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Coping with coronavirus disease 2019: Relationships between coping strategies, benefit finding and well-being

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Abstract

The coronavirus disease 2019 (COVID-19) pandemic has caused both physical and psychological changes in the general public. The current study aimed to examine the relationship between well-being and coping strategies in response to the pandemic. Furthermore, we aimed to investigate the mediational role of benefit finding. A total of 521 participants aged 18–65 years were recruited from 29 regions of mainland China. Situation-specific coping strategies, including support seeking, personal hygiene practice and social distancing, were measured at Time 1. Benefit finding and well-being were assessed 1 month later. A multilevel mediation model was conducted with region included in level 2 as cluster ID. Support seeking and personal hygiene practice were positive predictors of benefit finding, which further mediated their relationships with well-being, while social distancing negatively predicted well-being. These results highlight the relationships of support seeking, personal hygiene practice and benefit finding with well-being during the COVID-19 pandemic. Our findings indicate that besides adopting adaptive coping strategies to prevent infection by COVID-19, individuals should be encouraged to recognize benefits associated with the COVID-19 outbreak.

KEYWORDS
benefit finding, coping, COVID-19, well-being

1 | INTRODUCTION

On 11 March 2020, the coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organization (WHO). The rapid spread of COVID-19 has attracted worldwide attention and caused global panic, thereby threatening people's physical and mental health. It is, therefore, worthwhile to explore the general public's psychological reaction to COVID-19 prevention and investigate the association between coping strategies and mental health. This study focuses on the relationships between situation-specific coping strategies and individual well-being during the COVID-19 pandemic.

1.1 | Impact of COVID-19 on well-being

The COVID-19 outbreak has not only caused fear of infection among the public but also impacted work and social activities and caused immense economic loss. A nationwide survey in China suggested that COVID-19 has caused a variety of mental illnesses such as anxiety, depression and panic disorder (Qiu et al., 2020). Moreover, regional differences were found among the general Chinese population in their stress responses to COVID-19; those living in province-wide lockdown regions reported increased psychological distress (Gan et al., 2020; Zhou et al., 2020) and a higher risk of insomnia (Zhou et al., 2020). In addition, regional pandemic severity was negatively

associated with life satisfaction and perceived psychological distance from COVID-19 (Zheng et al., 2020). Moreover, perceived negative impact on livelihood positively predicted mental health issues (Guo et al., 2020), suggesting that the psychological impact of the COVID-19 pandemic may vary across regions in China.

The COVID-19 outbreak is similar to the severe acute respiratory syndrome (SARS) outbreak in 2003 (Wilder-Smith et al., 2020). Prior studies reported that the spread of SARS severely impacted individuals' subjective well-being (Tam et al., 2004). Main et al. (2011) also revealed that during an uncontrollable large-scale epidemic like SARS, even the people who were not directly infected by the virus were confronted with an acutely stressful situation, which impacted their psychological adjustment, including symptoms of mental health disorders and feelings of well-being.

Nevertheless, given that COVID-19 has higher transmissibility and a more prominent community transmission than SARS (Wilder-Smith et al., 2020), its impact on the general public's mental health might be more extensive. Moreover, since the peak of the COVID-19 pandemic in China occurred around the Chinese Spring Festival, individuals were advised against going out or attending social gatherings during the most important national holiday. It remains to be seen how an individual's well-being is affected by limited face-to-face interaction with friends/relatives and spending more time at home with family members.

1.2 | Coping strategies for COVID-19

Although many studies have highlighted the negative impact of public health emergencies on well-being (Aitsi-Selmi & Murray, 2016; Kamara et al., 2017; Rambaldini et al., 2005), Lau et al. (2008) reported a stable level of well-being among adults in Hong Kong after SARS, as compared to 1 year before the SARS outbreak. Prior studies have reported that protective factors, such as optimism (Olson et al., 2014), benefit finding (Sanjuán et al., 2016) and adaptive coping strategies (Main et al., 2011), help individuals maintain normal levels of well-being during epidemics and other stressful situations.

Similar to the situation-specific coping strategies that were proposed to deal with the threat of SARS infection (C. Cheng & Cheung, 2005; Lee-Baggley et al., 2004), the WHO issued specific advice on coping with COVID-19, such as frequent hand washing, practicing respiratory hygiene and maintaining social distance. Furthermore, studies have suggested that these coping strategies not only protected individuals from infection but were also closely associated with their mental health status (e.g., C. Cheng & Cheung, 2005).

