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Publication Date

2023

DOI

10.1111/pops.12894

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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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This study was supported by U.S. National Science Foundation Grants SES 2026337 and SES 2049932 to RCS, EAH, and DRG. DRG was supported by National Institute of Health K01 MD013910. The authors would like to thank the NORC AmeriSpeak team of J. Michael Dennis and David Reisner for survey research and sampling guidance, for preparation of the online surveys, and for preparation of the data files. We also thank Baruch Fischhoff for designing the risk items and Rebecca R. Thompson and Nickolas M. Jones for their contributions to the larger project from which these data were drawn.

Author Contributions: DPR: Conceptualization, Data curation, Formal analysis, Visualization, Writing – original draft, Writing – review and editing. EAH: Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Writing – review and editing. DRG: Conceptualization, Data curation, Methodology, Funding acquisition, Project administration, Writing – review and editing. PHD: Conceptualization, Writing – review and editing. RCS: Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Writing – review and editing.

All authors declare no competing interests.

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Abstract

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 six 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 six 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 non-politicized pathogen, the flu. Finally, political identity and Republican Trump support prospectively predicted vaccine intentions six months into the pandemic.

Keywords: politics, risk, pathogen, polarization, public health, elite cues

Highlights

- Stronger identification as Republican, and Trump support among Republicans, predicted weaker COVID-19 responses over the first six months of the pandemic.
- Stronger identification as Republican prior to the pandemic, and 2016 U.S. Presidential election support for Trump, prospectively predicted COVID-19 vaccine intentions six months into the pandemic.
- Results suggest that political identity and elite cues are important predictors of longitudinal responses to unfamiliar deadly pathogen threats and vaccine uptake in a polarized society.
- Findings suggest that political elites influence public opinions of major threats and that political influences be considered when communicating public health risks.

Politicization of a pathogen: A prospective longitudinal study of COVID-19 responses in a nationally representative U.S. sample

As our society becomes increasingly global, threats like widespread pathogen outbreaks are amplified (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 increasingly difficult in Western democracies as increasingly 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., 2018). 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; Romer & Jamieson, 2021; Mitchell et al., 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., 2021; Green et al., 2020). An important research question triggered 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 consensual 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 U.S. 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 be 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 perception over time less likely and partisan interpretation of the threat more resilient. This may be particularly true for individuals supportive of Donald Trump, who as President of the U.S. for the first half 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, 2021, 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 non-supporters 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, 2021; 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 be motivated specifically by Trump and Republican elite cues (Alcott et al., 2020; Bruine de Bruin et al., 2020; Conway et al., 2021; Douglas & Sutton, 2022; Engel-Rebitzer et al., 2022; Gadarian et al., 2020; 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., Alcott et al., 2020; Gadarian et

- al., 2020; Kaushal et al., 2022; Rodriguez et al., 2022), which can lead to sampling bias and limits generalizability to the broader U.S. population (Bradley et al., 2021; Pierce et al., 2020).
- 2) Most prior research did not compare COVID-19 outcomes to a non-politicized control pathogen to establish polarization (e.g., Alcott 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 two to three months of the pandemic only (e.g., Alcott 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., Alcott 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., Alcott et al., 2020; Gollwitzer et al., 2020; Grossman et al., 2020; Kim & Kwan, 2021; Rodriguez et al., 2022). Yet these measures of political identity (e.g., county-level polling or voting behavior) fail to account for the heterogeneity within blocks of voters; person-level analyses that can include individual-level confounds are essential for isolating specific effects of politicization 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 overcomes these limitations by investigating change in polarized affective, cognitive, and behavioral COVID-19 responses over a six-month period at the individual-level of analysis using a large probability-based nationally representative U.S. sample. Moreover, we *prospectively* measure 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 six 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 threat it posed became clearer toward 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), and 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 six 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 three 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 ($N = 6,501$) six 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 four 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 matches the February 2020 U.S. Census data (Holman et al., 2020; see Supplemental Material for more about statistical weighting). Descriptive statistics are provided in Table S1. Participants received a small compensation equivalent to \$4 for each wave. All procedures for this study were approved by the Institutional Review Board of the University of California, Irvine.

Materials

Outcome Variables

COVID-19 Fear (Wave 1 & 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 $\alpha = .92$, Wave 2 $\alpha = .91$.

Risk Perceptions (Wave 1 & 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 & 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 the Coronavirus, avoiding public places, avoiding public transportation, cancelling 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 (Pre-pandemic & Wave 2). At least three 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 (*Don't 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 to one party typically vote and hold preferences to party identifiers, see Keith et al., 1986; Klar & Krupikov, 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 (Pre-pandemic & 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 vs. 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 (Pre-pandemic, Wave 1, & 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 pre-pandemic self-reported prior mental health diagnoses¹.

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

Linear mixed effects modeling was used to test for change over time within individuals by modeling the interaction between each time-varying 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, 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 Supplemental Material for additional model specification details.

