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# Contents

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## Abstract

In this study, we use random assignment of vignettes that feature optimistic and pessimistic scenarios with respect to vaccine safety and efficacy on a sample of roughly 1,600 Russians in order to gauge public support for anti-pandemic measures under various scenarios. Negative information on vaccine safety and efficacy reduces support for the anti-pandemic measures among individuals who fear Covid-19 and were initially supportive of government restrictions. These individuals tend to be old, and therefore vulnerable to Covid-19, and politically active. This loss of support is strongest for economically costly measures such as banning of large gatherings and the shuttering of non-essential businesses. Mask-wearing, which involves only minor costs, finds broad acceptance. We interpret the reactions in light of adaptation, fatigue over Covid-19 restrictions, and fatalism. The political consequences of non-pharmaceutical measures to deal with a pandemic include loss of public support over time, erosion of trust in government, and political backlash.

JEL codes: I12, I18, C93.

Keywords: Covid-19, vaccine, non-pharmaceutical measures, anti-pandemic restrictions, lockdown, anxiety

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# 1 Introduction

National policy responses to the pandemic caused by the novel virus SARS-CoV-2 (Covid-19) typically comprise a range of measures. While some have sought to stave off overwhelming of the medical system through non-pharmaceutical strategies to deal with pandemics such as social-distancing, masking, lockdowns and other limits on mobility (Duque et al., 2020; López & Rodó, 2020), others have sought to accelerate pharmaceutical strategies through vaccine development and mass vaccination programs.

The WHO reports that over 280 vaccines were under development as of June 2021,[1] and that vaccination programs were underway in at least 180 countries.[2] Reluctance to get vaccinated (see e.g. Lazarus et al., 2020) can indicate public concerns about the efficacy or safety of the vaccines offered. Such vaccine hesitancy has its own costs given that it takes time to develop vaccines, roll out vaccination programs, and allow human immune systems to generate antibodies that suppress the invasive pathogen. Indeed, until herd immunity is achieved, the willingness of the population to accept non-pharmaceutical measures such as lockdowns, mask-wearing, and bans on large gatherings is crucial in preventing surges that overwhelm the health system.

This tension will likely persist until the majority of the world's population is vaccinated. The Economist Intelligence Unit suggested in January 2021 that widespread vaccination is unlikely to occur in most middle-income countries until late 2022, and perhaps still not be achieved in low-income countries in 2023.[3] Even for rich countries with vaccines in wide distribution, questions of vaccine efficacy and safety remain.

Many studies address *compliance* with government Covid-19 measures. They document the roles of such factors as socio-demographics (Galasso et al., 2020; Nivette et al., 2021; Brouard et al., 2020; Papageorge et al., 2020), personality traits and fear of contracting the virus (Qian & Yahara, 2020; Harper et al., 2020), partisanship and trust in government (Grossman et al., 2020; Wright et al., 2021), and interpersonal trust and social norms (Bargain & Aminjonov, 2020; Barrios et al., 2020). The most relevant for our research are the studies that consider the role of extended periods of restrictions as well as pre-existing beliefs about Covid-19. As (Briscese et al., 2020) show expectations of an extended period of restrictions may erode support for non-pharmaceutical measures by the most compliant segments of the population. Higher expected infectiousness of the disease could also lower compliance (Akesson et al., 2020) as well as perceptions about Covid-19 as a death sentence (Jimenez et al., 2020).

[1] https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines.
[2] https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/.
[3] https://www.eiu.com/n/85-poor-countries-will-not-have-access-to-coronavirus-vaccines/.

However, results about the correlation of compliance with the Covid-19 public health measures are mixed and contradictory. There is also little understanding of factors that drive *public support* of anti-pandemic measures, which is different than mere compliance. Individuals, for example, may support restrictions even if they are not compliant – in this case they could free ride on other's willingness to comply. Additionally, we only have a rudimentary understanding of how information about vaccine safety and efficacy shapes attitudes and behavior.

In this paper, we study the relationship between perceptions of vaccine safety and efficacy and public readiness to accept lockdowns and other non-pharmaceutical interventions in the interim before a high level of vaccination is achieved. We use a representative survey of about 1,600 Russians conducted in late July 2020 – the period with the Russian vaccine not being officially announced which eliminates potential confounder in our analysis and makes our findings more general.

For this survey, we provided respondents with two types of information treatment about vaccine safety and efficacy – positive and negative. The positive message conveyed an optimistic view of vaccine development, containing no information on possible vaccine deficiencies or side-effects. The negative message stated that the safety and efficacy of vaccines under development cannot yet be ensured, implying that there may be no pharmaceutical way to fully suppress the Covid-19 available in the near future. The control group received no information about the vaccine.

*Under the optimistic scenario*, we hypothesize that the support of respondents for anti-pandemic restrictions increases if they are seen as a temporary sacrifice. However they could also decrease support as the information treatment could make them satisfied with the forthcoming solution. *Pessimistic scenario* might increase support of government restrictions if people see them as a last resort against Covid-19. Alternatively, this scenario could undermine public support of government measures. This effect might be due to support being conditional on a rapid development of a vaccine and/or treatment or to the psychological effects of tiredness of restrictions, adaptation to the new reality and even fatalism. Concerns about the restrictions of civil liberties (Alsan et al., 2020) and privacy violations by the government (Schmelz, 2021) might also matter. We expect that both positive and negative information would largely affect costly measures (banning public gatherings, shutting down non-essential businesses) rather than relatively cheap ones (wearing masks).

Additionally people might react to our treatments heterogeneously depending on their already existing views and beliefs regarding Covid-19. Those who deny or downplay the risks posed by Covid-19 might be immune towards the new information of both scenarios. However, they could also increase their support for the restrictions being scared by the new information of the *pessimistic scenario*, especially if their behavior was driven by recklessness and complacency

before the treatment rather than skepticism towards science. On the contrast those who fear to contract Covid-19 might increase or decrease their support under both scenarios. It's also possible that they don't react on the new information if their beliefs correspond to the information in the treatment. Summary is presented in table 1.

Table 1 Role of information treatments depending on initial concerns about Covid-19

| | Fear of contracting Covid-19 | No fear of contracting Covid-19 |
|---|---|---|
| A. Optimistic scenario of vaccine development | A.1. Could increase support (restrictions seen as temporary sacrifice)<br><br>A.2 Could decrease support (solution coming soon)<br><br>A.3. May not react to new information | A.4 May not react to new information |
| B. Pessimistic scenario of vaccine development | B.1 Could increase support (restrictions seen as only remaining way to contain the virus)<br><br>B.2 Could decrease support (if conditional on the development of a vaccine or because of adaptation, lockdown fatigue, or fatalism)<br><br>B.3 May not react to new information | B.4 Could increase support (frightening new information)<br><br>B.5 May not react to new information |

The paper proceeds as follows. Section 2 presents methodology of the survey and empirical strategy of data analysis. Section 3 continues with the results, while section 4 offers discussions of these results.

