

The Impact of Positive Psychological Ability on College Students' Mental Health Level after COVID-19 Outbreak

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Abstract: This study was designed based on the research on the relationship between positive psychological ability and the mental health level of college students, to explore the breakthrough point of college students' getting rid of negative psychology after the COVID-19 outbreak from the perspective of positive psychological ability, so as to improve their mental health level by using Symptom Checklist-90 (SCL-90), Positive Psychological Capital Questionnaire (PPQ) and College Students' Positive Psychological Quality Scale with the objects of 517 college students in Guangxi. The results show that: (1) the level of students' mental health is significantly positively correlated with their positive mental abilities (positive mental capital and positive mental quality); (2) college students' parenting patterns, academic achievements and interpersonal relationships are significantly different in many dimensions of college students' mental health level, positive psychological capital and positive psychological quality.

Keywords: COVID-19 outbreak; positive psychological ability; mental health
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INTRODUCTION

The COVID-19 epidemic is still spreading all over the world, which threatens people's lives

and deeply affects people's mental health because of its high transmission rate, universal susceptibility and difficulty in prevention and control. As college students are at an important stage of their life growth, their mental health problems are more concerned and

valued by the society. Lu Lin, an academician of Chinese Academy of Sciences, pointed out that the mental and psychological characteristics of college students under the COVID-19 epidemic are anxiety, panic, sadness, etc.¹, which will probably lead to serious psychological problems of college students and affect their healthy life. Besides, the number of student suicides in COVID-19 increased 10 times over the same period of last year². Therefore, it is particularly important to study the mental health development of college students in the epidemic crisis.

PROBLEM POSING

As positive psychology is a favorable driving force for improving the quality of individual life and promoting the healthy development of individual and social life, exploring the mechanism of college students' positive psychological ability and mental health is beneficial to strengthening college students' psychological adjustment ability, getting rid of negative psychology under the epidemic situation, and providing corresponding theoretical mechanism for improving college students' mental health. "I feel very happy that I can stay with my family for a long time", "I am full of confidence in the country and believe that we can definitely overcome the COVID-19" and so on. The happiness, subjective well-being and optimism expressed in the words of college students are all basic experiences of positive psychology. Studies have proved that these college students have a relatively high level of positive psychological ability. At present, the definition of positive psychological ability is not clear and unified in the academic circle. By studying and summarizing the concepts of positive psychology, positive psychological ability is defined as an individual's ability to make full use of his positive and optimistic potential, create positive emotional experience, and enhance his psychological frustration tolerance and stress ability, so that he can calmly face major events, which is a measurable and

exploitable individual quality. In this study, positive psychological capital and positive psychological quality are selected to form positive psychological ability.

At the end of the 20th century, a research upsurge of positive psychology emerged in the west. Martin E.P. Seligman first put forward the concept of positive psychology, which is opposite to negative psychology³. What studied in positive psychology are human's positive psychological quality, positive psychological capital, positive subjective experience, positive personality traits, positive social environment, etc. It promotes individual and social development towards happiness by fully detecting and developing human's constructive potential. Positive psychological quality refers to the psychological process related to positive behavior, including cognition and emotion such as best state, gratitude and tolerance, etc. As the advanced potential of human who needs practice to learn and consolidate, it is the content and core of positive psychology⁴. And positive psychological capital is the key element of individual positive psychology, which refers to the positive strength and positive psychological state displayed by individuals in the present and future⁵.

Meng Wanjin pointed out that it is more valuable and meaningful than the rectification of the disease to use positive matters and means to form a mentality full of positive spirit, optimistic hope and vitality and cultivate positive quality⁶. Some researchers have investigated some students in higher vocational colleges through the questionnaire of positive psychological capital and symptom checklist 90 (SCL-90), and found that positive psychological capital of higher vocational college students is negatively correlated with mental health, that is, students with higher positive psychological capital have better mental health⁷. Darren P. Morton et al. studied and analyzed the changes of mental health and emotional health of college students who participated in the measurement after intervention, and found that multi-mode intervention combined with evidence-based strategies of lifestyle, medicine and positive psychology can improve the mental health and emotional health of college students⁸. To sum up, the development of college students' positive

psychology is closely related to their mental health. Therefore, in this study, the relationship between positive psychological ability and mental health of college students in the context of the epidemic will be explored from the perspective of positive psychological quality and positive psychological capital.

