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How Chinese attitudes toward COVID-19 policies changed between June and early December 2022: Risk perceptions and the uses of mainstream media and WeChat

Xiao Wang

Rochester Institute of Technology, 92 Lomb Memorial Drive, Rochester, NY, USA

ARTICLE INFO	ABSTRACT
	Debates about China's zero-COVID policy should consider Chinese public attitudes toward COVID-19 and China's COVID-19 policies. Such attitudes can provide a theoretical account for public health crisis management and have implications for China to manage future public health crises. The present research reports on two surveys conducted in mainland China in June ($N = 460$) and early December 2022 ($N = 450$) to examine the changing COVID-19 risk perceptions and policy attitudes. Results showed that the participants' perception of the severity of COVID-19, perceived health consequences of a COVID-19 policy, and fear predicted their policy attitudes. In contrast, perceived disruption to the economy and daily lives was a weak predictor of Chinese attitudes toward a COVID policy. Furthermore, mainstream media use was positively associated with favorable attitudes toward the COVID-19 policy backed by the government (i.e., zero-COVID in June and relaxing restrictions in December). On the other hand, the uses of WeChat positively predicted favorable attitudes toward the alternatives to the government's approach. The results indicate the need to address public health concerns and employ the mainstream media in China for public health communication.

1. Introduction

Since the beginning of the COVID-19 pandemic, China's strict zero-COVID policy (e.g., localized lockdowns, quarantine, and mass testing) has attracted much attention in the political sphere, the media, and scholarly journals (e.g., Joint Prevention and Control Mechanism of the State Council, 2022; Mitcham et al., 2022). Up till November 2022, the Chinese media and scholarship focused on the health consequences and the need for the zero-COVID policy (Cai et al., 2022; Liu et al., 2022). On the other hand, Western media outlets often cited the economic and social consequences of zero-COVID as the reasons to relax the COVID-19 restrictions in China (e.g., the Associated Press, 2022).

The Chinese public was at the center of this debate and the most impacted: What did they prefer? How and why did their perceptions change, if any? However, academic research did not consider their sentiments and attitudes toward the zero-COVID policy and its alternative. To encourage the public to adopt a health behavior or support a policy, public health officials must understand the reasons underlying their behavioral choices and policy preferences (Fishbein & Ajzen, 2010). Furthermore, the Chinese government understands the need to be responsive to public sentiments in exchange for political stability

(Tang, 2005). Therefore, this investigation aimed to examine Chinese public perceptions of COVID-19 risks and attitudes toward COVID policies (i.e., zero-COVID and its alternative). Such an understanding can address public concerns and facilitate policy support or behavioral change.

This project further examined the role of the Chinese public's use of mainstream and social media in their attitudes toward COVID policies because COVID-19 policies were communicated and discussed via these media. It is postulated that mass media can promote population health by "shaping discourses about exposure risk and disease" and "providing education and motivation that influence behaviors" (Schillinger et al., 2020, p. 1393). Furthermore, social media allows users to share their alternative health narratives and allows misinformation to propagate (Schillinger et al., 2020). Schillinger et al. (2020) stated that there was no consensus regarding whether the media promote or hinder public health promotion, thus requiring further research. Analyzing the role of mainstream and social media in a politically different country will also provide lessons and implications for future pandemics of a similar nature in China and possibly elsewhere.

E-mail address: xiao.wang@rit.edu.

1.1. COVID-19 policies in the world and China

The SARS-CoV-2 virus has evolved since first reported in late 2019, from the initial strain in Wuhan, China, to the Delta and Omicron variants (Katella, 2022; World Health Organization [WHO], 2022). Compared with the earlier strains, the Omicron variant that first appeared in late 2021 is much more infectious but less virulent (Centers for Disease Control and Prevention [CDC], 2022).

Many Western and Asian countries initially instituted COVID-19 restrictions, including social distancing, masking, and mandatory COVID-19 vaccination requirements (e.g., CDC, 2021; Kok, 2022; Mercer, 2022; Shin, 2022). Primarily based on the vaccination rates and the calculated risk assessment of the susceptibility to and severity of the SARS-CoV-2 variants, many countries later relaxed their early COVID-19 measures (e.g., CDC, 2021). Australia, South Korea, and Singapore relaxed COVID-19 restrictions in the first half of 2022 (e.g., Kok, 2022; Mercer, 2022; Shin, 2022), leading to a surge of COVID infections. For example, about 50% of the South Korean population had been infected with COVID-19 by October 24, 2022 (COVID Resource Center, 2022). On the other hand, such guidelines or policies could restore economic activities and minimize restrictions on people's daily lives.

China's COVID-19 responses from 2020 to December 2022, namely zero-COVID, aimed to eliminate community infections and promote a COVID-19-free country where most people went about their daily lives without interruption or worrying about COVID-19 infections (Liu et al., 2022). When the Omicron variant emerged in November 2021, there were 98,824 cumulative cases in mainland China (National Health Commission of the People's Republic of China [NHCPRC], 2021). Since 2022, China has experienced waves of infections resulting from the Omicron variant. In the months leading up to November 2022, China observed approximately 40,000 positive cases per day [NHCPRC, 2022a] despite the stringent lockdowns, quarantine, and mass testing. On November 11, 2022, the Chinese government signaled its intent to ease the COVID-19 restrictions (Stevenson, 2022). In late November, major cities gradually dropped the restrictions (Cokelaere, 2022; Tan, 2022). On December 7, China officially ended the zero-COVID policy (NHCPRC, 2022b).

