Research paper

Coping strategies, cyberbullying behaviors, and depression among Chinese netizens during the COVID-19 pandemic: a web-based nationwide survey

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ABSTRACT

Background: As a major life stressor now, the COVID-19 pandemic could substantially increase risks of cyberbullying and depression for global people, especially in the context of increased digital interconnectedness and strict social distancing. Though people are adopting different coping strategies, still little is known about their cyberbullying and depression and how the two associated with coping strategies.

Methods: A web-based nationwide questionnaire survey was conducted among 5,608 netizens during the peak time of COVID-19 in China. The study collected cross-sectional data on participants' coping strategies, general cyberbullying behaviors, cyberbullying behaviors specifically to residents of Hubei Province where first COVID-19 case was reported, and depression.

Results: A two-factor structure applied to participants' coping strategies, namely problem-focused coping and emotion-focused coping, and the former was more adopted. There existed gender, age, education, and income differences in the coping strategies. Problem-focused coping was associated with less cyberbullying behaviors while had no correlation with depression; emotion-focused coping was found positively correlated with cyberbullying and depression. The association between emotion-focused coping and depression was mediated by cyberbullying.

Limitations: The study used cross-sectional design, and its findings should be cautioned to be generalized to other countries, due to the differences in culture, stage of crisis, and government policies on COVID-19.

Conclusions: Problem-focused coping was associated with less cyberbullying, and emotion-focused coping predicted cyberbullying and depression. Cyberbullying mediated the correlation between emotion-focused coping and depression. These findings provide new perspectives for interventions on people's coping strategies towards COVID-19 pandemic.

1. Introduction

The Coronavirus Disease 2019 (COVID-19) was first reported in Wuhan, Hubei Province of China in December 2019. By June 4th, 2020, this pandemic has caused 386,091 deaths worldwide, and the number is still rapidly increasing (World Health Organization, 2020b). Along with the COVID-19's salient threats on physical health are subtle while more long-lasting consequences on people's mental health. Like other major public health crises, the COVID-19 pandemic is accompanied by significant life stressors that people have to cope with, including fear of exposure, widespread rumors, reduced income, and stigmatization (Altena et al., 2020; Huang & Zhao, 2020; Qiu et al., 2020). These stressors are correlated with behavioral and emotional problems, such as agitation and depression (Engel-Yeger et al., 2016; Holmes et al., 2020;

Wong et al., 2020). Especially, people are relying more on electronic devices and social media due to the implementation of social distancing rules, which implies higher risk of cyberbullying. However, still little is known about people's cyberbullying behaviors during the pandemic and how they are associated with people's coping strategies and mental health. The longest exposure to the disease and strict quarantine measures nationwide make China an appropriate social laboratory for examining the correlations between coping strategies and behavioral and mental problems in the context of pandemic.

According to Taylor and Stanton (2007), coping denotes "conscious volitional efforts to regulate emotion, thought, behavior, physiology and the environment in response to stressful events or circumstances". McCauley, Minsky, and Viswanath (2013) reported that people adopted different coping strategies during the H1N1 pandemic, according to the

availability of resources used to deal with a stressor. That is, persons with sufficient resources may select a positive-engaged coping strategy, such as finding a good balance between emotional expression and emotional regulation, or cognitive restructuring; while those with insufficient resources may adopt a negative-engaged coping strategy, such as avoidance or antagonizing people who seem threatening. Other researchers revealed different factor structures of coping strategy. For instance, Endler, Parker, and Summerfeldt (1998) found that people may choose from three types of coping strategies, including problem-focused coping, emotion-focused coping, and avoidant coping, when faced with health problems. Moreover, based on a French sample, Doron et al. (2014) put forward a five-factor coping strategy model, namely problem-solving, support-seeking, avoidance, cognitive restructuring, and distraction. It is worth noting that no evidence yet has been reported as with people's coping strategies during the COVID-19 pandemic. Therefore, the following research hypothesis is proposed:

Hypothesis. One: Chinese people's COVID-19 coping strategies showed a multi-factor structure.

