

A Study on the Social Participation of College Students in the COVID-19 Epidemic from the Perspective of Crisis Stage Theory

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Abstract: The crisis stage theory holds that public social participation is the result of multi-factor cross-effect, and its stage and variability characteristics are the key variables to adjust the crisis evolution. College students are the important participants of network information and group events in the network society and the real society. It is of great significance to explore their participating behavior characteristics. Based on the theoretical model of crisis stage, this paper makes a comparison and regression analysis on the social participation of 460 college students in different stages of the COVID-19 epidemic, and uses the decision tree model method to further explore. The results show that there are significant differences in participation behavior between different genders and ages; the degree of participation has significant difference in different stages; cognition, evaluation and attention have significant positive pull on participation; the importance of participation characteristic value is different in different stages of the epidemic. According to the research conclusions, this paper puts forward some suggestions, such as optimizing policy measures, promoting gender equality, improving college students' participation system, taking specific measures at different stages of the epidemic, and improving the accuracy of media reports.

1. Introduction

With the rapid development of China's economy and the acceleration of the urbanization process, the proportion of uncertain factors in the government decision-making environment increases and the possibility of public crisis increases. According to the theory of crisis stage, public crisis is the result of multi-factor cross-effect, which has the characteristics of stage and variability. Different measures should be taken to reduce the probability of crisis occurrence according to different objects [1]. Social participation refers to the degree of activities that the public and government agencies obtain information, listen to opinions and receive feedback through open means, and ultimately affect public life and political decision-making. It is the key regulatory variable of crisis evolution [2, 3]. Information communication can guide the public to perceive information and form a consensus, which is an important basis for social participation. Lagging information will aggravate public panic psychology, lead to mass actions and reduce the efficiency of public crisis management [4, 5]. The initial stage of a crisis is generally affected by many factors, such as the public's weak social awareness, the lack of self-help ability, the lack of interaction between the government and the public, and the insufficient role of social organizations [6]. In the middle and later stages of the crisis, the multi-agent behaviors such as government, social organizations, enterprises and citizens are affected by different information game strategies, and it is difficult to achieve cooperation spontaneously, which leads to disorder of social order [7]. The COVID-19 epidemic broke out in China in December 2019, and its spatial and temporal aggregation characteristics led to the rapid spread of the epidemic [8]. In the early stage of the epidemic, false information was widely spread and social order was disordered [9,

10]. Under the influence of media interaction, public opinion on public crisis has created a new path in its occurrence and development, and the dissemination of public opinion is more complicated and changeable [11]. College students are the main body involved in the epidemic, with new features such as more networking of thoughts and behaviors, local authority of information dissemination, and general lack of social practice [12]. Their public health awareness, information screening and dissemination capabilities have been enhanced, which plays an important role in the effective prevention and control of the epidemic in the middle and later stages [13].

At present, most scholars explore the characteristics of different stages of the crisis through the evolution of public opinion in the media era, and seldom combine the crisis with public participation in different stages. Based on the crisis stage theory, this paper collects data through questionnaires, analyzes and compares the characteristics of social participation of college students before and after the epidemic with the traditional paradigm and big data, in order to provide theoretical and practical reference for improving the government's ability to deal with sudden public crisis and proposing relevant policies and guidance.

2. Review of Research

Review of Research the Crisis stage theory follows the rules of time series and specific life cycle, and divides public emergencies into different stages. Song Hailong (2010) believes that crises generally go through four stages: formation, upsurge, fluctuation and eventual weakening[14]. Wu Nanjun (2016) divides the crisis into four stages based on media and public behavior: incubation period, outbreak period, spread period and end[15]. Ding Ying (2018) believes that the law of crisis evolution can be divided into early warning management stage, crisis management stage and rehabilitation management stage through five functional points, and the dynamics of each stage are different[1]. Bompada Janardonaroo(2017) and Vassileios Tokakis(2019) both divide the crisis into three stages: pre-crisis, crisis response and post-crisis and discuss the influencing factors of crisis management. they believe that crisis managers should have the ability to make decisions and be able to quickly and accurately control the crisis in different stages of crisis response[16] [17].