1.2. China's rationales behind zero-COVID and eventual easing

Before November 2022, the Chinese media and researchers stated that relaxing COVID-19 restrictions could lead to a surge of COVID-19 infections and deaths: Many elderlies in the nation had not been fully vaccinated, and the efficacy of Chinese COVID-19 vaccines was not particularly high and had waned (Cai et al., 2022; Liu et al., 2022). A simulation study (Cai et al., 2022) showed that without strict non-pharmaceutical preventive interventions (e.g., lockdown) and successful antiviral therapies, there would have been 112.2 million symptomatic cases, 7.8 million hospital admissions, and 1.6 million deaths in China between March and September 2022. Unvaccinated elderlies would have accounted for 74.7% of the deaths. Furthermore, this approach could disrupt the economy and crowd hospitals due to a surge in COVID-19 cases in China (Cai et al., 2022; Liu et al., 2022).

On the other hand, zero-COVID disrupted the economy and social and emotional well-being (Cai et al., 2022; Mozure & Stevenson, 2022). At the macro level, the zero-COVID policy could result in the closures of factories, workplaces, and schools. Observers forecasted that the Chinese economy would contract due to the strict COVID-19 policy (The Associated Press, 2022). At the micro-level, localized lockdowns forced individuals to confine their activities to their homes, resulting in a loss of productivity, lack of socialization, mental health issues, and other hardships in daily life (WHO, 2020). Repeated mass testing and waiting in line could have similar effects.

Naturally, both policies could arouse fear of the process. Zhong (2022) stated that the zero-COVID approach delicately balanced the need for public health and economic activities and that relaxing COVID-19 restrictions would negatively impact economic growth and result in "paying a higher price." The decision to lift restrictions in late November and early December was based on the waning severity of COVID-19 (NHCPRC, 2022b).

1.3. The theoretical framework and research questions

1.3.1. The role of risk perceptions

Because the present analysis focuses on Chinese attitudes toward COVID-19 policies, it draws on the theorizing of attitudes (Fishbein & Ajzen, 2010). Fig. 1 provides a graphical presentation of the theoretical constructs for this research. According to Fishbein and Ajzen (2010), attitudes toward a behavior (or a policy) refer to one's favorable or unfavorable evaluation of a behavior and are predicted by the underlying attitudinal beliefs toward the behavior. Furthermore, these underlying attitudinal beliefs generally are not unidimensional (Fishbein & Ajzen, 2010). That is, there can be several dimensions of attitudinal beliefs. For example, beliefs about a policy's health, economic, and social consequences can form different dimensions.

More recent theorizing has incorporated variables such as risk perceptions, media exposure, and emotions (Fishbein & Ajzen, 2010). Fishbein and Ajzen state that risk perceptions and media uses are antecedent variables that predict attitudinal beliefs, which predict attitudes (e.g., attitudes toward a COVID-19 policy). The present research further classifies risk perceptions as perceived susceptibility (i.e., how likely one will contract a disease) and perceived severity (i.e., how severe a disease is; Rosenstock, 1974). Furthermore, the present research does not consider fear an antecedent variable parallel to risk perceptions (i.e., perceived severity or susceptibility). Because fear's appraisal patterns (Roseman et al., 1994; Witte, 1994) state that fear results from risk perceptions, fear is used and analyzed as a mediating variable.

The discussion in Sections 1.2. and 1.3. indicates that Chinese risk perceptions and policy attitudes might change between June and early December 2022. The theoretical framework in Section 1.4. guides further analysis of the relationships among risk perceptions, beliefs, and policy attitudes. However, the relationships among the antecedent variables, mediating variables, and attitudes vary across behavior and population and should be examined empirically (Fishbein & Ajzen, 2010). As such, the present research asked the following research questions.

RQ1. How did the Chinese participants perceive their susceptibility to and the severity of COVID-19 in June and early December 2022?

RQ2. Did Chinese perceptions of and attitudes toward zero-COVID and relaxing restrictions change between June and early December 2022?

RQ3. What factors (e.g., attitudinal beliefs and fear) directly predicted Chinese attitudes toward COVID policies?

RQ4. How were the Chinese participants' perceived susceptibility to and severity of COVID-19 associated with their attitudes toward zero-COVID and relaxing COVID-19 restrictions?

1.3.2. The role of the mainstream and social media

The present research also differentiates mainstream mass media use from social media use because the two forms of media can provide different narratives (e.g., Schillings et al., 2020). The mainstream Chinese media often follow the government's directives (Wang, 2010) and contain curated information advocating the government's policy: A reading of the Chinese media showed that the mainstream media advocated the zero-COVID approach and refuted the possibility of relaxing restrictions (Zhong, 2022) in June 2022. On the other hand, it emphasized the waning severity of COVID-19 and why it was time to relax the restrictions when China suddenly reversed its zero-COVID policy to relax COVID-19 restrictions in late November and December 2022.

