

# Psychological capital and organizational citizenship behavior among nurses during the COVID-19 epidemic: Mediation of organizational commitment

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## Research Article

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# Abstract

**Background:** Nurses' organizational citizenship behavior, a spontaneous "altruistic work behavior", may be affected by psychological capital and organizational commitment, but its mechanism is not clear. The aim of this study was to investigate the characteristics and distribution of psychological capital, organizational commitment and organizational citizenship behavior among nurses during the COVID-19 epidemic, and explore the mediating role of organizational commitment in psychological capital and organizational citizenship behavior.

**Methods:** Across-sectional survey was conducted among 746 nurses from 6 designated hospitals for treatment of COVID-19 in China. Descriptive statistics, Pearson correlation analysis, and structural equation model were used in this study.

**Results:** Nurses' psychological capital, organizational commitment and organizational citizenship behavior scores were  $103.12 \pm 15.57$ ,  $46.53 \pm 7.14$  and  $101.47 \pm 12.14$ , respectively. Additionally, organizational commitment partially mediates between psychological capital and organizational citizenship behavior.

**Conclusions:** Nurses' psychological capital, organizational commitment and organizational citizenship behavior were at the upper middle level during the COVID-19 epidemic, which was affected by social-demographic variables. Moreover, psychological capital can affect organizational citizenship behavior through the mediating effect of organizational commitment. The findings call for the nursing administrations should develop and excavate nurses' psychological capital, enhance nurses' organizational commitment, so as to promote nurses' organizational citizenship behavior.

## Background

COVID-19, a highly infectious disease, has brought great challenges to the global medical and health care system (Zhang et al., 2021). Some studies pointed out that there was no specific treatment for COVID-19 at present, and its main treatment strategy was still the combination of anti-virus and supportive care (Tang et al., 2020; Lyu et al., 2020). As the main personnel providing nursing services for COVID-19 patients, nurses are faced with complex working environment, high work intensity and high work pressure, which may affect their "altruistic work behavior", such as organizational citizenship behavior (Zhang et al., 2021).

Nurses' organizational citizenship behavior is a spontaneous behavior, which is not within the requirements of the organizational system and is not caused by the formal salary system, but can maintain and enhance the social and psychological environment of the organization, and promote the completion of task performance (Jin et al., 2022). Some studies found that nurses' organizational citizenship behavior may be affected by their psychological capital and organizational commitment, and ultimately affect nursing organizational performance (Taghinezhad et al., 2015; Lee et al., 2020). The job demands-resources (JD-R) model also pointed out that personal resources (such as psychological

capital) can jointly stimulate workers' motivation (such as organizational commitment), which has a positive impact on employees' job performance (such as organizational citizenship behavior) (Bakker et al., 2017).

Although many studies believed that psychological capital and organizational commitment had a positive impact on nurses' organizational citizenship behavior (Taghinezhad et al., 2015; Lee et al, 2020), few studies have explored how this impact works, especially during the COVID-19 epidemic. In order for nursing managers to better promote nurses' organizational citizenship behavior and improve overall nursing performance during the COVID-19 epidemic, it is necessary to clarify the mechanism between nurses' psychological capital, organizational commitment and organizational citizenship behavior.

### **Psychological capital**

Nurses' psychological capital refers to a kind of positive psychological energy in a state-like displayed by nurses in their growth and development, which indicates their personal motivation tendency, and can obtain competitive advantage through targeted investment and development (Luthans et al., 2007). The conservation of resources (COR) theory holds that psychological capital is an important personal psychological resource, and the higher the level of psychological capital, the richer the available psychological resources, the less vulnerable to the impact of resource loss, the more able they are to coordinate resource income, clarify the relationship between individual and organization, show positive feedback, such as high-level organizational commitment and work engagement (Hobfoll, 2002; Zhou et al., 2018). Another study showed that nurses with a high level of psychological capital will not only take the initiative to complete their own work, but also may help their colleagues complete tasks without requirements, that is, show more organizational citizenship behavior (Hu et al., 2019).

### **Organizational commitment**

Organizational commitment refers to employees' recognition and acceptance of the goals and values set by the organization, emotional dependence on the organization and willingness to continue to stay and contribute to it (Chang et al., 2009; Cheng et al., 2017). Kazemipour et al (2012) and Taghinezhad et al (2015) both confirmed that organizational commitment could improve nurses' job satisfaction, increase their care behavior, make nurses show a high level of self-rated job performance, and positively predict nurses' organizational citizenship behavior.

