The driving path of positive psychological capital on college students' mental health from the perspective of career calling

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Abstract: In the era of digital intelligence, college students can access to more abundant learning resources and opportunities, thus speeding up the acquisition of knowledge and skills. However, over-reliance on digital technology and social media can lead them to become addicted to the virtual world, while information overload and cyberbullying can also negatively impact their mental health. By means of questionnaire survey, this study collected experimental data using positive psychological capital questionnaire, career calling scale and general health questionnaire, and explored the relationship between positive psychological capital, career calling and mental health by analyzing the experimental data. It aims to help college students find the meaning of work and life, improve their mental health level, and cultivate comprehensive and innovative talents to meet the needs of the Times.

1. Introduction

The mental health of college students is an important factor affecting the training of high-quality talents[1]. In the context of digitalization, college students can obtain educational resources flexibly through online learning platforms, educational applications and digital libraries to meet their personal learning needs[2]. A variety of social and communication methods enable them to share life experiences, obtain support and build social networks, which play a positive role in alleviating loneliness and enhancing social support[3]. However, the excessive use of digital media software in the age of digital intelligence leads to college students' neglect of interpersonal communication and emotional needs in real life, and even difficulties in concentration, social anxiety and sleep problems[4], which may further lead to serious mental health problems such as anxiety, self-doubt and self-esteem frustration[5]. The mental health of college students is affected by multiple factors. For example, Cheng Xiaoling and Lu Lijuan found in the survey that students have problems in life adaptation and study, including rural students' difficulties in adaptation and various factors of academic distress. Families, schools, society and students themselves need to work together to improve their mental health level[6]. By analyzing the mental health status and nursing measures of college students, Deng Yanlei found a positive correlation between study pressure and mental

health. College students are prone to psychological problems under the influence of factors such as academic study, which requires more attention and intervention[7]. Feng Linlin et al. took college students as subjects and conducted a questionnaire survey based on the theory of bioecology to study the relationship between parental rearing styles and college students' mental health. It is found that parenting style affects mental health, reality and online altruism play an intermediary role, and the intermediary effect of online altruism is stronger. Meanwhile, influential factors such as gender difference are analyzed[8]. Zhang Shuhao et al. analyzed the mechanism of action between trait mindfulness and emotional intelligence in sports and college students' mental health quality through questionnaire survey, and found that sports not only positively affect college students' mental health quality, but also indirectly affect them through trait mindfulness and emotional intelligence[9]. Based on existing studies, this study adopts the questionnaire survey method to explore the impact of positive psychological capital on the mental health of college students and investigate the mediating role of the sense of career mission in it, aiming to help college students get rid of psychological difficulties, develop positive psychological capital, improve mental toughness and optimism, achieve academic and life balance, and enhance the sense of career mission. Cultivate comprehensive and innovative talents to meet the needs of The Times.

2. The research hypothesis

Positive psychological capital includes elements such as self-efficacy, optimism, hope and resilience [11]. College students with higher positive psychological capital tend to be more confident, hold hope and show strong resilience in the face of setbacks, As shown in Figure 1. Therefore, the following hypothesis is proposed:

Hypothesis1: Positive psychological capital, including optimism, hope, resilience and other psychological traits, will have a positive and positive impact on the mental health of college students. Career calling is expressed as a strong passion for one's occupation and a strong sense of meaning in work. College students with career calling will reduce confusion and anxiety, clarify career goals, and show higher motivation and enthusiasm.

Hypothesis2: Career calling has a positive effect on the mental health of college students.Positive psychological capital may affect college students' mental health by stimulating their sense of career calling[10].