METHODOLOGY

Research Object

At present, there are about 537,000 full-time undergraduates in 38 undergraduate colleges in Guangxi Zhuang Autonomous Region. In this study, the full-time undergraduates in Guangxi universities were taken as the overall research object, and the survey samples were taken from 10 ordinary universities including Guangxi University, Guangxi Medical University and Guangxi Normal University by stratified and proportional random sampling. A total of 600 paper questionnaires were distributed, and 592 questionnaires were recovered, with a recovery rate of 98.67%. After excluding invalid questionnaires such as incomplete and incorrect filling, the effective questionnaires were 517, with an effective rate of 87.33%, a wide sample coverage and high representation.

Research Tools

Symptom checklist

The Symptom Checklist 90 (SCL-90) developed by L. R. Derogatis with a 5-level scoring system, 90 items in total, covering 10 dimensions such as somatization, obsessive-compulsive symptoms and phobia was used to measure the psychological conditions in 10 aspects⁹. The Cronbach α coefficient of the scale in this study was 0.978, and the α coefficients of each subscale were 0.894, 0.862, 0.858, 0.904, 0.868, 0.749, 0.804, 0.776, 0.850, and 0.734, respectively. Therefore, the scale was highly reliable in this study.

Positive psychological capital questionnaire

The Positive Psychological Capital Questionnaire (PPQ) jointly prepared by Zhang Kuo, Zhang Sai and Dong Yinghong was adopted, which included four dimensions (self-efficacy, resilience, hope and optimism) and 26 items. The Cronbach α coefficient of the whole questionnaire was 0.90, and that of its sub-questionnaires was 0.86, 0.83, 0.80 and 0.76⁵. The α coefficients of the questionnaire as a whole and its sub-questionnaires in this study were 0.961, 0.871, 0.764, 0.885, and 0.866. The above data show that the positive psychological capital questionnaire data were highly reliable in this study.

Positive psychological quality scale for college students

A total of 76 items, including 6 virtues and 24 positive psychological qualities, were scored from 1 to 5 on the college students' positive psychological quality scale. The Cronbach α coefficient was 0.948 in the total table and 0.859, 0.860, 0.889, 0.792, 0.782 and 0.864 in the subscale respectively, so the scale with good reliability was used as a tool to measure the positive psychological quality of college students¹⁰. The α coefficients of the overall scale and its subscales were 0.972, 0.881, 0.823, 0.861, 0.868, 0.787, and 0.904, respectively, indicating that the data in the questionnaire were highly reliable.

Measurement procedures and data processing tools

In this study, the questionnaire was distributed in schools, and the purpose and significance of this study were introduced to the subjects (college students) through the investigation and researchers. It was emphasized that this study was anonymous, and there was no right or wrong answer, and students were required to fill it out truthfully according to their own situation. In this study, SPSS20.0 software was used to statistically analyze the data.

RESEARCH RESULTS

Comparison between Mental Health of College Students after COVID-19 Outbreak and Adult Norm in China

The one-sample t test which compared the total SCL-90 scores and each factor score of the research subjects with the national adult norm¹¹ revealed that the total SCL-90 score of 517 college students in this survey was 125.20 ± 40.70 , $t = -2.659$, $df = 516$, and $P = 0.008$, and the difference between the total SCL-90 score and the total norm score (129.96 ± 38.76) was -4.76 , indicating that the mental health of college students in Guangxi was at a high level during the epidemic period, and the scores of

three of the nine factors were higher than the factor scores of the norm, namely, obsessive-compulsive symptom, phobia and psychosis. In addition, 437 college students with the individual total scores less than 160 points in the SCL-90 scale in this survey indicated that they were in good mental health, while 80 college students with scores over 160 points showed abnormal mental health, that is, about 15.5% of college students might need psychological intervention. Relevant data are shown in Table 1.

