

# Engagement among physicians fighting COVID-19: the mediating role of autonomy

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<b>Background</b>	Keeping and improving work engagement among physicians fighting COVID-19 is important to healthy medical systems. In line with the job demands-resources model, optimism was expected to positively relate with job resources, leading to higher work engagement. However, the underlying mechanism between optimism, autonomy and work engagement has not been explored.
<b>Aims</b>	To examine whether optimism has a positive impact on work engagement via autonomy among physicians fighting COVID-19 in China.
<b>Methods</b>	This study was conducted among physicians in March 2020. A convenience sample was used to recruit physicians from the Wuhan Leishenshan Hospital and Wuhan Jinyintan Hospital. One hundred and four Chinese physicians working in the COVID-19 epidemic completed a survey measuring levels of autonomy, optimism and work engagement. The PROCESS macro (model 4) was used to test hypotheses about mediation.
<b>Results</b>	This current study found that optimism was related to increased autonomy, and autonomy was related to increased work engagement. The results of the bias-corrected bootstrap method suggested the indirect effect of optimism on work engagement via autonomy (Effect = 0.16, SE = 0.08, lower level confidence interval = 0.04, upper level confidence interval = 0.37), indicating a mediated relationship, in which autonomy is one mechanism to explain the link between optimism and increased work engagement.
<b>Conclusions</b>	This study follows an observational design, with in-depth analysis of the relationship between optimism, autonomy and work engagement. When management implements strategies to improve work engagement among physicians working in the COVID-19 epidemic, the mediating impact of autonomy on the association between optimism and work engagement should be considered.
<b>Key words</b>	Autonomy; Covid-19; healthcare professionals; job performance; optimism; work engagement.

## Introduction

Physicians have played an important role in making correct decisions and delivering appropriate treatment. Chinese physicians were facing high risks of infection, long working hours, excessive workload and administrative demands, during the outbreak of COVID-19. In the long term, they may become less productive, work with co-workers inefficiently and fail to improve patient safety and healthcare quality. Work engagement is a crucial factor contributing to help physicians work productively [1]. Keeping and improving work engagement among

physicians working in the COVID-19 epidemic is important for a healthy medical workforce.

A guided theory can help researchers to advance the understanding of factors affecting work engagement. It is recommended that employees' occupational well-being (e.g. work engagement) can be detected in line with the job demands-resources (JD-R) model [1]. This model suggests that job resources (e.g. autonomy) can trigger a motivational pathway to work engagement.

In line with the JD-R model, Schaufeli and Taris [2] suggested that additional research is needed to investigate whether personal resources predict job resources

## Key learning points

### What is already known about this subject:

- Physicians have played an important role in making decisions and delivering appropriate treatment. Keeping and improving work engagement among physicians working in the COVID-19 epidemic is important for a healthy medical workforce.

### What this study adds:

- Our study indicates that optimism is related to increased work engagement, and autonomy can be seen as a mediator of the indirect effect of optimism on work engagement in physicians working in the COVID-19 epidemic.

### What impact this may have on practice or policy:

- When management implements strategies improving work engagement among physicians, the mediating impact of autonomy on the association between optimism and work engagement should be considered.

leading to work engagement. Optimism can be viewed as one of the examples of personal resources. Therefore, we aimed to clarify whether optimism has a positive impact on work engagement via autonomy among physicians working in the COVID-19 epidemic.

## Methods

A convenience sample was used to recruit Chinese physicians from the Wuhan Leishenshan Hospital and Wuhan Jinyintan Hospital; this study was conducted in March 2020. These hospitals have played an important role in delivering healthcare to COVID-19 patients in Wuhan. A web-based questionnaire was designed to collect data and it was anonymous.

This study has obtained ethical approval from ethics committee of Hubei No. 3 People’s Hospital of Jiangnan University (2020-001), and informed consent from the participants was obtained using click-box agreements on the online survey.

Autonomy was assessed by using the job autonomy survey scale developed by Richard and Oldham [3]. The four-item version of the scale developed by Scheier *et al.* [4] was used to measure optimism. The Utrecht Work Engagement Scale-9 was used to assess work engagement [5].

We calculated the descriptive information, average variance extracted (AVE) and correlation matrix by using IBM® SPSS® Statistics. We adopted the PROCESS macro to test the mediation model [6]. The parameters of observed variable path analysis were

estimated by using ordinary least squares regression in PROCESS. Model 4 of PROCESS macro was used for the analyses of mediation. We adopted the bootstrapping method to test the significance of the indirect effect, as it does not require the assumption of normality of the sampling distribution. If 95% bias-corrected bootstrap confidence intervals for the indirect effect do not contain zero, there is evidence to support the indirect effects.

