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Full length article

Who endorses conspiracy theories? A moderated mediation model of Chinese and international social media use, media skepticism, need for cognition, and COVID-19 conspiracy theory endorsement in China

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ABSTRACT

During the COVID-19 pandemic, various conspiracy theories have been circulating through social media platforms. Scholars have raised concerns about the negative ramifications of conspiracy theories, such as the deterrence of preventive measures. Against this backdrop, the current study analyzed an online survey ($N = 731$) from China and examined the conditional indirect effects of Chinese and international social media use on conspiracy theory endorsement (CTE) regarding COVID-19. Findings showed that Chinese social media use was not associated with CTE, while international social media use was negatively associated with CTE. Moreover, the significant association was mediated by media skepticism. Further, individuals' level of need for cognition (NFC) was found to moderate the indirect effect. That is, among people with higher levels of NFC, the negative indirect effect of international social media use on CTE became stronger. Theoretical and practical implications were discussed.

1. Introduction

The COVID-19 pandemic constitutes the largest public health crisis in a century (Beaunoyer, Dupéré, & Guitton, 2020; Guitton, 2020). The COVID-19 was first observed in Wuhan, China, in December 2019, and started to appear in more than 200 countries. As of the date of the current study, the World Health Organization (WHO) has reported more than 106 million confirmed cases and 2.3 million fatalities worldwide (World Health Organization, 2021).

Scientists have been exploring evidence about the origin of the virus without making hasty assertions (e.g., Andersen, Rambaut, Lipkin, Holmes, & Garry, 2020). However, due to the turbulence of international politics, particularly the continuing tensions between China and the United States, conspiracy theories revolving around the origin of the virus have caused a great clamor. For instance, a theory linking the 5G telecommunication network to the COVID-19 pandemic has led to misinformation and the burning of 5G towers in the United Kingdom (Ahmed, Vidal-Alaball, Downing, & Seguí, 2020). In line with the U.S.

Former President Trump's allegation that the virus may have originated in a Chinese lab (Dehghani & Masoumi, 2020; Ferrara, 2020), and another theory claiming that COVID-19 was a bioweapon created in China has been disseminated across social media platforms such as Twitter, leading to over 2.6 million related tweets in a 10-day span (Scott, 2020). On the contrary, copious conspiracy theories have also been circulated in China. Some claimed that the virus was a part of the trade war waged by the U.S., or a weapon of the biological warfare created and utilized by the U.S. (Lendman, 2020). Moreover, as the confirmed cases have reportedly declined in China, the Chinese state media and a spokesperson of the Chinese Ministry of Foreign Affairs have publicly asserted that it was the U.S. military members that first brought the virus into China (Myers, 2020).

Since 2016, pundits and scholars have raised concerns about the negative ramifications of misinformation, including the precipitation of democratic crises and hindrance of rational decision-making (e.g., Jang & Kim, 2018; Tandoc, Lim, & Ling, 2020; Valenzuela, Halpern, Katz, & Miranda, 2019). However, only a handful of studies have focused on

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China (e.g., Guo, 2020; Guo & Zhang, 2020). Moreover, although the amount of misinformation research at large has been increasing, conspiracy theory endorsement (CTE), a sub-category of the broader domain of misinformation (Craft, Ashley, & Maksl, 2017; Sunstein & Vermeule, 2009), did not attract sufficient scholarly attention.

Against this backdrop, the current study aims to investigate the effects of communication behaviors and media psychologies on CTE among Chinese people. The potential contribution of this study is twofold. First, China has been the epicenter of the international public opinions about the pandemic and has produced a series of conspiracy theories; hence, it is beneficial to unravel the relationships between people's use of social media and perception-shaping. Second, given the fact that most international news media and SNSs are blocked in China (Guo, 2020; Su & Xiao, 2020), the effects of nuanced social media consumption behaviors on people's CTE merit in-depth examinations. In doing so, this study extends the CTE literature into an authoritarian context and explicates the mechanisms of the distribution of conspiracy theories during a public health crisis.

1.1. Computer-mediated communication in China

Computer-mediated communication (CMC) is broadly defined as human communication that occurs through the use of electronic devices (Walther, 1996). However, the ever-changing technical landscape has rendered communication through conventional stationary terminals such as emails and the text-based Usenet incompetent in capturing today's communication activities (Yao & Ling, 2020). Pundits and scholars have suggested that mobile telephony and social media have become the two prominent technological platforms that "play into the structure of contemporary structure" as well as the growing body of CMC research (Yao & Ling, 2020, p. 7). Indeed, the past decade has witnessed the rise of social media use as one of the most examined variables (Faelens et al., 2020; Yao & Ling, 2020; Zhao et al., 2020). Prior studies have endeavored to investigate how news consumption through different types of social media, with different content, and characterized by different ideological attributes, have influenced human attitudes, behaviors, and perceptions of reality (Faelens et al., 2020; Garrett, Weeks, & Neo, 2016; Kim & Kim, 2017; Xiao, Su, & Lee, 2021, pp. 1–12).

China's media apparatus at large is considered the mouthpiece of the authorities, which is committed to propagating, building national image, and maintaining societal stability (Gan, 1994). However, the sudden emergence of social networking sites (SNSs) has brought challenges to its authorities in regulating computer-mediated communication (Guo, 2020; Su & Xiao, 2020). In maintaining its ruling legitimacy and absolute control over the society, the Chinese authority has updated its press censorship and made a series of efforts to regulate online platforms (Yang & Liu, 2014).

The main methodology of the regulation is twofold. First, the authority has implemented strict censorship on China's social media by adopting a real-name registration policy and advanced algorithms, to filter out the alleged terms of sensitivity, remove posts, and block accounts (Su & Xiao, 2020). As such, diversified information and opinions barely exist. Hence, scholars lamented that SNSs in China are largely echoing its official agendas (e.g., Chen, Su, & Chen, 2019; Hatton, 2015). In addition to the regulation over its domestic SNSs, the Chinese government has also blocked many international platforms, including Facebook, Twitter, and Instagram, to benefit its domestic propaganda without challenges from the Western discourses (France-Presse, 2019; Xu & Feng, 2015).