Table 1
Comparison between SCL-90 Score and National Norm under Epidemic Background

Factors	(n=517)		(n=1388)		t
	Research objects (n=517)		Norm (n=1388)		
	M	SD	M	SD	
Somatization	1.27	0.43	1.37	0.48	
Obsessive-compulsive symptom	1.65	0.62	1.62	0.58	
Interpersonal sensitivity	1.45	0.55	1.65	0.51	
Depression	1.44	0.55	1.50	0.59	
Anxiety	1.35	0.48	1.39	0.43	
Hostility	1.34	0.46	1.48	0.56	
Phobia	1.31	0.48	1.23	0.41	
Bigotry	1.31	0.47	1.43	0.57	
Psychosis	1.34	0.49	1.29	0.42	
Total average	125.20	40.70	129.96	38.76	-2.659

Difference test of mental health status

The one-way analysis of variance of parenting pattern revealed that the dimensions of obsessive-compulsive disorder, interpersonal sensitivity, depression and paranoia in SCL-90 indicated significant differences in parenting patterns. Self-efficacy, hope, optimism and their total scales in the Positive Psychological Capital Scale showed significant differences in parenting

pattern, while the others were not. According to LSD back testing, the level of laissez-faire parenting patterns in SCL-90 scale was significantly higher than that in democracy, while the level of democratic parenting patterns in Positive Psychological Capital and Positive Psychological Quality Scale was significantly higher than that in laissez-faire, but the difference only existed in the laissez-faire type and the democratic type, rather than other types.

Table 2
The Results of the Difference Test of Demographic Variables in Parenting Patterns

	1Democratic type	2Doting type	3Autocratic type	4Laissez-faire type	F	P	LSD
Somatization	1.24±0.41	1.24±0.38	1.30±0.49	1.32±0.48	0.782	0.537	
Obsessive-compulsive symptom	1.58±0.57	1.62±0.68	1.68±0.58	1.79±0.71	3.002	0.018*	4>1
Interpersonal sensitivity	1.40±0.50	1.38±0.57	1.47±0.48	1.59±0.66	3.244	0.012*	4>1
Depression	1.38±0.50	1.36±0.49	1.50±0.52	1.59±0.67	3.668	0.006**	4>1
Anxiety	1.32±0.47	1.30±0.44	1.39±0.47	1.41±0.53	0.863	0.468	
Hostility	1.30±0.42	1.39±0.50	1.41±0.45	1.40±0.54	1.399	0.233	

Phobia	1.28±0.43	1.30±0.48	1.30±0.46	1.38±0.60	0.986	0.415	
Bigotry	1.27±0.41	1.33±0.46	1.42±0.57	1.42±0.57	2.677	0.031*	4>1
Psychosis	1.30±0.46	1.32±0.49	1.33±0.47	1.43±0.56	1.510	0.198	
Others	1.39±0.49	1.37±0.44	1.45±0.45	1.55±0.62	2.139	0.075	
Self-rating symptoms	1.35±0.42	1.36±0.45	1.42±0.41	1.49±0.54	2.326	0.055	
Self-efficacy	4.39±1.05	4.28±0.95	4.08±1.09	4.11±1.11	2.868	0.023*	1>4
Resilience	4.30±0.92	4.06±1.07	4.28±0.69	4.14±0.94	1.054	0.379	
Hope	4.96±1.04	4.65±1.01	4.77±0.91	4.60±1.13	3.012	0.018*	1>4
Optimism	4.93±1.07	4.66±1.21	4.80±0.93	4.58±1.17	3.224	0.013*	1>4
Positive psychological capital	4.54±0.80	4.42±0.87	4.34±0.67	4.32±0.82	2.467	0.044*	1>4
Knowledge and wisdom	3.55±0.70	3.57±0.78	3.68±0.64	3.46±0.60	0.817	0.515	
Courage	3.63±0.62	3.62±0.73	3.67±0.60	3.55±0.64	0.479	0.751	
Kindness	3.70±0.64	3.80±0.73	3.62±0.71	3.60±0.65	0.984	0.415	
Justice	3.72±0.64	3.67±0.79	3.63±0.70	3.55±0.66	1.613	0.170	
Self-control	3.61±0.66	3.60±0.63	3.53±0.54	3.43±0.60	1.864	0.115	
Spirit transcendence	3.77±0.68	3.79±0.76	3.75±0.68	3.65±0.64	0.701	0.591	
Positive psychological quality	3.66±0.61	3.67±0.70	3.65±0.59	3.54±0.55	0.960	0.429	

