

Research on the Impact of COVID-19 on College Students' Mental Health: A Chain Mediation Model Investigation

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Abstract: To investigate the impact of coronavirus disease 2019 (COVID-19) on college students' mental health, the current research examined the association between mental health and protective factors. The research used the Symptom Checklist 90 scale (SCL-90) to assess college students' mental health in September 2019 (T1). Then, the SCL-90, the Experiences in Close Relationships (ECR) scale and the Coping Style Questionnaire (CSQ) were used to assess college students' mental health and protective factors in March 2020 (T2). Firstly, all of the variables in the research had a close relationship. Secondly, the research found a chain mediation model that demonstrated attachment avoidance and negative coping styles had an indirect negative impact on T2 mental health. These findings imply that parents should provide parental support for college students and help them cope with stress in a proper way.

1 INTRODUCTION

Social isolation is considered an effective way to contain the coronavirus disease 2019 (COVID-19), which has forced governments to impose lockdown measure to limit the rapid virus transimission (Ahrens, 2021). There is an urgent need to assess and recognize the influence of social isolation on college students who might be more vulnerable to poor mental health. Due to social isolation, college students spend increasingly more time with their parents. Adult attachment theory suggested that insecure attachment, such as attachment avoidance, is a risk factor for mental health. Although attachment and its association with mental health have been studied in the context of college students, there has been limited research on its association with social isolation during the COVID-19 outbreak (Jiang, 2014). For example, the difficulty of attachment has been linked to the other mental health problems. Attachment anxiety and avoidance, the two dimensions of attachment, are positively correlated with problematic behavior and psychological distress. Moreover, research revealed that coping styles had a close link with mental health (Reilly, 2021). Negative coping style refers to dealing with problems by neglecting, avoidance and denial,

whereas positive coping style refers to dealing with problems through direct and rational means (Reilly, 2021). Previous researches have suggested that negative coping style could elevate the likelihood of psychological symptoms when confronted with stressful events, and positive coping style could alleviate depressed mood. It seems that attachment and coping styles may be the specialty-specific protective factors for mental health during the COVID-19 outbreak. Previous studies on COVID-19 mainly focus on cross-sectional, with fewer longitudinal studies in all periods focusing on mental health (Li, 2020). However, it is impossible to assess the significance of protective factors during the epidemic without data from the pre-epidemic period. To fill this gap, it is necessary to conduct a longitudinal analysis. Thus, we further examine the association between mental health and protective factors. This research contributes to a better understanding of the association within attachment relationships, coping styles, and mental health in this epidemic, adding to this literature evidence of specialty-specific protective factors for psychology effects of the COVID-19 pandemic.

2 OBJECT AND METHOD

Using the random sampling method, 650 students aged 18 to 20 years old were selected from a college in southern China. All participants resided in Guangdong province, a southern province in China, without the confirmed COVID-19 cases. The Symptom Checklist 90 (SCL-90), the Experiences in Close Relationships (ECR) scale, and the Coping Style Questionnaire (CSQ) were employed in this study. (Jiang, 2014; Reilly, 2021; Zhu, 2021) These scales have good reliability and validity, which is widely used in the Chinese population. A two-stage sampling design was used, which is conducted as an online survey. Participants completed the SCL-90 scale before the COVID-19 outbreak (September 2019, T1). Then, they completed the SCL-90, the ECR Scale, and the CSQ during the pandemic (March 2020, T2). Totally 541 valid questionnaires were collected in the T2 period. SPSS statistical software (version 24.0) was used for data analysis in the current study.

3 RESULTS AND DISCUSSIONS

3.1 Collinearity Analysis

In this study, the collinearity statistics method was used to diagnose the value of TOL and Vif. The

results showed that the TOL values of attachment anxiety, attachment avoidance, negative coping, positive coping and T1 mental health were 0.88, 0.82, 0.72, 0.87 and 0.72, and the Vif values were 1.13, 1.22, 1.4, 1.15 and 1.4 respectively. According to the collinearity statistics standard, the VIF values of attachment anxiety, attachment avoidance, negative coping, positive coping and T1 mental health were below the cutoff of 5, indicating no concerns with collinearity.

