

Impact of Humble Leadership Behaviours of Hospital Leaders on The Innovation Performance and Work Engagement of Employees

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Abstract: Currently, the medical environment of hospitals is in a constant state of change, with the advancement of medical and healthcare system reforms. The organizational environment of hospitals is also becoming more and more dynamic, uncertain, and unpredictable. Relying only on the experience and knowledge of hospital administrators is no longer sufficient, necessitating employee participation. Vital to this is the provision of opportunities enabling employees to boost their motivation levels and encourage innovative practices. Four scales - leadership humility, innovation performance, psychological capital and job involvement - organize and design a questionnaire in this paper. Statistical methods are utilized to scrutinize and validate questionnaire data for quantitative research. This paper examines the factors that influence employees' innovative performance and work engagement. The aim is to identify ways in which the humble behaviour of hospital leaders can contribute concretely to enhance employees' work initiative and performance, thereby providing a substantive basis for better functioning of hospital departments.

Keywords: Leadership humility, Innovation performance, Work Engagement, Psychological capital.

1. Introduction

Leadership style has long been a significant subject within academia. Currently, China finds itself in a crucial period of strategic opportunities, with its economic development entering a new phase. Chinese enterprises face substantial and various challenges. Effectively enhancing the efficiency of management levels and employee performance is a key goal for these enterprises. Improving employee performance and maximising profits underpin the focus of leadership theory research. Consequently, the relationship between leadership style and employee performance, which encompasses various leadership methods such as service, transformative, real and humble leadership, has attracted attention from both domestic and international scholars. Humble leadership is a current research focus within the field of leadership style. Owens and Hekman (2012), foreign scholars, defined humble leaders across three dimensions: admitting their own weaknesses and errors, recognizing the strengths and contributions of subordinates, and exhibiting a willingness to learn modestly [1]. Further to this, a scale was developed to measure humble leadership behaviour, and its impact on employees' innovative behaviour was studied. The findings indicate that humble leadership exerts a substantial positive impact on employees' innovative conduct. Additionally, several scholars from the country have concurred that this type of leadership produces favourable effects on work input and behaviour. After conducting an extensive literature review, it is evident that research on the innovation performance and work input of enterprise employees prevails, while studies on hospital employees are comparatively scarce. This inadequacy is of particular concern given the dynamic, uncertain and unpredictable organizational environment of public hospitals amidst changing medical conditions and evolving healthcare system reforms. Relying solely on hospital managers' experience and wisdom to develop strategies is increasingly challenging and requires employee participation. It is crucial

to maintain employees' involvement to foster sustained improvement. To enhance employees' enthusiasm and innovation performance, improving self-awareness, appreciation of others, possessing leadership skills, and other factors have been identified as the primary influencing factors by Xu Ziwei et al. [2]. Insufficient research exists on the effects of hospital managers' humble leadership behaviour on the hospital staff's work input and innovation performance. Thus, it is imperative to investigate how the modesty of hospital leadership affects the innovative output and work productivity of the staff.

Does the humble behaviour of hospital leaders impact innovation performance and work engagement? Additionally, are there other mediating factors that directly affect each other? This study uses humble leadership behaviour as an independent variable, innovation performance, and work input as dependent variables, and psychological capital as a mediating variable to analyze the interaction between the three. In order to investigate the potential benefits of hospital leaders' modest conduct on their staff's work, this study aims to conclude that such behaviour can significantly contribute to enhancing hospital employees' innovative performance and productivity.

2. Study Hypotheses and Model

After an extensive review of relevant literature, it has become apparent that numerous similar hypotheses have been verified. This paper proposes the following hypotheses that align with its objectives:

2.1. Leadership Humble behavior and innovation performance

Leadership and staff management are critical aspects of any organisation, including both enterprises and hospitals. The personality and behaviour of leaders can impact the working status of employees. Leaders aspire, through their management style, to motivate employees to work hard,

improve their abilities and enhance performance and innovation. Humble leadership, characterised by a bottom-up approach, is a topic of interest for scholars studying the work behaviour of employees. Modest leaders possess the ability to listen, accept feedback, and proactively request input and suggestions from their employees. As a result, employees appreciate the approach of humble leaders which can positively influence employee psychology and behavior. He Qi's (2019) findings indicate that with the display of humility, leaders can foster an environment for enhanced innovation self-efficacy and boost employee innovation behavior. The paper aims to boost employees' confidence and increase their desire and demand for innovation to continually enhance their innovation performance[3]. Building on this, the study posits :

H1: The humbleness of hospital leaders positively affects employees' innovation performance.

