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Promoting higher social distancing and stay-at-home decisions during COVID-19: The underlying conflict between public health and the economy

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ABSTRACT

Social distancing and stay-at-home orders were implemented as a quick response to the public health crisis created by COVID-19. However, these measures led to competing concerns for public health versus the wellbeing of the economy during the pandemic. This drove polarized views and attitudes towards these measures in the US that threatened their effectiveness in controlling the spread of infections. Our study addresses this point by investigating uptake of messaging treatments that highlight the health risks of COVID-19. We also investigate how priming economic risk of COVID-19 affects responsiveness to the health information messaging. A sample of 1200 US respondents were randomly assigned to a control and four messaging treatments that included information about risks of COVID-19 on own health, public health, the economy, and combination of public health and the economy, respectively. Our results indicate a significant difference in messaging uptake based on political partisanship. Individuals identifying as Democrats increased their social distancing and stay-at-home decisions in response to all information treatments, contrary to Republicans who showed no significant change in their behavior. Using a latent class analysis model, we classify individuals into three main types (dismissive, amenable, and conscious) that differ in their perceptions of the risks associated with COVID-19. We show that only amenable individuals, who account for approximately 34% of the sample, respond significantly to the messaging treatments.

1. Introduction

The novel Coronavirus (COVID-19) pandemic has led to the worst public health crisis of our century (Rothan and Byrareddy, 2020). Ever since its emergence in December 2019, the virus has quickly spread worldwide, infecting millions of people and leading to hundreds of thousands of casualties (Dong et al., 2020). In the face of this challenge, governments around the world have implemented stay-at-home directives and provided social distancing guidelines in an attempt to slow the spread of the virus and allow time for the medical field to come up with a more permanent solution (Sandford, 2020).

In the US, these policies have been enacted on the state-level (Raifman et al., 2020). By early April 2020, almost all states around the US had implemented social distancing measures and issued stay-at-home orders (Wellenius et al., 2020). However, these policies received mixed responses from the public that differed significantly between democrat-leaning and republican-leaning states (Grossman et al., 2020). In fact, there was a stark heterogeneity in the US regarding general attitudes towards COVID-19 that stretched beyond social distancing and stay-at-home directives to other risk mitigation behaviors like mask wearing for example (Hornik et al., 2021).

The social distancing and stay-at-home orders showed initial success in both reducing mobility (Cronin and Evans, 2020; Dave et al., 2020; Wellenius et al., 2020) and controlling morbidity and mortality rates (Remuzzi and Remuzzi, 2020; Maier and Brockmann, 2020). This drove a wave of research to investigate these strategies, as well as broader prevention practices, to protect against COVID-19 infections. For instance, Lunn et al. (2020) reviewed the behavioral science literature to provide insights on how to best fight the COVID-19 outbreak. They outlined practices including self-isolation, hand-hygiene, and face touching. Two other studies by Harper et al. (2020) and Zettler et al. (2020) investigated how different psychological factors affect people’s tendency to adopt mitigation behavior during COVID-19. Combined results from these studies indicate that fear, anxiety, and emotional reactivity lead to higher adoption of different prevention practices. Other research – including Blagov (2020), Everett et al. (2020), and

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2.1. Setting and participants

A sample of 1,200 US respondents completed the online study, which was distributed through a survey management company that ensured proportional representativeness of the sample across age, gender, income, and region (Midwest, Northeast, South, West). Survey management companies are usually used in this type of studies, as well as national survey studies, as they keep a large respondent panel which they use to obtain representative study samples. For this study, a stratified sample was obtained to ensure representativeness across age, gender, income, and region using quotas that are available in Table A1 in the appendix. Respondents had to be 18 years or older to qualify for participation. Additionally, to maintain data quality, respondents had to confirm their willingness to provide their best answers to the survey questions and had to pass an attention check question that was included at the beginning of the survey.1 The first treatment (“own health”) emphasized the risk of COVID-19 on one’s own health and stressed the importance of practicing social distancing and stay-at-home. The second treatment (“public health”) was identical to the first, except that it highlighted the risk on public health, including self, loved ones, and others. The third treatment (“economic risk”) highlighted the negative impact of the pandemic on the economy in order to prime individuals to think about the many people who lost their jobs as a result of everyone shutting down their lives during COVID-19. The fourth treatment (“public health + economic risk”) combined information about the risk on public health and the negative impacts on the economy in order to investigate the interaction between these two competing factors. The order of the information highlighting public health and economic risk was randomized across subjects assigned to this treatment to control for ordering effects.

