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Politicization of a Pathogen: A Prospective Longitudinal Study of COVID-19 Responses in a Nationally Representative U.S. Sample

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Understanding population-level variability in responses to pathogens over time is important for developing effective health-based messages targeted at ideologically diverse populations. Research from psychological and political sciences suggests that party and elite cues shape how people respond to major threats like climate change. Research on responses to the COVID-19 pandemic suggests similar variability across party identities; however, prior work has methodological limitations. This prospective, longitudinal study of a large probability-based nationally representative U.S. sample assessed in March–April 2020 (N = 6,514) and then 6 months later in September–October 2020 (N = 5,661) demonstrates that COVID-19 fear, perceived COVID-19 death risk, and reported health-protective behaviors became increasingly polarized over the first 6 months of the pandemic. Initial differences between Democrats and Republicans failed to converge over time and became more pronounced. Responses among Republicans were further polarized by support for former President Donald Trump: Trump Republicans initially reported weaker responses to COVID-19 than non-Trump Republicans, and these differences became more pronounced over time. Importantly, political identity and Trump support were not linked to perceived infection risk of a nonpoliticized pathogen, the flu. Finally, political identity and Republican Trump support prospectively predicted COVID-19 vaccine intentions 6 months into the pandemic.

KEY WORDS: politics, risk, pathogen, polarization, public health, elite cues

As our society becomes increasingly global, threats like widespread pathogen outbreaks are more likely to occur and with greater severity (e.g., Kilpatrick, 2011). Indeed, the ongoing international spread of severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2), the virus that causes Coronavirus disease (COVID-19), is the worst pandemic in a century. Yet cooperation to mitigate public health threats has become difficult in Western democracies as more polarized political disagreements about facts threaten the efficacy of effective solutions (Bertin et al., 2020; Edelson et al., 2017; Jennings et al., 2021; Pummerer et al., 2021; Romer & Jamieson, 2020). For example, striking differences in the extent to which liberals and conservatives acknowledge the reality of climate change (Markowitz & Shariff, 2012), a divide exacerbated by party media and elite messages (Merkley & Stecula, 2018; Tesler, 2018), demonstrates how political motivations can shape threat responses. Such politicization of major threats erodes public trust in expertise (Kreps & Kriner, 2020) and can stall implementation of swift and effective solutions to existential public health threats.

Political goals, motivations, and narratives shape how partisans perceive and process information (Van Bavel & Pereira, 2018; Xiao et al., 2016), leading people on both sides of the political aisle to more readily accept information that supports their political beliefs and allegiances compared to information that challenges them (Ditto et al., 2019). Political motivations may also shape fear responses, which evidence suggests can be flexibly regulated (Reddan et al., 2018; Schiller & Delgado, 2010). If perceiving a threat is detrimental to a political group's interests and goals, members of that group may be motivated to minimize the perceived threat, downregulating their subsequent fear response (Miller & Maner, 2012).

One motivation for people to regulate their responses to a new and unfamiliar pathogen is threat cues given by political ingroup leaders. When confronted with an unfamiliar threat, especially in a polarized social environment, people are likely to follow the cues of the political elites they trust (e.g., Berinsky, 2007). Messaging from U.S. political leaders has influenced public opinion on a variety of issues, such as energy policy and immigration (Druckman et al., 2013; Zaller, 1992), even when the messaging contradicts prior policy positions taken by the group (Slothuus & Bisgaard, 2020). Throughout the COVID-19 pandemic, former President Donald Trump, along with Republican leaders and conservative media news outlets such as Fox News, downplayed the seriousness of the threat COVID-19 posed to public health (Box-Steffensmeier & Moses, 2021; Green et al., 2020; Hart et al., 2020; Jamieson & Albarracin, 2020; Jiang et al., 2021; Mitchell et al., 2021; Romer & Jamieson, 2021; Simonov et al., 2020). For example, in a meeting with Republican senators on March 10, 2020, Trump stated, "We're prepared, and we're doing a great job with it. And it will go away. Just stay calm. It will go away" (Stevens & Tan, 2020, March 31). Moreover, in the early months of the pandemic, Democratic leaders tweeted messages emphasizing the threat the crisis posed to public health and American workers, while Republican leaders tweeted messages emphasizing China's role in the crisis and the effects of lockdowns on businesses (Engel-Rebitzer et al., 2022; Green et al., 2020). An important research question elicited by such differences is whether these political identities and elite cues polarized affect, cognitions, and behaviors regarding COVID-19 as the pandemic progressed.

Estimating change in population-level politicized responses to pathogens is important because a rational analysis suggests that perceptions of a serious threat should converge across political lines over time. As scientists learn more about a novel threat (e.g., a previously unknown pathogen) and convey that accumulating knowledge to governmental officials and the general public, it might be predicted that lay beliefs would eventually converge on a collective understanding of the threat. Politically motivated frames and narratives might

initially shape how partisans interpret the threat when little relevant data are available, but over time, as greater scientific understanding of the pathogen emerges and is communicated to the public, political differences in reactions to the threat should shrink to reflect a shared sense of the reality of the threat. A historical example of threat perception convergence is U.S. involvement in World War II. At first the United States took an isolationist stance, and there was considerable internal debate about whether to get involved in another European war. However, after the Japanese attack on Pearl Harbor, the necessity to stop the growing Nazi axis of power became clearer, and there was greater bipartisan agreement on the reality of the threat (Kupchan & Trubowitz, 2007).

A second possibility, however, is that political identity and elite cues are powerful enough to reduce or even prevent threat-perception convergence over time. Despite the accumulation of overwhelming evidence that the COVID-19 virus has resulted in millions of deaths and untold suffering worldwide, the proliferation of misinformation (and disinformation) about COVID-19 through both social and traditional media may have been potent enough to maintain or even strengthen divergent perceptions along partisan lines. Indeed, evidence suggests that social media platforms have allowed misinformation to spread throughout the COVID-19 pandemic (Darius & Urquhart, 2021; Jamieson & Albarracin, 2020; Jennings et al., 2021; Jiang et al., 2021; Loomba et al., 2021; Stecula & Pickup, 2021), potentially making convergence in threat perceptions over time less likely and partisan interpretations of the threat more resilient. This may be particularly true for individuals supportive of Donald Trump, who as President of the United States for the first 10 months of the pandemic, admitted downplaying the seriousness of the COVID-19 threat and the necessity of behaviors that combat the spread of the virus (e.g., mask wearing and physical distancing; Haberman, 2020, September 9). If cues displayed by the former President played an important role in COVID-19 responses, then there should not only be differences between Democrats and Republicans in COVID-19 responses (both initially and over time), but there should be polarized differences among Republicans between supporters and nonsupporters of Trump.

