0.245	0.079	0.123	0.002	0.210	0.093	0.105	0.024
Promotion focus	-				-0.603	0.054	-0.429	<0.001	-0.610	0.054	-0.433	<0.001
Prevention focus	-				0.317	0.045	0.279	<0.001	0.329	0.045	0.290	<0.001
Promotion focus x workload	-				-				-0.094	0.081	-0.052	0.246
Prevention focus x workload	-				-				0.030	0.058	0.023	0.598
Promotion focus x emotional demand	-				-				-0.032	0.079	-0.018	0.684
Prevention focus x emotional demand	-				-				0.013	0.062	0.009	0.830
Promotion focus x interpersonal stress	-				-				0.097	0.131	0.032	0.459
Prevention focus x interpersonal stress	-				-				0.109	0.118	0.041	0.357
R ² (ΔR ²)	0.024				0.549 (0.524)				0.555 (0.006)			
F	1.714				41.222***				25.929***			

N = 350. Significant effects are in bold

**p < 0.01

***p < 0.001

Table 5 Affective commitment (upper panel) and job satisfaction (lower panel) predicted by job resources and regulatory foci (Study 2)

Variables	Model 1					Model 2					Model 3				
	B	S.E	β	p		B	S.E	β	p		B	S.E	β	p	VIF
(Intercept)	5.098	0.216		<0.001	0.728	0.603		0.228	0.385	0.632	0.544				
Professional title	Ref														
Unrated title	0.245	0.243	0.098	0.315	0.175	0.204	0.070	0.391	0.163	0.204	0.065	0.424	3.315		
Junior	0.149	0.240	0.060	0.536	0.289	0.204	0.116	0.156	0.275	0.203	0.110	0.177	3.352		
Intermediate	0.328	0.276	0.093	0.235	0.480	0.236	0.136	0.043	0.460	0.237	0.130	0.053	2.262		
Senior															
Shift															
Day shift only	Ref														
Two shifts	-0.008	0.158	-0.003	0.958	0.034	0.132	0.013	0.798	0.020	0.134	0.007	0.883	1.236		
Three shifts	-0.168	0.170	-0.060	0.322	-0.070	0.143	-0.025	0.627	-0.043	0.143	-0.015	0.762	1.294		
Servant leadership	-				0.487	0.092	0.275	<0.001	0.482	0.092	0.273	<0.001	1.372		
POS	-				0.022	0.066	0.015	0.746	0.075	0.079	0.051	0.344	1.447		
Promotion focus	-				0.831	0.115	0.372	<0.001	0.862	0.116	0.386	<0.001	1.365		
Prevention focus	-				-0.249	0.084	-0.138	0.003	-0.230	0.087	-0.127	0.008	1.157		
Promotion focus x servant leadership	-				-				-0.363	0.149	-0.116	0.016	1.155		
Prevention focus x servant leadership	-				-				-0.123	0.117	-0.053	0.295	1.260		
Promotion focus x POS	-				-				0.090	0.128	0.038	0.481	1.425		
Prevention focus x POS	-				-				-0.071	0.129	-0.028	0.582	1.269		
R ² (ΔR^2)	0.008				0.313 (0.305)				0.331 (0.018)						
F	0.578				17.199***				12.785***						
(Intercept)	3.954	0.139		<0.001	1.185	0.360		0.001	1.242	0.377	0.001				
Professional title	Ref														
Unrated title	0.157	0.157	0.097	0.316	0.101	0.122	0.062	0.409	0.081	0.121	0.050	0.505	3.315		
Junior	0.033	0.155	0.020	0.832	0.123	0.122	0.076	0.313	0.087	0.121	0.054	0.474	3.352		
Intermediate	0.098	0.178	0.043	0.582	0.212	0.141	0.093	0.134	0.153	0.141	0.067	0.279	2.262		
Senior															
Shift															
Day shift only	Ref														
Two shifts	-0.037	0.102	-0.021	0.714	-0.008	0.079	-0.005	0.917	-0.002	0.080	-0.001	0.983	1.236		
Three shifts	-0.202	0.110	-0.111	0.066	-0.113	0.086	-0.062	0.187	-0.078	0.085	-0.043	0.361	1.294		
Servant leadership	-				0.363	0.055	0.318	<0.001	0.347	0.055	0.303	<0.001	1.372		
POS	-				0.007	0.040	0.008	0.855	0.029	0.047	0.031	0.533	1.447		
Promotion focus	-				0.576	0.069	0.399	<0.001	0.582	0.069	0.403	<0.001	1.365		
Prevention focus	-				-0.275	0.050	-0.236	<0.001	-0.294	0.052	-0.252	<0.001	1.157		

