
Assessment of College Students' Public Crisis Consciousness-A Case Study of Zhejiang Province

Li Huang^{*}, Zhenmin Chen and Anfan Shen

Department of Engineering Management, School of Public Management, Zhejiang University of Finance and Economics, Hangzhou, China.

^{*}Corresponding author email id: huangli@zufe.edu.cn

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Abstract – Public crisis education has become a global consensus. The cultivation of college students' public crisis consciousness is an important content of crisis education in colleges and universities. Based on the theory of risk perception and perception, this paper establishes the evaluation framework of public crisis awareness (CSA) from the four dimensions, Prevention and guarantee, Response to the crisis, Feedback on information and Conclude and promote by clarifying the formation process of public crisis awareness. Secondly, by identifying indicators such as literature research, the index system of public crisis awareness evaluation of college students is constructed. The index system consists of 4 second-level indicators and 13 third-level indicators, and the weight of each indicator is determined by analytic hierarchy process. Then, Zhejiang Province is selected as the research area to evaluate the status quo of college students' public crisis awareness and analyze the differences of gender, grade and major of college students' public crisis awareness. The research shows that college students have weak awareness of public crisis and have differences in their majors. In this regard, some specific measures are proposed, such as setting up practical courses and using real scene exercises.

Keywords – Public Crisis Consciousness, College Students, Analytic Hierarchy Process, CSA.

I. INTRODUCTION

In the context of globalization, public health risks have become more pervasive and serious, as diseases can easily spread between different countries and regions. This has increased the complexity and difficulty of public health issues and requires governments and international organizations to strengthen cooperation in health prevention and control. In 2020, COVID-19 swept the world, refocusing attention on public health awareness research.

Since the outbreak of the COVID-19, there have been frequent reports of social disorder and economic losses caused by college students' disregard of school epidemic prevention requirements. Foreign scholars have also conducted similar surveys and found that college students' awareness of public health crisis was not optimistic. In Ohio, only 19.26 percent of respondents had been vaccinated, while 60 percent of those who had not been vaccinated were college students [1]. The outbreak of COVID-19 has been going on for three years, especially in today's society, which is full of many uncertain factors, and all kinds of diseases have taken on the new characteristics of sporadic, sudden, and recurrent nature, posing new challenges to the entire social crisis response system. In cultivating the public health awareness of the whole people, the university and college students are undoubtedly a special group, because the university is a place with a large number of people, high concentration ratio, and relatively closed space. At the same time, the lack of crisis awareness of college students will affect their responsibilities. Therefore, college education needs to cultivate college students' awareness of crisis, improve their ability to cope with it, and stimulate their sense of social responsibility and historical mission.

II. LITERATURE REVIEW

Crisis is a kind of objective social phenomenon in which unexpected events cause damage to individuals or specific groups and threaten their normal existence and development. Public crisis refers to the crisis events that may endanger public safety and normal order caused by natural disasters and the failure of social operation mechanism in the course of social operation [1]. Public crisis often threatens the personal safety of all citizens, easily leads to social panic and intensifies destructiveness. The public health crisis is an important part of the public crisis, so it is crucial to conduct relevant research on public health crises.

Crisis awareness refers to the perception of emergency or difficult moments and the ability to cope [2]. For college students, crisis consciousness includes macroscopic public crisis consciousness and microscopic personal crisis consciousness. Public crisis awareness mainly covers social and political crisis, economic crisis and natural crisis, while college students' personal crisis awareness is mainly reflected in safety, health, study and employment [3]. Effectively dealing with these risks will directly affect the healthy growth and future of college students. However, the existing researches mainly focus on natural disasters and personal crises, and further discussion is needed on college students' awareness of public crisis.