An increasing body of literature has documented the associations between life stressors and emotional and behavioral problems. First, exposure to life stressors may cause changes in physiology, including endocrine reactivity and immune and cardiovascular system, which in turn harms one's mental wellbeing (Bøe, Serlachius, Sivertsen, Petrie, & Hysing, 2018; Dao-Tran, Anderson, & Seib, 2017). Moreover, people who experience life stressors are more likely to adopt an unhealthy lifestyle, such as substance abuse, smoking, and sleep disturbance, which also associates with self-injury, withdrawal from daily life, agitation, and other behavioral problem (Kovacs & George, 2020; Yang and Zhang, 2018). It is also noted that environment-related stressors, namely stressors not depending on an individual's behavior and/or outside the control of an individual, are correlated with bullying and depression (Park & Dotterer, 2018; Yang & Lou, 2017). This could be especially true during the COVID-19 pandemic, when unprecedented digital interconnectedness and intense media coverage have amplified the pandemic-associated psychological fear (Chiolero, 2020). Moreover, the large-scale public lockdown efforts to implement social distancing has secondarily forced many individuals to stay indoors for prolonged periods of time, during which they could use electronic devices excessively and vent their negative emotions online (Wong et al., 2020). Though it is obvious that the COVID-19 provides hotbed for cyberbullying, still little is known about its prevalence in populations. Especially, the world is witnessing fueling disease-related stigmatization, taking the form of anti-Asian/Chinese racism (World Health Organization, 2020a); and China itself has no exception, where stigmatizing residents in Hubei Province, the region reported the first COVID-19 case, is not uncommon. Therefore, special attention should be paid to the cyberbullying imposed on Hubei residents. Following hypotheses are proposed:

Hypothesis. Two: COVID-19 coping strategies were significantly associated with general cyberbullying behaviors and specific cyberbullying behaviors to Hubei resident;

Hypothesis. Three: COVID-19 coping strategies were significantly associated with depression.

Past literature demonstrates the associations between coping strategies, cyberbullying behaviors, and depression. It is reported that positive coping strategies are associated with lower depression and behavioral problems for general population in stressful environment (Ehret, Joormann, & Berking, 2018; Yang, Ran, & Luo, 2019). Confronting cyberbullying, adopting positive coping skills, such as seeking instrumental support and using forgiveness, can buffer the negative influences on mental health (Heiman, Olenik-Shemesh, & Frank, 2019). On the other hand, negative coping strategies, such as avoidance and substance abuse, are associated with elevated risks of depression and behavioral problems (Cao & Yang, 2018; Ghafoor et al., 2019). It is also

worth noting the comorbidity of cyberbullying and depression. Existing literature reports that the experience of cyberbullying can have serious psychological effects for bullies, including sleeping difficulties, suicidal ideation, and depression (Donoghue & Meltzer, 2018; Rodelli, De Bourdeaudhuij, Dumon, Portzky, & DeSmet, 2018). The psychological stress for bullies is also greater than that for individuals who are not involved in any bullying (Campbell, Slee, Spears, Butler, & Kift, 2013). Though much has been done as with the associations between coping strategy, cyberbullying, and depression, still little is known on how the three would correlate with each other in the context of a pandemic. Therefore, the following research hypothesis is proposed:

Hypothesis. Four: Cyberbullying behaviors significantly mediated the association between COVID-19 coping strategies and depression.

Based on an online survey in China, the present study serves the following three aims: (1) to explore the structure of coping strategies adopted by Chinese netizens during the peak period of the COVID-19 pandemic and the prevalence of different coping strategies; (2) to examine how different coping strategies correlate with general cyberbullying behaviors, cyberbullying behaviors specifically to residents in Hubei, and depression; and (3) to test the mediating roles of cyberbullying on the association between coping strategies and depression.

2. Methods

2.1. Participants and procedures

Data collection occurred between February 22nd and February 29th, 2020, when was the peak period of COVID-19 pandemic in China. An online survey was conducted due to the research nature and strict social distancing rules. The eligibility criteria include: 1) aged 16 or above; 2) being able to provide an informed consent; and 3) being a Chinese and living in China during the pandemic. After applying the screening criteria, the present study included 5,608 netizens from all the 34 province-level administrative regions of China, and 988 of them were from Hubei Province, the epicenter of COVID-19 pandemic in China.

