



Data Analysis of the Influence of College Students' Personality Traits on Positive Mental Health Education Under COVID-19 Epidemic Situation

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Abstract. This study is quantitative research using survey method and mainly uses SPSS software to statistically analyze the questionnaire survey data. The purpose of this study is to analyze the influence of college students' personality traits on positive mental health education in colleges and universities under the current epidemic situation by using the empirical research method of statistical analysis of data, so as to provide ideas and empirical research basis for perfecting the positive mental health education model in Chinese colleges and universities. Research method: 843 college students in Shaanxi Province were randomly sampled and measured by questionnaire. By using various statistical analysis methods, such as descriptive analysis, t-test, ANOVA, and regression analysis, the following statistical results were obtained: (1) There were significant differences in the scores of positive mental health (well-being) among the three factors: gender, grade and whether students had participated in the student union or not ($P < 0.05$). (2) All five personality traits have significant predictive effects on positive mental health (well-being). Conclusions: Under the epidemic situation, we should pay attention to the positive mental health education of college students, and consciously cultivate their positive personality traits, so as to help college students face difficulties optimistically and improve their well-being during the epidemic situation.

Keywords: empirical research · statistical analysis method · positive mental health education · personality traits · epidemic

1 Introduction

Positive psychology is an effective mechanism to help individuals, groups and organizations learn about and raise their sense of happiness by way of scientific research, in a bid to facilitate individuals, groups and organizations to fulfill a flourishing state [5]. In this study, positive psychology refers to a new perspective in the exploration of mental health education, it provides theoretical support for epidemic prevention mental health education.

On the basis of the two-factor model theory and under the background of vigorous development of positive psychology, Keyes (2007) pointed out that mental health is a

complete state, in which individuals have no mental illness and get the flourishing of subjective well-being, psychological well-being and social well-being. Keyes constructed a positive mental health model, including three scales served as indicators of positive mental health: emotional well-being, social well-being and psychological well-being. In this study, the adult version of Mental Health Continuity Short Form (MHC-SF) compiled by Keyes based on the positive mental health model mentioned above was used to evaluate the positive mental health status of Chinese college students as the main dependent variable of the study.

In 2004, the World Health Organization published a first report on mental health promotion, conceptualizing mental health as not merely the absence of mental illness but the presence of “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community”. These definitions affirm the existing behavioral and social scientific vision of mental health as not merely the absence of mental illness but the presence of something positive. Social and psychological scientists have been studying something positive in the domain of subjective well-being—individuals’ evaluations and judgment of their own lives—for about 50 years (Keyes, 2006).

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At the same time, studies have shown that personality traits, as the most stable predictor of well-being, can reflect personal well-being to a certain extent. With the deepening of the research on well-being, people find that personality traits are closely related to well-being, which leads to the conclusion that college students’ personality traits are related to students’ positive mental health (well-being) under the current epidemic situation.

The purpose of this study is to analyze the influence of college students’ personality traits on positive mental health education in colleges and universities under the current epidemic situation by using the empirical research method of statistical analysis of data, so as to provide ideas and empirical research basis for perfecting the positive mental health education model in Chinese colleges and universities.

2 Research Materials and Method

This study is quantitative research using survey method and mainly uses SPSS software to statistically analyze the questionnaire survey data. The online questionnaire survey was conducted among 843 college students from colleges and universities in Shaanxi Province by random sampling.

2.1 Research Samples

- Inclusion criteria as following:
- Chinese College Students in Shaanxi Province, China;
- Including freshmen to seniors, aged 18 to 22.

Exclusion criteria as following:

- The Colleges and universities are not located in Shaanxi Province;
- Foreign students studying in colleges and universities;
- College students who practice outside Shaanxi Province.

2.2 Research Method

Due to the requirements of epidemic prevention and control, people gathering and close contact should be avoided as much as possible, so online questionnaire survey is mainly used in this study. With the help of the online questionnaire survey platform "Questionnaire Star", online questionnaires are distributed for random sampling survey. After collecting the questionnaire data, this study mainly uses SPSS software for statistical data analysis, such as descriptive analysis, t-test, ANOVA, regression and other statistical analysis.

2.2.1 Questionnaires

Adopt the General Data Questionnaire, which is made up and designed on the basis of consulting references by the researcher, and mainly includes the general demographic background data in terms of gender, grade, residence, Student Union member and monthly expense of students. The results showed that there is a significant difference among participants from different grades ($p < 0.05$). Freshman has a higher score than Sophomore and Junior students in terms of mental well-being. Senior has a lower score than Sophomore and Junior students in terms of mental well-being. In addition, there is no significant difference between Sophomore and Junior students in terms of mental well-being;

The adult version of Mental Health Continuum Short Form (MHC-SF) compiled by Keyes is adopted. This scale can be used to effectively evaluate positive mental health status after research test, and has good reliability and validity [7]. MHC is unique in that it integrates three kinds of well-being as indicators to evaluate positive mental health. MHC-SF (Adult Edition) includes three dimensions: emotional well-being, social well-being and psychological well-being, with a total of 14 items. Participants were asked to evaluate the number of times they felt the problem in the past two weeks to one month. Score from 0 (never) to 5 (every day). In this study, the internal consistency coefficients of the three dimensions of mental health are all higher than 0.80 (the coefficients of the three sub scales are 0.892, 0.822, 0.856), so the questionnaire has good reliability.