The current study focused on three forms of situation-specific coping strategies frequently used in response to COVID-19. First, personal hygiene practice, which includes taking health precautions and paying attention to sanitation and hygiene (e.g., wearing a face mask and frequent hand washing). Second, social distancing, which is defined as avoiding public places, close contact with others, or contact with people perceived as having a high risk of infection. In the

prevention and control of COVID-19, social distancing is considered an important strategy to reduce the transmission of the virus, thereby minimizing the spread of the disease (Preiser et al., 2020). Third, support seeking is also a frequently used coping strategy during pandemics (C. Cheng & Cheung, 2005; Main et al., 2011). It involves seeking emotional, informational, or tangible support from others to cope with stressors; for example, seeking the latest information and news about the outbreak (C. Cheng & Cheung, 2005). Furthermore, individuals may seek emotional support through face-to-face or virtual mediums to deal with the fear of infection (Lee-Baggley et al., 2004).

However, previous studies revealed inconsistent conclusions regarding the association between these coping strategies with mental health. For example, a multiple time-point study found that during the SARS outbreak, individuals who practiced personal hygiene less frequently and social distancing more frequently tended to report lower state anxiety over a four-week period. Moreover, the predictive effect of seeking informational support on state anxiety was statistically nonsignificant (C. Cheng & Cheung, 2005). However, in another study conducted at the endpoint of the SARS epidemic (Main et al., 2011), mixed findings were reported regarding support seeking, which was not only positively correlated with life satisfaction, but also positively predicted psychological symptoms of depression, anxiety, somatization and obsessive–compulsive disorders (Main et al., 2011).

Hence, for COVID-19, the impact of these situation-specific coping strategies on mental health remains unclear. Since most people remained at home under the strict nationwide lockdown in China, a detailed examination of the relationship between these coping strategies and individual well-being, and the potential mechanism of this relationship, is warranted.

1.3 | Relationships of benefit finding with well-being and coping

Despite the negative consequences and losses usually prompted by traumatic events or stressful experiences, growing evidence indicates that individuals may perceive some positive changes in themselves and their lives as a result of these experiences. Studies have referred to these positive changes by various names, such as 'benefit finding', 'posttraumatic growth', 'perceived growth' and 'stress-related growth' (Helgeson et al., 2006; Pakenham & Cox, 2018). Benefit finding refers to the positive changes resulting from adversities or traumatic events (Helgeson et al., 2006) and is related to higher levels of well-being (Jones et al., 2018; Langston et al., 2018; Sanjuán et al., 2016).

However, for large-scale infectious outbreaks, such as SARS and COVID-19, a majority of prior studies have solely focused on the negative consequences (e.g., symptoms of mental disorders). To the best of our knowledge, there has been only one published study that has examined both the costs and the benefits of the SARS epidemic (C. Cheng et al., 2006). This study found that the identification of

benefits was positively related to psychological well-being indicators over an 18-month period. Similarly, a recent study in China found that the perceived benefits of COVID-19 were negatively associated with distress, including depression, anxiety and stress (Yang et al., 2021). In the future, more studies are needed to investigate the effect of benefit finding on well-being during coping with COVID-19.

Coping and benefit finding are related but distinct processes that may have an effect on well-being. Benefit finding involves perceived benefits or growth from adversities, which are outcomes of adaptive coping rather than standalone coping mechanisms (Tedeschi & Calhoun, 2012). The meaning making model (George & Park, 2016) also consider identification of positive aspects (e.g., finding benefits from stressful events) as an outcome of the meaning making or coping process. According to Tedeschi and Calhoun's (2004, 2012) model of posttraumatic growth, successful coping with a stressor is a precursor to posttraumatic growth or benefit finding. Adversities or traumatic events may affect individuals' basic assumptions about themselves and/or the world. Nevertheless, adaptive coping efforts (e.g., support seeking and active coping) can promote constructive cognitive processing of stressful situations, thus leading to posttraumatic growth or benefit finding (Tedeschi & Calhoun, 2004, 2012; Wolchik et al., 2009). For instance, empirical studies have found that adaptive coping (Rogan et al., 2013) and support seeking (Pakenham & Cox, 2018) were positive predictors of benefit finding. A longitudinal study among cancer patients also demonstrated that individuals with more approach-oriented coping (including problem-focused coping, seeking social support, emotional approach coping and positive reframing coping) scored higher on benefit finding (Thornton et al., 2012).

