

Modeling of Vocational College Students' Mental Health Based on Big Data Analysis

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Abstract

With the rapid increase of employment pressure and academic pressure, the psychological status of higher vocational college students is increasingly concerned by schools and teachers. In order to ensure college students' mental health and provide timely and effective psychological counseling and guidance, this paper establishes an information-based mental health counseling platform. Based on big data analysis, this paper studies the modeling of Vocational College Students' mental health. This is the significance of mental health self-service system research under the background of big data. Based on the necessity of research on mental health self-service system and the psychological factors of higher vocational college students, this paper studies the technical framework and functional structure of mental health self-service system. This paper analyzes the difficulties encountered in the operation of the system, and puts forward solutions to build up the platform for the mental health information platform in the era of Internet plus.

Keywords: *Mental health, psychological counseling, counseling platform. Self service system.*

I. Introduction

In recent years, the incidents of students running away from home and hurting themselves caused by psychological problems are increasing, causing irreparable losses to the students and their families, which not only seriously affects the study, life and daily teaching of college students, is not conducive to the harmony and stability of colleges and universities, but also has a certain negative impact on the society. Big data technology is applied to the research of College Students' psychological crisis early warning and suicide prevention strategy, that is, with the support of underlying data, through the establishment of big data knowledge base and model base, the data is fully mined, and the current popular technologies such as ontology description, reasoning mechanism and machine thinking are used to design and develop a big data prototype system suitable for college students' psychological crisis early warning, Therefore, it is of great significance to realize the intellectualization and humanization of the system, and to realize the personalized emergency response of students' psychological crisis and the related theoretical research of information processing technology.

At present, the school mental health education department focuses on students' files through the establishment of psychological problems, and grasps the basic information of key students, regular daily performance information, communication with parents and other data; The Department of learning and engineering, the office of educational administration, and other relevant colleges in Colleges and universities have all kinds of data, such as the examination results of key students, the consumption of campus cards, and the use of them in the library, which to a certain extent reflects the daily performance, hobbies, and personality characteristics of students. At the same time, with the increasing popularity of microblog, wechat and other new media in the student group, it provides data support for us to analyze students' ideological trends, career preference and even emotional changes. The era of big data has come [1]. Only by applying big data analysis technology to college students' mental health education and making continuous innovation, can college students' psychological crisis early warning be effectively related and accurately predicted, and realize the transformation of psychological crisis emergency management from emphasizing fast and practical to personalized.

In the field of psychology, under the background of big data, college students' psychological crisis warning and suicide prevention strategy research will be a new trend in the future. We should use new media, innovate the carrier and platform of psychological crisis warning, through the analysis of big data, dynamically grasp college students' thinking and behavior, broaden information channels, and expand the platform to reflect college students' psychological status, Establish an effective interactive mechanism, so that college students from the passive object of intervention into the main body of active self-intervention, fully reflect the subjectivity of college students, give play to the enthusiasm and initiative of college students in psychological crisis early warning and suicide prevention, so as to truly achieve the good effect of psychological crisis intervention.

II. Prevention strategies of College Students' Psychological Crisis

With the social transformation, talent competition is becoming more and more fierce, college students are facing more and more severe challenges, psychological pressure is also increasing, which leads to their psychological problems are increasingly prominent, psychological crisis events are also increasing, which makes people pay more and more attention to the psychological crisis intervention research of College Students. In the early 1990s, Professor Zhai Shutao first established the psychological crisis intervention center in China by introducing the results of foreign crisis intervention [2]. Chinese scholars began to study the psychological crisis intervention of college students. For more than ten years, the psychological crisis intervention of college students and the suicide phenomenon caused by it have become the research hotspot of domestic scholars, and the psychological crisis intervention has been systematically constructed, forming a systematic theory. At present, there are more than ten Monographs on College Students' psychological crisis intervention and suicide intervention, but the Monographs on College Students' psychological crisis early warning and suicide prevention have not been published so far. Hundreds of papers about psychological crisis warning and suicide prevention of college students have been searched by CNKI [3]. By analyzing the contents of the papers, it is found that the research on psychological crisis warning and suicide prevention of college students has reached a general consensus, mainly involving warning indicators, warning objects, early warning information evaluation, suicide cause analysis and suicide intervention.