Although international SNSs are walled in China, many tech-savvy people take full advantage of the Virtual Private Networks (VPNs) to circumvent the Great Firewall, the world's biggest and most sophisticated censorship apparatus, to consume news through the international digital platforms (Sammacro, 2013; Xu & Feng, 2015). According to previous scholars, people engaging in international computer-mediated communication in China are typically younger generations, proficient in

English, energized by its sociotechnical savviness, and liberal-minded (Huang & Yeh, 2016; Powell, 2012; Xu & Feng, 2015; Yang, Chen, Shih, Bardzell, & Bardzell, 2017).

A sizable portion of studies has been devoted to the investigations of the nuanced effects of different types of SNSs on individuals' perceptions and behaviors. This vein of research includes the comparison between the effects of news consumption through social media platforms in various countries and political settings (e.g., Billings, Broussard, Xu, & Xu, 2016). In essence, these studies have inquired, in an authoritarian regime, whether the consumption of domestically circulated information and the exposure to globally disseminated information through circumventing the media regulation have nuanced impacts on people's perceptions. Following this vein of research, we contextualize our study in the COVID-19 pandemic, examining how the use of Chinese and international social media platforms among Chinese people affect their conspiracy theory endorsement regarding COVID-19.

1.2. Conspiracy theory endorsement (CTE)

Defined as "an effort to explain some event or practice by reference to the machinations of powerful people, who attempt to conceal their role" (Sunstein & Vermeule, 2009, p. 205), conspiracy theories often prevail in events where it is difficult to draw inferences due to the insufficiency of evidence (Craft et al., 2017; Sunstein, 2014). Anchored by Sunstein and Vermeule's (2009) conceptualization, Uscinski and Parent (2014) further provided a couple of exemplifications of such machination, a "secret arrangement between two or more actors to usurp political or economic power, violate established rights, hoard vital secrets, or unlawfully alter government institutions" (p. 31). According to Craft et al. (2017), although conspiracy theories can occasionally be validated by subsequent evidence, most of them hinge upon people's overestimation of "the competence of official actors" (p. 389) and the credulity that the motivations of these official actors are secret and nefarious (Craft et al., 2017; Sunstein, 2014).

A plethora of studies has demonstrated the relationships between CTE and media literacy (e.g., Craft et al., 2017), partisanship (e.g., Miller, Saunders, & Farhart, 2016), personal willingness to conspire (e.g., Douglas & Sutton, 2011) and self-evaluation (Cichocka, Marchlewska, & de Zavala, 2016). Only a handful of studies have probed the effects of media use on CTE. Stojanov (2015) revealed that debunking information as well as information about the motives of the conspiracy theorists and their fallacies were effective in reducing individuals' conspiracy beliefs. Similarly, through experimentations, scholars (e.g., Bode & Vraga, 2015; Jolley & Douglas, 2014; Lyons, Merola, & Reifer, 2019) also pointed to the significant role corrective information played in reducing conspiracy beliefs and misperceptions.

1.3. Media skepticism as mediator

To understand the role of media skepticism in this process, we first examine whether the two types of social media use correlate with media skepticism. Media skepticism is conceptualized as a subjective feeling of "alienation and mistrust toward the mainstream news media" (Tsfati, 2003a, p. 67). For instance, people who possess the feeling that journalists are not fair or objective in their storytelling are considered media skeptics (Tsfati, 2003a). Oftentimes, such skepticism is driven by a pre-existing belief that mainstream media always prioritize their political or commercial benefits rather than journalistic norms such as accuracy and objectivity (Tsfati, 2003a,b).

Media skepticism has been consistently confirmed to associate with consumption with various types of media. For instance, in analyzing a national survey of the U.S., Tsfati and Cappella (2003) suggested that media skepticism was negatively associated with mainstream news consumption, whereas its association with non-mainstream media exposure was positive, implying that people were more likely to distrust non-mainstream media in the U.S. These findings were further bolstered

by a Tsfati's subsequent research (Tsfati, 2010). In China, Xu (2013) confirmed that Chinese people's trust in state media was negatively associated with online news exposure, suggesting that the more frequently the Chinese people expose to online news, the less likely they trust the state media.

For the current study, we conceptualize media skepticism as the extent to which Chinese people are skeptical toward Chinese media. Although limited research has investigated the association between Chinese and international social media use and media skepticism among Chinese people, Liu and Bates (2009) have provided an epistemological basis to channel the association between both factors. They indicated that attitudes about media trust and credibility are closely tied to media consumers' self-perceived identity, including national identity that hinges upon "a specific script of virtual reality in the international consumer-media culture – encompassed by image, narratives, and information created by the media, where the basic logic of national identity is largely interpreted by what Appadurai (1995) called 'mediascapes'" (Liu & Bates, 2009, p. 322). As such, the extent to which people trust Chinese state media can dovetail with the degree of heterogeneity of their national identities and nationalism, not to mention that China's domestic media is part of the state apparatus (Gan, 1994; Liu & Bates, 2009). As reviewed above, Chinese people spanning the Great Firewall and using foreign media were generally characterized with sociotechnical savviness and higher levels of political dissatisfaction (Huang & Yeh, 2016; Powell, 2012; Sammaco, 2013; Yang et al., 2017; Xu & Feng, 2015), based upon Liu and Bates (2009), it is safe to say that these people are of higher levels of heterogeneity of nationalism and national identity, and in turn, will have lower trust in domestic state media. (Liu & Bates, 2009).

Skepticism has also been consistently testified to serve as a significant mediator between media consumption and perceptions or intentions (e.g., Giantari, Zain, Rahayu, & Solimun, 2013; Matthes & Wonneberger, 2014). For instance, through surveying the U.S. and Austrian consumers, Matthes and Wonneberger (2014) found that general advertising skepticism mediated the relationship between green ads consumption and green ads skepticism, concluding that emotional appeals could either decrease or intensify the effect of information utility on skepticism. Moreover, using online purchasing as an example, Giantari et al. (2013) also suggested that trust in the media environment mediated the association between individuals' online experience and their intentions.

