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Original article

Role of Mindfulness in the Effects of Organizational Culture on Depression in Korean Physical Therapists

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ABSTRACT

Objective: The study aimed to investigate whether mindfulness could mitigate the impact of job and interpersonal demands arising from stressful organizational cultures in predicting depression during the COVID-19 pandemic.
Methods: A total of 280 Korean physical therapists participated in this study. To verify the mediated moderation model, this study implemented an SPSS 26.0 PROCESS Macro (v.3.5) that was based on the verification of Hayes' conditional indirect effect.
Results: The study confirmed the moderated mediation effect of mindfulness on the mediating relationship between stressful organizational culture, job demands/interpersonal demands, and depression. Moreover, the conditional indirect effect of mindfulness was found to be statistically significant. However, the impact on interpersonal stress differed from anticipated outcomes.
Conclusions: Mindfulness, applicable within the framework of the Job Demands-Resources model theory, served as a resource variable and moderated the impact of organizational culture on members' depression. Amidst ongoing debates on mindfulness effectiveness, this study partially confirmed its potential within the Job Demands-Resources model, suggesting a role in mitigating the influence of organizational culture on members' depression as a resource variable.

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Learning outcomes

- Mindfulness operates as a resource, addressing not only existing demand variables but also mitigating stress associated with organizational culture.
- The level of the mindfulness resource remained inconsequential when organizational culture was high. This holds true particularly when organizational culture stress was linked to depression through interpersonal conflict.
- In the context of Korean medical organizations, mindfulness may exhibit limitations in mitigating the intense stress stemming from the hierarchical organizational structure.

1. Introduction

Various factors affect the health and performance of organization members. Organizational culture is created as member's experience various changes when dealing with issues and their external environments; it consists of implicitly shared values that determine the members' perceptions, thoughts, and behaviors [1,2]. When these values match the members' individual values, there is a positive effect on the members' organizational commitment, job satisfaction, organizational effectiveness, and well-being [3–7]. However, when an organization's values focus solely on achievement or adhere to a principle of strictly regulating individual behavior, the individuals experience incongruence due to the detrimental effects of the values and exhibit negative attitudes and behaviors [8].

Modern organizations require innovation, challenge, and risk-taking from individuals; additionally, adaptation and harmony are necessary within organizations. Applied to the organizational setting, the social exchange theory suggests that trust and loyalty between the individual and the organization constitute a reciprocal relationship that forms after a period of time, and they are an exchange of norms and rules [9,10]. Therefore, when the level of privileges and rewards provided to an individual is inadequate compared to the individual's perceived level of contribution to the organization, it is detrimental to the reciprocity between the individual and the organization, which leads to negative outcomes. Similar to the human body's immune system, organizational culture forms a control system based on shared norms and values, and it acts as a set of guidelines for members' attention, interpretations of certain events, attitudes, and behaviors. Under such a system, individuals who go against the organization's values and precepts are automatically excluded or develop maladaptive attitudes [11,12]. The control system that is formed based on organizational culture includes various job/organization-related factors within working life. Therefore, a control system that arises from an organizational culture that lacks reciprocity can cause job-related stress or interpersonal stress.

For example, according to the competing values framework, organizational culture is classified into four types according to flexibility-control and internal focus-external focus [8]. A controlling and internally oriented hierarchical culture is a culture that reflects the values and norms of bureaucracy that emphasize formal orders and rules, centralized control, and safety orientation. Therefore, if this type of culture acts as a stressor for individuals, strengthening control and supervision in organizational management can weaken the motivation and passion of lower-status members and cause interpersonal conflict with higher-status members [13]. Result-oriented culture uses competition among members as a stimulus because it emphasizes productivity in goal achievement and task performance. Therefore, if an organization sets a result-oriented norm, excessive workload under time pressure or the burden of completing difficult tasks that exceed an individual's capabilities will be perceived negatively [14]. This type of organizational culture does not always cause stress or anxiety, and a favorable organizational culture can reduce stress by leading to job satisfaction or positive leadership [15]. In other words, organizational culture can serve as a stress factor. Notably, this type of culture doesn't invariably induce stress, but the key takeaway is its significant role as a stress catalyst.

Stress (stressor) can also be reciprocal, where stress perceived in one domain can cause stress in another domain. An example of this is work-family conflict, where stress experienced in the work and family domains mutually influence each other. This phenomenon is explained by spillover theory and compensation theory [73–75]. Spillover theory posits that experiences in one domain spill over into the other, such that positive events at work can positively impact home life, while negative work events can have adverse effects at home [76]. On the other hand, compensation theory suggests an inverse relationship between work and family domains. Furthermore, assuming a causal relationship between stress in different domains, organizational culture—which encompasses work norms, task responsibilities, and hierarchical relationships—can be considered a primary stressor influencing both work-related and interpersonal relationship-related stressors, which are inherently interconnected.

Also, The causes of perceived individual stress within an organization include various factors that demand physical and psychological effort; these include work overload, role conflict, and role ambiguity. These demands lead to anxiety, depression, and burnout among organization members, which limits the organization's productivity and efficiency [16,17]. The positive causal relationship between demands and negative outcomes can be buffered by resources [18,19]. According to a relatively new expanded model of the demand-resource theory, resources can be divided into individual and job-related resources such as social support, motivational job characteristics, and feedback. Individual resources refer to the controllability of one's work, and include characteristics such as optimism and self-efficacy [20].

Mindfulness, also known as Vipassana or sati, which means observation or insight, refers to being aware of one's own experiences, paying attention to the current situation, and adopting a non-judgmental, receptive attitude toward experiences [21]. Mindfulness is a therapeutic technique and an individual trait that has received great attention over time based on the results of empirical research [22]. Mindfulness has been proven to reduce individuals' negative symptoms and promote well-being in both therapeutic and organizational settings, and it has been proven to have positive effects on depression, anxiety, and physical pain [23,24]. This is because mindfulness acts as an individual resource that buffers negative psychological symptoms caused by stress-related variables [25]. Related to this, many studies have recently been conducted on the effectiveness of mindfulness on medical professionals, including physical therapists, rather than patients [26–28].

Mindfulness scales are largely divided into trait scales and state scales. In the case of the state scale, it is a concept for measuring the "experience of nonjudgmental present-focused awareness" experienced by participating in MBI (mindfulness-based intervention). In the case of trait scales, the view is that individual differences exist because individual's inherent level of mindfulness is different. It can also be used to measure changes resulting from mindfulness intervention. However, it is mainly used in model research to

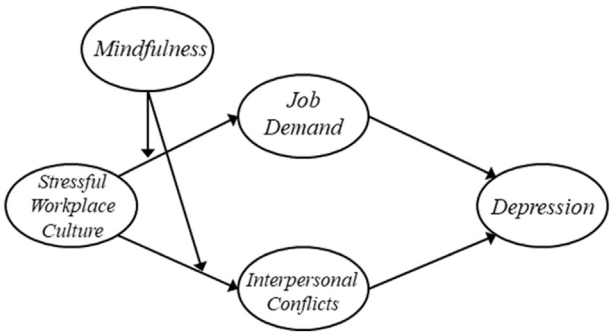


Fig. 1. Research model.

identify causal relationships between variables. FFMQ (Five Factor Mindfulness Questionnaire) [29], SMQ (Southampton Mindfulness Questionnaire) [30], PHLMS (The Philadelphia Mindfulness Scale) [31], and MPQ (Mindfulness Process Questionnaire) [32] have been used in various studies. However, more research is still needed on how trait mindfulness affects an individual's attitude at work [33].