Among the total participants and non-Hubei participants: females accounted for about 60%; the average age was about 30 years; about half of the participants in both groups had a yearly income below 30,000 RMB; over 20% of the participants held a Bachelor's Degree; 9.4% of the total participants had general cyberbullying behaviors, while 6.4% of Non-Hubei participants had cyberbullying behaviors specifically towards Hubei residents (See Table 1).

A professional online survey platform was utilized to deliver the

Table 1
Descriptive statistics for the research variables.

	Total participants (N = 5,608) M (SD) / N (%)	Non-Hubei participants (N = 4,620) M (SD) / N (%)
Female	3,305 (58.9%)	2,815 (60.9%)
Age (16-85 years)	31.33 (11.71)	30.90 (11.40)
Yearly income (RMB)		
< 10 thousand	2,316 (41.3%)	1,896 (41.0%)
10 to 30 thousand	505 (9.0%)	377 (8.2%)
30 to 50 thousand	597 (10.6%)	441 (9.5%)
50 to 100 thousand	1,056 (18.8%)	872 (18.9%)
100 to 200 thousand	772 (13.8%)	699 (15.1%)
> 200 thousand	362 (6.5%)	335 (7.3)
Education		
University/college or above	1,220 (21.8%)	1,119 (24.2%)
High school or equivalent	2,847 (50.8%)	2,424 (52.5%)
Junior high school	896 (16.0%)	665 (14.4%)
Elementary school or lower	645 (11.5%)	412 (8.9%)
GCB[a]	529 (9.4%)	420 (9.1%)
CBH[a]	-	294 (6.4%)

Note: [a] GCB = general cyberbullying behaviors; CBH = cyberbullying behaviors specifically to Hubei residents.

electronic questionnaire. The platform generated the web link and QR code for the questionnaire, and research assistants pasted the link and code on the bulletin board system (BBS) of each Chinese province's gateway website. Using the link or code, participants can access to the questionnaire and answer the questions anonymously. Those submitted their responses successfully would receive a cash coupon. All finished questionnaires were automatically sent back to and stored by the platform, which were available to be transformed into downloadable formats. Ethical approval was obtained from the Ethics Committee for Scientific Research of the corresponding author's university.

2.2. Measures

2.2.1. Cyberbullying behaviors

The present study applied the cyberbullying scale devised and validated by Patchin and Hinduja (2015) to measure general cyberbullying behaviors. The scale's usefulness has been demonstrated in different populations across the globe (Kazerooni, Taylor, Bazarova, & Whitlock, 2018; Palladino et al., 2017), including in China (Chen et al., 2018). It consists of nine items, which covers eight distinct cyberbullying behaviors and one global question on whether cyberbully others in the previous 30 days. Each item was scored on a five-point scale: from 0 ("never") to 4 ("many times"). In the present study, Cronbach's α of the scale was 0.987.

Moreover, we measured Chinese netizens' cyberbullying behavior specifically towards residents in Huber Province, the epicenter of the COVID-19 pandemic in China. We asked "Have you cyberbullied people who hold Hubei *Hukou* (household registry) or live in Hubei", and the responses were scored on a five-point scale, namely from 0 ("never") to 4 ("many times").

2.2.2. Coping strategies

The Brief COPE Inventory by Charles S Carver (1997) was utilized to measure netizens' coping strategies during the COVID-19 pandemic. It includes 14 two-item scales that measure 14 conceptually differentiable coping reactions, namely acceptance, active coping, positive reframing, planning, using instrumental support, using emotional support, behavioral disengagement, self-distraction, self-blame, humor, denial, religion, venting, and substance use. Participants using the inventory, scored themselves from 1 to 4 with 1 being "*I haven't been doing this at all*" and 4 being "*I've been doing this a lot*".

2.2.3. Depression

Centre on Epidemiological Studies Depression Scale – 10 (CES-D 10) was utilized to examine participants' severity of depression. Ratings were made on the frequency within the last week on ten symptoms including depressed mood, feelings of helplessness and hopelessness, feelings of guilt and worthlessness, loss of energy, and sleep and appetite problems (Björgvinsson, Kertz, Bigda-Peyton, McCoy, & Aderka, 2013). Response items ranged from 0 to 3 ("rarely" to "all of the time"). Cronbach's α of the scale was 0.861 in the study.