Recent research suggests this second prediction is more likely. Some evidence comes from non-peer-reviewed reports showing politically divergent COVID-19 concerns, perceptions, and attitudes over time (Canes-Wrone et al., 2020; Mitchell & Liedke, 2022; Pew Research Center, 2020), including divergence by Trump support among Republicans (Jones, 2022; Jurkowitz & Mitchell, 2021; Mitchell et al., 2021). In the peer-reviewed literature, early research during the pandemic suggests that U.S. Republicans were less worried about, and less willing to perform, health-protective behaviors that prevent the spread of the coronavirus, and this divergence may have been motivated specifically by Trump and Republican elite cues (Allcott et al., 2020; Bruine de Bruin et al., 2020; Conway et al., 2021; Douglas & Sutton, 2022; Engel-Rebitzer et al., 2022; Gadarian et al., 2021; Gollwitzer et al., 2020; Grossman et al., 2020; Kaushal et al., 2022; Kim & Kwan, 2021; Leventhal et al., 2021; Moore et al., 2021; Rodriguez et al., 2022; Ruisch et al., 2021). However, while each of these prior studies has methodological strengths, this body of research is limited in several important ways:

1. The vast majority of prior studies used either convenience samples (e.g., Conway et al., 2021; Douglas & Sutton, 2022; Engel-Rebitzer et al., 2022; Ericson et al., 2022; Fridman et al., 2021; Leventhal et al., 2021; Moore et al., 2021; Ruisch et al., 2021) or non-probability-based representative samples (e.g., Allcott et al., 2020; Gadarian et al., 2021; Kaushal et al., 2022;

Rodriguez et al., 2022), which can lead to sampling bias that limits generalizability (Bradley et al., 2021; Pierce et al., 2020).

2. Most prior research did not compare COVID-19 outcomes to a nonpoliticized control pathogen to establish polarization (e.g., Allcott et al., 2020; Bruine de Bruin et al., 2020; Conway et al., 2021; Gadarian et al., 2021; Gollwitzer et al., 2020; Kim & Kwan, 2021; Leventhal et al., 2021; Moore et al., 2021; Rodriguez et al., 2022; Ruisch et al., 2021).
3. Many prior studies investigated polarized COVID-19 responses within the first 2 to 3 months of the pandemic only (e.g., Allcott et al., 2020; Bruine de Bruin et al., 2020; Conway et al., 2021; Douglas & Sutton, 2022; Gadarian et al., 2021; Gollwitzer et al., 2020; Rodriguez et al., 2022; Ruisch et al., 2021). Understanding how polarized responses to a novel pathogen play out over a longer period of time is useful for devising long-term public health and risk-communications strategies.
4. Another limitation of the prior research is that political identities and COVID-19 outcomes were concurrently measured during the pandemic (e.g., Allcott et al., 2020; Bruine de Bruin et al., 2020; Conway et al., 2021; Douglas & Sutton, 2022; Ericson et al., 2022; Fridman et al., 2021; Gadarian et al., 2021; Leventhal et al., 2021; Moore et al., 2021; Rodriguez et al., 2022; Ruisch et al., 2021). Consequently, it is possible that partisans' responses to COVID-19 affected the strength of their political identities.
5. Finally, big data studies (e.g., smartphone mobility data, Twitter data; Engel-Rebitzer et al., 2022; Green et al., 2020; Jiang et al., 2021) also suffer from biases as their samples are self-selected, not probability based (Bradley et al., 2021), and are typically not representative of the population. Similarly, some of the prior work on polarized COVID-19 responses operationalized politics (and Trump support) and behaviors (e.g., social distancing) using county- and/or state-level data (e.g., Allcott et al., 2020; Gollwitzer et al., 2020; Grossman et al., 2020; Kim & Kwan, 2021; Rodriguez et al., 2022). County and state-level measures fail to account for the heterogeneity within blocks of voters. Person-level analyses that include individual-level confounds are essential for isolating specific effects of politization on outcomes. Moreover, snapshots of population-level trends cannot provide details regarding individual processes as they change over time; repeated measures of individual responses over time are necessary to capture those phenomena.

Together, the aforementioned literature that has addressed this topic has important shortcomings that limit its utility for policy development. The present study addresses these limitations by investigating change in polarized affective, cognitive, and behavioral COVID-19 responses over a 6-month period at the individual level of analysis using a large probability-based nationally representative U.S. sample. Moreover, we *prospectively* measured strength of political party identity and Trump support prior to the onset of the pandemic and include a non-politicized pathogen control (i.e., seasonal flu) for comparison.

Predictions

We tested the role of political identification and elite cuing as measured by support for former President Donald Trump in affective, cognitive, and self-reported behavioral responses to COVID-19 over the first 6 months of the pandemic. There were three possible outcomes: COVID-19 perceptions and responses were initially polarized along party lines, (1) but then began to converge as people gained experience with COVID-19 and the

extent of the threat it posed became clearer towards the end of the year, (2) and these differences remained stable across party lines and time, or (3) then became increasingly polarized as the pandemic progressed, partisan messaging about the pandemic continued, and the 2020 election neared. Of these three possibilities (politically divergent, stable, or convergent COVID-19 responses over time), based on the prior reviewed literature, we expected politicized COVID-19 responses to diverge over time. Specifically, we hypothesized that Democrats would report greater, and Republicans would report lesser, COVID-19 fear, risk perceptions, and health-protective behaviors over the first 6 months of the pandemic. We were agnostic as to whether independents would change in COVID-19 responses over time. We expected no political differences in perceptions of seasonal flu-infection risk. Lastly, we hypothesized that Democrats would report greater, while Republicans would report lesser, intentions to receive the COVID-19 vaccine.

Based on prior literature suggesting Trump signaled cues downplaying the threat of COVID-19, we also expected divergence within the Republican subsample such that Trump Republicans would report lesser COVID-19 responses over time compared to non-Trump Republicans, and that there would be no difference by Trump support in perceptions of flu infection risk. We expected divergence in COVID-19 vaccine intentions, with Trump Republicans reporting fewer intentions to get the vaccine than non-Trump Republicans.

Method

Sample

Panelists were drawn from the NORC AmeriSpeak Panel, a probability-based survey panel of 35,000 randomly chosen U.S. households recruited through the high-effort strategy of door-to-door interviewing. Participants then take Internet surveys using a computer, tablet, or smartphone on their own time and device. As the first wave of an ongoing nationally representative longitudinal study on American's responses to the COVID-19 pandemic (Holman et al., 2020), 11,139 panelists were recruited in three consecutive cohorts of 3,713 panelists from March 18, 2020, to April 18, 2020 (cohort data were analyzed in aggregate). By the end of the survey fielding period, 6,598 surveys were completed; 84 cases (1.27%) were removed due to unreliable survey completion times under 6.5 minutes or due to extensive missing data (>50% of items). This left a final weighted sample of $N = 6{,}514$ (58.48% completion). Most participants (86.40%) completed the survey in the first 3 days of data collection; 54% completed the survey on smartphones, 44% on computers, and 2% on tablets.

