

Research on Risk Perception and Coping Behavior of College Students

—Taking the Coronavirus Pandemic as an Example

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ABSTRACT

The COVID-19 outbreak in 2019 has been the focus of public attention in the past two years. The public's perception of risk influences their behavior. Taking risk perception as the starting point, this paper constructs a model of the relationship between risk perception and coping behavior of college students under the new crown epidemic, reveals the impact of risk information in the new crown epidemic on college students' risk perception and sense of control, dissects the mechanism of the inherent relationship between risk perception, sense of control, and active protective behavior of college students, and proposes recommendations for management practice that can be applied based on the research conclusions.

Keywords: *Epidemic Prevention and Control, Risk Perception, Coping Behavior*

1. INTRODUCTION

In 2021, reports about the winter vacation and the spring semester epidemic prevention and control arrangements of colleges and universities in various provinces appeared frequently in major news media. In the current epidemic, the last Spring Festival holiday, "back" or "stay" has become a difficult choice for a considerable number of people, and college students are one of the important groups. With the changing situation of epidemic prevention and control, universities around the world have put forward dazzling "fancy holiday orders". Among them, Northeast University of Finance and Economics, with the support of Dalian City, provided chartered flights, high-speed trains and point-to-point delivery services for students returning to their hometowns, and the news is on the hot search. Why does this happen? This is not unrelated to the recent increase in the number of new domestic cases of new coronavirus in China and the increase in imported cases abroad. This kind of public health emergency will cause or may cause serious damage to the public health.

After the outbreak of the new crown epidemic, the state issued a series of documents on epidemic prevention and control. On the basis of earnestly studying the spirit of the documents, various regions studied, deployed and implemented measures. Epidemic prevention and control

have become a normal trend in all regions. Although the normalized epidemic prevention and control has effectively controlled the spread of the epidemic to a certain extent, in order to completely control the epidemic, the public needs to make concerted efforts to tide over the difficulties together. There are a large number of college students in colleges and universities. Doing a good job in epidemic prevention and control of college students is one of the key tasks of epidemic prevention and control. Scholars' research shows that the world is what people perceive, and people regulate their behavior based on the facts they perceive, rather than the objective facts themselves. Therefore, it is of great significance to study risk perception and its impact. To this end, this paper takes risk perception as the starting point, constructs a model of the relationship between risk perception and coping behavior of college students under the new crown epidemic, reveals the impact of risk information in the new crown epidemic on college students' risk perception and sense of control, analyzes the mechanism of the role of risk perception and sense of control on college students' positive coping behavior, and proposes suggestions for management practice that can be applied based on the research findings.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

The concept of risk perception comes from psychology, which refers to the subjective judgment and intuitive feeling of the public when facing objective risks (Slovic, 1987).^[1] Xie Xiaofei et al. used a series of risk characteristics to explain the public's perception, such as control, familiarity, duration, severity of consequences, etc.^[2] Liu Xiping et al. believe that people rely on different risk dimension characteristics when perceiving different types of environmental problems.^[3] Through factor analysis of risk characteristics, Slovic concluded three dimensions of risk characteristics, namely unknown, fearful, and the number of people exposed to risk. From this, we can reason that the serious consequences of the new crown epidemic, such as the damage to human health, make college students feel the terrible risk characteristics of the new crown epidemic; the reported new cases of new crown virus infection make college students also feel the third dimension of risk characteristics deeply. From this reasoning, the risk information of the new crown epidemic, such as the increase in the number of newly infected cases, has improved the risk perception of college students. In addition, the sense of control refers to the degree to which people perceive things as predictable and controllable.^[4] When the government adopts a series of epidemic prevention and control measures, it will make college students predict that the future spread of the epidemic will be improved, so the sense of control will be enhanced. This leads to the following assumptions:

Hypothesis 1a: The content of risk information in the new crown epidemic reflects the spread of the epidemic to increase the risk perception of college students.

Hypothesis 1b: The content of risk information in the new crown epidemic that reflects the effectiveness of epidemic prevention and control measures enhances college students' sense of control.

