The Impact of COVID-19 Media Information Exposure on College Students' Psychological Anxiety

Bu Qingfeng[1,2,a,*], He Chuting[1], Sun Liren[1], Xin Meiqian[1], Dai Nuo[1], Gu Jiayi[1], Deng Jiayao[1]

[1]*School of Medical Instruments, Shanghai University of Medicine and Health Sciences, Shanghai, China*
[2]*School of Economics, Shandong University, Jinan, Shandong, China*
[a]*looooogle@163.com*
Corresponding author

Abstract: During the COVID-19 epidemic, college students, as the most active part of Internet users, often learn about the COVID-19 through online media. This paper conducts an empirical study on the influence of the duration and nature of exposure to COVID-19 media information on the psychological anxiety of college students, and provides suggestions for the psychological protection of college students in emergencies. In this study, literature research method, questionnaire survey method, combined with the general situation questionnaire, generalized anxiety scale, self-designed questionnaire, students in a medical college in Shanghai as the survey objects, and the data were analyzed. The results show that the duration of media information exposure and negative media exposure are positively correlated with the degree of anxiety of college students. Positive media exposure is negatively correlated with the degree of psychological anxiety of college students. Based on the analysis results, suggestions are put forward to alleviate the psychological anxiety caused by media information exposure to college students from the perspective of society and college students.

1. Introduction

The COVID-19 epidemic (hereinafter referred to as COVID-19) has become an international public health emergency, which has seriously affected the study and life of college students. In the Internet era, college students are the most active part of Internet users[1][2], and their minds and personalities are in the stage of gradual maturity and improvement. They have a high level of education, and most of them are able to face the massive and complex information during the COVID-19 with a correct attitude. However, there are still some college students during the COVID-19 information bombardment. Some information cannot be correctly discrimination and processing, anxiety, depression, panic and other psychological conditions, causing a negative impact on the normal study and life.

On January 26, 2020, the National Health Commission of the People's Republic of China issued the Notice on Issuing Guidelines for Emergency Psychological Crisis Intervention in the Novel Coronavirus Pneumonia Epidemic[3], which included psychological crisis intervention into the overall

deployment of COVID-19 prevention and control, and all aspects of society also put on the agenda the in-depth study of the impact of network information, such as media information, on the mental health of people, such as college students. This paper will conduct an empirical study on the influence of media information exposure on the anxiety of college students, a major adverse psychological state, and explore the relationship between media information exposure and psychological anxiety (hereinafter referred to as anxiety) during the COVID-19, so as to provide a theoretical basis for protecting the mental health of college students.

1.1 Media information exposure and anxiety

Zhou Yanmei et al. (2015) analyzed the information service needs of college students in combination with the questionnaire survey on college students' information acquisition ability, and found that most college students obtain information through search engines or push by various platforms[4], and media information exposure is mostly from new Internet media. Griffin, Dunwoody&Neuwirth (1999) and Griffin, Dunwoody& Yang (2012) studied from the perspective of risk information seeking and processing model and found that when people are in a risk event with uncertainty, they will collect relevant information of the event, maintain their health by establishing psychological defense, improving beliefs and changing behaviors[5][6]. Griffin, Neuwirth, &Dunwoody (1995) found that in this process, information adequacy and individual experience would affect individual behaviors and attitudes, thus leading to emotional reactions such as anxiety[7]. Hall, Murray, Galea, Canetti, & Hobfoll (2015) argues that in the process, the individual's psychological reaction will be affected by the risk events media exposure time[8]. Perez, Jones, Englert, &Sachau (2010) studied trauma psychology and found that one of the reasons for the improvement of the anxiety level of individuals is that they have been exposed to media reports on risk events for a long time and become indirect experience of risk events[9].

Individual psychological anxiety is not only affected by the duration of media information exposure, but also by the nature of information exposure (positive and negative). Yeung et al (2018) believed that individuals' cognition of the severity and susceptibility to disaster would be deepened with the increase of negative information reported by the media, thus generating fear and inducing anxiety. The research also found that the information reported by the media has the function of emotional awakening, and the negative emotions of individuals will be awakened by the negative information, which will aggravate psychological anxiety[10]. Hall et al. (2019) conducted a questionnaire survey on the viewing time and nature of media information of 1, 876 Chinese college students in Macao after the typhoon login, and found that individuals' negative mental state would be relieved after receiving positive information[11].