# 2 Data and methodology

## 2.1 Survey design

The survey was performed by the Levada Center, a private research institute based in Moscow. The survey comprised a nationally representative sample of Russians (N = 1,617) polled in late July 2020. The survey was a part of a regular omnibus survey ensuring confidentiality of the respondents. All respondents voluntarily consented to participation in the survey.

The survey design is based on a probability sampling method. The survey was conducted on a two-base sample consisting of mobile and landline numbers. The sampling of both mobile and landline telephone numbers was carried out by randomly generating telephone numbers. Quotas on completed interviews were imposed to match population distribution across geographical

regions of Russia (i.e. seven Federal Districts plus the City of Moscow, with the Southern and North Caucasus Federal Districts were treated as a single entity).

Respondents were randomly assigned to one of three groups. The first group (N = 525) received no treatment. The second group (N = 536) received the positive message, which read as follows:

> *"At this moment, teams of scientists around the globe are conducting research on Covid-19 vaccines to contain further outbreaks of the disease. Initial trials have demonstrated the efficacy and safety of these vaccines. Once additional trials are completed, mass vaccination should be possible within a few months."*

The third group (N = 556) received the negative message reading as follows:

> *"At this moment, teams of scientists around the globe are conducting research on Covid-19 vaccines to contain further outbreaks of the disease. However, there is still insufficient information on the safety and efficacy of these vaccines. It is likely that they only provide protection against Covid-19 for a few months and may cause side-effects in some individuals."*

Next, respondents were asked to rate their level of support for the anti-pandemic measures. The questions were worded as follows:

> *"To what extent do you support wearing masks in public places / banning mass gatherings / shutting down non-essential businesses to contain the spread of the coronavirus (Covid-19) if the number of infected people increased over the next few months?"*

The answer options were "Definitely yes", "Rather yes", "Rather no", and "Definitely no." For analysis, we recode the answers so that 1 represents a "Definitely no" response and 4 represents a "Definitely yes" response.

Before the treatment, respondents were asked to assess their fears of contracting Covid-19. The question was worded as follows:

> *"Are you afraid of contracting the coronavirus (Covid-19)?"*

The same answer options as in the questions on support for the anti-pandemic measures were available. To simplify interpretation of the interaction terms in our regressions, we create a new variable, "Fear of COVID," which takes a value of 0 for "Definitely no" and "Rather no" responses, and a value 1 for "Definitely yes" or "Rather yes" responses.

In addition, respondents provided their key demographic characteristics such as gender, age, educational attainment, occupation, self-assessment of material well-being, as well as working status during the lockdown period (remote work, reduced working hours, etc.). We also collect information on where the respondent resides.

## 2.2 Empirical strategy

Our dependent variable is support for each of the three policies, while the main independent variable of interest is treatment status. We use ordinary least squares, weighted least squares, and ordered logit models. In specification (1), we do not account for heterogeneity of the treatment effects across various subsamples.

$$Support_i = b_1 OptimisticTreatment_i + b_2 PessimisticTreatment_i + \varepsilon_i \quad (1)$$

In specification (2), we introduce interaction terms to allow for heterogeneity of the treatment effects according to the Covid-19 fears of respondents. In addition, we control for the covariates, listed in the Tables A1 and A2 in the Appendix, as well as dummies for geographical regions, i.e. Russia's Federal Districts and the City of Moscow. Our covariate choices of gender, age, education, occupational status, and economic consequences of the pandemic are informed by the previous literature, which shows the importance of these particular factors in compliance with anti-pandemic restrictions. We expect these factors to be important also with respect to the respondent's support or resistance to anti-pandemic measures.

$$Support_i = b_1 OptimisticTreatment_i + b_2 PessimisticTreatment_i + b_3 Fear\ of\ COVID_i + b_4 OptimisticTreatment_i \times Fear\ of\ COVID_i + b_5\ PessimisticTreatment_i\ \times\ Fear\ of\ COVID_i + b_6 Controls_i + \varepsilon_i \quad (2)$$

We implement additional robustness checks. Instead of our Federal District dummies, we use dummies for federal subjects, i.e. 79 smaller regional divisions. Furthermore, we run regressions using survey weights provided by the Levada Center intended to make distributions of gender, age, and educational attainment in the sample representative for the Russian population as a whole. Weighting is performed within substrata formed by intersection of Federal Districts and size of locality (e.g. city, town, rural village).

# 3 Results

## 3.1 Subsample assessments

We start by running balance tests and find that the three subsamples, i.e. the two treatment groups and the control group, are mostly balanced with respect to most of the 39 observable characteristics. The first treatment group shows differences in means with the control group significant at least at the 10 % level for three variables. The second treatment group shows similar differences for two variables (see Table A1 in the Appendix).

Table 2 presents the unconditional results of the experiment. Both treatments have no statistically significant effect on support for anti-pandemic measures. The coefficients are also quantitatively small, not exceeding in size 0.1 SD of the dependent variable.

However, as stated above, it is likely that our treatments have heterogeneous effects depending on the pre-existing beliefs of individuals regarding Covid-19. Thus, we split the sample into two categories according to the level of fear of Covid-19 reported by the participants, i.e. those who reply "Definitely yes" or "Rather yes" to the question on their fear of Covid-19 are classified into one group, and those who reply "Rather no" or "Definitely no" are placed in another group. Under these criteria, 55 % of respondents said they feared contracting Covid-19 (unweighted means are used). The relatively high share of respondents reporting little or no Covid-19-related fear may be explained by widespread skepticism or doubt about the coronavirus pandemic among members of the Russian public.

Table 2 Aggregate results of the experiment

| | (1) | (2) | (3) |
|---|---|---|---|
| Support for… | wearing masks | banning public gatherings | shutting down non-essential businesses |
| Optimistic message | 0.077 | –0.089 | –0.042 |
| | (0.064) | (0.056) | (0.064) |
| Pessimistic message | –0.013 | –0.064 | –0.003 |
| | (0.060) | (0.076) | (0.061) |
| Constant | 3.079*** | 2.943*** | 2.380*** |
| | (0.056) | (0.051) | (0.050) |
| Observations | 1,562 | 1,548 | 1,523 |
| R-squared | 0.001 | 0.001 | 0.000 |

Notes: OLS regression coefficients with the 4-point Likert scale measure of support for each policy as a dependent variable. SE clustered at the federal subject level in parentheses. Asterisks indicate significance levels of two-sided t-tests for the null hypothesis that the regression coefficient equals zero.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Participants that fear or do not fear contracting Covid-19 differ with respect to several characteristics (see Table A2 in the Appendix). Those fearing infection are 5 years older on average, more likely to be female, more likely to hold a university or other tertiary education degree, less likely to be manual workers or unemployed, and more likely to be retired. Our findings with respect to gender differences in Covid-19-related attitudes generally comport with finding for the OECD countries (Galasso et al., 2020). However, our findings differ from the results of Witteveen and Velthorst (2020), who demonstrate that higher occupational status is connected to lower health anxiety during the Covid-19 pandemic. In addition to this, those whose work situation was negatively affected by the lockdown (i.e. laid off without pay or only partial pay, or whose working hours were cut) are also less likely to fear contracting Covid-19. The same applies for those whose work schedule was unaffected by the lockdown.