2.2. Intervention

Respondents were randomly assigned to a control and four information treatments. The information treatments were presented in a slide at the beginning of the survey. The first treatment (“own health”) emphasized the risk of COVID-19 on one’s own health and stressed the importance of practicing social distancing and stay-at-home. The second treatment (“public health”) was identical to the first, except that it highlighted the risk on public health, including self, loved ones, and others. The third treatment (“economic risk”) highlighted the negative impact of the pandemic on the economy in order to prime individuals to think about the many people who lost their jobs as a result of everyone shutting down their lives during COVID-19. The fourth treatment (“public health + economic risk”) combined information about the risk on public health and the negative impacts on the economy in order to investigate the interaction between these two competing factors. The order of the information highlighting public health and economic risk was randomized across subjects assigned to this treatment to control for ordering effects.

2.3. Data collection instrument

Each respondent took 15–20 min to complete the study. Based on their random treatment assignment, respondents were first presented with one of the interventions above (or skipped this step if they were in the control group). Subsequently, they answered questions regarding the frequency with which they would practice social distancing and stay-at-home, which were treated as the main outcome variables in the study. Next, respondents indicated the frequency with which they would follow different risk-mitigation practices during COVID-19, after which they answered questions regarding their perceptions and attitudes towards the pandemic. This information included their level of concern about the spread of infections and the wellbeing of the economy during the pandemic, their perception of the infectiousness and severity of COVID-19 when compared to seasonal influenza, their view on the effectiveness of the government in addressing the pandemic, their willingness to accept a future vaccine, and their perception of the risk of being infected versus the risk of infecting others if they continue their life as normal. Table A2 in the appendix provides a summary of these questions. Respondents then provided information about their demographic characteristics, political partisanship, income reductions due to COVID-19, smoking status, and whether or not they or someone they know (e.g., family, friend, coworker) contracted COVID-19. Finally, they reported their general attitudes towards risk using the brief sensation seeking scale (Hoyle et al., 2002), which is widely used in the literature (Echeus, 2004; Pechorro et al., 2018; Stephenson et al., 2007) and produces a measure ranging from 1 to 5, with higher values indicating more risk-seeking behavior.

2.4. Data analysis

The effect of the different information interventions on social distancing and stay-at-home decisions is analyzed using nonparametric comparison of means tests and regressions. Considering the nature of the outcome variables (i.e., frequency of social distancing and stay-at-home), ordered Probit regression models are used. A system of equations is estimated in order to account for potential correlation in the error terms across the two outcome variables. The results are further broken down by political partisanship to test for any difference in the responses of individuals identifying as Democrats and Republicans. This analysis is motivated by the fact that Republicans in the US were more active in protesting against the government lockdowns during the early stages of the pandemic. As views and attitudes about the pandemic are

1 The wording of the information messages used is available in the appendix.
likely drivers of individual social distancing and stay-at-home decisions, a Latent Class Analysis (LCA) model is applied to split individuals into different classifications based on these factors. This will help us understand the breakdown of opinions among the sample and the resulting social distancing and stay-at-home frequencies practiced by the different types of individuals.

3. Results

3.1. Assessing the level of concern for public health vs. The economy

Fig. 1 plots the respondents’ average level of concern for the spread of infections and for the wellbeing of the economy during the COVID-19 pandemic. Clearly, respondents exhibited very high levels of concern for both the spread of infections and wellbeing of the economy. This demonstrates the potential conflict created by these two competing factors and the importance of assessing their interactive effects on behavior during the COVID-19 pandemic.