Table 5 (continued)

Variables	Model 1			Model 2			Model 3			VIF			
	B	S.E	β	p	B	S.E	β	p	B		S.E	β	p
Promotion focus X servant leadership	-								- 0.237	0.089	- 0.118	0.008	1.155
Prevention focus X servant leadership	-								0.071	0.070	0.047	0.310	1.260
Promotion focus X POS	-								0.120	0.076	0.078	0.115	1.425
Prevention focus X POS	-								0.070	0.077	0.042	0.363	1.269
R ² (Δ R ²)	0.014				0.413 (0.399)				0.432 (0.019)				
F	0.619				26.597***				19.665***				

N = 350. Significant effects are indicated in bold

POS perceived organizational support

**p < 0.01

***p < 0.001

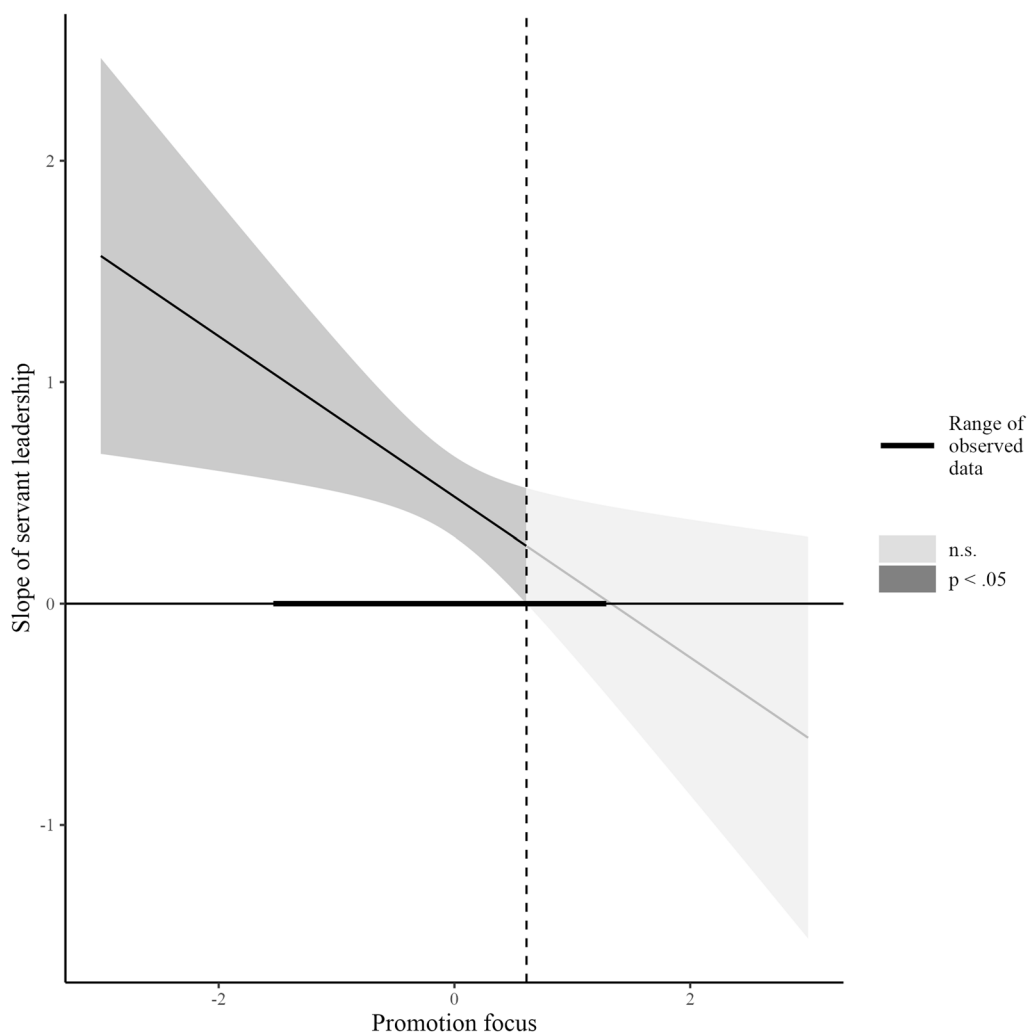


Fig. 4 Promotion focus decreased the effect of servant leadership on affective commitment (Study 2). Conditional effect of servant leadership on affective commitment at different levels of promotion focus. When promotion focus was -1.51 to 0.61 , the slope of servant leadership on affective commitment was significant. Servant leadership and promotion focus are mean-centered; gray areas denote confidence intervals

burnout following the energetic processes. This study advanced previous findings by showing that promotion versus prevention regulatory focus had distinct moderation effects on different job demands and resources. Furthermore, by investigating various job demands and resources, this study preliminarily highlighted the heterogeneity of different job characteristics. This point merits further research attention.

As hypothesized, the detrimental effect of job demands on energy outcomes (i.e., job burnout) was more prominent among medical staff with weak prevention focus than those with strong focus, although this was only observed in Study 1. The level of emotional demand was significantly lower in Study 2 than in Study 1 (Study 1: $M=2.689$, $SD=1.075$; Study 2: $M=2.449$, $SD=0.691$;

$t=3.374$, $p=0.001$; Supplemental Table S4), meaning the results should be interpreted with caution. In general, our results suggested that individuals with a strong prevention focus who favored obligation, safety, and security, and complied with rules [30] tended to be more alert to the existence of job demands and more motivated to fulfill these demands than those with a weak prevention focus. This disposition fits medical professions characterized by excessive workplace demands. However, this moderating effect was not observed for interpersonal stress or workload in either study. A possible reason is that compared with the other two job demands, emotional demands were more self-determined, and therefore more subject to preventative self-regulation efforts. In other words, medical staff had a certain level