Surprisingly, material well-being has little relationship to fear of contracting the virus. The exception here was that the survey's richest participants claiming "they can afford whatever they want" were less likely to report fear of contracting Covid-19. Also, there seems to be no clear-cut relationship between type and size of the locality where participants reside and their fears of contracting the virus. Only respondents from cities with populations greater than 500,000 (but not Moscow) report lower fear levels. This could be related to better access to hospitals in bigger cities. Reversed connection in Moscow could be due to high population density and crowded public spaces.

Table 3 Heterogeneity based on the fear of COVID-19

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Support for… | wearing masks | | banning public gatherings | | shutting down non-essential businesses | |
| Optimistic message | –0.000 | 0.016 | –0.007 | –0.001 | 0.022 | –0.030 |
| | (0.100) | (0.103) | (0.098) | (0.104) | (0.093) | (0.087) |
| Pessimistic message | 0.077 | 0.118 | 0.100 | 0.138 | 0.226** | 0.185* |
| | (0.098) | (0.096) | (0.126) | (0.125) | (0.099) | (0.109) |
| Fear of contracting Covid-19 | 0.891*** | 0.831*** | 0.736*** | 0.687*** | 0.753*** | 0.654*** |
| | (0.078) | (0.087) | (0.079) | (0.090) | (0.083) | (0.086) |
| Optimistic message * Fear of contracting Covid-19 | –0.128 | –0.083 | –0.141 | –0.100 | –0.096 | –0.020 |
| | (0.124) | (0.128) | (0.137) | (0.146) | (0.124) | (0.132) |
| Pessimistic message * Fear of contracting Covid-19 | –0.179 | –0.194 | –0.318** | –0.343** | –0.444*** | –0.389*** |
| | (0.122) | (0.118) | (0.139) | (0.141) | (0.127) | (0.123) |
| Controls: gender, age (and its square), educational attainment, occupation, material situation, work situation during the lockdown, size of locality, Federal District dummies | No | Yes | No | Yes | No | Yes |
| Constant | 2.588*** | 2.754*** | 2.545*** | 2.505*** | 1.974*** | 2.045*** |
| | (0.076) | (0.610) | (0.075) | (0.592) | (0.071) | (0.441) |
| Effect on participants who fear COVID-19 | | | | | | |
| Optimistic message | –0.128 | –0.0670 | –0.148 | –0.100 | –0.0746 | –0.0496 |
| *p-value* | *0.0728* | *0.385* | *0.0672* | *0.236* | *0.401* | *0.628* |
| Pessimistic message | –0.102 | –0.0760 | –0.218 | –0.205 | –0.218 | –0.204 |
| *p-value* | *0.108* | *0.242* | *0.00563* | *0.0210* | *0.00627* | *0.0126* |
| Observations | 1,528 | 1,411 | 1,516 | 1,402 | 1,487 | 1,378 |
| R-squared | 0.146 | 0.207 | 0.079 | 0.111 | 0.079 | 0.170 |

Notes: OLS regression coefficients with the 4-point Likert scale measure of support for each policy as a dependent variable. In the rows below the constant: estimates of the effect on the subsample of those who fear contracting Covid-19 obtained as a sum of the main effects and the interaction effects; respective p-values are presented. SE clustered at the federal subject level in parentheses. Asterisks indicate significance levels of two-sided t-tests for the null hypothesis that the regression coefficient equals zero.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Predictably, fear of contracting Covid-19 is a strong determinant of support for anti-pandemic measures (Table 3). Reporting at least some level of fear of contracting Covid-19 is associated with increased support for mask-wearing by 0.831–0.891 points on the 4-point scale (0.8–0.86 SD of the dependent variable, $p < 0.01$), support for banning public gatherings by 0.687–0.736 points (0.64–0.69 SD, $p < 0.01$), and support for shutting down non-essential businesses by 0.654–0.753 points (0.61–0.7 SD, $p < 0.01$).

Fear of contracting Covid-19 emerges as a strong moderator of the impact of the pessimistic scenario, and to a lesser extent, the optimistic scenario on public preferences. Within the subsample of participants *not reporting fear* of contracting Covid-19, the optimistic message had no effect on preferences over all the three policies compared to the control group. The pessimistic message did not affect support for mask-wearing and ban on public gatherings, but increased support for shutting down non-essential businesses by 0.185–0.226 points (0.17–0.21 SD), although the latter coefficient is significant at the 5 % level in the specification without socio-demographic controls, as well as at the 10 % level in the specification with the control variables included.

Within the subsample of those *who fear Covid-19*, the optimistic message's effect on the outcome variables is not significant for the most part, at least after introducing control variables. At the same time, the pessimistic message consistently leads to a strong and statistically significant decrease in support for the two costliest measures: banning public gatherings and shutting down non-essential businesses (0.19–0.20 SD for both policies, $p < 0.05$). In contrast, support for wearing face masks, a non-pharmaceutical intervention that can be implemented at relatively low cost and without interrupting business or social activities, is not significantly affected by the negative message.

By extension, the role that fear of contracting Covid-19 plays as a determinant of support for the anti-pandemic measures is significantly reduced under the negative scenario. In the regression with the support for banning public gatherings as a dependent variable coefficient of the interaction term between the fear dummy and the pessimistic message dummy equals –0.318 for the specification without the controls and –0.343 for the specification with the controls (–0.30 and –0.32 SD, $p < 0.05$). The same coefficient is –0.444 without controls and –0.389 with the controls (–0.41 and –0.36 SD, $p < 0.01$) for the regression with the support for shutting down non-essential businesses as a dependent variable. This implies significant convergence in preferences for the anti-pandemic policies between those who fear and do not fear the virus under the negative scenario.