Hypothesis3: Positive psychological capital can have a positive impact on college students' mental health by enhancing their sense of career calling, that is, career calling plays an intermediary role between positive psychological capital and college students' mental health.
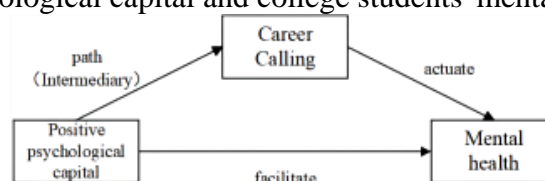

Figure 1: Research path map

3. Research design

This study conducted an online questionnaire survey through the Internet, and the positive psychological capital questionnaire prepared by Zhang Kuo et al. [11] was used as the content of the questionnaire. The final scale was formed by referring to Dobrow's CQ12 questionnaire and combining with the discussion of domestic professional scholars. The General Health Questionnaire (GHQ) compiled by Goldberg was adopted[12]. The questionnaire was shared by family and friends,

and the data came mainly from college students across the country. A total of 220 questionnaires were sent out. After eliminating missing, missing and incorrect relevant samples, 201 samples were retained, and the effective sample efficiency was 91.36%. Table 1 was obtained.

Table 1: Basic information features

Name	Category	frequency	Percentage (%)
1.Your gender:	Male	104	51.74
	Female	97	48.26
2.Grade:	Freshman	42	20.90
	Sophomore year	44	21.89
	Junior	48	23.88
	Senior	53	26.37
	Graduate student	14	6.97
3.Are you an only child?	Yes	90	44.78
	No	111	55.22
4.Is your current major consistent with your career expectations?	Yes	164	81.59
	No	37	18.41
Total		201	100.0

In this study, the maximum likelihood estimation method in structural equation models will be used to evaluate the relationship between the measured variables. It can be seen from Table 2 that the absolute values of kurtosis and skewness of the observed variables are less than 3, indicating that the observed variables are basically in a normal distribution.

Table 2: Analysis of basic indicators

Name	Sample size	Minimum	Maximum	Mean	Standard deviation	Skewness	Kurtosis
Efficacy	201	1.429	5	3.737	0.989	-0.891	-0.806
Resilience	201	1.286	5	3.618	1.044	-0.622	-1.300
Hope	201	1.333	4.833	3.541	1.090	-0.539	-1.459
Optimism	201	1.167	5	3.606	1.081	-0.708	-1.164
Career calling	201	1.667	4.75	3.672	0.932	-0.852	-1.008
Mental health	201	1.583	4.75	3.573	1.013	-0.671	-1.289

4. Data processing and statistical analysis

4.1. Reliability test

Cronbach alpha is a commonly used index to test the reliability of questionnaires. Generally, the Cronbach alpha value of the scale is lower than 0.7, indicating that the internal consistency of each variable is poor and needs to be recompiled. If it is higher than 0.7, the internal consistency is good; Higher than 0.9 is excellent [13]. This study uses the corrected item-total correlation (CITC) to measure the reliability of individual question items. In the study, if the question item meets the following two points, it will be deleted: (1) the overall correlation coefficient of CITC is less than 0.4; (2) After deleting this item, the Cronbach alpha coefficient of the scale is higher than the value of the corresponding dimension.

Table 3: Cronbach alpha results

Variable	α
Efficacy	0.915
Resilience	0.918
Hope	0.905
Optimism	0.911
Career calling	0.940
Mental health	0.943

According to Table 3, the Cronbach alpha coefficient values of self-efficacy, resilience, hope, optimism, professional mission and mental health variables are 0.915, 0.918, 0.905, 0.911, 0.940 and 0.943 respectively, all greater than 0.7. The CITC value of each item and the Cronbach alpha value of the deleted item meet the requirements, indicating that the variables of the questionnaire have high stability and the reliability basically passes the test.

4.2. Validity test

Table 4: Linear regression analysis table

KMO sample appropriateness measure		0.952
Bartlett sphericity test	Approximate chi-square	7389.408
	Degree of freedom	1225
	Significance	0.000

As shown in Table 4, the test result is as follows: p value of Bartlett test is less than 0.05, indicating that the questionnaire data can be factor analyzed. The KMO value was 0.952>0.7, indicating high validity. This shows that there is a correlation between the original variables.

4.3. Confirmatory factor analysis

In this study, confirmatory factor analysis (CFA) was conducted on variables from the self - efficacy, resilience, hope, optimism, career calling, and mental health scales. Compound reliability (CR) and mean variance extraction (AVE) were used to assess the convergent validity of each variable dimension. Initially, the model fitting of the confirmatory factor analysis scale was examined.