In terms of social participation, Zhanjie (2012) believes that there are still some problems in the subjectivity of public participation, such as weak awareness, lack of self-help ability, insufficient interaction between the government and the public, and the failure of social organizations, etc. To enhance public participation requires government behavior guidance[6]. Ma Qiongli (2013) believes that China's public participation in administrative management is still in the initial stage of development, with imperfect system design and lack of social foundation for wide application[3]. Li Jicun (2020) and others believe that the public is prone to irrational behavior in the process of participating in emergencies, which affects the emergency response work[18]. From the perspective of system construction, the transformation of citizens' awareness of participating in various management has undergone a qualitative change under the active guidance of the government[19]. However, Li Gaosheng (2014) believes that the current public participation is not effective, orderly and comprehensive enough, and there is no legal system for fair participation[20]. Wangyi (2019) believes that the current legislation on public participation in our country is difficult to function, and it is necessary to make full use of the Internet to promote the transformation of the legislation system on public participation into legislation negotiation[21]. From the different characteristics of participation, Fang Lingli (2019) investigated the social welfare participation in Wuhan, and found that the public's insufficient awareness of social welfare led to insufficient participation [22]. Liang Yujing and Xie Qiangqiang (2020) used the prisoner's dilemma model to analyze the game situation of government and public participation in urban governance, and proposed that the government's guidance to the public is the premise to improve the level of public participation, and mutual trust is the key [23]. Wan Xin (2020) found through research that attitudes and subjective norms have a significant positive impact on

public participation willingness, while moral factors have a significant role in promoting public participation willingness. Dissatisfaction with government work will cause the public to have antagonistic psychology [24]. Ge Wanda (2020) thinks that the cognition of the importance and value of events and the trust in the government have a positive impact on the public's willingness to participate, among which the value cognition has the greatest impact on the public's willingness to participate, and various factors have different influences on the willingness to participate [25].

On the whole, scholars in our country have formed a profound theoretical foundation for the research on public participation behavior and system construction in our country. However, few scholars have made comparative analysis on social participation under the crisis stage. Social participation is a key adjustment variable in the crisis evolution. College students are the most important potential labor force in China's economic construction and industrial transformation, and have an important impact on social stability and sustainable development. Therefore, it is of great significance to study the characteristics of this group's social participation and the changes in different stages, and what characteristics the corresponding policies and public opinions should have. Based on the theory of crisis characteristics, this paper makes a comparative study on the social participation of college students, a special group, in the period before and after the COVID-19 epidemic, to explore the differences and characteristics of participation behavior in different stages of the crisis, and to provide theoretical support and decision-making basis for the government's emergency management system decision-making, which is of strategic significance for achieving social harmony and stability.

3. Data Collection and Analysis

3.1 Questionnaire Design

The questionnaire is revised according to "Research on the Evolution Mechanism of Public Crisis Based on Media and Public Perspectives". According to the questionnaire, three aspects of attention, cognition and evaluation are set as evaluation participation criteria. The internal consistency reliability of the revised questionnaire is 0.759, and the reliability and validity are tested well. In this paper, the likert5-point scale method is used to collect data, taking college students as the survey object. The general data include gender and age. The degree of participation mainly designs 15 questions from three aspects: attention, cognition and evaluation. The items are assessed by five points in increments of 1-5, which are very different meaning (1), relatively disagree (2), neutral (3), relatively agree (4) and very agree (5).

In order to ensure the authenticity of the survey results and the quality of the answers, this questionnaire adopts anonymous survey, and the same IP address can only be answered once. Considering that contact should be avoided during the epidemic period, data were collected online only through the questionnaire network, and finally 460 valid questionnaires were obtained, with a questionnaire recovery rate of 96%.

3.2 General Information

Table 1. Composition of tested population

Category	Gender		Year		
	man	woman	18-20	20-22	Over22
Frequency	32	428	344	112	4
(%)	7%	93%	74.8%	24.3%	0.9%

Most of the respondents were women, accounting for 93%, and men accounted for 7%. The population aged 18-20 is the largest, accounting for 74.8%, 24.3% for 20-22 years old, and 0.9% for over 22 years old.

