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March 28, 2020

Summary

Background: During the outbreak of an epidemic, the success in risk communications to make the public comply with disease preventive measures depends on the public's trust in the government. In this study, we aim to understand how media audiences update their trust in the government during the COVID-19 outbreak depending on the information they received.

Methods: Online survey experiment in which respondents were randomly provided with a government press release and an endorsement either from an official or a non-official source, and a statement from a medical expert either mentioning or not mentioning his government-related title. We analyzed the average treatment effects and heterogeneous treatment effects.

Findings: The experiment was conducted in mid-February 2020 in Hong Kong. 1,016 responses were received. An endorsement from a non-official source can enhance the credibility of government press release more than an official source can (45 · 98, 95% CI 43 · 62-48 · 34 versus 42 · 85, 95% CI 40 · 35-45 · 35). The effect is particularly strong for respondents who are critical of the government. This positive effect exists among those who do know the source before and do not consider the source under instruction of the government, with the effect stronger for those who consider the source independent.

Interpretation: Information from non-official sources can enhance the credibility of official government messages. Allowing information flow from non-official sources and medical experts can be a practical measure for governments to address the problem of a credibility deficit in a period of epidemic outbreak.

Introduction

In the current international endeavor for guarding global health against COVID-19, the role played by political systems has been placed under the spotlight by the recent comments and editorials of *the Lancet*[1,2] on the information politics in nondemocratic countries and how it affects their public health governance. As the March 7 *Lancet* editorial[3] points out, China's special "command-and-control political economy" in fighting the virus is absent in other nations, among which many are nondemocratic. And yet, their weaker authoritarian governments still will necessarily face the challenge during the global contagion. In other words, with less power and coercive apparatus than their Chinese counterpart, these countries' ability to conduct risk communications in shaping people's risk perceptions and instructing them to adopt certain preventive measures such as social distancing and self-isolation becomes imperative during an epidemic outbreak.[4]

The success in risk communications to make the public comply with disease preventive measures has been found to be positively correlated with the trust in government.[5-7] More specifically, when it comes to the information distributed by the government, such trust often hinges on the credibility of its sources.[8-10] This is especially so when the information receivers, i.e. the public, do not possess adequate expertise in understanding technical details of the diseases, e.g., infection statistics and the effectiveness of vaccination.[11] However, an authoritarian government's institutional incentive and capacity to manipulate information often make the public have little trust in its policy announcements and statements, even when it truly wants to open up and share truthful information with its citizens. Without media freedom, such a government also has difficulties acquiring crucial information for assessing the situation and making correct policy decisions. For example, while some global health officials praised China's authoritarian system for its prompt and forceful response to lock down the infected cities, the death of an arrested whistle-blowers, Dr. Li Wenliang, nonetheless reminded people that, were it not for the censorship, the outbreak could have been preempted when there were only a few local infections. Besides the problem in the internal information transmission, an authoritarian government might also find its fragility in making its policies credible to the society it governs. The first official notice of Wuhan's lockdown on January 23, left an eight-hour window for people to choose between leave and stay. According to its mayor, roughly 5 million Wuhan residents chose the former before the policy was enforced.[12] Furthermore, immediately after the lockdown, a second notice was issued to guarantee the sufficient supply of daily necessities and medical resources within the city. Nonetheless, it did not stop people from hoarding and trying their best to leave the city.[13] These incidents showed that the lack of the liberty of expression to health workers and media outlets might not only make an authoritarian government lose the window of opportunity to contain the virus ex ante, but also weaken its policy to stop its spread ex post.

Such a credibility deficit, therefore, presents a grave challenge to the ongoing global efforts in containing the coronavirus in countries with nondemocratic political systems. In fact, many experts have suggested that granting liberty of expression to citizens and journalists in authoritarian systems would be a solution.[14] In particular, since the public trust in the conventional media, which are usually viewed as government propaganda mouthpieces, tends to be low in authoritarian countries, a feasible solution to the authoritarian credibility deficit during the current public health exigency probably lies somewhere else: citizen journalists as an independent source.

In this study, we are particularly interested in the role citizen journalism plays when citizen journalists endorse official risk communications focused on containing an epidemic. The study seeks to understand whether the government can "borrow" credibility from independent investigative journalists. Although reports from non-official sources may not emerge simply upon government request, we aim to explore whether allowing this kind of reporting is an effective measure for the government to stabilize public anxiety. We therefore conducted a survey experiment to show how relaxing censorship

on media and allowing independent reporting can actually enhance the credibility of an authoritarian government at an individual level and make its campaign against a pandemic more effective.

Research In Context

Evidence before this study

The effects of citizen journalism on non-democratic regimes' credibility deficit in risk communication during public health crises are only partially understood. In general, the traditional model of risk communication stresses the importance of facilitating the transmission of information from authoritative/official sources. Citizen journalism is, therefore, viewed as a positive factor that can not only provide more information that is inaccessible to government sources, but also proactively engage those who are affected to shape their risk perceptions. In the authoritarian context where some kind of censorship is often imposed, citizen journalism has been found to liberate people from propaganda through providing alternative information and aggravate dictators' credibility deficit. However, little is known if citizen journalism in a dictatorship can conversely work in tandem with its authoritarian government to enhance the effectiveness of risk communications during a public health crisis.

We searched Google Scholar and PubMed for publications between 2003 and 2020, with the keywords, "citizen journalism" AND "risk communication" OR "public health." We found what is lacking from this body of work is an empirical analysis that addresses how citizen journalism might actually reduce the credibility deficit under dictatorships. This literature inherits a traditional view that dictatorships are antithetical to media freedom, and thus, by definition, authoritarian leaders always suppress citizens' freedom of expression, so nothing contradicts their voices.

Added value of this study

To the best of our knowledge, this study is the first to confirm the positive effect of citizen journalism on reducing the credibility deficit in public health governance in authoritarian countries. First of all, we took advantage of a narrow window of opportunity to conduct a survey experiment in Hong Kong during China's COVID-19 outbreak. The timely research makes our findings less artificial and closer to reality. Second, compared to the previous study, we show that a citizen journalist's report can enhance the credibility of dictatorships. Third, in addition to the average causal effect of citizen journalism on authoritarian credibility in risk communications during a public health crisis, our findings also reveal that the effect is especially salient on those critical citizens who used to participate in Hong Kong's 2019 Anti-Extradition Protest and favor media freedom in China.