2.4. Statistical analysis

The data collected in the present study was analyzed in three steps. First, following Doron et al. (2014)'s recommendation, a higher-order exploratory factor analysis was conducted to determine the underlying structure of the Brief COPE inventory, which was followed by a descriptive analysis of the prevalence of different coping strategies among Chinese netizens and their correlations with the demographic variables. Second, multivariate regression analyses were conducted to examine the associations between coping strategies and depression, general cyberbullying behaviors, and cyberbullying behaviors specifically to Hubei residents. Third, we tested the mediation effects of cyberbullying behaviors on the associations between coping strategies and depression. In the second and third step, gender (female = 0, male

=1), age (in years), yearly income, and educational level (coded 1 to 4, elementary school or lower = 1 and university/college or above = 4) were included as covariates. All data analyses were conducted using SPSS 22.0.

3. Results

3.1. Hierarchical structure of the Brief COPE and prevalence of different coping strategies

As used by Charles S. Carver and Scheier (1989) in the development of the COPE questionnaire, the present study conducted a factor analysis at sub-scale level. For the most part, the results supported a two-factor solution that was consistent with the *a priori* conceptualization of problem-focused and emotion-focused coping (Lazarus & Folkman, 1984). The resulting six subscales that conceptually tapped problem-focused coping strategies for Chinese netizens were: distraction, active coping, using instrumental support, positive reframing, planning, acceptance. The eight subscales that tapped emotion-focused coping strategies were: denial, substance use, using emotional support, disengagement, venting, humor, religion, and self-blame.

In the present study, Cronbach alpha coefficients for the overall scales were 0.829 (problem-focused) and 0.853 (emotion-focused). Alpha reliability coefficients for the subscales ranged from 0.424 (self-distraction) to 0.842 (substance use). Reliabilities for the coping scales are listed in Table 2. It is shown that Chinese netizens were more likely to adopt problem-focused coping strategies. Specifically, active coping, acceptance, and positive reframing were scored highest among problem-focused strategies; while using emotional support, humor, and venting were scored highest among emotion-focused strategies.

Males were found less likely to adopt problem-focused coping strategies ($p < .001$) while more likely to adopt emotion-focused coping strategies ($p < .001$). More specifically, males were more likely to adopt denial, substance use, disengagement, humor, and self-blame strategies among the emotion-focused coping strategies; and they were less likely to take all types of problem-focused coping strategies compared to females. With the increased age, participants were generally more likely to adopt problem-focused coping strategies ($p < .05$), except self-distraction and using instrumental support. Among emotion-focused coping strategies, using emotional support, venting, and self-blame strategies were negatively associated with age. It is reported that both education and income were positively correlated with the adoption of problem-focused coping strategies ($p < .001$) while negatively correlated with the emotion-focused coping strategies ($p < .001$).

3.2. Results of multivariate regression analyses

Table 3 presents the results of multivariate regression models. For the total participants: problem-focused coping had no association with depression ($p = .30$), while higher problem-focused coping was associated with lower adoption of general cyberbullying behaviors ($p < .001$); on the other hand, higher emotion-focused coping was associated with higher depression ($p < .001$) and more general cyberbullying behaviors ($p < .001$). The same pattern applied to non-Hubei participants. That is, problem-focused coping was negatively associated with cyberbullying behaviors specifically to Hubei residents ($p < .001$), though having no correlation with depression ($p = .35$); emotion-focused coping was associated with more cyberbullying behaviors specifically to Hubei residents ($p < .001$) and higher depression ($p < .001$).

It is also reported that older age and higher income were associated with lower depression, less general cyberbullying behaviors, and less cyberbullying behaviors specifically to Hubei residents in the two groups. Among the total participants, females had higher depression ($p < .05$) while males had more general cyberbullying behaviors ($p < .001$). For both the total participants and non-Hubei participants, higher education was correlated with higher depression ($p < .05$) while less

Table 2

Descriptives of coping strategies and their correlations with demographics ($N = 5,608$).