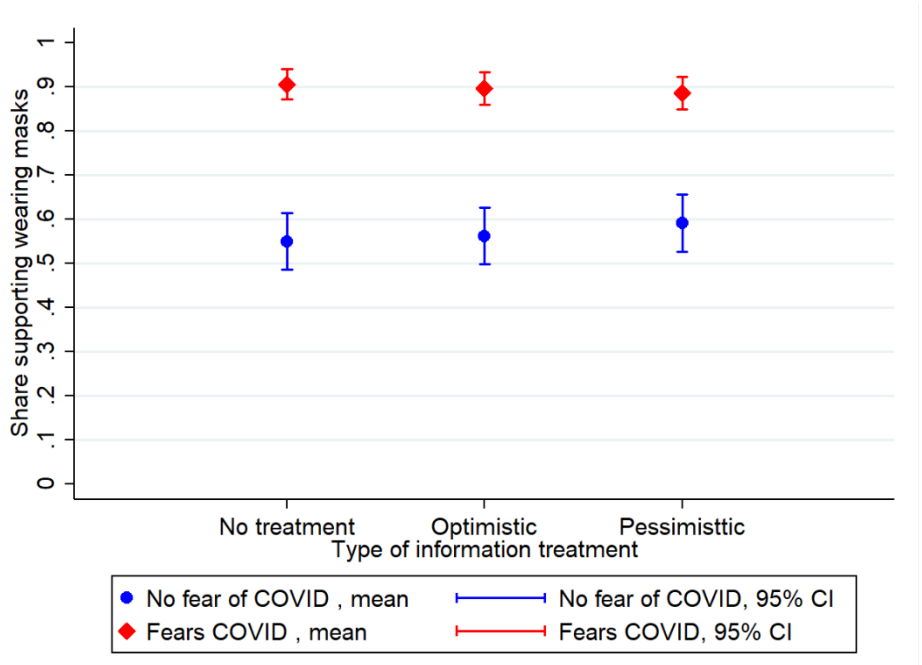
As robustness checks, we run regressions with the fixed effects for finer geographical regions, i.e. 79 federal subjects in our analysis instead of seven Federal Districts (Table A3 in the Appendix), and estimate the same regressions using weighted least squares (Table A4) and ordered

logit (Table A5). Our main finding – decreased public support of restrictions under the pessimistic scenario – remains unchanged. To sum up, we find support for the hypotheses A.3, A.4, B.2 and B.4 listed in Table 1. Thus, we show no effect of the optimistic scenario, some positive effect of the pessimistic scenario on those who don't fear contracting Covid-19, and a consistent negative effect of the pessimistic scenario for those that fear contracting Covid-19.

## 3.2. Magnitude of the effects

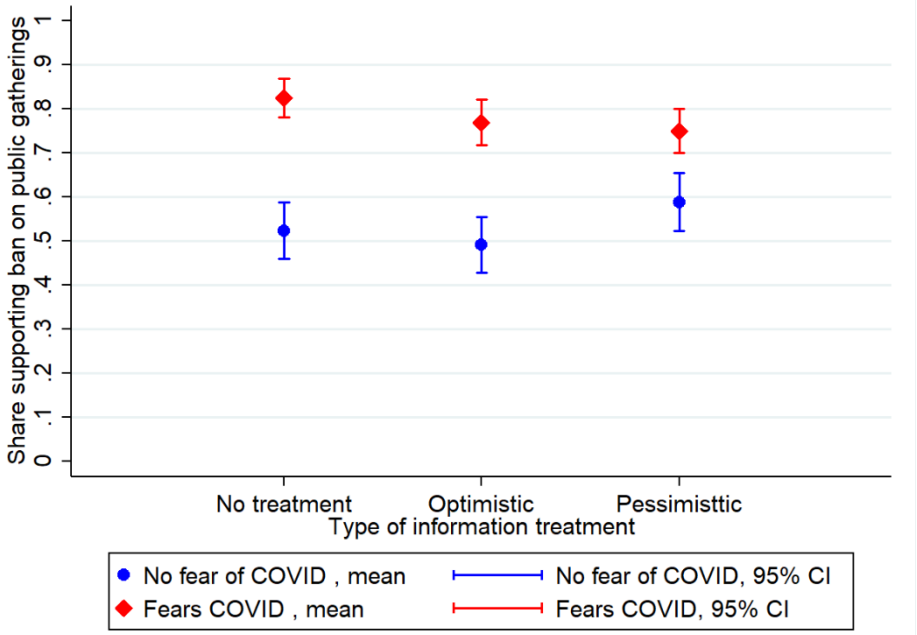
To illustrate the substantive magnitude of the effects identified, we plot the proportion of participants replying "Definitely yes" or "Rather yes" about their support for each of the three policies (Figures 1–3). Of the three policies, mask-wearing enjoys the highest support. Its support equals around 90 % among those who fear contracting Covid-19, irrespective of the treatment. Among those who do not fear contracting Covid-19, 55 % support wearing masks in the control group. This proportion increases slightly in both of the treatment groups, but the mean in the control group is statistically indistinguishable from the means of both treatment groups.

Figure 1 Wearing masks



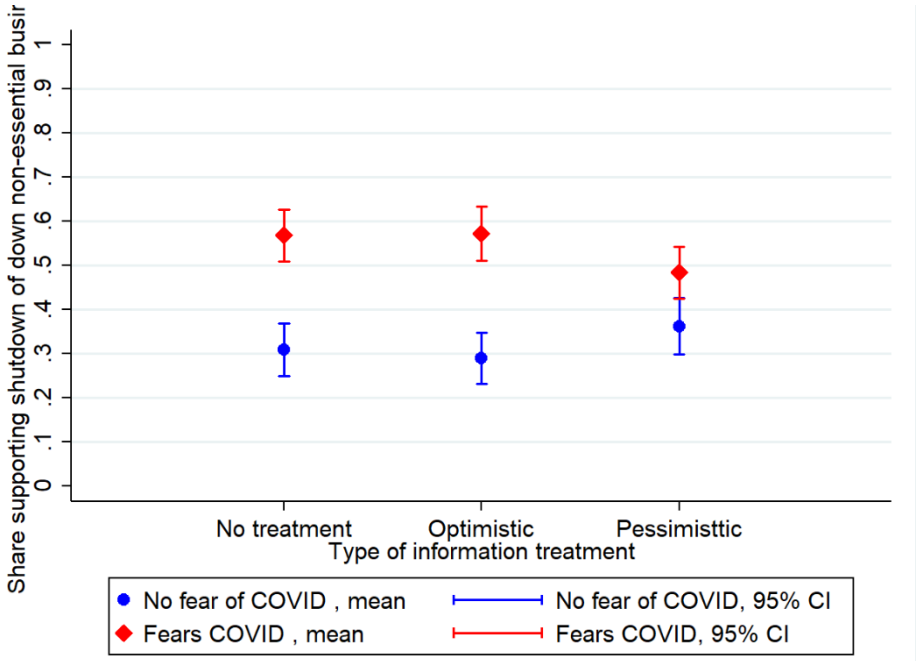

Proportion of respondents who replied "Definitely yes" or "Rather yes" when asked about support for wearing masks as anti-pandemic policy if the number of Covid-19 cases was expected to rise over the next several months. Red diamonds indicate respondents who replied "Definitely yes" or "Rather yes" when asked whether they feared contracting Covid-19 (N = 839). Blue circles indicate those who replied "Rather no" or "Definitely no" to this question (N = 689). Respondents who did not reply to either question are excluded. Error bars represent 95 % confidence intervals of the mean.