Implications of all the available evidence

The study shows that authoritarian leaders can "borrow credibility" from citizen journalists during a public health incident. Granting citizens freedom of speech can make authoritarian regimes more, instead of less, credible. This implies that there can actually be a synergy between state and society in a dictatorship. Given our finding that critical citizens also tend to be more responsive to reports made by citizen journalists, it implies that even nondemocratic leaders can make themselves more trustworthy to potential dissenters through citizen journalism. Moreover, the kind of experimental manipulation our participants were exposed to was not simply about some generic information about COVID-19, but about an actual policy measure that might affect people's behavior in real-life scenarios. This also renders our findings readily applicable to actual anti-virus campaigns in other authoritarian countries.

Finally, based on our findings, future research should tap into other civil society groups for alternative sources of independence.

Methods

Experiment design

We designed a Qualtrics-based questionnaire to conduct a survey experiment in Hong Kong (see Fig.1). A survey experiment is a method for understanding how people update their beliefs about an issue upon receiving different messages. Despite using a convenient online sample, previous research has shown that online survey experiments usually have external validity suitable for understanding social behavior.[15;16] The survey experiment is widely used in medical and public health research.[17−20]

   We chose Hong Kong to conduct this experiment since it is a part of China that still enjoys partial media freedom, and its citizens are more experienced in detecting government propaganda. In other words, if exposing them to our information treatment does induce an endorsement effect on the government announcement, then such effect should be easier to observe among other less sophisticated respondents. Moreover, it is less likely for Hong Kong citizens to have a very concrete idea about the situation in Wuhan, the city on lockdown, when our experiment was administered. Hence, we expected our respondents would be affected by the information we provided.

   The survey questionnaire consists of four sections: Pre-experiment questions, Experiment 1, Experiment 2 (See Appendix for details), and Post-experiment questions. Experiment 1 and Experiment 2 are randomly ordered (see Fig.1). Apart from demographic questions, to minimize the possibility that inattentive responses may impair data quality, choices for all other questions are also randomly ordered.
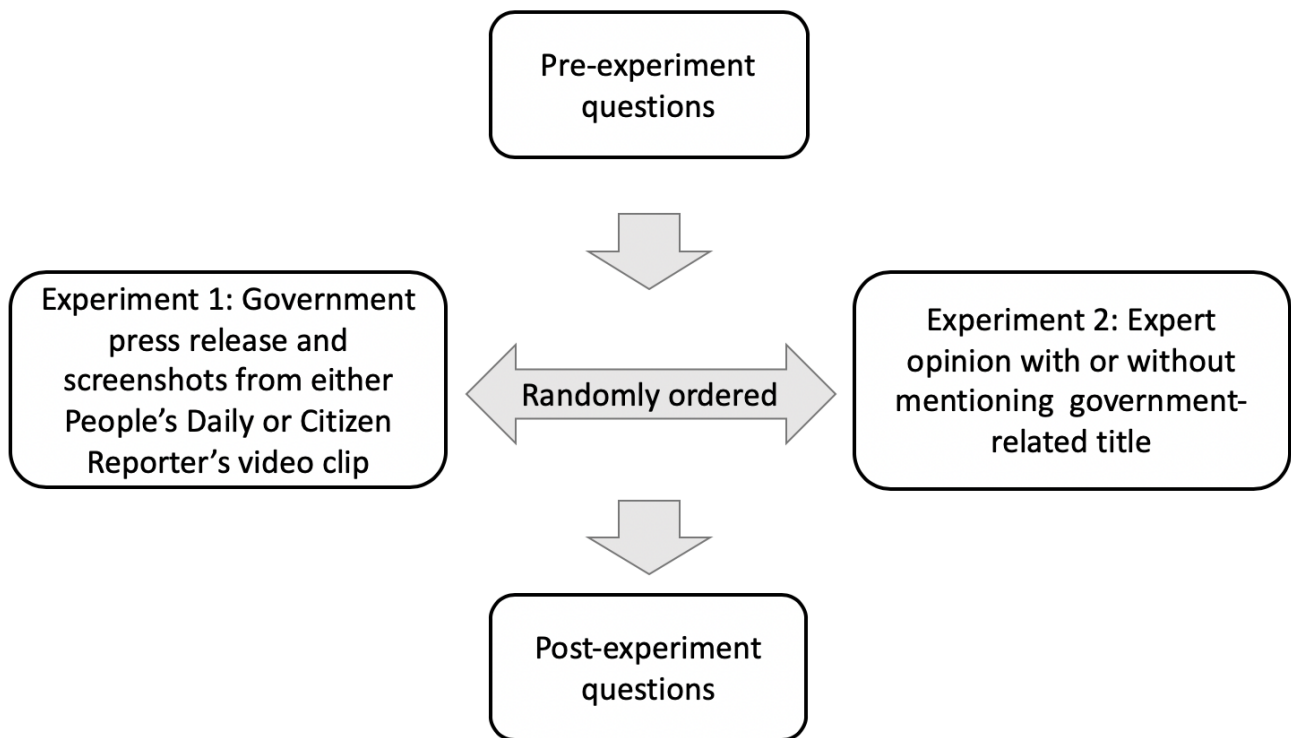
Figure 1: Flowchart of the experimental procedure

In the pre-treatment section, we asked the respondents questions such as their disease prevention knowledge and behaviors, their view on media freedom, their participation in the 2019-20 Hong Kong anti-extradition protests, and their knowledge about Chen Qiushi (henceforth CQ), a lawyer-turned-citizen reporter from mainland China. He was known by many Hong Kong citizens for his Youtube clips covering the 2019-20 Hong Kong protests. For those who have heard of him, some consider him an independent and trustworthy journalist, while others him an agent of the Communist Party who is exploited to guide public opinion in Hong Kong. There are also some people who have never heard of him. We are thus able to leverage his reputation in Hong Kong in our analysis. To avoid respondent fatigue, we included questions about demographic details and other information unaffected by the treatments in the post-experiment section. The questionnaire is available upon request.

