

RESEARCH ON COLLEGE STUDENTS' PSYCHOLOGICAL STRESS CAUSED BY EMERGENT CAMPUS CRISIS AND INTERVENTION MEASURES

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SUMMARY

Background: In colleges and universities, it is not uncommon for college students to experience psychological crises caused by emergent crisis events. These emergent crises always impose direct and serious adverse effects on college students' daily study, normal life, and their mental health as well. At the same time, emergent crisis events may also cause other negative effects.

Subjects and methods: This paper takes the outbreak of COVID-19 epidemic as an example to study the conditions of college students' psychological stress and corresponding intervention effects through a questionnaire survey. The questionnaire selects college students over 18 years old in Henan Province. A total of 4,000 questionnaires are distributed and 3,396 valid questionnaires are retrieved. SPSS analysis tools are used for data processing. According to the questionnaire results, 20 are selected as the experimental group among the subjects with a factor score ≥ 3 , and another 20 as the control group. The experimental group is subjected to a one-month active intervention from the school. The control group did not receive any intervention. SCL-90 scale data of the two groups are tested and recorded respectively before and after the experiment. T test is performed on the paired sample using SPSS software.

Results: Among the symptoms on the scale, two most serious problems are depression and anxiety. Students with a depression factor score greater than 2 account for 10.11%, and students with an anxiety factor score greater than 2 account for 13.89%. After the experimental group receive a one-month active intervention, all factor scores decline on difference levels, among which the decline of personal relationship and psychological terror is most significant.

Conclusions: Intervention measures such as ideological education and psychological counseling from schools have obvious positive guiding effects on college students experiencing emergencies. Colleges and universities shall not only handle the emergent crisis, but also equip themselves with prevention systems.

Key words: emergent crisis in colleges and universities - college students - psychological stress - psychological intervention

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INTRODUCTION

An emergent crisis in colleges and universities refer to an event that occurs suddenly on campus, which may bring social harm, affect students' safety, normal life and study, as well as have serious adverse effects on their mental health (Boatwright & Mazer 2017). Emergencies in colleges and universities are generally divided into three types. The first type is natural emergencies such as natural disasters or fires, the second is social management including theft, extortion, and brawl (Eklund et al. 2018), and the third is public security such as infectious diseases and food poisoning. Three types of emergencies are characterized by rapid and wide spread as well as great harm.

Stress, also the stress response, is a systemic non-specific adaptive response that occurs when the body is stimulated by various internal and external, as well as social and psychological environmental factors. This concept was first proposed by Canadian pathophysiological Hans Selye in 1936, who defined it as the sum of non-specific responses of the body to external or internal stimuli. He called these non-specific changes that have little to do with stimuli as General Adaptation Syndrome (GAS), which was later renamed

as stress. Psychological stress refers to the psychosomatic tension state caused by psychological and physiological responses when an individual feels or perceives a certain environmental stimulus. In people's real life, psychological stress is closely related to mental illness. Failing to cope with psychological stress habitually may lead to a decline in a person's ability to control his mind, emotion and behavior. Stressors are stimuli that arouse stress responses or adaptation requirements from the outside world. In this article, emergent crises in colleges and universities are the stressors (Michael et al. 2015).

The physical damage caused by emergencies in colleges and universities may recover in a short time, but the corresponding negative psychological effect will last for a long time (Kataoka et al. 2012). Existing research shows that the central nervous system of the body under stress will be abnormal with symptoms including tension, increased concentration, anxiety, fear, depression and anorexia, as well as that prolonged stress can also cause disorders of the body's immune function and cardiovascular disease (Chew et al. 2020). This study takes the outbreak of COVID-19 epidemic as an example to analyze college students' mental health status and related influencing factors, so as to provide

the basis for psychological stress intervention measures of college students in emergent crisis events (Poroli & Huang 2018).

SUBJECTS AND METHODS

Research object

This study selects college students over 18 years old in Henan Province as the research object. All the surveyed students have been informed and agreed to the research background, research scheme, questionnaire content and other information.

