

Effects of Ethical Leadership of Administrators on Organizational Commitment of Higher Vocational Medical Colleges under Henan Province: A Moderated Mediation Effect of Job Satisfaction and Job Stress

Li Pu

Sukhum Moonmuang

Sataporn Pruettikul

Leadership in Educational Leadership,

Bangkokthonburi University

E-mail: 182003322@qq.com

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ABSTRACT

There were a lot of study about the relationship between ethical leadership and teachers' commitment, but little was known about how ethical leadership was correlated with different dimensions of job satisfaction of teachers. The objectives of this study were: (1) to find the effect of ethical leadership on organizational commitment, (2) to find the effect of ethical leadership on job satisfaction, (3) to find the mediation effect of job satisfaction on the relationship between ethical leadership and organizational commitment, and (4) to find the moderation effect of job stress on the relationship between job satisfaction and organizational commitment.

This study employed a quantitative survey research approach. The population in this study were teachers from five vocational medical colleges in Henan Province, totally 4,210 teachers. A sample of 455 teachers was determined using the G*Power program with a test power of 0.8, utilizing a multi-stage random sampling method. Data collection was conducted through surveys, and data analysis was performed by using some statistical package software. Statistics for data analysis were descriptive statistics, a Confirmatory Factor Analysis (CFA) and a Structural Equation Modeling (SEM).

The research findings were; (1) there was a positive effect of ethical leadership on organizational commitment, (2) there was a positive effect of ethical leadership on job

satisfaction, (3) There was a positive mediation effect of job satisfaction on the relationship between ethical leadership and organizational commitment, and (4) there was a moderation effect of job stress on the relationship between job satisfaction and organizational commitment in a manner of when teachers' stress were high, the effect of job satisfaction on commitment were high, meanwhile, when teachers' stress were low, the effect of job satisfaction on commitment were low as well.

Keywords: Ethical Leadership, Organizational Commitment, Job Satisfaction

1. Introduction

The mission of vocational medical colleges was to cultivate healthcare professionals with specialized knowledge and a strong sense of responsibility, making positive contributions to the healthcare industry (Liu, S., Qin, Y., & Xu, Y. (2019). , 2019). Under such a mission, the quality of education and the organizational commitment of teachers in vocational medical colleges directly influenced the development of medical talents and the quality of social healthcare services (Wang, W., Hou, Y., Hu, N., Zhang, D., Tao, J., Man, Y., ... & Bi, Y. , 2014), holding significant prospects and significance.

Research indicated that at these institutions, administrative staff demonstrated high levels of ethical leadership (Li, G., Lu, Y., & Eliason, R. G. , 2022), encompassing integrity (Li, C., Hao, Y., Zheng, Z., Xu, X., Cui, L., Guan, M., ... & Wang, Y. , 2024), fairness, and altruism, significantly enhancing teachers' organizational commitment to the school (Zhou, Y., Yu, Y., Chen, X., & Zhou, X. , 2020). Ethical leadership fostered a positive work environment and values, boosting teachers' job satisfaction and furthering their identification with the school's mission and objectives. This contributed positively to the school's development and progress, demonstrating a high level of organizational commitment.

From literature review, there were many findings showed that Ethical leadership of administrators influence teacher commitment (binti Ismail, I., & bin Daud, Y. (2014). , 2014; Yanhui, T., & Shengjun, B. , 2021) but, very few had study of how administrators influence teacher commitment as well as asked the question such as if there are any intervening variables mediate between this relationship (Wang, J., & Feng, T. , 2023).

Therefore, researcher endeavored to delve deeper into exploring the influence pathways of ethical leadership among administrative staff in vocational medical colleges on teachers' organizational commitment and the relationships with related variables. This research aimed to enhance the moderated mediation of stress and job satisfaction on the

relationship between administrators' ethical leadership and teacher commitment in vocational medical college Henan province,.

2. Research objectives

1. To find the effect of ethical leadership on organizational commitment.
2. To find the effect of ethical leadership on Job-satisfaction.
3. To find the mediation effect of Job-satisfaction on the relationship between ethical leadership and organization commitment.
4. To find the moderation effect of Job stress on the relationship between Job satisfaction and organization commitment.