In this study, the simplified version of NEOPI published by Costa & McCrae was adopted to measure personality traits, which was named NEO-FFI (Neuroticism Extraversion Openness Five-Factor Inventory). NEO-FFI was proved to be consistent with the reliability of the full version. Therefore, NEO-FFI is widely used in academic and clinical research. NEO-FFI contains 60 items and is divided into 5 dimensions: Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A) and Conscientiousness (C). Research shows that the Chinese version of NEO-FFI, as a personality measurement tool for Chinese college students, has good reliability and structural validity [8].

3 Results

By using SPSS for descriptive analysis, the statistical results show that a total of 843 valid questionnaires were collected in this study, of which 425 were male, accounting for 50.4%; the gender distribution was relatively balanced. In terms of the distribution of grades, the four grades account for about 25% of each grade, and the distribution is relatively balanced. In the total sample, most of the samples are from rural areas, accounting for more than 70%; students from class cadres and non-class cadres account for half each; monthly expenses are concentrated at 1,500–2,000 Yuan, accounting for more than 40%.

The remaining specific proportions are listed in the Fig. 1.

3.1 General Demographic

Comparing the general demographic data of college students with the scores of positive mental health status (well-being) during the epidemic period by using statistical analysis of t-test and ANOVA, it was found that there were statistical significant differences in three factors: gender, grade and Whether students have experience in participating in the student union ($P < 0.05$). Specifically:

From the Fig. 2 we can see there is a significant difference between male and female participants ($p < 0.05$). That is, male participants have a higher score of mental well-being.

To test whether there is a significant difference among different grades in terms of mental well-being during the Covid-19 pandemic, we conducted an ANOVA with mental well-being as the dependent variable. From the Fig. 3 we can see there is a significant difference among participants from different grades ($p < 0.05$).

Table demographic information

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	425	50.4	50.4	50.4
	Female	418	49.6	49.6	100.0
Years	First	194	23.0	23.0	23.0
	Second	227	26.9	26.9	49.9
	Third	232	27.5	27.5	77.5
	Four	190	22.5	22.5	100.0
location	Rural	604	71.6	71.6	71.6
	Urban	239	28.4	28.4	100.0
class cadre	Yes	432	51.2	51.2	51.2
	No	411	48.8	48.8	100.0
Monthly expenditure	Less than 1000	59	7.0	7.0	7.0
	1000-1500	295	35.0	35.0	42.0
	1500-2000	363	43.1	43.1	85.1
	More than 2000	126	14.9	14.9	100.0

Fig. 1. Descriptive analysis of demographic information (original by the author)

Table Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Well-Being	Equal variances	26.461	.000	3.309	841	.001	.16538	.04999	.06727	.26350
	Inequal variances			3.302	793.716	.001	.16538	.05008	-.06708	.26369

Fig. 2. Independent Samples (original by the author)

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.371	3	6.124	11.942	.000
Within Groups	430.217	839	.513		
Total	448.588	842			

Fig. 3. ANOVA (original by the author)

To further compare the differences between two groups, we conducted a multiple comparison. From the Fig. 4, we found that Freshman has a higher score than Sophomore and Junior students in terms of mental well-being. Senior has a lower score than Sophomore and Junior students in terms of mental well-being. In addition, there is no significant difference between Sophomore and Junior students in terms of mental well-being.

To test whether there is a significant difference between participants having experience of participating student union. The description of the mean and standard deviation is shown in the following Fig. 5.

From the Fig. 6 we can see there is a significant difference between participants having experience of participating student union in terms of mental well-being ($p < 0.05$), H1d (There is a significant difference between students having experience of participating student unions and those who do not) was supported. Specifically, students having experience of participating student unions have higher scores of mental well-being.

3.2 Personality Straits

By using SPSS for regression analysis, the statistical results show that all five personality dimensions have obvious predictive effect on positive mental health (well-being).

From the Fig. 7 we found that except neuroticism has negative predictive effect, the other four personality straits dimensions have positive predictive effect on happiness.

Table Multiple Comparisons

(I)	(J)	Mean			95% Confidence Interval	
		Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Freshman	Sophomore	-.32843*	.07001	.000	-.4659	-.1910
	Junior	-.38571*	.06967	.000	-.5224	-.2490
	Senior	-.18854*	.07309	.010	-.3320	-.0451
Sophomore	Freshman	.32843*	.07001	.000	.1910	.4659
	Junior	-.05727	.06685	.392	-.1885	.0739
	Senior	.13990*	.07041	.047	.0017	.2781
Junior	Freshman	.38571*	.06967	.000	.2490	.5224
	Sophomore	.05727	.06685	.392	-.0739	.1885
	Senior	.19717*	.07006	.005	.0596	.3347
Senior	Freshman	.18854*	.07309	.010	.0451	.3320
	Sophomore	-.13990*	.07041	.047	-.2781	-.0017
	Junior	-.19717*	.07006	.005	-.3347	-.0596

*. The mean difference is significant at the 0.05 level.