2.2. Humble Leadership Behaviour and Work Engagement

According to Schaufeli, work engagement refers to a prolonged state of positive emotions, motivation, and vitality, accompanied by dedication and focus. Resilience is the ability to face difficulties without withdrawing, being willing to work hard, and having energy. Commitment involves being devoted to work, feeling enthusiastic and engaged, finding meaning in work, and feeling a sense of pride in achievements. Focus is the personal obsession with work, involving complete dedication to the task at hand, forgetting about other things, not wishing to leave the work, and feeling that time passes quickly. High levels of employee engagement can enhance organisational performance. Good leaders in an organization consistently motivate employees. Through humble behaviour, leaders showcase their own attributes and communicate with members and employees in a bottom-up approach, thereby affecting employees' behaviour. According to Zhou Jingxuan's (2019) research, exhibiting humble behaviours as leaders yields a significant positive impact on employees' productivity. Further confirmation is provided regarding the favourable correlation between humble leadership behaviour and employee engagement in a Chinese setting[4]. Leaders who exhibit humility can foster a sense of growth and advancement among employees, encourage their orientation towards team learning, enable them to appreciate the significance of their work, and recognize their own value, prompting employees to work diligently. Therefore, this paper proposes the hypothesis:

H2: The humble behavior of the hospital leadership has a positive effect on the staff's work input

2.3. Leadership: Humble Behaviour and Psychological Capital

There are few studies on the relationship between psychological capital and leadership humility. However, the definition of psychological capital provides insights into this relationship. Due to psychological capital being a positive mental state, we assume that the psychological factors it encompasses impact a leader's leadership style. Specifically, we hypothesize that there exists a relationship between a leader's self-efficacy, hope, optimism, and toughness of psychological capital, as well as their ability to acknowledge their mistakes and deficiencies, identify staff advantages and contributions, and engage in modest learning. Wang Ni (2014) discovered a considerable positive correlation between transformational leadership behaviour and the psychological

capital of leaders. Leaders who exhibit higher levels of psychological capital are more prone to embracing transformational leadership behaviours to manage their employees. Hence, the hypothesis being proposed is:

H3: The humble behavior of the hospital leadership has a positive effect on the psychological capital

2.4. Psychological Capital and Innovation Performance

Innovation drives long-term organizational growth, yet presents high levels of uncertainty and a low success rate. Innovation requires more psychological and spiritual resources than daily work. Psychological capital is a constructive psychological ability and an essential psychological resource that instills employees with the confidence and courage to manage the hazards and jeopardy of innovation, consequently promoting innovative behaviour. Researchers Xiong Zhengde et al. (2018) discovered that psychological capital has a greater influence on employees' innovation performance than human capital or social capital. The greater an employee's psychological capital, the likelier they are to opt for challenging tasks. This, in turn, can encourage them to generate inventive ideas and enhance their creativity. Zhang Zhen's (2020) findings suggest that psychological capital has a favourable effect on fostering breakthrough innovation performance in enterprises. Positive psychological states can lead to increased innovative behaviour in employees. When faced with challenges, individuals with a positive outlook are more likely to maintain this approach, persist in achieving their objectives and exhibit resilience in the face of setbacks. Such a mindset can lead to creative solutions that can benefit the enterprise, providing it with valuable resources[6]. Therefore, it is hypothesised that a positive mental state can enhance an individual's ability to innovate in the workplace. Thus, the hypothesis:

H4: Psychological capital has a positive effect on employees' innovation performance

2.5. Psychological Capital and Work Input

Positive psychology has gained widespread application in the field of human resources. Consequently, there has been an increasing amount of research on employee psychological capital and work investment. Liu Chaoying's (2013) survey of 663 nurses found that improving their psychological capital level could positively influence their work investment [7]. The research conducted by Liu Qinqin (2018) indicates that there is a positive correlation between the psychological capital of medical professionals and their work input, whereby the former has a positive impact on the latter [8]. Those medical staff who possess a high psychological capital level are more self-assured in coping with challenging and emergency situations. They have faith in their capacity to surmount difficulties and are adept at resolving work-related issues expeditiously. They approach work with a positive attitude and are optimistic about the future, displaying vitality. Therefore, the following hypothesis is put forth:

H5: Psychological capital has a positive effect on employees' work input

2.6. The intermediary role of psychological capital

Psychological capital refers to the level of positive mental state at the individual level, which plays a crucial role in promoting positive organizational behaviour. Employees with

high psychological capital tend to have more positive resources and are better able to manage the risk of failure during the process of innovation. Moreover, they are adept at attributing failures and problems in a positive and optimistic manner. They remain optimistic about attaining innovative outcomes, persisting in overcoming hurdles, consolidating their own resources, and furthering innovation. According to the social information processing theory, leaders are the main source of direct environmental information. They can improve employee performance through incentivizing self-efficacy, stimulating intrinsic motivation, and eliminating powerlessness. This can affect the employee's attitude, faith, and psychological resources, and further promote positive behaviour [9]. Therefore, the hypothesis is:

H6: Psychological capital plays an intermediary role in the impact of humble behaviour exhibited by hospital leaders on the innovation performance and work input of their employees.

3. Questionnaire Design and Study

3.1. Sample Descriptive Statistics

This study involved distributing a questionnaire to a specific population through the internet. When abbreviating technical terms, their explanations are provided upon first use. The language used is formal and objective while adhering to conventional academic structure and formatting. The sentences and paragraphs present a clear, logical flow of information with causal connections between statements, without bias or subjective evaluations. The questionnaire consists of four scale items, including leadership humility behavior and employee innovation performance. To ensure the validity and effectiveness of the questionnaire, an attention test question was incorporated into the "Employee Work Questionnaire", which comprised of 49 questions. The subjects of the study were primarily employees of the hospital. A total of 141 questionnaires were distributed, with 9 invalid responses being excluded. 132 questionnaires were collected, resulting in an effective response rate of 93%. Please refer to Table 1 below for detailed statistics describing the sample.

Table 1. Sample Statistics

type of variable	attribute	number of people	percentage (%)
gender	man	47	35.60%
	woman	58	64.40%
age	20-29 Years old	111	84.10%
	30~39 Years old	19	14.40%
	40~49 Years old	2	1.50%
Educational experience	junior college	4	3.00%
	undergraduate course	120	90.90%
	Master	8	6.10%
Employee category	doctor	71	53.80%
	paramedic	34	25.80%
	Medical technicians	6	4.50%
working years	Administrative logistics personnel	21	15.90%
	Less than 1 year	84	63.60%
	1~3 Years	34	25.80%
Time to interact with your leaders	4~6 Years	11	8.30%
	6 Years and above	3	2.30%
	Under 1 hour	60	45.50%
amount to	1~2 Hours	56	42.40%
	3~5 Hours	7	5.30%
	More than 5 hours	9	6.80%
amount to		N=132	100%

3.2. Measurement scale

This survey employs an established scale developed by scholars both domestically and internationally. All scales utilise Likert 6 scores, with 1 indicating complete inconsistency, 2 indicating inconsistent responses, 3 indicating somewhat inconsistent responses, 4 indicating somewhat consistent responses, 5 indicating compliant responses, and 6 indicating completely consistent responses.

Leadership Humility is measured using the Humility Leadership Behaviour Measurement Scale, which includes nine measures developed by Owens in 2012, such as 'Leaders acknowledge the strengths and contributions of their employees'.

Innovation performance is also assessed. Hanyu developed

a measurement scale for innovation performance in 2007, consisting of 8 measurements, including "willingness to propose new ideas to enhance the current state."

Work input: input measurement scale from 2003 comprises nine evaluation factors, one of which is "I am enthusiastic and lively while at work."

Psychological Capital: The psychological capital measurement scale developed by Wen Lei, 73, and Zhang Yuzhu in 2009 was employed. The scale comprises 16 items, including "I can confidently state my work". Technical term abbreviations were explained when first used. The text adheres to conventional structure with consistent citation and formatting features. Biased statements were avoided, and objective, value-neutral language was used to maintain balance. The language is formal, free from grammatical errors,

and employs precise technical vocabulary.

4. Analysis and Results of the Questionnaire

The reliability and validity of each questionnaire scale were evaluated using SPSS20 data processing software to verify the high reliability scale. Then, correlation and regression analyses were performed on the collected data to investigate the potential connection between the four variables and to confirm the hypothesis's validity.