The second wave survey was fielded to all available Wave 1 participants ($N = 6{,}501$) 6 months later from September 26 to October 16, 2020. A final weighted sample of $N = 5{,}661$ completed the second survey (87.10% completion) with most (80.10% completing the survey) within the first 4 days of data collection. Weighted analyses adjusted for the probability of selection into the AmeriSpeak Panel and accounted for differences between the sample and U.S. Census benchmarks. Poststratification weights were iteratively constructed from respondents' design weights using probability estimates based on age, gender, race/ethnicity, education, and U.S. Census region, and accounted for any demographic differences in participation between Wave 1 and Wave 2. The weighted sample closely matched the February 2020 U.S. Census data (Holman et al., 2020; see the online supporting information for more about statistical weighting). Descriptive statistics are provided in Table S1 in the online supporting information. Participants received a small compensation equivalent to $4 for each

wave. All procedures for this study were approved by the Institutional Review Board of University of California, Irvine.

Materials

Outcome Variables

COVID-19 fear (Wave 1 and Wave 2) Items assessing COVID-19 fear were adapted from prior research on responses to the 9/11 terrorist attacks (Holman et al., 2008; Silver et al., 2002). For each wave, participants responded to 10 items asking how often in the past week they had fears and worries about COVID-19 infection and death, civil unrest, lack of access to basic necessities, and economic consequences of the pandemic affecting themselves, their loved ones, and their community. Participants answered each item from 1 (*Never*) to 5 (*All the time*). Items were averaged at each wave to create a COVID-19 fear composite variable, Wave 1 $\alpha = .91$, Wave 2 $\alpha = .91$.

Risk Perceptions (Wave 1 and Wave 2) For each wave, participants indicated the percent chance in the next three months they would (1) get sick with the seasonal flu, (2) get sick with Coronavirus, and (3) die if sick with Coronavirus, by providing a whole number from 0% to 100%, with higher numbers indicating greater likelihood of the event happening.

Self-Reported Health-Protective Behaviors (Wave 1 and Wave 2) At Wave 1, participants reported how often they performed each of the following behaviors: washing hands or using hand sanitizer, wearing a face mask and/or gloves in public, purchasing extra household supplies, avoiding people who may be infected with COVID-19, avoiding public places, avoiding public transportation, canceling or rescheduling travel plans, and isolating at home for several days or more. At Wave 2, participants were asked how often they washed their hands for at least 20 seconds, wore a face mask in public, avoided socializing with people outside their household, avoided public spaces where there may be crowds or where social distancing may be difficult, chose an outdoor activity in place of an indoor activity, and avoided nonessential personal care services. Participants responded to each item in both waves from 1 (*Never*) to 5 (*All the time*). Responses for each wave were averaged to create a health-protective behavior composite variable, Wave 1 $\alpha = .77$, Wave 2 $\alpha = .80$.

COVID-19 Vaccine Intentions (Wave 2) At Wave 2, participants indicated the percent likelihood they will get the COVID-19 vaccine when one is made publicly available. Participants provided a whole number from 0% to 100%, with higher numbers indicating greater likelihood they will get the vaccine.

Independent Variables

Political Identity (prepandemic and Wave 2) At least 3 months prior to the COVID-19 pandemic (as part of entry to the AmeriSpeak Panel) and in the Wave 2 survey, participants reported the strength of their political party identity as 1 (*Strong Democrat*), 2 (*Moderate Democrat*), 3 (*Leans Democrat*), 4 (*Do not lean/Independent/None*), 5 (*Leans Republican*),

6 (*Moderate Republican*), or 7 (*Strong Republican*). Consistent with political polls, strength of political party identity was recoded to a 5-point scale by collapsing the "lean" categories with the "moderate" categories (as those who profess leaning towards one party typically vote and hold preferences similar to party identifiers; see Keith et al., 1986; Klar & Krupnikov, 2018). The pattern of results was identical for both the 5-point and 7-point scales; results are presented using the 5-point scale for ease of interpretation. To conduct analyses on the Republican subsample, only participants who scored higher than the midpoint on the strength of political identity variable were categorized as Republican and included in analyses.

Trump Support (prepandemic and Wave 2) Prior to the COVID-19 pandemic, 2016 U.S. Presidential election vote was measured (response options: *Clinton-Kaine*, *Trump-Pence*, *other*, and *did not vote*). This variable was collapsed into two categories: Trump and non-Trump (Clinton-Kaine, other, did not vote) voters. At Wave 2, participants were asked who they voted for or intend to vote for in the 2020 U.S. Presidential election, which included the categories *Biden-Harris*, *Trump-Pence*, *other*, and *unsure*. This was also collapsed into Trump versus non-Trump (Biden-Harris, other, unsure) supporters. For both waves, participants were coded as "0" if they did not vote/intend to vote for Trump and a "1" if they did.

Covariates (prepandemic, Wave 1, and Wave 2) Covariates measured prior to the pandemic included age, gender, ethnicity, education, household income, employment status, U.S. Census-bureau designated geographic region, and self-reported prior mental health diagnoses (prior anxiety, depression, or any other emotional, nervous, or psychiatric diagnosis). Self-reported average daily hours of COVID-19-related traditional (TV, radio, print, online news) and social (e.g., Facebook, Twitter) media exposure in the prior week were measured in both Wave 1 and Wave 2 surveys.

Analytic Strategy

Summary scores were computed for COVID-19 fear, self-reported health-protective behaviors, and self-reported COVID-19 media exposure to account for variability in these constructs (MacCallum et al., 2002). Two versions of each final model were estimated, one with unstandardized and the other with standardized continuous variables. All continuous variables were standardized prior to analysis, and all models controlled for time-varying self-reported average daily hours of COVID-19-related media exposure, age, gender, ethnicity, education, household income, employment status, and U.S. Census-bureau-designated geographic region, as well as time-invariant prepandemic self-reported prior mental health diagnoses.[1]

Linear mixed effects modeling was used to test for change over time within individuals by modeling the interaction between each political predictor (political identity, Trump support) and time (as a categorical variable) on each outcome variable. That is, we tested the interaction between strength of political identity and time on COVID-19 fear,

[1]At the request of a reviewer, we tested all models again with the additional covariates: religiosity and religious affiliation (measured prepandemic), trust in the scientific community (e.g., epidemiologists and other researchers) as a source for information about the COVID-19 outbreak, and conspiratorial thinking (the latter two measured at Wave 2). See the online supporting information for more details.