Note.

*p<0.05; **p<0.01; ***p<0.001

The one-way analysis of variance of the student's academic performance revealed that the somatization, interpersonal sensitivity, depression, and psychotic dimensions in the SCL-90 scale had significant differences in academic performance. The two dimensions of

self-efficacy and hope of positive psychological capital scale and the four dimensions of knowledge and wisdom, courage, self-control and spiritual transcendence of positive psychological quality scale all had significant differences. The content of the blank said not significant.

Table 3
Test Results of Differences in Demographic Variables of Academic Performance

	1.下	2.中下	3.中	4.中上	5.上	F	P	LSD
Somatization	1.72±0.79	1.38±0.56	1.24±0.40	1.24±0.36	1.20±0.38	5.956***	0.000	1>2>3, 4, 5
Obsessive-compulsive symptom	1.74±0.86	1.80±0.69	1.64±0.59	1.63±0.59	1.49±0.67	1.900	0.109	
Interpersonal sensitivity	1.72±0.86	1.61±0.65	1.42±0.51	1.44±0.54	1.33±0.53	2.860*	0.023	1>5, 2>3, 4, 5
Depression	1.73±0.78	1.61±0.67	1.40±0.51	1.41±0.52	1.34±0.54	3.381*	0.010	1, 2>3, 4, 5
Anxiety	1.50±0.61	1.48±0.62	1.33±0.47	1.32±0.42	1.29±0.48	2.024	0.090	
Hostility	1.44±0.67	1.47±0.55	1.32±0.44	1.30±0.39	1.28±0.55	2.013	0.091	
Phobia	1.45±0.69	1.42±0.53	1.29±0.46	1.31±0.45	1.19±0.50	2.018	0.091	
Bigotry	1.45±0.69	1.40±0.49	1.29±0.43	1.32±0.44	1.25±0.49	1.398	0.233	
Psychosis	1.44±0.67	1.50±0.65	1.31±0.46	1.30±0.41	1.29±0.52	2.426*	0.047	2>3, 4, 5
Others	1.57±0.63	1.56±0.66	1.40±0.50	1.40±0.46	1.43±0.54	1.675	0.155	
Self-rating symptoms	1.60±0.68	1.53±0.56	1.37±0.42	1.37±0.40	1.31±0.47	2.975*	0.019	1>5, 2>3, 4, 5
Self-efficacy	4.08±1.44	3.99±1.12	4.16±0.95	4.41±1.03	4.92±1.25	7.202***	0.000	5>1, 5>4>2, 3
Resilience	4.31±0.95	4.14±0.95	4.25±0.91	4.28±0.90	4.30±1.00	0.304	0.875	
Hope	4.48±1.36	4.64±1.08	4.76±1.07	4.99±1.00	5.09±1.05	2.743*	0.028	5>2, 4>2, 3
Optimism	4.51±1.62	4.73±1.11	4.73±1.06	4.93±1.08	5.02±1.17	1.529	0.192	
Positive psychological capital	4.28±1.23	4.37±0.78	4.37±0.76	4.54±0.75	4.82±0.99	3.837**	0.004	5>1, 2, 5>4>3