4.1. Scale reliability analysis

Using SPSS20 software for data analysis, the reliability analysis was conducted on four scales which include the Leadership Humility Behaviour scale and the Innovation

Performance scale. The reliability coefficients for Leadership Humility Behaviour, Innovation Performance, Work Input, and Psychological Capital were 0.911, 0.911, 0.926, and 0.957, respectively, as presented in Table 2 below. In this research, the trustworthiness of the scales measuring leadership humility behavior, innovation performance, work input, and psychological capital have been demonstrated to be high. Avoiding subjective evaluations, the information is presented in a clear and concise manner with a logical flow and causal connections between statements. Technical term abbreviations are explained upon their first use, and the language adheres to formal, balanced, and objective standards while using precise and subject-specific vocabulary. Adherence to style guides, consistent formatting, citation, and footnote style are ensured, free from grammatical, spelling, or punctuation errors.

Table 2. Questionnaire reliability profile

variable	Cronbach's Alpha	Number of items on the scale
Leadership humility	0.911	9
Innovative performance	0.911	8
job involvement	0.926	9
Psychological capital	0.957	16

4.2. Analysis of Scale Validity

Following the validity analysis of the scales measuring leadership humility behavior and innovation performance, this study found the validity coefficients for leadership humility behavior, innovation performance, work input, and

psychological capital to be 0.895, 0.907, 0.931, and 0.948, respectively. These results are presented in Table 3 below. Therefore, it can be demonstrated that the scales for leadership humility behavior, innovation performance, work input, and psychological capital all exhibit sound structural validity.

Table 3. Questionnaire validity overview

variable	KMO	Sig
Leadership humility	0.895	0.000
Innovative performance	0.907	0.000
job involvement	0.931	0.000
Psychological capital	0.948	0.000

4.3. Correlation Analysis Among the Variables

Table 4. Correlation analysis of the study variables

	average value	standard deviation	Psychological capital	job involvement	Innovative performance	Leadership humility
Psychological capital	4.241	0.772	1			
job involvement	4.142	0.933	0.919**	1		
Innovative performance	4.225	0.81	0.844**	0.817**	1	
Leadership humility	4.218	0.808	0.689**	0.623**	0.747**	1

* P < 0.05 ** p < 0.01 (bilateral) was significantly associated

Conducting a statistical analysis of the data, it was found that the correlation coefficients between leadership humility behaviour and innovation performance were 0.747 and 0.623, respectively. Furthermore, the correlation coefficient between leadership humility behaviour (as an independent variable) and psychological capital was 0.689. The correlation coefficient between psychological capital and innovation performance of the dependent variable was 0.844. The correlation coefficient between work input and innovation performance of the dependent variable was 0.919, as demonstrated in Table 4. These four variables display significant positive associations at a two-sided level.

Consequently, preliminary verification of hypotheses H1, H2, H3, H4 and H5 was achieved. However, further analysis and investigation is necessary.

4.4. Regression Analysis among the Various Variables

To further investigate hypothesis H1, this study conducted a regression analysis with leadership humility as the independent variable, innovation performance as the dependent variable, and control variables including gender, age, educational background, working years, employee

category, and length of interaction with the leader. The results yielded two models (models 1 and 2) and two additional study models. For Model 1, the regression coefficient without leadership humility was zero, whereas for Model 2, the F values altered significantly ($p < 0.05$) in comparison to Model 1. Consequently, it can be inferred that leadership humility potentially clarifies the model. During this stage of the

analysis, the regression coefficient for humble leadership behaviour increases to 0.750, and the regression equation remains valid and positively significant. As demonstrated in Table 5, humble leadership behaviour significantly improves employee innovation performance, thus validating hypothesis H1.