	M (SD)	Alpha	Gender	Age	Education	Income
PFC[a]						
Self-distraction	5.84 (1.47)	.424	-.13***	-.07***	.09***	-.02
Active coping	6.22 (1.45)	.580	-.12***	.07***	.03*	.08***
Instrumental support	4.67 (1.67)	.704	-.07***	-.07***	.04**	-.07***
Positive reframing	6.02 (1.57)	.714	-.08***	.06***	.08***	.08***
Planning	5.62 (1.52)	.601	-.03*	.10***	.05***	.08***
Acceptance	6.11 (1.42)	.500	-.12***	.05***	.15***	.09***
EFC[a]						
Denial	3.38 (1.60)	.702	.08***	.12***	-.21***	-.04**
Substance use	2.92 (1.56)	.842	.20***	.09***	-.12***	-.00
Emotional support	4.64 (1.69)	.687	-.09***	-.15***	.15***	-.07***
Disengagement	3.15 (1.53)	.733	.04**	.03*	-.10***	-.06***
Venting	4.19 (1.55)	.621	-.07***	-.10***	.06***	-.07***
Humor	4.28 (1.76)	.697	.12***	.06***	.08***	.11***
Religion	3.62 (1.65)	.681	.02	.06***	-.08***	-.04**
Self-blame	4.09 (1.66)	.699	.04**	-.05**	-.06***	-.08***
Overall						
PFC[a]	34.50 (6.69)	.829	-.12***	.03*	.10***	.05***
EFC[a]	30.26 (9.14)	.853	.06***	.01	-.04***	-.04**

Note: [a] PFC = problem-focused coping; EFC = emotion-focused coping.

Table 3

Results of multivariate regression models.

	Total participants $N = 5,608$, B (SE)		Non-Hubei participants $N = 4,620$, B (SE)	
	GCB[a]	Depression	CBH[a]	Depression
Intercept	1.68 (.48)***	5.18 (.50)***	.23 (.06)***	5.13 (.57)***
Gender	.99 (.13)***	-.28 (.14)*	.12 (.02)***	-.25 (.15)
Age	-.04 (.01)***	-.06 (.01)***	-.01 (.00)***	-.06 (.01)***
Income	-.02 (.04)	-.22 (.05)***	-.00 (.01)	-.22 (.05)***
Education	-.15 (.07)*	.20 (.08)*	-.02 (.01)*	.22 (.09)*
PFC[b]	-.13 (.01)***	.01 (.01)	-.01 (.00)***	.01 (.01)
EFC[b]	.18 (.01)***	.39 (.01)***	.02 (.00)***	.39 (.01)***

Note: [a] GCB = general cyberbullying behaviors; CBH = cyberbullying behaviors specifically to Hubei residents. [b] PFC = problem-focused coping; EFC = emotion-focused coping.

* $p < .05$. ** $p < .01$.
*** $p < .001$.

cyberbullying behaviors ($p < .05$).

3.3. Mediational analyses results

Since problem-focused coping had insignificant correlation with depression for both the total participants and non-Hubei participants,

we only examined the mediating role of cyberbullying behaviors on the association between emotion-focused coping and depression. As Table 4 shows, emotion-focused coping was positively associated with general cyberbullying ($\beta = 0.14$, t = 13.16, $p < 0.001$), which in turn was positively related to depression ($\beta = 0.12$, t = 11.05, $p < 0.001$). The positive direct association between emotion-focused coping and depression remained significant ($\beta = 0.32$, t = 40.85, $p < 0.001$). Therefore, general cyberbullying partially mediated the relationship between emotion-focused coping and depression of the total participants (indirect effect = 0.017, $SE = 0.002$, 95%CI = [0.014, 0.022]). Using the same method, cyberbullying behaviors specifically to Hubei residents was also found partially mediating the association between emotion-focused coping and depression of non-Hubei participants (indirect effect = 0.016, $SE = 0.002$, 95%CI = [0.012, 0.020]).