3.3 Analysis of Items in Preliminary Questionnaire

The purpose of project analysis is to determine whether the questionnaire research project is effective and appropriate. The principle is to sum up the analysis items first, and then divide them into high scores and low scores (bounded by 27% and 73% quantiles), and then use T-test to compare the differences between high scores and low scores. If there are differences, it means that the scale items are properly designed, otherwise it means that the scale items cannot distinguish information, and the design is unreasonable and should be deleted. Firstly, the 15 items are summed up and divided into high and low groups, and the difference is compared by T-test. Result shows that the high and low groups are significant for the 15 items ($p < 0.05$), which means that a total of 15 items are well differentiated, and there is no need to delete the analysis items. Factor analysis was carried out on the questionnaire, and items with commonality less than 0.4 were deleted. The results are as follows:

Table 2. Factor analysis

Subject item	Factor load factor			Common degree (Common factor variance)
	Factor 1	Factor 2	Factor 3	
V8	0.653	0.378	0.248	0.630
V9	0.658	0.248	0.122	0.509
V10	0.445	0.434	-0.183	0.419
V12	0.561	0.308	-0.044	0.411
V13	0.641	0.180	-0.125	0.459
V14	0.692	-0.171	0.210	0.552
V15	0.716	0.006	-0.034	0.514
V1	0.273	0.439	0.114	0.280
V4	0.349	0.655	0.186	0.585
V5	0.452	0.511	0.163	0.492
V6	-0.068	0.727	-0.097	0.543
V7	0.198	0.811	0.017	0.697
V11	-0.275	0.358	0.209	0.247
V2	0.021	-0.083	0.862	0.751
V3	0.068	0.207	0.752	0.613

The common degree of questions 1 and 11 in the questionnaire is less than 0.4, so it is deleted, and finally 13 valid items are obtained.

3.4 Exploratory Factor Analysis

Exploratory factor analysis of the remaining items. According to KMO value = 0.759 in table 4, it is suitable for factor analysis, and Bartlett sphericity test statistic = 2129.123, significance level Sig = 0.000 < 0.01, degree of freedom df = 78, which shows that there is the possibility of sharing factors in variables, and the sampling suitability is significant, which also shows that it is suitable for factor analysis (see table 3).

Table 3. Examination of KMO and bartlett

KMO		0.759
Bartlett Sphericity test	Approximate chi-square	2129.123
	df	78
	p	0.000

Through principal component analysis, common factors are extracted, and then orthogonal rotation is used to obtain the load matrix of rotation factors. The variance explanation rate and cumulative variance explanation rate of each factor are shown in Table 4.

Table 4. Variance explanation rate table

number	Characteristic root			Interpretation rate of rotation front difference			Interpretation rate of variance after rotation		
	Chara- cristi- c root	Variance explanatio n rate %	Cumulat ive %	Chara- cristic ic root	Variance explanation rate %	Cumula tive %	Charac- teristic root	Variance explanation rate %	Cumulat ive %
1	4.324	33.261	33.261	4.324	33.261	33.261	3.230	24.848	24.848
2	1.556	11.969	45.229	1.556	11.969	45.229	2.550	19.619	44.468
3	1.498	11.522	56.751	1.498	11.522	56.751	1.597	12.284	56.751

It can be seen from the above table that three factors are extracted from factor analysis, and the characteristic root values are all greater than 1. The variance interpretation rates of these three factors after rotation are 24.848%, 19.619% and 12.284%, respectively, and the cumulative variance interpretation rate after rotation is 56.751%.

In the rotating component matrix, the items whose absolute value of factor load is greater than 0.4 are retained, and the corresponding relationship between each factor and the item is analyzed through the factor load coefficient value. Each factor is named, and the three dimensions of the questionnaire are named evaluation, cognition and attention respectively. According to the corresponding relationship between factors and research items, v8, v9, v10, v12, v13, v14 and v15 are named as evaluation, v4, v5, v6 and v7 are named as cognition, and v2 and v3 are named as cognition.