The theory of risk cognition believes that strong risk cognition makes people pay more attention to risk information, collect and judge risk information, and communicate with others about risk, and will take necessary measures to avoid risks to a certain extent. Numerous studies have found that "risk perception" is an important factor that motivates people to adopt healthy behaviors.^[5] When college students perceive a risk, they will take actions to reduce or bear the risk, such as insisting on basic protection such as less gathering, wearing masks, washing hands frequently, and frequent ventilation. These are all positive protective behaviors. On the contrary, they are negative of continued non-protective behavior. From this, it can be seen that the higher the perceived risk of the new crown epidemic, the higher the possibility of active protective response behavior, and the lower the possibility of passive non-

protective behavior. Here, the sense of control is the opposite of risk perception. The sense of control has an important impact on risk tolerance and risk denial.^[6] The higher the sense of control, the lower the possibility of positive protection. This leads to the following assumptions:

Hypothesis 2a: Risk perception has a positive effect on the positive protective behavior of college students.

Hypothesis 2b: The sense of control has a negative effect on the positive protective behavior of college students.

Hypothesis 3a: Risk perception has a negative effect on college students' passive non-protective behavior.

Hypothesis 3b: The sense of control has a positive effect on college students' passive non-protective behavior.

After the outbreak of the new crown epidemic, college students need time to develop their own daily protective habits. In actual life, after the spread of the new crown epidemic in many places, because the basic epidemic prevention behavior of college students plays a certain role in preventing the further spread of the new crown virus, colleges and universities in various places have proposed dazzling "fancy holiday orders", and even some. Universities do not hesitate to spend a lot of money to provide chartered flights, high-speed rail trains, and point-to-point delivery services for returning students. Therefore, this study pays special attention to the daily personal protection intentions of college students after the new crown epidemic. Since most of the newly infected local cases are caused by human-to-human transmission, it can be speculated that the higher the risk perception of college students, the higher the personal protection intention. The higher the sense of control, the higher the possibility that college students perceive that the domestic new crown epidemic is under control, and the more likely they are to reduce personal daily protective behavior in the future. In addition, after the outbreak of the new crown epidemic, college students who are still able to take passive and non-protective behaviors indicate that their risk perception is low or their sense of control is high, and these college students have relatively low personal daily protection intentions in the future. The following hypothesis is obtained:

Hypothesis 4a: Risk perception has a positive effect on individuals' daily protection intentions.

Hypothesis 4b: Sense of control has a negative impact on personal protection intentions.

Hypothesis 4c: Positive protective behaviors have a positive impact on individuals' daily protective intentions.

3. RESEARCH DESIGN

On the basis of fully referring to the existing literature

of scholars at home and abroad, this research carried out the design of the items of the survey questionnaire, and modified and adjusted the items of individual variables in combination with the actual situation of the new crown epidemic. In order to ensure that the questionnaire has acceptable reliability and validity, a certain range of pre-tests were conducted before the formal survey. The data collection process takes the form of a professional questionnaire survey website. The questionnaire is divided into two parts: the first part is the demographic descriptive variables of the respondents, including age, gender, grade, discipline, etc.; the second part is latent variables such as risk information, sense of control, active protective behavior, passive non-protective behavior and risk perception, which are investigated through various observation variables. Risk information mainly examines the impact of the serious consequences of the new crown epidemic, news media reports, the treatment of infected persons, and relevant government measures on college students' risk perception. Risk perception refers to the research of Johnson etc. [7] It is measured by asking respondents about the perceived risk and the degree of threat to their health during the new crown epidemic, and the Likert scale is used to measure. The sense of control is to examine the respondent's perceived controllability of the treatment and control of the new crown epidemic, the cure of the new crown epidemic, the official control information and its authenticity, the government's control measures to control the spread of the epidemic and promote the popularization of vaccines. The coping behavior is combined with the actual situation of the new crown epidemic. It is measured from positive protective responses such as less gathering, wearing masks, washing hands frequently, and frequent ventilation, often participating in social activities or going to crowded places, or refusing vaccinations and other negative protective responses. These variables were measured using a five-scale Likert scale.

The formal survey was implemented by distributing online questionnaires, and the questionnaires were released through the domestic mainstream questionnaire platform "Questionnaire Star". A total of 343 electronic questionnaires were collected in this survey. According to the answering time of each questionnaire displayed on the

website, 303 valid questionnaires were obtained after kicking out the questionnaires with short filling time, with an effective rate of 88.3%.

The basic information of the 303 valid samples screened and determined are as follows: (1) Gender composition: females accounted for 45.55%; (2) Age composition: respondents aged 15-20 and 20-25 accounted for 79.87% and 20.13%; (3) Grades of study: All grades of freshman, sophomore, junior and senior year are involved, among which the respondents of sophomore and junior year account for 35.97% and 34.98% respectively; (4) Distribution of professional disciplines : Science and engineering respondents accounted for 59.08%.