According to Park et al. (2008), in coping with adversities, positive well-being (e.g., perceived growth) and mental distress (e.g., anxiety or depression) are two distinct outcomes. More importantly, the pathways from coping to posttraumatic growth are distinct from the pathways from coping to mental distress. For example, positive coping behaviours were more strongly associated with perceived growth than with posttraumatic stress (Park et al., 2008). Moreover, according to the self-regulation model (SRM), stimuli, emotional reactions or psychological adjustment, coping procedures and appraisal are linked in a feedback loop (Langston et al., 2018; Leventhal et al., 1992). SRM suggests that coping behaviours impact appraisals, which affect emotional reactions. As benefit finding could be regarded as a form of positive reappraisal of adverse situations (C. Cheng et al., 2006; Taylor, 1983), it can be inferred that benefit finding might mediate the relationship between coping strategies and psychological well-being. In a longitudinal study, Sanjuán et al. (2016) found that while effective coping only contributed to positive affect at Time 1, benefit finding only contributed to positive affect at Time 2, suggesting that with the passage of time, benefit finding is more closely related to well-being than effective coping strategies. Furthermore, a study among youth caregivers in a parental illness context reported that benefit finding mediated the relationship between social support and life satisfaction as well that between social support and positive affect (Pakenham & Cox, 2018). However, owing

to the cross-sectional design of this study, longitudinal evidence is needed to examine the mediating role of benefit finding. In addition, in the aforementioned studies, social support refers to the actual support that individuals receive; thus, we need to investigate whether support seeking, and the other two situation-specific coping strategies facilitated benefit finding during the COVID-19 outbreak.

1.4 | The present study

Although WHO-recommended personal hygiene practice and social distancing are followed to prevent the risk of infections, their psychological effects remain unclear. Therefore, the first aim of this study was to explore the association between situation-specific coping strategies (including personal hygiene practice, social distancing and support seeking) and well-being. In addition, this study also examined changes in the level of well-being during the COVID-19 outbreak.

In addition, since most prior psychological studies on COVID-19 have focused solely on the negative consequences caused by the outbreak (Qiu et al., 2020; Rubin & Wessely, 2020), little is known about the positive outcomes that may occur. This study explored the perceived growth or positive changes from the pandemic, namely benefit finding. As studies have reported that benefit finding in stressful experiences is associated with coping (Jones et al., 2018; Pakenham & Cox, 2018), the second aim of this study was to investigate the relationship between coping strategies and benefit finding during the COVID-19 outbreak. Moreover, based on SRM (Langston et al., 2018; Leventhal et al., 1992), the third aim was to examine whether benefit finding mediated the relationship between coping strategies and well-being.

A two-wave longitudinal design was employed. The first assessment was conducted on 7 February 2020, at the height of the pandemic in China, when lockdown measures (including traffic control and household quarantine advice) were enforced throughout the country. Individuals were advised to stay at home and avoid travelling or attending social gatherings. Given that C. Cheng et al. (2006) assessed the perceived benefits of SARS around mid-May 2003, when the outbreak had been brought under control in Hong Kong, we conducted the second survey to measure benefit finding and well-being in early March 2020, when the outbreak had been efficiently controlled in China. This study explored whether the situation-specific coping strategies adopted at the height of the COVID-19 pandemic in China predicted mental health outcomes 1 month later.

2 | METHODS

2.1 | Participants and procedure

Participants were recruited through convenience sampling, using the widely used online survey platform WenJuanXing, owned by Changsha Ranxing Information Technology Co., Ltd., China. The

researchers uploaded the questionnaires onto the platform and sent the link to the participants. Adults aged 18 years or older were allowed to participate in this study. A total of 1075 adults from 29 regions of mainland China participated in the study and completed the online Time 1 questionnaire on 7 February 2020. Furthermore, participants were required to provide their mobile phone numbers if they chose to participate in the follow-up survey. One month later, between 8 and 12 March 2020, an invitation including a link to the Time 2 survey was sent to participants via mobile phone text messages. Of the Time 1 sample, only 574 participants replied and agreed to complete the questionnaire. Some of the participants provided invalid phone numbers while others did not answer the survey even after a second invitation was sent to them. In total, 521 participants completed both Time 1 and Time 2 surveys. Their ages ranged from 18–65 years ($M = 29.37 \pm 8.83$), with women comprising more than half of the sample ($n = 303$, 58.2%). In terms of educational levels, 54 (10.4%) participants were at the high school level, 107 (20.5%) were at the junior college level, 258 (49.5%) had a bachelor's degree and 102 (19.6%) had a master's or doctoral degree. This study was approved by the ethics committee of the corresponding author's university. Participants provided online informed consent before their enrolment in the study. Of the completed questionnaires, only those in which respondents had provided identical answers to the two questions on education levels were considered as valid data. Upon completion, participants were awarded 6 yuan ($0.85) and 5 yuan ($0.70), for the Time 1 and Time 2 questionnaires, respectively.