Figure 2 Ban on public gatherings




Proportion of respondents who replied "Definitely yes" or "Rather yes" when asked about support for banning public gatherings as an anti-pandemic policy if the number of Covid-19 cases was expected to rise over the next several months. Red diamonds indicate respondents who replied "Definitely yes" or "Rather yes" when asked whether they feared contracting Covid-19 (N = 829). Blue circles indicate those who replied "Rather no" or "Definitely no" to this question (N = 687). Respondents who did not reply to either question are excluded. Error bars represent 95 % confidence intervals of the mean.

Figure 3 Shutting down non-essential businesses




Proportion of respondents who replied "Definitely yes" or "Rather yes" when asked about their support for shutting down non-essential businesses as an anti-pandemic policy if the number of Covid-19 cases was expected to rise over the next several months. Red diamonds indicate respondents who replied "Definitely yes" or "Rather yes" when asked whether they feared contracting Covid-19 (N = 807). Blue circles indicate those who replied "Rather no" or "Definitely no" to this question (N = 680). Respondents who did not reply to either question are excluded. Error bars represent 95 % confidence intervals of the mean.

Support for banning public gatherings is the highest in the control group among those who fear contracting Covid-19 (82.5 %). It shrinks to 77 % in the first (optimistic) treatment group and to 75 % in the second (pessimistic) group. This result is partially replicated in Table 3 (columns 3-4) using the 4-point scale, but the decrease of the dependent variable in the first treatment group loses statistical significance after controlling for socio-demographic characteristics of the respondents. Among those who do not fear contracting Covid-19, 52 % support a ban on public gatherings in the control group. This proportion shrinks to 49 % in the first treatment group, although remaining statistically indistinguishable from the baseline. In the second treatment group, this proportion rises to 59 %. Regression analysis on the 4-point scale (Table 3, columns 3–4) reveals similar patterns, although the latter effect is not statistically significant.

Shutting down non-essential businesses is the least popular of the three policies, enjoying majority support among those who fear contracting Covid-19 (57 % in both the control and the first treatment group). In the second treatment group, this proportion shrinks to 48 %. This drop is greater than in the cases of the two other policies, mask-wearing and banning public gatherings. In contrast, among those who do not fear contracting Covid-19, support for shutting down non-essential businesses remains low in both the control group and the first treatment group (31 % and 29 %, respectively), but rises to 36 % in the second treatment group. These findings are again consistent with the regression analysis in Table 3 (columns 5–6).

# 4 Discussion

Our main finding is about the effect of the negative scenario of Covid-19 vaccine development being conditional on preexisting attitudes to the disease. While initially having significantly higher support for these policies, those who reported fears of contracting Covid-19 experienced waning support for anti-pandemic policies with significant economic costs such as banning public gatherings and shutting down non-essential businesses. There was no such an effect on support for wearing masks, which is a less costly measure that can be implemented without interrupting everyday life. This implies that support for anti-pandemic policies in this group was conditional on the authorities stating a clear exit strategy for Covid-19-related restrictions. In the absence of a vaccine trusted by the population, initial public support for non-pharmaceutical interventions from people initially concerned about Covid-19 is likely to diminish. While this reaction may seem irrational at first glance, it could reflect restriction fatigue, adaptation to the new reality, or possible even a fatalism effect as found in several previous studies (Akesson et al., 2020; Jimenez et al., 2020).

At the same time, those reporting no fear of contracting Covid-19 were more likely to increase their support for shutting down non-essential businesses after negative scenario treatment.

Although we do not canvass the post-treatment level of Covid-19-related fears, it seems plausible that the initial optimism of this group regarding development of a Covid-19 vaccine or cure was reduced by the pessimistic treatment, causing them to become more concerned about Covid-19.

The optimistic treatment does not change significantly opinions of those who fear or do not fear contracting Covid-19. This could imply that reminding respondents of scientific efforts at vaccine development *per se* did not affect significantly public attitudes. However, it could also imply that the positive information about the vaccine development was old news to the respondents given the upbeat coverage of Russia's vaccine development efforts by the largely state-owned media (for discussion of prior exposure to treatment in survey experiments, see e.g. Gaines et al., 2007).

Even in the absence of across-the-board effects, our findings have important policy implications for pandemic responses depending on the population subgroup. Respondents who fear contracting the disease tended to be older, with age a factor in the severity of the illness. However, they also tended to be more educated, which, combined with higher average age, makes them more prone to engage in political activity, particularly voting (Nie, Junh & Stehlik-Barry, 1996; Plutzer, 2002; Melo & Stockemer, 2014). With regard to voting in Russia, McAllister and White (2017) argue that "in the context of a voter's resources, age is the predominant influence on turning out to vote." Therefore, people in this category are not just more likely to face worse outcomes if they stop following social distancing rules, but also to hold sway in determining public policies due to their higher propensity to vote. Even in an authoritarian setting like Russia's, leaders care about their approval ratings as it influences their tenure in office and overall regime survival (Frye et al., 2017).

Therefore, the general implication of our findings is that politicians may find it expedient to avoid strict anti-pandemic measures and to choose flexible response in the absence of safe and efficacious vaccines (accompanied by the widespread willingness to vaccinate and sufficient speed of vaccination) to avoid a backlash from the most politically influential demographic groups[4]. Another, more general implication is that maintaining high level of trust in vaccines might be important for building public support not just for vaccination campaigns but for non-pharmaceutical interventions as well. It also seems worthwhile to develop strategies to reach out to these populations to bolster their support for non-pharmaceutical interventions. Finally, our results show that a mask-wearing requirement is a practical measure that can be implemented universally without imposing significant costs on either the citizenry or politicians.

[4] Our findings are also relevant if obligatory mass vaccination is imposed. In case of low trust to the vaccines people might cheat on getting certificates of vaccination and even decrease their trust in authorities.

We consider our findings relevant for the broad literature about pandemics. We also contribute to a more general strand of research about the public demand for government intervention and its dependence on personal beliefs of people.[5]

Further research could consider which messages and incentives increase public support for anti-pandemic measures, and how such measures might be targeted at particular audiences depending on their pre-existing beliefs about Covid-19 or a new emergent pathogen. Another promising dimension of future research would be to design non-pharmaceutical anti-pandemic responses that secure public support even in the absence of a reliable vaccine. As support for wearing masks was virtually unaffected by pessimistic messaging about vaccines, similar appropriate measures could be worth stressing.

[5] See e.g. Aghion et al. (2010) about the negative role of trust on the demand for government regulation, and Scheve & Stasavage (2006) on the negative effect of religiosity on welfare state spending.

