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Factors influencing individual responses to public health COVID-19 directives:
Comparison of China and the United States

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Contents

Abstract	2
Introduction	3
Related Work	5
Demographic	5
Psychological	6
Politics and Government Influence (With Comparison to China)	7
Trust in the government and the health sector	8
Methodology	9
Interviews	9
Survey	10
Finding	17
United States Only	17
Comparisons of United States and China	21
Discussion	31
Conclusion	34
Reference	35

Abstract

Since the outbreak of COVID-19 in the United States, the US government has issued several public health advisories, such as stay at home and wearing masks. However, during the early stages of the outbreak, the implementation of these measures was met with much opposition. This study aimed to explore factors influencing individual responses to public health COVID-19 directives in the United States and China. A total of 1018 samples were collected from the United States and China through a web-based questionnaire. We explored various perspectives, which includes demographic, personality, COVID-19 awareness & knowledge, public pressure, information, political party, motivations, cultural, personal and family concern, etc. We found that although age, personality, knowledge of COVID-19, and trust in government and health organizations can influence compliance with COVID-19 related public health orders, individual responsiveness and social influence are likely to be the underlying causes.

Introduction

In December 2019, COVID-19 broke out in China and then began to break out worldwide in early March. The United States gradually became the country with the most infected people.¹ According to the CDC report, COVID-19 is easily transmitted from person to person, most often in close contact, and can sometimes be spread by airborne transmission.² Until a majority of the population has been vaccinated, the most effective way for society to combat COVID-19 is to prevent its spread.³ To control the spread of the virus, federal and state governments announced public health emergencies and issued public health orders including the closure of schools and businesses, bans on gatherings, curfews, stay-at-home orders, quarantines for travelers and travel restriction, etc.⁴ These public health orders issued by the government can be effective in reducing the increase in COVID-19 cases. For example, a study showed that social distancing restrictions can be effective in flattening the growth curve.⁵

People's willingness to obey public health orders during a pandemic is important for public health. Taking action and following public health orders could effectively minimize the spread of the virus. However, while most people are supportive of the orders, a survey in mid-May of 2020 showed that about 1/5 of Americans were opposed to the various bans or were indifferent.⁶

The main objective of this study was to explore the factors that influence the level of compliance with COVID-19 related public health recommendations. By referring to historical studies on

¹ World Health Organization. (2020). Coronavirus disease 2019 (COVID-19): situation report, 86.

² How coronavirus spreads | CDC. (2021, January 7). Retrieved April 16, 2021, from <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>

³ GÜNER, H. R., Hasanoğlu, I., & Aktaş, F. (2020). COVID-19: Prevention and control measures in community. *Turkish Journal of medical sciences*, 50(SI-1), 571-577.

⁴ Gostin, L. O., & Wiley, L. F. (2020). Governmental Public Health Powers During the COVID-19 Pandemic: Stay-at-home Orders, Business Closures, and Travel Restrictions. *JAMA*.

⁵ Courtemanche, C., Garuccio, J., Le, A., Pinkston, J., & Yelowitz, A. (2020). Strong Social Distancing Measures In The United States Reduced The COVID-19 Growth Rate: Study evaluates the impact of social distancing measures on the growth rate of confirmed COVID-19 cases across the United States. *Health Affairs*, 39(7), 1237-1246.

⁶ Czeisler, M. É., Tynan, M. A., Howard, M. E., Honeycutt, S., Fulmer, E. B., Kidder, D. P., ... & Czeisler, C. A. (2020). Public attitudes, behaviours, and beliefs related to COVID-19, stay-at-home orders, nonessential business closures, and public health guidance—United States, New York City, and Los Angeles, May 5–12, 2020. *Morbidity and Mortality Weekly Report*, 69(24), 751.

other large-scale epidemics⁷ and recently published papers related to COVID-19,⁸ we learned about several factors that can influence people's public health behaviour, such as demographics, political power, and some other human or social factors. In particular, the impact on the situation of the COVID-19 epidemic arising from the differences in political decision making between China and the United States has also been heavily mentioned in the COVID-19 related literatures.⁹ Factors other than political factors have not been compared in most of the literature.

This study contributes to further substantiate some of the existing arguments and to compare the responses of Chinese and American people to COVID-19 related public health guidelines in terms of demographics, political, and psychological factors. The main research method of this

⁷ Bish, A., & Michie, S. (2010). Demographic and attitudinal determinants of protective behaviours during a pandemic: A review. *British journal of health psychology*, 15(4), 797-824; Tang, C. S., & Wong, C. Y. (2003). An outbreak of the severe acute respiratory syndrome: predictors of health behaviours and effect of community prevention measures in Hong Kong, China. *American journal of public health*, 93(11), 1887-1888; Asma, S., Akan, H., Uysal, Y., Poçan, A. G., Sucaklı, M. H., Yengil, E., ... & Kut, A. (2016). Factors effecting influenza vaccination uptake among health care workers: a multi-center cross-sectional study. *BMC infectious diseases*, 16(1), 1-9; Lau, J. T., Kim, J. H., Tsui, H. Y., & Griffiths, S. (2007). Anticipated and current preventive behaviours in response to an anticipated human-to-human H5N1 epidemic in the Hong Kong Chinese general population. *BMC Infectious Diseases*, 7(1), 1-12; Barr, M., Raphael, B., Taylor, M., Stevens, G., Jorm, L., Giffin, M., & Lujic, S. (2008). Pandemic influenza in Australia: using telephone surveys to measure perceptions of threat and willingness to comply. *BMC infectious diseases*, 8(1), 1-14; Rubin, G. J., Amlôt, R., Page, L., & Wessely, S. (2009). Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: cross sectional telephone survey. *Bmj*, 339; Prati, G., Pietrantonio, L., & Zani, B. (2011). Compliance with recommendations for pandemic influenza H1N1 2009: the role of trust and personal beliefs. *Health education research*, 26(5), 761-769.

⁸ Moore, R. C., Lee, A., Hancock, J. T., Halley, M., & Linos, E. (2020). Experience with social distancing early in the COVID-19 pandemic in the United States: implications for public health messaging. *MedRxiv*; Galasso, V., Pons, V., Profeta, P., Becher, M., Brouard, S., & Foucault, M. (2020). Gender differences in COVID-19 attitudes and behaviour: Panel evidence from eight countries. *Proceedings of the National Academy of Sciences*, 117(44), 27285-27291; Wise, T., Zbozinek, T. D., Michelini, G., Hagan, C. C., & Mobbs, D. (2020). Changes in risk perception and self-reported protective behaviour during the first week of the COVID-19 pandemic in the United States. *Royal Society open science*, 7(9), 200742; Plohl, N., & Musil, B. (2021). Modeling compliance with COVID-19 prevention guidelines: The critical role of trust in science. *Psychology, Health & Medicine*, 26(1), 1-12; Kuper-Smith, B. J., Doppelhofer, L. M., Oganian, Y., Rosenblau, G., & Korn, C. (2020). Optimistic beliefs about the personal impact of COVID-19; Clements, J. M. (2020). Knowledge and behaviours Toward COVID-19 Among US Residents During the Early Days of the Pandemic: Cross-Sectional Online Questionnaire. *JMIR Public Health and Surveillance*, 6(2), e19161; Ren, X. (2020). Pandemic and lockdown: a territorial approach to COVID-19 in China, Italy and the United States. *Eurasian Geography and Economics*, 1-12; Kupferschmidt, K., & Cohen, J. (2020). Can China's COVID-19 strategy work elsewhere?; Haffajee, R. L., & Mello, M. M. (2020). Thinking globally, acting locally—The US response to COVID-19. *New England Journal of Medicine*, 382(22), e75; Bargain, O., & Aminjonov, U. (2020). Trust and compliance to public health policies in times of COVID-19. *Journal of Public Economics*, 192, 104316; Ezeibe, C. C., Ilo, C., Ezeibe, E. N., Oguonu, C. N., Nwankwo, N. A., Ajaero, C. K., & Osadebe, N. (2020). Political distrust and the spread of COVID-19 in Nigeria. *Global Public Health*, 15(12), 1753-1766; McFadden, S. M., Malik, A. A., Aguolu, O. G., Willebrand, K. S., & Omer, S. B. (2020). Perceptions of the adult US population regarding the novel coronavirus outbreak. *PloS one*, 15(4), e0231808; Chan, H. F., Brumpton, M., Macintyre, A., Arapoc, J., Savage, D. A., Skali, A., ... & Torgler, B. (2020). How confidence in health care systems affects mobility and compliance during the COVID-19 pandemic. *PloS one*, 15(10), e0240644.

