

COVID-19 related anxieties do not decrease support for liberal democracy

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Abstract

Studies carried out at the onset of the COVID-19 pandemic widely confirmed that under the impression of fear and anxiety individuals were more willing to tolerate violations of liberal-democratic norms and support discriminatory policies to preserve public safety. We still lack an understanding of the potential consequences of the pandemic on citizens' attitudes beyond its peak. To address this puzzle, we present evidence from an original experiment in which we manipulate individuals' cognitive accessibility of their fears related to COVID-19. We conducted this experiment in Hungary and Romania—two cases most likely to see such attitudes amplify under the condition of fear—one and a half years after the onset of the pandemic. The results show that our intervention is successful in elevating respondents' levels of worry, anxiety, and fear when thinking about infectious diseases like COVID-19. However, these emotions do not carry secondary effects on individuals' levels of right-wing authoritarianism, nationalism, or outgroup hostility, nor do they affect preferences for specific discriminatory policy measures aimed to fight a potential resurgence of COVID-19. We discuss these findings in light of the literature on elite-engineered emotions.

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Introduction

When people experience fear, their appraisal tendencies change towards more protective behaviors, and they perceive threats and risk more pessimistically (Lerner & Keltner, 2000; Lerner *et al.*, 2003; Druckman & McDermott, 2008). The number of people rapidly infected with the virus causing COVID-19, and the high death toll that followed increased fear and intensified anxieties among the public (Degerman *et al.*, 2020; Ahorsu *et al.*, 2020). Widespread lack of information, such as the one individuals experienced during the early stages of the pandemic, can trigger a psychological need for certainty, defensive reactions and a strong desire for security (Lambert *et al.*, 2011; Jonas *et al.*, 2014). Research carried out during the first stage of the pandemic confirms that citizens' approval of extreme policies meant to combat the spread of Sars-CoV-2, but at odds with liberal democratic norms increased (Alsan *et al.*, 2020; Amat *et al.*, 2020; Marbach *et al.*, 2020; Bartoš *et al.*, 2021). We know much less about the effects of the pandemic beyond its peak and the potential negative effects of the fears that individuals experienced in relation to COVID-19.

In light of the existing literature pointing to an erosion of liberal-democratic attitudes during the pandemic, it appears critical to understand what are the effects of citizens' experience with the crisis on their support for liberal-democratic norms beyond the peak of the pandemic. In this research note, we present empirical evidence of an original experiment conducted in two Central Eastern European countries (Romania and Hungary) one and a half years after the onset of the pandemic. In post-communist settings, there are greater tendencies among the population and the elites towards right-wing authoritarianism, ethnocentrism and illiberalism compared to the EU's Western half (Hooghe & Marks, 2018). Thus, in the absence of deep-seated liberal-democratic values among the public and the elites, the effects of the pandemic might be lasting and particularly pronounced.

To estimate such potential erosive consequences of the pandemic on citizens' support for liberal democracy, we exogenously manipulate individuals' cognitive accessibility of fears related to COVID-19. Our results show that this experimental manipulation is successful. Respondents in the treatment group experience significantly greater levels of worry, anxiety, and fear when thinking about infectious diseases like COVID-19. The results also demonstrate that these greater anxieties do not carry secondary effects on individuals' broader levels of right-wing authoritarianism, nationalism or their outgroup hostility, nor do they influence individuals' preferences for authoritarian or discriminatory policy measures aimed to fight a potential resurgence of COVID-19. This finding holds across a range of different modeling strategies and is independent of how the various attributes of the different concepts are represented in a low dimensional space. It also holds both in Hungary - where citizens have repeatedly supported authoritarian leaning politicians in power, and in Romania - where citizens have so far shown more resistance to challenges to the rule of law and repeatedly penalized elite driven challenges to the rule of law at the polls. In drawing attention to the lack of negative consequences of the COVID-19 experience on citizens' attitudes and their liberal-democratic values, our results suggest that early concerns raised by political scientists were too pessimistic. The findings of our study, instead, suggest that citizens' liberal-democratic attitudes may be more resistant than previously assumed. Citizens' democratic attitudes appear more averse to punctuated violations of liberal-democratic norms in the wake of the COVID-19 health

crisis.

The article is organized as follows. We begin by offering a concise review of the literature on the effects of fear and anxiety on individuals' political attitudes with a particular view on integrating the existing evidence on the related (early) effects of fear of COVID-19. In doing so, we highlight the need to understand the implications of the pandemic for citizens' liberal-democratic attitudes beyond the initial shock. We then introduce our research design, aimed to further our understanding of such potentially harmful and lasting political consequences in two countries most likely to be affected due to political elites' propensity to nurture support for anti-liberal agendas, and because of wider spread illiberal attitudes in the population. We present the results of our study and conclude with a discussion on the challenges of isolating the effects of individuals' fear on their political attitudes from the effects of other emotions - such as anger, and from the effects of amplification and manipulation of anxieties by political elites.

COVID-19 and the effects of fear on political attitudes

The literature concerned with understanding the effects of emotions on political behavior agrees that the emotional experience of fear has important consequences for individuals' decision-making and their political attitudes, reflected in a large body of literature studying related effects (Brader & Marcus, 2013). Individuals experience fear and anxiety¹ when their emotionality reacts to certain events that are perceived as threatening, dangerous or highly novel in nature. Anxiety dominates over other emotions when individuals deal with an uncontrollable source of threat, or one that cannot be overcome (Lazarus, 1991). In demanding individuals' full attention and focus, fear motivates risk-averse behavior. Political scientists have studied the implications of such kinds of behavior with respect to individuals' reaction to terrorist attacks (Merolla & Zechmeister, 2009; Albertson & Gadarian, 2015), organized crime (Vilalta, 2016), immigration (Brader *et al.*, 2008), economic downturns (Kopasker *et al.*, 2018), or deadly viral outbreaks (Brader & Marcus, 2013; Clifford & Jerit, 2018).

The global COVID-19 pandemic led to widespread fear among the population (Ahorsu *et al.*, 2020), creating what some observers identified as a 'culture of fear' among the population (Gruchola & Sławek-Czochra, 2021). The initial spread of an indiscriminate virus, coupled with individuals' lack of control over environmental conditions and their personal safety nurtured illiberal attitudes among citizens. Studies concerned with infectious disease salience in a society demonstrate that threats related to pathogen contamination make people less extraverted and more risk-averse (Schaller & Murray, 2008), more xenophobic (Faulkner *et al.*, 2004), and more ethnocentric (Navarrete & Fessler, 2006). Potential bodily contamination triggers disgust in individuals, a powerful driver for social conservatism (Aarøe *et al.*, 2020). Hartman *et al.* (2021) shows that perceptions of threat stemming from the virus causing COVID-19 are strongly associated with nationalism, right-wing authoritarianism, and outgroup derogation in the UK and Ireland. Dipoppa *et al.* (2021) argues that the threat of infection even triggered violence against certain minority groups, leading to an increase in hate crimes at the onset of the pandemic in Italy. Bartoš *et al.* (2021) study citizens'

¹Note that we follow the tradition in political psychology to use these concepts interchangeably (see Brader & Marcus, 2013; Wagner & Morisi, 2019).

early responses to the pandemic in the Czech Republic, showing that the salience of the COVID-19 crisis increased their hostility against foreigners in a behavioral experiment. Such findings are in line with research from political psychology, showing that individuals cope with threat by readily modifying their attitudes towards other individuals, in particular towards those who are not part of their social ingroup (Merolla & Zechmeister, 2009). Under conditions of a prolonged salience of infectious diseases within a society, such exclusionary norms may become culturally formalized (Karwowski *et al.*, 2020). In unconsolidated democracies (such as Romania) or hybrid regimes (such as Hungary)—where exclusionary and illiberal tendencies are already widespread among the population—this formalization of exclusionary norms should be particularly likely in response to fear of COVID-19. Following these arguments, we test the following hypotheses:

H1: Individuals who experience fear of COVID-19 display higher levels of **a)** right-wing authoritarianism, **b)** nationalism, and **c)** outgroup-hostility.