As mentioned earlier, organizational culture, which includes various job- and organization-related factors is related to the stress of employees. Stress includes work-related stress or interpersonal stress. If stress is prolonged, it can lead to pathological symptoms such as depression, anxiety, and mood disorder [34,35]. Therefore, the influence of stressors on stress may be alleviated through the trait of mindfulness before it develops into chronic pathological symptoms. As such, the individual resource of mindfulness can buffer negative individual circumstances caused by organizational demands.

The goal of this study is to examine the effects of mindfulness on negative symptoms that occur owing to stress experienced by Korean physical therapists in an organizational setting (or due to COVID-19). In Asian organizational culture, which emphasizes hierarchy, efficiency within the organization is pursued on a stable basis [8,36,37]. Members of such organizations have passive and risk-avoidant safety-oriented tendencies because they reflect the values and norms of the bureaucracy, which emphasizes official commands, rules, controls, and safety orientations. Consequently, the members' voluntary participation and attachment toward the organizations are reduced to avoid punishments and responsibilities [38,39]. From the perspective of the Regulatory Focus Theory of organizational culture, organizations with a prevention focus are characterized by an emphasis on safety and the performance of duties, and they seek to avoid risk, which hinders innovative behaviors by their members [40–42]. During the COVID-19 pandemic, health-related organizations in particular maintained existing systems rather than taking risks by pursuing new strategies to prevent increases in quarantines and confirmed cases, and they made greater efforts to prevent accidents. In such circumstances, the work intensity and interpersonal stress unavoidably increased for workers in the healthcare industry. Therefore, the goal of this study is to determine whether mindfulness can reduce the influence of job and interpersonal demands that occur owing to stressful organizational cultures when predicting depression. Fig. 1 shows this study's overall model. Through this study, we will be able to confirm whether the internal resource effect of mindfulness is applicable to a wide range of variables called organizational culture. Additionally, the results of this study may contribute to research on improving psychological safety and developing stress management for healthcare workers in disaster situations. In essence, mindfulness mitigates stress within work and interpersonal contexts influenced by organizational culture. Intervening to prevent this stress from becoming chronic and exacerbating, potentially leading to heightened depression levels, could substantiate the significance of internal resources for fostering psychological safety and health among organizational members during future potential pandemics. Additionally, it could validate the efficacy of MBSR interventions in sustaining and enhancing these resources.

2. Materials and methods

2.1. Data collection

The survey, conducted in the Republic of Korea from December 2021 to January 2022, focused on the country's 8 provinces. Physical therapists at primary to tertiary medical institutions and ETC hospitals in Gyeongsangnam-do were randomly selected through cluster sampling. Eligible subjects were those who worked for a minimum of 6 months during the COVID-19 pandemic and were presently employed in medical institutions. The questionnaire, developed using Google Forms, was administered with individual consent, and participants received coffee coupons as a token of appreciation. A total of 280 physical therapists participated in this study. In order to research workplace mental health characteristics of physical therapists, the questionnaire was conducted in the Republic of Korea from 2021 to 2022.

2.2. Data analysis

Measurement model analysis was conducted using AMOS 24 to examine the validity of latent factors and dimensions of variables. For measurement model analysis, competitive model analysis was conducted in comparison with the one-factor model. To conduct the analysis, including item parceling, we reviewed the covariance structure to be used in the final causal relationship analysis between organizational culture stress, job demands, interpersonal conflict, mindfulness, and depression, and then calculated the model fit and path coefficient was confirmed. The fit indices used in the analysis included the absolute fit index, where RMSEA (Root Mean Square Error of Approximation) was required to be less than 0.10, indicating a good model fit. Additionally, incremental fit indices such as TLI (Tucker Lewis Index), CFI (Comparative Fit Index), and NFI (Normed Fit Index) were all required to exceed 0.90, suggesting adequate model fit according to established criteria [43,44]. As a result of the analysis, in the case of the one-factor model—a competitive model—all path coefficients proved significant, yet none of the fits met the established standard. In the case of the research model, all path coefficients were significant, and all fit except NFI, which was affected by the simplicity of the model, was above an acceptable level. NFI is an index that accounts for model simplicity but is influenced by sample size [77]. In this study, the sample size meets the minimum criteria ($N = 200$) for structural equation modeling [78,79]. However, as it does not represent the entire population, there remains a possibility that it falls short of the 0.90 threshold. In addition, the AIC and ECVI values were found to be lower than those of competing models. Therefore, the validity of the latent factors and variable dimensions included in the research model was secured (Table 1 and Fig. 2).

To evaluate the level of common method bias, Harman's [45] single-factor test was performed. This method conducts exploratory factor analysis to evaluate whether a dominant single factor exists. The percentage of variance of the factor that accounts for the most explanation should be less than 50% [46,47]. Looking at the analysis results, 13 factors with an eigenvalue of 1 or higher were derived, and the percentage of variance of the first factor was

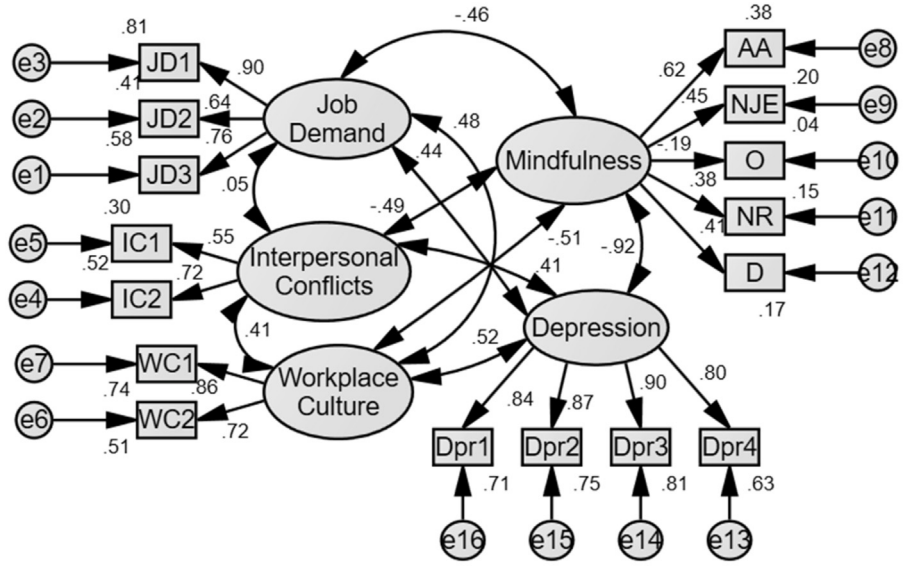
Table 1
Results of model fit

	X^2	*df*	NFI	CFI	TLI	RMSEA	90% CI		AIC	ECVI
							Low	High		
Research model	203.775***	94	0.891	0.936	0.908	0.065	0.053	0.077	319.775	1.146
1 Factor model	612.438***	104	0.671	0.706	0.615	0.132	0.122	0.143	708.438	2.5239