3. Research Hypotheses

- 1: ethical leadership positive effects on teacher commitment,
- 2; ethical leadership positive effects on job satisfaction,
- 3: job satisfaction positive effects on teacher commitment,
- 4 job stress effects the relationship between job satisfaction and teacher commitment
- 5: ethical leadership effects the teacher commitment via job satisfaction.

4. Research Methodology

4.1 Study area selection

Different countries have different interpersonal relationships and ideologies. The focus of this study was Henan Province, a traditional agricultural province in China. Henan Province, one of China's most populous provinces, had a vast population that required sufficient medical services and high-level medical education support. However, the reality indicated that the medical education strength in Henan Province was relatively weak, with many vocational and technical medical schools, which bore the substantial foundation of medical services in Henan Province.

4.2 Population and sample

Table 1.Number of Population and sample

no	Strata	Population	samples
1	Luohe Medical College	973	105
2	Nanyang Medical College	1065	115
3	Henan Medical College	637	69
4	Shangqiu Medical College	872	94
5	Puyang Medical College	663	72
Total		4210	455

The research focused on teachers from five vocational medical colleges in Henan Province, with a total population of 4210 teachers. The sample selection employed a proportional stratified random sampling method. The samples were 455 teachers calculate by G*power program at power of test .8 and using stratified random sampling method.

4.3 Instruments

The instrument used in this research was a 5-point Likert rating scale. According to the research objective, this article primarily investigates the impact mechanism of ethical leadership of administrators in Henan Province's vocational medical colleges on organizational commitment. It proposed the mediating role of job- satisfaction between ethical leadership and organizational commitment, as well as the moderating role of job-stress on the relationship between job-satisfaction and organizational commitment. Therefore, the questionnaire mainly consists of the following five parts:

- A: Basic information of respondents
- B: Questionnaire on the ethical leadership of administrators
- C: Questionnaire on organizational commitment
- D: Questionnaire on job satisfaction
- E: Questionnaire on job stress

During the instrument development process, operational definitions for the variables to be measured were defined based on the knowledge of research variables and relevant studies, guided by theoretical understanding. Subsequently, items were developed for each construct after establishing the structure and providing operational definitions. This involved adapting and refining existing items from the literature and creating additional items based on the operational definitions of the constructs. A 5-point Likert scale was used for measurement.

The initial draft of the items were then submitted to five senior researchers for content validation (IOC). Each reviewer independently examined each item and matched it to the corresponding operational definition used within the structure. After completion of the reviews, the items underwent an item objective congruence (IOC) evaluation, with a threshold of 0.50 considered acceptable. The questionnaire was revised based on the feedback received from the experts.

Additionally, a group of teachers, not part of the sample group, were invited to act as a tryout of questionnaire during the questionnaire analysis. The reliability of the questionnaire items was calculated using Cronbach's Alpha method. Finally, the Cronbach's Alpha coefficient and the number of items were obtained through statistical calculations to assess the reliability of the questionnaire as well as a questionnaire tryout.

4.4 Data Collection

The data collection process involved several steps. Initially, permission was obtained from the BTU Education Department to collect data. Subsequently, recommendation letters for researchers were requested from the department. Coordinating teachers were then selected to facilitate preparation for data collection in the research. Following this, a questionnaire survey was conducted among the target population using the online platform Questionnaire Star. Within two weeks, feedback receipts of the survey questionnaires were received.

4.5 Data Analysis

This research utilized a quantitative approach, developing corresponding items for each variable and consolidating them into a comprehensive survey questionnaire, which was used as the primary instrument. The survey questionnaire was distributed to collect data from a sample of 455 teachers. Data analysis was performed using SPSS, JAMOV, and AMOS software. The statistical technique employed was confirmatory factor analysis, establishing a path analysis model between variables as well as a moderated mediation effect analysis.