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# Appendix

Table A1 Balance tests of observable characteristics between respondents in experimental and treatment groups

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | No message | | Optimistic message | | Difference | Pessimistic message | | Difference |
| | *N* | Mean | *N* | Mean | (2–4) | *N* | Mean | (2–7) |
| Age | 556 | 51.10 | 525 | 51.24 | –0.134 | 536 | 51.13 | –0.0300 |
| Gender: Male | 556 | 0.396 | 525 | 0.381 | 0.0150 | 536 | 0.412 | –0.0170 |
| Gender: Female | 556 | 0.604 | 525 | 0.619 | –0.0150 | 536 | 0.588 | 0.0170 |
| Primary and general lower secondary education | 556 | 0.0490 | 525 | 0.0320 | 0.0160 | 536 | 0.0450 | 0.00400 |
| General upper secondary education | 556 | 0.117 | 525 | 0.124 | –0.00700 | 536 | 0.108 | 0.00900 |
| Vocational lower secondary education | 556 | 0.0270 | 525 | 0.0400 | –0.0130 | 536 | 0.0340 | –0.00700 |
| Vocational upper secondary education | 556 | 0.353 | 525 | 0.366 | –0.0130 | 536 | 0.347 | 0.00600 |
| Unfinished tertiary education | 556 | 0.0310 | 525 | 0.0290 | 0.00200 | 536 | 0.0340 | –0.00300 |
| Tertiary education (college degree or higher) | 556 | 0.424 | 525 | 0.410 | 0.0150 | 536 | 0.433 | –0.00800 |
| Occupation: Self-employed, entrepreneur | 553 | 0.0520 | 522 | 0.0590 | –0.00700 | 534 | 0.0470 | 0.00600 |
| Occupation: Manager | 553 | 0.0940 | 522 | 0.0940 | 0 | 534 | 0.0670 | 0.0270 |
| Occupation: Professional worker | 553 | 0.175 | 522 | 0.140 | 0.0360 | 534 | 0.197 | –0.0210 |
| Occupation: Clerical worker | 553 | 0.0560 | 522 | 0.0630 | –0.00700 | 534 | 0.0710 | –0.0150 |
| Occupation: Manual worker, foreman | 553 | 0.150 | 522 | 0.146 | 0.00400 | 534 | 0.150 | 0 |
| Occupation: Student | 553 | 0.0270 | 522 | 0.0210 | 0.00600 | 534 | 0.0170 | 0.0100 |
| Occupation: Retired | 553 | 0.325 | 522 | 0.343 | –0.0170 | 534 | 0.309 | 0.0170 |
| Occupation: Disabled | 553 | 0.0270 | 522 | 0.0360 | –0.00900 | 534 | 0.0410 | –0.0140 |
| Occupation: Homemaker | 553 | 0.0580 | 522 | 0.0670 | –0.00900 | 534 | 0.0430 | 0.0150 |
| Occupation: Non-working and looking for a job (unemployed) | 553 | 0.0250 | 522 | 0.0190 | 0.00600 | 534 | 0.0490 | –0.023** |
| Occupation: Non-working and not looking for a job | 553 | 0.00900 | 522 | 0.0110 | –0.00200 | 534 | 0.00900 | 0 |
| Work during the lockdown: non-working | 529 | 0.503 | 507 | 0.521 | –0.0180 | 517 | 0.489 | 0.0130 |
| Work during the lockdown: no change in schedule | 529 | 0.367 | 507 | 0.349 | 0.0180 | 517 | 0.368 | –0.00100 |
| Work during the lockdown: switched to fully remote work | 529 | 0.0300 | 507 | 0.0450 | –0.0150 | 517 | 0.0310 | –0.00100 |
| Work during the lockdown: switched to partially remote work | 529 | 0.0530 | 507 | 0.0370 | 0.0150 | 517 | 0.0560 | –0.00300 |
| Work during the lockdown: switched to part-time work | 529 | 0.0170 | 507 | 0.0120 | 0.00500 | 517 | 0.0210 | –0.00400 |
| Work during the lockdown: laid off with full pay | 529 | 0.00200 | 507 | 0.00200 | 0 | 517 | 0.00800 | –0.00600 |
| Work during the lockdown: laid off with no or partial pay | 529 | 0.0190 | 507 | 0.0220 | –0.00300 | 517 | 0.0150 | 0.00300 |
| Work during the lockdown: workload increased | 529 | 0.00900 | 507 | 0.0120 | –0.00200 | 517 | 0.0120 | –0.00200 |
| Material well-being: not enough money for food | 532 | 0.0490 | 509 | 0.0830 | –0.034** | 516 | 0.0970 | –0.048*** |

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | No message | | Optimistic message | | Difference | Pessimistic message | | Difference |
| | *N* | Mean | *N* | Mean | (2–4) | *N* | Mean | (2–7) |
| Material well-being: enough money for food, but not clothing | 532 | 0.192 | 509 | 0.161 | 0.0310 | 516 | 0.169 | 0.0230 |
| Material well-being: enough money for food and clothing, but not durable goods | 532 | 0.363 | 509 | 0.393 | –0.0300 | 516 | 0.355 | 0.00800 |
| Material well-being: enough money for durable goods (e.g. fridge, TV) but not a car | 532 | 0.254 | 509 | 0.212 | 0.0420 | 516 | 0.264 | –0.0100 |
| Material well-being: enough money for a car, but still have limited budget | 532 | 0.0810 | 509 | 0.0940 | -0.0130 | 516 | 0.0680 | 0.0130 |
| Material well-being: can afford whatever they want | 532 | 0.0620 | 509 | 0.0570 | 0.00500 | 516 | 0.0480 | 0.0140 |
| Locality size: City of Moscow | 556 | 0.101 | 525 | 0.0700 | 0.030* | 536 | 0.101 | 0 |
| Locality size: Over 500,000 inhabitants | 556 | 0.216 | 525 | 0.234 | –0.0180 | 536 | 0.218 | –0.00200 |
| Locality size: 100–500,000 inhabitants | 556 | 0.187 | 525 | 0.170 | 0.0180 | 536 | 0.159 | 0.0280 |
| Locality size: towns with more than 100,000 inhabitants | 556 | 0.228 | 525 | 0.272 | –0.044* | 536 | 0.229 | –0.00100 |
| Locality size: rural village or hamlet | 556 | 0.268 | 525 | 0.253 | 0.0150 | 536 | 0.293 | –0.0250 |

Notes: Results of comparison of means of observable variables between the control group and the two treatment groups. Column 5 displays differences in means between the control group and the first treatment group. Column 7 displays differences in means between the control group and the second treatment group. Asterisks indicate significance levels of two-sided t-tests for the null hypothesis that the difference equals zero.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A2 Balance tests of observable characteristics between respondents fearing and not fearing contracting Covid-19