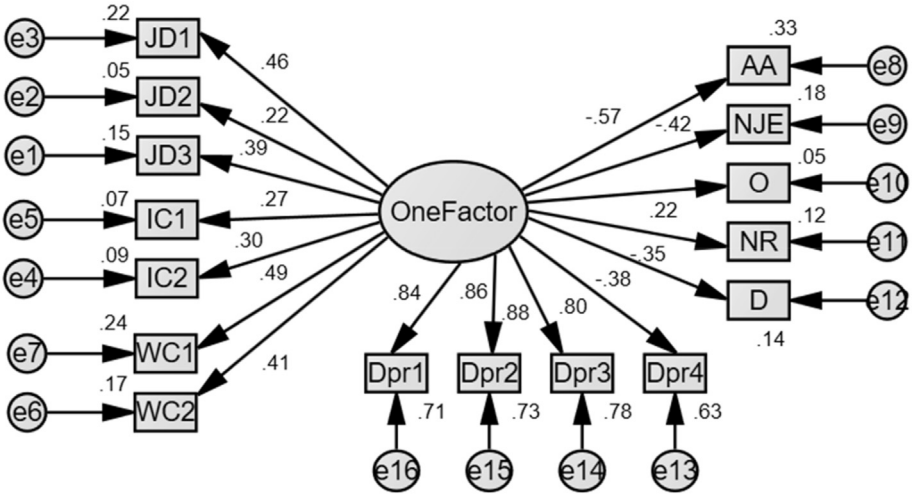
CFI, comparative fit index; NFI, normed fit index; RMSEA, root mean square error of approximation; TLI, Tucker Lewis Index; AIC, Akaike information criterion; ECVI, expected cross-validation index.

26.543%. Therefore, it was determined that the problem of common method bias due to measurement method was not serious.

This study implemented an SPSS 26.0 PROCESS version 3.5 macro that was based on the verification of Hayes' [48] conditional indirect effect. First, the PROCESS MODEL 4 macro was used to verify the mediation effects of job demands and interpersonal conflict on the influence of organizational culture on depression, as well as the indirect effects in each mediated effect model. Next, the PROCESS MODEL 7 macro was used to verify the moderation effect of mindfulness on the effect of organizational culture on job demands and interpersonal conflict. The confidence intervals of the conditional indirect effect were examined for high, medium, and



(A)



(B)

Fig. 2. (A) Measurement model analysis (research model), (B) measurement model analysis (1 factor model).

Table 2
Demographic characteristics

Variable	Category	*N* (%)
Age	Under 29y	107 (38.2)
	30 − 39y	94 (33.6)
	40 − 49y	59 (21.1)
	More than 50y	16 (5.7)
	Non-response	4 (1.4)
Education	College graduate	65 (23.2)
	University graduate	155 (55.4)
	Graduate school	60 (21.4)
Work period	Less than 3 years	46 (16.4)
	3 ~ 6	66 (23.6)
	7 ~ 9	43 (15.4)
	10 ~ 12	41 (14.6)
	More than 12 years	84 (30.0)
Workplace	Public Institution	1 (0.4)
	Corporation	1 (0.4)
	University's affiliated center	1 (0.4)
	University hospital	30 (10.7)
	Resort	1 (0.4)
	Hospital	85 (30.4)
	Social enterprise	1 (0.4)
	Cancer nursing hospital	1 (0.4)
	Nursing home	2 (0.7)
	Exercise center	2 (0.7)
	Doctor's office	35 (12.5)
	Welfare center for the disabled	1 (0.4)
	Disabled facilities	1 (0.4)
	General welfare center for the disabled	1 (0.4)
	Daycare center for the disabled	1 (0.4)
	Rehabilitation hospital	61 (21.9)
	General Hospital	52 (18.6)
	Community health and medical center for the disabled	1 (0.4)
	Oriental medicine hospital	2 (0.7)
Division	Musculoskeletal physiotherapy	88 (31.4)
	Neurological physiotherapy	97 (34.6)
	Modality	38 (13.6)
	Pediatric physiotherapy	9 (3.2)
	etc.	11 (3.9)
	More than one department	35 (12.5)
	None	2 (0.7)
Total		280

low levels of the moderation variables to verify the moderated mediation effect. Moreover, diagrams are presented using the Johnson−Neyman method [49–51].

2.3. Measures

2.3.1. Mindfulness

To measure mindfulness, short versions of the five-facet mindfulness questionnaire (FFMQ-18) were used Medvedev et al study [52]. For the scale, 18 out of the 39 original scale questions of Bear et al [29] were selected via Rasch analysis, and a validated Korean version was used [53]. All measures used a 4-point Likert-type scale (1 = strongly disagree to 4 = strongly agree). The scale consists of a total of 18 items distributed across the following subfactors and examples: Acting with awareness (3 items) "I find it difficult to stay focused on what's happening in the present moment", non-judging of experience (3 items) "I make judgments about whether my thoughts are good or bad.", observing (3 items) "I pay attention to physical experiences, such as the wind in my hair or sun on my face.", non-reactivity (4 items) "Usually when I have distressing thoughts or images I am able just to notice them without reacting.", and describing (5 items) "It's hard for me to find the words to describe what I'm thinking.". The scale's overall internal consistency reliability was demonstrated with a Cronbach's value alpha of 0.850.

2.3.2. Job stress

Job stress was measured for workplace culture, job demand, and interpersonal conflicts using the Korean occupational stress score-short form (KOSS-SF), which is a standardized and simplified version of the scale developed by Chang et al [54] All measures used a 4-point Likert-type scale (1 = strongly disagree to 4 = strongly agree). Eight questions on job demands (e.g., Given my heavy workload, I consistently find myself pressed for time.), four on interpersonal conflicts (e.g., my supervisor helps me complete my work [reverse coding]), and four on workplace culture (e.g., I am directed to operate in a state lacking standards or consistency) were used, and each scale's internal consistency reliability was demonstrated by a Cronbach's alpha of 0.842 for job demands, 0.746 for interpersonal conflicts, and 0.771 for workplace culture.

2.3.3. Depression

To measure depression, the Korean Center for Epidemiologic Studies Depression Scale-Revised (K-CESD-R) was used [55]. All measures used a 4-point Likert-type scale (1 = strongly disagree to 4 = strongly agree). It consists of a total of 20 questions (e.g., Regardless of the assistance received, I doubt my ability to get rid of this gloomy mood.), and the scale's internal consistency reliability was demonstrated by a Cronbach's alpha of 0.940.