Research methods

The survey is carried out through the online questionnaire (Questionnaire Star). A total of 4,000 are distributed and 3,520 questionnaires are retrieved. After eliminating the questionnaires whose answer time is less than 100 seconds and whose choice similarity is more than 70%, 3396 valid questionnaires are finally obtained, with an effective rate of 96.5%. SPSS 26.0 is used for data analysis.

Research tools

Symptom Check List-90 (SCL-90). The scale is compiled by L.R. Derogatis in 1975, with a total of 90 items including a wide range of psychiatric symptoms. The scale is applicable to adults (over 16 years old). Its function is to assess whether a person has certain psychological symptoms and how severe he is, from

various perspectives such as feeling, emotion, thinking, consciousness, behavior, living habits, interpersonal relationship, diet and sleep, etc. The scale uses a 5-level score ranging from 1 to 5 points. The higher the score, the more obvious the symptoms. According to the national norm results, if the total score exceeds 160 points, or the number of positive items exceeds 43, or any factor score exceeds 2 points, then the positive screening should be considered and further inspections are required (Yu et al. 2020).

Questionnaire reliability and validity test

Reliability refers to the consistency, stability and reliability of test results, whose level is generally reflected by internal consistency (Mendoza et al. 2000). The higher the reliability coefficient, the more consistent, stable and reliable the test results. In this study, SPSS 26.0 is used for data analysis, and Cronbach's alpha coefficient is used as the reliability test index. Generally, when the value of the α coefficient is less than 0.7, it means that the reliability test result of the scale is not ideal and cannot pass the consistency test. When the α coefficient value is between 0.7 and 0.8, it indicates that the reliability test result is good. When the α coefficient value is greater than 0.8, it indicates that the reliability test result is very good. The Cronbach coefficient of the questionnaire used in this study is shown in Table 1, $\alpha=0.812$, which means that the reliability of the questionnaire is good and meets the requirements.

Table 1. Cronbach reliability analysis

Factor	<i>n</i>	Cronbach's alpha
Value	90	0.812

Validity analysis is to test whether the respondent understands the intention of the questionnaire designer, that is, whether the questionnaire is effective. In this study, KMO and Bartlett Tests in SPSS are used to analyze the data from questionnaires (Ahmed & Ishtiaq 2021). KMO statistics are used to test the partial correlation between variables. The closer the KMO value is to 1, the greater the correlation between variables. Bartlett's Test of Sphericity is used to test whether the correlation matrix is a unit matrix. The test

statistics obey the χ^2 distribution. If the test result does not reject the null hypothesis ($P > 0.05$), then it is not suitable for factor analysis. Therefore, when the KMO test coefficient is greater than 0.5, and the significance probability P value of the χ^2 statistical value of the Bartlett's Test of Sphericity is less than 0.05, the questionnaire has structural validity. The results of KMO and Bartlett's Test of Sphericity are shown in Table 2.

Table 2. KMO and Bartlett's Test

	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.750
	Approx. Chi-Square	598.805
Bartlett's Test of Sphericity	<i>df</i>	89
	<i>Sig.</i>	0.000

The KMO value is 0.750, which is greater than 0.5. The significance of Bartlett's Test of Sphericity is 0.000. The sphericity test is significant, indicating that the

scale has sound validity, the items are highly correlated, and the questionnaire is valid.

RESULTS

The SCL-90 factor scores of surveyed students are counted and divided into ten types, including

somatization, compulsion, interpersonal relation, depression, anxiety, hostility, terror, paranoia, psychosis, and additional factor. The factor scores are shown in Table 3.