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | No fear of COVID | | Fears COVID | | Difference (2–4) |
| | *N* | Mean | *N* | Mean | |
| Age | 711 | 48.06 | 861 | 53.22 | –5.161*** |
| Gender: Male | 711 | 0.488 | 861 | 0.323 | 0.165*** |
| Gender: Female | 711 | 0.512 | 861 | 0.677 | –0.165*** |
| Primary and general lower secondary education | 711 | 0.0440 | 861 | 0.0410 | 0.00300 |
| General upper secondary education | 711 | 0.134 | 861 | 0.101 | 0.033** |
| Vocational lower secondary education | 711 | 0.0340 | 861 | 0.0310 | 0.00200 |
| Vocational upper secondary education | 711 | 0.366 | 861 | 0.351 | 0.0150 |
| Unfinished tertiary education | 711 | 0.0350 | 861 | 0.0230 | 0.0120 |
| Tertiary education (college degree or higher) | 711 | 0.388 | 861 | 0.453 | –0.065*** |
| Occupation: Self-employed, entrepreneur | 708 | 0.0680 | 856 | 0.0400 | 0.028** |
| Occupation: Manager | 708 | 0.0760 | 856 | 0.0910 | –0.0150 |
| Occupation: Professional worker | 708 | 0.175 | 856 | 0.174 | 0.00100 |
| Occupation: Clerical worker | 708 | 0.0610 | 856 | 0.0680 | –0.00700 |
| Occupation: Manual worker, foreman | 708 | 0.196 | 856 | 0.110 | 0.087*** |
| Occupation: Student | 708 | 0.0280 | 856 | 0.0180 | 0.0110 |
| Occupation: Retired | 708 | 0.243 | 856 | 0.387 | –0.144*** |
| Occupation: Disabled | 708 | 0.0340 | 856 | 0.0320 | 0.00200 |
| Occupation: Homemaker | 708 | 0.0580 | 856 | 0.0560 | 0.00200 |
| Occupation: Non-working and looking for a job (unemployed) | 708 | 0.0420 | 856 | 0.0220 | 0.020** |
| Occupation: Non-working and not looking for a job | 708 | 0.0180 | 856 | 0.00400 | 0.015*** |
| Work during the lockdown: non-working | 683 | 0.449 | 826 | 0.542 | –0.093*** |
| Work during the lockdown: no change in schedule | 683 | 0.404 | 826 | 0.328 | 0.076*** |
| Work during the lockdown: switched to fully remote work | 683 | 0.0320 | 826 | 0.0390 | –0.00700 |
| Work during the lockdown: switched to partially remote work | 683 | 0.0470 | 826 | 0.0530 | –0.00600 |
| Work during the lockdown: switched to part-time work | 683 | 0.0250 | 826 | 0.0100 | 0.015** |
| Work during the lockdown: laid off with full pay | 683 | 0.00400 | 826 | 0.00400 | 0.00100 |
| Work during the lockdown: laid off with no or partial pay | 683 | 0.0260 | 826 | 0.0130 | 0.013* |
| Work during the lockdown workload increased | 683 | 0.0120 | 826 | 0.0110 | 0.00100 |
| Material well-being: not enough money for food | 691 | 0.0840 | 827 | 0.0650 | 0.0190 |
| Material well-being: enough money for food, but not clothing | 691 | 0.182 | 827 | 0.168 | 0.0140 |
| Material well-being: enough money for food and clothing, but not durable goods | 691 | 0.363 | 827 | 0.383 | –0.0200 |
| Material well-being: enough money for durable goods (e.g. fridge, TV), but not a car | 691 | 0.227 | 827 | 0.249 | –0.0220 |

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | No fear of COVID | | Fears COVID | | Difference (2–4) |
| | *N* | Mean | *N* | Mean | |
| Material well-being: enough money for a car, but still have limited budget | 691 | 0.0740 | 827 | 0.0880 | –0.0140 |
| Material well-being: can afford whatever they want | 691 | 0.0690 | 827 | 0.0460 | 0.024** |
| Locality size: Moscow | 711 | 0.0770 | 861 | 0.0960 | –0.0190 |
| Locality size: Over 500,000 inhabitants | 711 | 0.248 | 861 | 0.204 | 0.043** |
| Locality size: 100–500,000 inhabitants | 711 | 0.170 | 861 | 0.171 | –0.00100 |
| Locality size: towns with than 100,000 inhabitants | 711 | 0.243 | 861 | 0.244 | –0.00100 |
| Locality size: rural village or hamlet | 711 | 0.262 | 861 | 0.285 | –0.0230 |

Notes: Results of comparison of means of observable variables between the subsamples of respondents fearing and not fearing contracting Covid-19. Column 5 displays differences in means between the former and the latter groups. The asterisks indicate significance levels of two-sided t-tests for the null hypothesis that the difference equals zero.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A3 Robustness check: Federal subject dummies

| | (1) | (2) | (3) |
|---|---|---|---|
| Support for… | wearing masks | banning public gatherings | shutting down non-essential businesses |
| Optimistic message | 0.003 | –0.002 | –0.025 |
| | (0.110) | (0.112) | (0.089) |
| Pessimistic message | 0.119 | 0.137 | 0.161 |
| | (0.101) | (0.137) | (0.117) |
| Fear of contracting Covid-19 | 0.811*** | 0.685*** | 0.616*** |
| | (0.091) | (0.093) | (0.088) |
| Optimistic message * Fear of contracting Covid-19 | –0.060 | –0.075 | –0.007 |
| | (0.135) | (0.155) | (0.138) |
| Pessimistic message * Fear of contracting Covid-19 | –0.173 | –0.340** | –0.341** |
| | (0.123) | (0.148) | (0.130) |
| Controls: gender, age (and its square), educational attainment, occupation, material well-being, work situation during the lock-down, size of locality, federal subject dummies | Yes | Yes | Yes |
| Constant | 2.515*** | 2.664*** | 2.347*** |
| | (0.640) | (0.511) | (0.488) |
| Effect on those who fear contracting Covid-19 | | | |
| Optimistic message | –0.0570 | –0.0764 | –0.0318 |
| *p-value* | 0.484 | 0.384 | 0.764 |
| Pessimistic message | –0.0536 | –0.203 | –0.180 |
| *p-value* | 0.439 | 0.0229 | 0.0374 |
| Observations | 1,411 | 1,402 | 1,378 |
| R-squared | 0.249 | 0.167 | 0.232 |

Notes: OLS regression coefficients with the 4-point Likert scale measure of support for each policy as a dependent variable. The controls include federal subject dummies. SE clustered at the federal subject level in parentheses. In the rows below the constant, estimates of the effect on the subsample of those who fear contracting Covid-19 obtained as the sum of the main effects and the interaction effects, and their p-values, are shown. Asterisks indicate significance levels of two-sided t-tests for the null hypothesis that the regression coefficient equals zero.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A4 Robustness check: Weighted least squares