The poor public crisis awareness of college students has a negative impact on the overall social epidemic prevention and control and economic development. Scholars have studied the influencing factors of college students' public crisis awareness and established relevant system to solve the problem. For example, Xiao Jianying took the COVID-19 epidemic as an example and established a public crisis awareness system of college students from a four-dimensional system [2]; Deng Danhui analyzed the relationship between it and public crisis awareness from the perspective of ideological and political education and proposed to optimize ideological and policy education strategies [3]; Liu Liyuan proposed to start with civic responsibility education of college students and cultivate civic responsibility awareness under the background of public crisis [4]. Other scholars, such as Du Xiuzong [5], Teng Xueqin [6], Zhou Xuefeng [7] and Xu Jun, put forward corresponding suggestions to cultivate public crisis awareness from the aspects of national consciousness education, modern citizenship consciousness, psychological quality, handling ability and the role of counselors. In addition, scholars have also paid attention to the relationship between crisis education level and crisis awareness.

According to a survey conducted by the Crisis Management research group at Tsinghua University's School of Public Administration, more than 5,000 young urban residents from 30 provinces and cities were relatively weak in coping with daily crises [8]. In addition, a survey conducted by the Institute of Psychology of Beijing Normal University showed that college students lack the necessary ability to cope with public crises, and a survey conducted by the Beijing Academy of Social Sciences among college students in Beijing shows that this group had a relatively weak awareness of public crises. It was suggested that the state, society and universities should carry out targeted and continuous crisis awareness education for college students, so as to improve their public crisis awareness. In 2014, Sun Duoyong et al. also found that undergraduate students in their universities did not have a strong sense of public crisis prevention. 66.5% of the students believed that their group's sense of crisis prevention was "average" or "not strong" [9]. According to the survey conducted by Xu Jun et al on colleges and universities in Zhejiang Province, colleges and universities generally did not pay enough attention to the cultivation of college students' crisis awareness, and the content and form of crisis education were relatively simple, which can no longer meet the development needs of college students in the new era [10]. In

addition, foreign scholars had also carried out research on the crisis awareness of college students, and found that college students in Uganda had a poor perception of COVID-19 crisis [11], college students in central China had a low awareness of public crisis [12], and college students in Ecuador had a limited awareness of COVID-19, so it was necessary to strengthen the cultivation of public crisis awareness [13].

III. EVALUATION FRAMEWORK OF COLLEGE STUDENTS PUBLIC CRISIS CONSCIOUSNESS

1. Theoretical Basis

The original concept of risk perception was extended from psychology by Bauer (1960) at Harvard University. Consumers imply uncertainty about the outcome in their purchase decisions, and this uncertainty is the initial concept of risk. According to the risk perception theory, perceiving and avoiding environmental dangers is one of the instinctive reactions that organisms rely on for survival, and the depth and breadth of ripple effects produced by public risk events are related to the way the public obtains, perceives and interprets relevant information. Taking the COVID-19 epidemic as an example, the characteristics of the epidemic, such as strong suddenness and lack of clear prevention and control measures, affect people’s perception of risk. In the early stage of the epidemic, there were negative emotions among college students, which brought a lot of social pressure to the society. However, in the later stage of the epidemic, since the epidemic was under control and a clear vaccine was available, college students began to ignore the seriousness of the epidemic and did not take relevant protective measures with a fluke attitude, leading to their own infection and even the spread of the epidemic. Siovic (1987) pointed out that public risk events have ripple effects, just like dropping a stone on a calm lake, circular water waves will spread from the center layer by layer, and the impact range will be quite wide. Figure 1 shows the process of public response to the risk of COVID-19 under the risk perception theory.

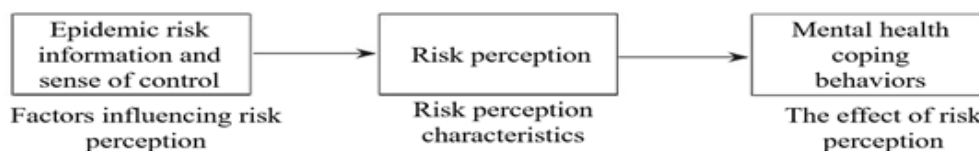


Fig. 1. Risk perception process.

