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How Propaganda Affects Public Opinion in China: Evidence from the First Phase of the COVID-19 Pandemic

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ABSTRACT
During a national crisis, can state propaganda shift public opinion, and if so, in what direction? Existing studies show that the effects of state propaganda on public opinion in China are mixed. Analysing data from an online survey experiment conducted during the initial phase of the COVID-19 pandemic in early 2020, this article finds that the Chinese public responded positively to propaganda that promoted Xi Jinping's leadership, when these messages included text as well as images that showed Xi being compassionate during his visit to Wuhan. However, when textual propaganda focused on familiar narratives, such as Xi's leadership, international praise of China's experience in fighting the virus, China's efforts to send medical assistance to other countries, and praise for medical workers, it was largely ineffective at changing political opinions. These results suggest that visual components that evoke an emotional response of solidarity can increase government favorability in public opinion. At the same time, propaganda narratives that fail to address critical questions about a national crisis, including its severity and attribution, tend to be ineffective at persuading the public.

KEYWORDS
Propaganda; public opinion; survey experiments; COVID-19; China

Introduction

Political propaganda attempts mass persuasion and constitutes a core component of authoritarian rule. In China, political propaganda has evolved to become more sophisticated. It has adopted modern methods of mass persuasion, such as public relations and social psychology (Brady, 2009), and it has achieved a certain level of persuasion among the public (Kennedy, 2009; Stockmann, 2013; Stockmann & Gallagher, 2011). However, recent findings suggest that, while some forms of propaganda are effective at changing public opinion, such as when propaganda messages are supported by perceived reality (Chen, 2018), other forms, such as stiff leader images and drab media reports, are not effective and may even backfire (Bush et al., 2016; Huang, 2018). Nevertheless, even propaganda that does not change public opinion may still signal state power and reduce the propensity to protest (Huang, 2015; 2018). The existing research finds both effects and limits of China's political propaganda.

The COVID-19 pandemic posed a sudden and serious political challenge to the leaders of the Chinese Communist Party (CCP) in early 2020, partly due to their initial mishandling, cover-up, and stringent lockdown measures (Kang, 2020). Furthermore, the transformation of a regional public health crisis into a global pandemic put the CCP under greater international pressure. The state propaganda system was in full swing to promote narratives that projected an image of a

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responsive and competent government (Xia et al., 2022), but the Chinese public was experiencing harsh and uneven local realities of isolation, illness, and death. By early April 2020, the outbreak was largely under control, and the 76-day lockdown in Wuhan was lifted on 8 April. Thereafter, state propaganda pivoted to praising China's success at containing the virus, especially when compared to Western democracies, which had only started to see surges of infections and deaths. How did the Chinese public respond to their prolonged exposure to pandemic-related propaganda from January 2020? Did the propaganda shift the public's political opinions? If so, in which direction?

To understand the effects of propaganda during the pandemic, this study analyses results from an original online survey experiment conducted from 26 March to 2 April 2020. The results show that embedding compassionate images of leaders in crisis propaganda positively affects the respondents' political evaluations and tendency to comply with the government's demands. Specifically, messages about Xi Jinping's leadership during the pandemic were presented in two ways in the experiment: one as text and the other as text combined with images portraying Xi's compassion during his visit to Wuhan in early March 2020. Only the version of text combined with images increased the respondents' political evaluations and compliance. Meanwhile, text-only messages about pandemic propaganda narratives, including Xi's effective leadership, international praise for the Chinese experience in controlling the virus, China's provision of medical assistance to other countries, and the contribution and sacrifice of its medical workers, were largely ineffective in changing respondents' evaluations and compliance tendencies. A further examination of the subgroups of the sample shows that the respondents who did not follow the news every day had highly positive reactions to the text-with-visuals propaganda about Xi's leadership, but the subgroup that followed the news daily did not react as positively. These results suggest that during the COVID-19 public health crisis, visual images that strike an appropriate emotional tone can empower propaganda effects, but textual propaganda is largely ineffective.

This article contributes to the study of propaganda effects in China and political communication in general, as well as the effects of propaganda on public opinion in a time of crisis. In China, propaganda has been an important component of the state's response to the pandemic. The effectiveness of the text-with-visuals propaganda on Xi's Wuhan visit indicates the persuasive power of carefully crafted visual images. During a national crisis, images of the national leader that signal solidarity can elicit emotional responses and enhance the public's political evaluation. This finding highlights the role of visual forms of propaganda in shaping public opinion. In an age of expanding digital technology, state propaganda often blends text with various forms of visuals, such as on webpages and social media apps. Visual propaganda can effectively change public opinion through an emotional mechanism and exert a greater impact than text-only propaganda.

The remainder of this article is structured as follow. First, it gives an overview of the existing research on Chinese public opinion and propaganda effects to provide a context for understanding the results of this study. It then reviews relevant literature from mass media communication, political crisis communication, and propaganda effects to develop expectations about the impact of China's crisis propaganda during the COVID-19 pandemic. After discussing the research design, data, and results, this article concludes with findings and implications.