According to the above, nurses' psychological capital, organizational commitment and organizational citizenship behavior are closely related. However, so far, there is little research on the relationship and path between the three, especially during the COVID-19 epidemic. Therefore, based on JD-R model, the purpose of this study is to analyze the correlation between nurses' psychological capital, organizational commitment and organizational citizenship behavior during the COVID-19 epidemic, and explore the mediating role of organizational commitment between psychological capital and organizational citizenship behavior, so as to provide a theoretical basis for stimulating nurses' work enthusiasm and

improving nursing organizational performance during the COVID-19 epidemic. The research hypotheses are as follows:

Hypothesis 1: Nurses' psychological capital is positively correlated with organizational citizenship behavior.

Hypothesis 2: Nurses' organizational commitment is positively correlated with organizational citizenship behavior.

Hypothesis 3: Nurses' organizational commitment plays a mediating role between psychological capital and organizational citizenship behavior.

## Methods

### Aims and design

This is a descriptive, cross-sectional study employing a path analysis approach to determine the mediating effect of nurses' organizational commitment in the relationship between psychological capital and organizational citizenship behavior during the COVID-19 epidemic.

### Data collection and sample

From January 2021 to May 2021, convenient sampling was used to select clinical nurses from 6 designated hospitals for treatment of COVID-19 in Chengdu, China. We first contacted the hospital administrator and obtained permission for investigation. The survey was mainly conducted through the network platform, and each hospital had a volunteer responsible for the investigation feedback and follow-up work of the hospital, and another research assistant monitored the network platform at any time during the survey. The electronic questionnaire included a unified guide to introduce the purpose, variables and filling requirements, and pointed out that it was deemed informed consent to fill in without omission and submit the questionnaire, and the survey was anonymous and voluntary. If there were problems with the quality of the questionnaire, the research assistant would quickly contact the volunteer and asked him to help strengthen the communication with the respondents to ensure the reliability of the data. A total of 800 questionnaires were distributed and 746 valid questionnaires were recovered, with an effective recovery rate of 93.25%.

The participants work in different departments, including internal medicine, surgery, obstetrics, pediatrics and infection department, etc. The inclusion criteria were as follows: (a) to have obtained the nurse certificate; (b) to be engaged in clinical nursing for  $\geq 1$  year; (c) informed consent and voluntary participation in this study. The exclusion criteria were as follows: (a) informal staff, such as refresher nurses; (b) nurses who were not on duty during the investigation; (c) nurses suffering from major physical diseases or mental disorders during the investigation; (d) nurses who experienced major family changes during the survey.

## **Ethical consideration**

This study has been approved by the XX (No. XX).

## **Measures**

### *Social-demographic information questionnaire*

The social-demographic information questionnaire included gender, age, education level, marital status, years of work experience, work hours per day, sleep hours per day, monthly income and participation in mental health-related training, with a total of 9 items.

### *Psychological Capital Questionnaire-24 (PCQ-24)*

PCQ-24 compiled by Luthans et al (2007), includes four dimensions of self-efficacy, hope, resiliency and optimism, with a total of 24 items, including three reverse scoring questions, items 13, 20 and 23 respectively. Participants were asked to answer with a 6-point Likert scale, ranging from "strongly disagree" to "strongly agree", score 1-6 points respectively, and the total score was the sum of the scores of each item. The higher the score, the higher the level of psychological capital. Through literature review, it was found that PCQ-24 had been proved to have good reliability and validity in Chinese nurse population (Zhou et al., 2018). In the current study, the Cronbach's  $\alpha$  reliability values of PCQ-24 was 0.939, and the confirmatory factor analysis (CFA) of PCQ-24 based on the four factor model showed that the fitting degree of the model was good ( $c2/df = 2.498$ , GFI = 0.942, AGFI = 0.921, NFI = 0.958, CFI = 0.974, TLI = 0.967 and RMSEA = 0.045), indicating that PCQ-24 had good reliability and validity in this study sample and could be used for data analysis.