1.4. Need for cognition as moderator

Need for Cognition (NFC) is defined as "a need to structure relevant situations in meaningful, integrated ways ... [i]t is a need to understand and make reasonable the experimental world" (Cohen, Scotland, & Wolfe, 1955, p. 291). Cacioppo and Petty (1982) further suggested that such need is not biological but "statistical (i.e., likelihood or tendency)" that it is a "tendency to engage in and enjoy thinking" (Cacioppo & Petty, 1982, pp. 116–118). Prior studies indicated that NFC-oriented individuals tend to process media information more carefully and analytically (Cacioppo, Petty, & Morris, 1983; Xiao et al., 2021, pp. 1–12). In other words, NFC-oriented individuals tend to devote more effort to use logical and critical thinking and persuasion resistance when consuming media information (Austin, Muldrow, & Austin, 2016). As such, it is expected that individuals with higher NFC would critically and comprehensively analyze COVID-19-related media information and would be less likely to endorse conspiracy theories (Austin et al., 2016; Cacioppo & Petty, 1982).

In addition, NFC also has the potential to moderate the relationship between skepticism and CTE. First, NFC is associated with skepticism (Tsfati & Cappella, 2005). For example, Vraga and Tully (2019, pp. 1–17) found that individuals with higher NFC demonstrated greater skepticism toward information shared on social media. Second, prior research implied that higher NFC reduced beliefs in conspiracy theories.

For instance, Swami, Voracek, Stieger, Tran, and Furnham (2014) indicated that analytical thinking, a key component of NFC, is negatively associated with beliefs in conspiracy theories; increasing analytical thinking helped individuals counter the influence of conspiracy theories.

1.5. Conceptual model, hypotheses and research questions

Building upon the reviewed literature, the current study first hypothesizes that, in the context of the COVID-19 pandemic and the related conspiracy theory struggles, people circumventing the censorship and using international social media in China would exhibit two characteristics: (1) they are more liberal-minded, tech-savvy and politically discontent (Huang & Yeh, 2016; Yang et al., 2017); (2) they would be more likely to expose themselves to more counterinformation against the domestically circulated theories, in that, for instance, U.S. counterattacks and debunks on China's conspiracy theories largely exist on platforms such as Twitter. Hence, the first characteristic is in line with Enders and Smallpage's (2019) argument about the role of partisanship whilst the second echoes the effectiveness of counter- and corrective information (e.g., Bode & Vraga, 2015; Jolley & Douglas, 2014; Lyons et al., 2019; Stojanov, 2015). Therefore, our first hypothesis is posited:

H1: International social media will be negatively associated with COVID-19 CTE.

When it comes to the effect of Chinese social media use on CTE, however, no empirical evidence is available to buttress a tentative hypothesis. Our study serves as the first known attempt to analyze its association. Therefore, the following research question is put forth:

RQ1: Does Chinese social media use associate with COVID-19 CTE?

The reviewed literature has lent credence to the positive association between international social media use and media skepticism; therefore, we posit the following hypothesis:

H2: International social media use would be positively associated with media skepticism.

However, in light of the fact that the investigations of the association between Chinese social media use and media skepticism has yielded mixed, and sometimes contradictory, results (e.g., Vraga & Tully, 2019, pp. 1–17; Xu, 2013), the following research question is postulated:

RQ2: What is the association between Chinese social media use and media skepticism?

Additionally, we hypothesize that in the face of domestically generated conspiracy theories, people with higher skepticism would be less likely to endorse these theories revolving around the COVID-19. Hence, H3 is further formulated:

H3: Media skepticism would be negatively associated with CTE regarding COVID-19.

In the current study, we propose that media skepticism would serve as an overall attitudinal orientation toward the information provided by the Chinese media at large, whereas CTE serves as the final response that infers psychological reactance or actions relative to supporting the conspiracy theories. The following hypothesis is postulated:

H4: Media skepticism would mediate the association between (a) Chinese and (b) international social media use and CTE regarding COVID-19.

Finally, building upon the reviewed literature, we also hypothesize that the indirect effect of media use on CTE via skepticism would be contingent upon NFC. However, the two aforementioned relationships have not been hitherto examined. Thus, we propose our final research questions:

RQ3: Would the indirect effects of (a) Chinese and (b) international social media use on CTE via media skepticism be contingent upon individuals' levels of NFC?

Juxtaposing the research hypotheses and questions, Fig. 1 exhibits our proposed model.

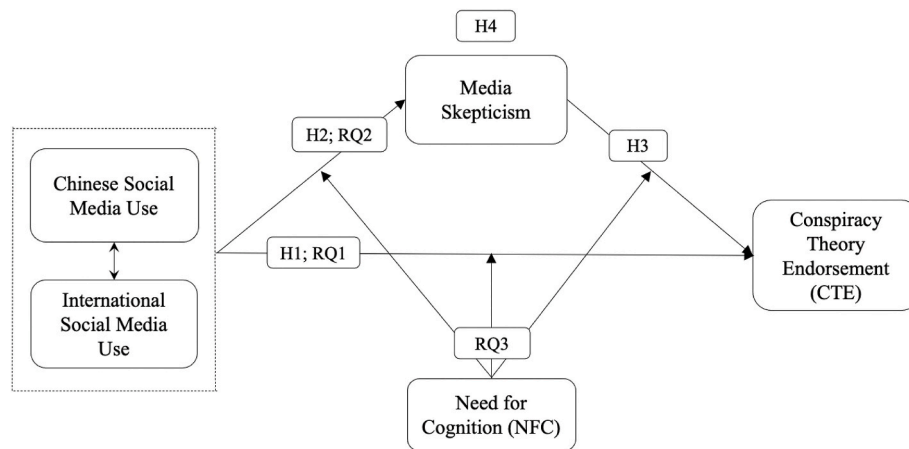


Fig. 1. The hypothesized moderated mediation model.