Public Opinion and State Propaganda

Existing research has found several key factors that can shape Chinese public opinion, shedding light on the conditions of authoritarian resilience and providing a context for how state propaganda can change public opinion. A fundamental question in this literature is how Chinese citizens perceive their government. Counterintuitively to some, regime support among citizens is high (Tang, 2018), and political trust in the central government is higher than that in local governments (Chen, 2017; Li, 2004; 2016). What explains this pattern of public favourability? According to the logic of performance legitimacy (Gilley, 2008; Yang & Zhao, 2015; Zhao, 2009), a government's policy performance drives people to attribute credit or blame to that government, depending on whether policy outcomes meaningfully improve citizens' lives. Therefore, the rapid progress in material lives in the reform era under the CCP is a primary contributor to public satisfaction. For unsatisfactory outcomes, local governments, which primarily bear the responsibility of providing public services, often become the target of blame. Furthermore, when public expectations exceed the state's governing capacity, performative governance, or 'the state's theatrical deployment of visual, verbal, and gestural symbols to foster an impression of good governance before an audience of citizens' (Ding, 2020), becomes a main strategy to sustain public support. More interestingly, in a comprehensive study that analyses multiple surveys conducted in China between 1987 and 2014, Tang (2016) finds that both political activism and government responsiveness sustain the current political regime, suggesting contentious yet responsive dynamics between citizen demands and government actions. These findings offer insights into Chinese public opinion.

Building on the above research, this article examines how political rhetoric, in addition to government actions or governance outcomes, may shift public opinion by focusing on political propaganda during a national crisis. When the COVID-19 virus first started to spread, medical knowledge about the virus was limited, while the severe symptoms created public panic and fear. In this context, the state's mass communication, including political propaganda, became a key component of what the public was exposed to or sought out to stay informed. The state's propaganda took various forms, including text and visuals such as images and videos. It delivered multiple narratives, including the heroism of front-line medical workers, China's contribution to the global community, the CCP's leadership, and the epidemic in the US and Europe (Xia et al., 2022). Being exposed to the various forms and narratives of propaganda while living through uneven local realities of the pandemic, how did the Chinese public react? This article uses existing research from mass-media communication, political crisis management, and propaganda effects to develop expectations about the effectiveness of state propaganda during the early days of the pandemic.

Visuals and text in mass media communication

Political propaganda can be delivered in different forms, such as text and visuals. Mass media communication research provides some expectations about the effectiveness of textual versus visual content. Research on news broadcasts and political campaigns in democracies suggests that visual information exerts a different impact on people's attitudes and opinions from text. Visual imagery can evoke a greater emotional response than text, in part because images can instigate emotions that drive the formation of attitudes and opinions (Graber, 1990; Pfau et al., 2006). For

example, some studies find that visual images instigating violence and fear can change people's attitudes and opinions (Gerbner et al., 1980; Pfau et al., 2008). Directly comparing the effects of visuals and text, an experimental study finds that when a video's visual and audio present conflicting information, viewers pay more attention to the visual (Drew & Grimes, 1987). A possible explanation for why viewers tend to focus on visual information is that they see images as credible records that allow them to 'witness' news events even though they were not physically present (McLuhan & Fiore, 1967, 117). Another explanation for why images draw more attention than text is that viewers process images' complex, visual details simultaneously rather than engaging in the sequential approach needed to process verbal information (Graber, 1990). The existing studies show that visuals in mass communication tend to be more effective than text at delivering messages.

In Chinese politics, visual images have long occupied a unique place in political propaganda. Analysing the architectures built for the 2008 Beijing Olympics, Broudehoux (2010) notes that the spectacle is a powerful conceptual tool for analysing structures of power and revealing how the state coopts the material landscape to build, consolidate, and reproduce hegemony. Parades around political anniversaries, such as National Day, also constitute an important form of state spectacle that can serve political objectives (Hung, 2007). Top national leaders from Mao Zedong to Xi Jinping have carefully constructed personal images to inspire public support and loyalty. During his first years as supreme leader, Xi projected an image of a genial leader who dedicated himself to serving the people. In December 2013, Xi surprised the Beijing public when he visited a local bun shop, ordered food, paid for it, and carried his food-tray to a nearby table while chatting with other customers in the shop (China News, 2013). This encounter was widely reported by the media and resonated with the affectionate moniker 'Uncle Xi' that was popular among the public. However, later in his leadership tenure, Xi has taken on a more stern and paternalistic manner, projecting the image of a leader who will preside over China's rejuvenation and ascendancy. The evolution of Xi's public image has paralleled China's increasingly authoritarian rule (Buckley, 2022). Some observers have pointed out that Xi's public image has increasingly resembled that of Mao. For example, the honorific title *lingxiu* (a reverential term for 'leader' that was only used for Mao and his successor Hua Guofeng more than three decades ago) has been used to describe Xi by the Politburo and the state media (Gan, 2017). During the five-yearly Party Congress, Xi's portrait occupies a much more prominent position vis-à-vis other Politburo Standing Committee members on the front pages of the *People's Daily*, forming a contrast with Hu Jintao and Jiang Zemin while resembling Mao (Denyer & Wang, 2017). During Xi's tour of farms and factories in northeastern China in 2018, the state media reporting highlighted an image where Xi is shown confidently stepping forward while an adoring crowd of farmers looks on, which mimics the look and feel of painted propaganda posters from the 1950s (Hernández, 2018). Indeed, Xi's ambition to stay in power indefinitely and his personalistic rule hark back to and, in some cases, surpass Mao's leadership style and control (Shirk, 2018). The use of propaganda images takes advantage of the Chinese public's familiarity with this style to create a greater sense of authority.

During the early days of the COVID-19 pandemic, Chinese state media actively used visuals of Xi in its propaganda messages to project an image of a competent and caring leader who can lead the nation out of crisis. Many images of Xi captured him visiting local communities and expressing sympathy towards ordinary people. These visuals may evoke an emotional response of solidarity among the public and thus send a stronger cue to convey the narrative of a competent and caring

leader. Furthermore, people process images differently than text, which may lead to a stronger, more impressive visual effect. Therefore, this study expects propaganda that combines text with images to be more effective than text-only propaganda at changing public opinions about the government. Considering that not all propaganda narratives are suitable for visual depiction and that 'in crises of paramount national importance, the head of government is expected to be the national meaning-maker in chief' (Masters & 't Hart, 2012), this study examines the effects of the propaganda message on Xi's leadership in text-with-visuals and text-only forms. This discussion leads to the following hypothesis:

Hypothesis 1: Compared with text-only propaganda messages, text-with-visuals propaganda messages praising the national leadership will enhance public opinion on government performance and political trust.