Knowledge and wisdom	3.57±0.80	3.45±0.61	3.43±0.66	3.61±0.69	3.95±0.62	6.821***	0.000	5>2, 5>4>3
Courage	3.70±0.82	3.54±0.59	3.54±0.66	3.65±0.57	3.95±0.55	4.489**	0.001	5>2, 3, 4
Kindness	3.67±0.76	3.69±0.67	3.61±0.65	3.70±0.62	3.87±0.64	1.659	0.158	
Justice	3.68±0.81	3.67±0.70	3.58±0.65	3.72±0.63	3.87±0.70	2.357	0.053	
Self-control	3.57±0.85	3.47±0.57	3.49±0.60	3.62±0.68	3.78±0.69	2.650*	0.033	5>2, 3
Spirit transcendence	3.76±0.81	3.71±0.68	3.68±0.66	3.74±0.65	4.03±0.72	2.747*	0.028	5>2, 3, 4
Positive psychological quality	3.66±0.76	3.59±0.58	3.55±0.59	3.67±0.57	3.92±0.58	4.035**	0.003	5>2, 3, 4

Note.

*p<0.05; **p<0.01; ***p<0.001

Univariate analysis of variance showed that there were significant differences in interpersonal relationship among college students in SCL-90 scale and its 10 dimensions. The interpersonal relationship of college students was significantly different in positive psychological capital and its four dimensions, and in positive psychological quality scale and its

six dimensions. LSD back testing showed that students with good interpersonal relationship status were significantly higher than those with poor interpersonal relationship status in the aspects of general and 10 dimensions of college students' mental health level, general and 4 dimensions of positive mental capital and general and 6 dimensions of positive mental quality.

Table 4
Test Results of Differences in Demographic Variables of Interpersonal Relationship

	1.Bad	2.General	3.Good	F	P	LSD
Somatization	1.70±0.93	1.29±0.43	1.18±0.32	12.216***	0.000	1>2>3
Obsessive-compulsive symptom	2.06±0.80	1.70±0.63	1.49±0.56	10.241***	0.000	1>2>3
Interpersonal sensitivity	2.16±1.00	1.50±0.55	1.30±0.43	22.395***	0.000	1>2>3
Depression	1.95±0.90	1.49±0.56	1.27±0.42	16.719***	0.000	1>2>3
Anxiety	1.78±0.84	1.38±0.50	1.24±0.35	12.230***	0.000	1>2>3
Hostility	1.75±0.76	1.36±0.46	1.24±0.38	11.444***	0.000	1>2>3
Phobia	1.79±0.92	1.35±0.49	1.18±0.35	16.586***	0.000	1>2>3
Bigotry	1.80±0.80	1.34±0.46	1.22±0.37	13.545***	0.000	1>2>3
Psychosis	1.84±0.82	1.37±0.51	1.23±0.37	13.728***	0.000	1>2>3
Others	1.71±0.78	1.46±0.54	1.34±0.44	5.067**	0.007	1>2>3
Self-rating symptoms	1.86±0.80	1.43±0.46	1.27±0.35	16.647***	0.000	1>2>3
Self-efficacy	3.57±1.18	4.00±0.88	4.90±1.11	52.196***	0.000	3>2>1
Resilience	3.67±0.56	4.13±0.88	4.54±0.95	15.301***	0.000	3>2>1
Hope	4.11±1.19	4.67±1.01	5.24±1.04	21.038***	0.000	3>2>1
Optimism	4.29±1.41	4.60±1.01	5.28±1.10	25.736***	0.000	3>2>1
Positive psychological capital	3.94±0.97	4.28±0.68	4.87±0.86	37.320***	0.000	3>2>1
Knowledge and wisdom	0.86±0.68	3.40±0.62	3.84±0.20	27.801***	0.000	3>2>1
Courage	3.40±0.61	3.48±0.56	3.90±0.65	28.947***	0.000	3>2>1
Kindness	3.43±0.66	3.54±0.58	3.97±0.68	27.663***	0.000	3>2>1
Justice	3.38±0.84	3.52±0.59	3.97±0.68	30.168***	0.000	3>2>1
Self-control	3.25±0.67	3.44±0.53	3.81±0.75	22.219***	0.000	3>2>1
Spirit transcendence	3.39±0.61	3.61±0.61	4.03±0.71	26.257***	0.000	3>2>1
Positive psychological quality	3.35±0.59	3.50±0.52	3.92±0.64	33.283***	0.000	3>2>1