Lastly, ordinary least square (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 pre-pandemic 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 lesser 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 six 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). 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 in the subsequent three 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 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), suggesting that polarized COVID risk perceptions did not change over time.

Similarly, 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, $\beta = -.11$, $SE_{Robust} = .01$, 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 six 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). 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 three 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), suggesting that change in flu risk perceptions over time was not dependent on political identity.

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). Analysis of simple slopes showed that the 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], $p < .001$.

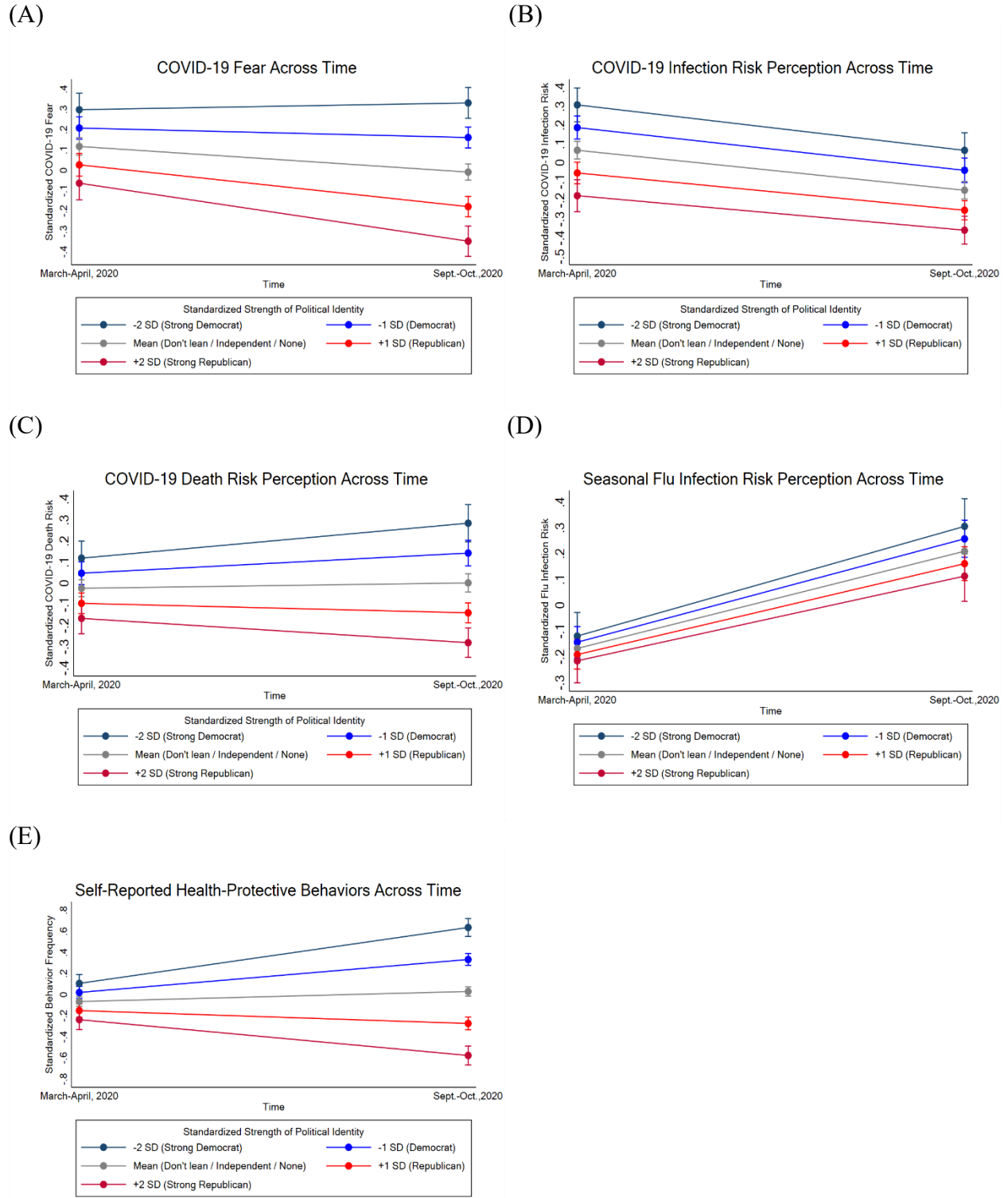


Figure 1. Mixed effects models predicting standardized (A) COVID-19 fear, (B) COVID-19 infection risk perception, (C) COVID-19 death risk perception, (D) seasonal flu infection risk

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.

Trump Support

To examine the role of partisan elite cues in politicizing COVID-19 responses, we next stratified participants based on their strength of political identity score by subsampling only those who identified as greater than the midpoint (Republican or Strong Republican) on the strength of 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). 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), suggesting that change in COVID-19 infection risk perceptions was not dependent on strength of political identity.

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), suggesting that change in COVID death risk perceptions over time was not dependent on strength of political identity.