2.2 | Measures

2.2.1 | Situation-specific coping strategies

For the present study, measures were created to assess situation-specific strategies for coping with the threat of COVID-19, based on previous studies on coping with SARS (C. Cheng & Cheung, 2005; Lee-Baggley et al., 2004). At Time 1, participants rated the frequency of adopting each coping strategy in response to COVID-19 for items with the following prompt: 'Please rate the extent to which you have taken the following measures to cope with COVID-19 since its outbreak'. Responses to all the coping items (including support seeking, personal hygiene practice and social distancing) were rated on a 5-point Likert scale, with scores ranging from 1 (*never*) to 5 (*always*).

Support seeking was measured with six items, assessing both informational and emotional support. Four items were taken from Lee-Baggley et al. (2004) and C. Cheng and Cheung (2005), and another two were adapted from the Using Emotional Support subscale of the Brief COPE (Carver, 1997). The six items included: 'seek information/advice from healthcare professionals', 'search for information about COVID-19 over the Internet', 'talk to someone for more information about COVID-19', 'talk to my family or friends about how I was feeling about COVID-19', 'seek emotional support from others' and 'seek confidence to fight against COVID-19 from related news or reports'. In this study, Cronbach's α was 0.82.

Personal hygiene practice was assessed with five items, taken from C. Cheng and Cheung (2005), and further adapted according to WHO's COVID-19 advice for the public. The five items included: 'wear a face mask', 'wash hands after sneezing, coughing or cleaning the nose', 'clean the house with disinfectant or a diluted bleach', 'wash hands with soap and water or alcohol-based hand rub' and 'cover nose and mouth when coughing and sneezing with tissue or flexed elbow' (C. Cheng & Cheung, 2005). Consistent with C. Cheng and Cheung (2005), the scale had moderately high reliability (Cronbach's $\alpha = 0.75$).

Social distancing was also assessed with items taken from C. Cheng and Cheung (2005) and further adapted according to WHO's COVID-19 public guidelines. The five items were: 'avoid going out to eat', 'avoid close contact with anyone with cold or flu-like symptoms', 'avoid unprotected contact with live wild or farm animals', 'avoid close contact with strangers' and 'avoid meeting people who have just come back from an area infected with COVID-19' (C. Cheng & Cheung, 2005). In this study, Cronbach's α was 0.86.

2.3 | Benefit finding

Benefit finding from the COVID-19 outbreak was assessed at Time 2, with items adapted from C. Cheng et al.'s (2006) measures of the perceived benefits of the SARS outbreak, which were constructed based on responses from individuals who had recovered from SARS and their family members, as well as healthy adults in Hong Kong. To ensure that the measures were applicable to the general public in mainland China during the COVID-19 outbreak, items were selected from the scale and adapted according to a report that collated positive changes perceived by 1132 healthy Chinese participants since the beginning of the COVID-19 pandemic. Ten items were generated, including five benefit finding domains frequently mentioned in previous studies (C. Cheng et al., 2006; McMillen & Fisher, 1998; Tomich & Helgeson, 2004), with two items each for health gains (e.g., pay increased attention to personal hygiene), enhanced family closeness (e.g., feel closer to my family members), increased meaning in life (e.g., be more aware of the significance of my work/study toward society), personal growth (e.g., form a clearer plan for my future career and life) and increased societal solidarity (e.g., discover that there is true love in society through the selfless dedication of medical staff and volunteers). Participants recorded their responses on a 7-point Likert scale, with scores ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Cronbach's α ranged from 0.65 to 0.86 for the five subscales; for the total scale, it was 0.92.

2.4 | Subjective well-being

Subjective well-being was measured at Time 2, using the 5-item Satisfaction with Life Scale (Diener et al., 1985). The Chinese version was found to be psychometrically sound when tested on Chinese samples (Kong et al., 2012). Participants rated each item on a

7-point Likert scale, with scores ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). In the present study, Cronbach's α was 0.88. In addition, to examine changes in overall well-being from Time 1 to Time 2, a single item ('Overall, how satisfied do you feel with your recent life?') was used at both time points to assess the global evaluation of well-being (Kobau et al., 2010). Participants indicated their overall life satisfaction on a 9-point Likert scale, with scores ranging from 1 (*extremely dissatisfied*) to 9 (*extremely satisfied*).