Table 5: Model fitting table for confirmatory factor analysis

Model fitting	CMIN	DF	CMIN/DF	NFI	RFI	IFI	TLI	CFI	GFI	RMSEA
Fitting result	1397.359	1160	1.205	0.828	0.819	0.966	0.964	0.966	0.801	0.032
Suggested value			<3	>0.8	>0.8	>0.8	>0.8	>0.8	>0.8	<0.05

As can be seen from Table 5, CMIN/DF value is 1.205 < 3, NFI, RFI, IFI, TLI, CFI and GFI are all greater than 0.8, and RMSEA is 0.032 < 0.05, indicating that the model has a good fit in confirmatory factor analysis. The models of self-efficacy scale, resilience scale, hope scale, optimism scale, career calling scale and mental health scale fit well.

4.4. Correlation verification analysis

Table 6: Standardized factor load table

Variable	Title	Estimate	SE	C.R.	P	Standard factor load	AVE	CR
Efficiency	XN7	1				0.842	0.609	0.916
	XN6	0.875	0.07	12.514	***	0.759		
	XN5	0.892	0.067	13.341	***	0.792		
	XN4	0.839	0.067	12.518	***	0.759		
	XN3	0.915	0.069	13.206	***	0.787		
	XN2	0.845	0.069	12.185	***	0.745		
	XN1	0.87	0.068	12.885	***	0.774		
Resilience	RX7	1				0.785	0.626	0.921
	RX6	0.997	0.078	12.829	***	0.821		
	RX5	1.045	0.081	12.833	***	0.822		
	RX4	1.015	0.081	12.608	***	0.810		
	RX3	0.925	0.079	11.753	***	0.767		
	RX2	0.947	0.078	12.182	***	0.789		
	RX1	0.916	0.081	11.266	***	0.741		
Hope	XW6	1				0.833	0.615	0.906

	XW5	0.891	0.071	12.522	***	0.772	
	XW4	0.997	0.077	12.902	***	0.788	
	XW3	0.868	0.072	11.987	***	0.748	
	XW2	0.967	0.076	12.712	***	0.780	
	XW1	0.951	0.074	12.774	***	0.783	
Optimism	LG6	1				0.799	
	LG5	0.955	0.081	11.77	***	0.760	
	LG4	0.966	0.077	12.473	***	0.795	0.630	0.911
	LG3	1.034	0.079	13.02	***	0.821	
	LG2	0.926	0.078	11.827	***	0.763	
	LG1	1.058	0.081	13.014	***	0.821	
Career calling	ZY12	1				0.737	
	ZY11	1.027	0.092	11.173	***	0.776	
	ZY10	0.931	0.091	10.186	***	0.713	
	ZY9	1.024	0.096	10.647	***	0.743	
	ZY8	1.095	0.094	11.619	***	0.805	
	ZY7	1.064	0.099	10.787	***	0.752	0.568	0.940
	ZY6	1.034	0.096	10.83	***	0.754	
	ZY5	1.072	0.101	10.637	***	0.742	
	ZY4	1.151	0.105	11.004	***	0.766	
	ZY3	1.104	0.096	11.534	***	0.799	
	ZY2	0.927	0.089	10.471	***	0.731	
	ZY1	0.977	0.095	10.289	***	0.720	
Mental health	JK12	1				0.782	
	JK11	0.953	0.081	11.761	***	0.761	
	JK10	1.038	0.084	12.384	***	0.793	
	JK9	1.032	0.086	12.021	***	0.774	
	JK8	0.982	0.083	11.88	***	0.767	
	JK7	1.007	0.085	11.802	***	0.763	
	JK6	0.949	0.083	11.419	***	0.743	0.582	0.944
	JK5	0.992	0.081	12.28	***	0.787	
	JK4	0.992	0.083	11.92	***	0.769	
	JK3	0.918	0.08	11.445	***	0.744	
	JK2	0.974	0.085	11.491	***	0.747	
	JK1	0.936	0.085	11.064	***	0.724	

1. "*" means p<0.05; "**" means p<0.01; "***" refers to p<0.001.