COVID-19-infection-risk perceptions, perceived risk of death from COVID-19, perceived risk of seasonal flu infection, and health-protective behaviors. We then repeated the models for the subsample of Republicans replacing political identity with Trump support as the main predictor interacting with time. Models with strength of political identity by time as the main predictor were estimated with a maximum likelihood approach because they included sampling weights. Models conducted on the Republican subsample with Trump support by time as the main predictor were estimated using a restricted maximum likelihood approach to obtain unbiased estimates; weights were not applied as the subsample was not assumed to be representative of the U.S. population. See the online supporting information for additional model specification details.

Lastly, an ordinary least squares (OLS) regression was conducted predicting Wave 2 likelihood of getting the COVID-19 vaccine from strength of political identity measured prior to start of the pandemic, controlling for the same covariates and with sampling weights applied. The same model was then conducted on the Republican subsample with prepandemic 2016 Trump support predicting Wave 2 vaccine intentions, controlling for covariates and without sampling weights.

Results

Political Identity

Affect

COVID-19 Fear Across waves and controlling for covariates, the stronger participants identified as Republican, the less COVID-19 fear they reported, $\beta = -.14$, $SE_{Robust} = .02$, 95% CI [−.17, −.11], $p < .001$. There was also a main effect of time where, overall, COVID-19 fear decreased from the onset of the pandemic to 6 months later, $\beta = -.11$, $SE_{Robust} = .03$, 95% CI [−.16, −.06], $p < .001$. Supporting the notion that polarized COVID-19 fear responses changed over time, there was a significant interaction between strength of political identity and time on COVID-19 fear. The stronger participants identified as Republican, the less COVID-19 fear they reported over time, $\beta = -.08$, $SE_{Robust} = .02$, 95% CI [−.11, −.05], $p < .001$ (Figure 1a; Table S2 in the online supporting information). Analysis of simple slopes showed that stronger identification as Republican was associated with less COVID-19 fear at both time points, and this association strengthened over time, Wave 1: $\beta = -.09$, $SE_{Robust} = .02$, 95% CI [−.13, −.06], $p < .001$, Wave 2: $\beta = -.17$, $SE_{Robust} = .02$, 95% CI [−.21, −.14], $p < .001$.

Cognition

COVID-19 Risk Perceptions Across time and controlling for covariates, the stronger participants identified as Republican, the less likely they thought they were to catch COVID-19 in the subsequent 3 months, $\beta = -.11$, $SE_{Robust} = .02$, 95% CI [−.14, −.08], $p < .001$. There was also a main effect of time where participants reported less perceived COVID-19 infection risk at Wave 2 compared to Wave 1, $\beta = -.22$, $SE_{Robust} = .04$, 95% CI [−.29, −.14], $p < .001$. There was no strength of political identity by time interaction on perceived risk of COVID-19 infection, $\beta = .01$, $SE_{Robust} = .02$, 95% CI [−.03, .06], $p = .509$ (Figure 1b; Table S3 in the online supporting information), suggesting that

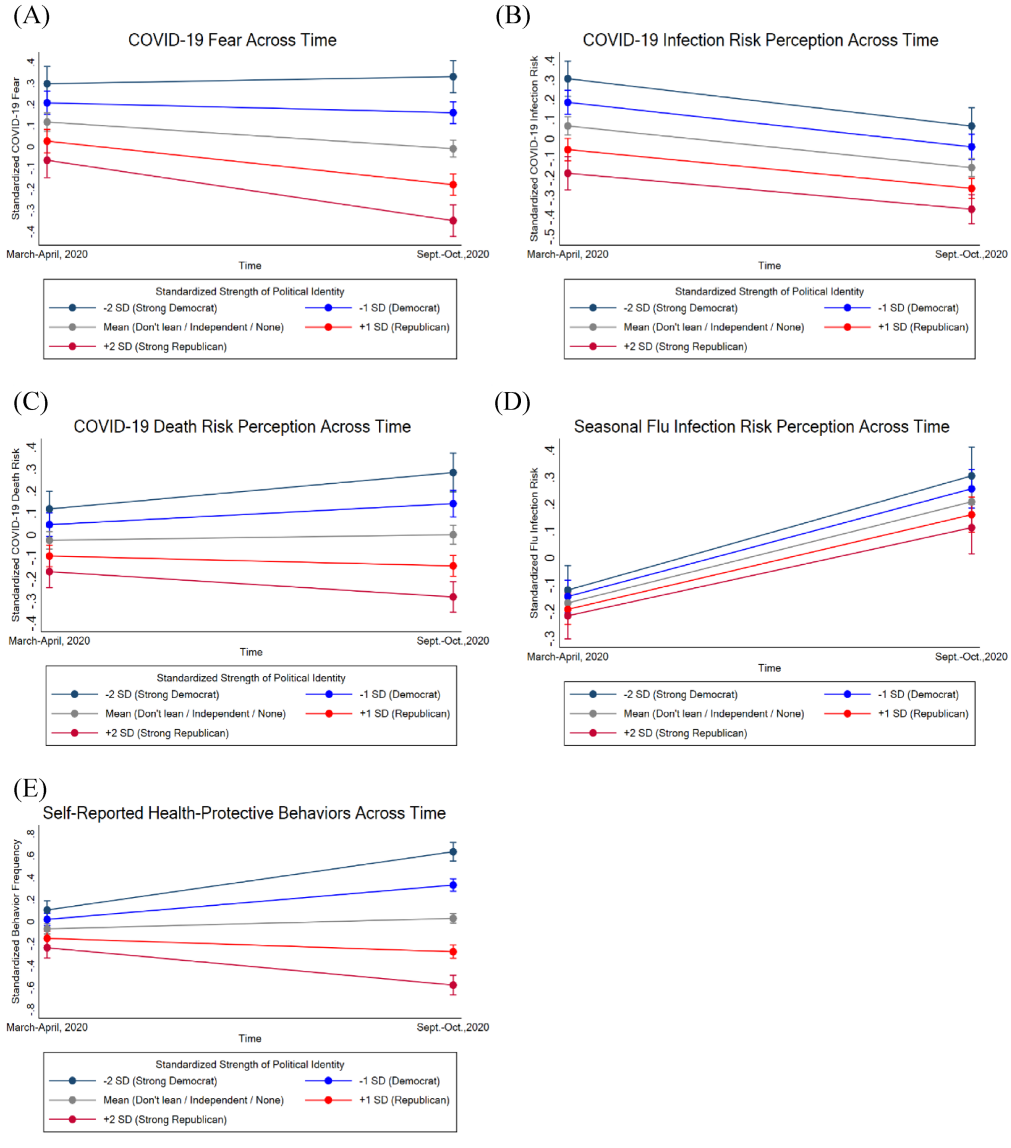

Figure 1. Mixed effects models predicting standardized (a) COVID-19 fear, (b) COVID-19 infection risk perception, (c) COVID-19 death risk perception, (d) seasonal flu-infection risk perception, and (e) self-reported health-protective behaviors from the interaction between standardized strength of political identity and time, controlling for covariates; *SD* = standard deviation; Bars = 95% confidence intervals; Wave 1 (March–April 2020) $N = 6{,}514$, Wave 2 (September–October 2020) $N = 5{,}661$.