⁹ Ren, op. cit.; Kupferschmidt, op. cit.; Haffajee, op. cit.

paper is to collect data through a web-based questionnaire and to conduct quantitative data analysis to find the answers.

The structure of this paper is as follows. The next section provides a summary of the relevant literature, such as studies of historical large-scale epidemics or other investigations of public health events. This is followed by a description of the research methods adopted for this study, including data collection, and analysis methods. The last two sections present the results of the data analysis as well as a discussion section summarized from the results.

Related Work

The factors that influence people's public health behaviours have been the subject of research by experts, especially during epidemics, such as SARS in 2003 and HIV1 in 2009. Studies prior to the COVID-19 outbreak show that there are multiple factors that influence people's public health behaviours. By summarizing the past literature, we conclude four broad factors that influence public health behaviour in response to public health crisis: demographic factors, psychological factors, politics and government influence and the trust of the public in the government and the health sector.

Demographic

Demographic factors such as age and gender were more strongly associated with public health behaviour, while work status and marital status were not significantly associated, and there were no consistent findings that education and race influence behaviour.¹⁰

Several studies have found that older people are more likely to follow public health advice than younger people.¹¹ Young people are relatively less concerned about their families, middle-aged people are more so, especially those who spend time with people over the age of 65,¹² while older people are more sensitive and aware of health-related terms.¹³

¹⁰ Bish, op. cit.

¹¹ Tang, op. cit.; Asma, op. cit.; Bish, op. cit.

¹² Asma, op. cit.

¹³ Moore, op. cit.

The literature on SARS in 2003 and the H1N1 pandemic in 2009 show that women are more likely to value and follow public health directives.¹⁴ Recent study on early COVID-19 confirms this contention. Women are more likely to view the pandemic as a serious health problem and to consent to and comply with restraint measures.¹⁵ However, another study on the propensity of health care workers for vaccination showed that male health care workers were more likely to be vaccinated.¹⁶

There does not appear to be an absolute relationship between educational attainment and work status and epidemic risk aversion behaviour. The findings show that educational attainment and work status are sometimes positively, sometimes inversely, and sometimes not absolutely related across country contexts, although in general the higher the educational attainment, the higher the odds of risk-averse behaviour during an epidemic.¹⁷ There is only a small amount of evidence of relatively high public health awareness among married individuals with respect to marital status.¹⁸

Psychological

One psychological factor that can influence the public health behaviour is the perceptions and opinions about the disease. From previous studies on the factors that influence people's preventive actions during an epidemic, it was found that individuals with a more comprehensive understanding of the risks have a higher willingness to comply with quarantine restrictions.¹⁹ The higher the estimate of concern and risk about the future development of the disease, the higher the likelihood that people will spontaneously generate public safety behaviours.²⁰ At the same time, the more dangerous the disease is perceived to be the more comprehensive the safety behaviour adopted by the person.²¹ A study during early COVID-19 period confirmed this point, with data showing that in the United States, the higher the awareness of the dangers of

¹⁴ Bish, op. cit.

¹⁵ Galasso, op. cit.

¹⁶ Asma, op. cit.

¹⁷ Bish, op. cit.

¹⁸ Tang, op. cit.; Lau, op. cit.

¹⁹ Barr, op. cit.

²⁰ Bish, op. cit.; Tang, op. cit.

²¹ Rubin, op. cit.

COVID-19, the more frequently protective behaviours are adopted.²² However, the studies also point out that most people in the United States, pre-COVID-19, underestimate the risk of infection, which could be an optimistic bias about their likelihood of getting the disease.²³

Politics and Government Influence (With Comparison to China)

The divergence of views among different political parties in the United States influences the behaviour of their supporters to some extent. Studies show that Democrats are more positive than Republicans in their performance of public safety behaviours.²⁴

The rapid spread of COVID-19 in the United States and the persistently high number of infections are unexpected. Yet China, the first country to have an outbreak of COVID-19, has managed to keep the epidemic to a very low level within a few months despite its large population base. Studies and discussions about the performance of the two countries during the outbreak and the factors influencing the situation have been conducted by many scholars from different perspectives.

First of all, the government plays a key role in the control of the territory. In China, after the initial debacle, the response was immediately centralized, as Xi Jinping mobilized vast resources to keep the spreading under control, for example, strict blockade of the city, strict tracking of the movement of residents, etc.²⁵ In the US, in the absence of rational decision-making by the Trump administration, and the slowness of the federal government's response to the epidemic, which resulted in missing the best time to contain the epidemic.²⁶ Even some state and local governments put a rapid response, because states and localities had to fend for themselves, they do not have sufficient public health capacity. Centralization has its limits but navigating a pandemic of this magnitude calls for a national effort.²⁷

²² Wise, op. cit.; Plohl, op. cit.

²³ Wise, op. cit.; Kuper-Smith, op. cit.

²⁴ Clements, op. cit.

²⁵ Ren, op. cit.

²⁶ Kupferschmidt, op. cit.; Haffajee, op. cit.

²⁷ Ren, op. cit.; Kupferschmidt, op. cit.; Haffajee, op. cit.

Trust in the government and the health sector

Trust is also a major influence, including trust in the government, trust in the health care system. The 2009 H1N1 study confirmed that the higher the trust in the authorities and the ministry of health, the higher the level of compliance with public safety orders.²⁸

Trust in authorities is important to encourage voluntary compliance. Without public trust in the police or government, "consent to policing" will be difficult or impossible, and public safety will be compromised.²⁹ A study conducted at the beginning of the COVID-19 pandemic about trust and group mobility also demonstrates that higher trust in government is associated with lower group mobility at the European regional level.³⁰ And it is worth drawing attention to the fact that political corruption triggers massive political mistrust. This undermines public compliance with government protocols, limits the government's response to COVID-19, and facilitates the spread of the virus within the country.³¹ Unfortunately, according to a study at early COVID-19, the American public trusts the government far less than it trusts science and public health leaders.³²

The combination of confidence in the health care system and trust in government may have an impact on people's public health behaviour. Overall, people who have greater trust in science and scientists are more likely to act on the recommended guidelines.³³ Areas with low confidence in the healthcare system respond more quickly when trust in government is similar. However, after a period of plateauing, public health behaviours, such as stay at home, are significantly less likely to occur. Areas with high trust in the health care system are more likely to follow government instructions. In areas where trust in the government is high, the public will respond significantly even if trust in the healthcare system is low.³⁴

²⁸ Prati, *op. cit.*

²⁹ Goldsmith, A. (2005). Police reform and the problem of trust. *Theoretical criminology*, 9(4), 443-470.