2.5 | Data analysis

Similar to Zheng et al. (2020), this study conducted a multilevel latent mediation model to control for the between-region effect, due to regional differences in the psychological effects of the COVID-19 pandemic in China. Therefore, we fit the model using Mplus 7.0 with regions as cluster ID, situation-specific coping strategies (i.e., social distancing, support seeking and personal hygiene practice) as predictors, benefit finding as the mediator and well-being as the dependent variable. The model fit was evaluated based on conventional cutoff values with $\chi^2(df)$ and its p value, root mean square error of approximation (RMSEA) < 0.08, comparative fit index (CFI) > 0.90 and Tucker–Lewis index (TLI) > 0.90 (Kline, 2015).

We centred psychological variables using the grand mean approach and the demographic variables (age, education and gender) using the group mean approach (Algina & Swaminathan, 2011). As the participants were nested in regions with different regional characters (e.g., different education levels), with group mean centring, the interpretation of the intercepts represents the expected value of dependent variables when education is at the regional average levels. First, we conducted a multilevel confirmative factor model to verify the measurement structure of the factors in this study. Second, Model 1 included control variables associated with subjective well-being, that is, age, gender (1 = *male*, 2 = *female*) and education (1 = *high school*, 2 = *college*, 3 = *bachelor's*, 4 = *master's or doctorate*) (Desjardins, 2008; Stone et al., 2010). Third, we added coping strategies to Model 2 to test their direct associations with well-being after controlling for demographic variables (i.e., age, gender and education).

Fourth, as Zheng et al. (2020) found that the pandemic severity was negatively related to life satisfaction, we hypothesized that the intercepts of the mediation paths across regions were not identical owing to the severity of regional differences. Therefore, we conducted a multilevel mediation model with fixed slopes (Model 3) to examine the mediating effects of benefit finding on the relationship between coping strategies and well-being. The indirect effects were tested using the Monte Carlo approach in R 4.0.2 as the bootstrapping approach was not feasible for multilevel model analyses (Preacher & Selig, 2012). This approach directly generates sampling statistics from the joint asymptotic distribution of the mediation effect by using the point estimates of two paths (a and b) and their asymptotic covariances for these estimates. We obtained the confidence intervals for sample a × b via the percentiles of this sampling distribution.

3 | RESULTS

3.1 | Attrition analysis

Attrition analyses on baseline levels of coping strategies showed no differences between the participants in the Time 2 sample ($n = 521$) and those who had dropped out ($n = 554$), except that the Time 2 sample reported lower levels of support seeking ($t = -2.28$, $p = 0.023$, Cohen's $d = 0.14$). Regarding demographic variables, no significant difference was found by gender, $\chi^2(df = 1) = 0.72$, $p = 0.397$. However, the Time 2 sample ($M_{age} = 29.37 \pm 8.83$, $M_{edu} = 2.78 \pm 0.88$) included younger and more educated participants than those who had dropped out ($M_{age} = 32.28 \pm 9.47$, $M_{edu} = 2.39 \pm 0.92$; $t_{age} = -5.21$, $p < 0.001$, Cohen's $d = 0.32$; $t_{edu} = 7.12$, $p < 0.001$, Cohen's $d = 0.43$).

3.2 | Descriptive analysis

Paired-sample t-tests showed statistically nonsignificant changes in the overall well-being from Time 1 ($M = 6.26 \pm 1.79$) to Time 2 ($M = 6.37 \pm 1.75$), $t(520) = -1.45$, $p = 0.148$, Cohen's $d = 0.06$, indicating that the global evaluation of well-being remained stable during the outbreak. Means, standard deviations and correlations of all the study variables are displayed in Table 1.

3.3 | Mediation model

First, we performed a confirmatory factor analysis for benefit finding. The results showed that the five-dimension measurement model fit the data well ($\chi^2 = 125.53$, $df = 25$, $p < 0.001$, RMSEA = 0.088, CFI = 0.97, TLI = 0.94). Next, we developed a multilevel confirmative factor model to construct a measurement model. The results indicated that the measurement model fit the data well ($\chi^2 = 893.83$, $df = 242$, $p < 0.001$, RMSEA = 0.072, CFI = 0.90, TLI = 0.89), and the factor loadings ranged from 0.54 to 0.92 (see Table 2). Although the intraclass correlations for subjective well-being were low (<0.01), we constructed a multilevel model owing to the nested data structure and differences in regional severity (Nezlek, 2008). Therefore, three multilevel models were conducted and the results of these models are displayed in Table 3.

