



## Walking the party line: The growing role of political ideology in shaping health behavior in the United States

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### ABSTRACT

**Objective:** To assess the extent to which political ideology affects COVID-19 preventive behaviors and related beliefs and attitudes in the U.S.

**Methods:** Two surveys, one using a convenience sample and another using a nationally representative sample, were conducted in September and November 2020, respectively. Multiple regressions compared political ideology with identified COVID-19 risk factors and demographics as well as knowledge measures. Surveys were followed by a review of the emerging COVID-19 behavioral literature (completed in January 2021) to assess the frequency of ideological effects in publicly reported data.

**Results:** In the survey data, political ideology was a significant predictor for all dependent variables in both surveys, and the strongest predictor for most of them. Out of 141 estimates from 44 selected studies, political ideology was a significant predictor of responses in 112 (79%) and showed the largest effect on COVID-19-related measures in close to half of these estimates (44%).

**Conclusions:** This study reinforces previous research that found partisan differences in engaging in behaviors with long-term health consequences by showing that these ideologically-driven differences manifest in situations where the possibility of severe illness or death is immediate and the potential societal impact is significant. The substantial implications for public health research and practice are both methodological and conceptual.

### 1. Introduction

Political polarization is a growing concern in many parts of the world (Carothers & O'Donohue, 2019) and is particularly acute in the United States, where people from opposing partisan groups have shown increasing disagreement on substantive issues (Abramowitz & Saunders, 2008) and rising mutual dislike (Iyengar & Krupenkin, 2018). Differences by political ideology are seen in all manner of beliefs and decisions (Sloman & Rabb, 2019), but the influence of political ideology on health behaviors is not widely considered in public health research and policy making, even though prior work has found partisan differences in diet, exercise habits, and smoking (Kannan & Veazie, 2018). COVID-19 has brought the issue into sharp relief (Rosenbaum, 2020a, 2020b) and constitutes a circumstance uniquely suited to research. When it comes to public health and disease prevention interventions, this infectious disease pandemic was unusual in that (i) the time from health decisions to

adverse outcomes is much shorter than for decisions about diet, exercise, or smoking, making the stakes especially high; (ii) prior public knowledge and beliefs about the COVID-19 pathogen were nonexistent before 2020, making for a “sterile” information environment at the start; and (iii) in the U.S., two sets of authorities (federal leadership and infectious disease experts) often delivered opposing messages on the risks posed and the efficacy and necessity of preventive measures. Furthermore, the US society has been experiencing its most extreme polarization in decades, driven by economic, racial, and ideological causes. Political partisanship seems to be driving and influencing people’s responses to the pandemic, from beliefs about the pandemic to mitigation behaviors (Shao & Hao, 2020), with conservatives/Republicans being more skeptical of personal risks and less supportive of mitigation policies than liberals/Democrats, which is in tone with the COVID-19 mediated message from Republican leaders.

In the initial phases of the pandemic the United States failed to

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adequately implement testing and mitigation policies, and for all of 2020 and the first half of 2021 had the highest number of deaths from COVID-19 in the world. For example, the US had a testing coverage threshold lower than 15, which researchers found was highly correlated with population mortality (Wei et al., 2021). The social controversy directly attributed to COVID-19 suggests that the strength of people's informational environments, the voices they listen to, and subsequent beliefs and attitudes should not be underestimated as factors influencing health behaviors. Indeed, classic health behavior models assign a key role to information (Ajzen, 1991; Bandura, 1969; Rosenstock, 1974), so individual characteristics that tend to covary with different informational environments should also covary with health behaviors.

Research has frequently showcased the relationship between political ideology and the information sources people attend to, as well as its role in moderating people's beliefs and attitudes. What happens when a deeply ideologically polarized society comes face to face with a major public health problem? Does political ideology have sufficient predictive power for behavior to be systematically considered in public health research and policy making? This study examines the predictive power of ideology on COVID-related behaviors and beliefs across a range of data sets. The results from two cross-sectional surveys and a review of the emergent COVID-19 literature show that, as COVID-19 was ravaging the United States, political ideology was the most reliable predictor of beliefs and behaviors that have direct implications for individual health. The data used in this study address a critical and unique moment in the evolution of the pandemic in the United States.

## 2. Political ideology and health

Studies addressing the role that political ideology has on health outcomes have explored the long-term impact of public health policies on health behaviors (such as smoking bans' impact on lung cancer incidence, or addiction mitigation policies on drug use and abuse) (Gilson, 2010; Longo et al., 2001; Soerjomataram et al., 2011). There is some evidence that our behaviors and lifestyle choices may be affected by our political beliefs (Kannan & Veazie, 2018), and several authors have argued that we should consider it a determinant of health (Mishori, 2019; Rosenbaum, 2020a, 2020b). The COVID-19 pandemic, a major public health crisis, provides a unique opportunity to attempt to characterize the prevalence of partisan effects on health behaviors.