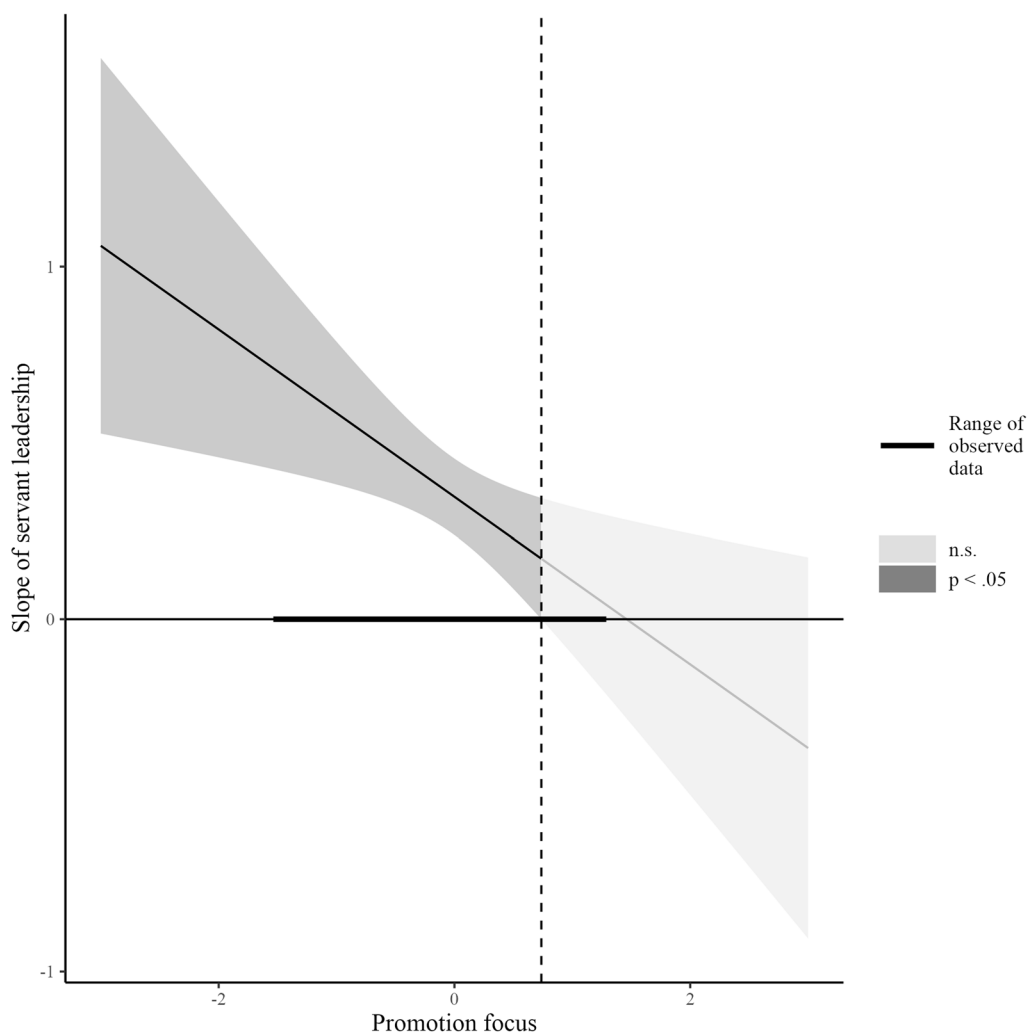


Fig. 5 Promotion focus decreased the effect of servant leadership on job satisfaction (Study 2). Conditional effect of servant leadership on job satisfaction at different levels of promotion focus. When promotion focus was -1.51 to 0.74 , the slope of servant leadership on job satisfaction was significant. Servant leadership and promotion focus are mean-centered; gray areas denote confidence intervals

of autonomy in deciding how much emotional labor (e.g., empathy toward patients) they expended in their routine work, whereas they lacked such autonomy in relation to co-workers (interpersonal stress) or work duration/intensity (workload).

Contrary to our hypothesis, the moderation effect of motivational processes was not supported in either study. Surprisingly, the beneficial effect of job resources (i.e., psychological safety and servant leadership) was more prominent among medical staff with a weak promotion focus than those with a strong promotion focus. A potential underlying mechanism may be the presence of a ceiling effect whereby individuals with a strong promotion focus generally had higher levels of affective commitment and job satisfaction than those with a weak

promotion focus [31, 61]. Consequently, job resources only resulted in improvement for those who were somewhat self-limited in achieving goals or less sensitive to positive outcomes. Simple correlations between motivational outcomes and promotion focus ranged from 0.443 to 0.739 ($p < 0.001$), which partially supported this possibility. Further studies could manipulate state promotion focus level or adopt longitudinal designs to test the related accumulative effect(s). The moderation of regulatory focus was observed only for workplace variables that were associated with autonomous processes. With support from servant leadership and a psychologically safe environment, employees can participate in decision-making, have their ideas heard, develop their professional skill toolkit, and experience freedom and

mental toughness to realize their full potential [62, 63]. Conversely, POS may be more dependent on how much (and how well) an employee solicits support. This mirrors the pattern observed in the moderating effect of prevention focus on emotional demand. In general, these results tentatively suggested that the effect of regulatory foci were more evident for workplace processes in which staff had some level of autonomy, which corresponded with its essence of self-regulation.

Implications

The major implication of these two studies relates to our findings that individuals with different regulatory foci may be susceptible to different job demands and resources. Hospital administrators should be aware that medical staff with weak prevention focus are vulnerable to job demands, whereas those with weak promotion focus benefit from job resources. This may be more apparent when resources and needs are closely linked to work procedures in which an individual has greater autonomy. These findings may inform the success of administrative actions and policies. In addition, this study revealed the heterogeneity of different job demands and resources in predicting different types of workplace well-being. Our findings could help hospital management to customize promotion strategies based on their own strengths and weaknesses.

Limitations and further research

The cross-sectional design of our studies restricted causality inferences among the variables of interest. Furthermore, some measurement ceiling effects appeared to be present. Further research using longitudinal designs or laboratory manipulation experiments could help validate these findings. Similarly, replication of this research in hospitals of diverse grades, levels, and locations would add ecological validity and generalizability.

Conclusion

In conclusion, our findings may improve awareness of the two different processes of the JD–R model and the interaction between the JD–R model and regulatory foci (especially in medical settings). Importantly, individuals with distinct regulatory foci may respond differently to various job demands and resources. Overall, our findings suggest that the implications of a regulatory focus are broader and more nuanced than currently recognized. We encourage further research attention in this area.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12960-024-00950-9>.