4. Discussion

The present study reveals that the COVID-19 coping strategies used by Chinese netizens could be categorized into problem-focused coping and emotion-focused coping, and the former was more favored. There existed gender, age, education, and income differences in the coping strategies: males were more likely to adopt emotion-focused coping and less likely to adopt problem-focused coping; age was positively associated with problem-focused coping; participants with higher education

Table 4

Testing the mediation effects of cyberbullying behaviors.

	Total participants[a] $N = 5,608$, β (t)			Non-Hubei participants[a] $N = 4,620$, β (t)		
	M1	M2	M3	M4	M5	M6
Gender	.09 (.66)	1.25 (9.16)***	.06 (.44)	.12 (.81)	.15 (8.43)***	-.02 (-.16)
Age	-.06 (-8.96)***	-.04 (-6.09)***	-.06 (-8.25)***	-.06 (-8.02)***	-.00 (-5.55)***	-.06 (-7.42)***
Income	-.35 (-6.29)***	-.04 (-.87)	-.24 (-5.20)***	-.25 (-4.97)***	-.00 (-.66)	-.25 (-4.93)***
Education	.06 (.72)	-.25 (-2.89)**	.09 (1.09)	.09 (.99)	-.03 (-2.89)**	.12 (1.36)
EFC[b]	.34 (45.69)***	.14 (13.16)***	.32 (40.85)***	.34 (41.57)***	.02 (10.97)***	.33 (37.70)***
GCB[c]			.12 (11.05)***			
CBH[c]						.99 (9.45)***
R^2	.30	.10	.31	.30	.10	.31
F	494.49***	46.11***	546.96***	417.77***	34.60***	448.17***

Note: [a] Dependent variables for M1-M3 were depression, general cyberbullying, and depression, respectively; dependent variables for M4-M6 were depression, specific cyberbullying, and specific cyberbullying, respectively.
[b] EFC = emotion-focused coping. [c] GCB = general cyberbullying behaviors.
[c] CBH = cyberbullying behaviors specifically to Hubei residents. * $p < .05$.
** $p < .01$.
*** $p < .001$.

and income were more likely to adopt problem-focused coping while less likely to adopt emotion-focused coping. Problem-focused coping was associated with less general cyberbullying and less cyberbullying behaviors specifically towards Hubei residents while had no correlation with depression; emotion-focused coping was found positively correlated with cyberbullying behaviors and with depression. It is also reported that the association between emotion-focused coping and depression was mediated by cyberbullying behaviors.

The statistical findings of this study echoed Lazarus and Folkman (1984)'s two-factor model of coping strategies. It is identified that problem-focused coping aims to modify the relationship between the environment and an individual through dealing directly with the source of the stress, while emotion-focused coping attempts to regulate emotional distress by altering one's own response to the stressor (Krägeloh, 2011). This clarification supports our categorization conceptually. Though the two-factor structure of coping strategies has been demonstrated by many other studies, its appropriateness and generalizability are still being debated (Skinner, Edge, Altman, & Sherwood, 2003; Skinner & Zimmer-Gembeck, 2007). Scholars have proposed many alternative categorizations such as through the addition of avoidant coping (Kichline, Kassam-Adams, Weiss, Herbers, & Marsac, 2017; Weiss, Risi, Sullivan, Armeli, & Tennen, 2019) or dysfunctional coping (Okech, Hansen, Howard, Anarfi, & Burns, 2018). It is argued that type of stressors, resource availability, and stage of recovery should be considered to determine which range of strategies and level of specificity allows for the most efficient assessment of people's use of coping strategies (Doron et al., 2014; Ibanez, Buck, Khatchikian, & Norris, 2004; Krägeloh, 2011).

The finding that problem-focused coping strategies were more adopted is shared by other studies on people's coping actions in the context of a crisis or a disaster (Rayamajhee & Bohara, 2019; Xu & He, 2012). Past literature mainly explains this from the perspective of resource. That is, the availability of resources, such as aid materials and services, information about stressor and coping knowledge, and supportive community network, could enhance one's mastery of environment and facilitate him/her to deal with the source of the stress in a direct way (Ben–Zur, Gil, & Shamshins, 2012; Okech et al., 2018). The present study's results that participants with higher income and education were more likely to adopt problem-focused coping strategies also echo this perspective. Moreover, some studies report that authoritative and institutionalized discourse in media coverage could also promote people's functionalism and emphasis on a return to normalcy through the compartmentalization of distress (Cox, Long, Jones, & Handler, 2008).