2. Methodology

2.1. Participants and procedure

Upon approval of the institutional review board (IRB), data were collected through an anonymous web-based survey through Qualtrics in two major Chinese cities. Prior to initiating the survey, informed consent was obtained from the respondents on the first page of the questionnaire. 1081 participants aged 18 and above submitted the survey. Upon data cleaning, 348 incomplete surveys were excluded from the analysis. The final sample consisted of 731 individuals, lending a response rate of 67.8%. Among the valid sample, the age ranged from 18 to 65, ($M = 23.26$, $SD = 5.68$), and 67.5% were reported female ($n = 497$).

2.2. Measures

2.2.1. Chinese social media use. The variable was assessed by the frequencies with which the respondents consume news from five main Chinese social media (e.g., Weibo, WeChat, etc.) on a 5-point Likert scale (0 = never, 4 = always) ($M = 2.19$; $SD = 0.69$, $\alpha = 0.86$).

2.2.2. International social media use. The variable was assessed by the frequencies with which the respondents consume news from five main international social media platforms (e.g., Twitter, Facebook, etc.) on a 5-point Likert scale (0 = never, 4 = always) ($M = 1.69$; $SD = 1.68$, $\alpha = 0.88$).

2.2.3. Media skepticism. Adapted from prior research (Tsafati, 2003a, 2003b), multiple items asked the respondents to indicate the extent to which they agree with the following statements, through a 5-point Likert scale (0 = strongly disagree, 4 = strongly agree): “thinking about Chinese mainstream media, please indicate the extent to which you agree with the following descriptions: they are fair, they tell the whole story, they are accurate, they can be trusted.” Eight types of mainstream media in China were included. The items were reverse coded before analysis ($M = 2.44$; $SD = 0.92$, $\alpha = 0.98$).

2.2.4. NFC. Adapted from prior research (Lins de Holanda Coelho, Hanel, & Wolf, 2018), six items were averaged to measure NFC. Respondents were asked to indicate the extent to which they agree with the following six statements through a 5-point Likert scale (0 = strongly disagree, 4 = strongly agree), including “I would prefer complex to simple problems,” “I like to have the responsibility of handling a situation that requires a lot of thinking,” “Thinking is not my idea of fun,” “I would rather do something that requires little thought than something that is sure to challenge my thinking abilities” and so forth. Two of the items were reverse coded before analysis ($M = 3.54$; $SD = 0.60$, $\alpha = 0.80$).

2.2.5. CTE. Seven items were averaged to assess the CTE of COVID-19. Through a 5-point Likert scale (0 = strongly disagree, 4 = strongly

agree), the respondents were asked to indicate the extent to which they agree with the following statements, “The COVID-19 is an artificial virus rather than a virus due to natural reasons,” “The COVID-19 was created by foreign governments, aiming to curb China’s development,” “The COVID-19 is a part of the political or trade war between China and foreign countries,” “The COVID-19 is a weapon of the biological warfare used by foreign countries,” “The dissemination of the COVID-19 is due to a virus leak in a laboratory,” “The COVID-19 was first brought into China by the US military members,” and “The COVID-19 is not related to politics, it is a virus due to people’s eating wildlife or other non-political reasons.” The last item was reverse coded before analysis ($M = 1.34$; $SD = 0.94$, $\alpha = 0.90$).

2.2.6. Exogenous (control) variables. A series of variables were controlled to reduce the chance that the associations between our endogenous variables are spurious. The first set of exogenous variables included four demographics, gender (67.8% female), age ($M = 23.26$, $SD = 5.68$), years of education ($M = 5.29$ [Completed college education], $SD = 0.77$), and monthly income ($M = 1.00$ [2000 to 5000 RMB], $SD = 1.54$). Previous research has also confirmed political efficacy to be a significant predictor of people’s attitudes toward scientific issues (Knight & Barnett, 2010), hence, we also controlled political efficacy. Respondents were asked to indicate the extent to which they agree with the following statements, “I feel that I have a pretty good understanding of the important political issues facing our country,” “I consider myself well-qualified to participate in politics” and “I feel that I have the ability to change the country and the society” (0 = strongly disagree, 4 = strongly agree) ($M = 2.54$; $SD = 0.84$, $\alpha = 0.76$).

2.3. Analytical approach

Descriptive statistics and bivariate correlations across all endogenous variables were calculated as our preliminary analyses (Table 1). Further, hierarchical regressions were conducted to analyze H1, H2, H3, RQ1, and RQ2. Hayes’ (2013) PROCESS macro model 4 was used to confirm H4 (the mediation model), and model 59 was performed to answer RQ3 (the moderated mediation model).

3. Results

3.1. Testing for model validation

Before testing our hypotheses and research questions, model validation was examined using criteria suggested by Hu and Bentler (1999). Estimations of the relationships among the full model showed excellent fit.

Table 1
Means, standard deviations, and correlations of all variables.

Variables	M	SD	1	2	3	4	5	6	7	8	9
1. Gender	1.68	.47	–								
2. Age	23.26	5.68	-.301***	–							
3. Education	5.29	.77	-.349***	.416***	–						
4. Income	1.00	1.54	-.442***	.651***	.674***	–					
5. Efficacy	2.54	.84	-.220***	.224***	.411***	.375***	–				
6. International social media use	1.69	1.68	-.379***	.239***	.538***	.584***	.433***	–			
7. Chinese social media use	2.19	0.69	-.173***	.156***	.245***	.284***	.315***	.307***	–		
8. Skepticism	2.44	.92	-.286***	.282***	.477***	.501***	.376***	.607***	.297***	–	
9. NFC	3.54	.60	-.156***	.109**	.322***	.244***	.384***	.367***	.178***	.309***	–
10. CTE	1.34	.94	.219***	-.138**	-.344***	-.300**	-.376***	-.433***	-.217***	-.538***	-.314***

Note. ** $p < .05$, *** $p < .001$.

