

Anxiety and social media use: a moderator of stress in the COVID-19.

Di, Gu*

Department of Jian, Qiao University, Shanghai, China

*Corresponding author: cherie_lee@shu.edu.cn

Abstract. As concern for students' psychological well-being is shared by all segments of the culture, many scholars have conducted research on this issue in early years. The problem with these studies was that people's mental health was affected by their use of social media during a very bad epidemic. However, nowadays, the association between the use of social media and well-being needs to be further explained in the context of persistent disease outbreaks over time. This paper examines COVID-19-related anxiety and social media use. SMU, COVID-19 stressors, anxiety, and variables were obtained from Chinese college students using an online questionnaire (e.g., health history, online media use, etc.). According to regression analyses, participants who spent more time using social media were more anxious in COVID-19-related content, while participants with more related stressors experienced less anxiety. The purpose of this study was to determine whether COVID-19 stressors moderated the association between social media use and mental health conditions such as anxiety in an epidemic setting in China. Study findings revealed that students with more COVID-19 stressors experiencing less anxiety when using social media, but COVID-19 stressors were no longer a risk factor.

Keywords: COVID-19 stressor, social media use, well-being, anxiety.

1. Introduction

Chinese college students filled out an online survey for this investigation of the effects of social media use, COVID-19 stresses, anxiety, and confounding variables in the context of an ongoing and recurrent epidemic in China (e.g., health history, online media use, etc.). The objective of this study was to examine the link between social media usage and mental health outcomes (anxiety in this text) related to COVID-19 by drawing on the knowledge and understanding of the Differential Sensitivity Model of Media Effects (DSMM). This result, in the author's opinion, suggests that COVID-19 stressors are likely no longer a risk factor, although it has been shown to have a substantial moderating impact.

2. Literature Review

A cross-sectional study has investigated university students' psychological well-being and social media use during the 2020 pandemic [1]. However, current longitudinal studies on the mental health of college students are needed to better understand the impact of these epidemics. This study uses the DMSS as a theoretical framework, as an established integrative model, the Differential Susceptibility to Media Effects Model (DSMM) examines the connection between media use and health consequences [2]. The effects on users' mental state, emotions, physiological state, and behavioral patterns may be influenced by media usage, as stated by the DSMM, and some personal or social characteristics affect the nature or the extent of the repercussions brought about by exposure to the media, and in disaster media effects theories, the personal characteristics or social environment associated with it are likely to be significant moderating variables [3]. In the current social environment, where social media is increasingly integrated into daily life, researchers have found that the harmful effects of social media use may be small, but there are potential risks to mental health conditions from social media use [3]. There are some obvious risks associated with the use of social media in disaster situations, ethical awareness and misuse of social media, including invasion of privacy and the dissemination of false information by some media workers may also contribute to

mental health outcomes [4], [5] During the COVID-19 pandemic in the United States, public mental discomfort was suspected to be related to outbreak-related media coverage [6]. As this study examines usage of social media, COVID-19 stress, and mental wellbeing (in this case, anxiety), the following hypotheses were made:

H1. After controlling for online media use, The more a person's exposure to social media posts about COVID-19, the higher their level of anxiety.

H2. After taking key factors into account (e.g., health history), more concern increased in response to COVID-19 stresses.

H3. COVID-19 stressors can make the link between social media use and anxiety worse or better. When it comes to daily social media use, people who have more COVID-19 stressors will report more anxiety problems.

3. Method

3.1. Procedure and participants

In order to collect a wider range of responses from college students across China, the authors posted the questionnaire on a widely popular social media platform in China, which contained explanatory notes for this study and also expressed their acknowledgement of the participants. During the data collection period of December 5 to December 7, 2022, the questionnaire link or QR code was clicked or scanned by interested people to become participants in the study.

The study collected questionnaires from 508 college students across the country and followed the methodology for detecting invalid responses to survey data includes a bogus question (i.e., "A cell phone is something I've never used." which eliminated 30 participants) and the worries that were voiced when the survey is over (i.e., "To be completely frank, should we use your data in our analysis?"). to assure the quality of the online data (two participants were excluded). All told, 476 Chinese college students made up the final sample (305 Han Chinese, average age 21.4 years, and go here for more information **Table 1**).

3.2. Variables

Use of the media, risk factors (i.e., health history, COVID-19 stressors), psychometric outcomes (i.e., anxiety) associated with COVID-19 were assessed, as well as demographic data.