3.2 Correlation Analysis

According to Tab. 1, attachment anxiety ($r = 0.23, P < 0.01$) and attachment avoidance ($r = 0.30, P < 0.01$) were significantly positively correlated with negative coping styles. Attachment anxiety ($r = -0.15, P < 0.01$) and attachment avoidance ($r = -0.13, P < 0.01$) were significantly negatively correlated with positive coping styles. Negative coping style had a significant positive correlation with mental health, while positive coping style had a significant negative correlation with mental health. Results have shown that a positive problem-focused coping style could enhance mental health effectively, while a negative emotion-focused coping style may worsen mental health problems. Furthermore, results suggested that attachment anxiety and avoidance are positively correlated with mental health during the COVID-19 outbreak.

Table 1: Descriptive statistical results of all variables.

	M±SD	1	2	3	4	5	6
1. attachment anxiety	62.65±10.32	1					
2. attachment avoidance	59.74±17.01	0.26**	1				
3. negative coping	27.6±9.01	0.23**	0.3**	1			
4. positive coping	35.73±6.4	-0.15**	-0.13**	0.13*	1		
5. T1 mental health	118.69±37.82	0.17**	0.34**	0.43**	-0.21**	1	
6. T2 mental health	129.55±34.94	0.15**	0.39**	0.36**	-0.18**	0.64**	1

Note: "*" stands for $P < 0.05$, "**" $P < 0.01$, "***" $P < 0.001$ (two-tailed), the same below.

3.3 The Impact of COVID-19 on the Psychological Symptoms

We used the paired samples t-test to examine the impact of COVID-19 on the psychological symptoms. According to Tab. 2, there were significant differences between stages emerged in all the SCL-90 subscales. When comparing the T1 and T2 SCL-90 subscales, significant increase in psychological symptoms were found (Somatization: $t = -5.99, P < 0.01$; Obsessive symptom: $t = -11.21, P < 0.01$;

Interpersonal sensitivity: $t = -7.7, P < 0.01$; Depression: $t = -5.85, P < 0.01$; Anxiety: $t = -8.7, P < 0.01$; Hostility: $t = -2.52, P < 0.05$; Terror: $t = -4.91, P < 0.01$; Paranoid symptom: $t = -6.68, P < 0.01$; Psychiatric symptom: $t = -5.73, P < 0.01$; Others: $t = -5.75, P < 0.01$). Especially, college students reported significantly more obsessive symptoms ($M \pm SD = 1.76 \pm 0.52$) during the COVID-19 outbreak ($t = -11.21, P < 0.01$), compared to the pre-pandemic ($M \pm SD = 1.54 \pm 0.54$). During the COVID-19, the increase of obsessive symptoms may be related to the

emphasis on personal hygiene. It is effective to fill the gap of cross-sectional study, adding to this literature evidence of the impact of COVID-19 on the psychological symptoms.

3.4 The Chain Model Investigation

We used the software of process 3.5 of SPSS 24.0 to examine the chain model (Fig. 1). COVID-19's effect on mental health had a significant path coefficient ($\beta=0.05$, $P<0.01$). The direct effect was significant (direct effect = 0.5, CI : 0.42, 0.60). The chain mediating effect of attachment avoidance and negative coping were found in the relationship between T1 and T2 stage. The indirect effect was

significant (Δ indirect effect = 0.1, CI : 0.01,0.08), accounting for 16.68% of the total effect. The 95% confidence of the effect estimates of the above paths does not include zero, so this path was significant. When attachment avoidance became more frequent, more negative coping styles were used to deal with the stress caused by the COVID-19, resulting in poor mental health. In this study, it was found that COVID-19 and poor attachment relationships between parents and college students were associated with mental health problems among college students. It suggested that parental support should be strengthened and conflicts between parents and college students should be reduced. These findings have both theoretical and practical implications, shedding light on the mental health promotion as potential protective factor.

Table 2: Before and after comparison of psychological symptoms for quality indicators.

	N	T1 psychological symptoms		T2 psychological symptoms		t
		M	SD	M	SD	
1. Somatization	541	1.21	0.37	1.3	0.35	-5.99***
2. Obsessive symptom	541	1.54	0.54	1.76	0.52	-11.21***
3. Interpersonal sensitivity	541	1.41	0.54	1.56	0.5	-7.7***
4. Depression	541	1.32	0.48	1.42	0.49	-5.85***
5. Anxiety	541	1.29	0.45	1.44	0.44	-8.7***
6. Hostility	541	1.3	0.47	1.35	0.44	-2.52*
7. Terror	541	1.25	0.43	1.33	0.45	-4.91***
8. Paranoid symptom	541	1.27	0.45	1.36	0.42	-6.68***
9. Psychiatric symptom	541	1.31	0.42	1.36	0.37	-5.73***
10. Others	541	1.31	0.45	1.42	0.46	-5.75***