3.2. Testing for main direct effects

In testing H1, Table 2 shows that the negative association between international social media use and CTE was significant ($b = -0.088$, $SE = 0.026$, $p < .01$). Hence, H1 is supported.

In answering RQ1, Table 2 demonstrates that the association between Chinese social media use and CTE is not significant ($b = -0.003$, $SE = 0.028$, $p = .912$), suggesting that using Chinese social media does not have any potential linkage between CTE regarding COVID-19.

H2 postulated that frequent use of international social media will be positively associated with media skepticism among Chinese people. According to the regression model, the association was significant ($b = 2.19$, $SE = 0.022$, $p < .001$). Therefore, H2 is supported.

RQ2 asked about the association between Chinese social media use and skepticism. As Table 2 demonstrates, the association was not significant ($b = 0.058$, $SE = 0.025$, $p = .053$). Therefore, using Chinese social media was not associated with media skepticism.

H3 posited that media skepticism would negatively associate with CTE. As can be seen in Table 2, the higher media skepticism the respondents had, the less likely they would endorse the conspiracy theories ($b = -0.392$, $SE = 0.044$, $p < .001$). Therefore, H3 is supported.

3.3. Testing for mediation effects

In answering H4, analyses were conducted using Hayes' PROCESS macro model 4. The results showed that Chinese social media use was not significantly associated with CTE ($b = -0.05$, $p = .09$), whilst it was significantly associated with media skepticism ($b = 0.09$, $p < .01$). With the addition of media skepticism to the regression model, although

skepticism was significantly associated with CTE ($b = -0.45$, $p < .001$), Chinese social media use was not significantly associated with CTE ($b = -0.01$, $p = .73$). The procedure of bias-corrected percentile bootstrap showed that the indirect effect of Chinese social media use on CTE through media skepticism was significant, $ab = -.04$, $SE = 0.01$, 95% CI = [-0.07, -0.01]. From the result, although a significant indirect effect was observed, the criteria for building up mediating effect were not fully fulfilled (MacKinnon, 2008). Therefore, H4a is denied.

H4b predicted that media skepticism would mediate the association between international social media use and CTE. As exhibited in Table 3, international social media use was negatively associated with CTE ($b = -0.16$, $p < .001$), while it is positively associated with media skepticism ($b = 0.22$, $p < .001$). With the addition of media skepticism to the regression model for CTE, the regression coefficient of international social media use became -0.09 , $p < .01$. Besides, media skepticism was negatively associated with CTE ($b = -0.39$, $p < .001$). Lastly, the procedure of bias-corrected percentile bootstrap showed that the indirect effect of international social media use on CTE through media skepticism was significant, $ab = -.09$, $SE = 0.02$, 95% CI = [-0.12, -0.06]. International social media use and media skepticism predict a significant portion of variability in CTE, $R^2 = 0.38$, $F(7, 626) = 54.98$, $p < .001$. From the results, the criteria for building up mediating effect were fully fulfilled (MacKinnon, 2008). Hence, H4b was supported.

3.4. Testing for moderated mediation effects

In answering RQ3a, the present study inspected the parameters for the three regression models outlined by Hayes's (2013) PROCESS macro model 59. The results showed that there was a significant main effect of

Table 2
Hierarchical regression models of the main direct effects.

	Model 1. Media skepticism				Model 2. Conspiracy theory endorsement			
	b	SE	β	t	b	SE	β	t
Step 1								
Age	-.013	.007	-.082	-1.847	.009	.008	.050	1.084
Gender	-.083	.073	-.043	-1.138	.180*	.082	.086*	2.186
Education	.222***	.054	.198***	4.131	-.188**	.060	-.156**	-3.118
Income	.194***	.032	.345***	6.016	-.058	.036	-.096	-1.594
Efficacy	.153***	.041	.144***	3.731	-.367***	.046	-.321***	-7.966
Model R ²	.314***				.250***			
F for R ²	57.534***				43.921***			
Step 2								
Age	.003	.007	.021	.491	-.003	.008	-.017	-.386
Gender	.046	.069	.024	.666	.097	.076	.046	1.265
Education	.127*	.051	.113*	2.508	-.063	.056	-.053	-1.127
Income	.070*	.032	.124*	2.178	.065	.036	.108	1.823
Efficacy	.041	.040	.038	1.024	-.269***	.044	-.236***	-6.092
Chinese social media use	.058	.025	.076	2.278	-.003	.028	-.004	-.110
International social media use	.219***	.022	.429***	9.898	-.088**	.026	-.160**	-3.338
Media skepticism					-.392***	.044	-.365***	-8.869
ΔR^2	.309***				.131***			
Model R ²	.314***				.381***			
F for R ²	54.448***				43.921***			

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

Table 3
The mediation effect of frequency of international social media use on CTE.

Predictors	Model 1. CTE		Model 2. Media skepticism		Model 3. CTE	
	b	t	b	t	b	t
Age	.01	.69	.003	.45	-.003	-.38
Gender	.06	.88	.05	.66	.10	1.27
Education	-.14	-2.63**	.13	2.49*	-.06	-1.13
Income	.01	.29	.08	2.38*	.07	1.82
Efficacy	-.24	-6.04***	.06	1.55	-.27	-6.26***
International social media use	-.16	-6.73***	.22	10.15***	-.09	-3.35**
Media skepticism					-.39	-8.92***
R ²	.25***		.41***		.38**	
F	42.15***		72.90***		54.98***	

Note. Each column illustrates a regression model that predicts the criterion at the top of the column. Gender was dummy coded such that 0 = female and 1 = male. * $p < .05$. ** $p < .01$. *** $p < .001$.