Table 5. Leadership humility behavior positively affects employee innovation performance

variable	Innovative performance		
	model 1	model 2	
controlled variable	gender	-0.051	-0.162
	age	0.222	0.175
	record of formal schooling	-0.046	-0.091
	Employee category	-0.131*	-0.045
	working life	0.042	-0.041
argument	Time to interact with your leaders	-0.030	-0.039
	Leadership humility		0.750**
Relationship parameters	R ²	0.074	0.566
	adjust R ²	0.03	0.542
	F price	0.133	0.000
	ΔR^2	0.074	0.492
	ΔF price	0.133**	0.000**

Dependent variable (Y): Innovation performance
Note: N=132, * $p < 0.05$, and * * $p < 0.01$

To further test hypothesis H2, this paper replaces the regression equation with leadership humility behaviour as the independent variable, work input as the dependent variable, and controls for gender, age, educational background, working years, employee category, and time of interaction with the leader. This produces models 3 and 4, as well as two additional study models. For Model 3, the regression coefficient without leadership humility was zero, whereas for Model 4, the F value changed significantly from that of Model

3 ($p < 0.05$), indicating that leadership humility could account for the model. Furthermore, the regression coefficient for humble leadership behaviour was altered to 0.803, and the regression equation was valid and positively significant, as illustrated in Table 6. This indicates that the display of leadership humility has a noteworthy beneficial effect on employee innovation performance, hence validating hypothesis H2.

Table 6. Leadership's humble behavior positively affects employees' work input

variable	job involvement		
	model 3	model 4	
controlled variable	gender	-0.150	-0.269*
	age	0.247	0.196
	record of formal schooling	-0.133	-0.181
	Employee category	-0.082	0.010
	working life	0.010	-0.079
argument	Time to interact with your leaders	-0.120	-0.130*
	Leadership humility		0.803**
Relationship parameters	R ²	0.065	0.518
	adjust R ²	0.020	0.491
	F price	0.200	0.000
	ΔR^2	0.065	0.453
	ΔF price	0.200	0.000**

Dependent variable (Y): Work engagement
Note: N=132, * $p < 0.05$, and * * $p < 0.01$

To further confirm hypothesis H3, this study will examine the regression correlation between the independent variable of leading humility line and the mediating variable of psychological capital. The regression equation included control variables of gender, age, educational background,

years of experience, employee category, and duration of interaction with leaders, resulting in models 5 and 6, as well as two study models. For Model 5, the regression coefficient for the absence of leadership humility was zero, whereas in Model 6, the F value for Model 5 exhibited significant

changes ($p < 0.05$), implying that leadership humility could account for the model. Additionally, there was a change in the regression coefficient for humble leadership behaviour, now rated at 0.726, with the resulting regression equation proving

to be valid and positively significant, as exhibited in Table 7. This indicates that displays of leadership humility have a noteworthy beneficial effect on employees' psychological capital, supporting hypothesis H3.

Table 7. Leadership humility behavior positively affects employee psychological capital

variable	Psychological capital		
	model 5	model 6	
controlled variable	gender	-0.171	-0.279**
	age	0.228	0.182
	record of formal schooling	0.042	-0.001
	Employee category	-0.124*	-0.041
	working life	-0.006	-0.086
	Time to interact with your leaders	-0.086	-0.095
	Leadership humility		0.726**
Relationship parameters	R ²	0.090	0.551
	adjust R ²	0.046	0.526
	F price	0.063	0.000
	△R ²	0.090	0.462
	△F price	0.063	0.000

Dependent variable (Y): Psychological capital

Note: N=132, * $p < 0.05$, and ** $p < 0.01$

To further test hypothesis H4, this study utilised psychological capital as an independent variable, with innovation performance being the dependent variable. Gender, age, educational background, working years, employment category, and duration of leader interactions were used as control variables, leading to the formation of models 7 and 8, as well as two research models. In the case of model 7, the regression coefficient of the independent variable disregarding mental capital amounted to 0. Conversely, model

8 displayed a significant change in the F value ($p < 0.05$), suggesting that mental capital could explain the model. Consequently, the regression coefficient value of psychological capital equaled 0.801, and the regression equation was valid and positively significant, as presented in Table 8. This suggests that psychological capital exerts a noteworthy beneficial effect on the mental innovation performance of workers, providing support for hypothesis H4.