³⁰ Bargain, *op. cit.*

³¹ Ezeibe, *op. cit.*

³² McFadden, *op. cit.*

³³ Plohl, *op. cit.*

³⁴ Chan, *op. cit.*

Methodology

Since there is a distinct difference in the public health directives related to COVID-19 between China and the United States, this study collected data from China as a comparison in addition to the data from the United States. To gain some insight into COVID-19 related responses, we first conducted semi-structured interviews with participants from China and the US. Then, using insights from the interviews, we developed a set of hypotheses and a survey questionnaire for the main study. The surveys were distributed and collected via 2 research firms, one in China and one in the US.

Interviews

The ultimate goal of this study is to discover the factors that influence people's decision making in the presence of public health COVID-19 directives through quantitative data analysis. In order to understand the potential factors, a total of 10 semi-structured interviews were conducted with participants from China and the United States, including 5 from China and 5 from the United States. It was one-on-one interviews conducted via remote video call for about an hour.

According to our initial hypothesis, age, gender, education level, political party, and income level may be the potential influencing factors. Thus, the ten interviewees' ages ranged from 20 to 50 years old; their genders were five males and five females; their education levels ranged from elementary school level to graduate school level; their occupations included students, office workers, non-workers, and store owners; and the political party of the US interviewees were Democrats and Republicans.

All interview data were processed on the Miro platform using the affinity diagram method.³⁵ The interview notes were recorded on virtual sticky notes and categorized by filtering, sorting, and summarizing. After the classification was completed, an initial list of factors that may affect the individual responses to public health COVID-19 directives was obtained.

³⁵ Holtzblatt, K., & Beyer, H. (1997). *Contextual design: defining customer-centered systems*. Elsevier.

Potential Factors :

1. Updated knowledge of the government policy
2. Updated knowledge of the number of active cases
3. The knowledge of pandemic
4. Political party
5. Trust in the government leaders
6. Trust in the news
7. Actual health condition
8. Confidence in their health condition
9. Financial situation and employment status
10. The need for approval from others
11. Confidence in their luck (fluke)
12. The idea of being courteous and social etiquettes and what's considered impolite
13. Whether there are elders at home
14. Degree of diligence

Survey

A total of 1018 questionnaires were administered, with 200 in China between July 20th to July 26th in 2020 and 818 in the US from July 13th to July 26th 2020. Of the 818 questionnaires in the United States, only 350 were completed. The survey contained 40 questions and took 15 to 20 minutes to finish. The survey was initially drafted in English, and translated into mandarin for Chinese participants.

Proportional quota sampling was used to ensure that respondents were demographically representative of the general population, with quotas based on age, gender, education, and political party(in the US). The survey conducted in China was distributed to people who are 18-24, 25-34, 35-44, 45-54 and 55-84 and received 40 responses in each age group. The gender quota roughly follows the half female and half male. The education level was followed by roughly $\frac{1}{3}$ in low (no school - before high school), medium (high school - associate degree) and high (bachelor's degree - doctorate) levels respectively. The data collected from the US follows

the same gender quota and political affiliation (Democrat, Republican, Independent 1/3 each), the age and education quota were not distributed evenly.

Personality Measurement

To explore the effect of individual personality on compliance with public safety recommendations, we used the Big Five Inventory³⁶ to examine the association between the five personality items, which are extraversion, agreeableness, conscientiousness, neuroticism, and openness. We also used 5 questions from the Locus of Control³⁷ theory to find out whether the tendency to believe in fate will take care of the COVID-19 (external locus of control) or to take action in the face of COVID-19 (internal locus of control) is related to the level of compliance with public safety recommendations.

COVID-19 Knowledge Measurement

We prepared 3 COVID-19 related multiple choice questions at three different difficulty levels: easy, medium, and hard. Each question has only one correct option. One point was added for each correct answer, and the final score obtained by the participants was used to determine their knowledge level of COVID-19.

Public Health Recommendations Compliance Measurement

In data analysis, Regression is the main analysis used to explore the relationship between each possible influencing factor and the level of compliance with public safety recommendations. In the survey, we collected the level of compliance with ten public health recommendations from people in China and the United States. To eliminate the difference in COVID-19 stages in the United States and in China, the participants were asked to indicate to what extent they adhered to the pandemic-related guidelines, at the moment in time (past or present) when they were most compliant. The 10 recommendations are Social distancing (6ft), Staying at home when possible, Wearing masks, Wearing gloves, Frequent hand-washing, Avoiding large gatherings, Adhering to curfews, Avoiding non-essential travel outside of your city/town, Quarantining when required.

³⁶ Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of research in Personality, 41*(1), 203-212.

³⁷ Rotter, J. (1966). Rotter Locus of Control Scale. *Psychological Monographs, 80*, 1-28.

For participants who are applicable to the above 10 recommendations, they were asked to provide their compliance levels on likert scale, which are Never, Occasionally, About half of the time, Most of the time and Always. While analyzing the data, we used 1-5 to stand for Never to Always.

In the process of comparing the data between China and the United States, we found a large variance in compliance with each public health order between the two countries. Please refer to the t-test (Table 1). To reduce the influence of the recommendations themselves on the regression, we selected two orders from the ten recommendations whose mean in the US and Chinese compliance level are closer. The two orders are Wearing masks (US Mean = 4.43, China Mean = 4.45) and Frequent hand-washing (US Mean = 4.55, China Mean = 4.61), They were selected as the dependent variable for measuring the compliance of the public health order.

Orders	US	China	P-value
Social distancing (6ft)	4.54	3.98	0.00
Staying at home when possible	4.40	3.88	0.00
Wearing masks	4.43	4.45	0.88
Wearing gloves	2.62	2.44	0.36
Frequent hand-washing	4.55	4.61	0.53
Avoiding large gatherings	4.62	4.23	0.00
Adhering to curfews	4.43	3.73	0.01
Avoiding non-essential travel outside of your city/town	4.47	4.60	0.31
Quarantining when required	4.53	4.27	0.07

Table 1: T-test result for the compliance level of the public health orders in the US and China

For the separate analysis of the US data, we summed the compliance levels for all ten recommendations and averaged them to use as a measure of the US participants' compliance with public health recommendations. We will refer to this value as the average compliance score.

Data Preparation

The data collected from China were all completed and of good quality. However, the quality of the data collected in the United States was inconsistent, with about ¼ of the data having dubious responses (e.g., contradictory responses, straight-lining, etc.). Therefore, by creating flag warnings (suspicion points) for each data item, and excluding data with more than 5 flags, 607 participants passed the screening.

The collected survey data were analyzed in two ways. One is the analysis of the US data only, and the other is the comparison of the US data with the Chinese data.

United States Only

In comparison to data from the 2019 national census,³⁸ our raw US survey data presents demographics that differ in age (Table 2). Thus, to ensure the sample's representativeness, surveys were chosen randomly from the larger pool of 607 participants until percentage-wise “quotas” for a discrete set of age buckets were met, leaving 238 surveys for analysis. Please find the sample size in gender, education and political party quota with their sample percentage in Table 3,4, 5 with the actual distribution of the gender,³⁹ education⁴⁰ and political party⁴¹ in the US.