As can be seen from Table 6, in the factor analysis model verified in this paper, the standardized factor load measurement values range from 0.713 to 0.842, all of which are greater than 0.50, and the corresponding significant P-values are less than 0.05, indicating that there is a significant influence between the latent variables and the observed variables. At the same time, AVE values of mean variance extraction ranged from 0.568 to 0.630, all greater than 0.5, and CR values of joint reliability ranged from 0.906 to 0.944, all greater than 0.7, indicating that the convergence validity of the variables in this study was good.

4.5. Linear regression analysis

Table 7: Linear regression analysis table

Variable	Non-standard coefficient		Standardization coefficient	t	p	Collinearity diagnosis	
	B	Standard error	Beta			VIF	Tolerance
Constant	0.013	0.200	-	0.066	0.948	-	-
Efficiency	0.176	0.061	0.172	2.904	0.004**	1.924	0.520
Resilience	0.229	0.059	0.236	3.865	0.000**	2.034	0.492
Hope	0.166	0.052	0.179	3.164	0.002**	1.744	0.573
Optimism	0.209	0.058	0.223	3.621	0.000**	2.068	0.484
Career calling	0.200	0.064	0.184	3.103	0.002**	1.920	0.521
R^2	0.644						
Adjusted R^2	0.634						
F	F (5,195)=70.424,p=0.000						

1. The dependent variable is mental health. 2. * p<0.05 ** p<0.01.

As can be seen from Table 7, the linear equation is:

$$Mental\ Health=0.013+0.176*A + 0.229*B + 0.166*C + 0.209*D + 0.200*E$$

Let A be self - efficacy, B resilience, C hope, D optimism, and E career calling. Based on the R - square and F test results of the model, A, B, C, D, and E can explain 64.4% of the changes in mental health and all positively and significantly affect it. D has the greatest impact (standardized path coefficient 0.236, p < 0.05), followed by B (0.204, p < 0.05), then A and C (0.193, p < 0.05). Evidently, traits like D and C in positive psychological capital positively influence college students' mental health, thus Hypothesis 1 holds. The standardized coefficient (Beta) of E is 0.184, p < 0.01, showing a significant positive correlation with mental health and a positive promotion effect on students' mental well - being, so Hypothesis 2 is established.

4.6. Structural equation model interpretation

Table 8: Model fitting evaluation table

Model fitting	CMIN	DF	CMIN/DF	NFI	RFI	IFI	TLI	CFI	GFI	RMSEA
Fitting result	1397.359	1160	1.205	0.828	0.819	0.966	0.964	0.966	0.801	0.032
Suggested value			<3	>0.8	>0.8	>0.8	>0.8	>0.8	>0.8	<0.05

Table 8 shows that the CMIN/DF value is 1.205, which is less than 3. The RMSEA value was 0.032, less than 0.05. NFI, RFI, IFI, TLI, CFI and GFI are all greater than 0.8, indicating that the model has a good fit.

Table 9: Results of model parameter estimation

Destination	Path	Origin	Estimate	SE	CR	P value
Career calling	←	Efficiency	0.187	0.069	2.183	0.029
Career calling	←	Resilience	0.270	0.083	2.667	0.008
Career calling	←	Hope	0.192	0.063	2.364	0.018
Career calling	←	Optimism	0.215	0.075	2.336	0.019
Mental health	←	Career calling	0.160	0.080	2.207	0.027
Mental health	←	Efficiency	0.193	0.066	2.590	0.010
Mental health	←	Resilience	0.204	0.079	2.314	0.021
Mental health	←	Hope	0.193	0.061	2.717	0.007
Mental health	←	Optimism	0.236	0.073	2.915	0.004

1."*" means p<0.05; "**" means p<0.01; "***" refers to p<0.001.

As shown in Table 9, all path coefficients' CR values have p - values < 0.05, being significant at 95% confidence level, indicating good internal structural fit of the model. Self-efficacy, perseverance, hope, optimism and sense of professional mission directly affect mental health; self - efficacy, perseverance, hope and optimism directly affect sense of career calling. Positive psychological capital dimensions (self - efficacy, resilience, hope, optimism) significantly and positively impact career calling, and career calling directly and positively impacts mental health. Perseverance most impacts sense of professional mission (standardized path coefficient 0.270, p<0.05), followed by optimism (0.215, p<0.05), then hope (0.192, p<0.05), with self - efficacy having the least impact (0.187, p<0.05).

