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Letter to the Editor

Cross-lagged analysis of the interplay between meaning in life and positive mental health during the COVID-19 epidemic

1. Introduction

Finding meaning in life is the primary motivating force for any individual, especially in difficult situations (Steger et al., 2006). Previous studies have suggested that, as an effective protective factor, meaning in life can reduce psychological distress (Yu et al., 2020) and facilitate mental health recovery (Jun and Yun, 2020). It is also closely associated with positive outcomes, such as life satisfaction (Steger, 2018) and subjective well-being (Schnell, 2009). However, few efforts have been made to investigate the contribution of mental health to meaning in life. The novel coronavirus disease 2019 (COVID-19) provides an opportunity to examine the causal relationship between these two psychological variables.

The ongoing outbreak of COVID-19, emerged in Wuhan city first, and spread rapidly across the whole country of China. The epidemic peaked in February 2020, which was quickly and effectively controlled. By the end of May, most colleges and universities in China officially opened under the measures of limited social contact. However, there are still sporadic cases thus far. As stated by Tandon (2020), it is necessary to continually focus on people's mental health and make effective measures. In the current study, we investigated the causal relationship between meaning in life and positive mental health by conducting two wave cross-lagged analysis, with an interval of 4 months during the COVID-19 epidemic.

2. Method

Self-report questionnaires including Chinese versions of 10-item Meaning in Life Questionnaire (MLQ, Wang and Dai, 2008) and 14-item Mental Health Continuum-Short Form (MHC-SF, Yin and He, 2012) were administered on computer at two time points. The MLQ had two factors: search for meaning (MLQ-S) and presence of meaning (MLQ-P) (Steger et al., 2006), while MHC-SF consists of three factors: emotional well-being (EWB), social well-being (SWB), and psychological well-being (PWB) (Keyes, 2002). A total of 595 Chinese university students answered the questionnaires at Time 1 (February 11, 2020). At Time 2 (after 4 months), 462 participants completed the questionnaires. Participants who answered the survey for less than 200 s ($n = 6$) or who did not answer the survey at Time 2 ($n = 31$) were excluded from the analysis. Therefore, the final sample comprised 425 participants (72 male students and 353 female students), with ages ranging from 18 to 25 years old (Mean = 20.79, SD = 1.42). Among them, no one was infected by COVID-19. Nevertheless, there were still 90 students (21.18 %) who had experienced medical isolation for at least 14 days during the COVID-19 epidemic.

3. Results

Means, standard deviations, Cronbach's α values, and correlation analyses results for all factors of meaning in life and positive mental health at Time 1 and Time 2 are presented in Table 1. The results revealed that meaning in life was significantly related to positive mental health across time ($Ps < 0.01$). Independent sample *t*-test showed that female students exhibited more positive mental health than that of male students at Time1 and Time 2, but there was no difference between genders regarding meaning in life. No difference existed in meaning in life and positive mental health between those with or without experience of medical isolation.

A cross-lagged structural equation modeling was conducted by AMOS 17.0 to analyze the causal relationship between meaning in life. As depicted in Fig. 1, an excellent model fit was obtained ($\chi^2/df = 1.124$, $P = 0.304$). The goodness of fit tests for the cross-lagged model were adequate: CFI = 0.999, TLI = 0.998, RMSEA = 0.017, SRMR = 0.017. The cross-lagged effect of meaning in life at Time 1 on positive mental health at Time 2 was positive and significant ($\beta = 0.17$, $P = 0.019$). On the other hand, positive mental health at Time 1 also significantly influenced meaning in life at Time 2 ($\beta = 0.14$, $P = 0.049$).

4. Discussion

The present study aimed to examine the causal relationship between meaning in life and positive mental health. Two waves of investigation were administered in the peak and remission periods during the COVID-19 outbreak in Chinese university students, with an interval of 4 months. Cross-lagged analysis indicated that university students who had reported higher level of meaning in life exhibited more emotional well-being, social well-being, and psychological well-being, which is consistent with the longstanding theorizing that meaning in life has a protective effect on mental health (Lew et al., 2020). Our results also showed that positive mental health helps to facilitate individuals' meaning in life. In other words, meaning in life and positive mental health have a reciprocal impact and promote each other. Accordingly, this fills a part of the present knowledge gap.

5. Conclusions

There is a reciprocal association between meaning in life and positive mental health in Chinese university students during the COVID-19 epidemic. This finding has significant implications for ensuring sound, healthy experiences for individuals experiencing the COVID-19 epidemic, and it may also offer guidance on effective professional measures for them.

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Table 1
Correlations, means, and standard deviations for main study variables (n = 425).