Age group	Percentage of US Population	Sample Percentage	Sample Size
18-24	11.79%	11.76%	28
25-34	18.01%	18.07%	43
35-44	16.33%	16.39%	39

³⁸ (2021, January 20). • US population by age and gender 2019 Retrieved April 30, 2021, from <https://www.statista.com/statistics/241488/population-of-the-us-by-sex-and-age/>; (n.d.). US Census Bureau QuickFacts: United States. Retrieved April 30, 2021, from <https://www.census.gov/quickfacts/fact/table/US/PST045219>

³⁹ (2021, January 20). • U.S. population by gender 2010-2024 | Statista. Retrieved April 30, 2021, from <https://www.statista.com/statistics/737923/us-population-by-gender/>

⁴⁰ (2018, September 4). Educational Attainment in the United States - Statistical Atlas. Retrieved April 30, 2021, from <https://statisticalatlas.com/United-States/Educational-Attainment>

⁴¹ (n.d.). Party Affiliation | Gallup Historical Trends - Gallup Poll. Retrieved April 30, 2021, from <https://news.gallup.com/poll/15370/party-affiliation.aspx>

45	16.03%	15.97%	38
55	16.64%	16.81%	40
65	12.35%	12.18%	29
75	6.26%	6.30%	15
85	2.59%	2.52%	6

Table 2: Population distribution in respect to age group

Gender	Percentage of US Population	Sample Percentage	Sample Size
Male	48.90%	39.08%	93
Female	51.10%	59.67%	142
Miss data	N/A	1.26%	3

Table 3: Population distribution in respect to the gender group

Education	Percentage of US Population	Sample Percentage	Sample Size
No schooling completed	1.40%	0.00%	0
Less than 8th grade	4.20%	0.84%	2
8th grade or more, but did not complete high school	7.40%	2.94%	7
High school graduate or equivalent	27.50%	22.69%	54
Trade/technical/vocational training	21.00%	4.20%	10
Associate degree	8.20%	6.30%	15
Bachelor's degree	18.80%	18.49%	44
Master's degree or professional degree	10.20%	14.71%	35

Doctorate degree	1.30%	2.52%	6
Age under 25	N/A	11.76%	28
Missing data	N/A	15.55%	37

Table 4: Population distribution in respect to education group (Age 25 and over)

Political Party	Percentage of US Population	Sample Percentage	Sample Size
Democrat	32.00%	36.13%	86
Independent	41.00%	26.47%	63
Republican	25.00%	27.73%	66
Other	N/A	1.68%	4
I don't know, or I prefer not to answer	N/A	7.98%	19

Table 5: Population distribution in respect to the political party

Comparisons of the United States and China

Because the two survey companies did not allow for the exact same set of criteria for determining participants, there were some differences in the demographics between the surveys in China and the United States. By conducting the t-test comparison of the US and Chinese data in terms of age, gender, and education, we found that the mean age and education level of the US survey participants was higher than that of the Chinese. The Survey age questions were distributed by interval, and in our analysis, we used 1 for the first interval 18-24 years old, 2 for 25-34 years old, and one unit increase per decade thereafter, and the last one is 8, for the 85+ group. The mean of the age group in the United States is 4.72 and in China, it is 3 ($p < 0.01$). The gender distribution (1=Male, 2=Female) differs very little, with a mean of 1.59 in the US and 1.5 in China ($p=0.03$). The distribution of education level was calculated from 1=No schooling completed to 9=Doctorate degree, with a mean of 5.55 in the US and 4.95 in China ($p < 0.01$).

To manage these differences, we conducted propensity score matching of the data to ensure that the distribution of the data between the US and China was consistent at each age and each

education level. After processing, 100 survey responses are selected from each country. The peak age for both countries fell into the 35-44 bracket (when the brackets are converted to discrete cardinal numbers, the mean age is 3.03 for the US and 3.05 for China ($p = 0.92$)); similarly, the peak education for both countries is between Trade/technical/vocational training and Associate degree (the mean of the discretized education categories is 5.69 for both countries). After the propensity score matching, according to the China and the US population in 2021.⁴² With a confidence level of 95%, both the Chinese and the US sample size provided us with a confidence interval of about plus or minus 9.8%. Since the US and China data are used for cross-country comparisons, this data is not necessarily nationally representative in either country, but that it is sufficient for the purposes of cross-country comparisons.

Multi-variable Linear Regression

For the analysis of the relationship between multiple variables, we used stepwise selection⁴³ for the analysis of the best multivariable linear regression. The outcome of the analysis is the n (number of factors chosen) best models with different sizes: the best 1-variable model, the best 2-variables model, ..., the best n -variables model.

We use 10-fold cross-validation to estimate the average prediction error (RMSE) of each of the n models. The RMSE statistical metric is used to compare the n models and to choose the best one, where best is defined as the model that minimizes the RMSE.

⁴² (n.d.). World Population Clock: 7.9 Billion People Retrieved April 30, 2021, from <https://www.worldometers.info/world-population/>

⁴³ Wilkinson, L. (1979). Tests of significance in stepwise regression. *Psychological bulletin*, 86(1), 168.

Finding

United States Only

Demographic

Age

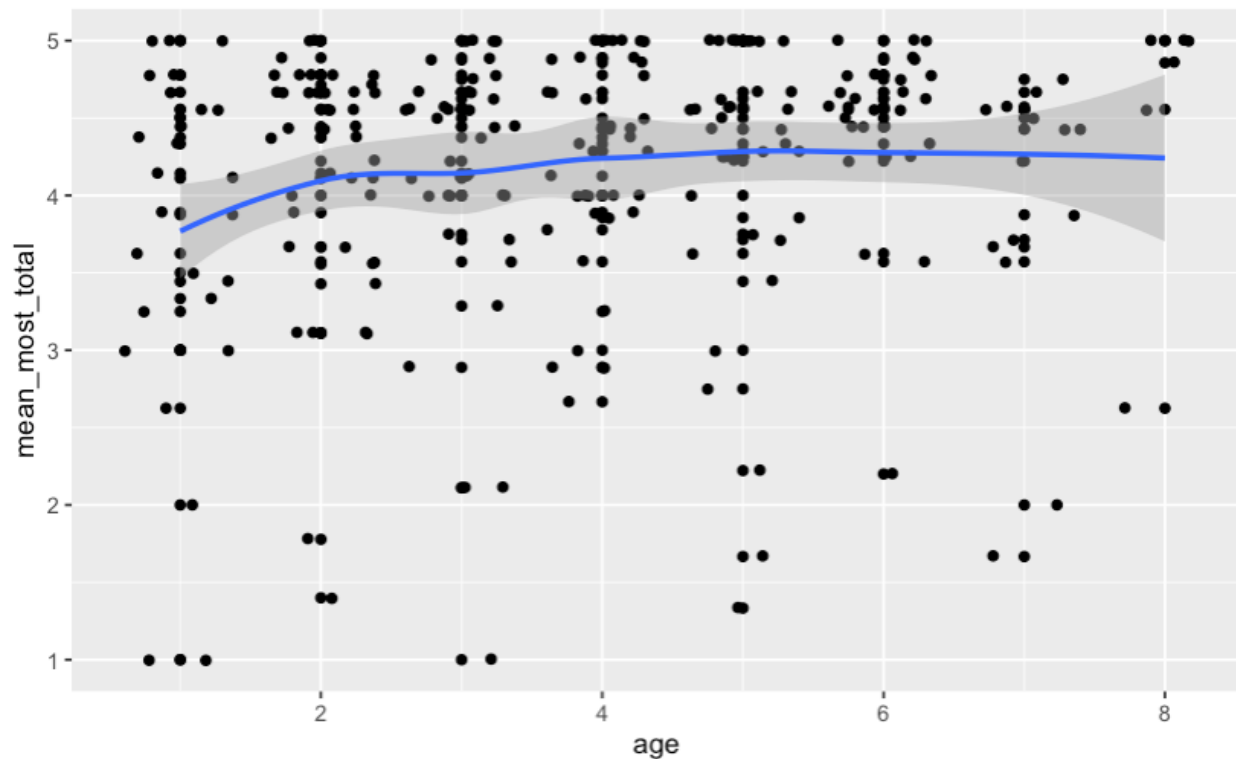


Figure 1: Regression of age vs. average public health order compliance level in the US (1=18-24, 2=25-34, 3=35-44, 4=45-54, 5=55-64, 6=65-74, 7=75-84, 8=85+)