3. Results

3.1. Demographic characteristics

Table 2 lists the demographic characteristics of the sample used in the analysis. The average (standard deviation) age corresponded to 34.3 (SD = 8.0) years. Education was counted starting with college graduates since a junior college graduate or higher was required to obtain a license as a physical therapist. The demographic variables investigated in this study may have differences in their influence on the research variables depending on the characteristics of the group. For example, there may be differences in work capabilities and professional knowledge depending on the level of education, and there may also be differences in the level of perceived stress depending on the position. Therefore, this study included age, education level, and tenure as control variables, excluding nominal scales such as workplace or department.

3.2. Correlation among variables

To understand the overall correlation among variables, Pearson correlation analysis was performed [Table 3]. As a result of correlation analysis, the culture showed a positive correlation with demand, conflicts, and depression ($p < 0.001$). In addition, work period and age, depression and demand, and depression and conflicts showed statistically significant positive correlations ($p < 0.001$). On the other hand, depression showed a negative correlation with age, and mindfulness showed a negative correlation with culture, conflicts, and depression ($p < 0.001$).

3.3. Mediation effect

Table 4 presents the results of verifying the mediation effect of job demands in regard to the effect of organizational culture on depression. In Step 1, the effect of organizational culture on job demands was statistically significant ($B = 0.339$, $p < 0.001$) after controlling the subjects' age, education, and work period. In Step 2, the effect of organizational culture on depression was also statistically significant ($B = 0.319$, $p < 0.001$). In the final step, when organizational culture and job demands were input simultaneously, the effect of job demands on depression was statistically

Table 3
Correlation among variables

Variables	1	2	3	4	5	6	7
1. Age							
2. Education	0.149*						
3. Work period	0.867***	0.129*					
4. Culture	−0.157**	−0.021	−0.079				
5. Demand	0.020	0.103	0.115	0.363***			
6. Conflicts	−0.081	0.048	−0.050	0.284***	0.053		
7. Depression	−0.225***	−0.068	−0.156**	0.441***	0.355***	0.309***	
8. Mindfulness	0.136*	0.131*	0.071	−0.245***	−0.183**	−0.276***	−0.490***

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

significant ($B = 0.208$, $p < 0.001$), and the effect of organizational culture on depression was also statistically significant, verifying the partial mediation model in which organizational culture raises the level of depression through the perception of job demands ($B = 0.248$, $p < 0.001$). Additionally, the results of using bootstrapping to verify the indirect effect of job demand perception within the mediation model showed that 0 was not included in the estimated 95% confidence interval, and the indirect effect was significant. Therefore, the mediation model was verified.

Table 5 lists the results of verifying the mediation effect of interpersonal conflict in regard to the effect of organizational culture on depression. First, in Step 1, the effect of organizational culture on interpersonal conflict was statistically significant ($B = 0.301$, $p < 0.001$) after controlling the subjects' age, education, and work period. In Step 2, the effect of organizational culture on depression was also statistically significant ($B = 0.319$, $p < 0.001$). In the final step, when organizational culture and interpersonal conflict were input simultaneously, the effect of interpersonal conflict on depression was statistically significant ($B = 0.131$, $p < 0.01$), and the effect of organizational culture on depression was also statistically significant, verifying the partial mediation model in which organizational culture raises the level of depression through the perception of interpersonal conflict ($B = 0.279$, $p < 0.001$). Additionally, the results of using bootstrapping to verify the indirect effect of interpersonal conflict perception within the mediation model showed that 0 was not included in the estimated 95% confidence interval, and the indirect effect was significant. Therefore, the mediation model was verified.

3.4. Moderation effect

Table 6 lists the results of verifying the moderation effect of mindfulness in regard to the effect of organizational culture on job demands. In Step 1, the main effects of organizational culture and mindfulness on job demands were both statistically significant after controlling the age, education, and work period (organizational culture $B = 0.314$, $p < 0.001$; mindfulness $B = -0.213$, $p < 0.05$). In Step 2, the interaction effect between organizational culture and mindfulness also significantly predicted job demands ($B = -0.433$, $p < 0.01$). Therefore, the moderation effect of mindfulness on job demands was verified. Moreover, to examine the directionality of the moderation effect, a graph is presented using the method proposed by Aiken and West [56] [Fig. 3].

Table 7 lists the results of verifying the moderation effect of mindfulness in regard to the effect of organizational culture on interpersonal conflict. In Step 1, the main effects of organizational culture and mindfulness on interpersonal conflict were both statistically significant after controlling the age, education, and work period (organizational culture $B = 0.243$, $p < 0.001$; mindfulness $B = -0.484$, $p < 0.001$). In Step 2, the interaction effect between organizational culture and mindfulness also significantly predicted job demands ($B = 0.443$, $p < 0.05$). However, contrary to the previously assumed direction, it was found that the higher the level of stressful organizational culture and the higher the level of mindfulness, the higher the level of interpersonal conflict. Additionally, to examine the directionality of the moderation effect, a graph is presented using the method proposed by Aiken and West [56] [Fig. 4].

3.5. Moderated mediation effect

Table 8 lists the results of verifying the role of mindfulness in the relationship in which organizational culture increases depression through perceptions of job demands. First, considering the moderation effect of mindfulness in the process by which organizational culture affects depression through perceptions of job demands, organizational culture significantly predicted job demands in the mediation model ($B = 0.282$, $p < 0.001$), and it had a

Table 4
Mediation and indirect effects of job demands

	Culture — demands — depression						Indirect effect of demands				
	Demand 1st (*B*/*SE*)		Depression 2nd (*B*/*SE*)		Depression 3rd (*B*/*SE*)			Indirect effect	*SE*	95% CI (bias-corrected)	
										LLCI	ULCI
Age	−0.017	0.009	−0.009	0.207	−0.006	0.007	Demands	0.071	0.023	0.031	0.120
Education	0.098	0.053	−0.033	0.007	−0.053	0.040					
Work period	0.131**	0.047	−0.003	0.042	−0.030	0.036					
Culture	0.339***	0.054	0.319***	0.037	0.248***	0.044					
Demand					0.208***	0.046					
F	13.850***	18.605***	19.964***								
R^2	0.170	0.215	0.270								

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. LLCI, lower limit confidence interval; ULCI, upper limit confidence interval.

Table 5
Mediation and indirect effects of interpersonal conflicts

	Culture — conflicts — depression						Indirect effect of conflicts				
	Conflicts 1st (B/SE)		Depression					Indirect effect	SE	95% CI (bias-corrected)	
			2nd (B/SE)		3rd (B/SE)					LLCI	ULCI
Age	−0.005	0.011	−0.009	0.207	−0.009	0.007	Conflicts	0.040	0.016	0.013	0.075
Education	0.069	0.064	−0.033	0.007	−0.042	0.041					
Work period	0.002	0.057	−0.003	0.042	−0.003	0.036					
Culture	0.301***	0.066	0.319***	0.037	0.279***	0.044					
Conflicts					0.131***	0.039					
F	6.028***		18.605***		17.777***						
R^2	0.082		0.215		0.248						

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. LLCI, lower limit confidence interval; ULCI, upper limit confidence interval.

significant effect on depression in the criterion model as well ($B = 0.248$, $p < 0.001$). Next, an examination of the index of moderated mediation showed that it was statistically significant, and a moderated mediation effect was verified (Index = −0.090, Boot LLCI = −0.190, Boot ULCI = −0.017). Additionally, considering the indirect effect by which organizational culture increased depression through perceptions of job demands at low, medium, and high levels of mindfulness, it was found that the effect was significant at the low and medium levels. Fig. 5 shows a graph of the results using the Johnson−Neyman method.