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Support for… | wearing masks | | | banning public gatherings | | | shutting down non-essential businesses | | |
| Optimistic message | 0.087 | 0.088 | 0.080 | –0.040 | –0.064 | –0.104 | 0.051 | –0.022 | –0.019 |
| | (0.133) | (0.126) | (0.127) | (0.115) | (0.128) | (0.138) | (0.107) | (0.110) | (0.115) |
| Pessimistic message | 0.177 | 0.226* | 0.219* | 0.036 | 0.092 | 0.057 | 0.301** | 0.311** | 0.260** |
| | (0.120) | (0.124) | (0.130) | (0.146) | (0.152) | (0.139) | (0.117) | (0.134) | (0.126) |
| Fear of contracting Covid-19 | 0.977*** | 0.876*** | 0.839*** | 0.609*** | 0.527*** | 0.509*** | 0.829*** | 0.682*** | 0.644*** |
| | (0.100) | (0.107) | (0.116) | (0.109) | (0.116) | (0.128) | (0.106) | (0.106) | (0.116) |
| Optimistic message * Fear of contracting Covid-19 | –0.196 | –0.113 | –0.094 | –0.049 | 0.009 | 0.064 | –0.139 | 0.008 | –0.001 |
| | (0.171) | (0.168) | (0.154) | (0.174) | (0.186) | (0.178) | (0.140) | (0.164) | (0.160) |
| Pessimistic message * Fear of contracting Covid-19 | –0.337** | –0.350** | –0.290* | –0.283* | –0.325* | –0.294 | –0.563*** | –0.521*** | –0.447*** |
| | (0.151) | (0.149) | (0.163) | (0.167) | (0.168) | (0.181) | (0.164) | (0.157) | (0.165) |
| Controls: gender, age (and its square), educational attainment, occupation, material well-being, work situation during the lockdown, size of locality | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Federal District dummies | No | Yes | No | No | Yes | No | No | Yes | No |
| Federal subject dummies | No | No | Yes | No | No | Yes | No | No | Yes |
| Constant | 2.494*** | 2.305*** | 2.313** | 2.580*** | 1.805*** | 2.371*** | 1.906*** | 1.597*** | 2.157** |
| | (0.095) | (0.731) | (0.937) | (0.091) | (0.611) | (0.852) | (0.081) | (0.463) | (0.898) |
| Effect on those who fear contracting Covid-19 | | | | | | | | | |
| Optimistic message | –0.109 | –0.0245 | –0.0140 | –0.0889 | –0.0547 | –0.0395 | –0.0872 | –0.0133 | –0.0198 |
| *p-value* | *0.197* | *0.791* | *0.876* | *0.448* | *0.647* | *0.729* | *0.355* | *0.904* | *0.856* |
| Pessimistic | –0.160 | –0.124 | –0.0704 | –0.247 | –0.233 | –0.237 | –0.262 | –0.210 | –0.187 |
| *p-value* | 0.0462 | 0.123 | 0.480 | 0.0141 | 0.0295 | 0.0388 | 0.0113 | 0.0370 | 0.0836 |
| Observations | 1,528 | 1,411 | 1,411 | 1,516 | 1,402 | 1,402 | 1,487 | 1,378 | 1,378 |
| R-squared | 0.147 | 0.213 | 0.281 | 0.057 | 0.104 | 0.187 | 0.088 | 0.187 | 0.255 |

Notes: Weighted least squares regression coefficients with the 4-point Likert scale measure of support for each policy as a dependent variable. SE clustered at the federal subject level in parentheses. In the rows below the constant, estimates of the effect on the subsample of those who fear contracting Covid-19 obtained as the sum of the main effects and the interaction effects, and their p-values, are shown. Asterisks indicate significance levels of two-sided t-tests for the null hypothesis that the regression coefficient equals zero.
*** p < 0.01, ** p < 0.05, * p < 0.1.

Table A5 Robustness check: Ordered logit

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Support for… | wearing masks | | | banning public gatherings | | | shutting down non-essential businesses | | |
| Optimistic message | –0.024 | –0.007 | –0.007 | –0.027 | –0.002 | –0.009 | 0.021 | –0.029 | –0.006 |
| | (0.178) | (0.191) | (0.199) | (0.167) | (0.173) | (0.190) | (0.178) | (0.177) | (0.207) |
| Pessimistic message | 0.126 | 0.206 | 0.229 | 0.162 | 0.239 | 0.216 | 0.405** | 0.391* | 0.353* |
| | (0.173) | (0.175) | (0.215) | (0.216) | (0.208) | (0.202) | (0.184) | (0.212) | (0.211) |
| Fear of contracting Covid-19 | 1.677*** | 1.656*** | 1.709*** | 1.290*** | 1.249*** | 1.321*** | 1.326*** | 1.233*** | 1.246*** |
| | (0.155) | (0.171) | (0.202) | (0.146) | (0.166) | (0.192) | (0.153) | (0.166) | (0.195) |
| Optimistic message * Fear of contracting Covid-19 | –0.345 | –0.284 | –0.292 | –0.266 | –0.204 | –0.160 | –0.141 | –0.017 | –0.010 |
| | (0.236) | (0.254) | (0.266) | (0.245) | (0.265) | (0.262) | (0.225) | (0.253) | (0.271) |
| Pessimistic message * Fear of contracting Covid-19 | –0.411* | –0.440* | –0.452 | –0.577** | –0.630** | –0.643** | –0.767*** | –0.701*** | –0.647** |
| | (0.248) | (0.234) | (0.280) | (0.237) | (0.246) | (0.267) | (0.225) | (0.233) | (0.265) |
| Controls: gender, age (and its square), educational attainment, occupation, material well-being, work situation during the lockdown, size of locality | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Federal District dummies | No | Yes | No | No | Yes | No | No | Yes | No |
| Federal subject dummies | No | No | Yes | No | No | Yes | No | No | Yes |
| Effect on those who fear contracting Covid-19 | | | | | | | | | |
| Optimistic | –0.369 | –0.290 | –0.299 | –0.293 | –0.206 | –0.169 | –0.121 | –0.0455 | –0.0157 |
| *p-value* | *0.0176* | *0.0965* | *0.0914* | *0.0558* | *0.221* | *0.350* | *0.413* | *0.802* | *0.927* |
| Pessimistic | –0.285 | –0.234 | –0.223 | –0.415 | –0.391 | –0.427 | –0.362 | –0.310 | –0.294 |
| *p-value* | *0.0612* | *0.151* | *0.219* | *0.00258* | *0.0179* | *0.0141* | *0.00429* | *0.0261* | *0.0687* |
| Observations | 1,528 | 1,411 | 1,411 | 1,516 | 1,402 | 1,402 | 1,487 | 1,378 | 1,378 |

Notes: Ordered logit regression coefficients with the 4-point Likert scale measure of support for each policy as a dependent variable. SE clustered at the federal subject level in parentheses. In the rows below the lists of controls, estimates of the effect on the subsample of those who fear Covid-19 obtained as the sum of coefficients on the main effects and the interaction effects, and their p-values, are shown. Asterisks indicate significance levels of two-sided t-tests for the null hypothesis that the regression coefficient equals zero.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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