5. Conceptual Framework

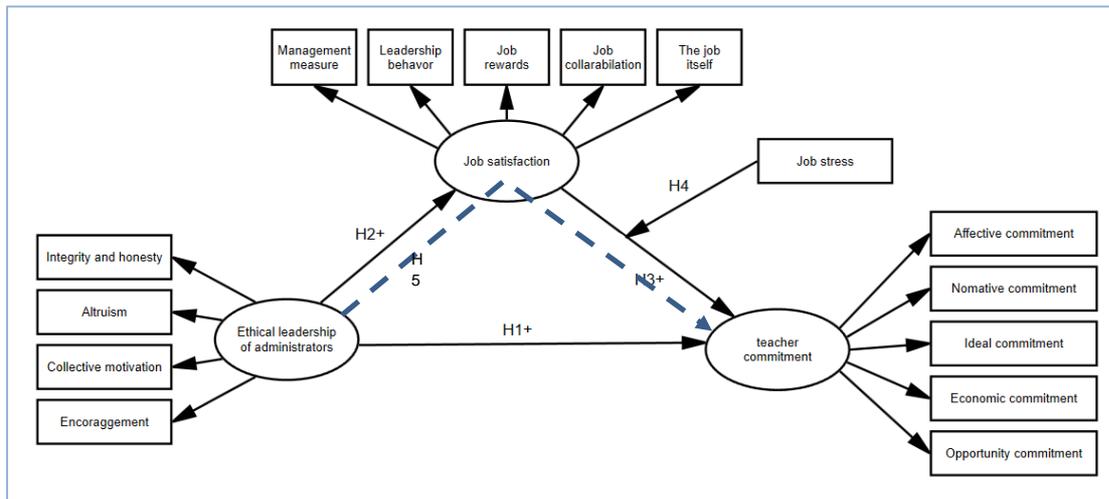


Figure1. Moderated Mediation on effects model of stress and job satisfaction on the relationship between administrators' Ethical leadership and teacher commitment.

6. Results

6.1 Intercorrelation among variable in model

Table 2 Intercorrelation matrix of variables in model.

Pearson Correlation						
	Mean	Std. Deviation	EL	C	JS	S
EL	3.493	0.834	1			
C	3.571	0.778	0.447**	1		
JS	3.485	0.774	0.458**	0.485**	1	
S	3.234	1.035	0.470**	0.459**	0.473**	1

* $p < 0.05$ ** $p < 0.01$, EL=Ethical leadership, C=teacher commitment, JS=Job satisfaction, S=Job stress

As observed from the above table, correlation analysis was employed to examine the relationship between C and the three variables EL, JS, and S. Pearson's correlation coefficient was utilized to quantify the strength of these correlations. The specific analysis revealed that the correlation coefficient between C and EL, JS, and S, were ranged from 0.458 – 0.485 which all were statistically significant, the direction were positive, and the magnitude were at medium.

6.2 Confirmatory factor analysis

Confirmatory factor analysis (CFA) was conducted in order to determine instrument validity by using Fornell and Larcker (Hamid, M R, et al., 2017) validity assessment criterion. At first, we examined full three-factor measurement model in which the items were permitted to associate substantially with their respective factors. The model fit was indicated by the relative chi-square = 1.129 which was excellent, CFI=0.996, and RMSEA=0.017 also indicate excellent measurement model.

The composite reliability (CR) of EL, JS, and C, were 0.776, 0.831, and 0.82 respectively, which showed that all component had CR over 0.70 and indicated that all component had sufficient reliability (Hair, et al., 2014).

The convergent validity which identified by the AVE found that EL, JS, and C had 0.46, 0.497, and 0.478 which were about 0.50 and could accepted that all component had convergent validity (Hair, et al., 2014).

Discriminant validity, indicated by using the maximum shared variance (MSV) method found the MSV, that all MSV of each construct were less than the their VAE which showed the discriminant validity (Hair, et al., 2014), as well as by using the heterotrait-monotrait ratio of correlations (HTMT) analysis found that the ration of each pairs of construct ranged from 0.591 – 0.604 which all less than the cutting point of 0.85 (Hu, and Bentler,, 1999), besides, the evaluation by using the comparison between the component square root of AVE and the their correlation showed that the square root of AVE were larger than their correlation of all pairs of comparison, also showed that all components in the measurement model had discriminant validity (Fornell, C., & Larcker, D. F. , 1981).

6.3 Direct effects

The analysis of the effect of Ethical leadership as independent variable on teacher commitment as dependent variable which had Job satisfaction as mediator could be hypothesized into 3 hypothesis as identified in table 2.