### *Chinese version Organizational Commitment Questionnaire (C-OCQ)*

The original version of OCQ was developed by Chang et al (2009) to measure nurses' organizational commitment level, including three dimensions: value commitment, effort commitment and retention commitment, with a total of 12 items. C-OCQ translated by Cheng et al (2017), and participants were asked to answer with a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree", they received 1-5 points respectively. The higher the score, the higher the level of organizational commitment. It was found that C-OCQ had been proved to have good reliability and validity in Chinese nurse population, and score of 12-24 indicated a low level of organizational commitment, a score of 25-47 indicated a medium level, and a score of 48-60 indicated a high level (Tai et al., 2021). In this study, the Cronbach's  $\alpha$  reliability values of C-OCQ was 0.949, and the CFA of C-OCQ based on the three factor model showed that the fitting degree of the model was good ( $c2/df = 4.396$ , GFI = 0.964, AGFI = 0.926, NFI = 0.981, CFI = 0.985, TLI = 0.974, RMSEA = 0.068), indicating that C-OCQ had good reliability and validity in this study sample and could be used for data analysis.

### *Nurses' Organizational Citizenship Behavior Scale (NOCBS)*

NOCBS compiled by Wan et al (2015), includes five dimensions: self-development, responsibility consciousness, actively serving, helping colleagues, and organizational identity, with a total of 24 items. Participants were asked to answer with a 5-point Likert scale, ranging from "very inconsistent" to "very consistent", they received 1-5 points respectively. It was found that NOCBS had been proved to have good reliability and validity in Chinese nurse population, and if the average score of items reached 3, it was a medium level, and the higher the score, the more organizational citizenship behavior of nurses (Du et al., 2020). In this study, the Cronbach's  $\alpha$  reliability values of NOCBS was 0.951, and the CFA of NOCBS based on the five factor model showed that the fitting degree of the model was good ( $c^2/df = 3.721$ , GFI = 0.919, AGFI = 0.883, NFI = 0.966, CFI = 0.975, TLI = 0.967, RMSEA = 0.060), indicating that NOCBS had good reliability and validity in this study sample and could be used for data analysis.

## Statistical analysis

SPSS version 23.0, AMOS version 23.0 were used to analyze the data. Internal consistency and CFA were used to test the reliability and validity of PCQ-24, C-OCQ and NOCBS. Descriptive analysis, independent sample T-test and one-way analysis of variance (ANOVA) were used to describe and compare the scores of organizational citizenship behavior of nurses with different social-demographic information. Pearson correlation analysis was used to determine whether there was a correlation between nurses' psychological capital, organizational commitment and organizational citizenship behavior. Structural equation model was used to explore the mediating role of organizational commitment between psychological capital and organizational citizenship behavior. The  $c^2/df < 5$ , Tacker-Lewis index (TLI), comparative fit index (CFI), incremental fit index (IFI), relative fit index (RFI) and normal fit index (NFI)  $> 0.90$ , root mean square error of approximation (RMSEA)  $\leq 0.08$  are considered to be reasonable model fitting. When testing the significance of mediation effect, the number of repeated sampling was set to 5000 and the confidence interval was set to 95%, and when the confidence interval of each path coefficient does not contain 0, it indicated that the mediation effect was significant (Hayes, 2013). In this study,  $p < 0.05$  was considered statistically significant (two-tailed test).

## Results

### Participant characteristics

Among the 746 participants, 4.69% were males and 95.31% were females, and their average age was  $31.23 \pm 6.51$ , average years of nursing experience was  $9.38 \pm 7.07$ , average work hours per day was  $8.60 \pm 1.58$ , and average sleep hours per day was  $6.79 \pm 0.85$ . More than half of the nurses were married (67.56%), had bachelor degree or above (75.87%) and had not participated in mental health-related training (56.70%). The number of nurses with a monthly income (CNY) of 4000-6000 was the largest (36.19%) (TABLE 1).