Table 3. SCL-90 factor survey data of college students after the epidemic

Types	Factor score ≥ 2		Factor score ≥ 3	
	Number of Participants	Percentages (%)	Number of Participants	Percentages (%)
Somatization	182	5.17	6	0.17
Compulsion	210	5.97	22	0.63
Interpersonal relation	120	3.41	12	0.34
Depression	356	10.11	20	0.57
Anxiety	489	13.89	38	1.08
Hostility	201	5.71	9	0.26
Terror	140	3.98	16	0.45
Paranoia	168	4.77	26	0.74
Psychosis	203	5.77	13	0.37
Additional factors	230	6.53	23	0.65

Somatization mainly reflects physical discomfort, including discomforts in cardiovascular, gastrointestinal, respiratory and other systems. Obsessive-compulsive symptoms mainly refer to meaningless thoughts, impulses, and behaviors that are knowingly unnecessary but cannot be avoided. Some more general behavioral signs of cognitive impairment are also reflected in this factor. Hostility factors are mainly reflected from three aspects including thoughts, feeling, and behavior, whose items include boredom, argument, and an uncontrollable outburst of temper, etc. Psychosis reflects a variety of acute symptoms and behavior, that is, symptoms of loosely defined psychotic process. Paranoia mainly refers to projective thinking, hostility, suspicion, delusion, passive experience, and exaggeration. The proportions of the above five types account for between 4.5% and 6%, which are relatively in the middle level. Interpersonal relation and terror account for 3.41% and 3.98% respectively, which are relatively lower.

According to the survey data, the most serious types are additional factors, depression and anxiety among college students experiencing the outbreak of COVID-19 (Faize & Husain 2021). In the type of additional factors, the number of participants with factor scores greater than 2 is 230, accounting for 6.53%, and this type mainly reflects the sleep and diet state of participants (Taylor & Gibson 2016). Depressed emotions and moods are the typical symptom of depression, which is characterized by the decreased interest in life, the lack of motivation, the loss of vitality, etc., and shows disappointment, pessimism, and cognitive and physical feelings associated with depression. In addition, it also includes thoughts about death and suicide. The number of participants with a factor score greater than 2 in the type is 356, accounting for 10.11%. Anxiety refers to an individual's unpleasant

and complex emotional state, such as tension, anxiety, worry, and annoyance caused by the upcoming and potential danger or threat. The number of participants with a factor score greater than 2 is 489 and ranks first among the ten testing types (13.89%).

According to the questionnaire results and among the subjects with a factor score ≥ 3 , 20 are randomly selected as the experimental group including 9 boys and 11 girls, and another 20 as the control group including 10 boys and 10 girls. The experimental group is subjected to a one-month active intervention from the school including ideological education and psychological counseling. The control group did not receive any intervention. SCL-90 scale data of the two groups are tested and recorded respectively before and after the experiment. *T*-test is performed using SPSS software. The relevant data are shown in Table 4.

According to Table 4, there is no significant difference between the experimental and the control group before the experiment. While after the experiment, differences between groups appears, which are specifically manifested as follows. Additional factors, somatization, and compulsive types are significantly correlated at 0.01 level. Interpersonal relation, depression, anxiety, hostility, terror, paranoia, and psychosis are at 0.0001 level. After receiving active interventions, all factor scores in the experimental group may decrease to varying degrees, of which the improvement of interpersonal relation and psychological terror is the most obvious.

In the first questionnaire survey, depression and anxiety are the two factors with the highest frequency. According to the experimental group data, the depression level of subjects has reduced to 2.00 ± 0.32 ($t = -3.76$, $P < 0.001$), and the anxiety to 1.85 ± 0.36 ($t = -5.66$, $P < 0.001$), indicating that active intervention from schools can be effective in alleviating widespread

depression and anxiety (Dalcali et al. 2021). According to the experimental results, the somatization level has decreased to 2.05 ± 0.33 ($t = -3.28$, $P < 0.01$), the compulsion to 2.11 ± 0.24 ($t = -3.21$, $P < 0.01$), and the additional factors to 2.06 ± 0.2 ($t = -2.81$, $P < 0.01$). According to the data, the proportions of somatization and compulsive are relatively low and the weights are

low, showing that the effectiveness of school intervention is good. While the proportion of additional factors is relatively high in the first questionnaire and the effectiveness of school intervention is lower than other types, which means that further research is still needed.