Beyond affecting individuals' higher-level authoritarian, outgroup-hostile, or nationalist attitudes, the experience of fear of COVID-19 might also directly shape their preferences for specific policies designed to fight the spread and the resurgence of the virus. Such policy measures included not only the compulsory use of facial masks or public lockdowns and the obligation to quarantine, all of which are established approaches to handling epidemics and pandemics (Hays, 2009). Instead, governments across the world also proposed policies that involve infringements of individual rights (Jørgensen *et al.*, 2021), curtail the balance of powers (Bolleyer & Salát, 2021), and could challenge the fundamentals of democratic rule (Goetz & Martinsen, 2021). A number of studies document that citizens' approval of extreme policies meant to combat the spread of Sars-CoV-2, but at odds with liberal democratic norms, increased under the impression of fear and anxiety at the height of the pandemic (Alsan *et al.*, 2020; Amat *et al.*, 2020). Marbach *et al.* (2020) demonstrate that the implementation of such policies in itself lastingly increased authoritarian values in four Western European democracies. While in established democracies liberal democratic norms may have worked to create resistance to these illiberal policy measures to some extent (Arceneaux *et al.*, 2020), the same may not hold true in countries where liberal democratic norms are less entrenched in society.

In light of this literature, we assume that when individuals recall their fears related to the pandemic, they are more likely to support illiberal policy measures aimed at containing the spread of the virus. The emotional experience of fear related to COVID-19 may directly affect their policy preferences should a similar threat re-emerge. Following these arguments, we test the following hypotheses:

H2: When under conditions of fear of COVID-19, individuals are more likely to approve of **a)** authoritarian, **b)** nationalist, and **c)** outgroup-hostile policies related to COVID-19.

Research design

To test our hypotheses, we draw on an original experimental design that allows us to exogenously manipulate the cognitive accessibility of fear of COVID-19.² The timing of the study is critical. The pandemic was central in people's decision making processes during its onset. Around one and a half years later, the most severe period of the COVID-19 pandemic could easily be perceived as drawing to an end. Across most European countries, the society and the economy reopened as the incidence of COVID-19 cases decreased, and the vaccination campaign was underway. This reduced the dominance of health concerns in the minds of citizens in everyday life. We exploit this setting to experimentally manipulate the cognitive accessibility of fears related to the pandemic. To do so, half of the respondents recall and describe their fears in open-ended questions (i.e., we apply a 'bottom-up' approach to induce fear (Wagner & Morisi, 2019); for similar designs see e.g., Kettle & Salerno (2017); Kugler *et al.* (2012); Lerner & Keltner (2000)). We first ask them to share three things that made them feel afraid during the peak of the COVID-19 pandemic, upon which they describe in greater detail one situation during the COVID-19 pandemic that made them feel most afraid.³ Respondents are instructed to picture that situation in such a way that it would make other people feel afraid too. We deliberately avoid specifying what we consider the peak of the COVID-19 pandemic to be, and we do not provide any specific examples of situations that could have made people afraid. This strategy aims to accommodate the variety of individual experiences which may have triggered fear and anxiety related to COVID-19.

If COVID-19 had lasting effects on individuals' support for liberal democracy, we are most likely to observe such negative effects in societies with less entrenched experiences with the rigours, norms and habits of liberal democracy. To further maximise the inference we can draw from studying attitudinal change in response to fear of COVID-19, we field the study in two Central and Eastern European (CEE) countries with different levels of democratic consolidation, Romania and Hungary. Hungary was a front-runner of post-communist transition that did not rise to expectations of rapid democratization and descended into authoritarianism (Magyar & Madlovics, 2020). Since 2014, the vote of a majority of the Hungarian population reconfirmed in office the party of Prime Minister Viktor Orban, Fidesz. Under PM Orban's leadership, Fidesz altered the functioning of democratic institutions as early as 2010, and pushed for an exclusionary heteronormative, white, Christian composition of the Hungarian society. Romania was considered a laggard of the transition—reflected in its late accession to the EU in 2007—and continues to stagnate in its democratic consolidation (European Commission, 2021). However, initial concerns of Romania's descent into authoritarianism did not materialise. Although incumbents frequently challenge judicial independence and self-servingly manipulate democratic institutions (Lacatus & Sedelmeier, 2020), the population has mostly sanctioned such policies at the polls and through protest movements.⁴

We study two central outcome variables: higher-level authoritarian attitudes and more specific

²Our experiment has received ethical approval and has been pre-registered in a pre-analysis plan available at the Open Science Framework .

³See Figure S1 in the SI.

⁴Our choice of cases allows us to hold constant incumbents' responses to the pandemic; unlike other nationalist populists in government, neither the Hungarian nor the Romanian incumbents undermined or downplayed the significance and severity of the COVID-19 pandemic.

preferences for authoritarian COVID-19 policy measures to combat the spread of the virus.⁵ To test the first set of hypotheses (H1a-c), we measure respondents' authoritarian attitudes by the six-item 'Very Short Authoritarianism' (VSA) scale (Bizumic & Duckitt, 2018). To estimate the effects of fear of COVID-19 on nationalist attitudes, we complement this six-item VSA scale with three more questions measuring respondents' nationalist attitudes. These questions ask respondents about their emotional attachment to their country, the importance of the birth place as a major component of their identity (proxy for nativism), and whether they have a strong national devotion that places their own country above all others. Finally, we measure respondents' outgroup-hostile sentiments by asking them about their agreement towards a set of statements related to the political rights of the diaspora, immigration by ethnic groups (of the same 'race' and of different 'race'), the impact of immigration on the functioning of the economy, and on quality of life within their country, more generally. Tables S1 and S2 in the SI show the exact question wording of all items.

To test the second set of hypotheses (H2a-c) and to measure individuals' support for COVID-19 specific policy measures, we ask respondents about their (dis-)agreement related to a set of specific policies that were discussed in the context of the pandemic. We broadly group these policies into three categories: authoritarian policy measures that relate to constitutional breaches or the concentration of executive power, nationalist policies that relate to the absolute prioritization of the respective country's national interests when faced with the COVID-19 crisis, and outgroup-hostile policies that relate to the enforcement of strict immigration policies and the limitation of freedom of movement during the pandemic. All COVID-19 containment policies we use are real measures discussed by the Romanian or the Hungarian executives.⁶

Results

We begin by discussing the effectiveness of our fear treatment. Our recall questions in the treatment condition were meant to increase individuals' cognitive accessibility of fears and anxieties related to COVID-19. On average, respondents spent 22 seconds on answering these questions, recalling what made them feel afraid during the COVID-19 pandemic. If our experimental manipulation was successful, we should observe that individuals in the treatment condition, on average, feel more worried and afraid when thinking about infectious diseases such as COVID-19. To assess whether this is the case, respondents report on the feelings they experience when thinking about infectious diseases like COVID-19. This 'manipulation check' is included *after* respondents answer all of the questions related to our outcome variables of interest (Kane & Barabas, 2019). Figure 1 shows the average levels of emotional responses among individuals in the treatment and control group along with the respective confidence distributions around these sample means. The graph indicates that individuals who were assigned to the "fear of COVID-19" condition display significantly higher levels of fear and worry. Having recalled their fears experienced during the peak of the COVID-19 pandemic, respondents feel more anxious and concerned when thinking about

⁵Note that in the survey experimental design, we first measure higher-level attitudes and then COVID-19 policy preferences. This is to avoid the subconscious experience of a recall of fear of COVID-19 in the control group when answering questions related to the pandemic before the questions related to higher-level authoritarian, nationalist, and outgroup-hostile attitudes.