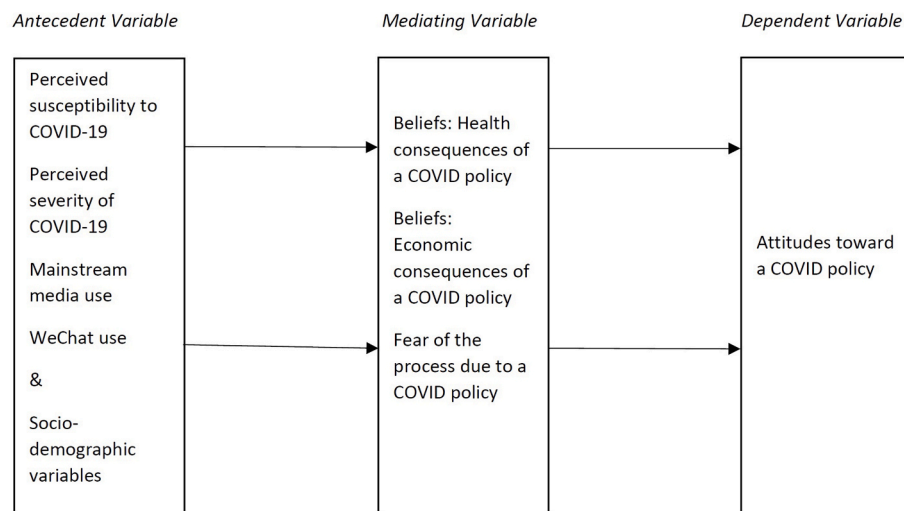Although censored to an extent, social media posts covered the

Fig. 1. Graphical Presentation of the Relationships to be Examined.

possibilities of both policies. Nonparticipant observations of WeChat groups conducted by the author from April to June 2022 showed that social media users discussed the possibility of relaxing restrictions, complained about zero-COVID and the government, and supported the need for zero-COVID. For example, some social media users stated: "They need to lock down Beijing's First Ring," "put it in a casing," "makes sense; use Zhongnanhai as the center, draw a circle with a 3-km radius, block it." Note that Zhongnanhai is the headquarters of the Chinese Communist Party and the Central Government and is within the "First Ring." On the other hand, one user who experienced the Xi'an lockdown in late December 2021 and early 2022 stated that the experience of lockdowns could be fleeting and tolerable. Although the preceding indicates that those who used the mainstream media would have consumed information supportive of the zero-COVID policy in June and relaxing COVID-19 restrictions in December 2022 and that those who used social media might have experienced mixed reactions to the COVID-19 approaches, evidence was limited. Thus, the following research question was asked:

RQ5. Did the Chinese participants' use of mainstream media and WeChat change between June and early December 2022?

RQ6. How were the Chinese participants' uses of mainstream media and WeChat associated with their attitudes toward the two COVID-19 approaches in June and early December 2022?

2. Method

2.1. Procedure and samples

An online survey was conducted via Credamo in China on June 10–13, 2022, shortly after the authorities lifted the lockdown in Shanghai (Chen et al., 2022), and another survey was conducted on December 2, 2022, shortly after China lifted COVID-19 restrictions. Credamo is a professional data collection company with three million online panel members in all provinces and administrative regions in mainland China. Credamo recruits its panel members from offline customers and residents, college campuses (e.g., students and teachers), businesses (e.g., employers and users), and those who previously participated in its offline surveys (Credamo, 2022).

Credamo sent the survey links to a randomly drawn sample of 1380 in June and another randomly drawn sample of 1350 panel members in December 2022. Credamo stopped data collection when a predetermined number of participants completed the survey. The final analysis retained 460 cases from the June survey after manually

removing seven respondents who failed two researcher-added attention-checking questions and all 450 cases from the December survey.

The participants' demographics in the two samples were generally consistent (Table 1).

2.2. Measurements

This analysis drew on part of the data collected via the surveys. Questionnaire items are presented below and in online supplementary materials (Tables S1 and S2). One confirmatory factor analysis performed on the antecedent variables (Table S1) showed satisfactory fit statistics: $\chi^2 = 223.1$, $df = 98$, comparative fit index (CFI) = 0.98, root mean square error of approximation (RMSEA) = 0.037, 90% CI of RMSEA (0.031 0.044), root mean squared residual (RMSR) = 0.033. Another confirmatory factor analysis on Chinese beliefs, fear, and attitudes toward COVID-19 policies also showed satisfactory fit statistics: χ^2 = 3324.6, df = 1052, CFI = 0.92, RMSEA = 0.049, 90% CI of RMSEA: [0.047 0.051], and RMSR = 0.057. Factor loadings for the items ranged from 0.59 to 0.94, providing evidence for the construct validity of the measures; that is, the measurement items loaded on their respective factors. Media use questions were measured in minutes. Responses to other measures ranged from 1 (*strongly disagree*) to 7 (*strongly agree*).

Mainstream media use questions were based on the average amount of time per day spent on four types of mainstream media to obtain information related to COVID-19: mainstream news sites (e.g., sohu.com or sina.com), government-sponsored news websites (e.g., xinhuanet.com), local news websites, and governments' public social media accounts. This measurement was similar to those used in media use research (de Vreese & Neijens, 2016; Wang, 2021). The alpha coefficient was 0.84.

WeChat use was measured by the average amount of time per day spent on four types of WeChat uses: public WeChat groups, private WeChat groups, direct communication via WeChat, and WeChat moments (i.e., friends' social media posts). The alpha coefficient was 0.89.

Perceived susceptibility to COVID-19 was measured by four items. These questions were constructed based on the susceptibility and severity literature (e.g., Rosenstock, 1974; Brewer et al., 2008). Participants were asked to think about the likelihood of themselves, their families, and other Chinese getting COVID-19 if China had not taken measures to contain it. The alpha coefficient was 0.95.

Perceived severity was measured by four items: "COVID-19 can result in deaths," "COVID-19 can cause severe bodily reactions (e.g., high fever)," "COVID-19 is a severe disease," and "COVID-19 only causes mild symptoms" (recoded). The alpha coefficient was 0.81.

Table 1
Socio-demographic information of the participants in the two surveys.