Model 1 was developed with well-being as the dependent variable, and the demographic variables as predictors. The results indicated that age positively predicted well-being ($\beta = 0.21$, *s.e.* = 0.05, $p < 0.001$), whereas gender negatively predicted well-being ($\beta = -0.13$, *s.e.* = 0.04, $p = 0.004$). In other words, compared to male participants, females had lower levels of well-being. However, education did not significantly predict well-being ($\beta = 0.01$, *s.e.* = 0.05, $p = 0.975$).

We added coping strategies to Model 2 to examine their predictive roles on well-being. The results showed that both personal hygiene practice ($\beta = 0.16$, *s.e.* = 0.06, $p = 0.009$) and social distancing

	M ± SD	1	2	3	4	5	6	7
1. Age	29.37 ± 8.83							
2. Gender	1.58 ± 0.49	−0.21**						
3. Education	2.78 ± 0.88	−0.27**	0.11*					
4. SS (T1)	4.04 ± 0.74	0.03	0.03	−0.13**				
5. PHP (T1)	4.06 ± 0.77	0.05	0.07	−0.07	0.43**			
6. SD (T1)	4.62 ± 0.67	0.02	0.26**	0.13**	0.28**	0.31**		
7. BF (T2)	5.78 ± 0.92	0.20**	−0.04	−0.15**	0.31**	0.29**	0.13**	
8. Well-being (T2)	4.46 ± 1.23	0.22**	−0.18**	−0.08	0.12**	0.11**	−0.09*	0.36**

TABLE 1 Descriptive statistics (means and standard deviations) and correlations between study variables (n = 521) [Correction added on 19 October 2021, after first online publication: Table 1 has been updated]

Note: Gender: 1 = male, 2 = female. Education: 1 = high school, 2 = college, 3 = bachelor's degree; 4 = master's or doctorate degree.

Abbreviations: BF, benefit finding; PHP, personal hygiene practice; SD, social distancing; SS, support seeking; T1, time 1; T2, time 2.

*$p < 0.05$.

**$p < 0.01$.

TABLE 2 Factor loadings of the multilevel confirmative analysis for the measurement model

Support seeking		Personal hygiene practice		Social distancing		Benefit finding		Well-being	
	β (s.e.)		β (s.e.)		β (s.e.)		β (s.e.)		β (s.e.)
Item 1	0.59 (0.03)	Item 1	0.55 (0.04)	Item 1	0.57 (0.03)	Parcel 1	0.86 (0.01)	Item 1	0.83 (0.02)
Item 2	0.77 (0.03)	Item 2	0.71 (0.03)	Item 2	0.79 (0.02)	Parcel 2	0.92 (0.01)	Item 2	0.91 (0.01)
Item 3	0.74 (0.03)	Item 3	0.65 (0.03)	Item 3	0.75 (0.02)	Parcel 3	0.90 (0.01)	Item 3	0.92 (0.01)
Item 4	0.76 (0.03)	Item 4	0.68 (0.03)	Item 4	0.84 (0.02)			Item 4	0.69 (0.03)
Item 5	0.70 (0.03)	Item 5	0.56 (0.04)	Item 5	0.80 (0.02)			Item 5	0.58 (0.03)
Item 6	0.54 (0.04)								

Note: All of the factor loadings were significant with $p < 0.001$; β indicates standardized coefficients; benefit finding was assessed with 10 items and three parcels were created for them in the measurement model. Details of these items are listed in the Supporting Information Materials.

($β = −0.14$, s.e. = 0.05, $p = 0.010$) significantly predicted well-being. However, the association between support seeking and well-being was nonsignificant ($β = 0.09$, s.e. = 0.06, $p = 0.150$).