2.1 Early warning index system

Early warning index system is a crisis prediction system that monitors the situation of early warning objects, events and individuals, and analyzes the causal relationship between early warning objects and crisis development state according to early warning index. Li Li believes that the early warning indicators are mainly composed of [4-5]: (1) personal status indicators, including personal personality, interest, ability, learning motivation, coping style, etc..(2) Social environment indicators, including family environment, social environment and social identity; (3) Interpersonal relationship indicators, including the treatment and attitude of family, friendship, love and other relationships; (4) Negative emotion index, including the cause of emotion, duration, physical reaction and emotion type.

Then a relatively perfect early warning index system is established: (1) stressors can be divided into independent stress, learning stress, future stress, communication stress, family and economic stress, major and sudden stress, etc..(2) Stress response, mainly divided into cognitive response, emotional response, volitional response, behavioral response and physiological response; (3) Individual crisis susceptibility factors mainly refer to individual characteristics and individual background. Individual characteristics focus on personality, coping style, attribution style, social support and self. Individual background includes gender, nationality, grade, major, family origin, self-rated academic performance, parents' educational background, family structure and other indicators.

2.2 Analysis on the causes of College Students' suicide

It is generally believed that suicide is a kind of psychological crisis. The causes of College Students' suicide are extremely complex, which are the result of the interaction of various internal and external factors, such as personal

factors, family conditions, social factors and so on. Zhou Mi believes that college students' suicide is the result of personal internal factors and external environmental factors. Personal factors include personal physiological factors and psychological factors, while external environmental factors mainly refer to the influence of family, school and social factors [6]. Yu Lili also attributed University suicide to college students' self factors, external environment factors and inducing factors. Among them, college students' psychological endurance, temperament, personality, outlook on life and other defects are the core factors that affect suicide behavior, while college students' love setbacks, learning pressure, interpersonal tension, self thought to have a very serious disease are the inducing factors of suicide [7]. Bao Yingshan and Cui Ning, from the perspective of system analysis, believe that the emergence of College Students' suicide psychology is not sudden or accidental, it is a system, there is a process of change and development, "life practice → suicide idea → suicide mode choice → suicide behavior" is the basic development process of College students' suicide psychology [8]. Negative events play a stimulating role in the formation of College Students' suicidal ideation, which is a very important external factor.

2.3 Suicide intervention among College Students

College Students' suicide psychological intervention system is a system that can take quick and effective measures to deal with college students' suicide, give support and help, and avoid suicide. Bao Yingshan and Cui Ning believe that the system consists of three levels: social level, school level and family level. The school level is the key, including four subsystems: prevention system, early warning system, disposal system and tracking system [9]. The four subsystems are closely combined, interact, support and complement each other, and play an important role in the process of suicide prevention, detection, control and resolution. Zhou Mi considered the strategy and mode from the intervention process, analyzed that college students' suicide psychological intervention should form a system, and constructed the intervention system from the aspects of early prevention and early warning, timely pre emergency treatment after the crisis and intervention after the suicide [10].

The strategies and patterns considered from the influencing factors of suicide can also be intervened from four aspects: self, family, school and society. It believes that college students' suicide psychological prevention should build a perfect network mechanism of College Students' suicide psychological prevention intervention, so as to play a real role in Preventing College Students' suicide. He advocated the construction of College Students' suicide prevention mechanism through mental health publicity network, consultation network, crisis intervention early warning network, psychological crisis relief intervention network, psychological crisis recovery intervention network and so on. Although the research on College Students' psychological crisis intervention started late in China, it has developed rapidly in recent ten years. Domestic academic circles have made a lot of achievements in the research on College Students' psychological crisis intervention. However, we can also see that there are still some problems in our research in this field. For example, in terms of psychological crisis early warning and suicide prevention, the key is to grasp a lot of information, make timely judgments, and interact with the intervention objects in a timely manner. However, scholars rely too much on traditional education models and methods, Too much emphasis on mental health education and ideological and political education and other theoretical indoctrination, while ignoring the social environment and individual changes, ignoring the individual subjectivity.

III. Case study

3.1 Object and method

A total of 208 freshmen of our college in 2018 were selected as the research objects. The first department students were selected as the intervention group (103), and the second department students were selected as the control group (105).