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).

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). 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], $p < .001$.

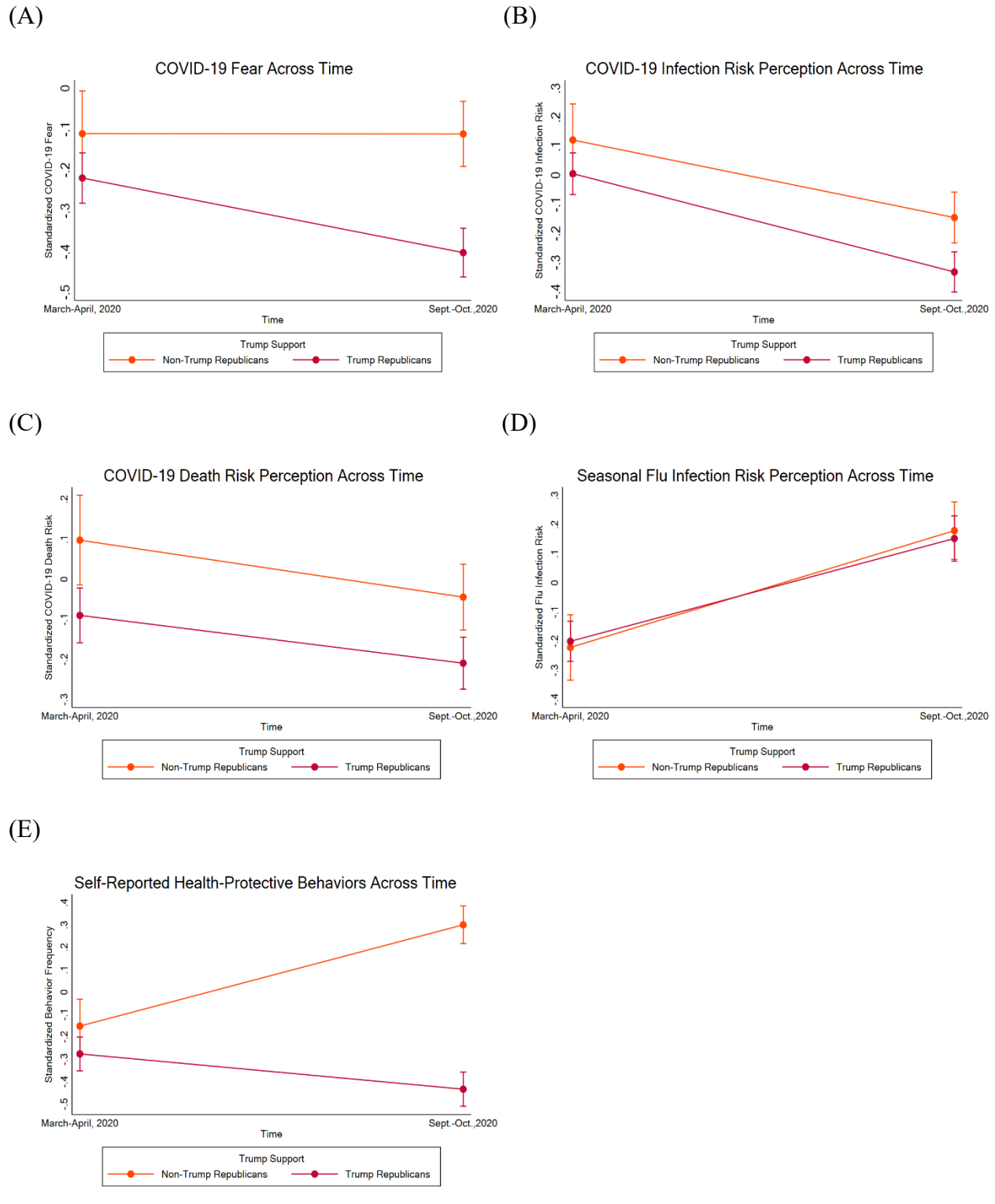


Figure 2. Mixed effects models predicting standardized (A) COVID-19 fear, (B) COVID-19 infection risk perception, (C) COVID-19 death risk perception, (D) seasonal flu infection risk

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 $n = 2,050$.

Prospective COVID-19 Vaccine Intentions

Finally, we examined polarized attitudes about vaccine hesitancy by conducting linear regressions predicting Wave 2 likelihood of getting the COVID-19 vaccine from pre-pandemic strength of political identity and pre-pandemic 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 six months into the pandemic. Stronger identification as 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). There were also differences among Republicans in COVID-19 vaccine hesitancy by pre-pandemic 2016 Trump support. Compared to non-Trump Republicans, Trump Republicans reported they were significantly less likely to get the COVID-19 vaccine, $\beta = -.38$, $SE = .07$, 95% CI[-.51, -.25], $p < .001$ (Figure 3B; Table S14).

² This result becomes non-significant after adding pre-pandemic 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).