Table 9 lists the results of verifying the role of mindfulness in the relationship in which organizational culture increases depression through perceptions of interpersonal conflict. First, considering the moderation effect of mindfulness in the process by which organizational culture affects depression through perceptions of interpersonal conflict, organizational culture significantly predicted interpersonal conflict in the mediation model ($B = 0.276$, $p < 0.001$), and it had a significant effect on depression in the criterion model as well ($B = 0.279$, $p < 0.001$). Next, an examination of the index of moderated mediation showed that it was statistically significant, and a moderated mediation effect was verified (Index = 0.058, Boot LLCI = 0.002, Boot ULCI = 0.140). Additionally, considering the indirect effect by which organizational culture increased depression through perceptions of interpersonal conflict at low, medium, and high levels of mindfulness, it was observed that the effect was significant at the medium and high levels. Fig. 6 shows a graph of the results using the Johnson−Neyman method.

4. Discussion

This study verified that individual resource trait, that is mindfulness, moderates how depression is affected by stress that occurs because of the organizational culture at the workplaces of physical therapists. Based on this study, the following inferences can be made. First, similar to previous studies that have presented the positive effects of mindfulness, the mindfulness trait acts as a resource in the demands-resources model [57]. The initial version of the demands-resources model included only controllability (i.e., job demands-control model; Karasek [58], and researchers later expanded on it to include various types of demands and resources. Similarly, it was reconfirmed that mindfulness is another individual internal trait variable that acts as a resource that can buffer negative effects such as stress, depression, and anxiety.

Second, it can be inferred that the effects of such resources act in the same way on stress that occurs from organizational culture. Considering past studies on the effects of mindfulness meditation programs and training, some studies have been conducted on how the mindfulness of leaders forms a healthy organizational culture or improves worker performance and how organizational culture is improved by the introduction of mindfulness meditation. However, very few studies have been conducted on whether trait mindfulness directly reduces the negative effects of organizational culture [59,60]. There are various models related to organizational culture factors and formation. For example, models such as Schein's [61] 3 levels of culture, Hofstede's [62,63], 5D Model, and Mckinsey's 7S Framework have different levels or suggested goals; however, most of these models include a wide range of organizational aspects such as the organization's internal structure, leadership, individuals, jobs, etc. Seeing as how organizational culture forms over a long period and becomes deeply rooted in all areas of the organization, the task of changing organizational culture itself is a very difficult one [64]. Therefore, if members experience stress due to a strong organizational culture, there is a high possibility that alleviating the stress using individuals' internal resource traits will be a more

Table 6
Moderation effect of mindfulness on job demands

	Criterion: Job demands			
	1st (*B*/*SE*)		2nd (*B*/*SE*)	
Age	−0.015	0.009	−0.016	0.009
Education	0.111*	0.053	0.111*	0.052
Work period	0.127**	0.046	0.126**	0.046
Culture	0.314***	0.055	0.282***	0.056
Mindfulness	−0.213*	0.108	−0.214*	0.106
Culture × mindfulness			−0.433**	0.152
F	11.980***		11.607***	
R^2	0.182		0.206	

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

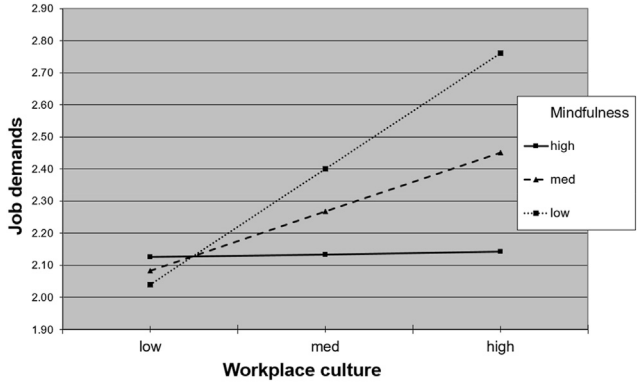


Fig. 3. Moderation effect of mindfulness between workplace culture and job demands.

Table 7
Moderation effect of mindfulness on interpersonal conflicts

	Criterion: Interpersonal conflicts			
	1st (*B/SE*)		2nd (*B/SE*)	
Age	−0.001	0.011	−0.001	0.011
Education	0.097	0.063	0.097	0.063
Work period	−0.008	0.056	−0.007	0.055
Culture	0.243***	0.066	0.276***	0.067
Mindfulness	−0.484***	0.129	−0.483***	0.128
Culture × mindfulness			0.443*	0.182
F	7.862***		7.653***	
(Δ) R^2	0.127		0.146	

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

effective means of resolution than changing the culture through follow-up measures.

Third, the positive moderation effect of mindfulness was nonetheless somewhat different than expected. It appears that the level of the mindfulness resource makes no difference when the level of the organizational culture is high if organizational culture stress is connected to depression through interpersonal conflict. This can be interpreted that the effect of mindfulness is inadequate when the perceived stress from organizational culture is high. Similar results can be found in previous studies as well. Specifically, there are studies that showed negative or mixed effects from mindfulness, e.g., a study that showed a positive correlation between mindfulness and musculoskeletal disorders and one that showed a negative correlation between mindfulness and performance [65,66]. This is related to the "dark side" aspect that has recently been reported in the field of mindfulness studies, and it is an area that requires more research [67,68]. Lee et al. [69] examined the impact of mindfulness on the relation between musculoskeletal disorders and stress. The findings suggest that the influence of mindfulness might have a limited impact on alleviating physical pain compared to its effects on psychological stress.

Moreover, based on a recent study employing ironic process theory, the mindfulness subfactors, namely observation and non-reaction in the FFMQ, were found to unintentionally prompt the exploration of thoughts or stimuli contrary to the intended desired state, leading to cognitive impairment. The argument posited that a deficiency in cognitive resources may contribute to the heightened perception of only negative thoughts or emotions [70]. Therefore, it is essential to investigate whether physical therapists perceive interpersonal stress as more intense than work-related stress.

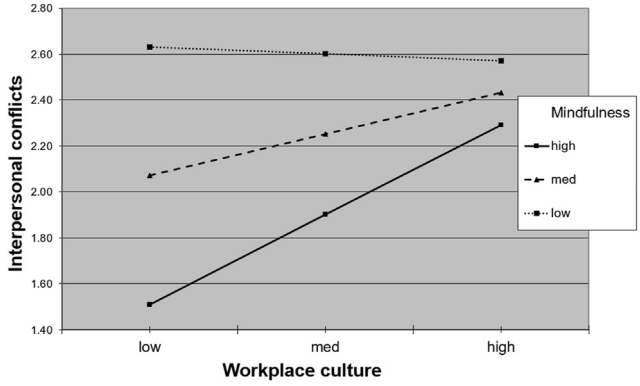


Fig. 4. Moderation effect of mindfulness between workplace culture and interpersonal conflicts.