Crisis management and public opinion

In times of crisis, government responses consist of not only decision-making about relief efforts (Rosenthal et al., 1989) but also meaning-making through rhetoric (Boin et al., 2005; 't Hart, 1993). Seeing a state's response to a crisis as 'framing contests', Boin et al. (2009) argue that the public expects political leaders to promptly and sufficiently explain the severity of the situation, who or what is driving the course of events, who or what is to be held responsible, and what needs to be done to cope with the situation. If the government is unable to fully address these matters, its likelihood of surviving the crisis will be greatly reduced. Similarly, a recent study of cultural responses during natural disasters (Xu & Bernau, 2022) suggests that how states define the disaster situation and construct positive self-images matter: states seek to address the 'meaning structure' of catastrophes and suffering, including why a disaster happened, how a state is responding effectively and compassionately, and how the disaster has affected the society and people. In addition to shaping how the public perceives the government, a state's meaning-making process during a crisis can have tangible material effects, such as when the UK government's cultural response powerfully shaped the relief efforts and the subsequent deaths and other traumas during the COVID-19 crisis (Morgan, 2020).

In the Chinese context, state propaganda has been a primary component of the state's framing of and symbolic response to the pandemic. The above research suggests that state propaganda will be effective in influencing public opinion only when it sufficiently addresses the severity, attribution, reaction, and consequences of the COVID pandemic. In other words, the focus of the state's symbolic response should be people's welfare rather than the state's self-aggrandisement. While the state media attempted to empathise with the suffering and sacrifice of those impacted by COVID-19, it did not transparently report the true scale of the crisis or sufficiently address the matter of attribution, such as the initial cover-up by local officials in Hubei (Myers, 2020). Rather, the state media tended to frame the policy response as a successful Chinese model for fighting the pandemic, downplaying individual suffering and sacrifice while emphasising the state's righteousness and capabilities. As such, the meaning structure was severely skewed by the state to prioritise its own image over public welfare. For example, the official narrative about the course of events during the pandemic omitted the initial mishandling and cover-up altogether, presenting a version where there was only success to praise and no one to blame (Gracie, 2020). Similarly, during the 2003 Severe Acute Respiratory Syndrome (SARS) epidemic, that SARS-related

rumours circulated in China suggests a major crisis not acknowledged by the government (Ma, 2005). Without sufficiently addressing the attribution of blame and responsibility, this skewed meaning structure is unlikely to resonate with people and change their opinions.

The pattern of positive framing favourable to political leaders during the COVID pandemic is similar to the propaganda during previous crises such as the 2003 SARS epidemic (Yang, 2012), the 2008 Sichuan earthquake (Xu & Bernau, 2022), and the 2012 Beijing floods (Repnikova, 2017). In the 2012 floods, the positive frames similarly skewed the meaning structure to prioritise the state's image over public welfare, with most emphasis placed on official deeds such as the activities of local officials during and especially after the storm (Repnikova, 2017). Comparing the 2003 SARS epidemic with the 2008 Sichuan earthquake, a content analysis of articles from the official *People's Daily* shows that the rescue and treatment frame was the most frequently used frame in both crises, while the leadership frame was used more frequently during the 2008 Sichuan earthquake when the government's handling of the crisis was considered more successful (Yang, 2012). These results show a similar emphasis on relief and less attention to the attribution of responsibility. These studies did not directly examine the effects on public opinion, but after the 2008 Sichuan earthquake, the initial state response during the emergency period was sufficient to offer a meaning structure that emphasised people's suffering and relief, including compassionate performances by political leaders, a tolerance for media reporting, and effective mobilisation of the military and other aspects of state capacity to help with the relief effort (Xu & Bernau, 2022). However, the state response during the recovery period was less tolerant, resulting in lower public satisfaction (Xu & Bernau, 2022, 6). Therefore, this article expects propaganda messages that fail to sufficiently address the meaning structure of the crisis to be unable to affect the public's evaluations of the government positively.

Hypothesis 2: Propaganda messages that only focus on or exaggerate the positive aspects of the COVID-19 pandemic will not positively shift public opinion on government performance and political trust.

Propaganda effects on behavioural compliance tendencies

Recent studies suggest that political propaganda can signal state power and thus reduce people's propensity to protest, even when the propaganda does not change people's substantive opinions about the government (Huang, 2015; 2018). This result suggests a different pathway of public opinion effects and draws attention to the behavioural realm of people's attitudes. The delivery of propaganda, regardless of its substance, can send a powerful signal of the state's coercive power and thus shape people's intention to comply with the state. Based on this mechanism, this study expects the public's behavioural compliance tendencies to be higher when exposed to state propaganda due to the signalling effect (Huang, 2015).

Hypothesis 3: Propaganda messages will increase the respondents' behavioural compliance tendencies with the government.