1.2 Review

In conclusion, the duration and nature of media information exposure to risk events can cause individual anxiety. However, most of the previous studies took the participants as the research objects, and there was a lack of research on the relationship between media information exposure and anxiety in the peripheral population. The vast majority of college students are non-confirmed COVID-19 patients, and college students frequently contact media, so they may be more susceptible to psychological distress related to media exposure (Jones, Garfin, Holman, &Silver, 2016)[12]. Therefore, this paper will explore the influence of the duration and nature of media information exposure on the anxiety of college students during the COVID-19.

2. Methods

2.1 Survey objects

Through the form of online questionnaire, the college students of a medical college in Shanghai were distributed online questionnaire. 353 copies were withdrawn.

2.2 Research hypothesis

H1: The longer college students are exposed to media information during the COVID-19, the more serious their anxiety will be.

H2: The more college students were exposed to positive media information during the pandemic, the less anxious they were.

H3: The more college students are exposed to negative media information during the COVID-19, the more serious their anxiety level will be.

2.3 Variable selection and measurement description

2.3.1 Explained variables

In this study, the anxiety degree of college students during the interview was taken as the explained variable, and the Generalized Anxiety Scale (GAD-7) was used to evaluate the anxiety.

2.3.2 Explanatory variables

The explanatory variable of this study was media information exposure. Media exposure refers to the public's exposure to media coverage of various types of information about risk events during or after the occurrence of risk events. The media information exposure in this study refers to the duration of college students' exposure to positive and negative information about the COVID-19. In this study, the media exposure questionnaire of Hall et al. (2019)[11] was used to design the epidemic media information exposure questionnaire. By asking college students how long they spent browsing information, the students' attention to positive information, such as reading heroic stories of COVID-19 prevention and control, and negative information, such as the number of newly confirmed or asymptomatic patients, were evaluated by scoring.

2.3.3 Control variables

The influence of respondents' personal characteristics on their anxiety should not be ignored. In this paper, 11 items of college students' gender, ethnicity, grade, major, GPA, whether they are the only child, off-campus residence, parents' education level, annual family income, and physical health status are listed as control variables.

3. Empirical Results

3.1 Descriptive statistics and correlation analysis

The data obtained from the survey were sorted out and summarized, and the sample data were briefly described in the following table. Pearson correlation analysis was used to investigate the correlation between media information exposure duration, positive media exposure, negative media exposure and anxiety.

3.1.1 Descriptive statistics

Descriptive statistics were made on the samples in this study, as shown in Table 1.

Table 1 Descriptive statistics of samples

Variable	N	Mean	p50	SD	Min	Max
Degree of anxiety	353	9.839	7	7.917	0	21
Duration of browsing information	353	1.872	1.500	2.267	0	24
Positive media exposure	353	5.119	6	2.863	0	9
Negative media exposure	353	5.374	6	2.736	0	9
Gender	353	1.595	2	0.492	1	2
Grade	353	2.694	3	1.065	1	5
Major	353	1.705	2	0.457	1	2
GPA	353	3.182	3.200	0.417	0	4
Come From	353	1.099	1	0.299	1	2
Whether they are the only child	353	1.459	1	0.499	1	2
Off-campus residence	353	1.459	1	0.499	1	2
Father's education level	353	2.754	3	1.174	1	5
Mother's education level	353	2.734	3	1.214	1	5
Annual household income	353	3.980	4	1.764	1	7
Physical health condition	353	3.609	4	1.163	1	5

Simple analysis and reasoning are carried out on several important variables: For the degree of anxiety, the median is in the stage of mild anxiety, but the average is close to the level of severe anxiety, which may be due to the high level of anxiety of some college students, leading to a high average level. It can be seen that most college students spend 1.5-2 hours browsing epideia-related information every day, which is normal. For the positive and negative information of browsing, the negative information pays relatively high attention, but there is little difference between the two, and both are in moderate media information exposure.