Figure 1 shows that in the United States, older people are more likely to comply with public health orders than younger people, though the effect levels off quickly - participants between ages 25-34 and 45-54 show similar levels of compliance, so does the age group between 55-64 and 65-74. An analysis of the categorical regression of compliance with public health orders by age group revealed that, based on the 1-5 scale, compared to those in the age group 18-24, the average compliance score was 0.417 ($p = 0.041$) higher for participants in the age group 25-34; 0.498 ($p = 0.018$) higher for participants aged 45-54 years; 0.448 ($p = 0.031$) higher for

participants aged 55-64 years; 0.724 ($p = 0.001$) higher for participants aged 65-74 years, and 0.764 ($p = 0.022$) higher for participants aged 85 years and older.

We also conducted regression analyses for the compliance level of the public health orders with other demographic factors: gender, employment status, number of family members and annual income, but found no significant correlations between the variables.

Personality

With respect to the Big Five personality dimensions, participants with higher levels of agreeableness and conscientiousness demonstrated higher levels of compliance with public health directives. There is a correlation between participants' agreeableness and conscientiousness and the degree to which they complied with public health orders. For agreeableness, every 1 point increase of the agreeableness score (-4 to 4) led to a 0.077 increase in the average compliance score of all the orders on a 1-5 scale ($p = 0.014$). For conscientiousness, every 1 point increase of the conscientiousness score (-4 to 4) led to a 0.078 increase in the average compliance score of all the orders on a 1-5 scale ($p = 0.010$).

There were no significant correlations between the compliance level of the public health orders and the other Big Five personality traits: neuroticism, extroversion, and openness. In addition, our analysis of Locus of Control did not find any effect of internal locus of control and external locus of control on compliance with public health directives.

Responsiveness

The higher the level of responsiveness to fight with the outbreak, the higher the level of compliance with COVID-19 related public health orders. We use the speed of taking precaution to measure the level of responsiveness to the outbreak. The longer the participants take to make wearing a mask or social distancing become a habit, the lower they are compliant to the COVID-19 related public health recommendations. For each of the 4 time range (Immediately, About a week, Between 2-4 weeks, More than a month), every one level longer on the time range in making mask wearing a habit, the participant's average compliance score decreased by 0.282

($p < 0.001$); very one level longer on the time range in making social distancing a habit, the participant's average compliance score decreased by 0.258 ($p < 0.001$)

COVID-19 Awareness & Knowledge

The higher the level of concern of the COVID-19 outbreak and knowledge of the coronavirus (SARS-CoV-2), the higher the level of compliance with COVID-19 related public health orders. Participants who perceived the current status of the pandemic as inferior to news reports also comply with the public health orders to a higher degree. We used the frequency with which participants read COVID-19 related news to determine their level of concern, understand their level of knowledge of the new coronavirus (SARS-CoV-2) from the 3 COVID-19 related easy to difficult questions, and finally the comparison of the current status with news reports to determine participants' perceptions and opinions of the current status.

The lower the frequency of receiving COVID-19 related news, the lower the participants' compliance score with the relevant recommendations. For each of the 6 frequencies (More than once a day, About once a day, A couple of times a week, About once a week, About 1-2 times a month, and Never), every one level lower on the frequency, the participant's average compliance score decreased by 0.140 ($p < 0.001$).

Participants who know more about COVID-19 tend to have a higher level of compliance to the public health recommendations than participants who have a low knowledge level of COVID-19. For knowledge level (scale 0-3), every 1 point of increase of the knowledge score led to a 0.129 increase in average compliance score ($p = 0.002$).

Participants who believed that the current status of the COVID-19 epidemic was better than reported in the media/news were less likely to comply with COVID-19 related recommendations than those who believed that the status of the epidemic was worse than reported in the media/news. Participants who believed that the current status of the COVID-19 epidemic was better than reported in the media/news showed their average compliance score of 0.809 ($p < 0.001$) lower than those who believed it is worse.

Follow the Crowds

Participants who indicated that they would not wear a mask if others were not wearing one were less likely to comply with public health directives than those who chose to continue wearing masks. There are 17.23% of participants in the United States who said they would not wear a mask because others were not wearing one. Their average compliance score was 1.194 ($p < 0.001$) lower than that of participants who chose to continue wearing a mask.

Trust the Health Organization Over the Government

In questions on the importance of information from different sources, it was found that in the United States, participants who valued the advice of health organizations had higher compliance with COVID-19 related public health directives than participants who valued government advice. Of all the orders on a 1-5 scale, participants who valued the advice of health organizations had an average compliance score of 4.249 ($p < 0.001$) where participants who valued government advice had 3.937 ($p=0.039$).

Political Party

In the US, participants who are Republican have a lower level of compliance to the public health recommendations than participants who are Democrat. There were no strong correlations between the responses of people favouring the independent party to those favouring the Democrats with respect to the compliance level of the public health orders. Republican's average compliance score is 0.294 ($p = 0.034$) lower than the Democrat.

Personal Concern

Participants who believe they will have more symptoms if they are infected by COVID-19 tend to have a higher level of compliance to the public health recommendations than participants who believe they will have fewer symptoms. 0.103 ($p = 0.034$) higher on the average compliance score was detected.

Multi-variable Linear Regression

We extracted 11 variables which p-value is less than 0.05 in all single variable regressions for Stepwise selection. These variables were age, agreeableness, conscientiousness, frequency of reading COVID-19 related news, how long mask-wearing became a habit, how long social distancing became a habit, willingness of wearing a mask if nobody is wearing a mask, knowledge level of coronavirus (SARS-CoV-2), perception of the COVID situation in the country, political party and symptoms prediction according to the health status.

The results showed that responsiveness (how long mask-wearing became a habit) to take actions and willingness of wearing a mask if nobody is wearing a mask were the 2 factors that influenced compliance with public health directives in the face of the COVID-19 period. Among all 11 groups of models, the 2-variable regression model has the lowest RMSE value (0.599) so how long mask-wearing became a habit and willingness of wearing a mask if nobody is wearing a mask can form the best regression model for measuring average compliance score.

Comparisons of the United States and China

Overall, we find that US participants reported higher compliance with COVID-19 health orders compared to Chinese participants. Response to five out of 10 questions shows a statistically significant difference ($p \leq 0.05$), with the American participants consistently claiming greater compliance.

Below, we discuss only the points of significant difference between China and the USA with respect to mask-wearing and handwashing. We will not summarize data that did not show a significant difference between the two countries. We also conducted analyses for differences by level of education, locus of control, knowledge of the coronavirus (SARS-CoV-2), belief in the government, responsiveness, and wellness of wearing masks when nobody does, but found no significant differences between the two countries.