Political ideology colors many kinds of judgments in the U.S. (Ditto et al., 2019; Smith et al., 2012); people often take a harsh view of those whose political perspective contrasts with their own (Iyengar et al., 2019). So, it was anticipated that *normative* beliefs about the COVID-19 pandemic—for instance, what policy responses are appropriate—would vary by political ideology. It was less obvious that *descriptive* beliefs—for instance what does and does not constitute risky behavior—would vary by political ideology when the consequences of those beliefs could be severe disease or death. Political rallies made headlines for openly flouting mask-wearing guidelines, and studies early in the pandemic suggested that behaviors varied along ideological lines, with conservatives less likely than liberals to engage in preventive behaviors (Clements, 2020; Gadarian et al., 2021). But the claim that people's group identities are central to life-or-death behaviors warrants sustained scrutiny.

## 3. Knowledge, information, and social identity

Before we turn to the evidence, it is worth considering how it could be that consequential health behaviors would vary by ideology even when lives are on the line. For topics that rely heavily on specialized or scientific knowledge, the vast majority of people lack the expertise to critically assess the factual information or to make inferences, instead relying on summary information from others to determine their beliefs, attitudes, and actions (Sloman & Fernbach, 2018). In the absence of thorough understanding of a domain, people naturally use summary

information from trusted sources. It is a common practice in both science (e.g., research abstracts) and everyday life (e.g., product reviews or user testimonials). Such judgments should be made based on source credibility—e.g., accepting that a more virulent strain of coronavirus is spreading, because the abstract is from a study published by a top-tier, peer-reviewed journal. Political scientists have long regarded this reliance on summaries or “cues” as a reasonable strategy when thorough assessments of evidence are prohibitively difficult (Bullock, 2020, p. 129). When searching for health information, people often go to preferred sources, either in person (medical practitioners, family, friends, etc.), or through media (websites, newspapers, social media, etc.) (Geana, 2020), and trust in the source regulates this information acquisition and usage (Smith, 2011). Those sources could be driven by scientific arguments, could be anchored in conspiracy theories, or could reflect the position of the groups people identify with. In the case of COVID-19, very different claims about causality and risk emerged from the two sides of the political divide, as is well documented in the polarized discourse of elected officials (Green et al., 2020). The informational environment of the pandemic was further complicated by 1) a multitude of media channels that promoted divergent views coming from the extremes of the political spectrum (Ash et al., 2020), 2) the preferential acceptance of information concordant with one's beliefs (Mitchell et al., 2020), and 3) the abundance of misinformation and disinformation, much of it made accessible by social media (Wang et al., 2019). As such, attitudes built on social identity premises may have influenced information search patterns, retrieval, and use, as well as consequent health behavior.

Social identity has been acknowledged as a powerful driver of intergroup bias and intergroup conflict, with strong group identity promoting intolerance and intergroup mistrust (Tajfel, 2010). Highly internalized subjective identity, supported by a common goal or aspirations, fuels outgroup antipathy. According to Social Identity Theory, identification with a political ideology, following a leader (prototyping), or some other source of social categorization explains the social identities that people assume (Huddy, 2001). Social identity is a strong contributor to our beliefs and attitudes about certain topics and influences how we understand causal systems relating to those topics (Sloman & Fernbach, 2018). In the polarized climate in the United States at the time of this study, social and political forces have led COVID-19-related beliefs and behaviors to become strongly linked to political ideology. These considerations naturally raise the question of how far this relationship goes.

RQ: In the context of the COVID-19 pandemic and current political polarization, to what extent does political ideology predict health attitudes and behaviors over and above true risk factors (age, race, education, level of exposure to the virus) and knowledge (both subjective and assessed)?

To answer this question, we first compare the effect of ideology with the effects of demographics, risk factors, and information-driven beliefs on COVID-19 behaviors and attitudes in data from two cross-sectional surveys administered in September and November 2020. We then review other COVID-19 behavioral studies in a dedicated academic database to explore the balance of evidence. The core assumption of this study is that despite the well-known limitations of multivariate models (multicollinearity, unmeasured confounders, etc.), they nonetheless afford a rough estimate of the relationship between two variables when holding other measured variables constant. We therefore examine the *relative* role of political ideology in health beliefs and behaviors when accounting for as many other variables as possible. Although doing so surely reduces the size of ideological effects, we take it as a strong test of the relation between ideology and health behaviors to examine (a) whether ideology remains significant when many other variables are entered into the model and (b) how often it shows the largest effect size compared to other variables under these conditions.