Subsequently, Model 3 was a multilevel mediation model used to test the mediation effect of benefit finding. The results showed that benefit finding positively predicted well-being ($β = 0.39$, s.e. = 0.05, $p < 0.001$). After controlling for benefit finding, the predictive relationships of social distancing on well-being remained significant ($β = −0.14$, s.e. = 0.05, $p = 0.005$), while the predictive relationships of support seeking ($β = 0.01$, s.e. = 0.06, $p = 0.997$) and personal hygiene practice ($β = 0.07$, s.e. = 0.06, $p = 0.215$) on well-being were statistically nonsignificant. Regarding the mediator, both support seeking ($β = 0.22$, s.e. = 0.06, $p < 0.001$) and personal hygiene practice ($β = 0.22$, s.e. = 0.06, $p < 0.001$) significantly predicted benefit finding. However, the prediction of social distancing on benefit finding was statistically nonsignificant ($β = 0.01$, s.e. = 0.05, $p = 0.943$). We conducted a multilevel mediation test using the Monte Carlo approach with 20,000 simulations. Results showed that benefit finding served as a mediator in the relationships between support seeking and well-being (effect size = 0.09, s.e. = 0.03, $p < 0.001$, 95% confidence interval [CI] = [0.04, 0.13]), and between personal hygiene practice and well-being (effect size = 0.09, s.e. = 0.03, $p < 0.001$, 95% CI = [0.04, 0.14]). However, this study did not detect a significant mediation effect of benefit finding between social distancing and well-being (effect size = 0.001, s.e. = 0.02, $p = 0.473$, 95% CI = [−0.04, 0.04]).

4 | DISCUSSION

This study examined the relationships between coping strategies, benefit finding and well-being in the general Chinese population during the COVID-19 outbreak. The results suggested that the coping strategies differed in their relationships with well-being. Social distancing at Time 1 had a direct, negative relationship with Time 2 well-being. With benefit finding as the mediator, both support seeking and personal hygiene practice indirectly predicted well-being Figure 1.

TABLE 3 Results of multilevel model analyses

	Model 1 Well-being β (s.e.)	Model 2 Well-being β (s.e.)	Model 3 Well-being β (s.e.)	Model 3 Benefit finding β (s.e.)
Age	0.21 (0.05)**	0.23 (0.05)**	0.16 (0.04)**	0.18 (0.04)**
Gender	−0.13 (0.04)**	−0.10 (0.05)*	−0.09 (0.04)*	−0.01 (0.04)
Education	0.01 (0.05)	0.09 (0.05)	0.11 (0.04)*	−0.05 (0.05)
Support seeking		0.09 (0.06)	0.01 (0.06)	0.22 (0.06)**
Personal hygiene practice		0.16 (0.06)**	0.07 (0.06)	0.22 (0.06)**
Social distancing		−0.14 (0.05)*	−0.14 (0.05)**	0.01 (0.05)
Benefit finding			0.39 (0.05)**	
−2LL	3949	13,583	16,605	
df	12	45	61	
R²	0.07	0.11	0.23	0.19

Note: β indicates standardized coefficients; *s.e.* are standard errors presented in the parentheses. −2LL is log likelihood times −2; R^2 is the explained variance of the dependent variable by independent variables.
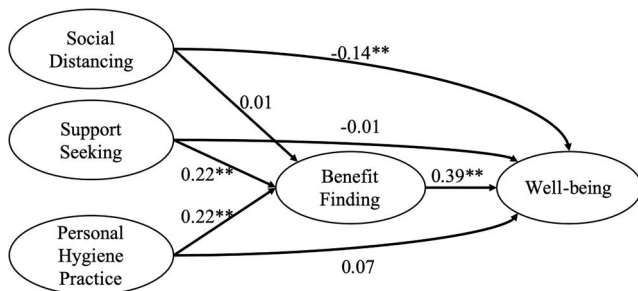
*$p < 0.05$.

**$p < 0.01$.

FIGURE 1 Latent mediational pathways of coping strategies on well-being via benefit finding (after controlling for age, gender and education level). *$p < 0.05$; **$p < 0.01$; The constructs are latent variables and the model presents standardised coefficients in Model 3

4.1 | Relationship between social distancing and well-being during a pandemic

During the SARS outbreak, C. Cheng and Cheung (2005) found that individuals who practiced social distancing more frequently experienced less anxiety; however, in this study, social distancing negatively predicted well-being. One explanation for this is that the peak of the COVID-19 outbreak in China occurred around the Chinese New Year. As maintaining social distance made it impossible for individuals to visit relatives or friends during this period, the limited face-to-face social activities and the unmet need for intimacy might have resulted in lowered well-being.

Furthermore, individuals in areas severely affected by the pandemic were forbidden from traveling owing to the compulsory lockdown measures, thus making social distancing a passive coping strategy. Rubin and Wessely (2020) highlighted that although a widespread lockdown affects mental health, voluntary quarantine is associated with good compliance and has a lesser psychological impact on individuals. Further research should clarify the differences in the psychological effects of voluntary versus forced social distancing.