3.5 Reliability Test

In this paper, Cronbach α coefficient and combination reliability CR value are used to test the internal consistency of the measurement model. For Cronbach α coefficient, if this value is higher than 0.8, it means high reliability; if this value is between 0.7 and 0.8, the reliability is good; if this value is between 0.6 and 0.7, the reliability is acceptable; if this value is less than 0.6, the reliability is not good. When the CR value is greater than 0.7, it shows that the aggregation validity is high. Table 5 shows the details:

Table 5. Reliability test of questionnaire

Factor	Cronbach α coefficient	Combination reliability CR value
Evaluation	0.791	0.791
Cognitive	0.768	0.783
Attention	0.618	1.183

The evaluation and cognitive reliability coefficients are 0.791, 0.768 and greater than 0.7 respectively, indicating that the reliability quality of research data is very good, and the reliability coefficient of attention is 0.618 and greater than 0.6, indicating that the reliability quality of research data is acceptable, and the combined reliability CR values of the above three dimensions are all greater than 0.7, indicating that the participation questionnaire has good reliability, and each variable has good convergence validity.

4. Comparative Study and Analysis

Taking the same items in February questionnaire as the items in November questionnaire, according to the factor analysis in February, the same dimension is set for comparison. According to the data obtained from two questionnaires, the following results were analyzed.

4.1 Variation Analysis and Regression Analysis

Table 6. Variation analysis and regression analysis

	February						November					
	Cognitive		Evaluation		Attention		Cognitive		Evaluation		Attention	
Gender	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Man	4.16	0.99	4.46	0.57	2.19	1.22	4	0.861	4.41	0.58	2.125	1.33
Woman	4.35	0.66	4.04	0.55	1.88	0.84	3.863	0.789	3.88	0.7	2.070	1.01
T	-1.091		4.178**		1.412		0.468		4.198**		0.145	
18-20	4.38	0.59	4.07	0.52	1.84	0.80	3.92	0.85	3.88	0.70	2.04	1.02
20-22	4.18	0.90	4.05	0.67	1.98	0.92	4.06	0.75	3.99	0.70	2.07	0.90
Over 22	5.00	0.00	5.00	0.00	5.00	0.00	5.00	0.00	5.00	0.00	5.00	0.00
F	5.696**		5.692**		29.714**		4.451*		5.949**		17.667**	

Note : * $p < 0.05$ ** $p < 0.01$

From the above table, it can be found that there are no significant differences in cognition and attention among different gender samples ($p > 0.05$), which means that there is no difference in cognition and attention among different gender samples. At the level of 1% significance, there is a significant difference between different genders ($t = 4.178$). Through specific comparison, it can be seen that the average value of men is 4.46 and that of women is 4.04 in February, and the average value of men and women is 4.41 and 3.88 in November.

From the above table, it can be seen that under the 5% significance level, attention, cognition and evaluation are significant in different age groups, which means that attention, cognition and evaluation are different in different age groups. Specific analysis shows that: Age showed a significant level of 0.05 for cognition, and the average score of each group in February was "above 22 > 18-20 > 20-22". The average score of each group in November was "above 22 > 20-22 > 18-20". Age is significant at the level of 0.01. in February, the average score of each group is "above 22 > 18-20 > 20-22". In November, the average score of each group was "above 22 > 20-22 > 18-20". Age showed a significant level of 0.01 for attention, and the average score of each group was "above 22 > 20-22 > 18-20".

4.2 Comparative Analysis

Paired sample t-test is used to test the differences of attention, cognition, evaluation and participation in two time periods, and the results are shown in Table 7:

Table 7. Paired sample t test

number	Item	Average value	Standard deviation	Mean value difference	t	p
1	Participation	3.77	0.46	0.16	8.020	0.000**
	Participation 1	3.61	0.59			
2	Attention	1.90	0.88	-0.17	-5.766	0.000**
	Attention 1	2.07	1.03			
3	Cognitive	4.34	0.68	0.37	10.745	0.000**
	Cognitive 1	3.96	0.83			
4	Evaluation	4.07	0.56	0.15	7.841	0.000**
	Evaluation 1	3.92	0.70			

Note : * $p < 0.05$ ** $p < 0.01$

From the above table, it can be seen that there are differences among the four pairs of data ($p < 0.01$). Specific analysis shows that: under the 1% significance level, there is a difference in participation degree between February and November ($t = 8.020$, $p = 0.000$), and the average participation degree in

February (3.77) is significantly higher than that in November (3.61); at 1% significance level, there is a difference between February and November ($t=-5.766$, $p=0.000$), and the average value of attention in February (1.90) is obviously lower than that in November (2.07). There is a 0.01-level significance between cognition in February and November ($t=10.745$, $p=0.000$), and the average value of the former (4.34) is significantly higher than that of the latter (3.96). The evaluation in February and November showed 0.01 level of significance ($t=7.841$, $p=0.000$), and the average value of evaluation in February (4.07) was significantly higher than that in November (3.92). To sum up, there are differences among the four pairs of data.