polarized COVID-19 risk perceptions did not change over time. Analysis of simple slopes showed that stronger identification as a Republican was associated with significantly less perceived COVID-19 infection risk at both time points, Wave 1: $\beta = -.12$, $SE_{Robust} = .02$, 95% CI [−.16, −.08], $p < .001$, Wave 2: $\beta = -.10$, $SE_{Robust} = .02$, 95% CI [−.14, −.07], $p < .001$, but this polarization did not increase or decrease over time.

For perceived COVID-19 death risk, across time and controlling for covariates, the stronger participants identified as Republican, the less likely they thought they were to die from COVID-19, $\beta = -.11$, $SE_{Roust} = .01$, 95% CI [−.13, −.08], $p < .001$. There was no main effect of time, suggesting that overall perceptions of COVID-19 death risk did not change over the first 6 months of the pandemic, $\beta = .04$, $SE_{Robust} = .03$, 95% CI [−.02, .10], $p = .190$. However, there was a significant strength of political identity by time interaction on the extent to which COVID-19 was perceived to pose the risk of death. The more participants identified as Republican, the less they thought they would die from COVID-19 over time, $\beta = -.07$, $SE_{Robust} = .02$, 95% CI [−.11, −.03], $p < .001$ (Figure 1c; Table S4 in the online supporting information). Simple slopes analysis showed that stronger identification as Republican was associated with increased COVID-19 death risk at both time points, and this association strengthened over time, Wave 1: $\beta = -.07$, $SE_{Robust} = .02$, 95% CI [−.10, −.04], $p < .001$, Wave 2: $\beta = -.14$, $SE_{Robust} = .02$, 95% CI [−.17, −.10], $p < .001$.

Seasonal Flu Risk Perceptions Across time and controlling for covariates, the stronger participants identified as Republican, the less likely they thought they would catch the seasonal flu in the subsequent 3 months, $\beta = -.04$, $SE_{Robust} = .02$, 95% CI [−.07, −.005], $p = .024$. This could suggest that participants perceived seasonal flu risk through the same politically polarized lens through which they perceived COVID-19 risk; however, this association is weaker than that found for COVID-19 infection risk. There was also a moderate effect of time such that, overall, participants perceived a greater likelihood of seasonal flu infection at Wave 2 compared to Wave 1, $\beta = .39$, $SE_{Robust} = .04$, 95% CI [.31, .46], $p < .001$. This finding makes sense, given that Wave 2 occurred at the start of the typical flu season (September – October). There was no political identity by time interaction on perceived risk of seasonal flu infection, $\beta = -.02$, $SE_{Robust} = .03$, 95% CI [−.08, .03], $p = .348$ (Figure 1d; Table S5 in the online supporting information), suggesting that change in flu risk perceptions over time was not dependent on political identity. Analysis of simple slopes showed there was no association between strength of political identity and perceived flu risk at Wave 1, and there was a minor change in this association over time, Wave 1: $\beta = -.03$, $SE_{Robust} = .02$, 95% CI [−.07, .01], $p = .138$, Wave 2: $\beta = -.05$, $SE_{Robust} = .02$, 95% CI [−.09, −.005], $p = .029$.

Behavior

Reported Health-Protective Behaviors Consistent with COVID-19 fear and risk perceptions, across time and controlling for covariates, the stronger participants identified as Republican, the less frequently they reported performing COVID-19-related health-protective behaviors, $\beta = -.21$, $SE_{Robust} = .02$, 95% CI [−.24, −.17], $p < .001$. There was also a main effect of time such that, controlling for covariates, participants overall reported performing more frequent health-protective behaviors at Wave 2 compared to Wave 1, $\beta = .14$, $SE_{Robust} = .03$, 95% CI [.07, .21], $p < .001$. There was a significant strength of political identity by time interaction on self-reported COVID-19 health-protective behaviors. The stronger participants identified as Republican, the fewer health-protective behaviors they reported over time, $\beta = -.22$, $SE_{Robust} = .02$, 95% CI [−.26, −.17], $p < .001$ (Figure 1e; Table S6 in the online supporting information). Analysis of simple slopes showed that stronger identification as Republican was associated with fewer reported health-protective behaviors at both time points, and this association strengthened over time, Wave 1: $\beta = -.09$, $SE_{Robust} = .02$, 95% CI [−.12, −.05], $p < .001$, Wave 2: $\beta = -.30$, $SE_{Robust} = .02$, 95% CI [−.34, −.27], $p < .001$.

Trump Support

To examine the role of partisan elite cues in politicizing COVID-19 responses, we next stratified participants based on their strength of the political identity score by subsampling only those who identified as greater than the midpoint (Republican or Strong Republican) on the strength of the political-identity variable. We then tested the effect of support for Trump (in the 2016 and 2020 elections) on each dependent variable over time among these Republican respondents.

Affect

COVID-19 Fear Across time and controlling for covariates, Trump Republicans reported significantly less COVID-19 fear than non-Trump Republicans, $\beta = -.20$, $SE = .04$, 95% CI [−.27, −.13], $p < .001$. There was also an overall decrease in COVID-19 fear from Wave 1 to Wave 2, $\beta = -.14$, $SE = .05$, 95% CI [−.24, −.03], $p = .008$. There was a significant Trump support by time interaction among Republicans. Trump Republicans reported significantly less fear of COVID-19 over time compared to non-Trump Republicans, $\beta = -.18$, $SE = .06$, 95% CI [−.30, −.07], $p = .002$ (Figure 2a; Table S7 in the online supporting information). Analysis of simple slopes showed that Trump Republicans were less fearful of COVID-19 than non-Trump Republicans at both time points, and this difference strengthened over time, Wave 1: $\beta = -.08$, $SE = .05$, 95% CI [−.17, .03], $p = .142$, Wave 2: $\beta = -.26$, $SE = .04$, 95% CI [−.34, −.18], $p < .001$.