Table 3. Direct effect hypothesis testing

Relationship	Estimate	Beta	S.E.	z	P	Hypotheses
JS □ EL	0.674	0.444	0.091	7.382	***	H2
C □ EL	0.390	0.341	0.069	5.673	***	H1
C □ JS	0.327	0.433	0.042	7.858	***	H3

Table 3 showed the direct effects hypothesis testing. Finding, revealed that Ethical leadership had positive direct effect on Job satisfaction, Job satisfaction had positive effect

on teacher commitment, and Ethical leadership had positive effect on teacher commitment.

6.4 Indirect effect (Mediation effects)

The purpose of this analysis was to test the indirect effect of mediator on the relationship between independent variable and dependent variable. Since in this study the moderator was Job Satisfaction (JS), the independent variable was Ethical leadership (EP), and the dependent variable was Organizational Commitment (C), then the moderation effect of Job Satisfaction on the relationship between Ethical Leadership and Organizational Commitment was analyzed by using AMOS and the parameter estimation using the bootstrapping method, the replicate of 5,000 and the confident 95%, the results of analysis were as in figure 4.1 and in table 3 as follow

Table 4. Mediation Moderation effect

Path	Parameter	Estimate	Lower	Upper	P	Testing Conclusions
EL → JS → C	Mediator1 (a)	0.215	0.144	0.302	0.000	Partial Intermediary
	Direct effect1 (c')	0.321	0.189	0.456	0.000	
	Total effect1 (c)	0.536	0.442	0.627	0.000	

To test H5: for path "EL → JS → C": Mediation 1 (a*b): The path coefficient is 0.215, with a p-value of 0.000, indicating a significant result. Direct effect 1 (c'): The path coefficient is 0.321, with a p-value of 0.000, indicating a significant result. Total effect 1 (c): The path coefficient is 0.536, with a p-value of 0.000, indicating a significant result. This suggests that Job satisfaction (JS) plays a partial mediating role in the relationship between Ethical leadership (EL) and teacher commitment (C).

6.5 Moderated mediation effects

Table 5. Moderation effects (interactions)

Moderator	Interaction	Estimate	SE	Lower	Upper	β	z	p
S	S:JS ⇒ C	0.14	0.04	0.05	0.22	0.66	3.11	0.002

To test the hypothesis H4: job satisfaction effects the relationship between job satisfaction and teacher commitment. Data analysis presented in table 4, the estimated

parameter was 0.14 which was statistically significant ($p=0.002$) and the hypothesis was supported by the empirical data. To reveal how job stress modulates the effect of job satisfaction on teacher commitment, we grouped high, medium and low according to the score of job stress and plotted the interaction as shown in figure 2 and estimated parameter in table 6.

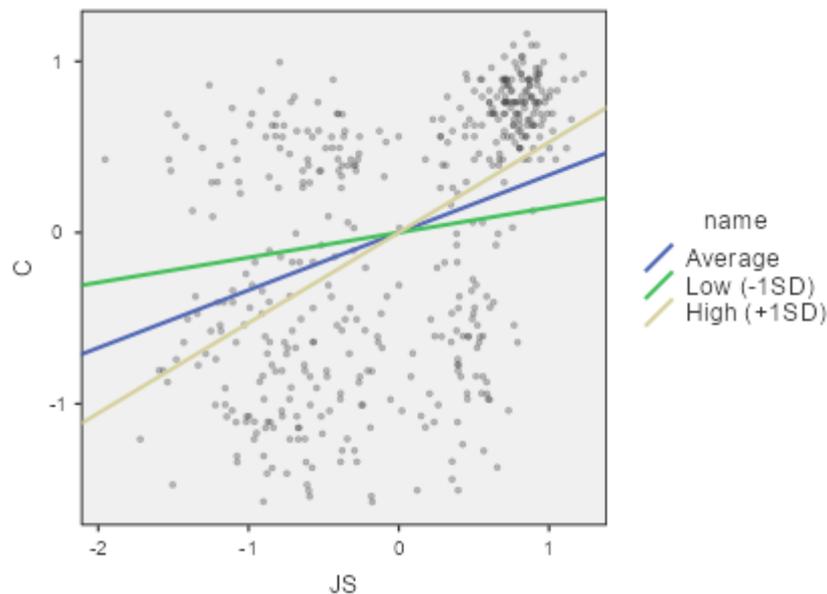


Figure 2 simple slope of the moderated mediation model of job stress on the relationship between job satisfaction and teacher commitment

Figure 2 showed the moderation effect of job stress on the relationship between job satisfaction and teacher commitment, in group of teaches with high job stress the relationship was higher than in group of teachers with lower job stress.