Perception theory is a theory in psychology, which holds that when people receive external stimuli, the brain will effectively organize, process and remember relevant information, thus forming a continuous process of experience. Perception is the most basic ideology of human beings and also the core of consciousness. Consciousness is the cognitive function of the subject's conscious integration with the object, which comes into being on the basis of cognition. Consciousness is the accumulation of knowledge, and the subject forms an independent thought cognition or spiritual entity through knowledge, perception, experience and other bases. Public crisis awareness is the subject's understanding of public crisis, through the exchange, processing and organization of information, to form a stable and comprehensive perception. The subject's perception of the public crisis often leads to their own psychological activities and emotional responses to the public crisis. People's awareness of public crisis is the result of mutual influence and action between perception and information acquisition, and the reaction of psychological activities. This kind of information consists of information, channel and attitude. An individual's response to a critical situation is a constant psychological oscillation between known and received knowledge and new information, resulting in a change in the content of accepted knowledge, thus forming a public sense of crisis that guides how the individual should act or react.

IV. FORMATION MECHANISM AND EVALUATION FRAMEWORK OF PUBLIC CRISIS CONSCIOUSNESS

Risk perception theory and perception theory provide a good logic for the analysis of college students' public crisis consciousness. From the perspective of risk perception theory, college students will form a crisis perception information for known risks. From the perspective of perception theory, college students are stimulated by public crisis events and the external environment triggered by them, thus generating a public crisis information. When college students process public crisis information and crisis perception information, they will form a certain sense of public crisis, as shown in Figure 2. The formation of college students' public crisis awareness refers to the public crisis information and crisis perception information generated by individuals under the stimulation of external environment such as public crisis events and risk perception. Through continuous processing, new understanding will be generated, which will eventually form four aspects: prevention and security, crisis response, information feedback, induction and improvement. The formation process usually has the following characteristics: First, dynamism. Through the continuous interaction between college students and the external environment of public crisis, the public crisis information and crisis perception information generated by the continuous dynamic adjustment, and finally form a relatively stable four aspects. Second, subjectivity. Under different mental health levels, college students have different public crisis awareness and different information processing. Third, stage. It includes two aspects: the first is the public crisis information and crisis perception information formed by college students and the external environment stimulus; the second is that the common crisis information and crisis perception information will interact with college students' own past experiences. In the formation process of public crisis, relevant organizations need to intervene in time. In the face of diversified information competition and mixed information interference in the crisis, educational institutions need to play a key role and effectively intervene in the construction of crisis consciousness to achieve effective sense-giving, whose purpose is to "influence others' meaning expression and construction. Move it toward the preferred definition of organizational reality, "that is, move public perception and understanding of the crisis in the direction expected by influencers. It is also based on this that universities can cultivate college students' awareness of public crisis by stimulating the external environment of college students' life.

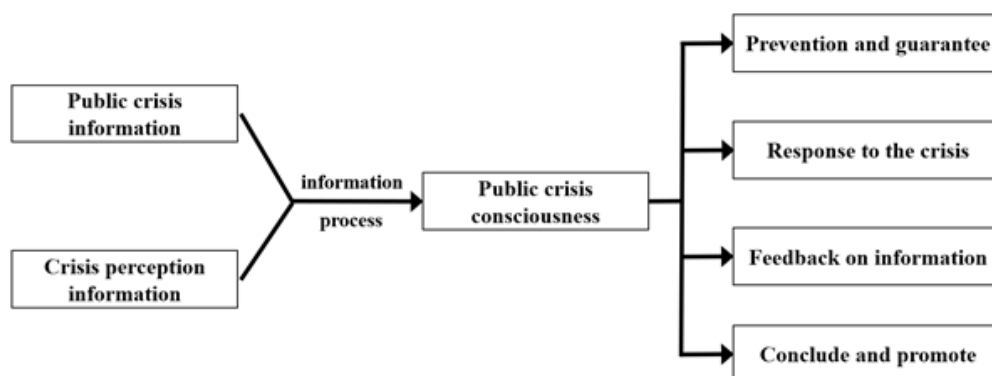


Fig. 2. Theoretical framework of college students' public crisis consciousness.