3.2.1. Social Media Use

Lin's own evaluation instrument inspired this application of social media. [7]. Participants were polled about how much time they spend on average each month using four popular Chinese social media sites to find information on the COVID-19 outbreak (i.e., Weibo, WeChat, Zhihu, and Douyin). Each system has a different reaction time, which might be anywhere from 0 to 12 hours. The sum of each user's daily social media usage is then calculated, with more time spent online corresponding to higher usage.

3.2.2. COVID-19 stressor

Utilizing a scale originally developed to assess strain caused by SARS, a 7-item inventory tool was applied to evaluate COVID-19 stressors [8]. Participants were asked about any personal experiences they have had with a city closure in Wuhan or Shanghai, confirmed or suspected infection, and voluntary involvement in outbreak prevention and control. Each item was answered with a "yes" (coded 1) or "no" (coded 0). In order to calculate the catastrophe stressor score during the pandemic, the total scores from each question were added together. Higher scores indicated greater exposure to disaster stressors on a scale from 0 to 7.

3.2.3. Anxiety

The Generalized Anxiety Disorder Scale (GAD-7) uses a Likert-type scaled response to quantify anxiety, which ranges from "not at all" (assigned a value of 1) to "almost every day" (assigned a value

of 4), the total number of points is added together to reveal the overall degree of anxiety (Cronbach's $\alpha = .82$).

3.2.4. Covariates

The amount of time spent reading four different online publications (i.e., Headline Today, People's Daily, CCTV News, and Surf News) about the COVID-19 virus was a proxy for how much attention those publications received. Code 1 was assigned to participants who responded "yes" to any question, whereas code 0 was assigned to those who did not. Two questions were used to determine if participants' health histories included the common cold or any form of mental illness during the COVID-19 epidemic. Participants who responded "yes" to any question were assigned the value 1, while those who did not were assigned the value 0. Age, race, education, and the average monthly salary of the family were analyzed, among other demographic factors

Table 1. Participants' demographic information (N=508)

Variables	Description	N	%(SD)
Age	18-20	371	1.8
ethnicity	Han	305	64.1
Monthly family income	0-4 999 RMB	81	17
	5,000-9,999 RMB	185	38.9
	10,000-14,999 RMB	173	36.3
	>15,000 RMB	37	7.8
Education level	Specialty	117	24.6
	Undergraduate	244	51.3
	Master	91	19.1
	Doctor	24	5
COVID-19 stressor	Personal or family COVID-19 infection	163	34.2
	Receive information related to outbreak prevention and control	448	94.1
	Participated as a volunteer in efforts to control and prevent epidemics.	135	28.4
	I've been locked up in Wuhan or Shanghai.	396	83.2
Healthy history	Declining economic conditions during the epidemic	347	72.9
	Delayed travel plans with friends	135	28.4
	Delayed exams or competitions	76	16
	After the COVID-19 pandemic, I caught a cold.	227	47.7
Social media use (h/day)	The diagnosis of mental disorder.	76	16
			1.82
Online media use (h/day)			1.67

4. Result

4.1. Preliminary Analyses

Table 2 demonstrates the summary analysis and correlations between the variables of the research. COVID-19 stressors are considered risk factors and it was linked to anxiety in a bad way ($r = -0.5$). Health history was considered to be one of the important covariates and was also negatively associated with anxiety. ($r = -0.2$), among the media use associated with COVID-19, Anxiety was found to be positively related to both social media ($r = 0.5$) and online media ($r = 0.4$) consumption.

Table 2. Analysis of Variables and Their Correlations and Descriptive Statistics
 (N = 508)

Variable	1	2	3	4	5
1.COVID-19 stressor	—				
2.Health history	.239**	—			
3.Social media use	-.400**	-.201**	—		
4.OMU	-.304**	-.180**	.307**	—	
5.Anxiety	-.449**	-.159**	.480**	.404**	—

** The correlation was found to be significant at the level of 0.01 (two-tailed).
 Note:The analyses in this paper all control for age, monthly income, ethnicity, education.