The students in the intervention group were given psychological quality training, while the control group were not given any intervention measures. Before the intervention, the two groups of college students were tested for

gender, family, goal, personality characteristics and other general conditions and psychological questionnaire. The psychological questionnaire included Eysenck Personality Questionnaire (including only two subscales of neuroticism and introversion), self acceptance questionnaire, coping style questionnaire, social support rating scale, state anxiety questionnaire, and depression scale used by the center for flow control. There are 20 items in the state anxiety questionnaire and flow adjusted depression scale. Each item is scored at 4 levels. The higher the score, the more anxiety and depression. The intervention time of psychological quality training was 8 times, 2 hours each time, in the large classroom. Using the combination of traditional teaching methods and group training, relying on multimedia teaching, combined with game activities, role play, knowledge competition, case analysis, impromptu speech, song appreciation and other flexible forms, the college students are intervened in various aspects of knowledge, emotion and intention. The intervention includes four aspects: one is to improve the individual psychological resources of college students, through understanding and analyzing themselves, so as to be more receptive to self, clear goals, learn to cultivate strong will and shape positive and self-confident personality; the second is to enrich college students' social psychological resources, through understanding their social psychology and communication mode, to discuss and learn interpersonal communication with each other in communication. The third is to cultivate college students' good behavior habits, to plan their study life reasonably, to actively deal with various difficulties and pressures in life, to improve their ability to deal with setbacks and improve their personality; the fourth is to learn emotional regulation through Alice's emotional ABC theory Training practice, learn to properly express their emotions, timely control their emotions, maintain their emotional health.

SPSS11.0 software package was used for statistical analysis. T-test and multiple linear regression analysis were used to analyze the data.

3.2Result

The scores of anxiety and depression before and after the intervention were compared between the intervention group and the control group. The scores of anxiety and depression of the two groups were compared by paired F test. The results are shown in Table 1.

Table 1 Comparison of anxiety and depression scores between pre intervention group and control group before and after intervention

Group	Number	Anxious				Depressed			
		Before intervention	After intervention	C	P	Before intervention	After intervention	C	P
Intervention Group	103	36.86±9.68	36.44 ±9.50	0.827	0.410	32.15±9.07	30.54 ±8.40	2.876	0.005
Control Group	105	34.68 ±8.85	37.88 ±9.36	-3.792	0.000	30.29 ±7.05	31.09±8.15	-2.233	0.028

The difference of anxiety and depression scores between the intervention group and the control group before and after the intervention was analyzed by multiple linear regression with the difference of anxiety and depression scores before and after the intervention as the dependent variable, and the score changes of general situation and other questionnaires as the independent variable. The results are shown in tables 2 and 3.

Table 2 Regression analysis of influencing factors of anxiety score difference before and after intervention

Influence Factor	B	Beta	R2	ΔR2	z	P
Self Acceptance	-0.326	-0.213	0.088	0.088	-2.481	0.014
Help-seeking Behavior	-6.49	-0.187	0.117	0.029	-2.287	0.024

Social Support	-0.842	-0.177	0.139	0.022	2.103	0.037
Utilization						

Table 3 Regression analysis of influencing factors of depression score difference before and after intervention

Influence Factor	B	Beta	R2	ΔR2	z	P
Self Acceptance	-0.167	-0.149	0.104	0.15	-1.862	0.065
Social Support	-0.300	-0.241	0.154	0.029	-3.094	0.002
Gender	J.997	0.179	0.196	0.029	2.386	0.018
Nervous	-0.122	-0.224	0.226	0.030	-2.839	0.005
Reasonable Behavior	_5.438	-1.191	0.247	0.021	2.482	0.014
Fantasy Behavior	4.965	0.169	0.268	0.021	2.150	0.033

3.3 Discussion

(1) Establishing six level system of school psychological crisis emergency disposal

The school should establish six levels of psychological emergency response system, including school, mental health education center, family, college, class and dormitory. The school is responsible for overall planning; Psychological counseling center is responsible for professional assistance; Family is responsible for providing psychological support and emotional connection for the growth of college students; The college is responsible for arriving at the scene at the first time in case of emergency, controlling the situation and understanding the cause and effect of the incident; Class and dormitory are the collective places for students to study and live. Class cadres are responsible for providing information to counselors on a regular basis, so that counselors can understand students' psychological status, and guide and refer students with psychological crisis in time. The six level system is not only the most original source channel of College Students' psychological information, but also the most powerful counseling network for psychological intervention and treatment. Within the system, the school and family occupy the dominant position, so we must establish a good interactive relationship. Only in this way, can the system really have long-term vitality.