3.2. Analyzing the effect of the interventions on the overall sample of respondents

The respondents’ social distancing and stay-at-home decisions are investigated in Table 1 using a system of equations Probit model. The odds ratios are reported in the table so an estimate greater (less) than 1 indicates a positive (negative) effect. We observe a significant increase in social distancing and stay-at-home under treatment 1 (“own health”). We also observe a marginally significant increase in both outcomes under treatment 2 (“public health”), but no significant effects for treatments 3 and 4. This indicates that priming individuals to consider the risk of COVID-19 on their own health seems to be the most effective strategy for increasing prevention behavior. On the other hand, framing the risk of COVID-19 on the economy had no effect on social distancing and stay-at-home decisions, and combining this frame with information on health risks dilutes the effects of the latter.

Regarding demographic and socioeconomic variables, we find that males are less likely to practice social distancing and stay-at-home. Age is also positively correlated with the frequency of following these practices. Notably, Democrats are significantly more likely to practice social distancing and stay-at-home, while Republicans are significantly less likely to practice stay-at-home, when compared to individuals identifying as third party/other. Adherence to stay-at-home is also reported more frequently by Asians, while social distancing is positively correlated with income and negatively correlated with education. The negative correlation between education and social distancing might be explained by the fact that individuals with a higher education occupy jobs that require them to keep showing up for work during COVID-19.

Table 1

| Variable                  | Parameter (Std. Error) | Parameter (Std. Error) | Parameter (Std. Error) | Parameter (Std. Error) |
|---------------------------|------------------------|------------------------|------------------------|------------------------|
| Health Risk (self)        | 1.353*** (0.141)       | 1.374*** (0.146)       | 1.249** (0.136)        | 1.273** (0.142)        |
| Health Risk (self + others) | 1.188* (0.122)        | 1.192* (0.125)        | 1.146 (0.123)         | 1.154 (0.126)         |
| Econ Risk                 | 1.179 (0.122)          | 1.153 (0.120)          | 1.165 (0.126)         | 1.127 (0.123)         |
| Health Risk + Econ Risk   | 1.17 (0.118)           | 1.177 (0.121)          | 1.116 (0.117)         | 1.125 (0.120)         |
| Male                      | 0.804*** (0.055)       | 0.860*** (0.062)       |                       |                       |
| Age                       | 1.008*** (0.002)       | 1.010*** (0.003)       |                       |                       |
| Education                 | 0.978 (0.024)          | 0.948** (0.024)        |                       |                       |
| Income                    | 1.002 (0.018)          | 1.041** (0.020)        |                       |                       |
| Unemployed                | 1.053 (0.106)          | 1.123 (0.118)          |                       |                       |
| Household Size            | 1.047 (0.033)          | 1.067** (0.035)        |                       |                       |
| Number of Children        | 0.973 (0.048)          | 0.923 (0.047)          |                       |                       |
| Number of Elderly         | 0.925 (0.094)          | 0.97 (0.049)           |                       |                       |
| COVID-19 Positive         | 1.061 (0.069)          | 1.074 (0.083)          |                       |                       |
| Smoke                     | 1.089 (0.093)          | 1.058 (0.094)          |                       |                       |
| Caucasian                 | 1.123 (0.142)          | 1.117 (0.146)          |                       |                       |
| Hispanic                  | 1.143* (0.267)         | 1.169 (0.223)          |                       |                       |
| Black                     | 0.95 (0.142)           | 0.894 (0.139)          |                       |                       |
| Asian                     | 1.623** (0.305)        | 1.278 (0.247)          |                       |                       |
| Republican                | 0.835** (0.070)        | 0.905 (0.079)          |                       |                       |
| Democrat                  | 2.128** (0.098)        | 1.416*** (0.121)       |                       |                       |
| Observations              | 1200                   | 1200                   | 1200                   | 1200                   |
| Log Likelihood            | −2180.28               | −2180.28               | −2180.28               | −2180.28               |

Notes: The dependent variables are coded on a 5-point Likert scale (1 “never”, 2 “sometimes”, 3 “about half the time”, 4 “most of the time”, and 5 “always”). Significance levels: *:10%, **:5%, ***:1%.