⁶For a discussion of the ecological validity of these policy measures, please see the SI.

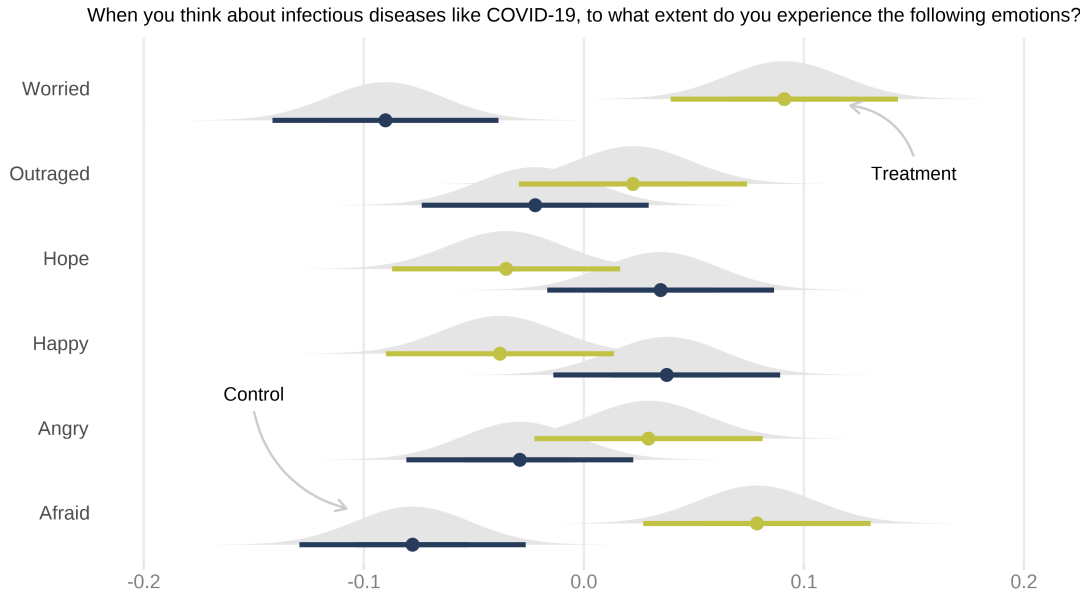


Figure 1: Means of emotional responses among treatment and control group when thinking about infectious diseases like COVID-19.

infectious diseases like COVID-19. While they also report somewhat lower levels of happiness and hopefulness and somewhat greater levels of anger and outrage, these differences are not statistically significant.⁷ Most importantly for the theoretical pursuit of our study, however, we find that treated respondents do experience significantly higher levels of being afraid and worried in relation to infectious diseases. Our experimental manipulation was thus successful. This strengthens our confidence in the validity of our design and in the inferences we draw from studying the differences among respondents in the treatment and control groups with respect to their levels of support for illiberal norms and policies.

Can we observe any such effects of fear of COVID-19 one and a half years after the onset of the pandemic? We next look at the variation that fear of COVID-19 explains in the three conceptual dimension of interest. Figure 2 shows that when under the impression of fear of COVID-19, individuals do not express greater preferences for authoritarian policies during a crisis such as the COVID-19 pandemic (see Table S5 in the SI for full results). We also do not observe any secondary effects on their broader levels of right-wing authoritarianism, outgroup-hostility, or nationalism. The 90%, 95%, and 99% confidence intervals obtained from estimating our model on 5000 bootstrap resamples of the data do all include zero. We obtain the same results when accounting for any potential variation among treatment and control group that may persist even after randomization

⁷Figure S2 in the SI shows there are strong positive correlations between the emotional states of feeling worried and afraid and between feeling angry and outraged (pearson's $r > 0.5$). There is also a modest positive correlation between feeling angry and worried (pearson's $r > 0.3$) and a modest negative correlation between feeling hopeful and afraid (pearson's $r < -0.3$). There are no statistically significant differences in these general patterns among treatment and control groups.

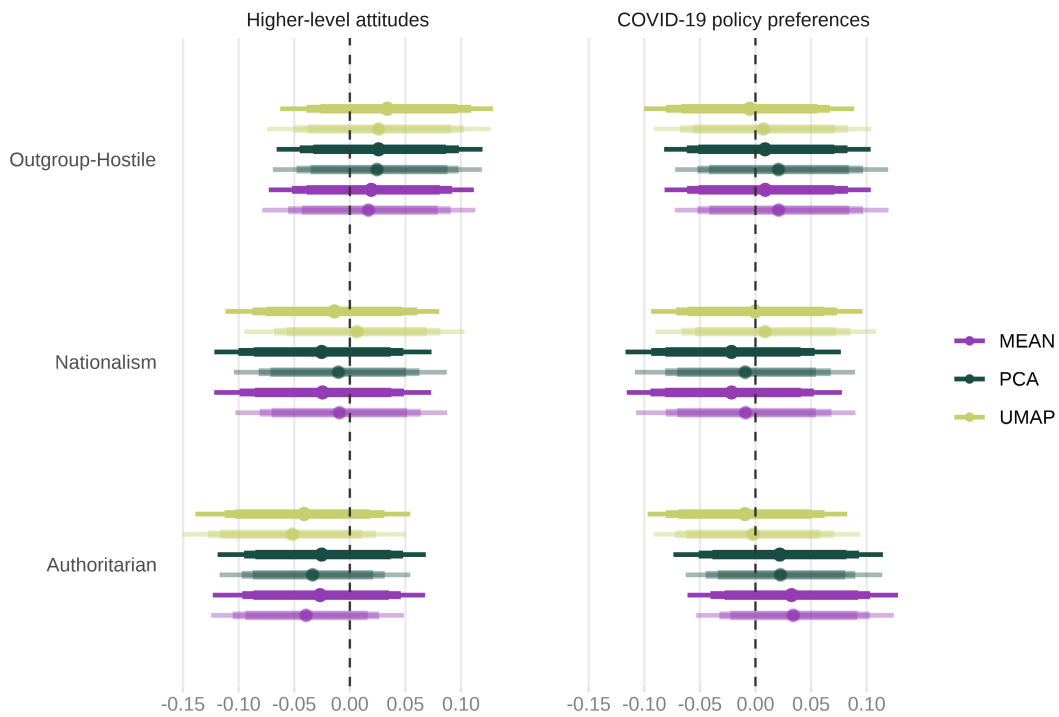


Figure 2: The effect of fear of COVID-19 on authoritarian, nationalist, and outgroup-hostile attitudes (left panel) and related COVID-19 policy measures (left panel). Point estimates along with 90%, 95%, and 99% bootstrapped percentile confidence intervals obtained from 5000 bootstrap resamples.