Research Design and Data

An online survey experiment was conducted from 26 March to 2 April 2020, with respondents from 29 of the 31 provinces, autonomous regions, and provincial-level municipalities in mainland China.[1] During the COVID-19 crisis, the Chinese public was cognitively motivated to react genuinely to propaganda and form judgements based on real-life situations. These conditions provide a realistic scenario to experimentally test and compare propaganda effects during a national crisis. A total of 1,045 responses were collected using Qualtrics. These responses included only those who correctly answered an attention-screening question embedded in the survey.[2]

This study uses a post-test-only control-group experimental design. Respondents were randomly assigned to an experimental group. Balance was achieved on all covariates except *party member*, which was accounted for in the regression analysis (see Appendix Table A1). Respondents in the treatment groups were asked to read a news article published by the state media *People's Daily* online outlet in the middle of the survey, after which they answered a series of questions to measure their political evaluations and behavioural compliance tendencies. Because this study aims to understand the public opinion effects of state propaganda during the pandemic, it uses real news articles, including online webpages dotted with advertisement banners and news headlines. This research design is intended to provide a realistic treatment that minimises the artificiality of the online survey environment by priming the respondents with real propaganda and motivating them to react as if they were encountering the propaganda in real life. The respondents' reactions after they spot the source of the articles and read the content is what this study aims to capture.

The treatments

Five treatments were used in the experiment, and they represent four main propaganda narratives (Xia et al., 2022) delivered by the state media in early 2020: 1) Xi Jinping's leadership, 2) international society's praise for the Chinese model of fighting the virus, 3) medical assistance sent to other countries, and 4) praise for medical workers in Wuhan. Because these narratives concern different aspects of the pandemic propaganda, testing propaganda effects requires this study to include all main propaganda narratives, thus resulting in four textual treatments. The fifth treatment uses the same textual message on Xi's leadership but includes images that portray his visit to Wuhan in March 2020, which allows this study to test the hypothesised difference between textual and visual propaganda messages.

The treatment article on Xi's leadership and his visit to Wuhan was published on the *People's Daily* website on 10 March 2020. It states Xi's emphasis on the importance of the fight against the pandemic, his gratitude toward medical workers, police, grassroots cadres, and ordinary citizens, and his condolences to those who lost loved ones. The treatment article on international society's praise for the successful Chinese model of fighting the virus was published on the *People's Daily* website on 20 March 2020. It highlights China's contributions to global public health and the praise that officials from other countries and international organisations lavished on China. The treatment article on medical assistance sent to other countries was published on the *People's Daily* website on 19 March 2020. It states that China sent medical assistance to Pakistan, Laos, Thailand, Iran, South Korea, Japan, and the African Union, donated US$20 million to the World Health Organization, and promised to send medical assistance to dozens of other countries. Finally, the treatment article praising medical workers in Wuhan was published on the *People's Daily* website on 9 February 2020. It profiles a doctor and two nurses working on the front lines to fight the virus.

Two versions of the article on Xi's leadership were used as separate treatments: one version did not have any images and consisted of text that describes Xi's visit to Wuhan; the other version consisted of an identical text combined with 14 images that portray Xi's visit. Both versions are real news articles published by the *People's Daily*. In all images, Xi wore a face mask, signalling his vulnerability and solidarity. These images portray Xi as a caring and competent leader who can lead the nation out of the crisis and defeat the virus. Some images show Xi surrounded by ordinary people in grassroots communities, highlighting his compassion. In one image, Xi was smiling and waving to residents in a high-rise apartment building. Other images show Xi giving orders to medical workers, military officers, and local cadres to direct their work and inspire their resolve, highlighting his competence in handling the crisis. Though portraying Xi's visit from different angles, these images show his softer, more personable side. These qualities are essential in crisis communication to offer consolation to the population. Using two versions of the same article allows this study to examine the same propaganda message delivered in different forms based on expectations about the effectiveness of visual cues.

Real propaganda articles from the state media on national leaders, especially Xi, tend to be longer and more formal than those on other topics, as real propaganda articles naturally vary in length and tone. However, this study aims to capture their variation and the resulting public opinion effects. Furthermore, despite the variation in length and tone, the source of the news article – *People's Daily* – and the appearance and style of online webpages are consistent, priming the respondents to notice the official source of real state propaganda.

The measurements and expectations

The dependent variables are evaluations of the central and local governments' handling of the pandemic, respectively; political trust in the central and local governments, respectively; and behavioural tendency to comply with government officials during natural disasters and disputes, respectively. The dependent variables are measured on a scale from 0 to 10.

Based on the earlier discussion, this article expects state propaganda to have some influence on public opinion. First, according to Hypothesis 1, the article expects the Xi treatment article with images to increase the respondents' political evaluations due to the stronger effects of visuals compared to text. Second, none of the treatment articles acknowledged the true scale of suffering or identified responsible parties for the outbreak, thus failing to address the 'meaning structure' in the post-crisis communication. According to Hypothesis 2, the article expects the four text-only treatments to be ineffective in changing the respondents' political evaluations. Finally, according to Hypothesis 3, the article expects all treatments to be effective in increasing the respondents' behavioural compliance tendencies due to the signalling effect of state propaganda.

The sample

As with many other online samples (Huang, 2018; Fang & Li, 2020), this sample skews toward urban, well-educated, and affluent individuals compared to the overall Chinese online population (see Appendix Table A2). The skewness limits the generalisability of the results, as other population segments may follow different mechanisms of propaganda effects. Nevertheless, web-

based samples are more diverse than in-person convenience samples, such as college students (Berinsky et al., 2012; Buhrmester et al., 2011). Recent studies also suggest that the magnitude of average treatment effects estimated from web-based samples is similar to that from nationally representative samples (Berinsky et al., 2012; Clifford et al., 2015).

Preference falsification due to political fear in authoritarian contexts is another concern in survey research. In Chinese politics, while some studies find evidence for preference falsification (Jiang & Yang, 2016; Robinson & Tannenberg, 2019) and inflated measures of political support due to survey nonresponse (Ratigan & Rabin, 2020), other studies find little or no evidence for preference falsification (Lei & Lu, 2017; Tang, 2016). The mixed findings suggest preference falsification is better conceptualised as a degree rather than an either/or situation. Therefore, we need to evaluate whether preference falsification is significant enough to invalidate descriptive results or statistical inferences. This study assumes that preference falsification exists and inflates the aggregate levels of government evaluation, political trust, and behavioural compliance tendencies. Given that inferences are made by comparing responses between experimental groups, it would be unlikely for preference falsification to invalidate the inferential results because preference falsification would apply across the experimental groups and possibly yield null results.