Note.

*p<0.05; **p<0.01; ***p<0.001

Correlation Analysis between Mental Health and Positive Psychological Ability of College Students after COVID-19 Outbreak

The total score of SCL-90 in a case exceeded 160 points, which meant that its mental health condition might deviate from normal, that is, the students with lower SCL-90 score had relatively higher mental health level.

An Analysis of the Relationship between Positive Psychological Capital and Mental Health

Pearson correlation analysis showed that positive psychological capital scale was negatively correlated with SCL-90 scale. The higher the score of the former, the lower the score of the latter. That is, positive psychological capital was positively correlated with mental health. In further data analysis, SCL-90 was significantly correlated with self-efficacy, resilience, hope and optimism (P<0.01), with correlation coefficients of -0.19, -0.26, -0.18 and -0.20 respectively, indicating that college students with higher positive psychological capital have higher mental health level. See Table 5 for relevant data.

Table 5

Analysis Results of the Relationship between Positive Psychological Capital and Mental Health

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Somatization	1															
2 Obsessive-compulsive symptom	0.68**	1														
3 Interpersonal	0.76**	0.83**	1													
4 Depression	0.83**	0.79**	0.84**	1												
5 Anxiety	0.74**	0.72**	0.76**	0.75**	1											
6 Hostility	0.67**	0.67**	0.77**	0.70**	0.76**	1										
7 Phobia	0.72**	0.73**	0.81**	0.76**	0.80**	0.77**	1									
8 Bigotry	0.78**	0.75**	0.83**	0.81**	0.87**	0.77**	0.73**	1								
9 Psychosis	0.75**	0.72**	0.71**	0.76**	0.79**	0.74**	0.63**	0.70**	1							
10 Others	0.86**	0.89**	0.92**	0.93**	0.94**	0.86**	0.82**	0.87**	0.92**	1						
11 Self-rating symptoms	-0.19**	-0.29**	-0.29**	-0.31**	-0.26**	-0.24**	-0.27**	-0.23**	-0.24**	-0.23**	-0.29**	1				

12 Self-efficacy	-0.26** -0.38** -0.39** -0.40** -0.34** -0.35** -0.31** -0.32** -0.33** -0.31** -0.39** 0.46** 1
13 Resilience	-0.18** -0.21** -0.24** -0.28** -0.21** -0.24** -0.21** -0.23** -0.21** -0.18** -0.25** 0.62** 0.38** 1
14 Hope	-0.20** -0.22** -0.25** -0.30** -0.22** -0.22** -0.18** -0.24** -0.23** -0.21** -0.26** 0.64** 0.39** 0.76** 1
15 Optimism	-0.16** -0.21** -0.23** -0.26** -0.20** -0.22** -0.20** -0.21** -0.20** -0.19** -0.24** 0.87** 0.32** 0.76** 0.85** 1
16 Psychological capital	
Note.	
* * indicates significant correlation at 0.01 level (bilateral).	