(for balance statistics see Table S3 in the SI). We account for variation in respondents' gender, their level of education, the degree of urbanity of their place of residence, self-identification with an ethnic minority group, their level of religiosity, their satisfaction with the work of their respective government, whether they had been infected with the SARS-CoV 2 virus that causes COVID-19, whether they are vaccinated against the disease, and for the current COVID-19 incidence rate in their region at the time of answering the survey. The fully specified models including these covariates are shown in light shading in Figure 2. These results are also independent of the choice of a dimensionality reduction method. We rely on three different such methods: the simple means of all items, their first principals of a principal component analysis (PCA), and their components obtained from a non-linear algorithm that maximally preserves the data's dimensionality relying on stochastic gradient descent (UMAP). Under any of these dimensionality reduction methods, the differences among respondents in the treated and control group are statistically insignificant.⁸

Figure S3 in the SI further shows that with respect to the various sub-items there are also no sta-

⁸Tables S5 to S10 in the SI report full results of the respective regression analyses underlying the estimates in Figure 2.

tistically significant differences between those respondents who recalled their fears related to the COVID-19 pandemic and those who did not, neither among Hungarian nor Romanian respondents. While this recall task was successful in elevating respondents' fears and anxieties related to infectious diseases like COVID-19, these fears do not entail any downstream effects on individuals' levels of authoritarianism, outgroup-hostility, or nationalism. They also do not carry any impact on their preferences for related kinds of policies to fight the spread of the virus.

Conclusion

Studies carried out at the onset of the COVID-19 pandemic widely confirmed that under the impression of fear and anxiety individuals were more willing to tolerate violations of liberal-democratic norms and support discriminatory policies to preserve public safety. Such findings were in line with theories on the effects of fear on political attitudes and behaviors. This literature also suggests potential long-term erosion of liberal-democratic attitudes under conditions of fear. Consequently, it appears critical to investigate the effects of anxieties associated with the health crisis on citizens' support for liberal-democratic norms beyond the peak of the pandemic.

This research note furthers our understanding of any such potential lasting consequences of the pandemic on citizens' liberal-democratic beliefs and attitudes. We present empirical evidence from an original survey experiment conducted in two Central Eastern European countries, Romania and Hungary, one and a half years after the onset of the pandemic. If the experience of fear and anxieties related to the pandemic would have had an impact on citizens' support for liberal democracy, we should have most likely observed any such effect in the new member states of the European Union. Hungarian elites' authoritarian agenda, coupled with widespread public support for those parties responsible for undermining liberal democracy, make already fragile liberal-democratic attitudes particularly vulnerable. In Romania, while the population appears more resilient to elites' authoritarian innovations, the absence of deep-seated liberal-democratic values also signals that the effects of pandemic related anxieties should be particularly pronounced.

Our experimental manipulation was highly successful in increasing individuals' cognitive accessibility of the fears and anxieties they have felt during the peak of the COVID-19 pandemic. We show that, one and a half years after the onset of the pandemic, there are no downstream effects of these emotional states on citizens' support for fundamental elements of liberal democracy. The lack of such an effect is highly robust across different modelling strategies and does not depend on a given representation of the different attributes in a low dimensional space. In showing that citizens' liberal attitudes are less vulnerable to fear and anxieties related to COVID-19 than previously assumed, the results of our study appear encouraging. However, our results also signal the need to develop a research agenda that takes into account the *origins* of emotions like fear, anger, and anxiety when evaluating their potentially detrimental consequences for support for liberal democracy. Future research should therefore try to understand whether these emotions—when strategically engineered and orchestrated by elites—could still pose a threat to support for liberal democracy in the post-COVID era.

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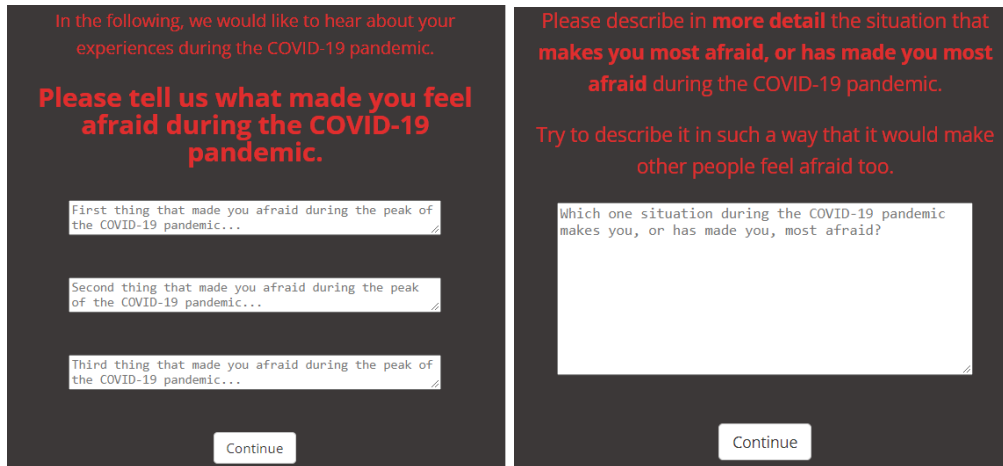


Figure S1: Fear recall questions presented to respondents in the treatment group. Left panel shows first question prompt, right panel shows following question prompt.

Supplementary Information

Experimental stimulus

Figure S1 shows the question prompts shown to individuals in the treatment group. The left panel shows the first question prompt that asked individuals to mention three things that made them feel afraid during the peak of the COVID-19 pandemic. The right panel shows the question prompt that followed and asked individuals to describe in more detail the situation that makes or made them most afraid in such a way that would make other people feel afraid, too. Drawing on research on the subconscious effects that colors have on individuals' emotional reactions, we present the fear recall questions on a black background with red text (Hupka *et al.*, 1997).

Items of outcome dimensions

Tables S1 and S2 show the different items that compose the different outcome dimensions. We introduced the different items measuring respondents' COVID-19 policy preferences by a short pretext ("While the numbers of COVID-19 cases are currently low, [Country] might still need to adopt policy-measures to contain the spread of the virus in the upcoming months. Please tell us how much you could personally approve of the following policies in this situation.").

Ecological validity of policy measures as outcome variables

We ask individuals about their preferences for a set of policy-measures related to COVID-19. These measures include actions that minimize the role of courts in balancing discretionary executive

Table S1: Items measuring higher-level attitudes related to right-wing authoritarianism, outgroup-hostility, and nationalism

Authoritarian		
1	R	It's great that many young people today are prepared to defy authority.
2		What our country needs most is discipline, with everyone following our leaders in unity.
3		God's laws about abortion, pornography, and marriage must be strictly followed before it is too late.
4	R	There is nothing wrong with premarital sexual intercourse.
5	R	Our society does NOT need tougher government and stricter laws.
6		The facts on crime and the recent public disorders show we have to crack down harder on troublemakers if we are going to preserve law and order.
Nationalist		
1		How emotionally attached do you feel to [Country]?
2		The interests of my country come before those of all other nations, including countries that are in desperate need
3		Being born in [Country] and having ancestry here is an important component of having a [Country] identity.
Outgroup-hostile		
1		[Country] citizens who live in [Country] should have a bigger say in how to run the country than those who left [Country]
2		[Country] should allow people of the same race or ethnic group as most [Country citizens] to come and live here
3		[Country] should allow people of a different race or ethnic group as most [Country citizens] to come and live here
4		Is it generally bad or good for [Country]'s economy that people come to live here from other countries?
5		Is [Country] made a worse or a better place to live by people coming to live here from other countries?

actions, put the military in charge of civil objectives such as hospitals, prioritise public safety over individual rights and freedoms such as freedom of movement and freedom of speech.