Fig. 4. Multiple Comparisons (original by the author)

Table Group Statistics

	Experience	N	Mean	Std. Deviation	Std. Error Mean
Well-Being	yes	432	4.0498	.64019	.03080
	no	411	3.7736	.78998	.03897

Fig. 5. Group Statistics (original by the author)

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Well-Being	26.277	.000	5.591	841	.000	.27626	.04941	.17927	.37325
Equal variances									
Inequal variances			5.562	789.284	.000	.27626	.04967	.17876	.37376

Fig. 6. Independent Samples Test (original by the author)

Specifically, the regression results indicated that neuroticism has a negative influence on students' well-being ($p < 0.05$). Conscientiousness has a positive influence on students' well-being ($p < 0.05$). Openness has a positive influence on students' well-being

Table Coefficients^a

Model	Unstandardized Coefficients		Standardized	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.030	.157		12.972	.000
Neuroticism	-.161	.025	-.214	-6.416	.000
Extraversion	.161	.027	.210	5.949	.000
Openness	.031	.012	.045	2.639	.008
Agreeableness	.283	.026	.390	10.737	.000
Conscientiousness	.093	.020	.124	4.686	.000

a. Dependent Variable: Well-Being

Fig. 7. Table Coefficients^a (original by the author)

($p < 0.05$). Extraversion has a positive influence on students' well-being ($p < 0.05$). Agreeableness has a positive influence on students' well-being ($p < 0.05$).

4 Conclusions

The research results show that under the current epidemic prevention situation, personality traits have an impact on college students' positive mental health (well-being).

Many surveys show that personality traits are considered to be one of the most influential factors on well-being, which can explain about 1/3 of the changes in well-being. It is generally believed that extraversion will affect a person's life satisfaction level and positive feelings, and can improve people's well-being level; Neuroticism can affect negative emotions and reduce people's well-being level. A survey has found that the most important factors affecting well-being are extraversion and neuroticism in the Five Factor Model (FFM) personality traits [6].

4.1 Neuroticism and Extraversion

Individuals with high neuroticism scores are not likely to have positive emotional feelings. Neurotic individuals often experience more psychological pressure, tension, anxiety and other negative emotions, and have poor emotional regulation and coping ability, and have three characteristics: inferiority complex tendency, perfectionism tendency and anxiety. The individuals with neurotic personality traits have high frequency of negative emotions and negative cognitive bias, and this state persists, which leads to the decline of their positive emotions, satisfaction and subjective well-being.

Eysenck (1987) once pointed out: "Stable extroversion can be reflected by well-being, and positive emotions in subjective well-being are related to sociable personality, which enables them to get along with others easily. Gray (1981) pointed that extroversion is positively correlated with subjective well-being and positive attitude towards life, so extroversion personality can improve the level of subjective well-being.

Generally speaking, people with high scores on extroversion are happier and more satisfied in their daily study and life, and they have strong happiness and often have

positive emotional experiences. By comparing the personality characteristics of people with different mental health status, those with good mental health have extroverted enthusiasm, stable and mature emotions, daring, smart and competent, sophisticated, knowing ourselves and ourselves, constant responsibility, conscientious work, positive, relaxed and happy, rigorous and self-disciplined, enterprising spirit and other personality characteristics, and have a high sense of personal accomplishment.

4.2 Influence of Positive Personality on Mental Health of College Students

Individuals those with poor mental health have the personality characteristics of headstrong, stubborn, indecisive, self-deception, indecision, anxiety and independence. These bad personality traits are formed by the comprehensive action of family, school and society. If you live in the social environment of family, school and society with bad personality characteristics, it will further affect your mental health, thus entering a vicious circle. Therefore, college students are in the golden age of life study. Besides studying basic courses and professional courses well, we should also cultivate our own hobbies and strengthen the promotion of comprehensive quality, so as to cultivate sentiment and optimize personality.

4.3 Recommendations

To sum up, the purpose of this study is to investigate and analyze the impact of personality traits on college students' positive mental health, in order to provide useful guidance for the cultivation and promotion of college students' well-being. Especially, positive personality traits have a positive predictive effect on college students' positive mental health.

Under the current epidemic prevention situation, from the perspective of individual psychological development, college educators should pay more attention to students' positive mental health. At the same time, we should strengthen students' positive mental health education and consciously help students develop and form positive personality traits, so as to guide students to acquire optimism, face up to the difficulties and setbacks in life and study during epidemic prevention and control, solve difficulties positively and optimistically, and learn to correctly solve negative emotions. As far as college students are concerned, their personality development still belongs to the plastic period, and the effective cultivation of positive personality is of great help to their positive life and optimistic face of difficulties in the future, and also has an important impact on promoting the all-round development of college students' psychological quality.

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