## Results

A total of 104 physicians consented to participate and completed questionnaires. Cronbach’s alpha, means, standard deviations, AVE and bivariate correlations for each variable can be seen in Table 1. Each AVE exceeded 0.50, indicating satisfactory convergent validity. Satisfactory discriminant validity was confirmed in our study, due to the square root of AVE values for all variables exceeding the construct correlation values.

As shown in Table 2, the significantly positive relationship between optimism and autonomy was found (Effect = 0.77,  $P < 0.001$ ), and autonomy was significantly related to work engagement (Effect = 0.21,  $P < 0.001$ ). The results of the bias-corrected bootstrap suggested that optimism was related to work engagement indirectly through autonomy (Effect = 0.16, SE = 0.08, lower level confidence interval = 0.04, upper level confidence interval = 0.37). Therefore, the mediating role of autonomy was supported among physicians working in the COVID-19 epidemic.

**Table 1.** Correlation coefficient, mean, standard deviation and AVE ( $N = 104$ )

Variables	Cronbach’s alpha	<i>M</i>	<i>SD</i>	AVE	1	2	3
1 Autonomy	0.88	5.11	1.36	0.72	<b>0.85</b>		
2 Optimism	0.93	4.02	0.81	0.78	0.46**	<b>0.88</b>	
3 WE	0.93	5.15	1.03	0.63	0.43**	0.45**	<b>0.79</b>

Values on the diagonal in parentheses are the square root of AVE; WE, work engagement.

\*\*Significant at the 0.01 level.

## Discussion

This study follows an observational design, with in-depth analysis of the relationship between optimism, autonomy and work engagement based on the JD-R model. We found that optimism is a mediator variable between autonomy and work engagement. Guglielmi *et al.* [7] found that opportunity to learn is a mediator of the effect of self-efficacy on work engagement. According to social cognitive theory, personal resources shape the way people understand their environment and react to it [8]. This means that optimism serving as one type of personal resource can have positive outlook properties to increase perceptions of job resources. When physicians are more optimistic, they perceive greater resources to help them complete the job. Therefore, experiencing the motivational process can enable physicians to be more engaged in their work.

Our study indicates that optimism is related to increased work engagement, and autonomy can be seen as a mediator of the indirect effect of optimism on work engagement in physicians. There needs to be more emphasis on occupational health among those physicians, and management should take effective measures to enhance optimism and autonomy.

Because optimism can be shaped and taught [9], hospital administrations should design training courses, such as optimism training, to develop employees' optimism. For example, a web-based training programme was beneficial to increase optimism, and participants can feel more optimism by interspersing video discussion and self-focused exercises [10]. Flexible training can also enable participation.

Autonomy is the key to increasing work engagement due to its mediating effects. To improve and shape autonomy, leadership may play an important role in the workplace. If supervisors or administration prefer to listen to subordinates' work needs, provide choice and encourage employees' self-initiated proactive actions, autonomy can be boosted. Therefore, it is necessary to develop leadership training as an occupational health intervention. During the courses, supervisors and leaders should be aware of the role of flexibility and freedom when employees prepare to start to work.

**Table 2.** Mediation analyses

DV	IV	Coeff	SE	<i>t</i>	<i>P</i>	LLCI	ULCI
WE	Optimism	0.41	0.12	3.38	<0.001	0.17	0.66
	Autonomy	0.21	0.07	2.90	<0.001	0.07	0.36
Autonomy	Optimism	0.77	0.15	5.22	<0.001	0.48	1.06
	<b>Indirect effect</b>	<b>0.16</b>	<b>0.08</b>	–	–	<b>0.04</b>	<b>0.37</b>

Optimism has a positive impact on work engagement via autonomy; DV, dependent variable; Indirect effect: Optimism → Autonomy → Work engagement; IV, independent variable; LLCI, lower limit of confidence interval; ULCI, upper limit of confidence interval; WE, work engagement; bootstrap sample size = 5000.

The results of this study contribute to clarifying the mediating role of autonomy in the relationship between optimism and work engagement. These findings suggest it is important to develop programmes to improve optimism and autonomy, because they are related to increased work engagement among physicians working in the COVID-19 epidemic.

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## Competing interests

None declared.

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