Individuals who identified as independent or other were grouped together and used as the baseline level against which the variables Democrat and Republican are compared.

2 A bar graph showing the average frequency with which respondents in each information treatment practice social distancing and stay-at-home is plotted in Figure A2 in the appendix.
which decreases their ability to maintain social distancing.

3.3. Analyzing the effect of the interventions across political partisanship

The protests that broke out in the US against government shutdowns during COVID-19 highlight the importance of investigating heterogeneities in attitudes towards social distancing and stay-at-home across political partisanship. Table 2 reports the results separately for individuals who identified as Democrats and Republicans.

As shown, Democrats significantly increased their frequency of social distancing and stay-at-home under essentially all treatments, while Republicans displayed no change in the frequency of these practices across treatments. This indicates that the social distancing and stay-at-home decisions of Republicans are more stable and less influenced by information campaigns, contrary to Democrats who are more responsive to such information priming. Notably, Democrats increased their social distancing and stay-at-home even when primed to think of the negative economic consequences resulting from the pandemic. One possible explanation for this result is that framing information on economic risk led Democrats to feel that their concern for public health is being overlooked, which pushed them to retaliate and increase their social distancing and stay-at-home.

The heterogeneities in risk-mitigation decisions of Democrats and Republicans motivate the analysis of the main underlying factors driving this difference in behavior. Fig. 2 presents differences in the average responses of Democrats and Republicans to several variables that capture general risk preferences as well as perceptions and attitudes towards the COVID-19 pandemic. The dots in the figure represent the difference in means (i.e., Average of Democrats – Average of Republicans), while the error bars are 95% confidence intervals.

Besides general risk preferences and concern for the economy, the average responses of Democrats were significantly higher than Republicans for all variables. This implies that, overall, Democrats are significantly more concerned about COVID-19, which can explain their higher responsiveness to information framing the health risks of this pandemic. The fact that general risk aversion was not different across Democrats and Republicans suggests that domain-general measures might not accurately predict individual behavior during COVID-19 and that the only predictors seem to be the domain-specific perceptions and attitudes towards the pandemic.

3.4. Latent class analysis model

Having identified heterogeneities in opinion and responses to COVID-19 based on political partisanship, we now classify the divergence in attitudes across key observable characteristics. To achieve this, we estimate a latent class analysis (LCA) model to split individuals into different groups based on their general risk aversion and perception towards the COVID-19 pandemic. See Collins and Lanza (2009) for a review of the methodology behind LCA models. The same variables from Fig. 2 were used to split the respondents into three main latent classes. Summary statistics of the observable variables for the 3 classes are presented in Table 3, along with the estimated fraction of respondents belonging to each class. Approximately 13% of respondents fell in class A, which had the lowest perception of risk for both self and others, lowest trust in government effectiveness, and lowest concern for the spread of infections. The majority of those individuals also did not view COVID-19 as more infectious or more severe than seasonal influenza and opposed vaccination against the disease. We thus label this class dismissive individuals. Class B, which accounts for approximately 53% of respondents, held the highest concerns for the spread of infections and the risk to self and others, had the highest perception of the infectiousness and severity of COVID-19, the highest trust in government efforts to address the pandemic, and the highest willingness to accept a vaccine. We therefore label these the conscious individuals. Finally, the remaining 34% of respondents in class C were in the middle between the dismissive and conscious types, and we label them the amenable type.