Experiment 1 was designed to test the causal effect of a citizen journalist's endorsement on the government news credibility. Subjects were provided with a government press release made by China's Ministry of Commerce (henceforth MoC), and then randomly assigned to two groups: one was provided with screenshots from the People's Daily (henceforth PD) clip and the other with screenshots from CQ's clip (see Figure 2).
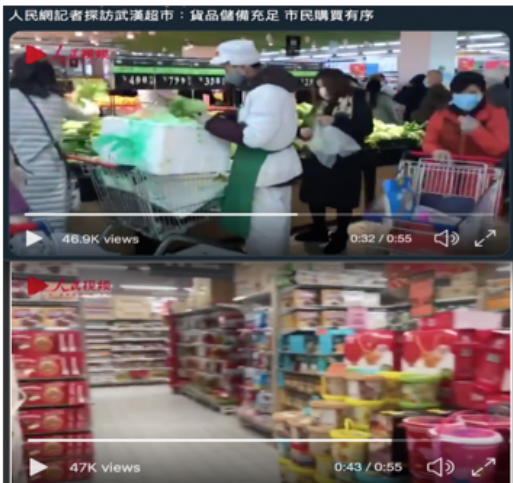
(a) People's Daily   (b) Chen Qiushi

Figure 2: Treatments for Experiment 1

All of the information supplied in this experiment is genuine. Before the experiment, we verified that both screenshots echoed MoC's press release and comparable to each other by consulting our colleagues' opinions. Please see the Appendix for more information about the design.

After reading the information provided, respondents were asked to rate the credibility of MoC's press release and that of either PD or CQ's report. We hypothesized that, because PD was a state mouthpiece of China and CQ was a non-official information source that many audiences considered independent, the credibility of a government press release should be higher when it was confirmed by CQ's report than by PD report.

Experiment 2 is designed to investigate whether an expert opinion with or without mentioning the expert's government-related title has a different level of credibility. Due to limitations of length, we

report our research design and empirical results of Experiment 2 in Appendices B and G.

Data

The experiment design obtained the Institutional Review Board approval at New York University Abu Dhabi (HRPP-2020-15) on February 3, 2020. We conducted an online survey experiment in Hong Kong between February 13 and 17, 2020 (local time). It was right after the Chinese government confirmed more than 15,000 cases on February 12 alone due to a change in the diagnostic criteria. All respondents were Hong Kong citizens, aged 18 to 65, recruited by the Rakuten Insight Global, an international survey company.

With quotas based on gender and age that correspond to the 2018 Population and Household Statistics published by the government of Hong Kong, proportional quota sampling was used to recruit respondents, and 1,016 responses were completed. A common feature of online surveys is over-representation of highly educated respondents. Our respondents also reported higher educational levels (approximately 65% have a university or above educational level) than the general population (approximately 33%). However, this is less of a problem for our study because what we aim to understand is how a type of information that is more available through the Internet impacts public opinion. The distribution of respondents' places of residence is close to the 2017 proportion of the land-based non-institutional population by District Council District published by the government of Hong Kong.

Statistical analysis

Data were analyzed using Stata 15·1. We used two-tailed t-tests to perform randomization checks. As reported in Tables 1 and 2 in Appendix C, the p-values of two-tailed t-tests indicate that the group differences are insignificant in our two experiments, except for gender in the second experiment. Yet, we would like to note that although randomization checks are widely used for assessing whether random assignment is conducted successfully, it is still controversial whether this practice can really fulfill its promise.[21] The average treatment effects of major interest in include (1) the perceived credibility of the government press release by the group that received only information from state-owned media versus the group that received information from a citizen reporter, and (2) the perceived credibility of a medical expert's statement when we include and exclude his government-related title. We estimated OLS regression models and linear interaction models to understand heterogeneous treatment effects.

Role of the funding sources

Results

We found that the exposure to independent citizen journalism increased respondents' trust in the government press release. A two-tailed t-test shows that the respondents who read CQ's report gave higher ratings of credibility to the MoC's press release than those who had read the PD report (45·98, 95% CI 43·62-48·34 versus 42·85, 95% CI 40·35-45·35, the difference is 3·13, 95% CI -0·30-6·57, two-sided p-value = 0·07, see Figure 3a). More generally, we found that, across all levels of government (the Central, Wuhan, and Hong Kong), the general trust in them correlates positively with respondents'

perceived transparency of information concerning the outbreak (Figure 3b). This indicates that information provided by the government can enjoy a higher level of trust from the citizens when they perceive a higher level of government transparency.
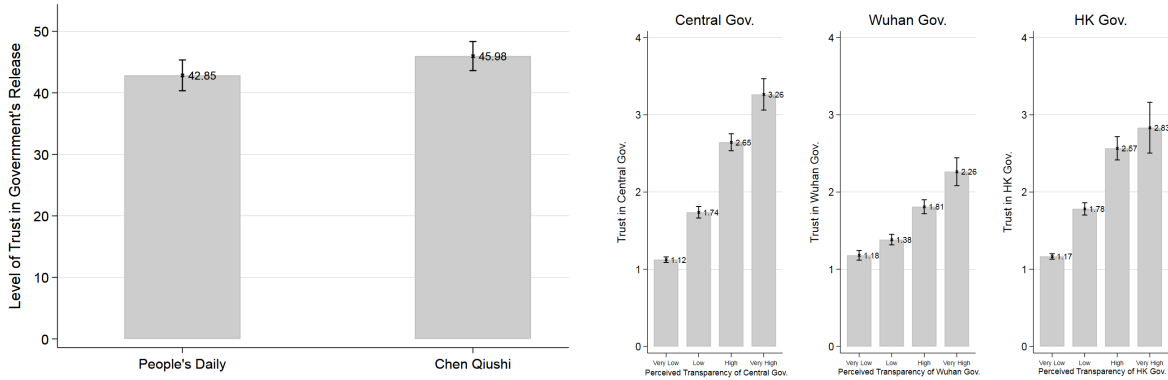
(a) Trust in government press release after reading news from different sources