4. DATA ANALYSIS

4.1 Reliability and validity analysis

First, the applicability test. The applicability test of several dimensions including risk information, risk perception, sense of control, and protective behavior is carried out through SPSS22.0 to reduce the data set dimension data according to the principal components. The KMO test value is 0.889, and the significance probability of the X-statistic value of Bartlett's sphere test is 0.000, indicating that it is fully suitable for factor analysis.

SPSS22.0 and Amos25.0 were used to test the reliability and validity of the measurement model. The standard loading of each factor, Cronbach's alpha, combined reliability (CR) and average variance extraction (AVE) are shown in Table 1. It can be seen that the scale's Cronbach's α and combined reliability (CR) are greater than 0.7, and the average variance extraction (AVE) is greater than 0.5, which indicates that the scale has good internal consistency and convergent validity. Table 2 shows the discriminant validity test results of this paper. The square root of the average extracted variance of each latent variable (the diagonal elements in Table 2) is greater than its correlation with other latent variables (the off-diagonal elements in Table 2), there are significant differences among the latent variables, and the discriminant validity is good.

Table 1 Standard loading, Cronbach's α , CR and AVE values for each factor

Latent Variable	Measure Variable	Standard Loading	Cronbach's α	CR	AVE
Risk Information (RI)	RI1	0.871	0.933	0.9023	0.6493
	RI2	0.763			
	RI3	0.786			
	RI4	0.800			
	RI5	0.805			
Sense of Control (SC)	SC1	0.866	0.854	0.877	0.6413

	SC2	0.797			
	SC3	0.751			
	SC4	0.785			
Positive Protective Behavior (PPB)	APB1	0.910	0.907	0.9141	0.6044
	APB2	0.744			
	APB3	0.751			
	APB4	0.732			
	APB5	0.740			
	APB6	0.755			
	APB7	0.795			
Passive Non-protective Behavior (PNB)	NUB1	0.860	0.772	0.8402	0.57
	NUB2	0.707			
	NUB3	0.764			
	NUB4	0.676			
Risk Perception (RP)	RP1	0.864	0.766	0.8656	0.7631
	RP2	0.883			

Table 2 Square root values of each latent variable AVE and variable correlations

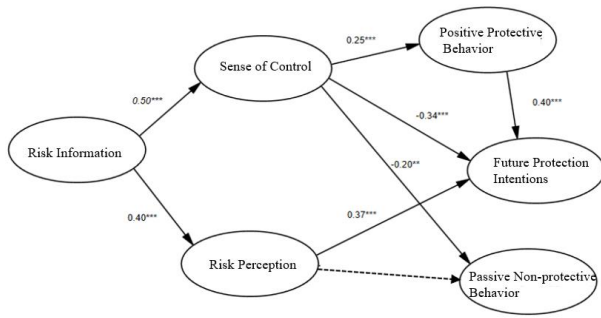
	RI	RP	SC	PNB	PPB
RI	0.8058				
RP	0.396	0.874			
SC	0.497	0.197	0.801		
PNB	-0.134	-0.133	-0.214	0.755	
PPB	0.124	0.049	0.249	-0.053	0.777

4.2 Structural equation model analysis

Table 3 details the main fit indicators obtained from structural model testing. After comparing with the given recommended value of the adaptation index, the fitting values of the adaptation index all fall within the recommended value range. It can be seen that the theoretically assumed structural equation model fits the data well. The path analysis of the model was carried out, and the standardized path coefficients and significance degrees among the latent variables were obtained as shown in Figure 1. The hypothesis is verified according to the path coefficient results, and the results show that the hypothesis 3a does not hold, the rest of the assumptions hold, and the significance level is less than 0.01. The final hypothesis verification results of this paper are shown in Table 4.

Table 3 Compatibility index values of structural equation model

Fit Indicator	Recommended Value	Fitted Value
χ^2	the smaller the better	314.882
χ^2/ df	<3.0	1.544
GFI	>0.9	0.915
AGFI	>0.8	0.894
RMSEA	<0.08	0.042
NFI	>0.9	0.922
IFI	>0.9	0.971
CFI	>0.9	0.971