Table 2

| Variable                        | Democrats Parameter (Std. Error) | Republicans Parameter (Std. Error) | Democrats Parameter (Std. Error) | Republicans Parameter (Std. Error) |
|--------------------------------|--------------------------------|----------------------------------|--------------------------------|----------------------------------|
| Health Risk (self)             | 1.419**                        | 1.325                             | 1.382**                        | 1.109                             |
|                                | (0.261)                        | (0.263)                           | (0.266)                        | (0.227)                           |
| Health Risk (self + others)    | 1.487**                        | 1.031                             | 1.579**                        | 1.163                             |
|                                | (0.271)                        | (0.203)                           | (0.307)                        | (0.240)                           |
| Econ Risk                      | 1.525*                         | 1.34                              | 1.659***                       | 1.084                             |
|                                | (0.271)                        | (0.227)                           | (0.315)                        | (0.225)                           |
| Health Risk + Econ Risk        | 1.242                          | 1.35                              | 1.578**                        | 1.198                             |
|                                | (0.216)                        | (0.272)                           | (0.297)                        | (0.250)                           |
| Demographic Controls’          | YES                            | YES                               | YES                            | YES                               |
| Observations                   | 437                            | 344                               | 437                            | 344                               |
| Log Likelihood                 | –679.54                        | –643.11                           | –679.54                        | –643.11                           |

Notes: a system of equation ordered Probit model was estimated separately for Republicans and Democrats. The dependent variables are coded on a 5-point Likert scale (1 “never”, 2 “sometimes”, 3 “about half the time”, 4 “most of the time”, and 5 “always”). The odds ratios are reported in the table so that a coefficient greater (smaller) than one indicates a positive (negative) relationship. Significance levels: *:10% **:5% ***:1%.

3 The social distancing and stay-at-home decisions of Democrats and Republicans conform with their relative attitudes towards other risk-mitigating behaviors, which are displayed in Figure A3 in the appendix. Democrats have a generally higher frequency of following various practices that can protect against COVID-19 infections.

4 Several LCA models were estimated using a sequence from 2 to 9 classes. The data only supported models with 2 and 3 classes, as models with a higher number of classes failed to converge. We chose the model with 3 classes since it had a lower AIC and BIC.
who significantly increased their social distancing and stay-at-home decisions under the economic risk, followed by seasonal influenza. It is noteworthy to mention that here too we fail to see any significant differences in general risk aversion measures across the 3 classes. Moreover, the variables measure respondents’ level of concern about the spread of COVID-19 and the wellbeing of the economy during the pandemic, and their view on effectiveness of the government in dealing with COVID-19.

Individuals. It is noteworthy to mention that here too we fail to see any significant differences in general risk aversion measures across the 3 classes.

The correlations between information treatments and main outcome variables (i.e., social distancing and stay-at-home decisions) are estimated for each class in Table 4. First, by looking at the mean of stay-at-home and social distancing decisions in the control group, we notice that the dismissive type had the lowest frequency of practicing those measures, followed by amenable, then conscious individuals. Moreover, the information treatments seem to only influence amenable individuals, who significantly increased their social distancing and stay-at-home decisions under the “own health”, “public health”, and “public health + economic risk” treatments. This implies that for those individuals, concern for health was indeed more dominant than concern for the economy, since priming both types of information together, in the “public health + economic risk” treatment, actually led to an increase in social distancing and stay-at-home decisions. As for dismissive and conscious individuals, the lack of change in their behavior under the information treatments might be due to their stronger opinions about the pandemic.

4. Discussion and conclusion

Social distancing and stay-at-home orders were issued by most state governments around the US to fight the spread of COVID-19 infections. However, these policies raised competing concerns for public health versus economic wellbeing during the pandemic, which can undermine compliance levels and limit their effectiveness. We address this issue by investigating responsiveness to different information messaging treatments that highlight the public health and economic risks of COVID-19. In doing so, we investigate the individual effects of priming health and economic risk as well as the interaction effects between these two factors.

Our results point to a significant heterogeneity in perceptions and attitudes between individuals identifying as Democrats and Republicans, where the former held stronger concerns about the infectiousness, severity, and risk associated with COVID-19 and were more responsive to the information treatments. These findings are echoed in previous studies, which report higher opposition to lockdown policies and stronger anti-mask sentiments among Republicans (de Bruin et al., 2020; Grossman et al., 2020; Hornik et al., 2021). By classifying our sample into three types of individuals (dismissive, amenable, and conscious), we show that only amenable individuals, who account for approximately one third of the sample, respond significantly to the information messaging treatments by increasing their social distancing and stay-at-home decisions. Compared to previous research findings, which estimate an 8% increase in stay-at-home in the US following government lockdown policies (Brzezinski et al., 2020), this result demonstrates the effectiveness of information campaigns in further promoting social distancing and stay-at-home.