Chinese social media use on CTE ($b = -0.60, p < .001$), which was moderated by NFC ($b = 0.16, p < .001$). Moreover, a significant main direct effect of media skepticism on CTE was also observed ($b = -1.37, p < .001$), which was moderated by NFC ($b = 0.27, p < .001$). However, the results showed that the effect of Chinese social media use on media skepticism was not significant ($b = 0.14, p = .32$), nor was the potential moderating effect of NFC ($b = -0.02, p = .68$). Therefore, Chinese social media use does not have a significant conditional indirect effect on CTE.

RQ3b queried whether the indirect effect of international social media use on CTE via media skepticism would be contingent upon NFC. As shown in Table 4, Model 1 shows that there was a significant main effect of international social media use on CTE ($b = -0.93, p < .001$), and this effect was moderated by NFC ($b = 0.21, p < .001$). Furthermore, Model 2 exhibits that the effect of international social media use on media skepticism was significant ($b = 0.48, p < .001$), and such effect was moderated by NFC ($b = -0.07, p < .05$). Lastly, Model 3 demonstrates that there was a significant main effect of media skepticism on CTE ($b = -1.26, p < .001$), and such effect was as well moderated by NFC ($b = 0.26, p < .001$).

The current study plotted the predicted CTE against media skepticism in Fig. 2, respectively for high and low levels of NFC. Simple slope tests showed that among individuals with higher NFC, the effects of media skepticism on CTE was significant and stronger ($b = -0.18, p < .01$) than those with lower NFC ($b = -0.49, p < .001$). In addition, the predicted CTE against international social media use was plotted in Fig. 3, respectively for high and average levels of NFC. Simple slope tests showed that for respondents with average level of NFC, the effect of international social media use on CTE was significant and stronger ($b = -0.11, p < .001$) than those with lower NFC ($b = -0.18, p < .001$). Lastly, the predicted media skepticism against international social media use was plotted in Fig. 4, respectively for high and low levels of NFC. Simple slope tests demonstrated that for respondents with lower

Table 4
The moderated mediation effect of international social media use on CTE.

Predictors	Model 1. CTE		Model 2. Media skepticism		Model 3. CTE	
	b	t	b	t	b	t
Age	.005	.65	.003	.47	-.002	-.34
Gender	.07	1.00	.04	.63	.11	1.55
Education	-.15	-2.77**	.13	2.47*	-.08	-1.41
Income	-.03	-.75	.09	2.74**	.01	.38
Efficacy	-.17	-4.20***	.03	.81	-.18	-4.13***
International social media use	-.93	-6.50***	.48	3.68***	-.53	-3.39***
NFC	-.44	-6.16***	.16	2.41*	-.88	-6.61***
International social media use x NFC	.21	5.56***	-.07	-2.05*	.12	2.82**
Media skepticism					-1.26	-5.77***
Media skepticism x NFC					.26	4.16***
R ²	.29		.42		.43	
F	38.49***		55.62***		47.03***	

Note. Each column is regression model that predicts the criterion at the top of the column. Gender was dummy coded such that 0 = female and 1 = male. * $p < .05$. ** $p < .01$. *** $p < .001$.

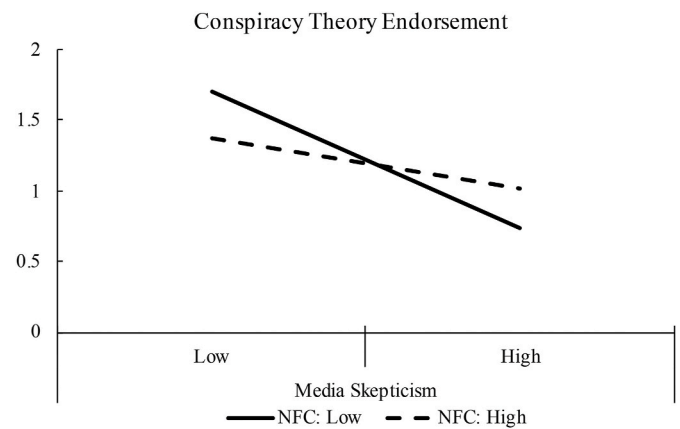


Fig. 2. CTE as a function of respondents' media skepticism and their levels of NFC. Functions were plotted for high and low levels of NFC. The purpose of the plot is for descriptive analyses, and all the inferential analyses preserved the continuous values for media skepticism and NFC.

NFC, the effect of international social media use on media skepticism was significant and stronger ($b = 0.27, p < .001$) than those of higher NFC.

Furthermore, the results of the bias-corrected percentile bootstrap demonstrated that the indirect effect of international social media use on CTE via media skepticism was moderated by NFC. For respondents with higher NFC, the significant indirect effect was stronger, $b = -.03, SE = 0.01, 95\% CI [-0.06, -0.01]$ than those with lower NFC, $b = -0.13, SE = 0.03, 95\% CI [-0.20, -0.07]$.

Therefore, the indirect effect of international social media use on

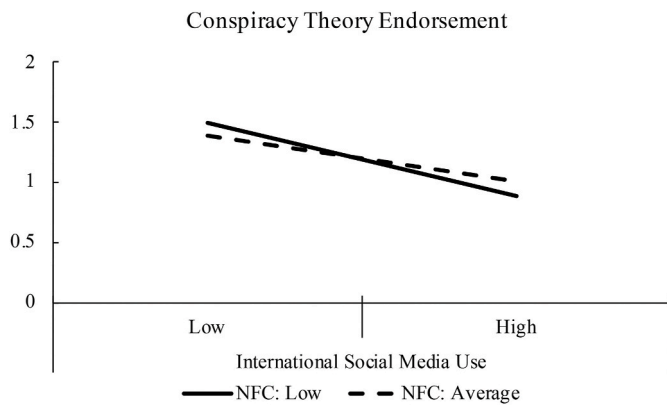


Fig. 3. CTE as a function of respondents' foreign social media use and their levels of NFC. Functions were plotted for high and average levels of NFC. The purpose of the plot is for descriptive analyses, and all the inferential analyses preserved the continuous values for international social media use and NFC.