Demographic

Age

Interestingly, while older Americans are more likely to comply with COVID-19 health orders than their younger participants, the responses are flipped in China, with older participants less likely to comply than younger ones. In the United States, regression shows that the mask-wearing compliance score of participants who are age 55-64 is 0.838 ($p = 0.036$) higher than participants who are in age 18-24 (Figure 2). In China, survey participants in the 55-64, 65-74, and 75-84 age groups presented 1.114 ($p = 0.002$), 1.697 ($p = 0.001$) and 1.864 ($p = 0.002$) lower in compliance to the mask-wearing than those of participants aged 18-24, respectively (Figure 3). In the analysis for age and hand washing recommendations, no significant association was derived for any age group in either country's data.

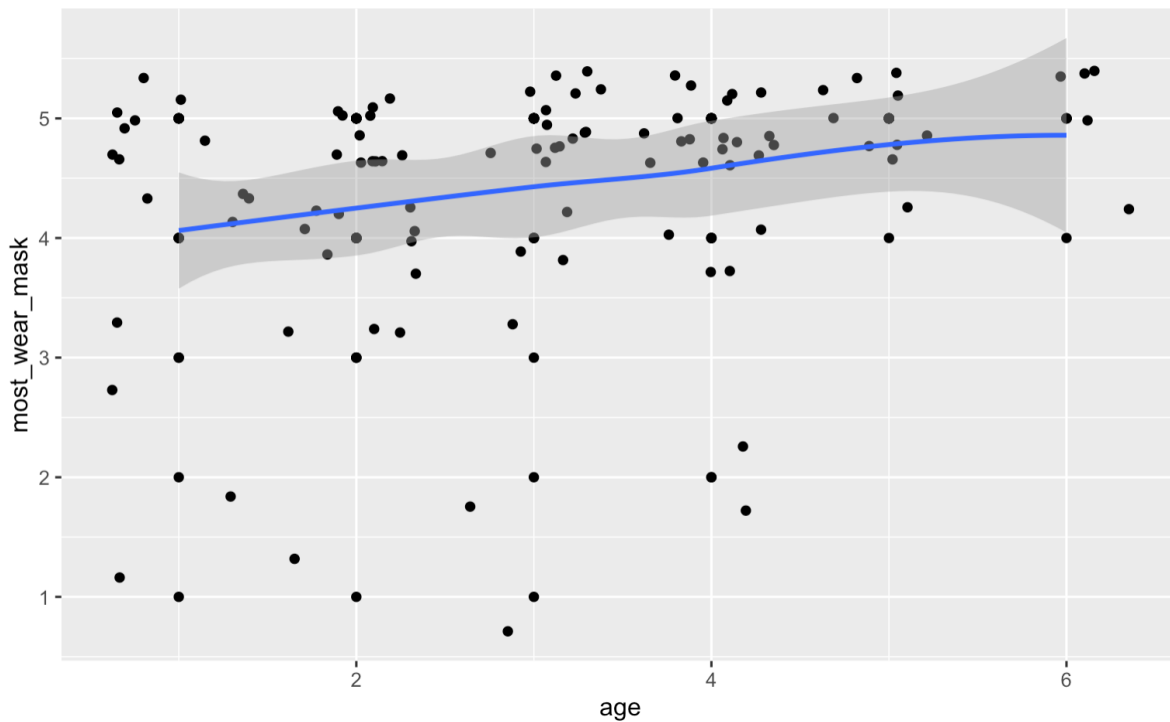


Figure 2: US regression of age vs. compliance level of mask wearing order (1=18-24, 2=25-34, 3=35-44, 4=45-54, 5=55-64, 6=65-74, 7=75-84, 8=85+)

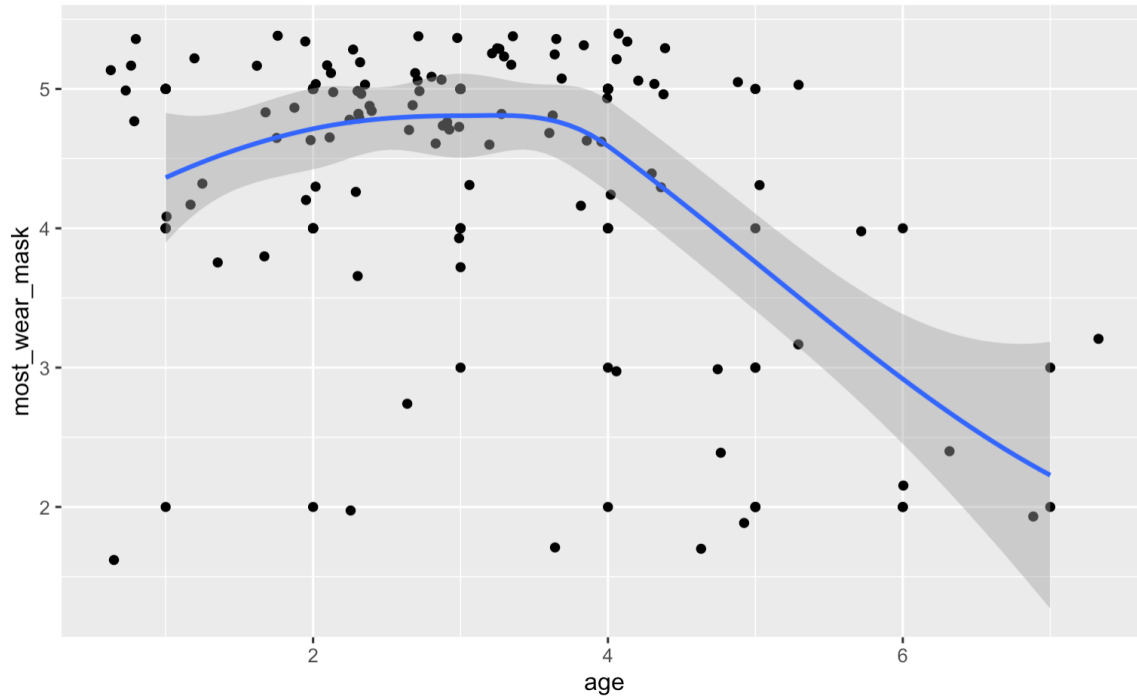


Figure 3: China regression of age vs. compliance level of mask wearing order (1=18-24, 2=25-34, 3=35-44, 4=45-54, 5=55-64, 6=65-74, 7=75-84, 8=85+)

Gender

While in China, there was a gender difference in hand-washing compliance (more women than men), there was no evidence of a gender difference in the United States. Female participants show 0.136 ($p = 0.010$) higher compliance to perform frequent hand wash than male participants in China. The data from China and the United States did not show a significant effect of gender on the level of compliance when it came to the recommendation to wear a mask.

Income and employment status

In China, income, and job stability can be influential factors in influencing people's compliance with public health recommendations, but this is not significantly evident in the United States.

In China, participants whose annual income is higher tend to be more compliant to the public health orders, but in the US it does not seem to be an influential factor. Chinese participants whose annual income (Chinese Yuan) are in the range of 20,000-40,000, 40,000-80,000, 80,000-160,000, 160,000-320,000 and above 320,000 have a higher level of compliance to

wearing mask recommendations than participants whose annual income is under 20,000. Except for the income ranges of 40,000 to 80,000 and 80,000 to 160,000 where participants had similar levels of compliance, all other levels of compliance tended to increase as the income range increased. For the significance, see Table 6

Annual income range	Estimate	p-value
Under ¥2000 (Intercept)	3.545	<0.001
¥20,000 - ¥40,000	0.705	0.031
¥40,000 - ¥80,000	0.935	0.004
¥80,000 - ¥160,000	1.246	<0.001
¥160,000 - ¥320,000	1.240	0.001
Above ¥320,000	1.455	0.035

Table 6: China regression of annual income vs. compliance level of mask wearing order

For Chinese, participants who have a more stable job tend to be more compliant with the public health recommendations than those who work in unstable jobs. Participants who are employed full time are 1.163 ($p = 0.007$) higher in mask wearing compliance score than participants who work part-time. Self-employed participants are 2.000 ($p = 0.050$) higher than part-time employees.