Cognition

COVID-19 Risk Perceptions COVID-19 risk-perception results were mixed. Across time and controlling for covariates, Trump Republicans thought they were less likely to become infected with COVID than non-Trump Republicans, $\beta = -.16$, $SE = .05$, 95% CI [−.25, −.07], $p < .001$. There was also an overall decrease in perceived likelihood of COVID-19 infection from Wave 1 to Wave 2, $\beta = -.33$, $SE = .06$, 95% CI [−.45, −.22], $p < .001$. There was no Trump support by time interaction on perceived COVID-19 infection risk, $\beta = -.07$, $SE = .07$, 95% CI [−.21, .07], $p = .315$ (Figure 2b; Table S8 in the online supporting information), suggesting that change in COVID-19-infection risk perceptions was not dependent on strength of political identity. Analysis of simple slopes showed that there was no difference between Trump and non-Trump Republicans in COVID-19-infection risk perceptions at Wave 1, $\beta = -.11$, $SE = .06$, 95% CI [−.22, .004], $p = .058$, but a significant difference emerged at Wave 2, $\beta = -.16$, $SE = .05$, 95% CI [−.25, −.07], $p = .001$.

Similarly across time and controlling for covariates, Trump Republicans thought they were less likely to die from COVID-19 than non-Trump Republicans, $\beta = -.16$, $SE = .04$, 95% CI [−.23, −.09], $p < .001$. There was also an overall decrease in perceived risk of death from COVID-19, $\beta = -.13$, $SE = .06$, 95% CI [−.23, −.02], $p = .022$. There was no Trump support by time interaction on perceived risk of death from COVID-19, $\beta = .02$, $SE = .06$, 95% CI [−.10, .15], $p = .722$ (Figure 2c; Table S9 in the online supporting information), suggesting that change in COVID-19-death risk perceptions over time was not dependent on strength of political identity. Analysis of simple slopes showed that Trump Republicans consistently perceived

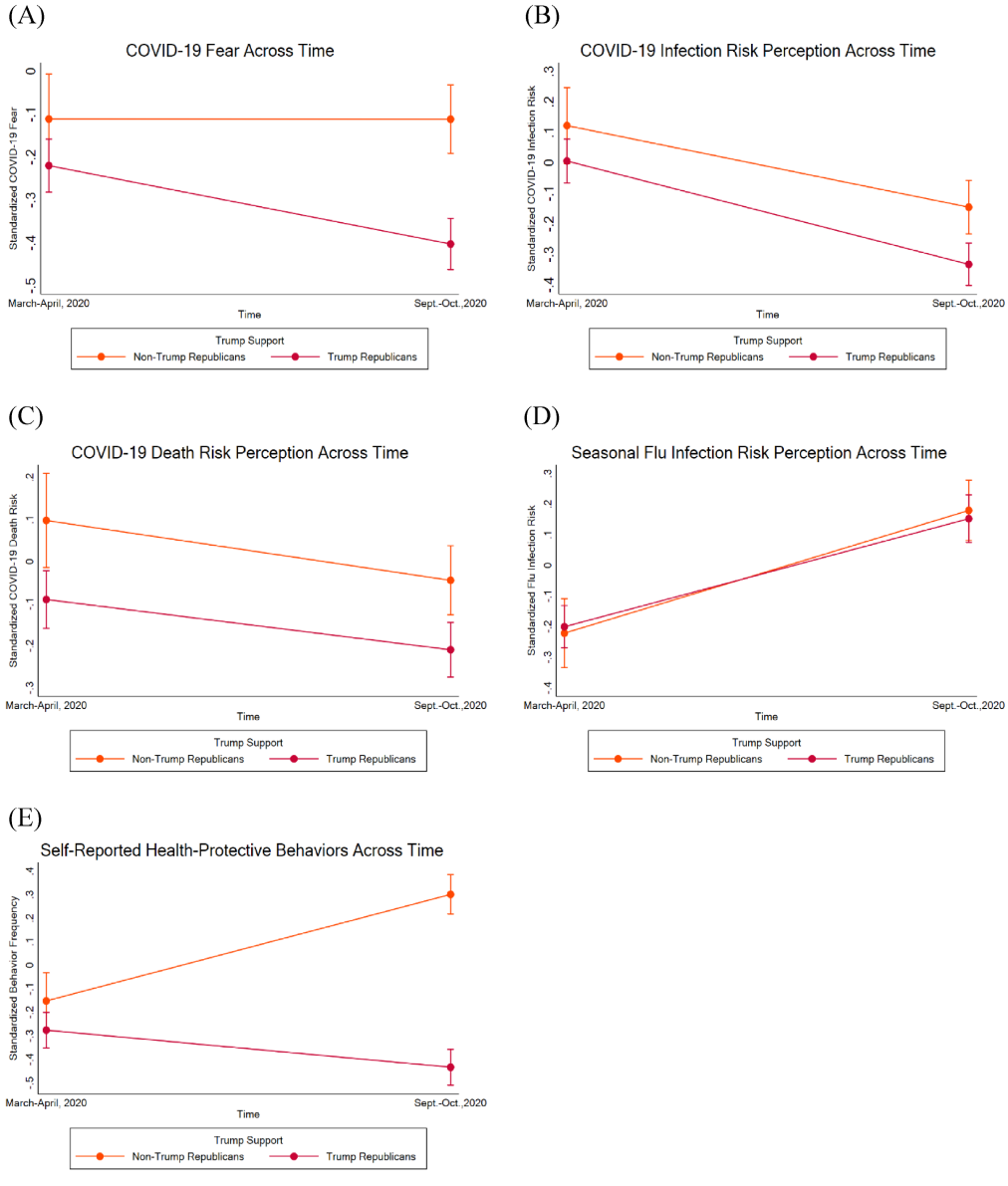

Figure 2. Mixed effects models predicting standardized (a) COVID-19 fear, (b) COVID-19-infection risk perception, (c) COVID-19-death risk perception, (d) seasonal flu-infection risk perception, and (e) self-reported health-protective behaviors from the interaction between Trump support and time, controlling for covariates; Bars = 95% confidence intervals; Time 1 (March–April 2020) Republican subsample n = 1,822, Time 2 (September–October 2020) Republican subsample n = 2,050.

significantly less COVID-19-death risk than non-Trump Republicans at both time points, and this difference remained stable over time, Wave 1: $\beta = -.18$, $SE = .05$, 95% CI [−.28, −.07], $p = .001$, Wave 2: $\beta = -.15$, $SE = .04$, 95% CI [−.24, −.06], $p = .001$.