One feature that contributes to the strength of our study is the incorporation of an experimental design where subjects are randomized across different information messaging treatments. This allows us to isolate the effect of the treatments on social distancing and stay-at-home decisions. Additionally, by collecting information about general risk preferences as well as perceptions and attitudes towards COVID-19, we are able to control for various behavioral factors that can influence social distancing and stay-at-home decisions. This being said, one

Table 4

| Variable                        | Stay-at-Home                     | Social Distancing                  |
|--------------------------------|----------------------------------|------------------------------------|
|                                | Class A                         | Class B                         | Class C                         | Class A                         | Class B                         | Class C                         |
|                                | Dismissive (Parameter (Std. Error)) | Amenable (Parameter (Std. Error)) | Conscious (Parameter (Std. Error)) | Dismissive (Parameter (Std. Error)) | Amenable (Parameter (Std. Error)) | Conscious (Parameter (Std. Error)) |
| Health Risk (self)             | 0.747                           | 1.766***                        | 1.314*                          | 1.237                           | 1.537**                        | 0.951                           |
|                                | (0.222)                         | (0.332)                         | (0.216)                         | (0.375)                         | (0.294)                         | (0.174)                         |
| Health Risk (self + others)    | 0.984                           | 1.763***                        | 1.008                           | 1.101                           | 1.666***                        | 0.868                           |
|                                | (0.255)                         | (0.325)                         | (0.162)                         | (0.289)                         | (0.313)                         | (0.157)                         |
| Econ Risk                      | 1.076                           | 1.305                           | 1.112                           | 0.939                           | 1.522**                        | 0.911                           |
|                                | (0.282)                         | (0.240)                         | (0.179)                         | (0.248)                         | (0.289)                         | (0.167)                         |
| Health Risk + Econ Risk        | 1.256                           | 1.703**                        | 0.900                           | 1.225                           | 1.411*                         | 0.916                           |
|                                | (0.328)                         | (0.322)                         | (0.137)                         | (0.323)                         | (0.271)                         | (0.160)                         |
| Demographic Controls**         | YES                             | YES                             | YES                             | YES                             | YES                             | YES                             |
| Mean in Baseline               | 3.45                            | 3.88                            | 4.60                            | 3.73                            | 4.21                            | 4.78                            |
| Observations                   | 159                             | 397                             | 644                             | 159                             | 397                             | 644                             |
| Log Likelihood                 | –398.107                        | –716.789                        | –806.702                        | –398.107                        | –716.789                        | –806.702                        |

Notes: a system of equation ordered Probit model was estimated separately for each class in the latent class analysis to investigate differences in the effect of nudging treatments on social distancing and stay-at-home behavior. The dependent variables are coded on a 5-point Likert scale (1 “never”, 2 “sometimes”, 3 “about half the time”, 4 “most of the time”, and 5 “always”). The odds ratios are reported in the table so that a coefficient greater than one indicates a positive relationship and a coefficient smaller than one indicates a negative relationship. Significance levels: *:10% **:5% ***:1%.

All regression specifications controlled for demographic and socioeconomic characteristics of respondents. The results presented here include only the estimated effects of the information treatments. The full table with estimated coefficients for demographic and socioeconomic variables is available upon request.
potential limitation in our study arises from the ordinal nature of the variables surrounding these behavioral factors. This adds a layer of complexity in the interpretation of our results, especially in the LCA model that is used to define different types of individuals.

The results presented in this study carry a number of important implications. First, Republicans were not responsive to any of the information treatments, while Democrats increased their frequency of social distancing and stay-at-home under all treatments. This information can help guide policymakers on tailoring policies to achieve higher impact. For instance, information campaigns highlighting the health risks of COVID-19 can prove successful in democrat-leading states. These interventions, however, are less likely to be effective in republican-leading states. Other types of interventions could be investigated to promote higher compliance with mitigation practices among Republicans.