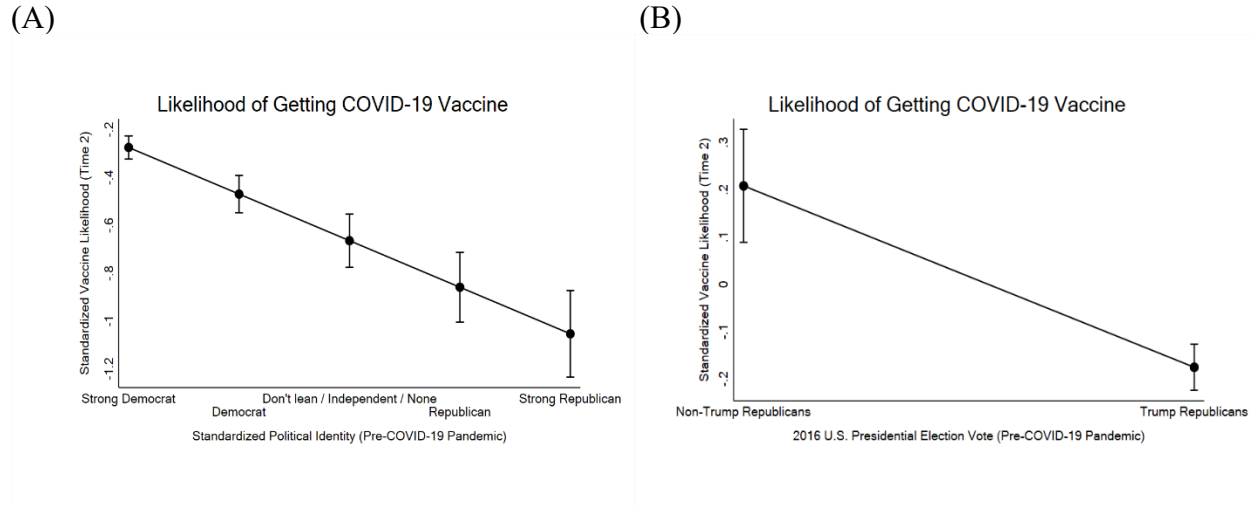


Figure 3. Ordinary least square (OLS) regressions predicting self-reported likelihood of getting the COVID-19 vaccine at Wave 2 from pre-COVID-19 pandemic (A) pre-pandemic strength of political identity and (B) pre-pandemic 2016 U.S. Presidential election Trump vote, controlling for covariates; Bars = 95% confidence intervals; Wave 1 (March-April 2020) $N = 6,514$, 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 (Kurbin et al., 2020; 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 six 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 six 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 six 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 (Alcott et al., 2020; Bruine de Bruin et al., 2020; Canes-Wrone et al., 2020; Douglas & Sutton, 2022; Gadarian et al., 2020; Gollwitzer et al., 2020; Kim & Kwan, 2021; Leventhal et al., 2021; Moore et al., 2021; Ruisch et al., 2021) either uses smaller non-probability samples, investigates change over a shorter period of time towards the beginning of the pandemic, fails to consider a non-politicized comparison pathogen threat, measures politics and COVID-19 responses concurrently during the pandemic, and/or measures only one or two COVID-19-related outcomes. Our findings add to the literature by overcoming these limitations by using a larger probability-based nationally representative sample, investigating change over a longer period of time, demonstrating politically coherent perceptions of infection risk from a non-politicized 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 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 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 U.S., 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-supporting 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 of 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 should 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 U.S. (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 span 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 Trumps 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 six 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.

Data Accessibility Statement

The methods and analyses in this article were not preregistered. Data and code are available upon request to the corresponding authors.

References

- Allcott, H., Boxell, L., Conway, J., Gentzkow, M., Thaler, M., & Yang, D. (2020). Polarization and public health: Partisan differences in social distancing during the Coronavirus pandemic. *Journal of Public Economics*, *191*, 104254.
<https://doi.org/10.1016/j.jpubeco.2020.104254>
- Berinsky, A. J. (2007). Assuming the costs of war: Events, elites, and American public support for military conflict. *The Journal of Politics*, *68*(4), 975-997.
<https://doi.org/10.1111/j.1468-2508.2007.00602.x>
- Bertin, P., Nera, K., & Delouvée, S. (2020). Conspiracy beliefs, rejection of vaccination, and support for hydroxychloroquine: A conceptual replication-extension in the COVID-19 pandemic context. *Frontiers in Psychology*, *11*, 2471.
<https://doi.org/10.3389/fpsyg.2020.565128>
- Bokemper, S. E., Huber, G. A., Gerber, A. S., James, E. K., & Omer, S. B. (2021). Timing of COVID-19 vaccine approval and endorsement by public figures. *Vaccine*, *39*(5), 825-829. <https://doi.org/10.1016/j.vaccine.2020.12.048>
- Box-Steffensmeier, J. M., & Moses, L. (2021). Meaningful messaging: Sentiment in elite social media communication with the public on the COVID-19 pandemic. *Science Advances*, *7*(29), eabg2898. <https://doi.org/10.1126/sciadv.abg2898>
- Bradley, V. C., Kuriwaki, S., Isakov, M., Sejdinovic, D., Meng, X. L., & Flaxman, S. (2021). Unrepresentative big surveys significantly overestimated US vaccine uptake. *Nature*, *600*(7890), 695-700. <https://doi.org/10.1038/s41586-021-04198-4>
- Bruine de Bruin, W., Saw, H. W., & Goldman, D. P. (2020). Political polarization in US