**TABLE 1.** Demographic characteristics, and the distribution of organizational citizenship behavior (N = 746).

Variables	N (%)	Mean (SD)	<i>t/F</i>	<i>p</i>
Gender			0.037	0.847
Male	35 (4.69)	101.09 (9.47)		
Female	711 (95.31)	101.49 (12.26)		
Age (years)			7.502	0.000
≤ 25	147 (19.70)	98.74 (12.67)		
26–35	452 (60.59)	101.17 (11.88)		
36–45	110 (14.75)	104.61 (11.67)		
≥ 45	37 (4.96)	106.70 (11.29)		
Education level			0.002	0.967
Associate degree or less	180 (24.13)	101.51 (12.85)		
Bachelor degree or above	566 (75.87)	101.46 (11.92)		
Marital status			7.447	0.001
Unmarried	226 (30.30)	98.96 (12.56)		
Married	504 (67.56)	102.49 (11.83)		
Divorced/Separated	16 (2.14)	105.06 (10.91)		
Years of nursing experience			5.630	0.000
≤ 5 years	238 (31.90)	99.13 (12.21)		
5 to 10 years	274 (36.73)	101.22 (12.13)		
11 to 15 years	123 (16.49)	103.70 (12.09)		
16 to 20 years	56 (7.51)	103.48 (11.07)		
> 20 years	55 (7.37)	105.89 (10.99)		
Work hours per day			6.530	0.011
≤ 8 h	519 (69.57)	102.22 (12.28)		
> 8 h	227 (30.43)	99.76 (11.66)		
Sleep hours per day			8.423	0.004
≤ 7 h	588 (78.82)	100.81 (12.23)		
> 7 h	158 (21.18)	103.95 (11.52)		
Monthly income (CNY)			3.154	0.014

≤4000	106 (14.21)	99.73 (12.89)		
4001-6000	270 (36.19)	101.26 (11.69)		
6001-8000	209 (28.02)	101.31 (12.67)		
8001-10000	112 (15.01)	101.53 (11.25)		
>10000	49 (6.57)	107.00 (11.49)		
Participation in mental health-related training			5.314	0.001
Not participated	423 (56.70)	100.01 (12.49)		
Once a year	165 (22.12)	102.63 (11.84)		
2 times / year	92 (12.33)	103.95 (10.76)		
≥ 3 times / year	66 (8.85)	104.53 (11.18)		

### The factors associated with organizational citizenship behavior

Independent-samples T-test and one-way ANOVA revealed that nurses who were aged 45 or higher, more than 20 years of nursing experience, and monthly income (CNY) > 10000 had higher organizational citizenship behavior scores ( $p < 0.05$ ), while nurses who were unmarried, worked more than 8 hours per day, slept less than 7 hours per day, and did not participate in mental health-related training had lower organizational citizenship behavior scores ( $p < 0.05$ ) (TABLE 1).

Multiple linear regression analyses showed that age ( $\beta = 0.179$ ,  $p < 0.001$ ), participation in mental health related training ( $\beta = 0.142$ ,  $p < 0.001$ ), sleep hours per day ( $\beta = 0.105$ ,  $p = 0.003$ ) and work hours per day ( $\beta = -0.079$ ,  $p = 0.027$ ) were influencing factors of nurses' organizational citizenship behavior. Other variables, such as marital status, were not significant in the regression equation (TABLE 2).

**TABLE 2.** Multiple linear regression analyses of organizational citizenship behavior (N = 746).

Model	<i>B</i>	SE	$\beta$	<i>t</i>	<i>p</i>
(Constant)	95.315	1.153		82.671	0.000
Age	2.952	0.586	0.179	5.039	0.000
Participation in mental health-related training	1.752	0.436	0.142	4.015	0.000
Sleep hours per day	3.109	1.059	0.105	2.936	0.003
Work hours per day	-2.084	0.940	-0.079	-2.218	0.027

$F = 13.705$ ,  $p = 0.000$ ,  $R^2 = 0.069$ , Adjusted  $R^2 = 0.064$ .

### Correlation analyses



TABLE 3 showed that the participants' psychological capital, organizational commitment and organizational citizenship behavior scores were  $103.12 \pm 15.57$ ,  $46.53 \pm 7.14$  and  $101.47 \pm 12.14$ , while their average score of items were  $4.29 \pm 0.65$ ,  $3.88 \pm 0.60$  and  $4.23 \pm 0.51$ , respectively. Psychological capital was positively correlated with organizational commitment and organizational citizenship behavior ( $r = 0.636$ ,  $p < 0.001$ ;  $r = 0.503$ ,  $p < 0.001$ ), while organizational commitment was positively correlated with organizational citizenship behavior ( $r = 0.498$ ,  $p < 0.001$ ).

**TABLE 3.** Means, standard deviations, and correlations of psychological capital, organizational commitment and organizational citizenship behavior (N = 746).