5. Conclusion

The empirical data show that there are significant differences in evaluation under different gender conditions, and the average value of men is higher than that of women; there are significant differences in the three eigenvalues of participation under different age groups; through comparative analysis, it is found that there are significant differences in participation in different stages of epidemic development, which are manifested in differences in cognition, evaluation and attention; by regression analysis, cognition, evaluation and attention have significant positive effects on participation, but the degree of influence is different in different stages of epidemic development.

First, there are significant differences between men and women in evaluating the government. By the difference analysis, it is found that the average value of policy evaluation is obviously higher for men than for women. In the process of formulating public policies in China, there is a problem of insufficient awareness of gender. During the epidemic, women played an important role in anti-epidemic, family, occupation or society, but women showed unbalanced, aphasia and disempowerment in social status. In the medical care group, women account for a large proportion, but there is insufficient concern and guarantee for women's medical and physiological health care. In the early stage of the epidemic, physiological supplies were not included in the list of epidemic protection supplies, and female medical staff assumed greater physiological pressure; under the background of epidemic situation, the employment situation of college students is grim, which has a greater impact on women's employment, and women's equal employment rights have been greatly impacted; during the epidemic, the media led the female role to the image of dedication and self-sacrifice, and the female medical staff were shaved, while the male medical staff did not use it, which caused great controversy. The above events show that there are huge problems in gender awareness in China's policies and society, which leads to women's lower evaluation of government policies than men's.

Secondly, there are significant differences among the three characteristic values of participation in different age groups. Different ages have different maturity and ability. For college students over the age of 22, most of them are juniors or are about to graduate, and their thoughts are more mature. After college training, their abilities are stronger than those of freshmen who have just entered the school. During the epidemic period, the awareness of COVID-19, attention to follow-up development and government policy evaluation were higher, and they were able to actively participate in the prevention and control of the epidemic. However, college students under 22 have insufficient life experience, low psychological quality and are easily guided by media public opinion, resulting in low participation in the epidemic.

Thirdly, there are significant differences in college students' participation in different stages of the epidemic, which are manifested in differences in cognition, evaluation and attention. This is related to the role of news media and government policies in different stages. In the early stage of the epidemic, China's medical materials, personnel and equipment could not be effectively guaranteed, and the government actively encouraged non-governmental organizations to participate in the prevention and control of the epidemic, thus driving the enthusiasm of college students to participate. At the stage of effective control of the epidemic, the media responded quickly, reducing the coverage of the epidemic,

entertainment news began to occupy the hot search on Weibo, and the change of public opinion reduced the way for college students to obtain information related to the epidemic. At the same time, the university resumed school in an all-round way, and students focused more on their study life. The government's response measures changed from the first-level response to speeding up the comprehensive recovery of economic and social life on the basis of grasping the prevention and control of the normalized epidemic, so the social participation of college students showed different characteristics.

Fourthly, cognition, evaluation and attention have a significant positive impact on participation, and the degree of influence is different in different stages of epidemic development. Awareness of the epidemic situation, attention and better evaluation of government policies will stimulate college students' participation. The reasons for the different influence coefficients at different stages may be that in the early stage of the epidemic, there are a lot of misleading information in the information obtained by the public, the development of each organization unit is unbalanced, and there is information asymmetry. College students are in the period of forming their own ideology, and their discrimination ability needs to be improved. They are easily misled by information that is difficult to distinguish between true and false, and they misjudge the situation and have too high or too low expectations for the government. When the actual situation deviates from the original judgment, the psychological gap will affect the policy evaluation. In this case, various factors are not easy to pull participation. With the active and effective measures taken by the government, the epidemic situation has been gradually controlled, and the treatment of false information has enabled college students to get effective guidance and more recognition of government measures. In this context, various factors are more likely to promote the growth of participation.