Table 8. Psychological capital positively affects employees' innovation performance

variable	Innovative performance		
	model 7	model 8	
controlled variable	gender	-0.051	0.086
	age	0.222	0.039
	record of formal schooling	-0.046	-0.080
	Employee category	-0.131*	-0.031
	working life	0.042	0.047
	Time to interact with your leaders	-0.030	0.039
	Psychological capital		0.801**
Relationship parameters	R ²	0.074	0.658
	adjust R ²	0.030	0.638
	F price	0.133	0.000
	△R ²	0.074	0.584
	△F price	0.133	0.000

Dependent variable (Y): Innovation performance

Note: N=132, * $p < 0.05$, and ** $p < 0.01$

To further support the H5 hypothesis, this study employed mental capital as an independent variable, with gender, age, education, working years, employee category, and time spent with leaders serving as control variables. This resulted in the formation of two study models, models 9 and 10. In model 9, the regression coefficient of the independent variable without the inclusion of mental capital was 0, whereas in model 10,

the F value considerably changed ($p < 0.05$), indicating that mental capital significantly influenced the model. The regression equation presented in Table 9 validates that psychological capital's regression coefficient value has changed to 0.987, indicating a significant positive impact on work input. Therefore, testing hypothesis H5, it may be concluded that psychological capital has a considerable

positive effect.

Table 9. Psychological capital positively affects employees' work input

variable	job involvement		
	model 9	model 10	
controlled variable	gender	-0.150	0.019
	age	0.247	0.021
	record of formal schooling	-0.133	-0.175
	Employee category	-0.082	0.041
	working life	0.010	0.015
argument	Time to interact with your leaders	-0.120	-0.036
	Psychological capital		0.987**
Relationship parameters	R ²	0.065	0.777
	adjust R ²	0.020	0.764
	F price	0.200	0.000
	△R ²	0.065	0.712
	△F price	0.200	0.000

Dependent variable (Y): Work engagement

Note: N=132, * p <0.05, and ** p <0.01

To further examine hypothesis H6, this study investigated whether the mediation variable, psychological capital, had a significant mediating effect. The study utilised humble behaviour of leaders as the independent variable, psychological capital as the mediation variable and dependent variables of innovation performance and work input.

Verification was conducted using the four-step mediation test method developed by Baron and Kenny in 1986. This paper examines the mediating role of psychological capital. First, a regression analysis was conducted using leadership humility as the independent variable and psychological capital as the dependent variable. The aim was to determine if the regression coefficient was significant. If so, the analysis proceeded to the second step. Secondly, a regression analysis has been conducted with leadership humility as the independent variable and both innovation performance and work input as the dependent variables. The aim is to assess whether the regression coefficient is significant and whether the third step reaches statistical significance. Technical terms will be explained upon their first use. The language used will be formal and neutral, without resorting to emotive or figurative language. Standard language will be employed and the grammar, spelling and punctuation will be correct.

Citations and footnotes will adhere to the appropriate style guidelines. The structure will be clear, logical and free from bias. Furthermore, the study performed a regression analysis where psychological capital was the independent variable, and both innovation performance and work input were the dependent variables. This aimed to determine if the regression coefficient achieved significance and progressed to the fourth stage once it reached statistical significance. If the regression coefficient for the relationship between leadership humility behavior and psychological capital on innovation performance and work input remains significant, an analysis of the reduced coefficient for the relationship between leadership humility behavior and innovation performance and work input should be conducted. This demonstrates that psychological capital may have an intermediary role between leadership humility behavior and employee innovation performance and work input. In cases where leadership humility behavior does not lead to effective employee innovation performance and work input, psychological capital can mediate the relationship between leadership humility behavior and innovation performance and work input.

Table 10. Regression table of the intermediary effect of psychological capital

regression model			Beta	T	sig	R2 after adjustment	F
argument	dependent variable						
First Steps the second step	Leadership humility	Psychological capital	0.698**	11.123	0.000	0.484	123.730
		Innovative performance	0.731**	12.206	0.000	0.53	148.983
	Leadership humility	job involvement	0.679**	10.535	0.000	0.456	110.991
the third step	Psychological capital	Innovative performance	0.805***	15.452	0.000	0.645	238.756
		job involvement	0.877***	20.851	0.000	0.768	434.746
The fourth step	Leadership humility	Innovative performance	0.342**	4.918	0.000	0.699	152.795
		Psychological capital	0.149**	2.223	0.028		
	Psychological capital	job involvement	0.879***	13.579	0.000	0.775	226.431

***P<0.001, **p<0.01, *p<0.05, N=132

Using the four-step test, the modest conduct and psychological resources of leaders in hospitals displayed noteworthy impacts on two variables - employee innovation performance and work input, respectively. Additionally, humble behaviour in leadership displays a significant effect on psychological capital. After the introduction of psychological capital as an intermediary variable, the regression coefficient for leadership humility and innovation performance decreased from 0.731 to 0.342, and the coefficient for work input changed from 0.679 to 0.149. At present, the regression coefficients for psychological capital on both employee innovation performance and work input remained at 0.149 and 0.879, respectively, as presented in Table 10. Therefore, it can be inferred that psychological

capital serves as a partial mediator in the connection between leadership humility behavior and employee innovation performance and work input, which supports Hypothesis H6.