Seasonal Flu Risk Perceptions Unlike strength of political-identity results, there was no significant difference in perceived risk of seasonal flu infection between Trump and non-Trump Republicans across time and controlling for covariates, $\beta = .02$, $SE = .04$, 95% CI [−.06, .09], $p = .707$. There was an overall increase in perceived flu-infection risk, $\beta = .35$, $SE = .06$, 95% CI [.24, .48], $p < .001$. There was no Trump support by time interaction on perceived risk of seasonal flu infection, $\beta = -.04$, $SE = .07$, 95% CI [−.19, .10], $p = .511$ (Figure 2d; Table S10 in the online supporting information). Analysis of simple slopes showed that there was no statistically significant difference between Trump and non-Trump Republicans in COVID-19-infection risk perceptions at either time point, and these coherent perceptions remained stable over time, Wave 1: $\beta = .03$, $SE = .05$, 95% CI [−.07, .14], $p = .517$, Wave 2: $\beta = -.005$, $SE = .06$, 95% CI [−.11, .11], $p = .933$.

Behaviors

Reported Health-Protective Behaviors Across time and controlling for covariates, Trump Republicans reported performing fewer COVID-19-related health-protective behaviors than non-Trump Republicans, $\beta = -.45$, $SE = .04$, 95% CI [−.53, −.37], $p < .001$. There was no main effect of time, $\beta = .01$, $SE = .06$, 95% CI [−.11, .14], $p = .855$. There was, however, a significant Trump support by time interaction on reported health-protective behaviors. Trump Republicans reported significantly fewer health-protective behaviors over time than non-Trump Republicans, $\beta = -.61$, $SE = .07$, 95% CI [−.75, −.47], $p < .001$ (Figure 2e; Table S11 in the online supporting information). Analysis of simple slopes showed that Trump Republicans reported significantly fewer health-protective behaviors at both time points, and there was a large increase in this difference over time, Wave 1: $\beta = -.08$, $SE = .06$, 95% CI [−.20, .04], $p = .177$, Wave 2: $\beta = -.68$, $SE = .05$, 95% CI [−.77, −.58], $p < .001$.

Prospective COVID-19 Vaccine Intentions

Finally, we examined polarized attitudes about vaccine hesitancy by conducting OLS regressions predicting Wave 2 likelihood of getting the COVID-19 vaccine from prepandemic strength of political identity and prepandemic 2016 U.S. presidential election vote, controlling for the same covariates as the prior models. Results illustrate that self-identified political identities from prior to the COVID-19 pandemic prospectively predicted participants' reported likelihood of getting the COVID-19 vaccine 6 months into the pandemic. Stronger identification as a Republican before the pandemic predicted decreased reports of the likelihood of getting the vaccine at Wave 2, $\beta = -.19$, $SE = .02$, 95% CI [−.23, −.16], $p < .001$[2] (Figure 3a; Table S12 in the online supporting information). There were also differences among Republicans in COVID-19 vaccine hesitancy by prepandemic 2016 Trump support. Compared to non-Trump Republicans, Trump Republicans reported they were significantly less likely to intend to get the COVID-19 vaccine, $\beta = -.38$, $SE = .07$, 95% CI [−.51, −.25], $p < .001$ (Figure 3b; Table S14).

[2]This result becomes nonsignificant after adding prepandemic religiosity and religion and Wave 2 trust in scientists and conspiratorial thinking to the model, $\beta = -.04$, $SE = .02$, 95% CI [−.08, .001], $p = .053$ (Table S13 in the online supporting information).

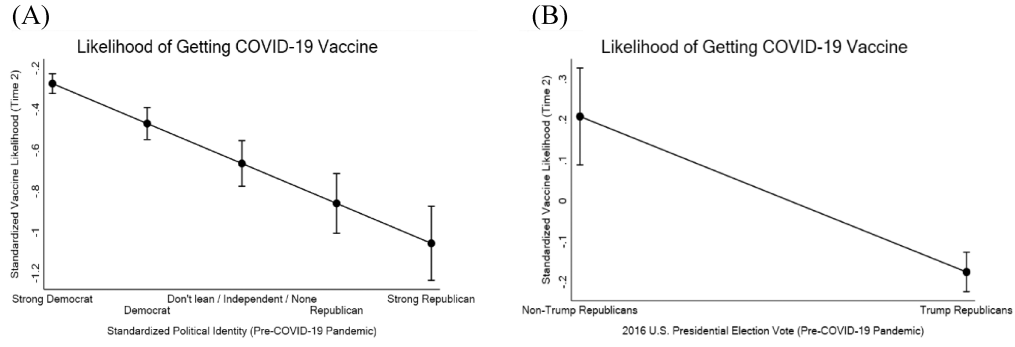

Figure 3. Ordinary least square (OLS) regressions predicting self-reported likelihood of getting the COVID-19 vaccine at Wave 2 from pre-COVID-19 pandemic (a) strength of political identity and (b) 2016 U.S. Presidential election Trump vote, controlling for covariates; Bars = 95% confidence intervals; Wave 1 (March–April 2020) N = 6514, Wave 2 (September–October 2020) N = 5,661; Wave 1 (March–April 2020) Republican subsample n = 1,822, Wave 2 (September–October 2020) Republican subsample n = 2,050.

Discussion

The politicization of major threats is a growing issue in modern society, especially in the West. Politically driven responses to threats such as climate change or global pathogen outbreaks have important implications for public health, policy, and national security in devising effective strategies to combat the threat. To ameliorate the effects of politically motivated responses to pathogens, it is necessary to understand how such politicized perceptions and responses play out over time. Some prior research suggests that competing factions should converge in their responses to superordinate threats with increasing shared threat experience (Kubin et al., 2021; Sherif, 1958). However, the current study suggests that political identities and elite cues, particularly within a polarized culture, are important factors that may lead to divergent threat perceptions and responses that are resilient over 6 months.

We demonstrate that self-identified strength of political identity measured *prior to* the COVID-19 pandemic predicted increasingly divergent COVID-19 fear (affect), perceived risk of death from COVID-19 (cognition), and self-reported health-protective behaviors (behavior), over the first 6 months of the COVID-19 pandemic, controlling for demographics, prior mental health diagnoses, and self-reported daily hours of COVID-19-related media exposure. These results add important generalizability to recent research on politicized COVID-19 responses by following a large probability-based U.S. nationally representative sample over the first 6 months of the pandemic, with underrepresented groups (racial/ethnic, geographic, etc.) included proportionally to their representation in the U.S. population. Moreover, most empirical work demonstrating politically polarized U.S. COVID-19 responses (Allcott et al., 2020; Bruine de Bruin et al., 2020; Canes-Wrone et al., 2020; Douglas & Sutton, 2022; Gadarian et al., 2021; Gollwitzer et al., 2020; Kim & Kwan, 2021; Leventhal et al., 2021; Moore et al., 2021; Ruisch et al., 2021) either used smaller nonprobability samples, investigated change over a shorter period of time towards the beginning of the pandemic, failed to consider a nonpoliticized comparison pathogen threat, measured politics and COVID-19 responses concurrently during the pandemic, and/or measured only one or two COVID-19-related outcomes. Our findings add to the literature by overcoming these limitations, using a larger probability-based nationally representative sample, investigating change over a longer

period of time, demonstrating politically stable perceptions of infection risk from a nonpoliticized pathogen (the seasonal flu), using prospective measures of political identity and Trump-support predictors collected prior to the onset of the pandemic, and simultaneously investigating a wide array of COVID-19 perceptions and responses. Our results thus confirm, using the most stringent survey methodological approach to date, the deeply politicized nature of emotional, cognitive, and behavioral responses to COVID-19 in the U.S. population. Despite the methodological rigor of the findings we present, one limitation is that we are unable to specifically examine the mechanism through which political identities and elite cues influenced COVID-19 responses. Future experimental research with random assignment using a similar large probability-based sample would provide a complimentary follow-up study by illuminating specifically how elite cues affect partisan responses to unfamiliar and deadly pathogens.