Results and Discussion

Difference in means tests

To test whether exposure to propaganda led to higher political evaluations, Table 1 summarises the results of *t*-tests for group mean differences. It shows that the treatment of Xi's visit to Wuhan with images significantly increased the respondents' evaluations of government performance, political trust, and tendencies to comply with government officials. In addition, the treatment of China's provision of medical assistance to other countries increased the respondents' trust in local governments and behavioural compliance tendencies. Other treatments did not show statistically significant effects. The contrast between the two treatments of Xi's leadership shows that the visuals of his visit, combined with an identical text, shifted the respondents' political evaluations in a positive direction, possibly due to the emotional reactions activated by the images. This result provides strong support for Hypothesis 1.

<Typesetter: Insert Table 1 about here>

Meanwhile, the four textual propaganda narratives were mostly ineffective in influencing political evaluations, possibly due to their inadequacy in addressing the severity and attribution components of the meaning structure in post-crisis communication (Xu & Bernau, 2022). Finally, the same exposure to state propaganda increased respondents' behavioural compliance tendencies in the text-with-visuals treatment group and the medical assistance treatment group when asked about obeying government officials during natural disasters or disputes. These results offer support for Huang's (2015, 432) model, whereby:

> a sufficient amount of propaganda can serve to demonstrate a regime's strength in maintaining social control and political order, thus deterring citizens from

challenging the government, even if the content of the propaganda itself does not induce pro-government attitudes or values.

However, the other treatment groups did not show a similar positive reaction to the signalling of the state's coercive power. Therefore, the results provide strong support for Hypothesis 2 and some support for Hypothesis 3.

Regression analysis

As a robustness check, this study analyses linear regression models with demographic and other covariates. *Age*, *education*, *gender*, *household income*, *party member*, *urban hukou*, and *state sector employment* were included to capture important demographic characteristics unique to China.[3] The variable *post-80 generations* was created to capture the generational differences in the online environment (Harmel & Yeh, 2019). The variable *crisis severity* was created based on the provincial governments' crisis response levels as of 25 March 2020 to capture the local severity of the pandemic.[4] The summary statistics for all variables are presented in Appendix Table A3.

The regression results (Table 2) are largely consistent with the results of the difference-in-means tests. The treatment of Xi's visit to Wuhan with images is associated with higher political evaluations and behavioural compliance tendencies at a statistically significant level, except for in relation to the central government's handling of the pandemic. Other treatments, however, are not significantly associated with the dependent variables. Therefore, the earlier significant effects of the medical assistance treatment on local trust and behavioural compliance tendencies do not appear to be significant after considering the covariates. Together, the regression results provide little support for Hypothesis 3 but strong support for Hypotheses 1 and 2.

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Furthermore, the covariates reveal some interesting results. First, being in provinces with a more severe outbreak level is correlated with lower levels of political evaluations and behavioural compliance tendencies, suggesting that the respondents did, in part, base their political evaluations on the local realities of the pandemic. This effect may also alleviate some of the concerns over preference falsification. Second, an urban *hukou* is associated with a lower evaluation of the local government, less trust in the local government, and a lower tendency for behavioural compliance, suggesting that dissatisfaction and distrust in local governments concentrate in the urban areas. Finally, those who are party members, wealthier, and female tended to have higher levels of political evaluations and behavioural compliance tendencies, while the 'post-80 generations' had lower evaluations of local governments and lower behavioural compliance tendencies.

Subgroup comparison

A limitation of this study is that some respondents may have already seen the treatment articles before they participated in the experiment. Given this possibility, the sample is divided into two subgroups based on whether or not the respondents followed the news every day, which is used as a proxy for the likelihood that they had already been exposed to the treatment articles. The survey asks 'How often do you follow news about politics, government, and current affairs?' The answers

range from every day, several times a week, several times a month, and several times a year, to seldom or never. In creating a proxy for the likelihood of exposure to treatment articles, the answers are collapsed into two categories: those who follow political news every day and those who do not. Everyday exposure to political news is a reasonably good indicator of the respondents' news consumption and familiarity with state propaganda.

The results of *t*-tests for group mean differences for each subgroup are summarised in Table 3. Overall, the results show that the respondents who had a lower likelihood of exposure to the treatment articles reacted positively toward the treatment of Xi's visit to Wuhan with images. Furthermore, even the Xi treatment without images increased the respondents' trust in their local governments. On the other hand, the respondents who followed the news every day and thus had a higher likelihood of previous exposure to the treatment articles did not change their opinions at a statistically significant level. Therefore, it is primarily the people who do not follow the news closely who are most susceptible to political propaganda with visual images that strike an appropriate emotional tone in the aftermath of a national crisis. According to the fourth wave of the Asian Barometer Survey data from mainland China (2014–2016), around 44 per cent of respondents followed news about politics and government every day, while around 55 per cent of respondents followed political news somewhat less frequently. In other words, most citizens do not follow political news daily, and they will likely pay attention to the news during a crisis and be influenced by visual propaganda. If so, the article finds a powerful effect of state propaganda.