(b) Government transparency in disease information and trust in government

Figure 3: Endorsement Effect of Citizen Journalism
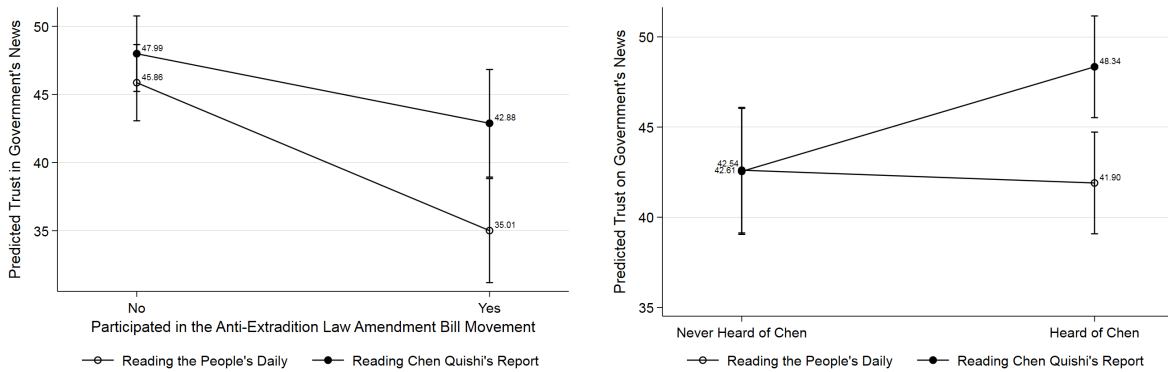
(a) Social movement Participation and trust in government press release

(b) Previous awareness of CQ and trust in government press release
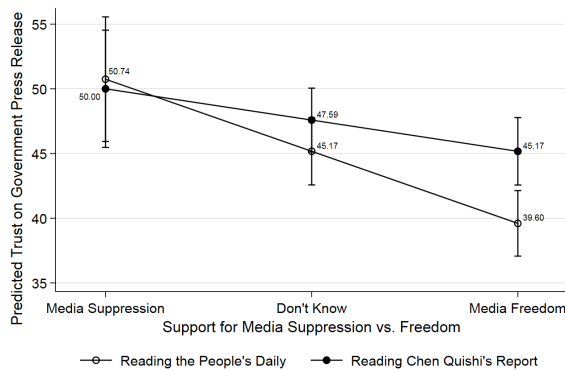
(c) Support for media freedom, information sources, and trust in government press release

Figure 4: Censorship and Media Freedom

To further explore the heterogeneous effects of independent citizen journalism on reducing the credibility deficit of authoritarianism, we estimated several multiple linear regression models (MLRs) including respondents' demographics and virus-related variables (see Tables 3 and 4 in the Appendix for their operationalization and summary statistics). There was substantial evidence the identified causal effect was driven by the respondents who were more critical. First of all, tapping into Hong Kong's recent critical event, the 2019-20 protests, we found CQ's report induced a greater trust on MoC's press release among protest participants than among non-participants (42·88, 95% CI 38·94-46·83 versus 35·01, 95% CI 31·19-38·83). Similarly, those who heard of CQ and favored media freedom in mainland China also showed a higher trust in government press release after reading CQ's report (Figure 4b, 48·34, 95% CI 45·52-51·16 versus 41·90, 95% CI 39·09-44·72; Figure 4c, 45·17, 95% CI 42·56-47·78 versus 39·60, 95% CI 37·07-42·13). Finally, the results of manipulation check are also consistent with our expectations. Respondents showed higher levels of trust in government press release as they perceived CQ to be an independent reporter (46·87, 95% CI 42·11-51·63, see Figure 5a). Similarly, compared to the credibility of PD report (44·09, 95% CI 41·58-46·60), on average, respondents rated CQ's report with a higher level of trust (53·36, 95% CI 51·12-55·60, see Figure 5b).

(a) CQ's independence and trust in government press release

(b) Trust in different sources of information
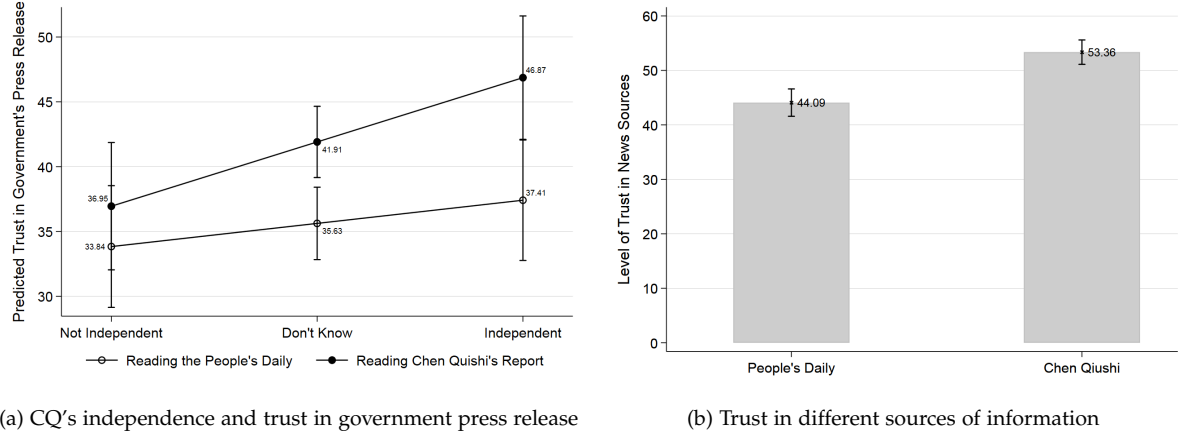
Figure 5: Manipulation Check

Discussion

Our study shows that, during a public health crisis, the credibility deficit of an authoritarian government can be substantially reduced by allowing independent citizen journalism. Such an effect is especially salient among those citizens who are critical of the government. We draw four conclusions from our analysis.

First, as the number of newly confirmed cases have gradually flattened out in China and went up elsewhere, it has become the global priority to find a practical solution to reducing credibility deficit in risk communications in other authoritarian countries without Chinese administrative capacity so they can effectively implement preventative measures such as social distancing and hand-washing. The observed effects of citizen journalism from our experiment were moderate yet meaningful. This is especially worth noting since the effects were triggered simply by a brief visual treatment. More importantly, while the effects of risk communications tend to be dwarfed by those exerted by preventative measures themselves, they can still be quite substantially in absolute numbers on a population level. [22;23]

Second, the effect is also strengthened by the finding that, even in an authoritarian country, one

will trust the government more when his/her perceived government transparency in handling the outbreak is higher (Figure 3b). The fact that the effect is significant across all levels of government suggests that citizen journalism can help an authoritarian government enhance its credibility in both central decision-making and local implementation of public health policies.