In a nation as polarized along political lines as the United States, people may turn to political ingroups and authorities for guidance on how to respond to societal threats. The COVID-19 outbreak took place in the lead up to a contentious U.S. election, where Republicans were motivated to strengthen their power across government branches, and Democrats were motivated to unseat Republicans. Throughout this power struggle, the threat of COVID-19 became politicized, with Republican leaders, including then President Trump, downplaying the seriousness of COVID-19, and Democratic leaders emphasizing the severity of the threat (Green et al., 2020). To further examine the importance of group leadership in threat responses, we investigated whether responses within Trump's own party were polarized. Results illustrated that, even among Republicans who reported weaker COVID-19 responses than Democrats, affect and behaviors diverged over time, with Trump Republicans reporting less COVID-19 fear and fewer health-protective behaviors than non-Trump Republicans as the pandemic progressed. This supports research on the influence of partisan elite messages on public opinion when confronted by novel issues (Berinsky, 2007; Merkley & Stecula, 2018; Tesler, 2018; Zaller, 1992) and speaks to the power of authority in shaping perceptions of real and deadly threats. Future research should further investigate the circumstances in which people defer threat perception to their leaders and what dispositional traits may underlie such deference in situations with deadly consequences.

Our results have important implications for public health and epidemiology. Understanding responses to pathogen threats over time is important for strategizing and deploying community, national, and international efforts to combat disease spread. Our results suggest that epidemiologists and public health officials should consider better tailoring their messages to the multifaceted political and cultural narratives of their target audiences to increase compliance (Gollust et al., 2020), particularly when battling unfamiliar pathogens. For example, given that U.S. Republicans and Democrats rely on different moral intuitions (Graham et al., 2009), public health officials might benefit from framing compliance messages in strongly Republican areas using authority, loyalty, and purity-based terms and in strongly Democratic areas using harm and care-based terms (Feinberg & Willer, 2019). Further research could test this possibility and focus on illuminating additional psychological underpinnings of population-level pathogen-response variability.

An important weapon in the fight against viral pathogen threats is vaccination. Recent research has documented politicized intentions to receive the COVID-19 vaccine in the United States (Callaghan et al., 2021; Fridman et al., 2021; Largent et al., 2020; Latkin et al., 2021; Ruiz & Bell, 2021; Viswanath et al., 2021); however, most of this research relies on cross-sectional data or longitudinal data that spanned less than a month during the pandemic. Moreover, prior studies have

documented the effects of partisan elite cues on COVID-19 intentions, where endorsement of the vaccine from a high-ranking Center for Disease Prevention and Control figure, Dr. Anthony Fauci, can lead to increased vaccine uptake (Bokemper et al., 2021) and Trump's anti-vaccination tweets led Republicans to express increased concern about the vaccine (Hornsey et al., 2020). We add to this literature by prospectively demonstrating the effect of self-identified strength of political party identity and support for Trump measured prior to the COVID-19 pandemic on COVID-19 vaccination intentions 6 months into the pandemic. These results illustrate the importance of political elite messaging and cooperation in implementing solutions to mitigate novel life-threatening pathogens.

An increasingly global and interconnected society means a greater likelihood of disease spreading beyond borders (Kilpatrick, 2011). Estimating population-level differences in politicized responses over time could provide insights into best strategies for implementing population-specific public health campaigns. The present research demonstrates that, within politically polarized societies, political subcultures and authorities play a prominent role in how people perceive and respond to unfamiliar and potentially deadly pathogens as such threats unfold.

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CONFLICT OF INTEREST

All authors declare no competing interests.

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Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's web site:

Table S1. Descriptive Statistics

Table S2. Mixed Effects Model Predicting Standardized COVID-19 Fear from Standardized Strength of Political Identity × Time

Table S3. Mixed Effects Model Predicting Standardized Perceived Likelihood (%) of COVID-19 Infection from Standardized Strength of Political Identity × Time

Table S4. Mixed Effects Model Predicting Standardized Perceived Likelihood (%) of Death from COVID-19 from Standardized Political Identity × Time

Table S5. Mixed Effects Model Predicting Standardized Perceived Likelihood (%) of Seasonal Flu Infection from Standardized Strength of Political Identity × Time

Table S6. Mixed Effects Model Predicting Standardized Self-Reported Health-Protective Behaviors Frequency from Standardized Strength of Political Identity × Time

Table S7. Mixed Effects Model Predicting Standardized COVID-19 Fear from Trump Support × Time

Table S8. Mixed Effects Model Predicting Standardized Perceived Likelihood (%) of COVID-19 Infection from Trump Support × Time

Table S9. Mixed Effects Model Predicting Standardized Perceived Likelihood (%) of Death from COVID-19 from Trump Support × Time

Table S10. Mixed Effects Model Predicting Standardized Perceived Likelihood (%) of Seasonal Flu Infection from Trump Support × Time

Table S11. Mixed Effects Model Predicting Standardized Self-Reported Health-Protective Behaviors Frequency from Trump Support × Time

Table S12. Ordinary Least Squares (OLS) Regression Predicting Wave 2 Standardized Likelihood of Getting the COVID-19 Vaccine from Pre-Pandemic Standardized Strength of Political Identity

Table S13. Ordinary Least Squares (OLS) Regression Predicting Wave 2 Standardized Likelihood of Getting the COVID-19 Vaccine from Pre-Pandemic Standardized Strength of Political Identity—Additional Reviewer-Requested Covariates

Table S14. Ordinary Least Squares (OLS) Regression Predicting Wave 2 Standardized Likelihood of Getting the COVID-19 Vaccine from 2016 Trump Support

Table S15. Ordinary Least Squares (OLS) Regression Predicting Wave 2 Standardized Likelihood of Getting the COVID-19 Vaccine from 2016 Trump Support—Additional Reviewer-Requested Covariates