Supplementary Material 1. Table S1: Study characteristics and univariate analysis of well-being among medical staff (Study 1). Table S2: Study characteristics and univariate analysis of well-being among medical staff (Study 2). Table S3: The results of the confirmatory factor analysis. Table S4: Comparison of key variables in Study 1 and Study 2. Figure S1: The (positive) effect of prevention focus on moderating emotional demands on job burnout (Study 1). Figure S2: The (positive) effects of promotion focus on the moderating effect of psychological safety on affective commitment (Study 1). Figure S3: The (positive) effects of the promotion focus on the moderating effect of psychological safety on affective commitment (Study 2). Figure S4: The (positive) effects of promotion focus on the moderating effect of psychological safety on job satisfaction (Study 2).

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Author contributions

All authors made a significant contribution to the reported work. T.J.: conceptualization, literature review, and drafting and critically revising the manuscript. M.B.: conceptualization, literature review, and data collection. C.Y.: conceptualization, literature review, and validation. Y.X.: literature review and validation. Z.Z.: conceptualization, methodology, drafting and critically revising the manuscript, and review of the final submitted version. S.L.: literature review, data collection, methodology, substantive revisions, and review of the final submitted version.

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Availability of data and materials

The datasets used or analyzed in this study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

All methods used in this study adhered to the applicable rules and regulations, including the Declaration of Helsinki (version 2008). We informed participants that their participation in this research was voluntary and that all information gathered would be treated with the utmost confidentiality. The survey results were confidential and only used for academic study; they will not be accessible to any other person or organization. This research project was approved by Shanghai Jiao Tong University School of Medicine (reference number: SJUPN-202104).

Consent for publication

Not applicable.

Competing interests

The authors report no conflicts of interest related to this work.