	June 10–13, 2022	December 2, 2022	t or χ^2 test
	N = 460	N = 450	
Average annual income (RMB)	109,900 (73,800)	121,000 (82,100)	$t = -2.14$, $df = 893.2$, $p = .033$
Average age	30.83 (8.37)	31.44 (8.43)	$t = -1.10$, $df = 908$, $p = .274$
Average years of education	15.70 (2.88)	15.66 (2.89)	$t = 0.25$, $df = 908$, $p = .805$
Political philosophy (1 = conservative, 7 = liberal)	4.84 (1.30)	4.60 (1.51)	$t = 2.56$, $df = 882.2$, $p = .011$
Gender			
Male	52.0%	48.7%	$\chi^2 = 0.99$, $df = 1$, $p = .321$
Female	48.0%	51.3%	
Ethnicity			
Han	97.4%	98.7%	$\chi^2 = 1.91$, $df = 1$, $p = .167$
Other ethnicities	2.6%	1.3%	
Occupation			
Administrative personnel	19.6%	24.4%	$\chi^2 = 5.31$, $df = 8$, $p = .724$
Students	15.9%	14.9%	
Research & development/Technical	15.0%	14.2%	
Support personnel	16.1%	13.6%	
Marketing/customer service	9.6%	8.5%	
Factory workers	5.0%	4.4%	
Accounting	5.2%	4.2%	
Other (e.g., teachers, attorneys, doctors)	17.0%	18.2%	
Unemployed	0.4%	0.4%	
Provinces or administrative regions			
Guangdong	15.9%	12.2%	$\chi^2 = 34.0$, $df = 17$, $p = .008$
Shandong	11.7%	14.7%	
Jiangsu	6.7%	6.0%	
Jiangxi	6.1%	1.8%	
Hebei	5.0%	4.4%	
Zhejiang	4.8%	5.3%	
Shanxi	4.1%	3.8%	
Guangxi	3.9%	4.2%	
Sichuan	3.7%	3.6%	
Henan	3.7%	3.8%	
Hubei	3.7%	3.8%	
Anhui	3.5%	6.2%	
Hunan	3.3%	1.6%	
Fujian	3.3%	1.3%	
Shanghai	2.8%	3.8%	
Beijing	2.8%	3.1%	
Shanxi	2.6%	1.6%	
Helongjiang	2.6%	6.7%	
Other provinces	9.8%	12.1%	

Questions related to perceived positive health consequences and disruptions to the economy and daily lives because of COVID-19 policies (i.e., zero-COVID or relaxing restrictions), fear of the processes, and attitudes toward the policies were constructed parallel to each other and aimed to facilitate comparison.

Perceived positive health consequences of the COVID-19 policies were based on the following questions. For zero-COVID, questions included, for example, "All in all, the zero-COVID policy can prevent people from getting infected," "… can protect my health," and "… can protect my family's health," and "… can prevent COVID-19 outbreaks." For relaxing COVID restrictions, the same set of questions was used by replacing zero-COVID with "relaxing COVID restrictions." For example, "All in all, relaxing COVID restrictions can prevent people from getting infected." Alpha coefficients for the health consequences of zero-COVID and relaxing restrictions were 0.88 and 0.95, respectively.

Disruptions to the economy and daily lives resulting from zero-COVID were measured by using questions such as "All in all, the zero-COVID policy can hurt the economy," "… increase labor costs," and "… cause psychological issues among some people." The same questions were used to measure disruptions from relaxing COVID restrictions by

replacing zero-COVID with "relaxing COVID restrictions." For example, "All in all, relaxing COVID restrictions can hurt the economy." Confirmatory factor analysis found that questions measuring economic and social disruptions formed one factor (Table S2). Alpha coefficients were 0.95 and 0.94 for the disruptions from zero-COVID and relaxing restrictions, respectively.

Fear of the COVID process (due to a COVID policy) was constructed based on the fear definition and literature (e.g., Ahorsu et al., 2020; Roseman et al., 1994; Witte, 1994). Participants responded to the following questions: "Thinking about the zero-COVID policy, I feel tense, " " …, I feel worried," " …, I feel afraid," and " …, I don't feel I have choices about my own health." The same questions measured fear toward relaxing COVID restrictions by replacing "the zero-COVID policy" with "relaxing COVID restrictions." Alpha coefficients were 0.91 and 0.94, respectively.

Attitudes toward a COVID policy were measured by items adapted from Fishbein and Ajzen (2010). Items include, for example, "Regarding the zero-COVID policy, it is wise," " …, it is useful," and " …, it is convenient." The same questions were used to measure attitudes toward relaxing COVID restrictions by replacing "the zero-COVID policy" with "relaxing COVID restrictions." Alpha coefficients were 0.89 and 0.94 for attitudes toward zero-COVID and attitudes toward relaxing restrictions, respectively.

3. Results

The analysis first compared the participants' risk perceptions and media uses and then beliefs about the health and other consequences of the two COVID-19 policies (i.e., zero-COVID and relaxing COVID restrictions) between June and early December 2022. Because 12 comparisons were made, the alpha level for each independent-samples t test was set to $0.05/12 = 0.004$ to control for the family-wise type I error. Table 2 shows the results of the independent-samples t tests. It then examined the role of the participants' COVID-19 risk perceptions and the uses of mainstream and social media in predicting their policy attitudes.

3.1. Risk perceptions and media use in June and early December 2022: t-test analysis

For RQ1, on average, the participants did not change their perceptions of susceptibility to COVID-19 ($M_D = 4.89$ vs. $M_J = 4.89$, $t = 0.00$, $p = .998$). However, their perception of the severity of COVID-19 decreased ($M_D = 5.55$ vs. $M_J = 5.08$, $t = 5.46$, $p < .001$).