V. EVALUATION MODEL OF COLLEGE STUDENTS' PUBLIC CRISIS CONSCIOUSNESS

A. Evaluation Index System

According to the theoretical framework of college students’ public crisis awareness in FIG. 2, Prevention and guarantee, Response to the crisis, Feedback on information and Conclude and promote are taken as the secondary indicators for the evaluation of college students’ public crisis awareness. Then, through literature research and focus group meetings, various tertiary indicators are selected, and finally, an evaluation index system is established based on the principles of scientific, comprehensive, feasible and dynamic. The established evaluation index system of college students’ public crisis awareness consists of 4 second-level indicators and 13 third-level indicators, as shown in Table 1. Prevention and guarantee includes Attention to information, legal knowledge and Learning receptivity; Response to the crisis includes Scientific solution, take responsibility, duty of execution, self-protection and psychological regulation; Feedback on information refers to the feedback of surrounding information and people’s attitude, which consists of Positive and negative feedback, channel feedback and attitude feedback. Conclude and promote refers to the reflection on the public crisis events that have happened and the preparation for the future public crisis events, which consists of reflective error correction and crisis prediction.

Table 1. Evaluation index system of college students’ public crisis intention.

First-Order Index	Secondary Index	Three-Level Index	Three Level Index Content Definition
College students public crisis consciousness (CS)	Prevention and guarantee (PB)	Attention to information (PB1)	College students' understanding of the public crisis events that have occurred
		Learning receptivity (PB2)	Willingness to accept knowledge of relevant public crisis events
		Legal knowledge (PB3)	Knowledge of law related to public crisis
	Response to the crisis (CD)	Scientific solution (CD1)	Adopt an official scientific approach to tackle public crises
		Take responsibility (CD)	Strict adherence to rules in a public crisis
		Duty of execution (CD3)	Obey the due obligations n the public crisis
		Self-protection (CD4)	Have a clear understanding of how to deal with public crises
		Psychological regulation (CD5)	Understand how to regulate your emotions in a public crisis
	Feedback on information (MF)	Positive and negative feedback (MF1)	The positive and negative influence of public crisis information on oneself
		Channel feedback (MF2)	The influence of sources and channels of public crisis information on oneself
		Attitude feedback (MF3)	The influence of the attitude of people around you on your own attitude
	Conclude and Promote (CO)	Reflective error correction (CO1)	Summarize your own problems and deficiencies in the public crisis
		crisis prediction (CO2)	Prediction and preparation of future public crisis events

B. Index Weight Determination

In this paper, the index weight is determined by analytic hierarchy process (AHP), which is a hierarchical weight decision analysis method. Its principle is to decompose complex problems into different factors and boil the factors into different levels. By comparing and judging the factors at each level, the overall ranking of the relative weights of the lowest level and the top level evaluation factors is formed. In this analytic hierarchy method, 8 experts were hired to compare the evaluation indicators of college students' public crisis awareness, among which 6 were college student managers and 2 were college scholars in crisis management research. All the experts knew and were familiar with the psychology and life field of college students. There are 5 judgment matrices in each questionnaire. According to the evaluation questionnaire of experts, the calculated consistency satisfaction value of the judgment matrix is shown in Table 2. The results show that the consistency satisfaction of each expert's judgment matrix is less than 0.1, indicating a good consistency. According to the analytic hierarchy process (AHP), the weights of each layer of the evaluation indicators of college students' public crisis awareness are calculated, as shown in Table 3.

Table 2. CR value of consistency satisfaction of judgment matrix A.

Matrix Number Specialist	1	2	3	4	5	6	7	8
1	0.023	0.023	0	0	0	0.023	0.023	0.017
2	0.005	0.005	0.018	0.017	0	0	0	0.037
3	0.013	0.013	0.015	0.041	0.018	0.017	0.067	0.013
4	0.018	0.018	0.052	0	0.013	0	0.013	0
5	0	0	0	0	0	0	0	0

Table 3. Evaluation index system of college students' public crisis awareness.