	1	2	3	4	5	6	7	8
Mean	103.12	46.53	101.47	21.14	25.62	20.77	17.26	16.67
SD	15.57	7.14	12.14	2.66	3.22	2.83	2.16	2.28
1. Psychological capital	-							
2. Organizational commitment	0.636**	-						
3. Organizational citizenship behavior	0.503**	0.498**	-					
4. Self-development	0.455**	0.430**	0.917**	-				
5. Responsibility consciousness	0.461**	0.443**	0.952**	0.883**	-			
6. Actively serving	0.490**	0.527**	0.931**	0.786**	0.847**	-		
7. Helping colleagues	0.411**	0.431**	0.921**	0.797**	0.867**	0.822**	-	
8. Organizational identity	0.499**	0.464**	0.884**	0.740**	0.759**	0.828**	0.786**	-

\*\*  $p < 0.001$

### Mediation analyses

The structural model included three latent constructs (psychological capital, organizational commitment and organizational citizenship behavior) and twelve observed variables (FIGURE 1). The fit indices indicated that the model was appropriate:  $\chi^2/df = 4.731$ , TLI = 0.972, CFI = 0.981, IFI = 0.982, RFI = 0.964, NFI = 0.977, RMSEA = 0.071. Furthermore, all factor loads of indicators on latent constructs were significant ( $p < 0.05$ ), indicating that all latent constructs were well represented by their indicators.

As shown in TABLE 4, psychological capital had a significant direct effect on organizational commitment ( $\beta = 0.624, p = 0.001$ ) and organizational citizenship behavior ( $\beta = 0.339, p = 0.001$ ). The direct effect of organizational commitment on organizational citizenship behavior was 0.234 ( $p = 0.001$ ). The indirect effect of psychological capital  $\rightarrow$  organizational commitment  $\rightarrow$  organizational citizenship behavior was 0.146 ( $p = 0.001$ ), which suggested that organizational commitment partially mediates between psychological capital and organizational citizenship behavior.

**TABLE 4.** Direct and indirect effects for the model (N = 746).

Model pathways	Standardized effect ( $\beta$ )	95% CI	<i>p</i>
Direct effect			
Psychological capital $\rightarrow$ organizational commitment	0.624	(0.572, 0.674)	0.001
Organizational commitment $\rightarrow$ organizational citizenship behavior	0.234	(0.145, 0.324)	0.001
Psychological capital $\rightarrow$ organizational citizenship behavior	0.339	(0.249, 0.428)	0.001
Indirect effect			
Psychological capital $\rightarrow$ organizational commitment $\rightarrow$ organizational citizenship behavior	0.146	(0.089, 0.204)	0.001

## Discussion

In this study, we revealed that nurses' psychological capital, organizational commitment and organizational citizenship behavior were at the upper middle level during the COVID-19 epidemic. Compared with previous studies, nurses' psychological capital reported in this study was similar, but organizational commitment and organizational citizenship behavior were lower, which may be related to complex nursing situation and great work pressure faced by nurses from designated hospitals for treatment of COVID-19 (Jin et al., 2022; Tai et al., 2021; Liu et al., 2017). Our study suggested that the older the nurses were and the more frequently they participated in mental health related training, the higher the organizational citizenship behavior, while the nurses who slept per day < 7 h and worked per day > 8 h had lower organizational citizenship behavior. Jin et al (2022) believed that with the growth of age and work experience and the launch of psychological education and training, nurses gradually integrated the overall medical care quality and hospital development goals with their own values and goals, could actively sacrifice personal interests for the hospital and consciously contribute to the hospital, so as to show more voluntary dedication behavior. Additionally, some studies found that nurses' long working hours and insufficient sleep time were easy to lead to the imbalance of nurses' work and life, cause job burnout, and affect nurses' growth and development, and ultimately may reduce nurses' organizational citizenship behavior (Dall'Ora et al., 2015; Stimpfe et al., 2019; Zeng et al., 2022).

Hypothesis 1 proposes a positive correlation between psychological capital and organizational citizenship behavior. The results of this study confirmed that psychological capital had a positive impact on organizational citizenship behavior, which is consistent with the research results of Bogler et al (2019) and Lee et al (2020). As a positive personal psychological resource, psychological capital has unlimited advantages and great potential (Luthans et al., 2007; Bogler et al., 2019). The higher the level of psychological capital of nurses, the more it can encourage nurses to do some behaviors to improve work efficiency and nursing service quality on the basis of voluntary, so as to promote the overall organizational performance and help medical and nursing organizations obtain unique competitive advantages.