Third, besides showing the average causal effect of independent citizen journalism in an authoritarian context, our research also unpacks several mechanisms driving it. Actually, one might wonder if our results were mainly driven by the behavior of the regime's loyal supporters. If this is the case, lifting the restrictions on citizen journalism probably won't help an authoritarian government much in reducing its credibility deficit since loyalists would support it anyway. Moreover, there have also been various studies showing how destabilizing public health hazards can be to authoritarian countries,[24,25] and a sudden removal of censorship might give potential rebels opportunities to mobilize and paralyze their governments' ability to deal with such crises.[26]

Our findings, by contrast, suggest otherwise and therefore should send a soothing message to authoritarian leaders who are about to face the COVID-19 challenge. According to our analysis of causal heterogeneities, while the respondents who were participants of anti-extradition protests and (or) media freedom in China had lower trust in the government press release to begin with, these potential dissidents however, upwardly adjusted their trust in it significantly more than their not-so-critical counterparts when they received a rather positive piece of information from a non-official source. In other words, there can actually be a virtuous cycle between citizen journalism and government credibility under dictatorships.

Fourth, our results also have a profound implication for the state-society synergy in public health governance under authoritarian regimes. It has been well-established in the literature that social capital not only can help authoritarian governments provide more local public goods,[27] but is also critical to public health.[28−30] Our results offer yet another piece of evidence for how having a vibrant civil society where independent citizen journalism is able to thrive can reduce dictators' credibility deficit during an epidemic outbreak.

Our study had one major limitation. We only showed our respondents the kind of citizen report that endorsed the government's press release. From the perspective of experiment design, we were constrained to identify one of CQ's reports that could be juxtaposed symmetrically with a government press release related to the virus outbreak. Unfortunately, because CQ stopped tweeting in early February and has been disappeared since then, his January report on the food supply in one of Wuhan's supermarkets was the only report that qualified. This issue, however, is partially addressed by the effect of CQ's independence we found (Figure 5a). Since the independence in citizen reporting means that one's reports won't be always endorsing but also critical, counter-factually, the finding implies that the endorsement effect is unlikely to disappear even if there is a chance for citizen journalists' reports to contradict the government's announcements.

While the number of newly confirmed cases of COVID-19 gradually declines in China, the number has begun to soar in other parts of the world, regardless of the type of government structure. In this race against the spread of the virus, our study shows that allowing some level of free flow of information can be a practical way for authoritarian governments that suffer from credibility deficit to improve public trust in their risk communications and induce people's cooperative behavior in containing the contagion during the current pandemic outbreak.

Contributors

GS, HT, and WW contributed equally.

Declaration of Interests

We declare no competing interests.

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Appendix

A Vignettes and Questions of Experiment 1

The government press release is presented as follows:

> The Novel Coronavirus Pneumonia is spreading. At the moment of announcing the lockdown of the city of Wuhan, the Ministry of Commerce, People's Republic of China issued a press release titled "The commerce department of Hubei is making all efforts to ensure the sufficient supplies of life essentials," including the following statement: "On January 24, the city of Wuhan is supplied with sufficient life essentials, and the price of vegetables also decreased. The commerce department of Hubei is making all efforts to ensure the sufficient supplies of life essentials. First, the government will supply the essentials for Lunar New Year celebrations at markets. 1.55 million kilograms of eggs, 5 million kilograms of vegetables, 1 million kilograms of fish, 0.2 million kilograms of beef and 6000 heads of pigs will be distributed across 300 stations. Starting January 21, 0.5 million kilograms of frozen pork have also been distributed in cooperation with the Development Department. Second, to ensure the normal operation of retailing businesses in Wuhan, we ask all supermarkets, pharmacies, and gas stations to continue their operations during the period of Lunar New Year and increase their stocks. Third, all vegetables and meats will be shipped into Wuhan through the 24-hour Green Lane, to ensure smooth transportation. Fourth, we will continuously inspect the market supplies of life essentials and address any issues immediately."

Screenshots used in this experiment are presented in the main text.

Source:
Press release from the Ministry of Commerce of the People's Republic of China (published on January 25, 2019) `http://www.mofcom.gov.cn/article/jiguanzx/202001/20200102932965.shtml`
Chen Qiushi's video (published on January 26, 2019, on Youtube) `http://youtu.be/KNLlYwTnY3E`
People's Daily video (published on January 26, 2019, on v.eople.cn) `http://tiny.cc/fgxkkz`

Questions:

> Do you believe in the Ministry of Commerce's press release? Rate it on a scale from 0 to 100. A larger number indicates higher level of trust.

> Do you believe that the report by Chen Qiushi faithfully reflected the situation in Wuhan? Rate it on a scale from 0 to 100. A larger number indicates higher level of trust.

> Do you believe that the report by the People's Daily faithfully reflected the situation in Wuhan? Rate it on a scale from 0 to 100. A larger number indicates higher level of trust.

B Hypothesis, Vignettes, and Questions of Experiment 2

Hypothesis:

Experiment 2 was designed to investigate whether an expert opinion with or without mentioning the expert's government-related title had a different level of credibility. We studied this using a vignette quoted from a Hong Kong newspaper. In the news piece, the expert cited, Dr. Li Xingwang, was presented as "a member of the National Medical Expert Committee and Chief Expert at Clinical and Research Center of Infectious Diseases, Beijing Ditan Hospital." We randomly provided the respondents with the vignette that included or excluded the statement that Dr. Li was a member of National Medical Expert Committee. Then we asked respondents to rate their trust in Dr. Li's statement. Our aim was to investigate how Dr. Li's opinion was considered as more or less credible depending on whether or not his government-related title was cited. Being included on the government expert committee, on the one hand, reflects that his expertise is highly regarded. On the other hand, however, it also means that he may be incentivized to align more closely to the government. Hence, his opinion may not be considered as purely neutral and science-based. Accordingly, we tested the following hypothesis: The mean perceived credibility of Dr. Li's opinion differs between the group of respondents who read the vignette with his government-related title and the group who read the vignette without the title.

Vignette:

Dr. Li Xingwang, [a member of the National Medical Expert Committee and] Chief Expert at Clinical and Research Center of Infectious Diseases, Beijing Ditan Hospital, suggests that, as the virus starts to spread nationwide, there are many infected cases all over the country. Some contagious patients may display no symptoms but are later tested positive. Some others will show no obvious fever but sometimes cough, and feel fatigue. "These kinds of patients are also contagious. However, as the virus is spread by droplets, and those with mild illness tend to show fewer cough symptoms... the transmission ability might not be that strong," said Dr. Li.