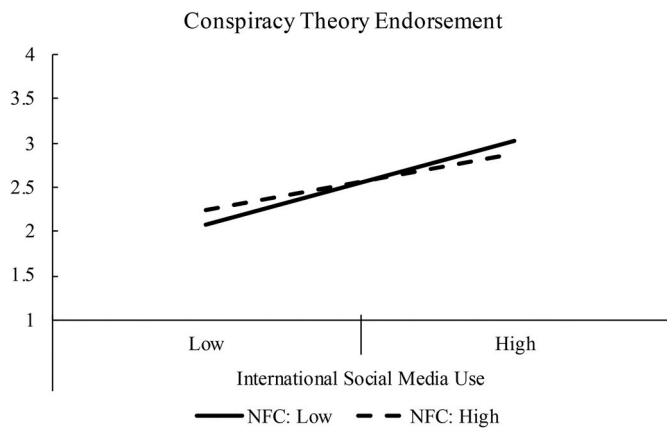


Fig. 4. Media skepticism as a function of respondents' foreign social media use and their levels of NFC. Functions were plotted for high and low levels of need for cognition. The purpose of the plot is for descriptive analyses, and all the inferential analyses preserved the continuous values for global social media use and need for cognition.

CTE via media skepticism is varied by the level of NFC among Chinese people, such that the indirect effect was stronger for people with higher NFC. Fig. 5 visualizes our final moderated mediation model.

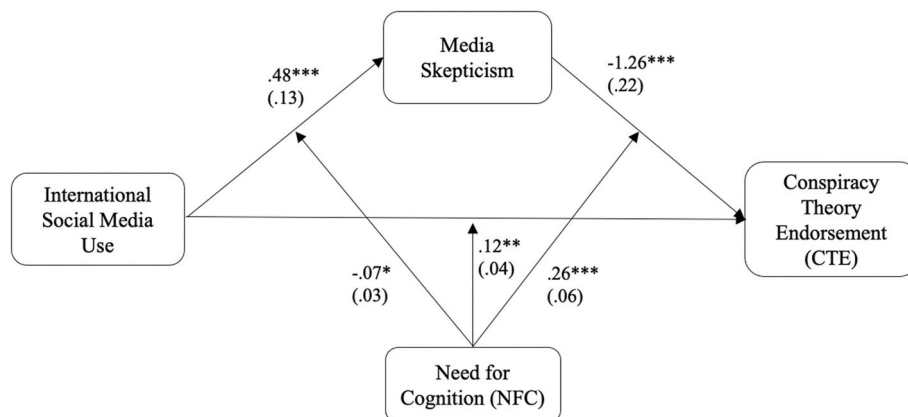


Fig. 5. The final moderated mediation model. Note. Unstandardized coefficients are reported with standard errors in parentheses. Respondents' age, gender, education, income and efficacy were controlled. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

4. Conclusion and discussion

During the COVID-19 pandemic, the WHO has raised concerns about the amplification and exacerbation of misinformation and conspiracy theories (Vraga, Tully, & Bode, 2020). Pundits have highlighted the necessity of curbing the “infodemic” as it could potentially “deter effective preventative behaviors” (Vraga et al., 2020, p. 475). Against this backdrop, the current study built a moderated mediation model to investigate the conditional indirect effects of Chinese and international social media use on conspiracy theory endorsement among Chinese people. Several intriguing findings merit further discussions.

First, the association between Chinese social media use and CTE was not significant. Given the remarkable penetration of social networking sites in Chinese, using social media, such as WeChat and Weibo, is rather a daily communication routine, which might be incompetent in reflecting or further reshaping an individual's perception (). However, the use of international social media was found to be negatively associated with CTE. Scholars have consistently confirmed that exposure to diversified media agenda and heterogeneities could affect people's perceptions, weakening or reconciling people's preexisting beliefs (e.g., Kim & Kim, 2017; Lee, Choi, Kim, & Kim, 2014; Su, 2021). In other words, encountering heterogeneity triggers deliberation and persuasion, thereby avoiding simplistic thinking and leading to self-correction of predisposed ideologies (Brundidge, 2010; Choi & Lee, 2015; Su, 2021). Our finding bolstered previous research which confirmed that corrective information and counterinformation could decrease individuals' conspiracy beliefs (e.g., Bode & Vraga, 2015; Lyons et al., 2019).

Moreover, we found that international social media use was positively associated with skepticism toward Chinese media, and the latter further mediated the main direct effect of the former on CTE. This finding lent credence to the previous assumption that upon media information exposure, individuals oftentimes obtain a perceived attitudinal orientation prior to providing a final psychological response to the initial stimuli (e.g., Giantari et al., 2013; Matthes & Wonneberger, 2014). Specific to our research context, using international social media platforms potentially leads to exposure to contents at odds with the singular Chinese domestic discourses, such as counterattacks on, or debunks of, the conspiracy theories revolving around COVID-19. Such exposure stimulated a stronger distrustfulness towards the Chinese media at large, which further facilitated their repudiation and disapprobation of the conspiracy theories generated across the Chinese media.

Beyond the communicative and attitudinal variables, we also found that need for cognition played a role in moderating the indirect effect of international social media use on CTE among Chinese people. Specifically, among those with stronger desires to process information more rationally and analytically, the association between

international social media use and CTE was more negative. Specific to the case of COVID-19, though escaping from the controlled media environment to use international social media may lead to exposure to heterogeneous contents, people lacking abilities to analyze this information can still be immune to persuasion and deliberation (Brundidge, 2010; Choi & Lee, 2015). For instance, the indirect effect of using international social media on CTE could become less prominent among people with motivations of entertainment or need for affect (NFA) (e.g., Austin et al., 2016; Xiao et al., 2021). On the contrary, when people are exposed to heterogeneous information, while simultaneously having a stronger ability to process information rationally and analytically, they would be more likely to discern and screen misinformation (Vraga & Tully, 2019, pp. 1–17). As far as China's special media culture is concerned, this finding implies that in addition to circumventing the regulation and consuming diversified information, improving one's analytical information processing abilities and media literacy would also be important to combat misinformation in an authoritarian context.