We also measure support for policies that discriminate against minorities or foreigners should they be framed as protecting personal safety. At the start of the COVID-19 pandemic, representatives of the Romanian government urged their own citizens who lived or worked outside the country not to return to Romania. This is similar to the Polish Prime Minister Mateusz Morawiecki 's assertion that most cases of COVID-19 in Poland were 'imported, in the strict sense of the word,' by foreigners or Poles returning from abroad. Hungarian PM Viktor Orban declared that 'primarily foreigners brought in the disease, and that it is spreading among foreigners.' Orban linked this to his long-established anti-immigration policy, stating that: 'We are fighting a two-front war, one front is called migration, and the other one belongs to the coronavirus, there is a logical connection between the two, as both spread with movement.'

Table S2: Items measuring right-wing authoritarian, outgroup-hostile, and nationalist COVID-19 policy preferences

Authoritarian	
1	The Constitutional Court should refrain from intervening to check every executive decision.
2	It is more important for the government to act fast than closely follow legal procedures.
3	The military should be allowed to take over some of the duties of the government.
4	Public safety needs to take precedence over freedom of movement.
5	Public safety needs to take precedence over freedom of expression.
6	Public safety needs to take precedence over minority rights.
Nationalist	
1	[Country] should not consider sharing personal protective equipment (PPE) or vaccines with other nations.
2	The government should make it more difficult for [Country] trained medical personnel to leave the country and work somewhere else.
Outgroup-hostile	
1	[Country] should impose tougher border controls and checks on the returning workforce.
2	[Country] should be ready to impose tough immigration controls to keep those who are not [Country] citizens out.

Descriptive statistics

Table S3 presents descriptive statistics on the mean, standard deviation, minimum and maximum values of relevant covariates among treated and control units in Hungary and Romania. The table also shows how each variable is distributed by presenting inline histograms and boxplots.

Table S3: Summary statistics by treatment and control

	Treatment				Control			
	Mean	SD	[Min, Max]		Mean	SD	[Min, Max]	
Hungary								
Female	0.54	0.50	[0, 1]		0.49	0.50	[0, 1]	
Age	42.11	13.08	[18, 66]		43.42	13.36	[18, 68]	
Diaspora	0.01	0.10	[0, 1]		0.00	0.06	[0, 1]	
Urbanity	2.28	1.15	[1, 5]		2.33	1.16	[1, 5]	
Education	3.18	1.10	[1, 6]		3.13	1.14	[1, 6]	
Minority	0.03	0.18	[0, 1]		0.02	0.15	[0, 1]	
Religion Life	0.33	0.47	[0, 1]		0.33	0.47	[0, 1]	
Religious Service	1.65	0.95	[1, 5]		1.65	0.95	[1, 5]	
Support Government	2.98	3.32	[0, 10]		3.28	3.45	[0, 10]	
Pol. News Consumption	2.86	1.21	[1, 6]		2.86	1.17	[1, 6]	
Covid Infection	0.19	0.39	[0, 1]		0.16	0.37	[0, 1]	
Covid Vaccination	0.65	0.48	[0, 1]		0.67	0.47	[0, 1]	
Incidence (Survey)	8.18	4.48	[2.84, 21.94]		8.66	4.74	[2.84, 21.94]	
Romania								
Female	0.51	0.50	[0, 1]		0.49	0.50	[0, 1]	
Age	41.95	12.50	[18, 66]		42.28	12.81	[18, 66]	
Diaspora	0.01	0.11	[0, 1]		0.00	0.07	[0, 1]	
Urbanity	1.93	1.11	[1, 5]		1.98	1.14	[1, 5]	
Education	3.88	0.90	[1, 6]		3.82	0.92	[1, 6]	
Minority	0.08	0.27	[0, 1]		0.08	0.27	[0, 1]	
Religion Life	0.65	0.48	[0, 1]		0.61	0.49	[0, 1]	
Religious Service	2.26	1.01	[1, 5]		2.20	0.96	[1, 5]	
Support Government	2.87	2.89	[0, 10]		2.72	2.82	[0, 10]	
Pol. News Consumption	3.02	1.34	[1, 6]		3.17	1.38	[1, 6]	
Covid Infection	0.22	0.41	[0, 1]		0.22	0.41	[0, 1]	
Covid Vaccination	0.56	0.50	[0, 1]		0.51	0.50	[0, 1]	
Incidence (Survey)	12.06	8.16	[3.2, 33.98]		12.64	8.85	[3.2, 47.39]	

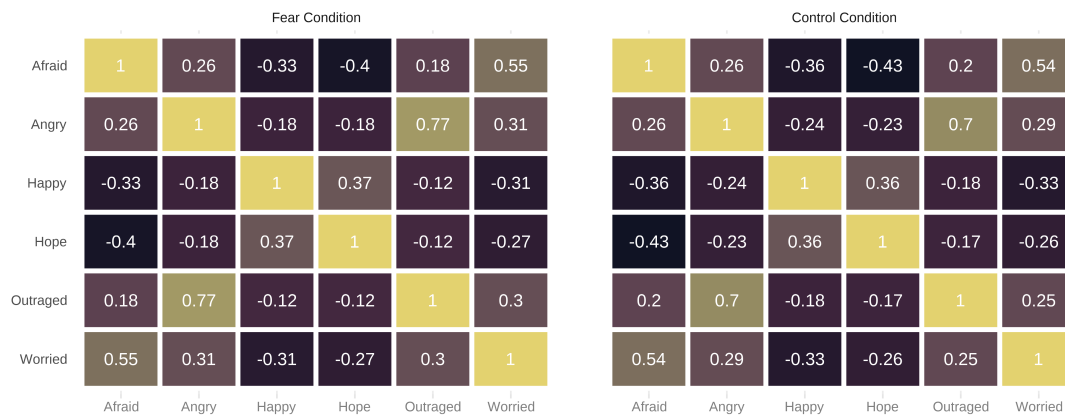


Figure S2: Heat map of correlations between different emotional states among treated and control respondents.

Analyses

Heat Map of Emotion States

Figure S2 shows a heat map of the bivariate correlations between the different emotional states that respondents reported in the treatment and control group. We find strong positive correlations between the emotional states of feeling worried and afraid and between feeling angry and outraged (pearson's $r > 0.5$). There is a modest positive correlation between feeling angry and worried (pearson's $r > 0.3$) and a modest negative correlation between between feeling hopeful and afraid (pearson's $r < -0.3$). There are no statistically significant differences in these general patterns among treatment and control group.

PCA reduced outcome dimensions

Principal Component Analysis (PCA) is an unsupervised, non-parametric statistical technique frequently used for dimensionality reduction. It reduces a larger set of variables into a smaller set, while maintaining most of the information contained in the initial variables. The new variables ('principal components') are constructed as linear combinations of all underlying variables that are uncorrelated with each other. Most of the information contained in the larger set of initial variables is compressed into the first components. PCA, thus, puts maximum possible information of the underlying variables into the first component. This allows us to reduce the dimensionality in our data by focusing on the first component(s) and discarding the remaining components that only add little additional information of lower eigenvalues. Table S4 shows the metrics of the PCA that we conducted to arrive at the conceptually relevant outcome dimensions of interest. We show the first two components and the amounts of variance in the initial set of variables that can be explained by these three components. The percentage of variance explained by each principal component is

Table S4: First and second principal components of each conceptually relevant dimension and amount of variance explained by each component.