First-Order Index	Serial Number	CSA												
	Absolute weight	1.00												
Secondary Index	Serial number	PB			CD					MF			CO	
	Absolute weight	0.278			0.313					0.215			0.193	
Three-Level Index	Serial number	PB1	PB2	PB3	CD1	CD2	CD3	CD4	CD5	MF1	MF2	MF3	CO1	CO2
	Absolute weight	0.088	0.119	0.072	0.069	0.055	0.052	0.074	0.062	0.115	0.078	0.058	0.096	0.096
	Relative weight	0.316	0.424	0.258	0.222	0.176	0.165	0.237	0.197	0.369	0.361	0.268	0.500	0.500

VI. EMPIRICAL RESEARCH

1. Sample Questionnaire

In 2022, Zhejiang Province's GDP and total economic output ranked fourth and third in the country, respectively, with good economic development. There are a total of 109 ordinary higher education institutions in the province, including 60 undergraduate and 50 vocational colleges, with relatively small differences in education levels. There are a total of 40.248 million college students in the province, and the level of higher education in Zhejiang Province is among the top in China, except that, Zhejiang Province is one of the provinces with the smallest difference in the degree of economic and cultural development in China. It can better represent the average level of public crisis awareness of domestic college students. Therefore, college students in Zhejiang

Province are selected as the research group in this paper.

This study takes college students in Zhejiang Province as research samples. According to Table 1, the evaluation index system of college students' awareness of public crisis is adopted to design a questionnaire with five-level Likert scale. In the questionnaire design, the contents of the indicators are transformed into corresponding questions, and the evaluation answers are "strongly agree, agree, indifferent (uncertain), disagree, completely disagree", and the corresponding scores are "5, 4, 3, 2, 1". According to Likert five-level scale, the qualitative evaluation results are set into four grades of "excellent, good, medium and poor" : $X < 1.5$ was failing; $1.5 \leq X < 3.5$ is a passing grade; $3.5 \leq X < 4.5$ is good; $4.5 \leq X < 5$ is superior (X is the score value). In order to verify the established assessment model of college students' public crisis awareness, the self-evaluation items of college students' public crisis awareness are set in the questionnaire survey, which are divided into four grades according to the scores: excellent (100-90), good (90-80), pass (80-60) and fail (60-0).

2. Assessment Result

Questionnaires were distributed in paper and online from October 2 to March 14, 2022. A total of 1657 questionnaires were collected, and a total of 1645 valid samples were obtained after invalid questionnaires were deleted. In the valid questionnaire samples, the number of male students and female students are 772 and 873, respectively. The proportion of freshmen, sophomores, juniors, seniors, graduate students and doctoral students is 19.09%, 33.62%, 28.51%, 12.16% and 6.63%, respectively. According to the first-level discipline of students' major, it involves 12 disciplines, which are philosophy, economics, law, education, literature, history, science, engineering, agronomy, medicine, management, and art. Among them, engineering, education, management and medicine account for a relatively high proportion. The proportions were 12.77%, 12.77%, 11.79% and 10.88%, respectively. The statistical analysis software SPSS was used for sample analysis to make a statistical analysis of the overall situation of public crisis awareness of college students in Zhejiang Province and the differences of grades and majors.

A. Overall Evaluation

Through the statistical analysis of 1645 valid questionnaires of college students in Zhejiang Province, the evaluation results of college students' public crisis awareness are shown in Table 5. The secondary indexes of prevention and guarantee (PB), Response to the crisis (CD), Feedback on information (MF) and Conclude and promote (CO) are 3.440, 3.293, 3.51 and 3.198, respectively. The qualitative evaluation is pass, pass, good and pass, respectively. The First-order index score is 3.359 and the qualitative assessment was pass. The average value of self-evaluation of public crisis awareness of college students in Zhejiang Province is 77.63, which belongs to pass grade, indicating the correctness of the evaluation model. On the whole, the rating of public crisis awareness of college students in Zhejiang Province is pass, indicating that college students in Zhejiang Province have a certain degree of public crisis awareness, but their public crisis awareness is flawed, so it is necessary to strengthen the education of public crisis awareness and cultivate and improve their public crisis awareness.