4.1. Implications

4.1.1. Practical implications

This study has several practical implications. First, our findings revealed the importance of information diversification in shaping people's perceptions. In the context of China, where the information environment is strictly controlled, people would benefit from bypassing the censorship and consuming information of distinct ideological stances. Though the latter may still not necessarily guarantee accuracy or conclusiveness, the consumption of counterinformation could trigger one's rethinking and scrutiny of singular media content.

Second, our findings also highlighted the personality dimensions such as media skepticism and need for cognition in reducing conspiracy beliefs. Both psychological factors pertain to media-literate practices. Media literacy education is central to decrease people's reliance on simple, heuristic, or affective cues from information, while they increase their thoughtful, systematic, or cognitive manners in message processing (Austin et al., 2016; Xiao et al., 2021, pp. 1–12).

In general, two major practical implications for social and political specialists can be yielded from our main findings. First, information diversification due to the political control would provide a breeding ground where conspiracy theories could circulate. Therefore, political decision-makers should relax the censorship of social media through institutional means, to enable the functioning of the self-purification and correction mechanisms of the digital platforms for online misinformation through information diversification and user deliberations. This is especially instructive for countries and societies with strict media censorship systems.

Second, as media skepticism and need for cognition – two major components of media literacy – were found to significantly affect the associations between media use and CTE, media educators should attach greater importance to media literacy education. Scholars have already highlighted the role of digital media literacy education in leading to corrective action, rumor refutation, and decision-making (Pinkleton & Austin, 2019). In today's society where misinformation has been rampantly circulating, information rectification is absent, and the fact-checker is not yet popularized, digital media literacy education could be internalized by the educated into an "individualized, invisible safeguard," allowing them to build better self-immunity against conspiracy theories and fake news.

4.1.2. Theoretical contributions

This study has the following theoretical contributions. First, in terms of misinformation research, although the past few years have witnessed its glaring increase, especially in the context of the COVID-19 pandemic (Su, 2021; Vraga et al., 2020), our study is the first known attempt to introduce the concept of conspiracy theory, a subcategory of the large domain of misinformation, in China, an authoritarian regime, as well as

in the context of the COVID-19 pandemic. Our attempt heeds the call for digital technology scholars to devote attention to the long-ignored social media user groups in developing countries (e.g., Adjei-Bamfo, Maloreh-Nyamekye, & Ahenkan, 2019; Jennings & Gagliardi, 2013).

Moreover, in terms of the psychological factors that help reduce misperceptions, our attempt enriches the knowledge regarding the nuances and similarities among citizens in a controlled media environment and others (e.g., Su, 2021). Our findings indicate that the role of media skepticism and need for cognition in reducing misperceptions did not change across different media landscape. Consistent with prior studies (e.g., Austin et al., 2016; Vraga & Tully, 2019, pp. 1–17; Xiao et al., 2021, pp. 1–12), our study demonstrates that both factors played a positive role in either buffering or reducing misperceptions. Our attempt not only consolidates the external validity of the relationships at the practical level (Calder, Phillips, & Tybout, 1982) but also makes up for the lack of examination of media literacy-related variables in the non-Western contexts (e.g., Xiao et al., 2021, pp. 1–12). Last but not least, in examining the influence of social media news consumption on misperceptions, previous studies largely treated social media at large (e.g., Su, 2021), while only a few endeavored to further inspect whether different typologies of social media could lead to distinctive perceptual and behavioral outcomes. Scholars have already highlighted that different social media platforms "are distinctive in their relationships" with behavioral outcomes (Woo-Yoo, S., & Gil-de-Zúñiga, 2014, p. 33), worrying that the hasty generalization of social media regardless of typology would lead to spurious results. Our study heeds the call and adds pixels to the social media research at large. Previous studies found that the use of foreign media among Chinese people was associated with eroded regime support (e.g.,). Our study well aligns with these findings and extends the realm into social media.

In a nutshell, our study provides insights into the contextual conditionalities under which the effect of social media information consumption differs. In other words, our study suggests that the impact of social media information consumption on perception-shaping is conditional rather than conclusive. It is contingent upon the information content conveyed, the ideological characteristics with which social media information is charged, and the political environment in which social media are located. Future scholars could benefit from (1) continuing to probe the antecedents and institutional motivations of the dissemination of misinformation and conspiracy theories in other political contexts, so as to improve the balance of contextualization in digital media and misinformation research (Adjei-Bamfo et al., 2019; Jennings & Gagliardi, 2013); (2) examining whether the positive effects of media-literacy related variables, including media skepticism and NFC, on misperception reduction still hold true in multiple contexts; and (3) further distinguishing the variable of social media use not only by its political affiliation, but also by its functionalities and target audience (Woo-Yoo, S., & Gil-de-Zúñiga, 2014), so as to provide nuanced insights into the role of social media platforms in the era of misinformation (Xiao et al., 2021, pp. 1–12).

4.2. Limitations and future directions

This study is not without limitations. First, we only examined the Chinese sample. Given that various conspiracy theories regarding COVID-19 have been circulating in the world, future scholars would benefit from adopting our research pattern and carry out cross-national comparisons. Second, akin to previous research, the self-reporting of attitudinal variables such as skepticism and need for cognition may vary regarding their understandings of the questions. Hence, we encourage future scholars to consider utilizing dual evaluation scales – evaluation on self and by others, to increase the accuracy of the measurement. Last but not least, with regard to social media use, our study only focused on social media information consumption. Future scholars are encouraged to also examine people's online expression on social media, such as commenting, tweeting and retweeting, to extend our understanding of

the extent to which constant social media expression would affect misperceptions.

Credit author statement

Yan Su: Conceptualization, Methodology, Data collection, Data analysis, Writing – Original draft preparation. **Danielle Ka Lai Lee:** Data analysis, Results interpretation. **Xizhu Xiao:** Data collection, conceptualization. **Wei Li:** Data collection. **Wenxuan Shu:** Data collection.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chb.2021.106760>.

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