3.1.2 Correlation analysis

Table 2 Correlation analysis

	Degree of anxiety
Degree of anxiety	1
Duration of browsing information	0.097*
Positive media exposure	0.108**
Negative media exposure	0.094*
Gender	-0.204***
Grade	-0.0770
Major	0.435***
GPA	0.00600
Come From	0.143***
Whether they are the only child	-0.120**
Off-campus residence	0.134**
Father's education level	0.00300
Mother's education level	-0.00900
Annual household income	0.0730
Physical health condition	0.0150

Pearson correlation coefficient was used in this study to conduct correlation analysis on the data,

and the results are shown in Table 2 below. It can be seen from the results of correlation analysis that there is a strong correlation between the three explanatory variables and the explained variables, which has empirical research significance. Among them, "positive media exposure", "average daily browsing time" and "negative media exposure" are all positively correlated with anxiety level. The result is consistent with hypothesis 1 and 3, but not with hypothesis 2. In order to reach a conclusion, the hypothesis will be further verified by regression analysis.

In addition, among other variables, female students were more likely to be affected by media information exposure to the COVID-19 than male students, non-medical majors compared with medical majors, non-Han students compared with Han students, only children compared with non-only children, and urban students compared with rural students. In the regression analysis below, the above five variables with high correlation with anxiety degree are selected for further analysis.

4. Results

4.1 Full sample regression

In this study, the ordered Logit model was used for estimation. The model is set as follows in Table 3:

$$Y_i = \alpha_0 + \alpha_i X_i + \varepsilon_i \tag{1}$$

Table 3 Full sample regression results

Variable	Degree of anxiety
Degree of anxiety	0.241
Duration of browsing information	(1.29)
Positive media exposure	-0.281
Degree of anxiety	(-0.90)
Duration of browsing information	0.325
	(0.97)
Gender	-1.462*
	(-1.77)
Major	6.857***
	(8.82)
Come From	3.109***
	(3.11)
Whether they are the only child	-1.798**
	(-2.32)
Off-campus residence	1.406*
	(1.78)
Constant	-3.134
	(-1.21)
Observations	353
R-squared	0.239
F test	0
r2_a	0.221
F	20.70

In the formula, Y_i is the degree of anxiety, α_0 is the constant term, α_i is the coefficient of explanatory variables, and X_i is the three explanatory variables and five control variables. ε_i is a

random disturbance term. Based on the above correlation analysis, the full-sample regression results are shown in Table 3.

The results of regression analysis show that the three variables of "media information exposure duration", "positive media exposure" and "negative media exposure" do not have a significant impact on the degree of anxiety, so the original hypothesis cannot be fully accepted. However, their trends are consistent with the three hypotheses in this paper, that is, the hypothesis is valid to some extent. The three explanatory variables with the highest to lowest influence on anxiety degree were ranked as "duration of media information exposure", "negative media exposure" and "positive media exposure".

Control variables that have a greater impact on anxiety degree are briefly discussed in order of degree from high to low: non-medical students are more likely to be affected by epideia-related information and thus have anxiety compared with medical students, non-Han students with Han students, female students with male students, only children with non-only children, and students in urban areas with rural areas.

5. Discussion

The duration of media information exposure was positively correlated with anxiety level. From the perspective of college students, they spend their time browsing media information and fail to make full use of this time to complete specific tasks or improve their own abilities, resulting in a large gap between themselves and their peers around them, a lack of corresponding processing ability or an inability to complete tasks on time and quality when facing personal road choices and difficulties. In terms of the external environment, the media accurately pushes information to the public based on big data analysis. In the long run, college students are trapped in the "information cocoon" created by the media. Following the push of unregulated browsing, all body parts will be tired, leading to the generation and deepening of anxiety.

The more negative media information the college students were exposed to during the COVID-19, the more serious their anxiety was. The more positive media exposure, the less anxious they were. In psychology, "emotional infection" refers to the emotional experience caused by others' emotions and matched with others' emotions, that is, browsing negative information will produce negative emotions and thus induce anxiety. Contrary to the nature of negative information, positive information may bring positive signals to the college students in the school or community: the unsealing date is earlier, family and friends are in good condition, and so on. Over time, under the package of positive information, college students will be full of confidence and strength in the face of daily nucleic acid testing and study and life, and the anxiety will naturally decrease.