Second, the frequency with which individuals practice social distancing and stay-at-home during COVID-19, and possibly other pandemics, is directly correlated with their specific perceptions about the pandemic including risk to self and others, concern about the spread of infections, infectiousness and severity of the disease, trust in government efforts to address the pandemic, and willingness to accept vaccination. In contrast, domain-general measures of risk aversion (like COVID-19) have no effect on individual behavior and attitudes during the pandemic. This information is useful for policymakers and Democrats in Fig. 2, despite significant observed heterogeneities in attitude and behavior towards COVID-19 across these groups.

Third, only a fraction (approximately 34%) of individuals are responsive to information messaging promoting social distancing and stay-at-home decisions. And this fraction is comprised of individuals with the pandemic. This is seen by the fact that there was no difference in the risk aversion scores across dismissive, amenable, and conscious individuals in Table 3, and there was also no difference in risk aversion between Republicans and Democrats in Fig. 2, despite significant observed heterogeneities in attitude and behavior towards COVID-19 across these groups.

Finally, in the conflict between concern for health and concern for the economy, it seems that concern for health overpowers the responses of individuals. This is seen by the fact that amenable individuals increased their social distancing and stay-at-home even when presented with both information primes. Moreover, presenting information about the negative effects of the pandemic on the economy to the wrong crowd can result in a reverse effect. This was the case for individuals identifying as Democrats, who, perhaps due to retaliatory motives, chose to increase (rather than decrease) their social distancing and stay-at-home decisions when the information frame only emphasized the negative economic impact of COVID-19.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssci.2021.105300.

References

Barry, Christian, Lazar, Seth, 2020. Justifying Lockdown. Bravie, P.S., 2020. Adaptive and dark personality traits in the COVID-19 pandemic: predicting health behavior endorsement and the appeal of public health messages. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/chkgk.

Brzezinski, Adam, Desana, Guido, Kecht, Valentijn, Van Dijcke, David, 2020. The covid-19 pandemic: government and citizen action across the united states. Covid Econ.: Vested Real-Time Papers 7, 115–156.

Collins, Linda M., Lanza, Stephanie T., 2009. Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences, vol. 718. John Wiley & Sons.

Cronin, Christopher J., Evans, William N., 2020. Private Precaution and Public Restrictions: What Drives Social Distancing and Industry Foot Traffic in the COVID-19 Era? No. w27531. National Bureau of Economic Research.

Dav, Dhaval, Friedson, Andrew J., Harasz, Sabia, Joseph J., 2020. When do shelter-in-place orders fight COVID-19 best? Policy heterogeneity across states and adoption time. Economic Inquiry.

de Bruin, Wandi Bruine, Sow, Hay-Walt, Goldman, Dana P., 2020. Political polarization in US residents’ COVID-19 risk perceptions, policy preferences, and protective behaviors. J. Risk Uncertainty 61 (2), 177–194.

Dong, Ensheng, Du, Hongru, Gardner, Lauren, 2020. An interactive web-based dashboard to track COVID-19 in real time. Lancet Infect. Dis. 20 (5), 533–534.

Dyer, Owen, 2020. Covid-19: Trump stakes protests against social distancing measures. BMJ 369.

Echurch, Peter, 2004. Using the brief sensation seeking scale (BSSS) to predict holiday preferences. Personality Individual Differences 36 (1), 141–153.

Everett, J.A.C., Colombarotto, C., Chitruc, V., Brady, W.J., Crockett, M., 2020. The effect of moral messages on public health behavioral intentions during the COVID-19 pandemic. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/9y9p8.

Fairly, J., Bentovim, A., Gostin, Lawrence O., and Pondal, R., 2020. The cascading, cumulative, and inequitable: social distancing and the ‘rights’ divide in the age of COVID-19. Am. J. Bioethics 1–7.

Grossman, Guy, Kim, Soojong, R, Jonath, M., Thirumurthy, Harsha, 2020. Political partisanship influences behavioral responses to governors’ recommendations for COVID-19 prevention in the United States. Proc. Natl. Acad. Sci. 117(39), 24144–24153.