4.2. Analyses of Regression

Correlative directions of social media use and anxiety related to COVID-19 were shown in a multiple linear regression analysis, concluding anxiety levels were higher among those who spend more time on social media. ($b=0.36, p<0.01$). The findings supported the first working hypothesis. Anxiety was also highly linked to COVID-19 stresses($b=-0.31, p<0.01$), consequently, participants in the COVID-19 who experience greater stress will experience fewer symptoms of anxiety, and the results did not support hypothesis 2. To more accurately demonstrate the significant moderating effect of COVID-19 stressors, the interaction between social media use and COVID-19 stressors is not negligible, so the authors performed a simple slope analysis to aid in the demonstration (see here for more information **Table 3**). The more social media users reported using, the less anxious they were at higher COVID-19 stress levels. On the other hand, the longer participants used social media, the more anxiety they felt in conditions with fewer COVID-19 stressors. In several ways, these findings confirmed hypothesis 3 (for details see **Figure 1**).

Table 3. COVID-19 moderating effect of stressor

	Anxiety		Anxiety	
SMU	0.358	8.576	0.368	8.456
COVID-19	-0.306	-7.331	-0.298	-6.963
interaction			0.034	0.847
R2	0.309		0.31	
F	105.68		0.718	

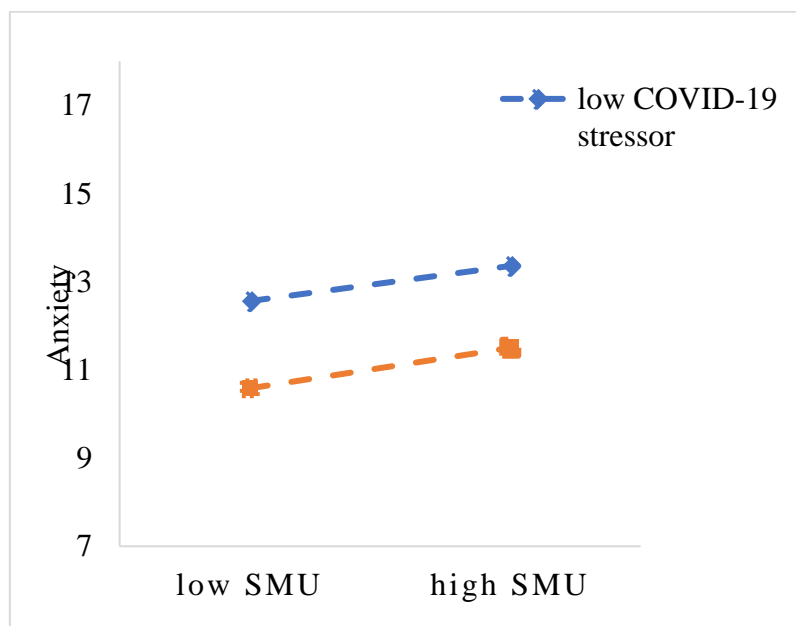


Figure 1. Interactions cause anxiety.

5. Discussion

5.1. Moderating the COVID-19 stressor.

In the present study, using stressors common to participants in epidemiological settings such as COVID-19 stressors, disaster stressors may be predictors of mental health status. Participants with higher levels of stressors experienced fewer anxiety problems, which indicates COVID-19 stressors are no longer a risk factor. The results are inconsistent with, even completely opposite to previous studies, demonstrating that publicly accepted preventive measures and mitigation strategies may be beneficial in reducing negative outcomes [8]. [9] There is strong evidence that COVID-19 is a moderating stressor, as the interaction term contributes significantly.

5.2. Implications

The final conclusion of this study, contrary to previous research, is noteworthy in that whether social media use is positively or negatively correlated with mental health, there is necessarily a correlation. In order to optimize the DSMM model, the author include the COVID-19 stressor as the moderating variable in this model, suggesting more possible explanations for the development of the DSMM model. The current study did not measure emotional reactions elicited by media exposure in terms of an overarching feeling due to the overlap of this concept with mental health outcomes, which in the previous study were negative emotions, and the inclusion of mental health conditions as precisely as feelings of anxiety, thus increasing the precision and credibility of the results. An interesting finding is that this study confirms the application of moderation and mediation in DMSS theory from a different perspective, based on the outcomes of the empirical analysis, which found the opposite conclusion that more COVID-19 stressors instead reported fewer mental health problems. Psychological resilience of the public for crowds facing disasters may be a future research direction [10]. Psychological resilience could be developed through resilience-related courses in colleges and universities to promote students' positive adaptation to the stress of disaster-related media or to reduce the psychological burden of students, as well as through awareness campaigns to make students understand the importance of resilience.