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Different levels of exposure to news may also be an indication of educational differences. People who are more educated are more likely to read the news regularly (Price & Zaller, 1993) and more likely to be sophisticated about interpreting the news (Guo & Moy, 1998; Valentino et al., 2001). The results of *t*-tests show that education levels are indeed different between the two subgroups at the 95 per cent confidence level ($t = 2.25$), although the magnitude of the difference is small (4.93 vs 4.84 on a six-point scale). Therefore, besides prior propaganda exposure, education may also mediate propaganda effects on political opinions and attitudes. Nevertheless, for the low-news-consumption subgroup, the null effects of the propaganda narratives, except for the Xi treatment with images, still support Hypotheses 1 and 2, suggesting that emotion-inducing visual images combined with a text about Xi's leadership empowered propaganda effects. In contrast, text-only propaganda was largely ineffective in changing political evaluations.

A competing explanation for the null results is the ceiling effect. Because political evaluations and behavioural compliance tendencies were already high for the control group, there was little scope for further increase, possibly leading to null results. Comparing the political trust averages from the control group in this study with political trust averages from other national surveys, Table 4 shows that political trust levels in this study are indeed higher. However, the comparison is crude given the different sampling methods and survey times. The above subgroup analysis seems to cast doubt on the potential for the ceiling effect, rather than ineffective propaganda, to explain the null results: public opinion shifts can happen not just in a positive direction but also in a negative direction, as is evident in the negative differences for the text-only Xi treatment group in the everyday-news-consumption subgroup. While not statistically significant, the backfire effect shows that excessive propaganda can undermine the respondents' previously high political

opinions. This study cannot completely rule out the ceiling effect explanation, but the backfire effect cautions against interpreting null results as the ceiling effect. Furthermore, the statistically significant differences between the group receiving the Xi treatment with images and the control group suggest that, despite the already high political opinions, visual cues embedded in the text can further increase the respondents' political evaluations by evoking emotional responses, suggesting a powerful mechanism of propaganda effects.

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This analysis shows that the treatment of Xi's leadership that combines appropriate visuals activating emotional responses can exert powerful, persuasive effects on the respondents' political evaluations and behavioural compliance tendencies. Meanwhile, the textual messages of the triumphant propaganda narratives on COVID towards the end of the Wuhan lockdown were largely ineffective in influencing the respondents' opinions. This result suggests that narratives that fail to address the meaning structure in the aftermath of a crisis tend to be ineffective in changing political evaluations and behavioural compliance tendencies, at least among the wealthy and educated urban residents.

Conclusion

This study used an online survey experiment to examine propaganda effects in the aftermath of the COVID-19 crisis in China. It found that the state propaganda on Xi's leadership delivered in both textual and visual forms was more effective at influencing public opinion than the same propaganda narrative delivered in textual form only, suggesting the persuasive power of visuals that can evoke an emotional response of solidarity. However, the power of visuals only existed among the subgroup not overexposed to state propaganda, while the subgroup often exposed to state propaganda reacted indifferently. Furthermore, other propaganda narratives during the crisis did not change the respondents' opinions, likely due to the inadequacy of addressing the 'meaning structure' in the aftermath of a public health crisis. The narratives on competent national leadership, a successful Chinese model of fighting the pandemic, medical assistance provided to other countries, and the sacrifice and contribution of medical workers did not address questions about the origins and severity of the crisis or who should be held accountable. Existing studies in crisis communication and cultural sociology suggest that such an inadequacy will likely fail to generate support for incumbents. Finally, this ineffectiveness seems to have contributed to the lack of significant effects on behavioural compliance tendencies, suggesting the limits of propaganda's signalling power during a crisis.

Overall, this study found that the persuasive power of visuals in Chinese state propaganda can evoke an emotional response of solidarity and increase the public's political evaluation during a crisis. As the media landscape evolves along with the expansion of digital technology, Chinese state propaganda has also evolved with growing sophistication. In the Maoist tradition of colourful posters, recent propaganda has mainly portrayed model behaviour and a better future (Landsberger, 2020). In the new millennium, it has become commonplace for state propaganda to use various forms of visuals, including leader images and videos, to convey more fine-tuned messages. Indeed, Xi has used his public appearances to construct images that reflect his evolving political style and ambition. Therefore, propaganda images are an important component of the Chinese state's

political communication and, as this study has found, can have a consequential impact on public opinion during a crisis.

As people increasingly access media through smartphones, news apps and social media platforms beam with attractive visuals, which impels state propaganda to evolve with the emerging attention economy. For example, the smartphone app and the Weibo account of *People's Daily* are crowded with eye-catching images and videos that convey the latest propaganda narratives. These visuals often feature not only political leaders and government officials but also celebrities and ordinary citizens. The extensive range of visual features is intended to project broad and sincere public support for the government and its policies. Indeed, celebrities have been recruited to disseminate propaganda on their social media accounts (Chen & Gao, 2023). These developments highlight the significance of the findings in this article. Visual propaganda, such as the political leader images examined here, can influence public opinion through an emotional mechanism and exert a greater impact than text-only propaganda on China's current public discourse. However, a limitation of this study is that it does not test the effects of different forms of visuals in state propaganda. Also, the unique online sample in this study implies that the treatment effects may not apply to other segments of the Chinese population. Understanding the potentially diverging propaganda effects is a promising direction for future research.