4.2 | Support seeking and personal hygiene practice maintain well-being via benefit finding

Similar to previous findings that found that adaptive coping strategies contribute to benefit finding (Rogan et al., 2013), both support seeking and personal hygiene practice were positive predictors of benefit finding over a one-month period in the present study. According to Wolchik et al. (2009), active coping may facilitate constructive information processing of stressors, thus promoting posttraumatic growth. For coping with COVID-19, seeking support helps individuals disclose their anxiety or panic and receive aid for coping strategies. Such support might promote positive reappraisal of the pandemic and lead to benefit finding.

Personal hygiene practice, mainly endorsed as a protective measure against infection, was positively associated with anxiety during the SARS outbreak (C. Cheng & Cheung, 2005). However, the present study revealed its positive relationship with benefit finding. According to Tedeschi and Calhoun (2012), in coping with adversities, automatic cognitive engagement is generally accompanied by emotional distress. When adaptive coping behaviours (e.g., wearing a mask) effectively relieve emotional distress (e.g., the fear of being infected), ongoing cognitive engagement becomes adaptive, thus

reducing untenable beliefs and leading to adaptive cognition (Tedeschi & Calhoun, 2004, 2012). Therefore, in coping with COVID-19, personal hygiene practice, as an adaptive coping strategy, might promote benefit finding by inspiring adaptive cognitive engagement.

Furthermore, although both support seeking and personal hygiene practice were positively associated with well-being, when benefit finding was included, the direct effects became statistically nonsignificant, indicating that during the COVID-19 outbreak, seeking support or paying attention to personal hygiene practice may not lead to direct improvements in well-being. Instead, their associations with well-being are accounted for by the mediational role of benefit finding. In coping with COVID-19, benefits include health gains as well as increases in meaning in life, personal growth and appreciation for family closeness and societal solidarity, which are closely associated with well-being (George & Park, 2016; King et al., 2018).

4.3 | Implications

Contrary to social distancing, support seeking and personal hygiene practice were positively associated with well-being. Thus, education for pandemic prevention and control should emphasize their positive psychological effects. Although lockdown measures limited face-to-face social activities and affected people's social networks and perceptions of social support, support seeking was positively associated with benefit finding and well-being. In coping with COVID-19, despite the lockdown measures, individuals should seek either informational or emotional support from families, friends and healthcare professionals, especially through social media and other online resources. Furthermore, individuals must reappraise the outbreak from a positive perspective and extract its benefits. A benefit finding intervention could guide individuals to focus on positive aspects and empower them to maintain psychological health in the long-term (S. T. Cheng et al., 2014, 2017).

4.4 | Limitations and suggestions for future studies

The current study has some limitations. First, despite the two-wave longitudinal design, benefit finding and well-being were assessed simultaneously at Time 2 without controlling for the baseline, thus making it unfeasible to infer casual relationships. A three-wave design with repeated measures for all study variables would better support the mediation hypothesis. Second, most participants were young or mid-aged and lived in eastern and central regions of mainland China. Although our data was collected in China's most affected regions (i.e., eastern and central China), many ethnic minorities residing in western China were not included in this study. These groups might use other coping strategies, such as religious coping, to cultivate benefit findings from the pandemic. Moreover, this study had a high attrition rate, in which older adults, people with low levels of education and those with high levels of support seeking were more likely to drop out. Therefore, caution must be exercised

when generalizing the applicability of the present findings to other groups. Third, this study recruited participants through an online sampling platform. Although this study aimed to investigate the pathway from coping to subjective well-being, previous studies suggest a moderately positive relationship between posttraumatic growth and posttraumatic stress symptoms (Park et al., 2008). A clinical method such as a screening procedure should be conducted in future studies to exclude participants who are clinically depressed. Fourth, considering that COVID-19 is a pandemic, country-wise differences might exist in the adoption of coping strategies and perceived benefits from the pandemic. Therefore, we must exercise caution while making cross-cultural generalizations.

5 | CONCLUSION

This two-wave longitudinal study revealed the positive predictive roles of personal hygiene practice and support seeking on benefit finding. It also supported their positive associations with well-being via benefit finding. Contrary results were found for social distancing, which negatively predicted well-being. Future studies should further compare the psychological impact of social distancing to that of personal hygiene practice.

CONFLICT OF INTERESTS
The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

AUTHOR CONTRIBUTIONS
Miao Miao and Lei Zheng designed research. Jie Wen and Shuai Jin performed research. Miao Miao and Lei Zheng analysed data. Miao Miao took the lead in writing the manuscript. Yiqun Gan and Lei Zheng provided critical review and helped shape the manuscript.

DATA AVAILABILITY STATEMENT
The datasets and materials used during the current study are available from the corresponding author on reasonable request.

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