5.3. Limitations

This study has the following limitations. As the current epidemic environment is not yet stable, the questionnaire was administered through an online mode, all participants were from social media platforms, people who do not use social media may not have been surveyed, and the online format may not be as effective as the offline format under supervision. The participants were polled on how often they accessed data regarding the COVID-19 pandemic outbreak via social media. and different understanding due to differences in individual susceptibility may cause corresponding bias [11]. To minimize bias, the authors provided explanations in the survey to help participants understand relevant content (e.g., discussing epidemic-related matters with friends on WeChat, livelihood news in the context of the epidemic, etc.). Gender was not accounted for in the questionnaire design, which may lead to some corresponding deviations due to unclear gender ratios, and although several potential factors, including demographics as well as health history, have been controlled, there may still be associations due to other relevant factors that were not measured in this paper. By examining the link between disaster stress and mental health in more depth, whether social media information exposure may be psychologically resilient to the public can be targeted. Students may require high levels of resilience in order to cope with stressors like extended pandemic conditions and lockdowns. [12].

6. Conclusion

This article investigates whether social media use causes anxiety and the function that COVID-19 stressors play as moderators. Eventually it was found that COVID-19 stressors are no longer a risk

factor in the current setting, but it still proved to have a significant moderating effect and people with higher COVID-19 stressors reported fewer anxiety problems. Based on this result, one speculation is that not only COVID-19 stressors change in the long-term epidemic setting, but also the content of epidemic messages on social media and public attitudes toward the epidemic also changed, suggesting more possibilities for research in related fields. The shortcoming of this study is that it did not distinguish in detail the differences in COVID-19 content (positive or negative), which may be one of the reasons for inconsistency with previous studies. Distinguishing between differences of content on social media and psychological resilience of the public-facing disasters may be a direction for future research.

References

- [1] Zhao, N., & Zhou, G. Social Media Use and Mental Health during the COVID-19 Pandemic: Moderator Role of Disaster Stressor and Mediator Role of Negative Affect. *Applied Psychology: Health and Well-Being*, 2020, 12(4): 1019–1038.
- [2] Valkenburg, P. M., & Peter, J. The Differential Susceptibility to Media Effects Model. *Journal of Communication*, 2013, 63(2): 221–243.
- [3] Boer, M., Stevens, G. W., Finkenauer, C., de Looze, M. E., & van den Eijnden, R. J. Social media use intensity, social media use problems, and mental health among adolescents: Investigating directionality and mediating processes. *Computers in Human Behavior*, 2011, 116: 106645.
- [4] Pulido, C. M., Villarejo-Carballido, B., Redondo-Sama, G., & Gómez, A. COVID-19 infodemic: More retweets for science-based information on coronavirus than for false information. *International sociology*, 2020, 35(4): 377-392.
- [5] Alexander, D. E. Social media in disaster risk reduction and crisis management. *Science and engineering ethics*, 2014, 20(3): 717-733.
- [6] Riehm, K. E., Hologue, C., Kalb, L. G., et al. Associations between media exposure and mental distress among US adults at the beginning of the COVID-19 pandemic. *American Journal of Preventive Medicine*, 2020, 59(5): 630-638.
- [7] Lin, L.Y., Sidani, J.E., Shensa, A., et al. Association between social media use and depression among US young adults. *Depression and Anxiety*, 2016, 33(4): 323–331.
- [8] Paul, L. A., Price, M., Gros, D. F., et al. The associations between loss and posttraumatic stress and depressive symptoms following Hurricane Ike. *Journal of Clinical Psychology*, 2014, 70(4): 322-332.
- [9] Naushad, V. A., Bierens, J. J., Nishan, K. P., et al. A systematic review of the impact of disaster on the mental health of medical responders. *Prehospital and disaster medicine*, 2019, 34(6): 632-643.
- [10] Abramson, D. M., Grattan, L. M., Mayer, B., Colten, C. E., Arosemena, F. A., Bedimo-Rung, A., & Lichtveld, M. The resilience activation framework: A conceptual model of how access to social resources promotes adaptation and rapid recovery in post-disaster settings. *The journal of behavioral health services & research*, 2015, 42(1): 42-57.
- [11] Valkenburg, P., Beyens, I., Pouwels, J. L., van Driel, I. I., & Keijsers, L. Social Media Use and Adolescents' Self-Esteem: Heading for a Person-Specific Media Effects Paradigm. *Journal of Communication*, 2021, 71(1): 56–78.
- [12] Kocjan, G. Z., Kavčič, T., & Avsec, A. Resilience matters: Explaining the association between personality and psychological functioning during the COVID-19 pandemic. *International Journal of Clinical and Health Psychology*, 2021, 21(1): 100198.