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Table 1. Group Mean Differences

	Xi w/ pic (N=174) —Control (N=164)	Xi w/o pic (N=173) —Control (N=164)	Int'l praise (N=176) —Control (N=164)	Assistance (N=182) —Control (N=164)	Doctor (N=176) —Control (N=164)
Central gov handling of pandemic	0.34* (1.88)	-0.04 (-0.18)	0.09 (0.46)	0.18 (0.99)	0.09 (0.45)
Local gov handling of pandemic	0.49** (2.54)	-0.07 (-0.33)	0.23 (1.17)	0.28 (1.49)	0.20 (0.99)
Trust in central gov	0.41* (2.01)	0.06 (0.25)	0.25 (1.18)	0.24 (1.18)	0.20 (0.92)
Trust in local gov	0.62** (2.83)	-0.04 (-0.17)	0.30 (1.25)	0.45* (2.01)	0.28 (1.21)
Obey gov in dispute or conflict	0.48** (2.39)	-0.13 (-0.61)	0.13 (0.63)	0.37* (1.88)	0.23 (1.09)
Obey gov in natural disasters	0.40* (2.25)	-0.13 (-0.62)	0.03 (0.17)	0.34* (1.87)	-0.02 (-0.09)

Note: Entries are group means differences on a scale of 0 to 10. *t* statistics are in parentheses. The *t*-tests assume unequal variance. The *p*-values reflect one-sided hypothesis tests at a 95% confidence level.

* $p < .05$; ** $p < .01$.

Table 2. Regression Results

	Handling of Pandemic		Political Trust		Behavioural Compliance	
	Central Gov	Local Gov	Central Gov	Local Gov	Obey Gov in Dispute or Conflict	Obey Gov in Natural Disasters
Xi visit w/ pic	0.35	0.47**	0.43*	0.60**	0.46*	0.42*
	(0.18)	(0.18)	(0.19)	(0.21)	(0.20)	(0.18)
Xi visit w/o pic	-0.03	-0.08	0.05	-0.05	-0.15	-0.13
	(0.18)	(0.18)	(0.19)	(0.21)	(0.20)	(0.18)
Int'l praise	0.05	0.17	0.20	0.21	0.08	-0.01
	(0.18)	(0.18)	(0.19)	(0.21)	(0.20)	(0.18)
Assistance	0.15	0.24	0.19	0.36	0.30	0.31
	(0.18)	(0.18)	(0.19)	(0.21)	(0.20)	(0.18)
Doctor	0.07	0.17	0.18	0.23	0.20	-0.03
	(0.18)	(0.18)	(0.19)	(0.21)	(0.20)	(0.18)
Age groups	-0.04	-0.004	-0.03	0.03	0.07	-0.08
	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)
Education	-0.15	-0.06	-0.15	-0.16	-0.09	-0.15
	(0.10)	(0.10)	(0.11)	(0.12)	(0.11)	(0.10)
Gender (female=1)	-0.07	0.15	-0.02	0.41***	0.24*	0.10
	(0.10)	(0.11)	(0.11)	(0.12)	(0.11)	(0.11)
Household income	0.09*	0.13**	0.08	0.18***	0.09*	0.09*
	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)
Party member	0.34*	0.15	0.54***	0.42**	0.35*	0.41**
	(0.14)	(0.14)	(0.15)	(0.16)	(0.15)	(0.14)
Hukou (urban=1)	-0.07	-0.34*	-0.20	-0.58***	-0.43**	-0.40**
	(0.15)	(0.15)	(0.16)	(0.17)	(0.16)	(0.15)
State sector	0.14	0.19	0.24	0.16	0.23	0.20
	(0.12)	(0.12)	(0.13)	(0.14)	(0.13)	(0.12)
Post-80 generations	-0.38	-0.42*	-0.42	-0.43	0.06	-0.57**
	(0.21)	(0.21)	(0.23)	(0.24)	(0.23)	(0.21)
Crisis severity	-0.19*	-0.27**	-0.22*	-0.17	-0.26**	-0.24**
	(0.08)	(0.09)	(0.09)	(0.10)	(0.09)	(0.09)
Intercept	9.73***	8.85***	9.75***	8.20***	8.26***	10.20***
	(0.64)	(0.65)	(0.69)	(0.74)	(0.70)	(0.66)
N	1045	1045	1045	1045	1045	1045

Note: Entries are unstandardised estimated coefficients. Dependent variables are measured on a scale from 0 to 10. Robust standard errors are in parentheses. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3. Propaganda Effects by Frequency of News Consumption

Less frequent news consumption (N=341)	Xi w/ pic (N=65) —Control (N=59)	Xi w/o pic (N=54) —Control (N=59)	Int'l praise (N=60) —Control (N=59)	Assistance (N=55) — Control (N=59)	Doctor (N=48) —Control (N=59)
Central gov handling of pandemic	0.52* (1.66)	0.36 (1.16)	0.01 (0.03)	0.10 (0.29)	0.10 (0.26)
Local gov handling of pandemic	0.98** (2.77)	0.56 (1.56)	0.35 (0.94)	0.34 (0.88)	0.38 (0.94)
Trust in central gov	0.65* (1.75)	0.49 (1.37)	0.28 (0.72)	0.23 (0.57)	0.32 (0.75)
Trust in local gov	1.12** (2.69)	0.72* (1.69)	0.36 (0.81)	0.65 (1.49)	0.56 (1.19)
Obey gov in dispute or conflict	0.88** (2.46)	0.43 (1.15)	0.40 (1.10)	0.48 (1.36)	0.44 (1.05)
Obey gov in natural disasters	0.81** (2.42)	0.42 (1.21)	0.14 (0.39)	0.47 (1.26)	0.15 (0.36)
Everyday news consumption (N=704)					
	Xi w/ pic (N=109) —Control (N=105)	Xi w/o pic (N=119) —Control (N=105)	Int'l praise (N=116) —Control (N=105)	Assistance (N=127) — Control (N=105)	Doctor (N=128) —Control (N=105)
Central gov handling of pandemic	0.24 (1.08)	-0.24 (-1.00)	0.11 (0.52)	0.18 (0.88)	0.04 (0.18)
Local gov handling of pandemic	0.21 (0.93)	-0.41 (-1.62)	0.14 (0.65)	0.19 (0.97)	0.04 (0.18)
Trust in central gov	0.27 (1.15)	-0.18 (-0.67)	0.21 (0.89)	0.20 (0.90)	0.09 (0.39)
Trust in local gov	0.34 (1.38)	-0.45 (-1.52)	0.23 (0.90)	0.29 (1.19)	0.08 (0.30)
Obey gov in dispute or conflict	0.25 (1.08)	-0.44 (-1.60)	-0.03 (-0.10)	0.26 (1.13)	0.06 (0.27)
Obey gov in natural disasters	0.18 (0.85)	-0.41 (-1.65)	-0.03 (-0.14)	0.25 (1.22)	-0.14 (-0.61)

Note: Entries are group means differences on a scale of 0 to 10. *t* statistics are in parentheses. The *t*-tests assume unequal variance. The *p*-values reflect one-sided hypothesis tests at a 95% confidence level.