In conclusion, positive psychological capital can positively influence college students' mental health by enhancing sense of professional mission. Thus, sense of professional mission mediates between them, and Hypothesis 3 holds.

5. Conclusion

Positive psychological capital significantly drives college students' mental health. The factors covered by it, such as self-efficacy, resilience, hope and optimism, are significantly positively

correlated with mental health, and together explain 64.4% of the variation in mental health. Career calling has a positive driving effect on college students' mental health. As an individual's identification and goal pursuit of professional role, it can help college students clarify their direction, reduce confusion and anxiety, and have a positive impact on mental health. Career calling plays a mediating role between positive psychological capital and mental health of college students. Positive psychological capital not only directly affects mental health, but also indirectly affects it by enhancing the sense of professional mission. The influence degree of each factor is different. Optimism has the greatest influence on mental health, followed by resilience. Resilience has the greatest impact on career calling, followed by optimism. This study provides a reference for college students' mental health intervention and the cultivation of career calling. Colleges and society should pay attention to the cultivation of positive psychological capital, especially the cultivation of optimism and perseverance. The results are helpful to understand the influencing mechanism of college students' mental health, provide theoretical and practical basis for college education and guidance, and are of great significance to cultivate comprehensive and innovative talents.

References

[1] Shao, L. (2020). The Role of mental health education in colleges and universities on quality education of college students. Education and Teaching Forum(02), 63-64.

[2] Jin, T. &Sun, X. (2024). Research on Core Competence Cultivation of applied University students in the era of digital intelligence. Journal of Beijing Union University(05), 53-58.

[3] Li, Y., Chen, M., Zhang, R., Li &X. (2021). Experiencing happiness together facilitates dyadic coordination through the enhanced interpersonal neural synchronization. Social Cognitive and Affective Neuroscience, 17. 5, 447-460

[4] Wang, W., Tang, S., Qian, P. et al. Research on the association mechanism between hedonic information system and excessive use of mobile phone under the tendency of boredom[J]. Information Theory and Practice, 2023, 46(09):95-104.

[5] Feng, L. The Impact of Excessive use of mobile phone on the emptiness of college students[D]. Jiangxi University of Traditional Chinese Medicine, 2023.

[6] Cheng, X. &Lu, L. (2011). Analysis and Research on Mental Health status of College students. Journal of Tianjin Normal University(Social Science Edition)(01), 76-80.

[7] Deng, Y. (2024). Mental health status and nursing measures of college students. Wisdom Health(17), 14-16+20.

[8] Feng, L., Zhang, L., Sun, X. &Li, L. (2023). Parenting style and college students' mental health: mediating effect and comparative analysis of real and online altruism. Chinese Journal of Health Psychology(09), 1375-1381.

[9] Zhang, S., Zhang, L., Liu, H., Lv, S., Yang, Y. &Lin, J. (2024). The effect of physical exercise on the mental health quality of college students: the chain mediating effect of trait mindfulness and emotional intelligence. Chinese Journal of Health Psychology(01), 156-160.

[10] Chen, X. The contemporary value of Cultivating College students'sense of Professional Mission in the New Era[J]. Economist, 2023, (11):213-214.

[11] Zhang, K., Zhang, S. &Dong, Y. (2010)Positive Psychological Capital:Measurement and its relationship with mental health. Journal of Psychological and Behavioral Research, 8(1), 58-64.

[12] Sarriera, J. C., Sheila Goncalves CAMARA, &Berlim, C. S. (1996). analise fatorial da escala de goldberg(ghq-12) numa amostra de jovens. Psicologia Reflexao E Critica, IX(2), 293-306.

[13] Su, Z., Li, S. &Cheng, Y. (2009). Internal Consistency of scale evaluation and application evaluation of Cronbach'sαcoefficient. Journal of Clinical Psychosomatic Disorders, 15(1), 2.