Table 4. Score statistics of Symptom Check List-90 (SCL-90) before and after the experiment

	Before the experiment			After the experiment		
	Experimental group	Control group	<i>t</i>	Experimental group	Control group	<i>t</i>
Somatization	2.48±0.30	2.41±0.26	0.69	2.05±0.33	2.46±0.25	-3.28**
Compulsion	2.56±0.34	2.53±0.30	0.28	2.11±0.24	2.51±0.2	-3.21**
Interpersonal relation	2.58±0.25	2.52±0.30	0.55	1.37±0.24	2.53±0.37	-9.28***
Depression	2.56±0.28	2.44±0.28	1.46	2.00±0.32	2.47±0.35	-3.76***
Anxiety	2.53±0.21	2.45±0.27	0.96	1.85±0.36	2.55±0.35	-5.66***
Hostility	2.54±0.28	2.48±0.29	0.84	1.42±0.31	2.45±0.38	-8.24***
Terror	2.51±0.29	2.59±0.32	-0.79	1.31±0.31	2.54±0.35	-9.84***
Paranoia	2.56±0.28	2.44±0.29	1.32	1.43±0.23	2.48±0.26	-8.40***
Psychosis	2.43±0.31	2.57±0.29	-1.38	1.44±0.22	2.55±0.28	-8.88***
Additional factors	2.52±0.25	2.40±0.30	1.37	2.06±0.2	2.41±0.32	-2.81**

Note: * means significant at the 0.05 level, ** means significant at the 0.01 level, *** means significant at the 0.001 level.

CONCLUSIONS

This paper takes the outbreak of COVID-19 epidemic as an example to study college students' psychological stress under emergent crisis events and to test the effectiveness of active intervention from schools, which has certain reference significance for handling other emergencies in colleges and universities (Loon et al. 2020). Of course, the deficiencies of the research should attract attentions. One is the problem of sample size. In the experiment receiving active intervention from school, the representativeness of research is affected due to the difficulty of recruiting active participants and the lack of subjects. Second, the adopted SCL-90 scale has some shortcomings itself, for example, question 47 "Afraid of taking trams, buses, subways, or trains" and question 70 "uncomfortable in crowded places like shops or movie theaters" are not suitable for this survey in closed environment where the COVID-19 is raging.

Colleges and universities are places where high-knowledge and high-quality groups are concentrated, and always attract great attention from the government, public, and media. Therefore, emergent crises in colleges and universities are more likely to arouse social repercussions and become public hotspots, resulting in "amplification" or "radiation" and causing a wider range of psychological panic. Comparing the data between the experimental group and the control group, it can be seen that the school intervention such

as ideological education and psychological counseling has a positive guiding role for college students experiencing emergencies (Chen et al. 2021).

As an important institution that directly contacts with students and cultivates useful talents for the country and society, colleges and universities should not only deal with crises after emergencies, but also complete related prevention systems (Adamson & Peacock 2007). Firstly, it is important to cultivate the crisis awareness of college students and enhance their self-protection abilities. The school staff should cooperate with the student affairs office, the security office, the medical department and other departments to carry out safety and health education through lectures, publicity and other methods. In-depth practical education should also be carried out aiming at the lack of self-protection awareness and insufficient ability (Sheldon 2018). The cultivation of crisis awareness can start from members of the class committee, who could regularly organize emergency training courses. They should first organize a team of student cadres with professional first aid knowledge and literacy, and then gradually cover all the student population. Secondly, it is important to establish a complete set of crisis prevention mechanisms in colleges and universities. Relevant staff should fully do the information monitoring work of media platforms, organize with the student union, and regularly conduct actual surveys in dormitories or classes, so as to integrate into the student population. They should also comprehensively

understand and grasp students' study, employment, physiology and psychology, and then establish an effective crisis prevention mechanism.

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Contribution of individual authors:

Lei Wang: wrote the paper, participated in literature search and analyses, evaluations, and manuscript preparation.

Junwei Guo: participated in the data analysis, sorting of documents, and writing revision.

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