Table 8
Conditional indirect effect of mindfulness in mediation effect of job demands between workplace culture and depression

	Mediation model (demands)		Criterion model (depression)	
	B	SE	B	SE
Age	−0.016	0.009	−0.006	0.007
Education	0.111*	0.052	−0.053	0.040
Work period	0.126**	0.046	−0.030	0.036
Culture	0.282***	0.056	0.248***	0.044
Mindfulness	−0.214*	0.106		
Culture × mindfulness	−0.433**	0.152		
Demands			0.208***	0.046
F	11.607***		19.964***	
R^2	0.206		0.270	

		Depression			
		Indirect effect	*SE*	95% CI (bias-corrected)	
				LLCI	ULCI
Mindfulness	L	0.090	0.028	0.042	0.149
	M	0.060	0.019	0.026	0.101
	H	0.025	0.021	−0.018	0.067

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. LLCI, lower limit confidence interval; ULCI, upper limit confidence interval.

Furthermore, in-depth exploratory research is needed to understand the specific impact of sub-variables of mindfulness on individual stress factors.

When viewed from a cross-cultural perspective, the organizational cultures of Korean healthcare institutions are physician-centered and vertically hierarchical. Therefore, from the viewpoint of physical therapists who support such organizations, it is difficult to bring positive changes to the negative interpersonal relationships that occur within an organization owing to its hierarchical structure, and even if such changes occur, they may progress so slowly that they cannot be perceived by individuals. Consequently, when there is high stress regarding organizational culture, it is unlikely to change, and the effects of mindfulness may also be marginal.

This study had the following limitations. First, because it is a cross-sectional study, there is a need for longitudinal studies to clearly verify causal relationships. In the case of MBSR or education programs, it is possible to verify the differences before and after

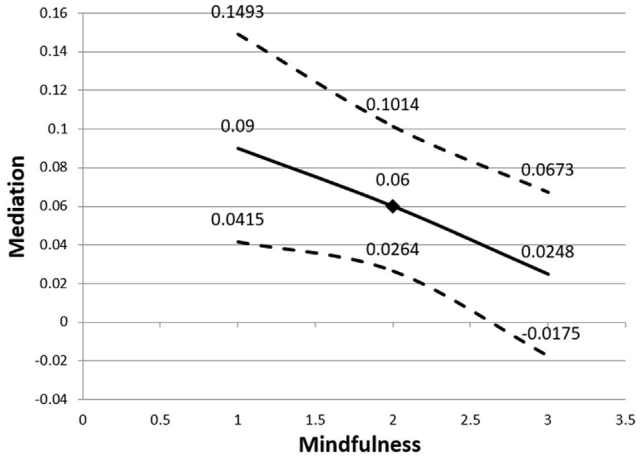


Fig. 5. Conditional indirect effect of mindfulness in mediation effect of job demands between workplace culture and depression.

Table 9
Conditional indirect effect of mindfulness in mediation effect of interpersonal conflicts between workplace culture and depression

	Mediation model (conflicts)		Criterion model (depression)	
	B	SE	B	SE
Age	−0.001	0.011	−0.009	0.007
Education	0.097	0.063	−0.042	0.041
Work period	−0.007	0.055	−0.003	0.036
Culture	0.276***	0.067	0.279***	0.044
Mindfulness	−0.483***	0.128		
Culture × mindfulness	0.443*	0.182		
Conflicts			0.131***	0.039
F	7.653***		17.777***	
R^2	0.146		0.248	

		Depression			
		Indirect effect	*SE*	95% CI (bias-corrected)	
				LLCI	ULCI
Mindfulness	L	0.016	0.016	−0.014	0.050
	M	0.036	0.016	0.012	0.068
	H	0.058	0.023	0.021	0.108

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. LLCI, lower limit confidence interval; ULCI, upper limit confidence interval.

intervention. However, the influence of individuals' temperamental traits makes it necessary to examine whether internal resources that have accumulated over long periods of time have an effect when stress occurs. Therefore, more accurate results can be obtained by measuring the outcome variables through actual behaviors such as turnover and using methods such as comparing the survival rates of groups according to differences in mindfulness resources through survival analysis.

Secondly, the interpersonal conflicts scale comprises items that assess "lack of support from colleagues or superiors," which may pose challenges in terms of face validity for respondents. Previous research that developed the scale argues that this stress area reflects interpersonal conflict within the Republic of Korea's hierarchical and vertical organizational culture [54]. However, it's important to note that a low level of positive affectivity perceived by an individual does not necessarily indicate a high level of negative affectivity [80]. This suggests that social support and interpersonal conflict might be independent concepts rather than inverse correlates. Therefore, future studies would benefit from using questions with higher validity that directly measure interpersonal conflicts.

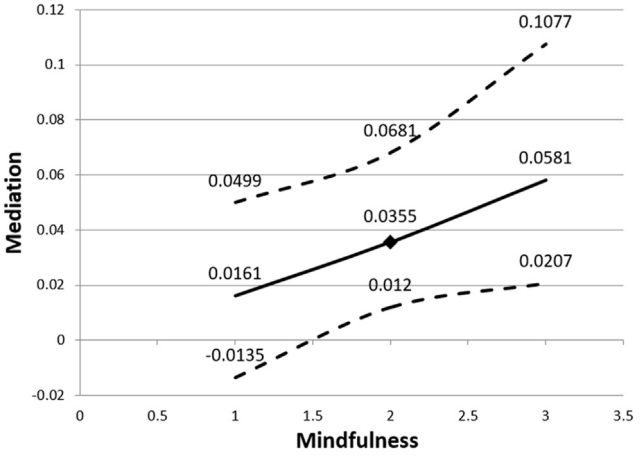


Fig. 6. Conditional indirect effect of mindfulness in mediation effect of interpersonal conflicts between workplace culture and depression.

Third, this study's data focuses on workers from an Asian country with a relatively high level of conservative and hierarchical organizational cultures, and it focuses on the job category of physical therapists working in the medical field. Because the data were collected during a national disaster, there are limitations in regard to generalizing the relationships between variables to other groups and circumstances.

In the case of Korean physical therapists, only those who have graduated or are expected to graduate from a 3 or 4-year course at a university physical therapy department take the national exam and obtain a license. However, in the United States, all new graduates are awarded a Doctor of Physical Therapy and physical therapists are considered primary care clinicians who have direct access to patient care [71,72]. In this way, American physical therapists have an independent and horizontal organizational culture as they are clinicians, whereas Korean physical therapists have a hierarchical and vertical organizational culture as they work under the supervision of doctors. Therefore, to examine the positive effects of mindfulness on the stress caused by organizational culture, which includes various aspects of a single organization, it will be necessary to conduct cross-cultural studies and perform revalidation on various groups at various points in time.

Ethical considerations and disclosures

All of the participants provided informed consent prior to participation, as required by the Institutional Review Board of the affiliated university (No. CUPIRB-2019-064).

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Data availability

The data collected in this study is confidential and it will not be shared as an open source.