Harper, C.A., Satchell, L.P., Fido, D., Lattman, R.D., 2020. Functional Fear Predicts Public Health Compliance in the COVID-19 Pandemic (published online ahead of print, 2020 Apr 27). Int. J. Ment. Health Addict. 1–14. https://doi.org/10.1007/s11469-020-00281-5.

Hornik, Robert, Kikut, Ava, Jesch, Emma, Woko, Chiamo, Siegel, Leean, Kim, Kwnaho, 2021. Association of COVID-19 misinformation with face mask wearing and social distancing in a nationally representative US sample. Health Commun. 36 (1), 6–14.

Hoye, Rick H., Stephonnon, Michael T., Palmgreen, Philip, Lorch, Elizabeth Puzzles, Lewis Donohew, R., 2002. Reliability and validity of a brief measure of sensation seeking. Personality Individual Differences 32 (3), 401–414.

Lunn, Peter D., Belton, Cameron A., Lavin, Ciaran, McGowan, Feilhim P., Timmons, Shane, Robertson, Deirdre A., 2020. Using behavioral science to help fight the coronavirus. J. Behav. Public Admin. 3 (1) https://doi.org/10.30636/ bpa.31.147.

Maier, Benjamin F., Brockmann, Dirk, 2020. Effective containment explains subexponential growth in recent confirmed COVID-19 cases in China. Science 368 (6492), 742–746.

Panda, Anmol, Siddarth, Divya, Pal, Joyojeet, 2020. COVID, BLM, and the polarization of US politicians on Twitter. arxiv preprint arxiv:2008.03263.

Pechorro, Pedro, Castro, Ana, Hoye, Rick H., Simoes, Maria R., 2018. The Brief Prevention-Sensing Scale: latent structure, reliability, and validity from a sample of youths at-risk for delinquency. J. Forensic Psychol. Res. Practice 18 (2), 99–113.

Piehlheicher, S., Nockur, L., Bohn, R., Sannenrath, C., Petersen, M.B., 2020. The political emotional path to action: empathy promotes physical distancing during the COVID-19 pandemic. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/y2cg5.

Rafman, Julia, Nocka, Kristen, Jones, David, Bor, Jacob, Lipson, Sarah, Jay, Jonathan, Chan, Philip, Galea, Sandro, 2020. COVID-19 US state policy database. Remuzzi, Andrea, Remuzzi, Giuseppe, 2020. COVID-19 and Italy: what next? The Lancet Infect. Dis. 395 (10231), 1225–1228. https://doi.org/10.1016/s0140-6736(20)30627-9.

Rothan, Husnin A., Byarreddy, Siddappa N., 2020. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. J. Autoimmunity 109, 102433. https://doi.org/10.1016/j.jaut.2020.102433.

Sandford, A., 2020. Coronavirus: Half of Humanity Now on Lockdown as 90 Countries Call for Confinement. Euronews, April 2, 2020. Available at: https://www.euronews.com/2020/04/02/coronavirus-in-europe-spain-dead-toll-hits-10-000-after-records-950-new-deaths-in-24-hours.

Stephenson, Michael T., Velev, Luis F., Chafele, Patricia, Ramirez, Amelie, Hoye, Rick H., 2007. The reliability and validity of the Brief Sensation Seeking Scale (BSSS-8) with young adult Latino workers: Implications for tobacco and alcohol disparity research. Addiction 102, 79–91.

Wellenius, Gregory A., Vitasek, Swapan, Espinoza, Valeria, Fabrikant, Ach, Tsai, Thomas C., Hennessey, Jonathan, Williams, Brian, et al., 2020. Impacts of state-level policies on social distancing in the United States using aggregated mobility data during the covid-19 pandemic. arxiv preprint arxiv:2004.10172.

Zettler, C., Schidt, C., Lillehat, L., Bohn, R., 2020. Individual differences in accepting personal restrictions to fight the COVID-19 pandemic: results from a Danish adult sample. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/pkm2a.