The results obtained regarding the relationship between organizational commitment and organizational citizenship behavior allowed us to corroborate Hypothesis 2, in line with the studies carried out by Taghinezhad et al (2015). Nurses with a high level of psychological capital have strong emotional control ability and psychological adjustment ability, as well as strong pressure resistance and recovery ability, so that they can face difficulties in work more firmly and calmly, and will also actively seek organizational support when necessary, further enriching the emotional relationship between nurses and organizations, and improving the level of organizational commitment of nurses to a certain extent (Taghinezhad et al., 2015; Firmansyah et al., 2022).

Besides, Hypothesis 3 on the mediating effect of organizational commitment had also been confirmed by the research. Positive psychological capital can promote nurses' level of organizational commitment, strengthen nurses' recognition of the goals and values set by the organization, make nurses have a higher sense of identity and belonging to the organization, and improve nurses' willingness to work hard for the organization and retention intention, which will make nurses more actively focus on their work, actively complete additional work tasks, and show a high level of organizational citizenship behavior (Zhou et al., 2018; Tang et al., 2019; Firmansyah et al., 2022).

The direct impact of psychological capital on organizational citizenship behavior can be explained by the conservation of resources theory. Generally speaking, the higher the level of individual psychological capital, the more abundant psychological resources can be used, and it is easier to invest their existing resources in order to obtain reserve resources, so as to promote the generation of organizational citizenship behavior and achieve better career development (Hobfoll, 2002; Coetzee et al., 2018; Lee et al., 2020). Furthermore, the indirect effects of organizational commitment as mediating variables can be explained by the JD-R model. As a personal resource, psychological capital can stimulate individual work motivation, such as organizational commitment, and further promote organizational citizenship behavior (Bakker et al., 2017; Bogler et al., 2019; Tang et al., 2019; Taghinezhad et al., 2015).

## **Limitations**

Although our research has certain limitations, it is undeniable that the results of this study can be used as an extension of JD-R model in the field of nursing, and this study also has certain theoretical guiding significance for the research direction of nurse psychology and management in the future. The first

limitation is that this study is designed as a cross-sectional survey, and it is unable to measure the dynamic change trajectory and potential relationship between nurses' psychological capital, organizational commitment and organizational citizenship behavior over time. The second limitation is that the self-report scale used in this study may affect the reliability of the results to a certain extent. The third limitation is that convenient sampling is used in the selection of samples, which may affect the universality of the research results.

## **Conclusion**

Based on JD-R model, this study for the first time discusses the relationship between nurses' psychological capital, organizational commitment and organizational citizenship behavior during the COVID-19 epidemic, and puts forward that nurses' psychological capital, organizational commitment and organizational citizenship behavior were at the upper middle level during the COVID-19 epidemic, which was affected by social-demographic variables. Moreover, psychological capital can not only directly affect organizational citizenship behavior, but also indirectly affect organizational citizenship behavior through the mediating effect of organizational commitment. To sum up, we believe that some measures can be taken to promote nurses' organizational citizenship behavior. On the one hand, nurses should pay attention to their own mental health level, correct their mentality, adapt to the environment, improve their trust and loyalty to the organization, actively participate in work and activities, and promote the improvement of personal performance and organizational performance. On the other hand, nursing managers should note that nurses' organizational citizenship behavior can be further promoted by developing and excavating their psychological capital, enhancing their organizational commitment level.

## **Declarations**

### **Acknowledgements**

We thank all the participants who took part in the study.

### **Authors' contributions**

Li ZENG: Conceptualization; Data curation; Formal analysis; Methodology; Visualization; Writing - original draft; Writing - review & editing.

Jialin WANG: Conceptualization; Investigation; Supervision; Writing - review & editing.

Fen FENG: Investigation; Supervision; Investigation; Resources.

Man JIN: Data curation; Formal analysis; Methodology; Validation.

Xin LI: Investigation; Data curation; Methodology.

Yihang PENG: Investigation; Software; Validation.

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## Availability of data and materials

The data that support the finding of this study are available from the corresponding author upon reasonable request.