Personality

Data from the United States showed that participants with higher levels of openness were more likely to comply with the recommendation to wash hands frequently. One point higher on Openness led to an increase of 0.130 ($p = 0.031$) on frequently hand wash compliance score. In China, the more conscientious the Chinese participants were the higher their compliance with handwashing recommendations. Conversely, the higher the level of neuroticism, the lower the level of compliance with handwashing recommendations. One point higher on conscientiousness led to an increase of 0.082 ($p = 0.047$) on frequently hand wash compliance score. One point

higher on neuroticism led to a decrease of 0.100 ($p = 0.018$) on frequently hand wash compliance score.

Motivations

Participants were asked to rank 6 motivations in respect of the importance of them. To analyze the overall ranking of these 6 choices, the first option in each answer was replaced by 1, the second with 2, and so on, and the last with 6. All results collected in China and in the US were then summed separately, and the sums were sorted to arrive at the following two different orders.

In the US:

1. (178) Avoiding COVID-19 for my family and friends
2. (190) Reducing the spread of COVID-19 in the larger population
3. (211) Avoiding COVID-19 for myself
4. (228) Being a responsible citizen
5. (255) Avoiding the consequences of breaking the law or workplace rules
6. (303) Doing what my friends and neighbours expect me to do

In China:

1. (263) Avoiding COVID-19 for my family and friends
2. (273) Being a responsible citizen
3. (329) Avoiding COVID-19 for myself
4. (339) Reducing the spread of COVID-19 in the larger population
5. (389) Avoiding the consequences of breaking the law or workplace rules
6. (507) Doing what my friends and neighbours expect me to do

Compared to the US participants, Chinese participants tend to value "citizenship" over "public good" reasons. From the above ranking of motivation by participants from both countries, it can be seen that "Avoiding COVID-19 for my family and friends" was the most important motivation for participants from both countries. For the US participants, "Reducing the spread of COVID-19 in the larger population" was the second biggest motivation, but for the Chinese participants, "Being a responsible citizen" was more important than "Avoiding COVID-19 for

myself” and “Reducing the spread of COVID-19 in the larger population”. “Avoiding the consequences of breaking the law or workplace rules” and “Doing what my friends and neighbours expect me to do” were both considered to be the two lowest motivations by participants in both countries.

Information

What information affected the behaviour

Information makes participants be more compliant	US%	China %	P-value
A significant increase in the number of COVID-19 cases in my city/town.	57	69	0.107
A new case of COVID-19 among people that I interact with in person.	40	33	0.378
An additional government order to take more precautions (local or national).	34	69	1.51e-06
A significant increase in the number of COVID-19 cases in my country.	31	65	3.00e-06
A new case of COVID-19 among people that I know, but with whom I do not interact in person.	28	34	0.445
A new recommendation from a non-governmental health organization (such as the WHO).	13	22	0.137
People around me are beginning to follow more pandemic-related recommendations.	16	53	8.56e-08

Table 7: Information makes participants be more compliant with public health orders

Information makes participants be less compliant	US%	China %	P-value
An announcement that there are no active cases in my city/town.	43	54	0.157
A government announcement that fewer precautions need to be taken (local or national).	29	72	2.85e-09
A significant decrease in the number of COVID-19 cases in my city/town.	38	33	0.555
An announcement from a non-governmental health organization (such as the WHO) that fewer recommendations are required.	19	21	0.860
A significant decrease in the number of COVID-19 cases in my country.	30	43	0.078
People around me are relaxing their following of pandemic-related recommendations.	13	32	0.002

Table 8: Information makes participants be less compliant to public health orders

From Table 7 and Table 8, we find that overall, Chinese participants were more likely to act seriously on news about COVID-19: on 11 out of 13 information, they were more likely than the US participants to react to the changes in information. This was particularly true with government announcements about taking more or fewer precautions, people around them taking more or fewer precautions and when a significant increase in the number of COVID-19 cases in the country.

For US participants, a significant increase in the number of COVID-19 cases in the local area is the top information that will make them take more actions. But for Chinese citizens, a significant increase in the number of COVID-19 cases in the local area, in the country, and the government order are equally important.

For US participants, no active COVID-19 cases in the local area is the top information that will make them take fewer actions. But for Chinese citizens, a government announcement of taking fewer precautions is more effective than other information.

Information credibility

Information resources	US%	China %	P-value
Government rule or recommendation	43	89	1.85e-11
A health organization or medical expert's recommendation	52	65	0.085
Workplace rule or recommendation	22	41	0.006
A recommendation from a major news source (e.g., New York Times, Wall Street Journal, CNN News)	20	64	7.25e-10
A recommendation from an independent news source or blog	6	15	0.065
Family or friend's recommendation	20	38	0.008
Recommendations of strangers (e.g., on social media)	9	9	1.00

Table 9: Information resources with the percentage of in which people think it is important

From Table 9, Chinese participants showed a higher level of attention to almost all (6 out of 7) sources of information, especially government rules and recommendations and the major news sources.

In a longitudinal comparison, government advice was more important to Chinese participants than other sources of information, as 89% of participants indicated. This is followed by information from health organizations and mainstream media, which are almost equally important, with 65% and 64% of participants saying so, respectively. For the US participants, advice from health organizations was more important than other sources of information, with 52% of the US participants stating this.

COVID-19 Awareness & Knowledge

We used the same method to evaluate the level of concern, level of knowledge of the coronavirus and participants' perceptions and opinions for the US and China comparison. We further confirmed that in the US, the higher the level of concern of the COVID-19 outbreak, the higher the level of compliance with COVID-19 related public health orders. Participants who perceived the current status of the pandemic as inferior to news reports also comply with the public health orders to a higher degree. But in China, people's concerns about COVID-19 and their thoughts on the status of COVID-19 do not affect their level of compliance with public health orders.

The lower the frequency of receiving COVID-19 related news, the lower the participants' compliance with the relevant recommendations. In the wearing mask model, every one level lower on the frequency, the participant's average compliance score decreased by 0.129 ($p = 0.044$)

In both wearing masks and frequent hand washing models, participants who believed that the current status of the COVID-19 epidemic was better than reported in the media/news were less likely to comply with COVID-19 related recommendations than those who believed it was worse. In the mask-wearing model, participants who believed that the current status of the COVID-19 epidemic was better than reported in the media/news showed their average compliance score of 0.886 ($p = 0.001$) lower than those who believed it is worse. It is 0.469 ($p = 0.0036$) lower in the frequent hand washing model.

Cultural

Reasons being less compliant	US%	China %	P-value
Because few people I know appear to be following the recommendations.	19	54	5.92e-07
Because it would be rude in some contexts to insist on the recommendations.	17	26	0.169
Because I am getting tired of following the recommendations.	22	30	0.259
Because of a material inability to follow the recommendations (e.g., I cannot afford to purchase so many masks).	22	35	0.061
Because I sometimes forget to follow the recommendations.	17	40	0.001

Table 10: Reasons being less compliant in respect to the cultural factors

From Table 10, we find that compared to American participants, Chinese participants are more likely to relax their level of compliance with social health recommendations if few people around them follow them.