(2) Construction of psychological crisis treatment system

The core of psychological crisis emergency response system is to build a psychological crisis treatment system. This should not only be implemented by the psychological crisis Advisory Group and treatment group of the mental health education center, but also the college counselors should actively participate in the psychological emergency response and auxiliary treatment. In the process of career planning education and life safety education, we should guide and encourage students positively, coordinate with mental health education, systematize and diversify various education contents, and cultivate college students' positive psychological quality, healthy personality and positive attitude towards life. We should vigorously build the resource sharing platform of College Students' psychological crisis treatment, actively integrate the advantageous resources inside and outside the University, carry out centralized "consultation" on College Students' mental health problems, use the sharing platform to absorb various advantageous resources, expand and strengthen the professional capacity reserve of

College Students' Psychological Crisis treatment, and improve the professional and scientific level of psychological treatment.

(3) Establishing a psychological crisis relief system

Due to the fierce competition in the society and the higher requirements for students from various colleges, students are generally under great learning pressure. Most of the students study alone and lack of communication and exchange. Therefore, the college should establish a psychological crisis relief system. When it is found that students have extreme behavior ideas or tendencies, resulting in behavioral barriers, College counselors should actively assist psychological counselors to guide and correct students' thoughts and behaviors. Through group activities, such as relying on various competitions, social practice and volunteer service, counselors and head teachers can help students find their strengths and weaknesses, understand themselves, and communicate with each other and help each other when facing challenges or difficulties together, so that everyone in the group can face difficulties bravely and pass through psychological crisis with the support of others, Enhance the ability to coordinate and adapt to the social environment. In recent years, the author's school has systematically carried out college students' psychological crisis early warning work by using the prototype developed by big data technology, and has achieved certain results. According to the severity of psychological crisis, the early warning system uses green, yellow, orange and red to indicate different crisis alert states. Green means normal; Yellow indicates low-risk alert state, which means that students have unstable psychological factors, are vulnerable to various influences and may develop into crisis, so early warning and prevention work should be done well; Orange indicates a moderate crisis alert state, which requires the intervention of relevant departments of the school and timely intervention of students; Red indicates high-risk alert status, should immediately intervene and evaluate to prevent crisis, serious cases should be immediately referred to mental health hospital to prevent accidents. Our school has successfully warned and dealt with six psychological crisis events this year, which has ensured the harmony and stability of the school.

The research basically meets the expectation of this study. However, except for the observation factor, the other factors in the pre-test and post-test scores of the sub-scale in Chinese reached more than the effective force value of the pre-test and post-test, and there was a significant difference in the score of the perceptive action factor. This may have something to do with the practice points emphasized in training. Because, in this training program, it is mainly emphasized that on the basis of understanding the mechanism of depression, participants can change their emotional state through physical exercise, abdominal breathing and copying practice. Therefore, there is less emphasis on observation. Even in the fifth and sixth week of awareness of their own thoughts, emphasis will be placed on trying to replace negative thoughts with positive ones when participants become aware of unpleasant thoughts. In other words, in this training program, the focus is on reducing the distress of depression through conscious action. This may be one of the reasons for the significant improvement in the pre-test and post-test scores of the participants in the perceptive action factor. This study is the first time to combine the neurophysiological mechanism of depression with the key elements of mental awareness training to develop an eight week group training program to reduce depression. What is insufficient in the study is that the number of subjects is too small. Therefore, in the future research, large sample study can be carried out to further explore the effect and application of the scheme.

IV. Conclusion

It is of great practical value to carry out the research on the application of big data technology with the object of psychological crisis warning and suicide prevention strategy of college students. By using the application value of big data technology such as rapidity, relevance, prediction, accuracy and practicability, the state and degree of the crisis can be quickly and accurately judged, and the targeted crisis intervention scheme can be effectively formulated to reduce or relieve the crisis state. This makes college students from the passive intervention object to the active self-intervention subject, fully reflects the subjectivity of college students, give full play to the

enthusiasm and initiative of college students in the psychological crisis warning and suicide prevention, so as to give full play to the role of psychological crisis intervention and control..

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