Analysis of the Relationship between Positive Psychological Quality and Mental Health

Correlation analysis showed that the higher the score of positive psychological quality scale was, the lower the score of SCL-90 scale was, and there was a significant negative correlation between the two ($p < 0.01$), that is, mental health

level was significantly positively correlated with positive psychological quality, and SCL-90 scale was significantly correlated with knowledge and wisdom, courage, kindness, justice and self-control spirit, as shown in Table 6. In view of the above correlation analysis results, it is concluded that there is a close positive correlation between mental health level and positive mental ability.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 Somatization	1																	
2 Obsessive-compulsive symptom	0.68**	1																
3 Interpersonal	0.72**	0.83**	1															
4 Depression	0.76**	0.83**	0.85**	1														
5 Anxiety	0.83**	0.79**	0.84**	0.86**	1													
6 Hostility	0.74**	0.72**	0.76**	0.75**	0.79**	1												
7 Phobia	0.67**	0.67**	0.77**	0.70**	0.76**	0.69**	1											
	0.72**	0.73**	0.81**	0.76**	0.80**	0.77**	0.75**	1										

8 Bigotry	0.78** 0.75** 0.83** 0.81** 0.87** 0.77** 0.73** 0.83** 1
9 Psychosis	0.75** 0.72** 0.71** 0.76** 0.79** 0.74** 0.63** 0.70** 0.76** 1
10 Others	0.86** 0.89** 0.92** 0.93** 0.94** 0.86** 0.82** 0.87** 0.92** 0.85** 1
11 Self-rating symptoms	-0.19** -0.25** -0.26** -0.25** -0.24** -0.19** -0.27** -0.23** -0.23** -0.17** -0.26** 1
12 Knowledge and wisdom	-0.19** -0.20** -0.25** -0.24** -0.24** -0.21** -0.25** -0.26** -0.23** -0.15** -0.25** 0.82** 1
13 Courage	-0.25** -0.23** -0.25** -0.27** -0.26** -0.21** -0.28** -0.27** -0.25** -0.19** -0.28** 2.80** 0.83** 1
14 Kindness	-.22** -.22** -0.25** -0.26** -0.24** -0.25** -0.26** -0.25** -0.24** -0.22** -0.27** 0.76** 0.76** 0.81** 1
15 Justice	-0.18** -0.24** -0.23** -0.25** -0.23** -0.23** -0.21** -0.23** -0.21** -0.19** -0.25** 0.75** 0.71** 0.73** 0.77** 1
16 Self-control	-0.22** -0.20** -0.25** -0.26** -0.26** -0.25** -0.27** -0.26** -0.22** -0.22** -0.27** 0.83** 0.82** 0.85** 0.83** 0.76** 1
17 Spirit transcendence	-.23** -.24** -0.27** -0.28** -0.27** -0.24** -0.28** -0.27** -0.25** -0.21** -0.29** 0.92** 0.91** 0.91** 0.90** 0.86** 0.94** 1
18 Positive psychological quality	
Note.	
* * indicates significant correlation at 0.01 level (bilateral).	

DISCUSSIONS

Discussion on Mental Health Status

With regard to the mental health level of college students during the outbreak, the research data shows that the average score of college students in SCL-90 is 1.39, indicating a high level of mental health. The average value of the norm (n=1,388) of normal Chinese in the SCL-90 is 1.44 ± 0.43^{11} , which is higher than the average value of the total scores of the scale sampled in this study, indicating that the overall mental health level of college students during the epidemic was relatively high. However, there are some college students who are over-defensive. For example, the mean value of

obsessive-compulsive symptoms, psychosis and phobia in this study (the mean score of obsessive-compulsive symptoms is 1.65 ± 0.62 , that of phobia is 1.31 ± 0.48 , and that of psychosis is 1.34 ± 0.49) is higher than that of the national norm (the mean score of obsessive-compulsive symptoms is 1.62 ± 0.58 , that of phobia is 1.23 ± 0.41 , and that of psychosis is 1.29 ± 0.42). College students affected by the COVID-19 outbreak will be more conscious to take precautions. Some of them may have compulsive symptoms such as excessive cleaning when they come back from the epidemic that will remain in the later period after the outbreak. During the outbreak, it was inevitable that college students were tired because they were all confined to their homes. In addition, college students also experienced academic

pressure and emotional problems, resulting in some psychological pressure and lack of channels to vent.