Country	Dimension	Principal Component	N Items	% Variance Explained
COVID-19 Policies				
Hungary	Authoritarian	1	6	0.52
Hungary	Authoritarian	2	6	0.16
Romania	Authoritarian	1	6	0.47
Romania	Authoritarian	2	6	0.17
Hungary	Outgroup-Hostile	1	2	0.70
Hungary	Outgroup-Hostile	2	2	0.30
Romania	Outgroup-Hostile	1	2	0.80
Romania	Outgroup-Hostile	2	2	0.20
Hungary	Nationalist	1	2	0.58
Hungary	Nationalist	2	2	0.42
Romania	Nationalist	1	2	0.59
Romania	Nationalist	2	2	0.41
General Attitudes				
Hungary	Authoritarian	1	6	0.39
Hungary	Authoritarian	2	6	0.18
Romania	Authoritarian	1	6	0.26
Romania	Authoritarian	2	6	0.22
Hungary	Outgroup-Hostile	1	5	0.44
Hungary	Outgroup-Hostile	2	5	0.18
Romania	Outgroup-Hostile	1	5	0.41
Romania	Outgroup-Hostile	2	5	0.22
Hungary	Nationalist	1	3	0.66
Hungary	Nationalist	2	3	0.21
Romania	Nationalist	1	3	0.73
Romania	Nationalist	2	3	0.15

the eigenvalue of each component divided by the sum of all eigenvalues. As can be seen in Table S4, the first principal of the well-established short right-wing authoritarian scale (Bizumic & Duckitt, 2018) only explains around a third of the variance of the data in both countries. To address this shortcoming, and to assess the robustness of our results with respect to an entirely different way of reducing our data's dimensionality, we also report the results from using the first component of a so-called uniform manifold approximation and projection (UMAP). We discuss this in greater detail below.

Table S5 shows the effect of fear of COVID-19 on authoritarian, outgroup-hostile, and nationalist policy measures in response to the pandemic. The dependent variables are first principal components of the respective dimensions. We report confidence intervals from 5000 bootstrap resamples stratified by countries.

Table S6 shows the effect of fear of COVID-19 on broader levels of authoritarian, outgroup-hostile, and nationalist attitudes that are not specifically related to the pandemic.

Table S5: Preferences for authoritarian, outgroup-hostile, and nationalist COVID-19 measures in response to fear of COVID-19 (Outcomes: PCA)

	Authoritarian		Outgroup-Hostile		Nationalist	
	Simple	Full	Simple	Full	Simple	Full
COVID-19 Fear	0.02 [-0.05; 0.09]	0.02 [-0.04; 0.09]	0.01 [-0.06; 0.08]	0.02 [-0.05; 0.10]	-0.02 [-0.09; 0.05]	-0.01 [-0.08; 0.07]
Female		0.12 [0.05; 0.19]		0.08 [0.01; 0.16]		-0.02 [-0.10; 0.05]
Urbanity		-0.01 [-0.04; 0.03]		-0.01 [-0.04; 0.02]		-0.01 [-0.04; 0.03]
Education		-0.11 [-0.15; -0.08]		-0.09 [-0.13; -0.05]		-0.06 [-0.10; -0.02]
Gov. Support		0.11 [0.10; 0.12]		0.06 [0.05; 0.08]		0.04 [0.02; 0.05]
Pol. News		-0.04 [-0.07; -0.01]		0.00 [-0.03; 0.03]		-0.06 [-0.09; -0.03]
Church Attendance		-0.01 [-0.06; 0.03]		0.00 [-0.05; 0.04]		0.01 [-0.04; 0.05]
Religion Important		0.23 [0.15; 0.32]		0.21 [0.12; 0.31]		0.13 [0.04; 0.22]
Covid Infection		0.05 [-0.04; 0.14]		-0.02 [-0.12; 0.08]		-0.03 [-0.12; 0.06]
Covid Incidence Rate		0.00 [-0.01; 0.00]		0.00 [-0.01; 0.00]		-0.01 [-0.01; -0.00]
Minority		-0.15 [-0.31; 0.01]		-0.17 [-0.34; 0.02]		0.04 [-0.12; 0.20]
Diaspora		-0.36 [-0.73; 0.01]		-0.61 [-1.02; -0.19]		-0.72 [-1.10; -0.30]
Intercept	-0.01 [-0.07; 0.05]	-0.15 [-0.35; 0.04]	0.00 [-0.07; 0.06]	0.05 [-0.16; 0.26]	0.01 [-0.05; 0.07]	0.36 [0.15; 0.57]
R ²	0	0.175	0	0.067	0	0.038
Num.Obs.	2876	2665	2876	2665	2876	2665

Note: dependent variables are first principal components of the respective dimensions. 95% percentile confidence intervals from 5000 bootstrap resamples stratified by countries.

Table S6: Authoritarian, outgroup-hostile, and nationalist attitudes in response to fear of COVID-19 (Outcomes: PCA)

	Authoritarian		Outgroup-Hostile		Nationalist	
	Simple	Full	Simple	Full	Simple	Full
COVID-19 Fear	-0.03 [-0.10; 0.05]	-0.03 [-0.10; 0.03]	0.03 [-0.05; 0.10]	0.02 [-0.05; 0.10]	-0.03 [-0.10; 0.05]	-0.01 [-0.08; 0.06]
Female		-0.04 [-0.10; 0.03]		-0.04 [-0.12; 0.03]		0.00 [-0.07; 0.07]
Urbanity		0.03 [-0.00; 0.06]		0.00 [-0.04; 0.03]		0.00 [-0.04; 0.03]
Education		-0.07 [-0.11; -0.04]		-0.13 [-0.17; -0.09]		-0.13 [-0.16; -0.09]
Gov. Support		0.09 [0.08; 0.10]		0.02 [0.01; 0.04]		0.07 [0.06; 0.08]
Pol. News		-0.03 [-0.06; -0.01]		-0.04 [-0.07; -0.01]		0.06 [0.03; 0.09]
Church Attendance		0.17 [0.13; 0.22]		0.02 [-0.03; 0.06]		0.03 [-0.01; 0.07]
Religion Important		0.56 [0.48; 0.64]		0.18 [0.09; 0.27]		0.33 [0.24; 0.42]
Covid Infection		-0.02 [-0.10; 0.06]		0.03 [-0.06; 0.12]		-0.01 [-0.10; 0.08]
Covid Incidence Rate		0.00 [-0.01; 0.00]		-0.01 [-0.01; -0.00]		-0.01 [-0.01; -0.00]
Minority		-0.11 [-0.28; 0.04]		-0.11 [-0.29; 0.07]		-0.56 [-0.73; -0.39]
Diaspora		0.04 [-0.40; 0.51]		-0.38 [-0.92; 0.14]		-0.03 [-0.42; 0.33]
Intercept	0.01 [-0.05; 0.07]	-0.34 [-0.52; -0.16]	-0.01 [-0.08; 0.05]	0.61 [0.40; 0.82]	0.01 [-0.05; 0.07]	0.01 [-0.19; 0.22]
R ²	0	0.262	0	0.06	0	0.13
Num.Obs.	2876	2665	2876	2665	2876	2665

Note: dependent variables are first principal components of the respective dimensions. 95% percentile confidence intervals from 5000 bootstrap resamples stratified by countries.