Source: HK01 (a Hong-Kong-based online newspaper) `http://tiny.cc/0mskkz`

Question:

Do you believe in the opinion of Dr. Li Xingwang, [a member of the National Medical Expert Committee and] Chief Expert at Clinical and Research Center of Infectious Diseases, Beijing Ditan Hospital? Rate it on a scale from 0 to 100. A larger number indicates higher level of trust.

Results:

Please refer to Appendix G for the results of Experiment 2.

C Randomization Checks

Table 1: Randomization checks: Experiment 1

Variable	Group People's Daily			Group Chen Qiushi			p-value
	N	Mean	SD	N	Mean	SD	
Age	489	44·043	13·232	495	42·962	13·127	0·199
Male	490	0·486	0·500	497	0·489	0·500	0·920
College	496	66·330	0·473	496	0·663	0·473	0·890
Subjective Social Class	471	2·270	0·905	483	2·308	0·829	0·489
Party ID	490			497			
Pro-establishment	61	0·125	0·330	68	0·137	0·344	0·566
Moderate	140	0·286	0·452	134	0·270	0·444	0·573
Pro-democracy	195	0·398	0·490	199	0·400	0·490	0·938
Others	94	0·192	0·394	96	0·193	0·395	0·958
Attention to Coronavirus	484	2·366	1·075	491	2·432	1·069	0·336
Knowledge about Coronavirus	490	0·512	0·500	497	1·127	0·993	0·107
Perceived Risk of Being Infected	490	2·080	0·819	497	2·034	0·841	0·391
Perceived China's Influence on Hong Kong	443	2·077	1·267	452	2·046	1·253	0·719
Participated in the 2019 Protests	462	0·305	0·461	458	0·317	0·466	0·709
Support for Media Freedom	488	2·523	0·808	494	2·496	0·815	0·608

Note: The p-values of two-tailed t-tests are reported in the last column.

Table 2: Randomization checks: Experiment 2

Variable	Without Gov. Title			With Gov. Title			p-value
	N	Mean	SD	N	Mean	SD	
Age	484	43·262	12·936	503	43·897	13·373	0·449
Male	484	0·519	0·500	506	0·457	0·499	0·051
College	481	0·669	0·471	505	0·648	0·478	0·469
Subjective Social Class	468	2·323	0·841	491	2·248	0·885	0·489
Party ID	484			506			
Pro-establishment	61	0·126	0·332	68	0·134	0·341	0·697
Moderate	134	0·277	0·448	142	0·281	0·450	0·895
Pro-democracy	192	0·397	0·490	201	0·397	0·490	0·986
Others	97	0·200	0·401	95	0·188	0·391	0·615
Attention to Coronavirus	476	2·408	1·083	502	2·384	1·056	0·736
Knowledge about Coronavirus	484	1·103	0·996	506	1·055	0·999	0·450
Perceived Risk of Being Infected	484	2·056	0·826	506	2·055	0·833	0·993
Perceived China's Influence on Hong Kong	434	2·018	1·208	464	2·097	1·295	0·348
Participated in the 2019 Protests	462	0·307	0·462	461	0·317	0·466	0·760
Support for Media Freedom	482	2·529	0·800	503	2·497	0·818	0·535
Heard of Chen	484	0·599	0·491	506	0·625	0·484	0·414
Independence of Chen	290	1·997	0·732	316	2·016	0·706	0·741

Note: The p-values of two-tailed t-tests are reported in the last column.

D   Operationalization of variables

Table 3: Operationalization of variables

Variable	Question Wording and Operationalization
Male	1: Male; 0: Female
College	1: With a College; 0: Without a college degree
Subjective Social Class	'What social class do you consider your family to belong to?" 1: Working or Lower class; 2: Lower middle class; 3: Middle class; 4: Upper middle class, 5: Upper class. DKs are dropped.
Partisanship	"What's your political leaning?" 1: Pro-establishment group; 2. Moderate group; 3: Pro-democracy group; 4: Others (including DKs)
Attention to Coronavirus	"In the past week, how much time daily did you spend on learning information about the outbreak of NCP." 1: Not interested at all or less than one hour; 2: 1-2 hours; 3: 2-3 hours; 4: More than 3 hours; DKs are dropped.
Knowledge about Coronavirus	"Do you agree with the following statements? " 'Only N-95 masks can prevent the infection of NCP.' 'In addition to bleach and ethanol, vinegar can also kill the virus to prevent the spread of NCP.' 0: If respondents answer "Yes" to both questions; 1: If respondents answer only one "No" to either questions; 2: If respondents answer "No" to both questions.
Perceived Risk of Being Infected	"What's your perceived likelihood of being infected with NCP?" 1: Not possible at all or somewhat unlikely 2: DK; 3: Somewhat likely or very likely.
Perceived China's Influence on Hong Kong	"Overall, what's your opinion about mainland China's impact on Hong Kong?" 1: Very negative; 2: Somewhat negative; 3: No impact; 4: Somewhat positive; 5: Very positive. DKs are dropped.
Participated in the 2019 Protests	"Have you participated in the Anti-Extradition Law Amendment Bill Movement in any form?" 0: No; 1: Yes. DKs are dropped.
Support for Media Freedom	"Which of the following two statements best reflects your opinion?" 1: Government has the right to refrain the media from reporting news that may result in political instability; 2: DK; 3: Media have the right to report news and express opinions, free from government control.
Heard of Chen	"Have you heard about a citizen reporter named Chen Qiushi?" 0: No; 1: Yes.
Independence of Chen	"Do you think Chen Qiushi's report is independent and not under" the government's instruction? 0: No; 1: Don't Know; 2: Yes.
Perceived Government Transparency	"Overall, what do you think about the levels of information transparency of different governments in the outbreak of NCP?" 1: Very low; 2: Somewhat Low; 3: Somewhat high; 4: Very high. DKs are dropped.
Trust in Government	"What are your levels of trust in PRC's Central/Wuhan/Hong Kong government?" 1: Very not trustworthy; 2: Somewhat not trustworthy; 3: Somewhat trustworthy; 4: Very trustworthy. DKs are dropped.

Note: DK = Don't know; NCP: Novel Coronavirus Pneumonia.