6. Proposal

Combined with the above conclusions, this paper puts forward the following suggestions:

First, the government should optimize policies and measures to promote gender equality. In public events, women should not be defined as victims or vulnerable roles, nor should men and women be distinguished in policies, but gender equality should be sought on the value level. Policy optimization is to achieve gender equality and protect the legitimate rights and interests of different gender subjects. In policy making, women should be given full discourse power and leadership, women's special status in public health events should be considered, women should be encouraged to participate in community grass-roots organizations, understand the needs of special groups, support and help women's organizations, and expand women's appeal channels. In the policy, we should pursue gender awareness of gender equity, integrate gender awareness into sex education for teenagers, improve the awareness and thought of gender equality in society, ensure that women and men enjoy equal job opportunities, relieve the employment pressure of women, especially female college students, and provide a perfect and fair online employment service platform.

Second, schools should improve the participation system of college students and improve their quality. College students lack sufficient life experience, lack of scientific and media literacy affects rational cognition, and face great physical and psychological challenges, leading to cognitive deviation and behavioral anomie. **Error! Reference source not found.** On the one hand, the government and social media jointly influence public behavior, so to protect the public's right to know, take active guidance to college students, improve the participation mechanism of college students, and exercise their own supervision power can enhance the participation of college students, and promote rational government decision-making and fair media reporting. On the other hand, adopting effective psychological intervention mechanism, strengthening information guidance and providing assistance and support will help relieve students' psychological pressure and improve their quality.

Third, the government implemented specific measures in the crisis evolution stage to ensure the

stable operation of society. At the critical time of crisis development, the government takes appropriate measures to play an important role in the crisis development process. The government can carry out the research on the evolution mechanism and time node simulation of sudden crisis, improve the scientific level of emergency management, enrich the emergency response plan, and improve various systems and measures for crisis prevention and control. Strengthen the institutionalization of powers and responsibilities of emergency management at all levels of government from the central government to the local government, make overall plans to improve the conventional and unconventional emergency management systems, improve the pattern of national participation in emergency management, and realize rapid and effective vertical management and horizontal coordination and cooperation. Improve the risk early warning management system, improve the emergency measures for future crisis evolution, and grasp the staged characteristics of the crisis. Before the crisis broke out, we should begin to pay attention to and intervene, do a good job of prevention and control, and curb the further evolution of the crisis. In view of the characteristics of repeated epidemics, China should consider more security factors and deepen the reform of system and mechanism in the process of promoting the development of open economy and domestic circular economy. In the stage of gradual control of the epidemic, it is necessary to strengthen trade assistance, help enterprises resume work and resume production, and improve the efficiency of resource allocation and employment of workers; Adopt the trinity of remote production, education and research to promote the resumption of work and return to school, and realize the study from home.

Four, the media should ensure the timeliness and transparency of the epidemic information disclosure. The timeliness and transparency of information disclosure have an impact on the confidence of epidemic prevention and control, and the mediating effect of epidemic prevention and control confidence on risk perception further affects people's emotional experience. In the process of public crisis evolution, the media has the fastest response speed. Media participation can directly affect the progress of public crisis [11]. The media should pay attention to rationality in guiding public opinion, that is, to solve the three problems of "time, degree and effectiveness". Grasp the timeliness, the media should do a good job of early warning in the early stage of the crisis, and report the development of the crisis in a timely manner in the period of crisis development; When guiding public opinion, we should be moderate. Too many reports will cause public panic and anxiety, and too few reports cannot cause public alarm. Pay attention to efficiency, pay attention to the effect of reporting, prevent and control the unconfirmed news dissemination.

7. Summary and Prospect

On the whole, there are significant differences in college students' participation in different stages of the epidemic. Formulating different policies and measures is conducive to solving social problems in different stages and improving policy efficiency. At the same time, the targeted suggestions put forward in this paper can provide empirical basis and theoretical guidance for improving college students' social participation under public crisis. However, due to the specific conditions, this paper still has the following shortcomings: First, this paper only studies the group behavior of college students, the types of research samples are limited, and the universality of research results needs to be further tested; secondly, the questionnaire scale is properly adjusted with reference to the mature scale of existing related research, ignoring the actual differences in different situations, and its perfection needs further verification.

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