Table 4. Evaluation results of public crisis awareness of college students in Zhejiang Province.

First-Order Index	CSA
Score	3.359

Secondary Index	PB			CD					MF			CO	
Score	3.440			3.293					3.510			3.198	
Three-Level Index	PB1	PB2	PB3	CD1	CD2	CD3	CD4	CD5	MF1	MF2	MF3	CO1	CO2
Score	3.507	3.731	2.905	3.528	2.938	3.587	3.556	2.833	3.512	3.529	3.507	3.514	2.881

B. Grade Difference Analysis

From the overall scoring results, senior grade has the highest public crisis awareness score, sophomore grade has the lowest public crisis awareness score; The Prevention and guarantee (PB) and Conclude and promote (CO) of sophomore are the weakest; The Response to the crisis (CD) and Feedback on information (MF) of postgraduates and doctoral students are the weakest. Senior students have the best performance in Response to the crisis (CD), Conclude and promote (CO) and Prevention and guarantee (PB). From the perspective of three-level index scores, all grades in Learning receptivity (PB2), Duty of execution (CD3) and Self protection (CD4) are more than 3.5, reaching a good level and performing well. The scores in Legal knowledge (PB3), Take responsibility (CD2), Psychological regulation (CD5) and Disaster prediction (CO2) are all less than 3, showing poor performance.

Multiple independent Kruskal-Wallis test was used to analyze the grade differences of public crisis awareness among college students in Zhejiang Province. It was assumed that there was no significant difference among the grades of public crisis awareness among college students in Zhejiang Province. When the p value of asymptotic significance was less than the significance level of 0.05, the original hypothesis was rejected. The significance test results of public crisis awareness of college students in Zhejiang Province are shown in Table 5. The results show that there are significant differences in PB1 (Attention to information), PB2 (Learning receptivity), PB3 (Legal knowledge), CD5 (Psychological regulation), MF3 (Attitude feedback) and CO1 (Reflective error correction) among different grades. From the perspective of secondary index, there are significant differences among different grades in Prevention and guarantee (PB), Response to the crisis (CD), Feedback on information (MF) and Conclude and promote (CO).

Table 5. Significance test of public crisis awareness among college students in Zhejiang Province.

Three-Level Index	PB1	PB2	PB3	CD1	CD2	CD3	CD4	CD5	MF1	MF2	PF3	CO1	CO2
Chi-Square	16.416	14.022	15.022	2.502	8.106	1.072	1.299	18.191	4.367	1.237	14.060	12.718	1.490
df	4	4	4	4	4	4	4	4	4	4	4	4	4
Progressive Significance	0.017	0.040	0.029	0.644	0.088	0.899	0.862	0.000	0.359	0.872	0.039	0.000	0.828

C. Specialty Difference Analysis

A total of 12 majors were investigated in this questionnaire, among which 8 majors with large numbers were selected for difference analysis. From the overall score results, the overall score of the eight majors is between 2.5 and 3.1. From the qualitative results, the eight disciplines are all at the passing level, among which the highest score of medical major was 3.475, and the lowest score of Science is 3.242.

The multivariate independent test was used to analyze the major differences of public crisis awareness among students in Zhejiang province. It was assumed that there was no significant difference in the major of public

crisis awareness among college students in Zhejiang Province. When the p value of asymptotic significance was less than the significance level of 0.05, the null hypothesis was rejected. The test results of professional significance of public crisis awareness of college students in Zhejiang Province are shown in Table 6. The results show that there are significant differences among different majors in attention to information (PB1), Legal knowledge (PB3), Scientific solution (CD1) and Positive and negative feedback (MF1).

Table 6. Professional significance test of public crisis awareness of college students in Zhejiang Province.