E   Summary Statistics

Table 4: Summary statistics

Variable	N	Mean	SD	Minimum	Maximum
Trust in					
Government's Press Release	987	44·424	27·527	0	100
Report of the People's Daily	490	43·753	28·192	0	100
Report of Chen Qiushi	491	53·259	25·278	0	100
Medical Expert without Government Title	506	49·753	27·609	0	100
Medical Expert with Government Title	484	49·787	27·609	0	100
Age	1,013	43·358	13·142	18	80
Male	1,016	0·483	0·500	0	1
College	1,007	0·659	0·474	0	1
Subjective Social Class	978	2·289	0·864	1	5
Party ID	1,016				
Pro-establishment	61	0·128	0·334	0	1
Moderate	140	0·272	0·445	0	1
Pro-democracy	195	0·401	0·490	0	1
Others	94	0·200	0·400	0	1
Attention to Coronavirus	1,004	2·404	1·070	1	4
Knowledge about Coronavirus	1,016	1·085	0·997	0	2
Perceived Risk of Being Infected	1,016	2·063	0·828	1	3
Perceived China's Influence	922	2·051	1·253	1	5
Participated in the 2019 Protests	939	0·315	0·465	0	1
Support for Media Freedom	1,009	2·519	0·805	1	3
Heard of Chen	1,016	0·611	0·488	0	1
Independence of Chen	621	2·008	0·715	1	3

F Results of OLS Models for Experiment 1

This section describes how we used various OLS regression models to investigate the endorsement effects of a citizen journalist, Chen Qiushi, on the press release of the Chinese government. We included variables on respondents' demographic traits and attitudes, such as their age, gender, education, subjective social class, attitudes toward the coronavirus, perception of China's influence on Hong Kong, participation in the 2019 Anti-Extradition protests in Hong Kong, support for media media freedom, awareness of Chen, and perception of his independence from the government. We also investigated whether the endorsement effect is heterogeneous among respondents by including interaction terms between their attitudes and the treatment assignment (Models 2 to 5). We illustrated the heterogeneous effects by drawing marginal effects plots.

Model 1 suggests that the group of respondents who read Chen's report would have more trust of 4·10 points on a scale from 0 to 100 in the government's press release than those who read the report of People's Daily (95% CI 1·06-7·14). Model 2 shows that respondents' skepticism of the Chinese government would be mitigated after reading Chen's report. The coefficient of "Participated in the 2019 Protests" is negative (-10·85, 95% CI -15·83-5·88), and its interaction term with Group Chen is positive (5·75, 95% CI -0·59-12·08). Meanwhile, the difference in the effect between reading People's Daily and Chen's report is indistinguishable for the respondents who attended and did not attend the protests (see Figure 4a).

We also investigated whether there was a heterogeneous effect among those who support the media freedom or its suppression by the government in China. The respondents who supported media freedom may be skeptical of government's press release because China had limited freedom of media and People's Daily was the Chinese government's mouthpiece. In contrast, those who supported government suppression of media freedom would be less skeptical of the People's Daily and give higher ratings to the government's credibility. The results of Model 3, as illustrated in Figure 4c, suggest that respondents who supported media freedom would trust the government's news by 6 points more if they read Chen's report instead of the People's Daily (45·17, 95% CI 42·56-47·78 versus 39·60, 95% CI 37·07-42·13). Meanwhile, the difference in the effect between reading People's Daily and Chen's report is indistinguishable for the respondents who supported government suppression of media freedom in China or did not have a clear position on media suppression versus freedom. In other words, the respondents who supported media freedom would be more skeptical of the government's press release, but they would also upwardly adjust their trust in the government policy release significantly more if they learned that that the press release was endorsed by a non-official source of information.

Models 4 and 5 further explore whether respondents' knowledge of Chen makes his report more influential. In Model 4, we included a dummy variable to indicate whether respondents' had heard of Chen, and we also interacted that variable with Group Chen. Figure 4b illustrates the marginal effect of reading Chen's report and shows that the respondents who have heard of Chen before trusted the official press release more by 6·44 points than those who supported media freedom but read the People's Daily report (48·34, 95% CI 45·52-51·16 versus 41·90, 95% CI 39·09-44·72). Meanwhile, it should be noted that if respondents had never heard of Chen before, the difference in marginal effect between reading Chen's and the People Daily's report is statistically indistinguishable (42·54, 95% CI 39·05-46·04 versus 42·61, 95% CI 39·13-46·09). Thus, the endorsement effect of Chen is much higher among those respondents who have heard of him.

In Model 5, we explored whether it is Chen's image as an independent citizen reporter that makes him more trustworthy. We included a variable that measured respondents' perception of Chen's independence from the government. We interacted this variable with Group Chen, with the baseline group as respondents who read the People's Daily. Figure 5a shows that when respondents believed that Chen was an independent reporter, they trusted the government's press release more after they read

Chen's endorsement of it by 9·46 points (46·87, 95% CI 42·11-51·63 versus 37·41, 95% CI 32·77-42·06). Yet, the respondents who regarded Chen as not independent trusted the government's press release less after they read his report (36·95, 95% CI 32·04-41·86 versus 33·84, 95% CI 29·14-38·53). Meanwhile, those who did not know Chen's independence would have a middle level of trust in the press release (35·64, 95% CI 32·83-38·42 versus 41·91, 95% CI 39·16-44·66). Thus, the endorsement effect of Chen on the trustworthiness of the official news results from respondents' perceived level of Chen as an independent reporter.

Table 5: Determinants of popular trust in the Ministry of Commerce's press release