For RQ5, on average, the participants spent more time on mainstream media ($M_D = 29.98$, $SD = 29.87$ vs. $M_J = 23.41$, $SD = 21.73$, $t = -3.79$, $p < .001$) and social media ($M_D = 24.49$, $SD = 32.15$ vs. $M_J = 17.82$, $SD = 21.20$, $t = -3.69$, $p < .001$) during the month leading to the December survey than the June survey.

3.2. Comparing beliefs, fear, and attitudes in June and December 2022 (RQ2)

Additional analysis used the participants' responses to the related measures as the within-subject factor (e.g., health consequences of zero-COVID vs. health consequences of relaxing COVID-19 restrictions) and the survey time (June vs. early December 2022) as the between-subject factor. Significant interaction effects were found for all the analyses (Fig. 2). Table 2 presents the means of the participants' responses.

First, on average, participants evaluated less positively the health consequences of zero-COVID, perceived a greater disruption to the economic and social consequences because of zero-COVID, and evaluated less positively zero-COVID itself in early December than in June 2022. There was no change in their fear of the zero-COVID process.

Second, participants evaluated more positively the health consequences and perceived a less disruption to the economic and social well-

Table 2

Independent-samples t Tests Comparing Participants' Media Use and Attitudes Toward COVID-19 Policies in June and December 2022.

Variable	June 10–13, 2022	December 2, 2022	Mean difference	Standard error	*t*	*df*	*p*
	Mean (*SD*)	Mean (*SD*)					
Mainstream media use	**23.41** (21.73)	**29.98** (29.87)	−6.57	1.73	−3.79	819.42	<.001
WeChat use	**17.82** (21.20)	**24.49** (32.15)	−6.67	1.81	−3.69	774.97	<.001
Susceptibility to COVID-19	4.89 (1.75)	4.89 (1.67)	0.00	0.11	0.00	908	.998
Severity of COVID-19	**5.55** (1.02)	**5.08** (1.21)	0.41	0.08	5.46	891.87	<.001
Positive health consequence (zero-COVID)	**6.07** (0.74)	**5.85** (0.98)	0.22	0.06	3.76	835.2	<.001
Positive health consequences (relaxing restrictions)	**2.26** (1.29)	**3.11** (1.58)	−0.85	0.10	−8.92	866.3	<.001
Disruption to the economy (zero-COVID)	4.78 (1.41)	5.01 (1.41)	−0.23	0.09	−2.45	908	.015
Disruption to the economy (relaxing restrictions)	**4.64** (1.41)	**3.91** (1.45)	0.73	0.09	7.70	908	<.001
Fear of the zero-COVID process	3.11 (1.45)	3.04 (1.46)	0.07	0.10	0.69	908	.491
Fear of the relaxing-restriction process	**5.53** (1.32)	**4.62** (1.68)	0.91	0.10	9.09	851.88	<.001
Attitudes toward zero-COVID	**5.45** (1.05)	**5.11** (1.26)	0.33	0.08	4.34	870.0	<.001
Attitudes toward relaxing restrictions	**2.70** (1.35)	**3.84** (1.67)	−1.14	0.10	−11.31	863.8	<.001

Note. N = 460 and N = 450. WeChat and mainstream media use were measured in minutes. All other scale values ranged from 1 (*strongly disagree*) to 7 (*strongly agree*).
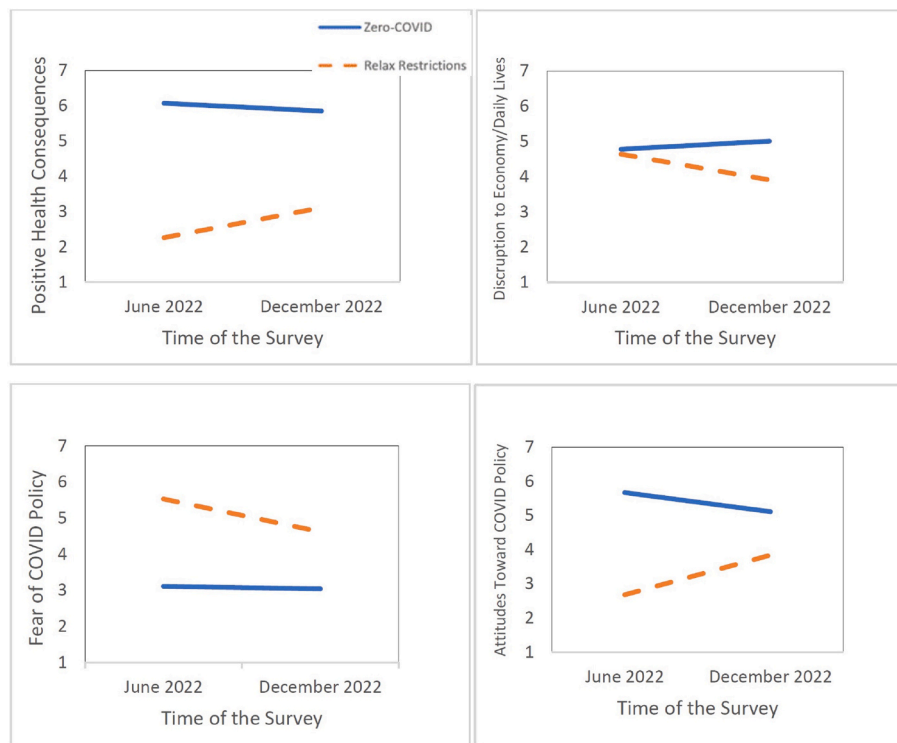

Fig. 2. Analysis of Changes of Beliefs, Fear, and Attitudes Toward COVID-19 Policies
Note. N = 460 (June 10–13, 2022), N = 450 (December 2, 2022). Solid lines = zero-COVID; dash lines = relaxing restrictions. All interactions were significant (*p* < .001). Scale values of the variables ranged from 1 (*strongly disagree*) to 7 (*strongly agree*).

being consequences of relaxing COVID-19 restrictions. The participants also showed less fear and responded more positively toward relaxing COVID restrictions in early December than in June 2022.