UMAP reduced outcome dimensions

UMAP is a non-linear dimensionality reduction algorithm first introduced by McInnes *et al.* (2018). It is based on ideas from topological data analysis and is particularly well-suited to balance the emphasis of local versus global structure of the data. Relying on the concept of k-nearest neighbor, UMAP tries to optimize the results through stochastic gradient descent. To do so, it first calculates the distance between the different points in high dimensional space, while projecting them onto the low dimensional space and calculating the distance between the different points in this respective

low dimensional space. Using stochastic gradient descent, it then tries to minimize the difference between these distances.

Table S7 shows the effect of fear of COVID-19 on authoritarian, outgroup-hostile, and nationalist policy measures in response to the pandemic. The dependent variables are first UMAP components of the respective dimensions. We report confidence intervals from 5000 bootstrap resamples stratified by countries.

Table S6 shows the effect of fear of COVID-19 on broader levels of authoritarian, outgroup-hostile, and nationalist attitudes that are not specifically related to the pandemic.

Table S7: Preferences for authoritarian, outgroup-hostile, and nationalist COVID-19 measures in response to fear of COVID-19 (Outcomes: UMAP)

	Authoritarian		Outgroup-Hostile		Nationalist	
	Simple	Full	Simple	Full	Simple	Full
COVID-19 Fear	-0.01 [-0.08; 0.06]	0.00 [-0.07; 0.07]	-0.01 [-0.08; 0.07]	0.01 [-0.07; 0.08]	0.00 [-0.07; 0.07]	0.01 [-0.07; 0.09]
Female		0.08 [0.01; 0.16]		0.05 [-0.03; 0.13]		0.03 [-0.05; 0.10]
Urbanity		-0.01 [-0.04; 0.02]		0.02 [-0.01; 0.06]		0.01 [-0.02; 0.04]
Education		-0.09 [-0.13; -0.05]		-0.07 [-0.11; -0.03]		-0.05 [-0.08; -0.01]
Gov. Support		0.08 [0.07; 0.09]		0.03 [0.02; 0.04]		0.02 [0.01; 0.03]
Pol. News		-0.05 [-0.08; -0.02]		0.01 [-0.03; 0.04]		-0.05 [-0.08; -0.02]
Church Attendance		-0.03 [-0.08; 0.02]		0.00 [-0.05; 0.05]		0.02 [-0.03; 0.07]
Religion Important		0.16 [0.07; 0.25]		0.10 [0.01; 0.19]		0.05 [-0.05; 0.14]
Covid Infection		0.04 [-0.06; 0.13]		-0.02 [-0.12; 0.07]		0.02 [-0.07; 0.11]
Covid Incidence Rate		0.00 [-0.01; 0.00]		0.00 [-0.01; 0.01]		0.00 [-0.01; 0.00]
Minority		-0.12 [-0.29; 0.05]		-0.22 [-0.39; -0.04]		0.04 [-0.12; 0.20]
Diaspora		-0.16 [-0.58; 0.26]		-0.21 [-0.66; 0.25]		-0.72 [-1.06; -0.37]
Intercept	0.00 [-0.06; 0.07]	0.02 [-0.18; 0.22]	0.00 [-0.06; 0.07]	0.06 [-0.16; 0.28]	0.00 [-0.06; 0.06]	0.24 [0.03; 0.45]
R ²	0	0.097	0	0.024	0	0.02
Num.Obs.	2876	2665	2876	2665	2876	2665

Note: dependent variables are dimensions obtained by UMAP. 95% percentile confidence intervals from 5000 bootstrap resamples stratified by countries.

Table S8: Authoritarian, outgroup-hostile, and nationalist attitudes in response to fear of COVID-19 (Outcomes: UMAP)

	Authoritarian		Outgroup-Hostile		Nationalist	
	Simple	Full	Simple	Full	Simple	Full
COVID-19 Fear	-0.04 [-0.11; 0.03]	-0.05 [-0.13; 0.02]	0.03 [-0.04; 0.11]	0.03 [-0.05; 0.10]	-0.01 [-0.09; 0.06]	0.01 [-0.07; 0.08]
Female		-0.01 [-0.09; 0.07]		-0.01 [-0.09; 0.06]		0.02 [-0.05; 0.10]
Urbanity		0.00 [-0.04; 0.03]		-0.01 [-0.05; 0.02]		-0.01 [-0.05; 0.02]
Education		0.01 [-0.03; 0.05]		-0.01 [-0.05; 0.03]		-0.09 [-0.13; -0.06]
Gov. Support		0.03 [0.01; 0.04]		-0.01 [-0.02; 0.01]		0.04 [0.02; 0.05]
Pol. News		-0.03 [-0.07; 0.00]		0.00 [-0.03; 0.03]		0.06 [0.03; 0.09]
Church Attendance		-0.01 [-0.05; 0.04]		0.05 [0.00; 0.09]		0.04 [-0.01; 0.08]
Religion Important		0.01 [-0.08; 0.09]		0.04 [-0.05; 0.14]		0.20 [0.11; 0.29]
Covid Infection		0.13 [0.04; 0.22]		0.08 [-0.01; 0.17]		-0.05 [-0.14; 0.05]
Covid Incidence Rate		0.00 [-0.01; 0.00]		0.00 [-0.00; 0.01]		0.00 [-0.01; 0.00]
Minority		0.08 [-0.08; 0.23]		0.00 [-0.17; 0.17]		-0.32 [-0.47; -0.17]
Diaspora		-0.01 [-0.43; 0.39]		0.01 [-0.40; 0.40]		-0.43 [-0.82; -0.03]
Intercept	0.02 [-0.04; 0.08]	-0.02 [-0.23; 0.21]	-0.02 [-0.08; 0.05]	0.12 [-0.10; 0.34]	0.01 [-0.05; 0.07]	-0.01 [-0.22; 0.21]
R ²	0	0.013	0	0.018	0	0.052
Num.Obs.	2876	2665	2876	2665	2876	2665

Note: dependent variables are dimensions obtained by UMAP. 95% percentile confidence intervals from 5000 bootstrap resamples stratified by countries.

Simple means reduced outcome dimensions

Table S9 shows the effect of fear of COVID-19 on authoritarian, outgroup-hostile, and nationalist policy measures in response to the pandemic. The dependent variables are simple means of all items belonging to the respective dimensions. We report confidence intervals from 5000 bootstrap resamples stratified by countries.

Table S10 shows the effect of fear of COVID-19 on broader levels of authoritarian, outgroup-hostile, and nationalist attitudes that are not specifically related to the pandemic.

Table S9: Preferences for authoritarian, outgroup-hostile, and nationalist COVID-19 measures in response to fear of COVID-19 (Outcomes: Mean)