- residents' COVID-19 risk perceptions, policy preferences, and protective behaviors. *Journal of Risk and Uncertainty*, 61(2), 177-194. <https://doi.org/10.1007/s11166-020-09336-3>
- Callaghan, T., Moghtaderi, A., Lueck, J. A., Hotez, P., Strych, U., Dor, A., Fowler, E. F., & Motta, M. (2021). Correlates and disparities of intention to vaccinate against COVID-19. *Social Science & Medicine*, 272, 113638. <https://doi.org/10.1016/j.socscimed.2020.113638>
- Canes-Wrone, B., Rothwell, J. T., & Makridis, C. (2020). Partisanship and policy on an emerging issue: Mass and elite responses to COVID-19 as the pandemic evolved. *Social Science Research Network*. <http://dx.doi.org/10.2139/ssrn.3638373>
- Conway III, L. G., Woodard, S. R., Zubrod, A., & Chan, L. (2021). Why are conservatives less concerned about the coronavirus (COVID-19) than liberals? Comparing political, experimental, and partisan messaging explanations. *Personality and Individual Differences*, 183, 111124.
- Darius, P., & Urquhart, M. (2021). Disinformed social movements: A large-scale mapping of conspiracy narratives as online harms during the COVID-19 pandemic. *Online Social Networks and Media*, 26, 100174. <https://doi.org/10.1016/j.osnem.2021.100174>
- Ditto, P. H., Liu, B. S., Clark, C. J., Wojcik, S. P., Chen, E. E., Grady, R. H., Celniker, J. B., & Zinger, J. F. (2018). At least bias is bipartisan: A meta-analytic comparison of partisan bias in liberals and conservatives. *Perspectives on Psychological Science*, 14(2), 273-291. <https://doi.org/10.1177/1745691617746796>
- Douglas, K. M., & Sutton, R. M. (2022). Toeing the party line: Politically driven responses to the Coronavirus pandemic in the USA. *Journal of Social and Political Psychology*, 10(1),

323-334. <https://doi.org/10.5964/jspp.6089>

Druckman, J., Peterson, E., & Slothuus, R. (2013). How elite partisan polarization affects public opinion formation. *American Political Science Review*, *107*(1), 57-79.

<https://doi.org/10.1017/s0003055412000500>

Edelson, J., Alduncin, A., Krewson, C., Sieja, J. A., & Uscinski, J. E. (2017). The effect of conspiratorial thinking and motivated reasoning on belief in election fraud. *Political Research Quarterly*, *70*(4), 933-946. <https://doi.org/10.1177/1065912917721061>

Engel-Rebitzer, E., Stokes, D. C., Meisel, Z. F., Purtle, J., Doyle, R., & Buttenheim, A. M. (2021). Partisan differences in legislators' discussion of vaccination on Twitter during the COVID-19 era: Natural language processing analysis. *JMIR Infodemiology* *2*(1), e32372.

<https://doi.org/10.2196/32372>

Ericson, J. D., Albert, W. S., & Duane, J.-N. (2022). Political affiliation moderates subjective interpretations of COVID-19 graphs. *Big Data & Society*, *9*(1), 1-16.

<https://doi.org/10.1177/20539517221080678>

Feinberg, M., & Willer, R. (2019). Moral reframing: A technique for effective and persuasive communication across political divides. *Social and Personality Psychology Compass*, *13*(12), e12501. <https://doi.org/10.1111/spc3.12501>

Fridman, A., Gershon, R., & Gneezy, A. (2021). COVID-19 and vaccine hesitancy: A longitudinal study. *PLoS ONE*, *16*(4), e0250123.