By early December 2022, on average, the participants preferred zero-COVID, were less fearful of zero-COVID, and had more favorable attitudes toward zero-COVID than relaxing COVID-19 restrictions.

3.3. Direct predictors of attitudes toward COVID policies (RQ3)

Following Fishbein and Ajzen's theorizing (2010), attitudes toward a COVID-19 policy were used as the final dependent variable, beliefs toward the consequences and fear were used as mediators, and risk perceptions and media use were used as antecedents (Fig. 1). This analysis adopts Hayes' PROCESS MACRO to examine the relationships. Hayes'

PROCESS MACRO uses ordinary least square estimate and percentile-based bootstrap sampling. Tables 3 and 4 provide the direct and total effects in predicting policy support. Tables S3–S6 in the online supplementary materials provide additional statistics (e.g., indirect effects). For this analysis, those (<5%) who self-reported using the media or WeChat for more than 82.5 min per source were coded as 82.5.

For the direct predictors of attitudes toward zero-COVID (Table 3), if the participants perceived more positive health consequences of the zero-COVID policy, they showed more favorable attitudes toward the policy ($\beta_{June} = 0.39$, $p < .001$ vs. $\beta_{Dec} = 0.25$, $p < .001$). On the other hand, if they felt more fear of the process of the zero-COVID policy, they showed less favorable attitudes ($\beta_{June} = -0.34$, $p < .001$ vs. $\beta_{Dec} = -0.39$, $p < .001$). Although perceived disruption to the economy and daily lives predicted attitudes, it was a weak predictor ($\beta_{June} = -0.12$, $p < .001$ vs. $\beta_{Dec} = -0.17$, $p < .001$).

For the direct predictors of attitudes toward relaxing restrictions (Table 3), if the participants perceived more positive health consequences, they showed more favorable attitudes toward the policy ($\beta_{June} = 0.47$, $p < .001$ vs. $\beta_{Dec} = 0.37$, $p < .001$). If they felt more fear of the process of relaxing COVID restrictions, they showed less favorable attitudes ($\beta_{June} = -0.30$, $p < .001$ vs. $\beta_{Dec} = -0.44$, $p < .001$). Furthermore, although perceived disruption to the economy and daily lives predicted attitudes, it was a weak predictor ($\beta_{June} = -0.13$, $p < .001$ vs. $\beta_{Dec} = -0.13$, $p < .001$). In essence, the psychological mechanism underlying attitudes toward the two COVID policies was similar.

3.4. The total effects of risk perceptions (RQ4)

Perceived risks and media use were used as antecedent variables; beliefs and fear mediated their relationships with attitudes toward COVID policies. Table 4 presents the statistics on the total effects of these variables. The indirect effects are presented in the online supplementary materials (Tables S3–S6).

For attitudes toward zero-COVID, the perceived severity of COVID-19 positively predicted attitudes toward the zero-COVID policy ($\beta_{June} = 0.44$, $p < .001$ vs. $\beta_{Dec} = 0.39$, $p < .001$), whereas perceived susceptibility did not ($\beta_{June} = -0.08$, $p = .065$ vs. $\beta_{Dec} = 0.08$, $p = .079$).

For attitudes toward relaxing restrictions, the perceived severity of COVID-19 negatively predicted attitudes toward this policy ($\beta_{June} = -0.35$, $p < .001$ vs. $\beta_{Dec} = -0.24$, $p < .001$). Perceived susceptibility did not predict such policy attitudes in June ($\beta_{June} = -0.03$, $p = .475$) but predicted policy attitudes in December ($\beta_{Dec} = -0.14$, $p = .003$).

The general pattern showed that perceived severity was a more important predictor of attitudes toward COVID policies than perceived susceptibility.

3.5. The role of mainstream media and WeChat use (RQ6)

For attitudes toward zero-COVID, mainstream media use positively predicted such attitudes in June ($\beta_{June} = 0.12$, $p = .028$) but not in December 2022 ($\beta_{Dec} = 0.07$, $p = .250$). In contrast, WeChat use did not predict attitudes toward zero-COVID in June ($\beta_{June} = 0.02$, $p = .767$) but in early December 2022 ($\beta_{Dec} = 0.16$, $p = .009$).

For attitudes toward relaxing restrictions, mainstream media use did not predict such attitudes in June ($\beta_{June} = 0.02$, $p = .757$) but in December 2022 ($\beta_{Dec} = 0.13$, $p = .046$). In contrast, WeChat use predicted attitudes toward relaxing restrictions in June ($\beta_{June} = 0.13$, $p = .026$) but not in early December 2022 ($\beta_{Dec} = 0.01$, $p = .865$).

The role of mainstream media and WeChat use changed between June and early December 2022.

4. Discussion

4.1. Chinese attitudes toward COVID policies: risk perceptions and attitudinal beliefs

The present research examined Chinese attitudes toward zero-COVID and relaxing COVID restrictions and the factors associated with these two approaches. Such an analysis helps understand the Chinese's evolving attitudes toward these policies and the role of risk perceptions and their media uses between June and early December 2022.