Major findings of this study are about the associations between coping strategies and cyberbullying behaviors and depression. Past literature supports that problem-focused coping is associated with less behavioral problems (Marty, Segal, & Coolidge, 2010; Riley & Park, 2014), though evidence on its specific association with cyberbullying is still rare. This association is explained by the evidence that problem-focused coping is correlated with social supports and positive personalities (e.g. optimistic and persistent) that buffer behavioral consequences of stressors (Chao, 2011). On the other hand, since using emotion-focused coping is associated with negative personality characteristics and does not deal with stressors directly, it could predict emotional and behavioral problems such as depression and agitation (Völlink, Bolman, Eppingbroek, & Dehue, 2013).

The present study demonstrates the mediating role of cyberbullying on the correlation between emotion-focused coping and depression, which echoes the past literature reporting that emotion-focused coping links with mental health problems through behavioral problems. On the one hand, some emotion-focused coping strategies, such as substance use, self-blame, and venting, are significant predictors of aggression-related behavioral problems (Sigurvinsdottir & Ullman, 2015); while on the other hand, cyberbullying perpetration can create challenges for bullies on multiple fronts, which increases the risk of depression (Selkie, Kota, Chan, & Moreno, 2015; Wang et al., 2019).

The findings as with cyberbullying specifically to people in Hubei province necessitates close attention being paid to the social stigmatization in the current pandemic. According to McCauley et al. (2013), people have soothed their fear of disease outbreaks by stigmatizing certain social groups throughout the history. The cases include the stigmatization experienced by Mexicans and other Latinos living in the US during the H1N1 pandemic and by gays during the early history of AIDS (originally termed "gay-related immune deficiency") (Hoppe, 2018). Moreover, seeing disease as a genetic or environmental disorder also influences the associated stigmatization (Serafini et al., 2011). Mainly because Hubei Province of China reported the first case and was most affected by the disease, residents there were quickly stigmatized as carriers of the virus and are living in great uncertainty and pessimism (Goh, 2020). Under the strict social distancing rules while increased digital interconnectedness, the stigma has transformed into cyberbullying behaviors that correlates with people's coping strategy on the one hand and harms their mental wellbeing on the other.

The findings from the present study should be interpreted with the following caveats. First, the cross-sectional design of this study precluded the establishment of causal links among coping strategies, cyberbullying behaviors, and depression. It is plausible, for example, that depression could influence netizens' coping strategies or that the two conditions could be mutually reinforcing. Future longitudinal research is required to assess change in coping strategy (e.g., from low problem-focused coping to high problem-focused coping) and its influence on depression. Second, the present study is based on an online survey, though it has a nationwide scale. Therefore, it should be cautioned to generalize the findings to the whole Chinese population. Third, the two-factor structure of Chinese netizens' coping strategies might not be applied to those of other peoples, due to the differences in culture, stage of crisis, and government policies on COVID-19.

Despite the above limitations, the present study enhances the understanding of people's coping strategies in a pandemic and how they are related to cyberbullying and depression. The findings regarding the prevalence of general cyberbullying behaviors and cyberbullying behaviors specifically towards residents of Hubei Province provide empirical support for combating the secondary disasters of the pandemic, namely agitation, stigma and racism, that not only harm our mental health but also tear our world apart. It is suggested that governments, mental health services, and mass media should work together to encourage people to adopt more positive coping strategies that deal directly with the source of the stress. For example, evidence-based guidance and advice should be provided for health workers, managers of health facilities, people who are looking after children, older adults, people in isolation and members of the public more generally, to help alleviate the behavioral and emotional consequences of the COVID-19 pandemic. These guidance and advice may cover topics such as how to deal with social media, how to be active in social distancing, and how to manage depression and anxiety in times of uncertainty.

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Ethical considerations

This research was conducted in accordance with the Declaration of Helsinki as revised in 2013.

CRediT authorship contribution statement

Fan Yang: Formal analysis, Writing - original draft, Data curation, Supervision.

Declaration of Conflicting Interests

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