Table 6. conditional mediation effect (Moderated mediation effect) of stress and job satisfaction on the relationship between administrators' ethical leadership and teacher commitment

Moderator levels							
S	Type	Effect	Estimate	SE	β	z	p
Mean-1·SD	Indirect	EL \Rightarrow JS \Rightarrow C	0.044	0.015	0.046	2.900	0.004
Mean-1·SD	Component	EL \Rightarrow JS	0.305	0.044	0.311	6.950	< .001

Moderator levels							
S	Type	Effect	Estimate	SE	β	z	p
Mean-1·SD		JS ⇒ C	0.145	0.045	0.146	3.190	0.001
Mean-1·SD	Direct	EL ⇒ C	0.170	0.049	0.175	3.470	< .001
Mean-1·SD	Total	EL ⇒ C	0.299	0.045	0.304	6.700	< .001
Mean	Indirect	EL ⇒ JS ⇒ C	0.087	0.019	0.088	4.660	< .001
Mean	Component	EL ⇒ JS	0.305	0.044	0.311	6.950	< .001
Mean		JS ⇒ C	0.285	0.045	0.284	6.290	< .001
Mean	Direct	EL ⇒ C	0.170	0.047	0.172	3.630	< .001
Mean	Total	EL ⇒ C	0.299	0.045	0.304	6.700	< .001
Mean+1·SD	Indirect	EL ⇒ JS ⇒ C	0.130	0.023	0.127	5.590	< .001
Mean+1·SD	Component	EL ⇒ JS	0.305	0.044	0.311	6.950	< .001
Mean+1·SD		JS ⇒ C	0.426	0.045	0.407	9.390	< .001
Mean+1·SD	Direct	EL ⇒ C	0.170	0.045	0.165	3.800	< .001
Mean+1·SD	Total	EL ⇒ C	0.299	0.045	0.304	6.700	< .001

Note. 1. Confidence intervals computed with method: Standard (Delta method)

2. Betas are completely standardized effect sizes
3. Mean-1 SD means group of teaches with low job stress.
4. Mean means group of teaches with medium job stress.
5. Mean+1 SD means group of teaches with high job stress.

7. Conclusion

Based on the data and analysis presented in the tables:

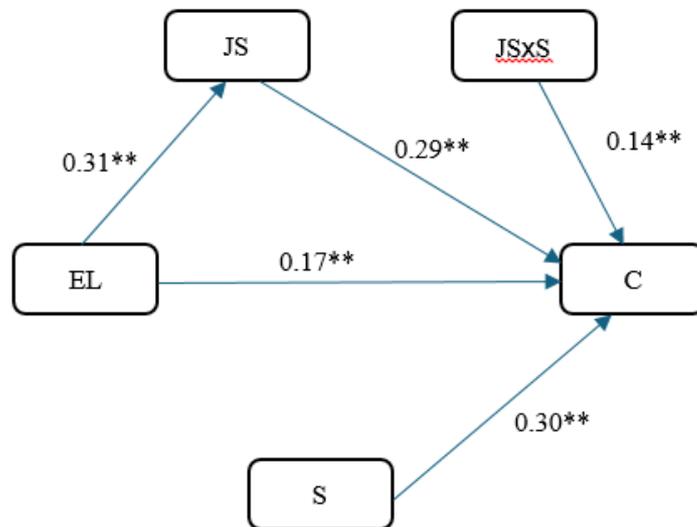


Figure 3 Summary hypothesis testing

In figure 3 the hypothesis testing, all 5 hypotheses were statistically significant. Hence, the relationship between administration ethical leadership on teacher commitment has emerged of all effects, direct effect, indirect effect or mediating effect through job satisfaction, and moderation effect of moderator job stress.

Moderation Effect of Job Stress on the Relationship between Ethical Leadership and Organizational Commitment (Table4): Job Stress moderates the relationship between Ethical Leadership (EL) and Organizational Commitment (C). Specific parameter estimates and test conclusions are likely provided in the table.