* $p < .05$; ** $p < .01$.

Table 4. Political Trust across Different Samples

	Trust in the central government	Trust in the local government
Current sample (control group)	8.39	7.73
ABS (2015–2016)	7.80	6.37
WVS (2018)	8.29	

Note: Entries are means of political trust rescaled to an 11-point scale from 0 to 10. ABS (2015–2016) refers to the Asian Barometer Survey online sample (4th wave conducted in 2015 and 2016). WVS (2018) refers to World Values Survey online sample (7th wave conducted in 2018).

Appendix: Additional Tables

Table A1. Group Balance

	Age group	Female	Education	Income	*Hukou* (urban)	Party member	State sector	Crisis severity
Control (N=164)	4.96	0.48	4.90	5.82	0.86	0.17	0.29	2.92
Xi w/ pic (N=174)	4.93	0.51	4.93	5.98	0.85	0.14	0.29	2.91
Xi w/o pic (N=173)	4.96	0.50	4.94	5.82	0.85	0.17	0.28	2.87
Int'l praise (N=176)	5.05	0.52	4.94	6.03	0.88	0.22	0.32	2.90
Assistance (N=182)	4.90	0.56	4.93	6.01	0.86	0.26*	0.28	2.90
Doctor (N=164)	5.06	0.49	4.87	5.99	0.85	0.18	0.27	2.96
F	0.10	0.34	0.62	1.58	0.22	2.03	0.29	1.12
Prob > F	0.99	0.89	0.69	0.16	0.95	0.07	0.92	0.35

Note: Levene's test for equal variance for non-normally distributed data is satisfied for all variables. The *t*-test results for difference in means show no significant differences in group means except for *party member*. * p <0.05.

Table A2. Demographic Comparison with Chinese Online Population

	Current Sample	CINIC Online Population	ABS Online Sample	WVS Online Sample
Urban hukou	85.7%	73.7%		
Gender				
Female	51.0%	47.6%	48.7%	52.2%
Male	49.0%	52.4%	51.3%	47.8%
Education				
Elementary school and no formal schooling	0.5%	18.0%	15.8%	7.4%
Middle school	1.2%	38.1%	34.5%	25.2%
High school (including vocational school)	12.2%	23.8%	24.1%	28.4%
University (including associate) and above	86.1%	20.1%	24.3%	37.6%
Age				
0-10		4.0%		
10-19		16.9%		
20-29		24.6%		
18-29	15.8%		32.4%	30.2%
30-39	37.9%	23.7%	25.2%	25.8%
40-49	15.8%	17.3%	23.1%	25.5%
50-59	18.4%	6.7%	10.8%	12.7%
60 and above	12.2%	6.9%	7.9%	5.8%

Note: The data on CINIC online population come from the 44th China statistical report on Internet development, published in 2019 by the China Internet Network Information Center (CINIC). The data on ABS online sample come from Asian Barometer Survey (4th wave conducted in 2015 and 2016). The data on WVS online sample come from World Values Survey (7th wave conducted in 2018). The age brackets for those below 30 used in this survey experiment and the CINIC report are different. This survey experiment only included those aged 18 and above.

Table A3. Summary Statistics (N=1045)

	Min	Max	Median	Mean	SD
Central gov handling of pandemic	0	10	9	8.67	1.68
Local gov handling of pandemic	0	10	9	8.32	1.71
Trust in central gov	0	10	9	8.59	1.81
Trust in local gov	0	10	8	7.98	1.99
Obey gov in dispute or conflict	0	10	8	8.01	1.85
Obey gov in natural disaster	0	10	9	8.54	1.73
Age groups	1	9	4	4.98	2.49
Education	1	6	5	4.92	0.56
Gender (female=1)	0	1	1	0.51	0.50
Household income	1	8	6	5.94	1.45
Party member (=1)	0	1	0	0.19	0.39
Hukou (urban=1)	0	1	1	0.86	0.35
State sector (=1)	0	1	0	0.29	0.45
Frequency of news consumption	1	5	5	4.58	0.74
Crisis severity	1	4	3	2.91	0.61
Post-80 generation (=1)	0	1	1	0.54	0.50

Notes

[1] This project received approval from the Institutional Review Board at the University of Richmond. The two provinces not included in the sample are Tibet and Qinghai.

[2] The screening question asked the respondents to identify the capital city of China.

[3] *Hukou* is a household registration system that divides the population into agricultural (rural) and non-agricultural (urban) segments. It determines one's access to welfare benefits. The term 'state sector employment' refers to work conducted in state-owned enterprises and institutions, party- and state-affiliated organisations, and governments.

[4] Crisis response level is an indication of government response to emergencies, which include natural disasters, accidents, public health crises, and social stability crises, according to 中华人民共和国突发事件应对法 [People's Republic of China Emergency Response Law] and 国家突发公共事件总体应急预案 [National General Emergency Plan for Public Emergencies]. It has four levels that direct national and local governments' responses.