Note: *** indicates $p < 0.001$, ** indicates $p < 0.01$, * indicates $p < 0.05$

Figure 1 Standardized path coefficient

Table 4 Hypothesis test results

	Assumption	Result
1a	The content of risk information in the new crown epidemic reflects the spread of the epidemic to increase the risk perception of college students.	support
1b	The content of risk information in the new crown epidemic that reflects the effectiveness of epidemic prevention and control measures enhances college students' sense of control.	support
2a	Risk perception has a positive effect on the positive protective behavior of college students.	support
2b	The sense of control has a negative effect on the positive protective behavior of college students.	support
3a	Risk perception has a negative effect on college students' passive non-protective behavior.	not support
3b	The sense of control has a positive effect on college students' passive non-protective behavior.	support
4a	Risk perception has a positive effect on individuals' daily protection intentions.	support
4b	Sense of control has a negative impact on personal protection intentions.	support
4c	Positive protective behaviors have a positive impact on individuals' daily protective intentions.	support

5. CONCLUSIONS

The results of the study found that risk information in the New Coronavirus epidemic both increased the perception of risk and increased the sense of control among university students, suggesting that the risk information factor has a two-way effect. On the one hand, the negative information contained in the risk information, such as the number of patients reported to be infected with the NCC virus in different regions, increased the perception of risk among university students and triggered a sense of caution and concern among them. On the other hand, positive information such as the series of control measures taken by the government and other authorities under the New Coronavirus epidemic and the rehabilitation of New Coronavirus patients had a positive impact on the

perception of control among university students. The results of the study also confirm that risk perception and sense of control have an important influence on university students' coping behavior and later personal protection intentions under the epidemic, but risk perception and sense of control play opposite roles. When university students have a low perception of risk and a high degree of control over the new epidemic, their confidence in the prevention and control of the epidemic may lead to a low level of active personal protection, which is why universities around the world are proposing a dazzling array of 'fancy holiday orders'.

Therefore, trying to improve the risk perception of college students and moderately reduce the sense of control is an important way to enhance the personal protection intention of college students under epidemic prevention and control. In response to the new crown

epidemic, this study found that information factors play a large role. The information factors that trigger risk perception are mainly the number of new crown infections reported in various places and their treatment, while the information factors that reduce the sense of control are mainly from the effectiveness of vaccines, etc. Therefore, it is suggested that similar public health emergencies should be improved mainly from three aspects: improving students' public health literacy, the effectiveness of emergency management and control in colleges and universities, and establishing information transparency mechanisms.

At the level of college students themselves, improve their own public health literacy, especially the basic scientific literacy to deal with acute infectious diseases, improve their own crisis identification ability and prevention awareness, and be able to implement their responsibilities in actions in the face of public health emergencies. For example, after the outbreak of the new crown epidemic, college students should understand the transmission route of the virus, arouse their own awareness of protection, and establish scientific daily protection habits.

At the level of colleges and universities, while paying attention to the popular education of students' public health and disease prevention, they should improve their emergency management capabilities from the perspectives of managers, management objects and management processes. Especially in the management process, it is necessary to strengthen the strictness, systematic and continuity of management. In terms of strictness, the management standards are refined, the daily protection behavior of college students is strictly defined, and appropriate punishments are given to students who do not meet the standards. Systematically, the implementation details of health and safety supervision should run through every link of students' clothing, food, housing and transportation to control the safety of students' entire learning and life chain. At the same time, pay attention to the popular education of students' public health and disease prevention, and improve students' ability to deal with public health emergencies and disease prevention. In terms of continuity, adhere to regular inspections, establish health monitoring data ledgers, etc.

In addition, even if the public health literacy of students and the effectiveness of emergency management and control in colleges and universities have reached a certain level, but the transparency of epidemic information is not enough, and the access to information of college students is limited, their risk perception is not high, and daily protection awareness and daily protection habits still cannot be established. This is also one of the reasons why, despite a series of preventive and control management measures taken by the government and universities, the new epidemic has spread and universities

are frequently subject to "fancy holiday orders". Therefore, it is recommended that the government administration systematically and timely report the situation related to the epidemic through official channels, and that universities do a good job of synchronizing the acquired official information with students and answering relevant questions from students in a timely manner. By improving public health literacy, strengthening control, establishing information transparency mechanism and strengthening good interaction with college students, we can raise their awareness of daily protection and help them establish good daily protection habits. Under the normalization of epidemic prevention and control, it will enable them to protect themselves better.

This paper also has certain limitations. For example, in terms of factors influencing risk perception and sense of control, the research model focuses on the influence of risk information, and future research could also consider the influence of antecedent variables such as college students' prior health knowledge and personal experience. In terms of intermediate variables, this paper mainly considered the effects of two key variables, risk perception and sense of control, on college students' behaviors, and future research could further examine the effects of other factors on college students' psychological and behavioral effects.

FUNDING RESOURCES

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