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References

- Duvall JJ, Andrews DR. Using a structured review of the literature to identify key factors associated with the current nursing shortage. *J Prof Nurs*. 2010;26:309–17.
- McVicar A. Scoping the common antecedents of job stress and job satisfaction for nurses (2000–2013) using the job demands-resources model of stress. *J Nurs Manag*. 2016;24:E112–136.
- Lee RT, Lovell BL, Brothridge CM. Tenderness and steadiness: relating job and interpersonal demands and resources with burnout and physical symptoms of stress in Canadian physicians. *J Appl Soc Psychol*. 2010;40:2319–42.
- Patel RS, Bachu R, Adikey A, Malik M, Shah M. Factors related to physician burnout and its consequences: a review. *Behav Sci (Basel)*. 2018;8:98.
- Winter V, Schreyogg J, Thiel A. Hospital staff shortages: environmental and organizational determinants and implications for patient satisfaction. *Health Polic*. 2020;124:380–8.
- Lesener T, Gusy B, Wolter C. The job demands-resources model: a meta-analytic review of longitudinal studies. *Work Stress*. 2018;33:76–103.
- Bakker AB, Demerouti E. Job demands-resources theory: taking stock and looking forward. *J Occup Health Psychol*. 2017;22:273–85.
- Cooper CL, Dewe PJ, Dewe PJ, O'Driscoll MP, O'Driscoll MP. *Organizational stress: a review and critique of theory, research, and applications*. Thousand Oaks: Sage Publications; 2001.
- Van den Tooren M, de Jonge J. Job resources and regulatory focus as moderators of short-term stressor-strain relations. *J Pers Psychol*. 2011;10:97–106.
- Schaufeli WB, Taris TW. A critical review of the job demands-resources model: Implications for improving work and health. In: Bauer G, Hämmig O, editors. *Bridging occupational, organizational and public health*. Dordrecht: Springer; 2014. p. 43–68.
- Petrou P, Demerouti E. Thinking of change in terms of 'gains' or 'losses': Promotion versus prevention focus as a moderator in the job demands-resources model. *SA J Ind Psychol*. 2010;36:1–11.
- Brenninkmeijer V, Demerouti E, Le Blanc PM, Van Emmerik IH. Regulatory focus at work: the moderating role of regulatory focus in the job demands-resources model. *Career Dev Int*. 2010;15(7):708–28.
- Chênevert D, Kilroy S, Johnson K, Fournier PL. The determinants of burnout and professional turnover intentions among Canadian physicians: application of the job demands-resources model. *BMC Health Serv Res*. 2021;21:1–10.
- Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB. The job demands-resources model of burnout. *J Appl Psychol*. 2001;86:499–512.
- Bakker AB, Demerouti E. The job demands-resources model: state of the art. *J Manag Psychol*. 2007;22:309–28.
- Fuss I, Nubling M, Hasselhorn HM, Schwappach D, Rieger MA. Working conditions and work-family conflict in German hospital physicians: psychosocial and organisational predictors and consequences. *BMC Publ Health*. 2008;8:353–69.
- Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. *The Lancet*. 2009;374:1714–21.
- Rosslar W. Stress, burnout, and job dissatisfaction in mental health workers. *Eur Arch Psychiatr Clin Neurosci*. 2012;262(Suppl 2):S65–69.
- Lee RT, Ashforth BE. A meta-analytic examination of the correlates of the three dimensions of job burnout. *J Appl Psychol*. 1996;81:123–33.
- Baik D, Zierler B. Clinical nurses' experiences and perceptions after the implementation of an interprofessional team intervention: a qualitative study. *J Clin Nurs*. 2019;28:430–43.
- Nembhard IM, Edmondson AC. Making it safe: the effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *J Organ Behav*. 2006;27:941–66.
- Ahmed I, Nawaz MM, Ali G, Islam T. Perceived organizational support and its outcomes: a meta-analysis of latest available literature. *Manag Res Rev*. 2015;38:627–39.
- Eisenberger R, Fasolo P, Davis-LaMastro V. Perceived organizational support and employee diligence, commitment, and innovation. *J Appl Psychol*. 1990;75:51–9.
- Zhong C, Li S, Zhang Z. Sharing Weal and Woe the perceived organizational support scale for healthcare workers (unpublished manuscript). Shanghai Jiao Tong University School of Medicine: Shanghai. 2024.