	Mean (SD)	Cronbach's α	1	2	3	4	5	6	7	8	9
1 T1 search for meaning	25.28 (5.76)	0.90	—								
2 T1 presence of meaning	23.73 (5.24)	0.77	0.51**	—							
3 T1 emotional well-being	10.65 (3.35)	0.96	0.27**	0.36**	—						
4 T1 social well-being	17.13 (5.67)	0.87	0.30**	0.43**	0.72**	—					
5 T1 psychological well-being	20.58 (6.75)	0.94	0.32**	0.44**	0.70**	0.83**	—				
6 T2 search for meaning	26.51 (5.65)	0.94	0.28**	0.22**	0.19**	0.18**	0.24**	—			
7 T2 presence of meaning	24.91 (4.69)	0.80	0.24**	0.36**	0.22**	0.25**	0.25**	0.71**	—		
8 T2 emotional well-being	11.05 (3.25)	0.97	0.21**	0.20**	0.31**	0.26**	0.27**	0.59**	0.59**	—	
9 T2 social well-being	17.80 (5.60)	0.92	0.22**	0.26**	0.30**	0.36**	0.33**	0.62**	0.64**	0.81**	—
10 T2 psychological well-being	21.61 (6.73)	0.97	0.21**	0.21**	0.27**	0.30**	0.32**	0.63**	0.67**	0.81**	0.86**

Note: $^{**}P < 0.01$.

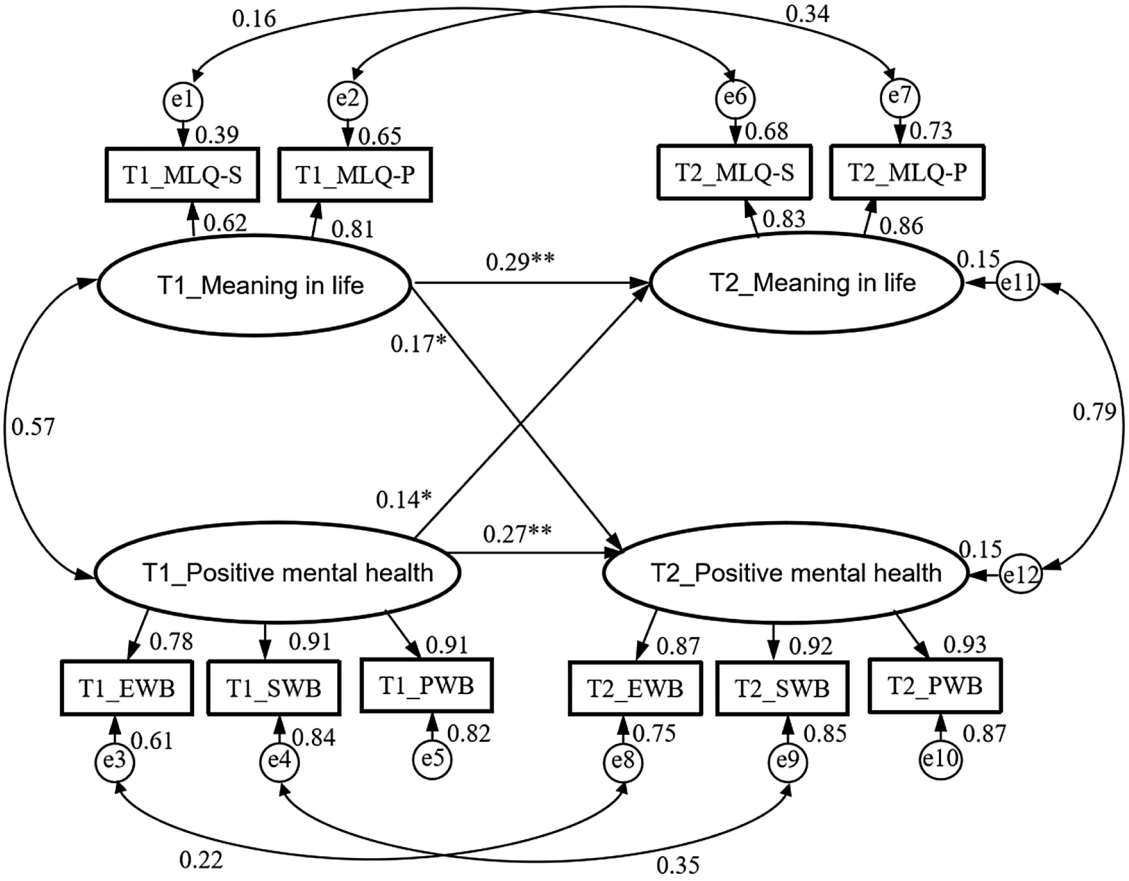

Fig. 1. A Structural equation model showing the reciprocal relationship between meaning in life and positive mental health. T1, Time 1; T2, Time 2. Coefficients represent standardized values. MLQ-S, search for meaning; MLQ-P, presence of meaning; EWB, emotional well-being; SWB, social well-being; PWB, psychological well-being. $^{*}P < 0.05$, $^{**}P < 0.01$.

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Declaration of Competing Interest

None.

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