## Ethics approval and consent to participate

In this study, all methods were carried out in accordance with the Declaration of Helsinki and approved by the Ethics Committee of Chengdu University of Traditional Chinese Medicine (Number: 2020-KL084). All participants signed the electronic informed consent form on the front page of the online questionnaire and promised to participate in the study voluntarily. In addition, our research is anonymous. During the survey, we only collected questionnaire information, but not personal information, such as address and account ID.

## Consent for publication

Not applicable.

## Competing interests

The authors declare that they do not have any conflict of interest.

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## Figures

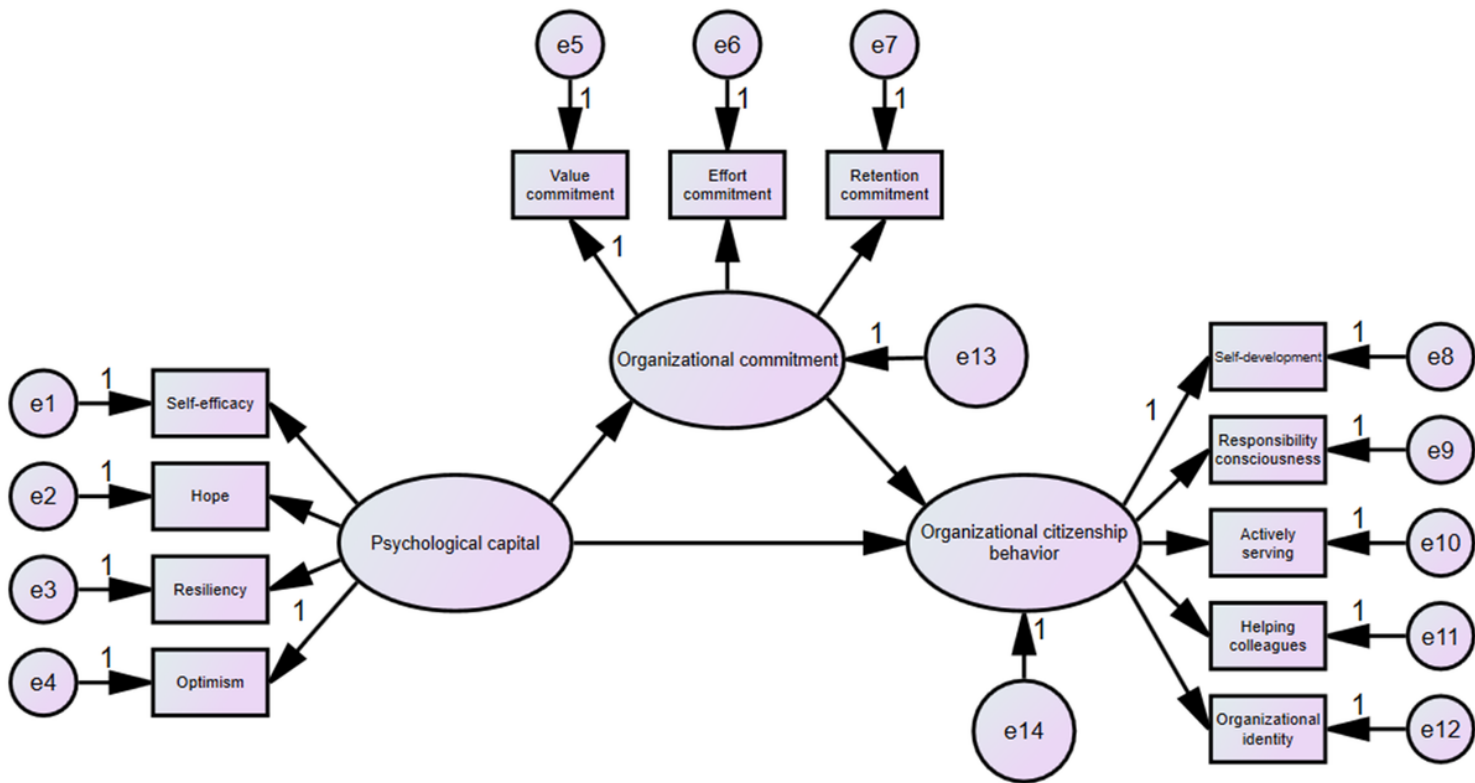


Figure 1

The structural model.