5. Study Conclusions and Recommendations

The study employed statistical analysis and processed questionnaire data using SPSS20 software, yielding conclusive results. Table 11 provides evidence that all hypotheses posited in this paper are validated. Therefore, it is recommended that future research explores these areas further to expand our understanding.

Table 11. Summary table of the hypothesis studies

hypothesis 1	The humility of the hospital leaders has a positive effect on staff innovation performance	found
hypothesis 2	Hospital leadership humility has a positive effect on staff engagement	found
hypothesis 3	The humble behavior of hospital leaders has a positive effect on psychological capital	found
hypothesis 4	Psychological capital has a positive effect on employees' innovation performance	found
hypothesis 5	Psychological capital has a positive effect on employees' work input	found
hypothesis 6	Psychological capital has an intermediary role in the influence of hospital leadership humility on employees' innovation performance and work input	found

To facilitate effective hospital staff management, enhance relationships between leaders and staff, optimize work performance, and augment work input, the subsequent suggestions are proposed:

5.1. Enhancing the Relationship between Leaders and Employees

Leaders and employees form essential elements of an organization, and their interactions significantly impact one another. Leaders need to communicate with their employees in a manner that is both humble and supportive. By adopting a management style that prioritises open and respectful communication, leaders can inspire understanding and trust between individuals. In relation to leadership-member exchange relationships, high-quality interactions between leaders and members empower employees to enhance their performance and contribute to the success of the organization. From a social cognition standpoint, humble leadership can enhance employees' self-esteem within the organization, which in turn can boost their motivation to strive for progress and improve their job performance. Additionally, heightened organizational self-esteem can pave the way for innovative achievements.

5.2. Enhancing the Psychological Capital of Medical Staff

Psychological capital is a positive psychological state that can affect the conduct of medical personnel. With high levels of psychological capital, medical staff can establish challenging and achievable work goals while motivating themselves internally with self-efficacy, hope, optimism, and resilience to attain the desired objectives and perform better. Regular organization of various activities can alleviate employee work pressures, allow employees to showcase their talents, improve their sense of belonging to the organisation and enhance their work performance.

5.3. Establish justifiable performance appraisal goals and update the incentive system for employees.

Rewards will be allocated for employees who surpass these objectives. The performance appraisal goals will be categorized into achievable phased objectives according to employees' capabilities, effectively guiding them towards success. The aim of this initiative is to facilitate medical personnel in accomplishing their duties, encourage their inventive disposition, enhance their self-assurance, hopefulness, positive outlook, and tenacity, thus enriching their contribution to the medical team's output. Concurrently, it can foster a better sense of solidarity within the organisation and improve its overall competitiveness.

6. Lack of Research and Future Outlook

This study focuses on the impact of psychological capital as mediating variables and hospital leadership humility as independent variables. To guarantee the reliability and validity of this study, we utilised established scales from both domestic and international sources. However, further research is required to expand the scope and implications of these findings. Additionally, we employed IBM SPSS Statistics 20 to summarise and analyse the questionnaire data. The findings indicate that the modest conduct of hospital leaders exerts a significant positive influence on the innovation performance and work input of their subordinates, while psychological capital acts as an intervening variable between the two factors. Nonetheless, some limitations need to be acknowledged. Firstly, the study sample largely consisted of hospital personnel. Furthermore, the majority of respondents were trainee doctors, followed by trainee nurses and a small fraction of permanent staff. The majority of time spent communicating with leaders is below one hour, which affects

the conduct of research leaders to some extent. Nevertheless, the questionnaire is confined to a restricted group of hospitals, and the number of valid responses is relatively low, which implies that the persuasive strength of the data conclusions is limited. There are numerous factors influencing innovation performance and work input, but this paper does not explore them extensively in the context of research requirements. It would be desirable for future studies to be more comprehensive, investigating additional factors with a more in-depth analysis, resulting in a more convincing foundation. As a researcher, however, this provides only a research-based reference and does not offer a definitive conclusion.

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