- Garber JS, Madigan EA, Click ER, Fitzpatrick JJ. Attitudes towards collaboration and servant leadership among nurses, physicians and residents. *J Interprof Car*. 2009;23:331–40.
- Farrington SM, Lillah R. Servant leadership and job satisfaction within private healthcare practices. *Leadersh Health Serv (Bradf Engl)*. 2019;32:148–68.
- Zada M, Zada S, Khan J, Saeed I, Zhang YJ, Vega-Munoz A, Salazar-Sepulveda G. Does servant leadership control psychological distress in crisis? moderation and mediation mechanism. *Psychol Res Behav Manag*. 2022;15:607–22.
- Brockner J, Higgins ET. Regulatory focus theory. Implications for the study of emotions at work. *Organ Behav Hum Decis Process*. 2001;86:35–66.
- Zhang Y, Zhang Y, Ng TWH, Lam SSK. Promotion- and prevention-focused coping: A meta-analytic examination of regulatory strategies in the work stress process. *J Appl Psychol*. 2019;104:1296–323.
- Higgins ET. Beyond pleasure and pain. *Am Psychol*. 1997;52:1280–300.
- Lanaj K, Chang CH, Johnson RE. Regulatory focus and work-related outcomes: a review and meta-analysis. *Psychol Bull*. 2012;138:998–1034.
- Chen X, Wei S, Rice RE. Integrating the bright and dark sides of communication visibility for knowledge management and creativity: the moderating role of regulatory focus. *Comput Hum Behav*. 2020;111: 106421.
- Hertting A, Nilsson K, Theorell T, Larsson US. Downsizing and reorganization: demands, challenges and ambiguity for registered nurses. *J Adv Nurs*. 2004;45:145–54.
- Higgins ET, Roney CJR, Crowe E, Hymes C. Ideal versus ought predilections for approach and avoidance distinct self-regulatory systems. *J Pers Soc Psychol*. 1994;66:276–86.
- Neubert MJ, Kacmar KM, Carlson DS, Chonko LB, Roberts JA. Regulatory focus as a mediator of the influence of initiating structure and servant leadership on employee behavior. *J Appl Psychol*. 2008;93:1220–33.
- Shah J, Higgins ET, Friedman RS. Performance incentives and means: how regulatory focus influences goal attainment. *J Pers Soc Psychol*. 1998;74:285–93.
- Shah J, Higgins ET. Expectancy x value effects: regulatory focus as determinant of magnitude and direction. *J Pers Soc Psychol*. 1997;73:447–58.
- Edmondson A. Psychological safety and learning behavior in work teams. *Adm Sci Q*. 2016;44:350–83.
- Detert JR, Burris ER. Leadership behavior and employee voice: Is the door really open? *Acad Manage J*. 2007;50:869–84.
- Eisenberger R, Huntington R, Hutchison S, Sowa D. Perceived organizational support. *J Appl Psychol*. 1986;71:500–7.
- Eisenberger R, Cummings J, Armeli S, Lynch P. Perceived organizational support, discretionary treatment, and job satisfaction. *J Appl Psychol*. 1997;82:812–20.
- Lockwood P, Jordan CH, Kunda Z. Motivation by positive or negative role models: Regulatory focus determines who will best inspire us. *J Pers Soc Psychol*. 2002;83:854–64.
- Maslach C. *Maslach burnout inventory-human services survey (MBI-HSS)*. In: Maslach C, editor. *MBI manual*. Washington DC: Consulting psychologists press; 1996. p. 192–8.
- Li C, Shi K, Luo Z. An investigation on job burnout of doctor and nurse. *Chin J Clin Psychol*. 2001;11:170–2.
- Meyer JP, Allen NJ, Smith CA. Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *J Appl Psychol*. 1993;78:538–51.
- Weiss DJ, Dawis RV, England GW. In *minnesota studies in vocational rehabilitation; work adjustment project*. Minneapolis: University of Minnesota Industrial Relations Center; 1967.
- Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. *J Mark Res*. 2018;18:39–50.
- R Core Team. *A language and environment for statistical computing*. <https://www.R-project.org/>. Accessed 22 Dec 2023.
- Wickham H. *ggplot2: elegant graphics for data analysis*. New York: Springer-Verlag; 2016.
- Long JA. Package 'interactions'. <https://cran.r-project.org/web/packages/interactions/interactions.pdf>. Accessed 22 Dec 2023.
- Miller JW, Stromeyer WR, Schwieterman MA. Extensions of the Johnson-Neyman technique to linear models with curvilinear effects: derivations and analytical tools. *Multivar Behav Res*. 2013;48:267–300.
- Van de Ven AH, Ferry DL. *Measuring and assessing organizations*. 1st ed. New York: John Wiley & Sons; 1980.