First, the participants' beliefs about the health consequences and fear of the processes of the two COVID-19 approaches were the primary predictors of their attitudes toward zero-COVID and its alternative. Furthermore, perceived severity was an important predictor of COVID-19 policy attitudes. On the other hand, perceived susceptibility was a very weak or nonsignificant predictor of the two COVID-19 policies. The results indicate that Chinese attitudes and beliefs focus on the health consequences of COVID-19 and the efficacy of COVID-19 policies in protecting public health. The results were also consistent with people being less concerned about getting COVID-19 themselves and more concerned about spreading it to vulnerable others (Cai et al., 2022).

Second, although negative beliefs and fear existed toward loosening COVID-19 restrictions both times, Table 3 and Fig. 1 show that the

Table 3
Variables predicting attitudes toward COVID policies in June and December 2022 – direct relations.

	Attitude toward zero-COVID						Attitude toward relaxing restrictions					
	June 10–13, 2022 (N = 460)			December 2, 2022 (N = 450)			June 10–13, 2022 (N = 460)			December 2, 2022 (N = 450)		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Control variable												
Gender (1 = male, 2 = female)	−0.13	0.07	−.06+	−0.14	0.08	−.05+	0.12	0.09	.04	0.05	0.10	.02
Age (year)	0.01	0.00	.04	0.00	0.01	−.00	0.00	0.01	.01	0.00	0.01	−.02
Education (year)	−0.01	0.01	−.02	−0.03	0.02	−.04	−0.02	0.01	−.03	0.01	0.03	−.01
Annual income (1 = RMB10,000)	−0.00	0.01	−.02	0.00	0.01	−.03	−0.01	0.01	−.05	−0.00	0.01	−.02
Political philosophy	0.02	0.03	.02	−0.06	0.03	−.07*	−0.02	0.03	−.02	0.06	0.03	.06+
Antecedent variable												
Perceived susceptibility	−0.03	0.02	−.05	0.06	0.03	.08*	0.02	0.03	.02	0.04	0.03	.04
Perceived severity	0.23	0.03	.23***	0.17	0.04	.16***	−0.15	0.05	−.12***	−0.12	0.05	−.09**
WeChat use	0.05	0.02	.08+	0.07	0.03	.12*	0.07	0.03	.09*	0.03	0.03	.04
Mainstream media use	0.06	0.03	.09*	0.03	0.03	.05	−0.04	0.03	−.05	−0.02	0.03	−.03
Mediating variable												
Positive health consequence	0.55	0.05	.39***	0.33	0.05	.25***	0.49	0.04	.47***	0.39	0.04	.37***
Disruption to economy	−0.09	0.03	−.12***	−0.15	0.03	−.17***	−0.12	0.03	−.13***	−0.15	0.04	−.13***
Fear of the process	−0.25	0.03	−.34***	−0.34	0.03	−.39***	−0.31	0.04	−.30***	−0.43	0.04	−.44***

Note. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. WeChat and mainstream media use were measured in minutes and were divided by 10 (i.e., 1 = 10 min). All other scale values ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). Model statistics: zero-COVID in June: $R^2 = 0.57$, $F(12, 447) = 48.6$, $p < .001$; zero-COVID in December: $R^2 = 0.58$, $F(12, 437) = 49.4$, $p < .001$; relaxing restrictions in June: $R^2 = 0.58$, $F(12, 447) = 52.2$, $p < .001$; relaxing restrictions in December: $R^2 = 0.63$, $F(12, 437) = 61.8$, $p < .001$.

Table 4

Variables predicting attitudes toward COVID policies in June and December 2022 – total relations.

	Attitude toward zero-COVID						Attitude toward relaxing restrictions					
	June 10–13, 2022 (N = 460)			December 2, 2022 (N = 450)			June 10–13, 2022 (N = 460)			December 2, 2022 (N = 450)		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Control variable												
Gender (1 = male, 2 = female)	−0.03	0.09	−.02	−0.30	0.10	−.12**	−0.05	0.12	−.02	0.26	0.15	.08+
Age (year)	0.01	0.01	.10+	0.01	0.01	.04	−0.00	0.01	−.01	0.00	0.01	.02
Education (year)	0.00	0.02	.01	−0.04	0.03	−.06	−0.02	0.02	−.01	0.02	0.04	−.03
Annual income (1 = RMB10,000)	0.01	0.01	.05	0.01	0.01	.06	−0.01	0.01	−.05	−0.00	0.01	−.02
Political philosophy	0.01	0.03	.02	−0.12	0.04	−.14***	0.10	0.05	.10*	0.16	0.05	.14**
Antecedent variable												
Perceived susceptibility	−0.05	0.03	−.08+	0.06	0.03	.08+	−0.03	0.04	−.03	−0.14	0.05	−.14**
Perceived severity	0.43	0.04	.44***	0.41	0.05	.39***	−0.44	0.06	−.35***	−0.33	0.10	−.24***
WeChat use	0.01	0.03	.02	0.10	0.03	.16**	0.10	0.04	.13*	0.01	0.05	.01
Mainstream media use	0.07	0.03	.12*	0.04	0.04	.07	0.01	0.05	.02	0.10	0.05	.13*

Note. N = 460. $^+ p < .10$, $^* p < .05$, $^{**} p < .01$, $^{***} p < .001$. WeChat and mainstream media use were measured in minutes and were divided by 10 (i.e., 1 = 10 min). All other scale values ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). Model statistics: zero-COVID in June: $R^2 = 0.22$, $F(9, 450) = 13.7$, $p < .001$; zero-COVID in December: $R^2 = 0.28$, $F(9, 440) = 18.8$, $p < .001$; relaxing restrictions in June: $R^2 = 0.17$, $F(9, 450) = 9.9$, $p < .001$; relaxing restrictions in December: $R^2 = 0.18$, $F(9, 440) = 11.0$, $p < .001$.

participants' beliefs, fear, and attitudes were trending toward more accepting relaxing COVID restrictions in early December than in June 2022. When there was a need to relax the restrictions, educating the public about the waning severity of COVID-19 and assuring them of the positive prospects of health consequences was essential.