8. Discussion

Ethical leadership had a positive impact on organizational commitment, particularly within Chinese organizations, where this influence appeared to be more pronounced and critical. The research in this article empirically corroborated the viewpoints of the following studies: Han, Liangliang and Zhang Caiyue (2015) found through hierarchical regression analysis that ethical leadership positively influenced subordinate organizational commitment. Meng Hui et al. (2014) delved deeply into the essence of ethical leadership in the Chinese context and developed a measurement tool, validating its significant impact on organizational commitment. Yang, C (2022) introduced

the novel concept of "moral authority" within indigenous Chinese organizations, highlighting the positive impact of ethical leadership on organizational commitment.

Previous research by Li, Y., et al. (2014) conducted empirical studies using hierarchical regression analysis on survey data collected from 608 questionnaires across 35 companies. The research findings indicated that ethical leadership positively influenced subordinates' perceptions of fairness, job satisfaction, organizational commitment, and organizational citizenship behavior. Perceived fairness also positively impacted subordinates' job satisfaction, organizational commitment, and organizational citizenship behavior. Additionally, perceived fairness played a partial mediating role in the relationship between ethical leadership and subordinates' job satisfaction and organizational citizenship behavior, emphasizing the influence of transformational leadership on subordinates' job satisfaction, revealing the significant impact of leaders' moral character on subordinates' job satisfaction.

However, these organizations differ from medical education institutions, where the relationship between administrative staff and teachers is horizontal rather than hierarchical. Therefore, the empirical study on the positive impact of ethical leadership of administrative staff on teachers' job satisfaction in vocational medical colleges is an innovative contribution.

Research found that teacher job stress affected the relationship between job satisfaction and organizational commitment, which aligned with the following studies: Liu, Yongzhi (2005) investigated the sources of employee job stress, dimensions of job satisfaction, and their interrelationships, emphasizing the moderating effect of work stress. Yang, C., Chen, Y., Zhao, X., & Chen, A. (2022) introduced the concept of "moral authority" and noted the role of employee work stress in influencing the relationship between job satisfaction and organizational commitment in the Chinese organizational context.

Specifically, this relationship can be explained as follows:

Ethical Leadership: The ethical leadership of administrative personnel in high vocational medical colleges encompasses guiding principles of ethics and values, as well as respect and care for employees. This form of ethical leadership influences the attitudes and behaviors of administrative personnel towards the organization.

Organizational Commitment: Administrative personnel, influenced by ethical leadership, demonstrate high levels of loyalty and dedication to the school organization.

They identify with the school's goals and values, and are willing to work hard for the school's development and success.

Teacher Job Satisfaction: The organizational commitment of administrative personnel ultimately impacts teachers' job satisfaction. Because administrative personnel's commitment to teachers enhances teachers' sense of belonging and trust in the school, it increases teachers' job satisfaction and engagement.

Therefore, ethical leadership indirectly influences teachers' job satisfaction through administrative personnel's organizational commitment. Understanding this mediated relationship helps to analyze in-depth the association between teacher job satisfaction and administrative leadership behavior.

9. Recommendation

Administrators formulated policies aimed at cultivating and strengthening ethical leadership among administrative staff, with a focus on improving teacher job satisfaction and organizational commitment. These policies included launching training programs to assist administrators in understanding and practicing ethical leadership principles, as well as encouraging the establishment of a positive work environment to reduce teacher work pressure and enhance job satisfaction. To effectively implement these policies, efforts were made to enhance the moral leadership training and education of administrative personnel, establish supervision and positive incentive mechanisms to reinforce ethical standards compliance, and formulate comprehensive teacher incentive policies aligned with organizational development strategies and diverse teacher needs.

Based on the recommendations for effective policy application in vocational medical colleges, the following measures were suggested: establishing a sound organizational culture where administrators led by example, set moral standards, and ensured smooth communication and clear processes; implementing a regular assessment and feedback mechanism to understand teacher job satisfaction and organizational commitment levels and making timely adjustments to policies based on feedback; providing teachers with good career development opportunities and training support to enhance their professional abilities and alleviate work pressure; strengthening teacher support and engagement by recognizing contributions and fostering a collaborative atmosphere; and continuously monitoring and evaluating policy implementation to adjust strategies promptly and ensure alignment with organizational goals. These measures

contributed to improving the effective implementation of policies in vocational medical colleges and enhancing organizational performance and staff satisfaction.

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