	Model 1	Model 2	Model 3	Model 4	Model 5
Group Chen	4·097**	2·129	-3·899	-0·066	-0·058
	[1·549]	[1·901]	[4·662]	[2·393]	[5·953]
Age	0·152*	0·147*	0·156*	0·154*	0·140
	[0·066]	[0·066]	[0·066]	[0·066]	[0·089]
Male	2·011	1·953	1·979	1·818	0·598
	[1·599]	[1·599]	[1·598]	[1·596]	[2·063]
College	-2·057	-2·071	-2·031	-1·975	-1·128
	[1·888]	[1·887]	[1·882]	[1·891]	[2·577]
Subjective Social Class	1·652	1·746+	1·727	1·635	1·431
	[1·057]	[1·052]	[1·052]	[1·055]	[1·399]
Partisanship: Moderate	-7·821**	-7·793**	-7·890***	-8·103***	-7·246+
	[2·395]	[2·389]	[2·386]	[2·394]	[3·724]
Partisanship: Pro-democracy	-11·617***	-11·558***	-11·918***	-12·220***	-12·745**
	[2·726]	[2·713]	[2·721]	[2·725]	[4·002]
Partisanship: Others	-9·008**	-8·981**	-9·346**	-9·300**	-12·541**
	[2·908]	[2·894]	[2·902]	[2·907]	[4·703]
Attention to Coronavirus	-0·184	-0·145	-0·237	-0·295	0·727
	[0·750]	[0·748]	[0·749]	[0·751]	[1·010]
Knowledge about Coronavirus	0·216	0·257	0·216	0·140	0·054
	[0·778]	[0·777]	[0·777]	[0·777]	[1·004]
Perceived Risk of Being Infected	-1·494	-1·500	-1·445	-1·520	-2·144+
	[0·935]	[0·934]	[0·933]	[0·938]	[1·216]
Perceived China's Influence	7·526***	7·568***	7·510***	7·607***	8·013***
on Hong Kong	[0·831]	[0·823]	[0·827]	[0·831]	[1·150]
Participated in the 2019 Protests	-7·924***	-10·854***	-7·826***	-8·374***	-9·216***
	[1·987]	[2·532]	[1·986]	[1·998]	[2·409]
Support for Media Freedom	-4·002***	-3·999***	-5·572***	-4·334***	-4·554*
	[1·102]	[1·099]	[1·444]	[1·114]	[1·799]
Group Chen X		5·747+			
Participated in the 2019 Protests		[3·227]			
Group Chen X			3·156+		
Support for Media Freedom			[1·800]		
Heard of Chen				-0·708	
				[2·337]	
Group Chen X				6·507*	
Heard of Chen				[3·121]	
Independence of Chen					1·787
					[1·905]
Group Chen X					3·170
Independence of Chen					[2·783]
Constant	40·937***	41·724***	44·802***	42·968***	39·303***
	[6·381]	[6·396]	[6·792]	[6·575]	[9·792]
R-squared	0·402	0·405	0·404	0·407	0·368
N	806	806	806	806	513

Note: Robust standard errors in brackets. The marginal effects of interaction terms in Models 2 to 5 are illustrated in Figures 4a to 5a. $^+$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All tests are two-tailed.

G Results of Experiment 2

The second main outcome of interest is respondents' trust in a medical expert's explanations of the coronavirus. Respondents were asked to rate their trust in the explanations provided by a medical expert with and without the expert's government-related title included in the statement on a scale from 0 to 100, with a larger number indicative of a higher level of trust. We hypothesized that the credibility of medical experts with a government-related title would be lower than that of medical experts without the title. Yet, we found that our data did not support this hypothesis. As shown in Figure 6, the difference between the two groups is only 0·04 on a scale from 0 to 100 (95% CI -3·41-3·47). As a result, the result does not support our second hypothesis that the inclusion of government-related title would matter to an medical expert's statement about the disease.
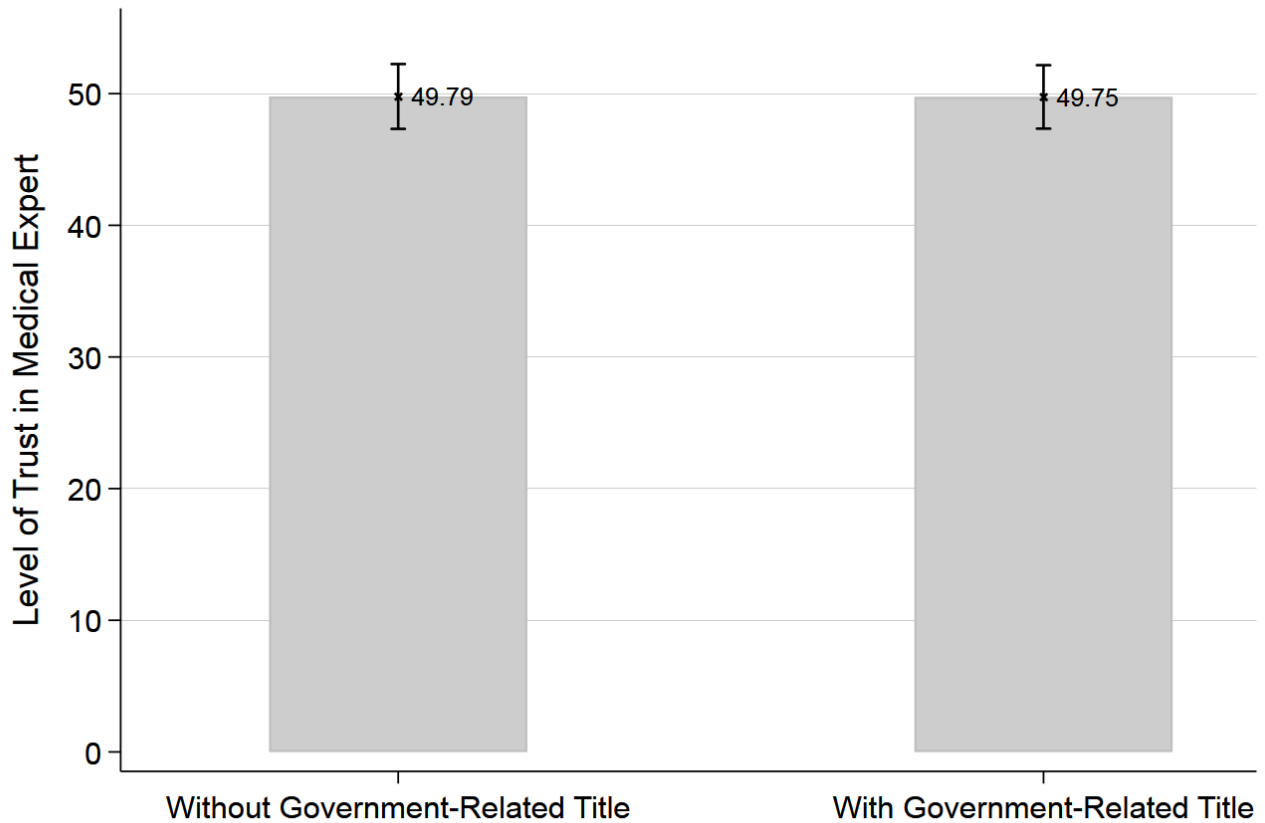

Figure 6: Government title and credibility of a medical expert