4.2. The role of mainstream media and WeChat use

The present results illustrated the changing role of mainstream media and WeChat use when the situation was fluid. Mainstream media use was positively associated with support for the government's COVID-19 policies (i.e., zero-COVID in June and relaxing restrictions in December). In contrast, WeChat use was positively associated with support for the policy not chosen by the government in June and early December 2022.

First, mainstream media was expected to partially change the public's perceptions and opinions in late November and early December, shortly after the government signaled its intent to ease the zero-COVID policy in November 2022. Previous research has shown that information in the mainstream media can change public perceptions and behaviors (Wakefield et al., 2010) and set a public agenda on what topics to discuss. Furthermore, mainstream media often reach more people and feature health experts, an essential source of health information (Wang, 2021). The longitudinal design of this research provides evidence for the importance of mainstream media in a pandemic. When the results from the two surveys were compared (Table 3 and Fig. 2), the trends showed that the participants had less favorable attitudes toward zero-COVID and more favorable beliefs about the consequences of relaxing COVID restrictions, were less fearful, and had more favorable attitudes toward relaxing COVID-19 restrictions in early December than in June 2022. Such changes could be attributed to the interventions between the surveys, notably the changes in the government's COVID-19 policies and the heavy promotion of relaxing COVID-19 restrictions. The author observed that information about the waning severity of COVID-19 dominated the mainstream media in late November and December 2022. Furthermore, WeChat use was not associated with relaxing restrictions in early December 2022, thus ruling out an alternative explanation of the changing attitudes toward relaxing COVID-19 restrictions.

Note that an audience may be motivated to seek information consistent with their views (i.e., selective exposure). Those more willing to accept zero-COVID might have sought confirmation from mainstream media in June, and those more willing to accept relaxing COVID-19 restrictions sought confirmation from mainstream media in late November and December. Such media uses do not discount the

importance of mainstream media. The process between media choice and effects is often dynamic (Knobloch-Westerwick et al., 2019). The audience needs to choose a media outlet before it can influence them. In addition to providing new information to persuade the public, mainstream media may provide information to help them validate their pre-existing beliefs and manage their emotions (e.g., fear). Such repeated exposure reinforces the public's behavioral intentions and public support.

Second, on the other hand, information on social media, although censored to an extent, is less curated than the information in mainstream media. Social media, including WeChat, allow the public to share their opinions and experiences with others. For example, the author observed that in June 2022, WeChat group chats during the Shanghai lockdown frequently discussed the prospects of "lying flat" (i.e., relaxing the restrictions). Those using WeChat more frequently might align their opinion with the information shared on WeChat. Social media, including WeChat, allows the public to share experiences and opinions, a venue for information seeking and emotional management (Wang, 2021). Misinformation on social media can be detrimental, but reliable information and real experiences shared on social media can provide more contextualized examples and statistics for the public to understand the waning severity of COVID-19 in 2022. The December 2, 2022 survey was conducted at the beginning of the COVID-19 surge in China and before the Chinese participants had COVID infection experiences to share. Further research should examine the role of media use during the pandemic. For example, nonparticipant observations of WeChat group use can provide more insights into the uses and effects of social media during the pandemic and help contextualize this present research.

4.3. Public health importance

Health professionals working in China should consider the severity of a disease, beliefs about health consequences, and associated fear when enacting or lifting health restrictions and communicating to the public. Such policies and public communication should be premised on the severity of the disease under consideration. Although the government should consider economic reasons, it should also consider public sentiments toward a disease.

The Omicron infections among the Chinese population surged more quickly than expected. In two short months, approximately 80%–90% of the population were infected, and most recovered later in December or January 2023. The author later observed via WeChat posts that unpleasant but not deadly personal experiences shared via WeChat and interpersonal communication provided much-needed confirmation and emotional support for the many to accept lifting the restrictions. As such,

personal experience can be an essential aspect to focus on.

4.4. Limitations and conclusion

First, the samples collected via Credamo did not represent the Chinese population. Based on the IP addresses, the sample skewed toward urban dwellers more affected by the COVID-19 policies. Furthermore, it skewed toward the young and more educated. The younger and more educated may be more open to relaxing COVID-19 restrictions because they were less affected by COVID-19 while being more vocal and more likely to complain. Second, the samples represented 33% of those who were sent the survey links. Credamo stopped data collection when the predetermined numbers of participants were reached. As such, the traditional response rate could not be calculated. Thirdly, the present research focused on risk perceptions, media use, and health and economic consequences. Future research should also examine the role of variables such as COVID-19 fatigue and personal values in public health attitudes.

In summary, the present analysis underscores the importance of the COVID policies' perceived health consequences and the fear of carrying out the policy in Chinese attitudes. Such beliefs are rooted in the Chinese's perceptions of the severity of COVID-19. Mainstream media and interpersonal communication via social media differ in predicting the participants' attitudes toward the two policies.

Ethical Approval

The Institutional Review Board at Rochester Institute of Technology approved the survey procedure in May 2022.

Informed Consent

The participants viewed an informed consent before voluntarily completed the questionnaire.

Author statement

Author credit: The author is responsible for all aspects of this research and manuscript preparation.

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Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssmph.2023.101467.

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