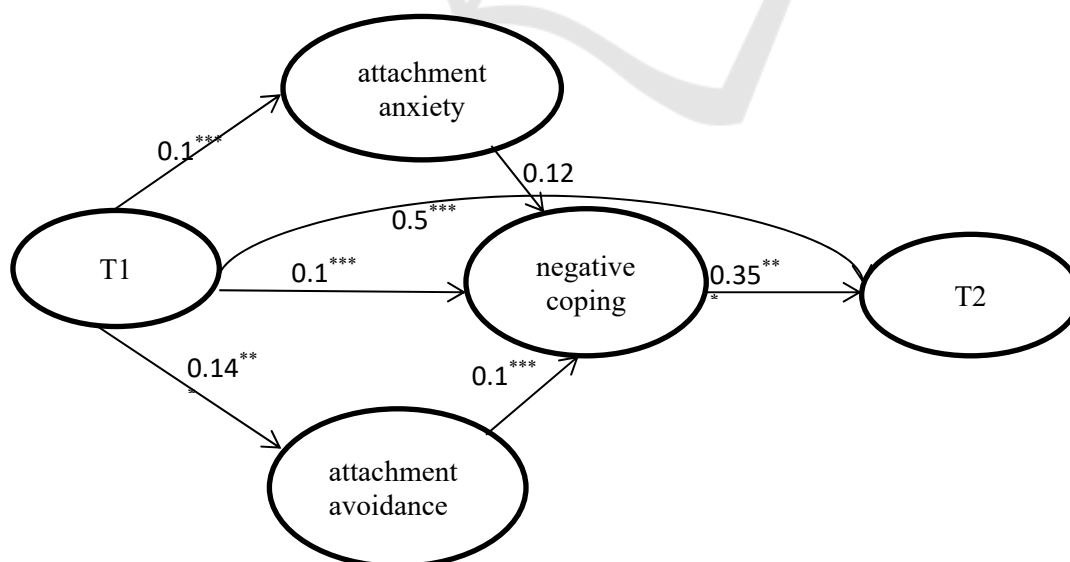


Figure 1: The chain model.

4 CONCLUSION

The following conclusions are drawn from the above-mentioned findings and discussions:

(1) In the special social environment of COVID-19, lockdown measures lead to social isolation, which exacerbates individual psychological problems. The COVID-19 pandemic is inducing an additional burden on peoples mental health, especially emotional reactions.

(2) In terms of intervention strategies, parents must be prepared to provide parental support for students who coped with the pandemic with negative styles when quarantined at home during the COVID-19 outbreak.

(3) Based on these findings, it is necessary for governments, college, and families to pay closed attention to the psychological reactions of college students during the COVID-19 pandemic and take effective rmeasures to reverse the negative impact of the lockdown measure on mental health for college students.

(4) Some limitations of the current research must be considered. Firstly, some students did not complete the survey during the T2 measurements. Secondly, certain COVID-19 effects might damage mental health after a longer period due to chronic stress. However, we were unable to observe the mental health deterioration for a longer time.

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REFERENCES

Ahrens K F, Neumann R J, Kollmann B, et al. Impact of COVID-19 lockdown on mental health in Germany: longitudinal observation of different mental health

trajectories and protective factors [J]. *Translational Psychiatry*, 2021, 11(1).

Jiang Y, Tiliopoulos N. Individual differences in adult attachment and reinforcement sensitivity[J]. *Personality & Individual Differences*, 2014, 68:205-210.

Li X, Lv S, Liu L, et al. COVID-19 in Guangdong: Immediate Perceptions and Psychological Impact on 304,167 College Students[J]. *Frontiers in Psychology*, 2020, 11:2024.

Reilly S E, Soulliard Z A, Mccuddy W T, et al. Frequency and perceived effectiveness of mental health providers' coping strategies during COVID-19[J]. *Current Psychology*, 2021:1-10.

Zhu Y, Zhang L, Zhou X, et al. The impact of social distancing during COVID-19: A conditional process model of negative emotions, alienation, affective disorders, and post-traumatic stress disorder[J]. *Journal of Affective Disorders*, 2021, 281(Suppl 7):131-137.