<https://doi.org/10.1371/journal.pone.0250123>

Gadarian, S. K., Goodman, S. W., & Pepinsky, T. B. (2021). Partisanship, health behavior, and policy attitudes in the early stages of the COVID-19 pandemic. *PLoS ONE*, *16*(4):

e0249596. <https://doi.org/10.1371/journal.pone.0249596>

- Gollust, S. E., Nagler, R. H., & Fowler, E. F. (2020). The emergence of COVID-19 in the US: A public health and political communication crisis. *Journal of Health, Politics and Law*, 45(6), 967-981. <https://doi.org/10.1215/03616878-8641506>
- Gollwitzer, A., Martel, C., Brady, W. J., Pärnamets, P., Freedman, I. G., Knowles, E. D., & Van Bavel, J. J. (2020). Partisan differences in physical distancing are linked to health outcomes during the COVID-19 pandemic. *Nature Human Behaviour*, 4(11), 1186-1197. <https://doi.org/10.1038/s41562-020-00977-7>
- Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, 96(5), 1029-1046. <https://doi.org/10.1037/a0015141>
- Green, J., Edgerton, J., Naftel, D., Shoub, K., & Cranmer, S. J. (2020). Elusive consensus: Polarization in elite communication on the COVID-19 pandemic. *Science Advances*, 6(28), eabc2717. <https://doi.org/10.1126/sciadv.abc2717>
- Grossman, G., Kim, S., Rexer, J. M., & Thirumurthy, H. (2020). Political partisanship influences behavioral responses to governors' recommendations for COVID-19 prevention in the United States. *Proceedings of the National Academy of Sciences of the United States of America*, 117(39), 24144-24153. <https://doi.org/10.1073/pnas.200783511>
- Haberman, M. (2020, September 9). Trump admits downplaying the virus knowing it was 'deadly stuff'. *The New York Times*. <https://www.nytimes.com/2020/09/09/us/politics/woodward-trump-book-virus.html>
- Hart, P. S., Chinn, S., & Soroka, S. (2020). Politicization and polarization in COVID-19 news coverage. *Science Communication*, 42(5), 679-697. <https://doi.org/10.1177/1075547020950735>

- Holman, E. A., Silver, R. C., Poulin, M. J., Andersen, J., Gil-Rivas, V., & McIntosh, D. N. (2008). Terrorism, acute stress, and cardiovascular health: A 3-year national study following the September 11th attacks. *Archives of General Psychiatry, 65*, 73–80. <https://www.doi.org/10.1001/archgenpsychiatry.2007.6>
- Holman, E. A., Thompson, R. R., Garfin, D. R., & Silver, R. C. (2020). The unfolding COVID-19 pandemic: A probability-based, nationally representative study of mental health in the United States. *Science Advances, 6*(42), eabd5390. <https://doi.org/10.1126/sciadv.abd5390>
- Hornsey, M. J., Finlayson, M., Chatwood, G., & Begeny, C. T. (2020). Donald Trump and vaccination: The effect of political identity, conspiracist ideation and presidential tweets on vaccine hesitancy. *Journal of Experimental Social Psychology, 88*, 103947. <https://doi.org/10.1016/j.jesp.2019.103947>
- Jamieson, K. H., & Albarracin, D. (2020). The relation between media consumption and misinformation at the outset of the SARS-CoV-2 pandemic in the US. *The Harvard Kennedy School Misinformation Review, 1*(2), 1-22. <https://doi.org/10.37016/mr-2020-012>
- Jennings, W., Stoker, G., Bunting, H., Valgarðsson, V. O., Gaskell, J., Devine, D., McKay, L., & Mills, M. C. (2021). Lack of trust, conspiracy beliefs, and social media use predict COVID-19 vaccine hesitancy. *Vaccines, 9*(6), 593. <https://doi.org/10.3390/vaccines9060593>
- Jiang, X., Su, M. H., Hwang, J., Lian, R., Brauer, M., Kim, S., & Shah, D. (2021). Polarization

- over vaccination: Ideological differences in Twitter expression about COVID-19 vaccine favorability and specific hesitancy concerns. *Social Media & Society*, 7(3), 1-14.
<https://doi.org/10.1177/205630512111048413>
- Jones, B. (2022). *The changing political geography of COVID-19 over the last two years*. Pew Research Center. <https://www.pewresearch.org/politics/2022/03/03/the-changing-political-geography-of-covid-19-over-the-last-two-years/>
- Jurkowitz, M., & Mitchell, A. (2021). *Americans who relied most on Trump for COVID-19 news among least likely to be vaccinated*. Pew Research Center.
<https://www.pewresearch.org/fact-tank/2021/09/23/americans-who-relied-most-on-trump-for-covid-19-news-among-least-likely-to-be-vaccinated/>
- Kilpatrick, A. M. (2011). Globalization, land use, and the invasion of West Nile virus. *Science*, 334(6054), 323-327. <https://doi.org/10.1126/science.1201010>
- Kaushal, N., Lu, Y., Shapiro, R. Y., & So, J. (2022). American attitudes toward COVID-19: More Trumpism than partisanship. *American Politics Research*, 50(1), 67-82.
<https://doi.org/10.1177/1532673X211104625>
- Keith, B. E., Magleby, D. B., Nelson, C. J., Orr, E., Westlye, M. C., & Wolfinger, R. E. (1986). The partisan affinities of independent 'leaners'. *British Journal of Political Science*, 16(2), 155-185. <https://doi.org/10.1017/s0007123400003872>
- Kim, J., & Kwan, M.-P. (2021). The impact of the COVID-19 pandemic on people's mobility: A longitudinal study of the U.S. from March to September of 2020. *Journal of Transport Geography*, 93, 103039. <https://doi.org/10.1016/j.jtrangeo.2021.103039>

Klar, S. & Krupnikov, Y. (2018, October 17). How to win wing voters (and how to lose them).