53. Bakker AB, Demerouti E, Verbeke W. Using the job demands-resources model to predict burnout and performance. *Hum Resour Manag.* 2004;43:83–104.
54. Presti AL, Nonnis M. Testing the job demands-resources model: evidence from a sample of Italian employees. *TPM-Test Psychom Methodol Appl Psychol.* 2014;21:89–101.
55. Taris TW, Schreurs PJ. Explaining worker strain and learning: how important are emotional job demands? *Anxiety Stress Coping.* 2009;22:245–62.
56. Van Veldhoven M, Meijman T, Broersen J, Fortuin R. Handleiding vragenlijst beleving en beoordeling van arbeid. Amsterdam: SKB; 1997.
57. Spector PE, Jex SM. Development of four self-report measures of job stressors and strain: Interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *J Occup Health Psychol.* 1998;3:356–67.
58. Liu C, Spector PE, Shi L. Cross-national job stress: a quantitative and qualitative study. *J Organ Behav.* 2007;28:209–39.
59. Liden RC, Wayne SJ, Meuser JD, Hu J, Wu J, Liao C. Servant leadership: validation of a short form of the SL-28. *Leadersh Q.* 2015;26:254–69.
60. Bao Y, Li C, Zhao H. Servant leadership and engagement: a dual mediation model. *J Manag Psychol.* 2018;33:406–17.
61. Kark R, Van Dijk D. Motivation to lead, motivation to follow: the role of the self-regulatory focus in leadership processes. *Acad Manag Rev.* 2007;32:500–28.
62. Ma Y, Faraz NA, Ahmed F, Iqbal MK, Saeed U, Mughal MF, Raza A. Curbing nurses' burnout during COVID-19: the roles of servant leadership and psychological safety. *J Nurs Manag.* 2021;29:2383–91.
63. Brown SP, Leigh TW. A new look at psychological climate and its relationship to job involvement, effort, and performance. *J Appl Psychol.* 1996;81:358–68.

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