Personal and Family Concern

In China, the participant who has more family members tends to be more compliant to the wearing mask recommendation. There is no significant evidence in the United State shows the relationship between the number of family members with the compliance level in wearing masks or frequent hand washing. The higher the number of family members, the lower the participants' compliance with the wearing mask recommendations in China. Every one level higher on the family members, the participant's average compliance score increased by 0.643 ($p < 0.001$)

Personal health condition is another factor that affects the Chinese participants' compliance to the public health order, while in the US, there were not significant numbers that show that. In China, participants with long term health conditions are 0.536 ($p = 0.037$) higher in the degree of compliance than participants with no long term health condition.

Multi-variable Linear Regression

We used similar methods for the US and China comparison as we did for the US only data. We extracted 7 variables from the US data and 8 variables from the Chinese data to find the best model to predict the compliance level of the mask-wearing recommendation.

The 7 variables selected from the US data are age, frequency of reading COVID-19 related news, how long mask-wearing became a habit, how long social distancing became a habit, willingness of wearing a mask if nobody is wearing a mask, perception of the COVID situation in the country, and the political party.

The results showed that responsiveness (how long mask-wearing became a habit) to take actions and willingness of wearing a mask if nobody is wearing a mask and the political party were the 3 factors that influenced compliance with wearing mask directives in the face of the COVID-19 period. Among all 7 groups of models, the 3-variable regression model has the lowest RMSE value (0.648) so how long mask-wearing becomes a habit, willingness of wearing a mask if nobody is wearing a mask and the political party can form the best regression model for measuring the mask-wearing compliance score in the US.

The 8 variables selected from the US data are age, employment status, work in person or not, number of family members, annual income, long term health conditions, how long social distancing became a habit, and willingness of wearing a mask if nobody is wearing a mask.

The results showed that annual income, in-person work requirement and willingness of wearing a mask if nobody is wearing a mask were the 3 factors that influenced compliance with wearing mask directives in the face of the COVID-19 period. Among all 8 groups of models, the 3-variable regression model has the lowest RMSE value (0.761) so annual income, how long mask-wearing becomes a habit, and willingness of wearing a mask if nobody is wearing a mask can form the best regression model for measuring the mask-wearing compliance score in China.

Discussion

By analyzing the influence of demographic factors, psychological factors, government, and other intrinsic and extrinsic factors on participants' compliance with public health directives, we found 4 broad factors which are perceptions and opinions related to the COVID -19, trust in the government and health organization, public influence and family concern and two critical factors or the underlying cause that we predict.

As we mentioned in our review of previous literature, people who have a more comprehensive understanding of an epidemic,⁴⁴ who have higher estimates of concern and risk,⁴⁵ and who think the disease is dangerous⁴⁶ tend to adopt greater public safety behaviours. In our study, we confirmed that people with higher knowledge of the coronavirus were more compliant. People with higher concern and estimate of risk about the disease and the more dangerous level is perceived were also more compliant. Besides that, we also discovered that the more eagerly the person wants to know about the COVID-19, the more compliant they are. And in the US, believing the situation is worse than the news reports can trigger higher compliance to the orders. From all these findings, we conclude that those who are better-informed or who have a pessimistic view of viral spread comply more with health orders. This is not surprising, and it confirms previous results.

Regarding trust in the health organization and the government, previous literature indicated that higher trust in the government and health organization will lead to higher compliance level to the public health directives.⁴⁷ Additionally, American public trusts the government far less than it trusts science/public health leaders.⁴⁸ Chinese citizens tend to follow the leadership of the government.⁴⁹ Our research confirmed the above conclusion and discovered that Americans who trust the health organization have higher compliance levels with the public orders than those who trust the government. In China, the government has the highest authority among the leaders. So

⁴⁴ Barr, op. cit.

⁴⁵ Bish, op. cit.; Tang, op. cit.

⁴⁶ Rubin, op. cit.

⁴⁷ Bargain, op. cit.; Chan, op. cit.

⁴⁸ McFadden, op. cit.

⁴⁹ Kupferschmidt, op. cit.

we conclude that Chinese citizens trust most official authorities; American citizens trust health organizations more than the government. This is not surprising, given geopolitical differences, but it suggests that trust in health information sources depends on local context.

We discovered that Chinese people are more influenced by the behaviour of groups, Americans are influenced to some extent by the behaviour of groups. Nearly 90% of the Chinese public thinks government advice is important. In the US, political affiliation has an effect, but it might be mediated by "following the crowd" of the opinion of one's acquaintances. Out of these findings, we believe that in both China and America, public health behaviour is often determined by herd behaviour.

From the previous literature, we found these 4 broad factors, which are the demographic, generally related to age⁵⁰ and gender,⁵¹ then the perceptions and understanding about the disease,⁵² government directives and political affiliation,⁵³ and the trust in the government and health organization.⁵⁴ However, our multivariable regression models suggest that two underlying factors are the root causes: individual responsiveness, which itself is possibly due to level of awareness, conscientiousness, agreeableness, openness; and social influence, which is related to the actions of friends and acquaintances. In other words, in the context of the COVID-19 pandemic, the dominant causes of health behaviours may be due to more general psychological and sociological causes, rather than pandemic-specific issues.

Recommendations

Based on the discussion, we have 3 recommendations. First, because people vary in the sources of information they trust, consistency of information across formal organizations and news sources is important. Second, because less compliant age groups could be influenced by more

⁵⁰ Asma, op. cit.; Tang, op. cit.; Bish, op. cit.

⁵¹ Bish, op. cit.; Galasso, op. cit.

⁵² Barr, op. cit.; Tang, op. cit.; Bish, op. cit.; Rubin, op. cit.; Wise, op. cit.; Plohl, op. cit.; Kuper-Smith, op. cit.

⁵³ Clements, op. cit.; Ren, op. cit.; Kupferschmidt, op. cit.; Haffajee, op. cit.

⁵⁴ Prati, op. cit.; Goldsmith, op. cit.; Bargain, op. cit.; Chan, op. cit.

compliant ones, encouraging families to reside together could be helpful in many contexts. At last, because people seem to be strongly influenced by their acquaintances, and because some people are inherently more compliant, efforts should be made to affirm and encourage "early adopters."

Limitations

The measure of compliance with public health recommendations in this study was self-reported, so data may be subject to social desirability bias. The majority of the responses to the public health advice asked indicated that the US citizens were more likely to comply with the public health recommendation than Chinese citizens. This does not preclude the possibility that Chinese participants conservatively estimated their own compliance and the US participants may have overestimated their own compliance. Therefore, in future studies, objective and realistic questions could be set, such as how many times in the past week did you wear a mask when you went out. The results would then be rated based on the results of multiple questions. Another possibility is that because our questionnaire was released in mid to late July 2020, at this time the epidemic is effectively controlled in China, while the US is at the peak of the outbreak. This may influence to some extent the attitude of the masses when giving feedback

Our questionnaire is published by two different companies in China and the United States. There are differences in how the companies distribute the questionnaires and to whom, which may affect the accuracy of our data.

Conclusion

Through quantitative data analysis of 200 questionnaires collected from China and 818 questionnaires collected from the United States, we collated the factors that may influence people's compliance with public health directives in both countries. We explored various perspectives from Demographic, Personality, COVID-19 Awareness & Knowledge, Public Pressure, Information, Political party, Motivations, Cultural Personal and Family Concern were explored from multiple perspectives. We found that although age, personality, knowledge of COVID-19, and trust in government and health agencies can influence compliance with COVID-19 related public health orders, individual responsiveness and social influence are likely to be the underlying causes.

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