CRediT authorship contribution statement

Jong-Hyun Lee: Formal analysis. **Jinwon Lee:** Investigation. **Jaejin Hwang:** Conceptualization, Methodology. **Du-Jin Park:** Investigation, Resources. **Won-Jin Kim:** Writing – review & editing. **Kyung-Sun Lee:** Conceptualization, Funding acquisition, Project administration, Writing – original draft, Writing – review & editing.

Conflicts of interest

The authors confirm that they know of no conflict of interest associated with its publication and that they received no financial support for this work that could have influenced its outcome.

References

[1] Schein EH. Organizational psychology. Prentice-Hall; 1965.
[2] Schein EH. Culture: the missing concept in organization studies. Adm Sci Q 1996;41:229–40.

[3] Dóra K, Péter R, Péter SZ, Andrea C. The effect of organizational culture on employee well- being: work-related stress, employee Identification, turnover Intention. J Int Coop Dev 2019;2:19.
[4] Hartnell C, Ou A, Kinicki A, Choi D, Karam EA. Meta-analytic test of organizational Culture's association with elements of an organization's system and its relative predictive validity on organizational outcomes. J Appl Psychol 2019;104.
[5] Levinson MH. Managing organisational stress through general semantics. ETC 2004;61:245–54.
[6] Scott-Findlay S, Estabrooks CA. Mapping the organizational culture research in nursing: a literature review. J Adv Nurs 2006;56:498–513.
[7] Smith ME. Changing an organisation's culture: correlates of success and failure. Leadersh Organ Dev J 2003;24:249–61.
[8] Cameron KS, Quinn RE. Diagnosing and changing organizational culture based on competing values framework. San Francisco: Josey Bass; 2006.
[9] Cropanzano R, Mitchell M. Social exchange theory: an interdisciplinary review. J Manag 2005;31:874–900.
[10] Emerson RM. Social exchange theory. Ann Rev Sociol 1976;2:335–62.
[11] O'Reilly CA, Chatman JA. Culture as social control: corporations, cults, and commitment. In: Staw BM, Cummings LL, editors. Research in organizational behavior: an annual series of analytical essays and critical reviews, vol. 18. Elsevier Science/JAI Press; 1996. p. 157–200.
[12] Watkins M. What is organizational culture? And why should we care. Harv Bus Rev 2013:1–6.
[13] Anicich EM, Fast NJ, Halevy FN, Galinsky AD. When the bases of social hierarchy collide: power without status drives interpersonal conflict. Organ Sci 2015;27:123–40.
[14] Yip JA, Levine EE, Brooks AW, Schweitzer ME. Worry at work: how organizational culture promotes anxiety. Res Organ Behav 2020;40:100124.
[15] Kokt D, Ramarumo R. Impact of organizational culture on job stress and burnout in graded accommodation establishments in the Free State province, South Africa. Int J Contemp Hosp Manag 2015;27:1198–213.
[16] Hakanen JJ, Schaufeli WB, Ahola K. The Job Demands-Resources model: a three-year cross-lagged study of burnout, depression, commitment, and work engagement. Work Stress 2008;22:224–41.
[17] Leone S, Huibers M, Knottnerus J, Kant IJ. The prognosis of burnout and prolonged fatigue in the working population: a comparison. J Occup Environ Med 2008;50(10):1195–202.
[18] Bakker AB, Demerouti E. The job demands-resources model: state of the art. J Manag Psychol 2007;22(3):309–28.
[19] Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB. The job demands – resources model of burnout. J Appl Psychol 2001;86:499–512.
[20] Bakker AB, Demerouti E. Multiple levels in job demands-resources theory: implications for employee well-being and performance. In: Diener E, Oishi S, Tay L, editors. Handbook of well-being. Salt Lake City, UT: DEF Publishers. D; 2018.
[21] Kabat-Zinn J. Mindfulness-based interventions in context: past, present, and future. Clin Psychol Sci Pract 2003;10:144–56.
[22] Brown KW. Mindfulness training to enhance positive functioning. In: Brown KW, Creswell JD, Ryan RM, editors. Handbook of mindfulness: theory, research, and practice. The Guilford Press; 2015. p. 311–25.
[23] Reangsing C, Punsuwun S, Schneider JK. Effects of mindfulness interventions on depressive symptoms in adolescents: a meta-analysis. Int J Nurs Stud 2020;2020:115.
[24] Goldberg SB, Tucker RP, Greene PA, Davidson RJ, Wampold BE, Kearney DJ, Simpson TL. Mindfulness based interventions for psychiatric disorders: a systematic review and meta-analysis. Clin Psychol Rev 2018;59:52–60.
[25] Lee JH, Lee KS, Hwang J. Job satisfaction and job-related stress among nurses: the moderating effect of mindfulness. Work 2019;62:87–95.
[26] Cornforth E, Schramm K. Physical therapist's beliefs, practice patterns and barriers to the incorporation of mindfulness meditation into management of individuals with chronic dizziness. Complement Ther Clin Pract 2021;43:101387.
[27] Dean S, Peng W, Zaslawski C, Elliott D, Newton-John T, Campo M, Pappas E. Mindfulness in physical and occupational therapy education and practice: a scoping review. Phys Ther Rev 2017;22:221–8.
[28] Kindel HR, Rafoth MA. The effects of teaching mindfulness on stress in physical therapy students: a randomized controlled trial. Health Prof Educ 2020;6:142–52.
[29] Baer RA, Smith GT, Hopkins J, Krietemeyer J, Toney L. Using self-report assessment methods to explore facets of mindfulness. Assessment 2006;13:27–45.
[30] Chadwick P, Hember M, Symes J, Peters E, Kuipers E, Dagnan D. Responding mindfully to unpleasant thoughts and images: reliability and validity of the Southampton mindfulness questionnaire (SMQ). Br J Clin Psychol 2008;47:451–5.
[31] Cardaciotto L, Herbert JD, Forman EM, Moitra E, Farrow V. The assessment of present-moment awareness and acceptance: the Philadelphia mindfulness scale. Assessment 2008;15:204–23.
[32] Erisman SM, Roemer LA. Preliminary investigation of the process of mindfullness. Mindfulness 2012;3:30–43.
[33] Mesmer-Magnus J, Manapragada A, Viswesvaran C, Allen JW. Trait mindfulness at work: a meta-analysis of the personal and professional correlates of trait mindfulness. Hum Perform 2017;30:79–98.
[34] Khan S, Khan RA. Chronic stress leads to anxiety and depression. Ann Psychiatry Ment Health 2017;5:1–4.
[35] Baum A. Stress, intrusive imagery, and chronic distress. Health Psychol 1990;9:653–75.
[36] Quinn R, Rohrbaugh JA. Spatial model of effectiveness criteria: toward a competing values approach to organizational analysis. Manag Sci 1983;29:363–77.
[37] Quinn RE, Rohrbaugh J. A competing values approach to organizational effectiveness. Public Product Rev 1981;5:122–40.
[38] Biong H, Nygaard A, Silkoset R. The influence of retail management's use of social power on corporate ethical values, employee commitment, and performance. J Bus Ethics 2010;97:341–63.
[39] Richard OC, McMillan-Capehart A, Bhuian SN, Taylor EC. Antecedents and consequences of psychological contrast: does organizational culture really matter? J Bus Res 2009;62:818–25.
[40] Higgins ET. Regulatory focus theory. Handb Theor Soc Psychol 2012;1:483–504.
[41] Lanaj K, Chang CH, Johnson RE. Regulatory focus and work-related outcomes: a review and meta-analysis. Psychol Bull 2012;138:998–1034.
[42] Wallace JC, Butts MM, Johnson PD, Stevens FG, Smith MB. A multilevel model of employee innovation: understanding the effects of regulatory focus, thriving, and employee involvement climate. J Manag 2016;42:982–1004.
[43] Byrne BM. Structural equation modeling with EQS and EQS/Windows. Thousand Oaks, CA: Sage Publications; 1994.
[44] Kline RB. Principles and practice of structural equation modeling. Guilford Press; 1998.
[45] Harman HH. Modern factor analysis. 3rd ed. Chicago, IL: The University of Chicago Press; 1976.
[46] Podsakoff PM, MacKenzie SB, Lee J-Y, Podsakoff NP. Common method biases in behavioral research: a critical review of the literature and recommended remedies. J Appl Psychol 2003;88:879–903.
[47] Podsakoff PM, MacKenzie SB, Podsakoff NP. Sources of method bias in social science research and recommendations on how to control it. Ann Rev Psychol 2012;63:539–69.
[48] Hayes AF. Introduction to mediation, moderation, and conditional process analysis second edition: a regression-based approach. New York, NY: The Guilford Press; 2017.
[49] Johnson PO, Fay LC. The Johnson–Neyman technique, its theory and application. Psychometrika 1950;15:349–67.
[50] Johnson PO, Neyman J. Tests of certain linear hypotheses and their application to some educational problems. Stat Res Mem 1936;1:57–93.
[51] Potthoff RF. On the Johnson–Neyman technique and some extensions thereof. Psychometrika 1964;29:241–56.
[52] Medvedev ON, Titkova EA, Sieget RJ, Hwang YS, Krägeloh CU. Evaluating short versions of the five facet mindfulness questionnaire using Rasch analysis. Mindfulness 2018;9:1411–22.
[53] Won D, Kim KH. Validation of Korean version of five-factor mindfulness questionnaire. Korean J Health Psychol 2006;11:871–86.
[54] Chang SJ, Koh SB, Kang D, Kim SA, Kang MG, Lee CG, Chung JJ, Cho JJ, Son M, Chae CH, Kim JW, Kim JI, Kim HS, Roh SC, Park JB, Woo JM, Kim SY, Kim JY, Ha M, Park J, Rhee KY, Kim HR, Kong JO, Kim IA, Kim JS, Park JH, Huyun SJ, Son DK. Developing an occupational stress scale for Korean employees. Korean J Occup Environ Med 2005;17:297–317.
[55] Cho MJ, Kim KH. Diagnostic validity of the CES-D(Korean Version) in the assessment of DSM-III-R major depression. J Korean Neuropsychiatr Assoc 1993;32:381–99.
[56] Aiken LS, West SG. Multiple regression: testing and interpreting interactions. Sage Publications, Inc.; 1991.
[57] Grover SL, Teo STT, Pick D, Roche M. Mindfulness as a personal resource to reduce work stress in the job demands-resources model. Stress Health 2017;33:426–36.
[58] Karasek RA. Job demands, job decision latitude, and mental strain: implications for job redesign. Adm Sci Q 1979;24:285–308.
[59] Petitta L, Martínez-Córcoles M. A conceptual model of mindful organizing for effective safety and crisis management. The role of organizational culture. Curr Psychol 2023;42:25773–92.
[60] Reb J, Chaturvedi S, Narayanan J, Kudesia RS. Leader mindfulness and employee performance: a sequential mediation model of LMX quality, interpersonal justice, and employee stress. J Bus Ethics 2019;60:745–63.
[61] Schein EH. Organizational culture and leadership. San Francisco, CA: Jossey-Bass Publishers; 1992.
[62] Hofstede G. Culture's consequences: international differences in work-related values. Beverly Hills: Sage Publications; 1980. London.
[63] Hofstede G. Cultures and organizations. Software of the mind. New York: McGraw-Hill; 1997.
[64] Schabracq MJ. Changing organizational culture: the change agent's guidebook. John Wiley & Sons, Ltd.; 2007.
[65] O'Brien WH, Horan KA, Singh SR, Moeller MM, Wasson RS, Jex SM, Matthews RA, Barratt CL. Relationships among training, mindfulness, and workplace injuries among nurse aides working in long-term care settings. Occup Health Sci 2019;3:45–58.
[66] Remmers C, Topolinski S, Michalak J. Mindful(l) intuition: does mindfulness influence the access to intuitive processes? J Posit Psychol 2015;10:282–92.
[67] Hall SP. Being mindful about mindfulness: exploring the dark side. Int J Coerc Abus Manip 2020;1:17–28.