The New York Times. <https://www.nytimes.com/2018/10/17/opinion/midterms-independents-swing-voters-.html>

Kreps, S. E., & Kriner, D. L. (2020). Model uncertainty, political contestation, and public trust in science: Evidence from the COVID-19 pandemic. *Science Advances*, 6(43), eabd4563.

<https://doi.org/10.1126/sciadv.abd4563>

Kubin, E., Puryear, C., Schein, C., & Gray, K. (2021). Personal experiences bridge moral and political divides better than facts. *Proceedings of the National Academy of Sciences of the United States of America*, 118(6), e2008389118.

<https://doi.org/10.1073/pnas.2008389118>

Kupchan, C. A., & Trubowitz, P. L. (2007). Dead center: The demise of liberal internationalism in the United States. *International Security*, 32(2), 7-44.

<https://doi.org/10.1162/isec.2007.32.2.7>

Largent, E. A., Persad, G., Sangenito, S., Glickman, A., Boyle, C., & Emanuel, E. J. (2020). US public attitudes toward COVID-19 vaccine mandates. *JAMA Network Open*, 3(12),

e2033324. <https://doi.org/10.1001/jamanetworkopen.2020.33324>

Latkin, C., Dayton, L. A., Yi, G., Konstantopoulos, A., Park, J., Maulsby, C., & Kong, X.

(2021). COVID-19 vaccine intentions in the United States, a social-ecological framework. *Vaccine*, 39(16), 2288-2294. <https://doi.org/10.1016/j.vaccine.2021.02.058>

Leventhal, A. M., Dai, H., Barrinton-Trimis, J. L., McConnell, R., Unger, J. B., Sussman, S., & Cho, J. (2021). Association of political party affiliation with physical distancing among

young adults during the COVID-19 pandemic. *JAMA Internal Medicine*, 181(3), 399-403. <https://doi.org/10.1001/jamainternmed.2020.6898>

- Loomba, S., de Figueiredo, A., Piatek, S. J., de Graaf, K., & Larson, H. J. (2021). Measuring the impact of COVID-19 vaccine misinformation on vaccination intent in the UK and USA. *Nature Human Behaviour*, 5(3), 337-348. <https://doi.org/10.1038/s41562-021-01056-1>
- MacCallum, R. C., Zhang, S., Preacher, K. J., & Rucker, D. D. (2002). On the practice of dichotomization of quantitative variables. *Psychological Methods*, 7(1), 19–40. <https://doi.org/10.1037/1082-989X.7.1.19>
- Markowitz, E., & Shariff, A. (2012). Climate change and moral judgement. *Nature Climate Change*, 2(4), 243-247. <https://doi.org/10.1038/nclimate1378>
- Merkley, E., & Stecula, D. A. (2018). Party elites or manufactured doubt? The informational context of climate change polarization. *Science Communication*, 40(2), 258-274. <https://doi.org/10.1177/1075547018760334>
- Miller, S. L., & Maner, J. K. (2012). Overperceiving disease cues: The basic cognition of the behavioral immune system. *Journal of Personality and Social Psychology*, 102(6), 1198–1213. <https://doi.org/10.1037/a0027198>
- Mitchell, A., Jurkowitz, M., Oliphant, J. B., & Shearer, E. (2021). *Republicans who relied on Trump for news in 2020 diverged from others in GOP in views of COVID-19, election*. Pew Research Center. <https://www.pewresearch.org/journalism/2021/02/22/republicans-who-relied-on-trump-for-news-in-2020-diverged-from-others-in-gop-in-views-of-covid-19-election/>
- Mitchell, A., & Liedke, J. (2022). *Attention to COVID-19 news increased slightly amid Omicron surge; partisans differ in views about the outbreak*. Pew Research Center. <https://www.pewresearch.org/fact-tank/2022/01/27/attention-to-covid-19-news-increased-slightly-amid-omicron-surge-partisans-differ-in-views-about-the-outbreak/>