Discussion on the Results of Mean Difference Test

With regard to parenting pattern, it is found in this study that students with democratic parenting pattern have better mental health and positive psychological ability. According to the theory of family stress, family economic pressure will increase parents' psychological pressure¹², because they have no autonomy at work and are busy making money to support their families. Besides, parents' negation, indifference and even neglect make children gain more negative emotional experience from parent-child interaction, and then form students' negative and unsafe cognition and attitude emotion, which affects the establishment of their positive interpersonal psychology and healthy and good psychology.

Regarding the analysis of college students' academic performance, it is found in this study that college students with lower academic performance have more prominent manifestations of somatization, interpersonal sensitivity, depression and psychotic symptoms. Students with poor academic performance are more likely to have learning anxiety, and many setbacks will bring them learned helplessness, which will increase their learning burden and suppress their hopeless future. Even worse, due to the lack of interest and motivation in life and the accumulation of negative psychology, their degree of pessimism and depression will gradually deepen. This study also shows that college students with good academic performance have higher positive psychological ability, because their self-efficacy will be stronger, which will increase their enthusiasm for discovery and respond to the challenges in study and life with positive kinetic energy. Thus it is clear that academic achievements have a significant impact on college students' mental health and positive psychological ability.

As for the interpersonal relationship of college students, it is found in this study that students with better interpersonal relationship have higher mental health level and better positive psychological ability. From the perspective of social support system, firstly, social support can promote and maintain mental health¹². College students with good interpersonal relationship are more likely to get social support, and the more social support they can get. Secondly, the higher the degree of social support an individual receives from having a good interpersonal relationship, the closer the relationship he has with the outside world (society, family, etc.). When he encounters difficulties and problems, he can get more resources and opportunities to improve his concept of problem solving and get more angles and methods to solve problems, and then change his cognition of frustration and suffering, which can enhance their sense of self-worth, form more positive health cognition and healthy behavior, and improve the mental health level of individuals¹³.

Discussion on the Relationship between Positive Psychological Ability and Mental Health

According to the data analysis, there is a significant positive correlation between college students' mental health level and positive psychological ability (positive psychological capital and positive psychological quality), and enhancing their positive psychological ability can improve their mental health, so that they can use their positive mental abilities to explore positive psychology, solve psychological problems, get rid of negative psychology under the epidemic situation and maintain a high level of mental health when encountering major events. Thus, strengthening the positive psychological ability of college students during the epidemic period can help them to get rid of the troubles brought by the epidemic and thus maintain their healthy psychology. The above illustrates the mental health status of college students during the epidemic and the important regulation ability of positive mental ability on college students' psychology.

CONCLUSIONS

The average value of SCL-90 score in this study was 1.39 points, indicating that the overall mental health of college students in the epidemic situation was good, including 437 college students with the individual total score less than 160 points in SCL-90 score with a good mental health. However, the mental health levels of 80 college students with the score more than 160 points might deviate from the normal, that is, about 15.5% of college students might need psychological intervention. The correlation analysis revealed that there was a significant positive correlation between college students' mental health and their positive psychological abilities (positive psychological capital and positive psychological quality). At the same time, college students' parenting pattern, academic performance and interpersonal relationship status showed significant differences in multiple dimensions of college students' mental health, positive psychological capital and positive psychological quality.

Therefore, in this study, the strategies to promote college students' positive psychological ability are discussed from three aspects: individual, family and school based on the positive psychological ability. Specially, on the individual level, students' positive emotional experience is increased to improve their cognitive power and give play to their humanitarian advantages; on the family level, democratic atmosphere is created to form a friendly and benign family interaction atmosphere and mode; on the university level, systematic positive mental health education is given, and the internal linkage social support system is constructed to enhance their positive psychological ability and improve their mental health level.

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