[68] Lutkajtis A. The dark side of dharma: why have adverse effects of meditation been Ignored in contemporary western secular contexts? J Acad Study Relig 2018;31:192–217.
[69] Lee JH, Lee J, Lee KS. Moderated mediation effect of mindfulness on the relationship between muscular skeletal disease, job stress, and turnover among Korean firefighters. Saf Health Work 2020;11:222–7.
[70] Lee J-H, Moon Y-K, Lee K-S, Beehr TA. The negative effect of solving the 'white bear' problem with mindfulness: expansion and reconfirmation of mindfulness profiles based on ironic process theory. Personal Individ Differ 2024;217:1–12.
[71] APTA. Physical therapist education overview. https://www.apta.org/For_Prospective_Students/PT_Education/Physical_Therapist_(PT)_Education_Overview.aspx 2020. [Accessed 10 June 2022]; 2020.
[72] Rowland DM, Murphy AA, Manik HR, Lane CY, Givens DL, Cook CE, Garcia AN. Predictors of research productivity among physical therapy programs in the United States: an observational study. BMC Med Educ 2020;20:216.
[73] Champoux JE. The world of nonwork: some implicati on for job Re-design efforts. Pers Psychol 1980;33:61–75.
[74] Near J, Rice R, Hunt R. The relationship between work and nonwork domains: a review of empirical research. J Manag Rev 1980;5:415–29.
[75] Staines G. Spillover versus compensation: a review of the literature of the relationship between work and nonwork. Hum Relat 1980;33:111–29.
[76] Zedeck S, Mosier KL. Work in the family and employing organization. Am Psychol 1990;45:240–51.
[77] Bentler PM. Comparative fit indexes in structural models. Psychol Bull 1990;107:238–46.
[78] Comrey AL, Lee HB. A first course in factor analysis. 2nd ed. Hillsdale, NJ: Erlbaum; 1992.
[79] Kline RB. Principles and practice of structural equation modeling. New York: Guilford Press; 2011.
[80] Watson D, Clark L. Negative affectivity. Psychol Bull 1984;96:465–90.