- Moore, C. A., Ruisch, B. C., Granados Samayoa, J. A., Boggs, S. T., Ladanyi, J. T., & Fazio, R. H. (2021). Contracting COVID-19: A longitudinal investigation of the impact of beliefs and knowledge. *Scientific Reports, 11*(1), 20460. <https://doi.org/10.1038/s41598-021-99981-8>
- Pierce, M., McManus, S., Jessop, C., John, A., Hotopf, M., Ford, T., Hatch, S., Wessely, S., & Abel, K. M. (2020). Says who? The significance of sampling in mental health surveys during COVID-19. *The Lancet Psychiatry, 7*(7), 567–568. [https://doi.org/10.1016/S2215-0366\(20\)30237-6](https://doi.org/10.1016/S2215-0366(20)30237-6)
- Pew Research Center (2020). *Republicans, Democrats move even further apart in Coronavirus concerns*. <https://www.pewresearch.org/politics/2020/06/25/republicans-democrats-move-even-further-apart-in-coronavirus-concerns/>
- Pummerer, L., Böhm, R., Lilleholt, L., Winter, K., Zettler, I., & Sassenberg, K. (2021). Conspiracy theories and their societal effects during the COVID-19 pandemic. *Social Psychological and Personality Science, 13*(1), 49-59. <https://doi.org/10.1177/19485506211000217>
- Reddan, M. C., Wager, T. D., & Schiller, D. (2018). Attenuating neural threat expression with imagination. *Neuron, 100*(4), 994-1005. <https://doi.org/10.1016/j.neuron.2018.10.047>
- Rodriguez, C., G., Gadarian, S. K., Goodman, S. W., & Pepinsky, T. B. (2022). Morbid polarization: Exposure to COVID-19 and partisan disagreement about pandemic response. *Political Psychology*. <https://doi.org/10.1111/pops.12810>
- Romer, D., & Jamieson, K.H. (2020). Conspiracy theories as barriers to controlling the spread of COVID-19 in the US. *Social Science & Medicine, 263*, 113356. <https://doi.org/10.1016/j.socscimed.2020.113356>

- Romer, D., & Jamieson, K.H. (2021). Conspiratorial thinking, selective exposure to conservative media, and response to COVID-19 in the US. *Social Science & Medicine*, 291, 114480. <https://doi.org/10.1016/j.socscimed.2021.114480>
- Ruisch, B. C., Moore, C., Samayoa, J. G., Boggs, S., Ladanyi, J., & Fazio, R. (2021). Examining the left-right divide through the lens of a global crisis: Ideological differences and their implications for responses to the COVID-19 pandemic. *Political Psychology*, 42(5), 795-816. <https://doi.org/10.1111/pops.12740>
- Ruiz, J. B., & Bell, R. A. (2021). Predictors of intention to vaccinate against COVID-19: Results of a nationwide survey. *Vaccine*, 39(7), 1080-1086. <https://doi.org/10.1016/j.vaccine.2021.01.010>
- Schiller, D., & Delgado, M. R. (2010). Overlapping neural systems mediating extinction, reversal and regulation of fear. *Trends in Cognitive Sciences*, 14(6), 268-276. <https://doi.org/10.1016/j.tics.2010.04.002>
- Sherif, M. (1958). Superordinate goals in the reduction of intergroup conflict. *American Journal of Sociology*, 63(4), 349-356. <https://doi.org/10.1086/222258>
- Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *JAMA: The Journal of the American Medical Association*, 288, 1235–1244. <https://doi.org/10.1001/jama.288.10.1235>
- Simonov, A., Sacher, S. J., Dubé, J.-P. H., & Biswas, S. (2020). *The persuasive effect of Fox News: Non-compliance with social distancing during the Covid-19 pandemic* (Working Paper 27237). National Bureau of Economic Research. doi: 10.3386/w27237. <https://www.nber.org/papers/w27237>

- Slothuus, R., & Bisgaard, M. (2020). How political parties shape public opinion in the real world. *American Journal of Political Science*, 65(4), 896-911.
<https://doi.org/10.1111/ajps.12550>
- Stecula, D. A., & Pickup, M. (2021). Social media, cognitive reflection, and conspiracy beliefs. *Frontiers in Political Science*, 3, 647957. <https://doi.org/10.3389/fpos.2021.647957>
- Stevens, H., & Tan, S. (2020, March 31). From ‘it’s going to disappear’ to ‘we will win this war’: How the president’s response to the Coronavirus has changed since January. *The Washington Post*. <https://www.washingtonpost.com/graphics/2020/politics/trump-coronavirus-statements/>
- Tesler, M. (2018). Elite domination of public doubts about climate change (not evolution). *Political Communication*, 35(2), 306-326.
<https://doi.org/10.1080/10584609.2017.1380092>
- Van Bavel, J. J., & Pereira, A. (2018). The partisan brain: An identity-based model of political belief. *Trends in Cognitive Sciences*, 22(3), 213-224.
<https://doi.org/10.1016/j.tics.2018.01.004>
- Viswanath, K., Bekalu, M., Dhawan, D., Pinnamaneni, R., Lang, J., & McLoud, R. (2021). Individual and social determinants of COVID-19 vaccine uptake. *BMC Public Health*, 21(818). <https://doi.org/10.1186/s12889-021-10862-1>
- Xiao, Y. J., Coppin, G., & Van Bavel, J. J. (2016). Perceiving the world through group-colored glasses: A perceptual model of intergroup relations. *Psychological Inquiry*, 27(4), 255-274. <https://doi.org/10.1080/1047840X.2016.1199221>
- Zaller, J. R. (1992). *The nature and origins of mass opinion*. Cambridge University Press.