After the regression analysis of the samples, the conclusion is that the three hypotheses are likely to be invalid, and the possible reasons are as follows: First, from 2019 to 2022, more than two years have passed. Different from the panic and anxiety state of the whole people at the beginning of the COVID-19, the response capacity and measures in all aspects are insufficient, people need to seek to ensure their own safety. Now the COVID-19 has become normal, and the capacity in all aspects has been improved. The information doesn't stir up too much inside, and anxiety isn't obvious. Second, the sample was collected in May 2022. During the outbreak of the COVID-19 in Shanghai, university campuses and communities were closed, making the living environment of college students more simple and relatively safe. College students did not need to search for the COVID-19 information to feel safe, and their attention to media information decreased. Due to the simple and stable environment, it is suitable for college students to devote themselves to study and communicate with people around them, and the degree of psychological anxiety will be relatively reduced.

This study will provide suggestions for college students to reduce the psychological anxiety caused

by media information from both social and personal levels. At the social level, relevant departments should strengthen the supervision of the media; Media should regulate the content of information; Schools should pay attention to students' psychological education and guidance. At the individual level, college students should reasonably plan their time for browsing information; We need to improve their own quality and strengthen the ability of information recognition; We need to participate in outdoor activities and exercise.

References

[1] Zhang Daquan, Zhu Hongfei, & Sun Xiao. (2021). Based on Grounded theory, an analysis of the factors influencing the continuous attention behavior of information users of new media platforms in universities. Information Science (3), 113-119.

[2] Zhang Min, Meng Die, & Zhang Yan. (2020). A conceptual model of social media users' continuous use behavior under the framework of "use-satisfaction" analysis. Journal of Information Resources Management, 10(1), 10.

[3] Bureau of Disease Control and Prevention, National Health Commission. Notice on the Issuance of Guidelines for Emergency Psychological Crisis Intervention in the Outbreak of Novel Coronavirus Pneumonia [EB/OL]. (2020-01-27)[2020-03-02]

[4] Zhou Yanmei, Liu Dongsu, Wang Yanxi, & Hao Dan. (2015). Investigation and Analysis of college students' information behavior and information service Countermeasures. Library and Information Services (6), 7.

[5] Griffin R. J., Dunwoody S., & Neuwirth K. (1999). A proposed model of the relationship of risk information seeking and processing to the development of preventative behaviors. Environmental Research, 80(2 Pt 2), S230-S245.

[6] Griffin R.J., Neuwirth K., & Dunwoody S. (1995). Using the Theory of Reasoned Action to Examine the Impact of Health Risk Messages. Annals of the International Communication Association, 18, 201-228.

[7] Griffin R. J., Powell M., Dunwoody S., Neuwirth K. & Novotny V. (2004). Testing the Robustness of a Risk Information Processing Model. Association for Education in Journalism and Mass Communication.

[8] Hall B. J., Murray S. M., Galea S., Canetti D., & Hobfoll S. E. (2015). Loss of social resources predicts incident posttraumatic stress disorder during ongoing political violence within the palestinian authority. Social Psychiatry & Psychiatric Epidemiology, 50(4), 1-8.

[9] Perez L. M., Jones J., Englert D. R., & Sachau D. (2010). Secondary traumatic stress and burnout among law enforcement investigators exposed to disturbing media images. Journal of Police & Criminal Psychology, 25(2), 113-124.

[10] Hall B. J., Xiong Y. X., Yip P. S. Y., Lao C. K., Shi W., & Sou E. K. L., et al. (2019). The association between disaster exposure and media use on post-traumatic stress disorder following typhoon hato in macao, china. Taylor & Francis (1).

[11] Jones N. M., Garfin D. R., Holman E. A., & Silver R. C. . (2016). Media use and exposure to graphic content in the week following the boston marathon bombings. American Journal of Community Psychology, 58.

[12] Chen Ling. Research on Time Anxiety of College Students in the New Media Environment [D]. Hubei: Central China Normal University, 2020.