	Authoritarian		Outgroup-Hostile		Nationalist	
	Simple	Full	Simple	Full	Simple	Full
COVID-19 Fear	0.03 [-0.04; 0.10]	0.03 [-0.03; 0.10]	0.01 [-0.06; 0.08]	0.02 [-0.05; 0.10]	-0.02 [-0.09; 0.05]	-0.01 [-0.08; 0.07]
Female		0.12 [0.04; 0.19]		0.08 [0.01; 0.16]		-0.03 [-0.10; 0.05]
Urbanity		0.00 [-0.04; 0.03]		-0.01 [-0.05; 0.02]		-0.01 [-0.04; 0.03]
Education		-0.12 [-0.15; -0.08]		-0.09 [-0.13; -0.05]		-0.06 [-0.09; -0.02]
Gov. Support		0.11 [0.10; 0.12]		0.06 [0.05; 0.08]		0.04 [0.02; 0.05]
Pol. News		-0.04 [-0.07; -0.01]		0.00 [-0.03; 0.03]		-0.06 [-0.09; -0.03]
Church Attendance		-0.01 [-0.05; 0.03]		0.00 [-0.05; 0.04]		0.01 [-0.04; 0.05]
Religion Important		0.21 [0.13; 0.30]		0.21 [0.12; 0.30]		0.13 [0.04; 0.22]
Covid Infection		0.05 [-0.03; 0.14]		-0.02 [-0.12; 0.08]		-0.03 [-0.12; 0.06]
Covid Incidence Rate		0.00 [-0.01; 0.00]		0.00 [-0.01; 0.00]		-0.01 [-0.01; -0.00]
Minority		-0.14 [-0.31; 0.02]		-0.16 [-0.34; 0.02]		0.04 [-0.12; 0.20]
Diaspora		-0.38 [-0.73; -0.02]		-0.62 [-1.02; -0.19]		-0.73 [-1.11; -0.31]
Intercept	-0.02 [-0.08; 0.05]	-0.15 [-0.34; 0.05]	0.00 [-0.07; 0.06]	0.05 [-0.16; 0.26]	0.01 [-0.05; 0.07]	0.35 [0.14; 0.56]
R ²	0	0.175	0	0.066	0	0.038
Num.Obs.	2876	2665	2876	2665	2876	2665

Note: dependent variables are dimensions obtained by mean aggregation. 95% percentile confidence intervals from 5000 bootstrap resamples stratified by countries.

Table S10: Authoritarian, outgroup-hostile, and nationalist attitudes in response to fear of COVID-19 (Outcomes: Means)

	Authoritarian		Outgroup-Hostile		Nationalist	
	Simple	Full	Simple	Full	Simple	Full
COVID-19 Fear	-0.03 [-0.10; 0.05]	-0.04 [-0.11; 0.03]	0.02 [-0.05; 0.09]	0.02 [-0.06; 0.09]	-0.02 [-0.10; 0.05]	-0.01 [-0.08; 0.06]
Female		-0.03 [-0.10; 0.04]		-0.04 [-0.11; 0.04]		0.00 [-0.08; 0.07]
Urbanity		0.03 [-0.00; 0.06]		0.00 [-0.04; 0.03]		0.00 [-0.04; 0.03]
Education		-0.06 [-0.10; -0.03]		-0.13 [-0.17; -0.10]		-0.13 [-0.16; -0.09]
Gov. Support		0.09 [0.08; 0.10]		0.02 [0.01; 0.04]		0.07 [0.06; 0.08]
Pol. News		-0.04 [-0.07; -0.01]		-0.04 [-0.07; -0.01]		0.06 [0.03; 0.09]
Church Attendance		0.16 [0.12; 0.20]		0.02 [-0.02; 0.07]		0.03 [-0.02; 0.07]
Religion Important		0.53 [0.45; 0.61]		0.19 [0.10; 0.28]		0.33 [0.24; 0.41]
Covid Infection		0.00 [-0.08; 0.08]		0.03 [-0.06; 0.12]		-0.01 [-0.10; 0.08]
Covid Incidence Rate		0.00 [-0.01; 0.00]		-0.01 [-0.01; 0.00]		-0.01 [-0.01; -0.00]
Minority		-0.10 [-0.27; 0.06]		-0.12 [-0.29; 0.05]		-0.56 [-0.73; -0.38]
Diaspora		0.03 [-0.44; 0.50]		-0.43 [-1.00; 0.11]		-0.03 [-0.42; 0.33]
Intercept	0.01 [-0.05; 0.07]	-0.35 [-0.53; -0.16]	-0.01 [-0.07; 0.05]	0.60 [0.39; 0.81]	0.01 [-0.05; 0.07]	0.02 [-0.19; 0.22]
R ²	0	0.233	0	0.06	0	0.129
Num.Obs.	2876	2665	2876	2665	2876	2665

Note: dependent variables are dimensions obtained by mean aggregation. 95% percentile confidence intervals from 5000 bootstrap resamples stratified by countries.

Within-dimensions analyses

In the following, we report the simple differences in means between treatment and control across the various items of the different dimensions. Figure S3 shows that there are no statistically significant differences on any of the outcome items (for a detailed description of the items see Tables S1 and S2), neither for the Hungarian respondents, nor for the Romanian respondents. The graph shows that the mean values on the respective outcome variables (standardised to a zero mean and unit standard variation) among those respondents to whom their fears and anxieties during

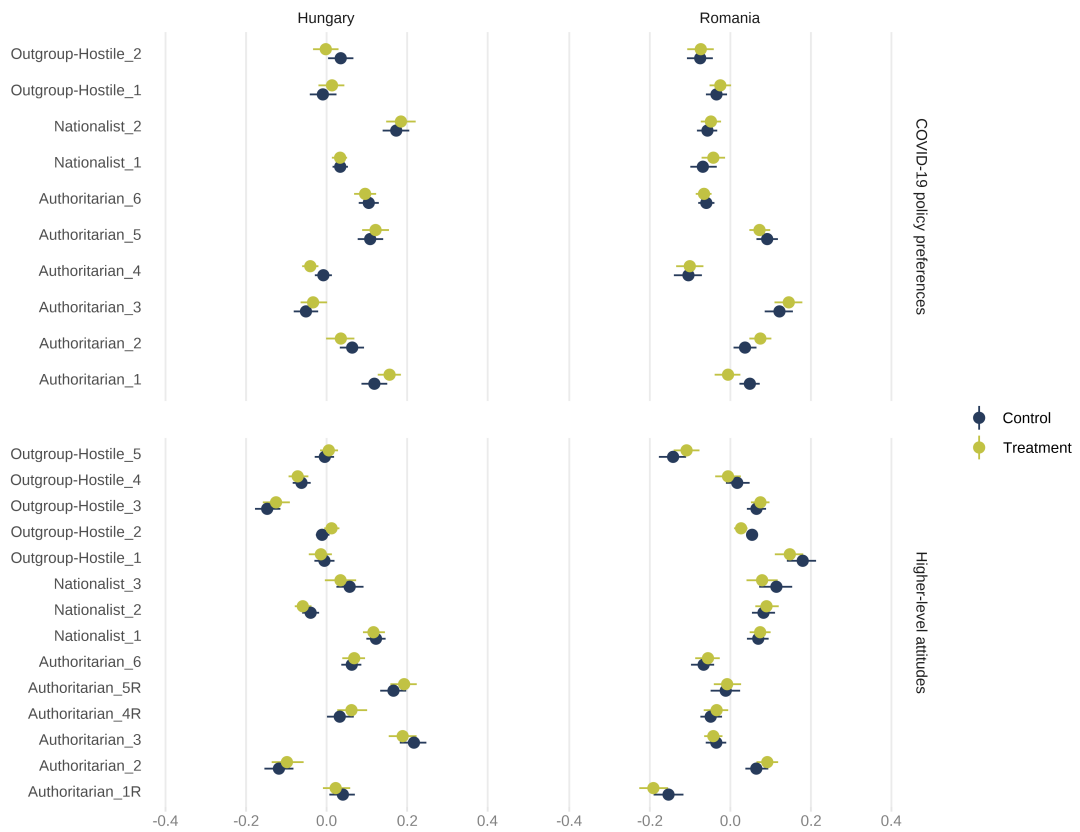


Figure S3: The effect of fear recall on the various outcome items within each dimension.

the COVID-19 pandemic were cognitively accessible (“Treatment”) are statistically indistinguishable from the mean values among those respondents to whom their fears and anxieties during the COVID-19 pandemic were not cognitively accessible (“Control”).

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