Three-Level Index	PB1	PB2	PB3	CD1	CD2	CD3	CD4	CD5	MF1	MF2	PF3	CO1	CO2
N	12	12	12	12	12	12	12	12	12	12	12	12	12
Standard J-T Statistic	2.038	1.626	2.792	1.968	0.390	1.218	1.479	1.219	3.066	1.682	1.475	1.240	1.464
Progressive Significance (Bilateral)	0.042	0.104	0.005	0.049	0.697	0.223	0.139	0.223	0.002	0.093	0.140	0.215	0.143

VII. CONCLUSION AND SUGGESTION

This paper establishes an evaluation model of college students' public crisis awareness, which consists of four secondary indexes, namely Prevention and guarantee, Response to the crisis, Feedback on information, Conclude and promote and 13 Three-level index, including Attention to information, Learning receptivity, legal knowledge, Scientific solution, etc. Taking college students in Zhejiang Province as a case, the evaluation research of college students' public crisis awareness was carried out.

On the whole, the average score of public crisis awareness evaluation of college students in Zhejiang Province is 77.63, which belongs to pass, while the score of public crisis of college students calculated by the research team according to the CSA model is 3.359, which is qualifies as pass. The two data results correspond to each other, indicating the correctness of the evaluation model of public crisis awareness of college students constructed. After about three years of COVID-19 from 2020 to now, college students in Zhejiang Province generally have a certain awareness of public crisis, but still get a pass in terms of qualitative results. Which indicates that the training of public crisis awareness needs to be strengthened. From the perspective of college majors, the score of science major is the lowest, and the score of medical major is the highest. In terms of secondary indexes, science majors had the lowest Prevention and guarantee (PB), Response to the crisis (CD) and Conclude and promote (CO) among the eight majors. In addition, there are significant differences among different majors in Attention to information (PB1), legal knowledge (PB3), Scientific solution (CD1) and Positive and negative feedback (MF1).

According to the evaluation results, the public crisis awareness of college students in Zhejiang province mainly has defects in four aspects: Legal knowledge, Take responsibility, Psychological regulation, and Crisis prediction, college students majoring in science score the lowest in public crisis awareness, and their scores in Prevention and security, Crisis response, Induction and promotion are far lower than those of other majors. Therefore, on the whole, The emphasis of education should be placed on Legal knowledge, Take responsibility, Psychological regulation and risis prediction. At the same time, special training should be conducted for specialties.

In view of Legal knowledge and Psychological regulation. colleges and universities should improve the content of public crisis education, including psychological regulation and legal knowledge, adopt multiple types of education carriers, construct three-dimensional safety education network, improve the education effect, and strengthen the cultivation of crisis awareness of college students. In terms of Take responsibility, colleges and universities should combine responsibility with overall awareness, use high-quality resources to publicize exemplary deeds, strengthen college students' overall awareness, and promote the integration of the two. In terms of the Crisis prediction, colleges and universities should enhance the attention of college students to public crisis, adopt the form of live exercise to carry out education, and adopt the hierarchical overall participation and key training mode according to the characteristics of subjects, so as to deepen the crisis awareness of college students.

For the major of Science, we should pay attention to the cultivation of students' practical ability. By offering practical courses, special exercises, participating in public crisis emergency drills and other activities, students can learn and apply public crisis management knowledge and skills in practice, and exercise their ability to combine theory with practice. At the same time, public crisis investigation and research should be carried out so that students can have an in-depth understanding of the nature and factors of public crisis and improve their ability and accomplishment in dealing with public crisis.

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AUTHOR'S PROFILE

Li Huang, Department of Engineering Management, School of Public Management, Zhejiang University of Finance and Economics, Hangzhou, China.

Zhenmin Chen, Department of Engineering Management, School of Public Management, Zhejiang University of Finance and Economics, Hangzhou, China.

Anfan Shen, Department of Engineering Management, School of Public Management, Zhejiang University of Finance and Economics, Hangzhou, China.