**Table 1**  
Dependent and independent variables for studies 1 and 2.

Variable	Study	Metric	Description	Scale
DV: Preventive Behavior	1	Mean across 7 items ( $\alpha = .85$ )	Recommended preventive measures as per CDC and WHO	5-point scale from 1 = Almost all the time, to 5 = Almost never
	2	Mean across 4 items ( $\alpha = .78$ )	Mask wearing and social distancing behavior	5-point scale from 1 = Never to 5 = Every time
DV: Policy Support	1	Mean across thirteen items ( $\alpha = .92$ )	Policy measures that have been taken or being proposed at national and local levels	5-point Likert-type scale from 1 = Strongly against, to 5 = Strongly support
	2	Mean across 2 items ( $\alpha = .93$ )	Level of agreement with mitigation policies issued by the federal or state government	5-point Likert scales
DV: Risk Perception	1	Mean across three items ( $\alpha = .74$ )	Perceived vulnerability to COVID-19, estimated chance to get infected with the novel coronavirus in the next 6 months, and perceived severity of disease if infected	10-point scale
	2	Single value	"What is the likelihood that you will become infected by the coronavirus in the next month?"	0–100% scale
DV: Vaccine Intention	2	Single value	"If and when a coronavirus vaccine becomes available, will you get vaccinated?"	5-point scale from 1 = Definitely won't to 5 = Definitely will.
IV: Political Ideology	1	Single value	"How would you rate your political leanings?"	7-point scale from 1 = Very conservative, to 7 = Very liberal
	2	Single value	"How would you rate your political leanings?"	5-point scale from 1 = Very conservative to 5 = Very liberal
IV: COVID Objective Knowledge	1	Cumulative score	19 questions on general knowledge of COVID-19 and 7 questions about transmission	True/False
	2	Cumulative store	8 questions addressing COVID-19 well-publicized facts about transmission and contagiousness	True/False
IV: COVID Subjective Knowledge	1	Single value	"How would you rate your knowledge about COVID-19?"	Sliding scale 1 = Very poor knowledge to 10 = Very good knowledge,
	2	Single value	"How would you rate your knowledge about COVID-19?"	5-point scale from 1 = No knowledge whatsoever to 5 = Extremely knowledgeable
IV: 7-day trend	1, 2	Single value	Slope of trend of day-to-day changes by state the 7 days prior to the completion of the survey	Ratio
IV. Working with COVID-19 patients	1	Single value	"Do you currently work in a medical facility or other place where you come in daily contact with COVID-19 patients?"	Yes/No
IV. Working in healthcare	2	Single value	Healthcare was one of the options in a multiple-choice question asking about employment industry	Yes/No
IV: Knows people who had COVID-19	1	Single value	"Do you know people in your community or place of work who have or had COVID-19?"	Yes/No
IV. Demographic Variables	1, 2	Age, Black race, Hispanic/Latino ethnicity, Male, Years of education		

#### 4. Methods

**Study 1.** The initial data for this study come from a general survey exploring COVID-19 attitudes, beliefs, knowledge, and behaviors conducted in September 2020 by the Center for Excellence in Health Communication to Underserved Populations, University of Kansas School of Journalism and Mass Communications. A strategic sample of 695 participants was recruited via a combination of survey distribution through advertising placement on social media (Facebook and Instagram, nationwide - 452 respondents; the social media ads reached 13,077 users, proportionally distributed across the United States according to population density, and targeted adults 18–65+), and survey administration to an undergraduate student research pool (243 respondents, 18–35 years old, who received course credit for their participation). The University's Institutional Review Board approved the research protocol.

Dependent and Independent variables for studies 1 and 2 are presented in Table 1. In order to rule out spurious relationships between political ideology and health attitudes and behaviors, the Independent variables include demographics that are known to covary with COVID-19 outcomes (age (Wu & McGoogan, 2020); race (Kopel et al., 2020; Liao & De Maio, 2021); education (Dalsania et al., 2021)). We also include subjective (Motoki et al., 2021) and measured (Ning et al., 2020) knowledge of COVID-19, as well as variables that may capture level of

exposure to the virus (whether an individual is a healthcare worker or knows people who have had COVID, case rates in individuals' areas). Complete survey instruments can be found in Supplementary Materials.

Three multiple regressions were conducted, one for each DV, including all listed IVs. Because some argue that cognitive ability (Lewandowsky et al., 2017) and the tendency to reject dubious information (Baron & Jost, 2019) are asymmetrical across the partisan divide, we compared the correlations that ideology and knowledge had to each of the dependent variables.

**Study 2.** Data for this study came from a national survey of beliefs and attitudes about COVID-19 conducted by The Policy Lab at Brown University in the first half of November 2020 on a representative sample of 1000 US adults. The research was classified as public health surveillance and thus exempt by the university's IRB. Data were collected by YouGov. Population weights were calculated to estimate effects in a population representative of the United States by age, gender, race/ethnicity, education, and region. In addition to DVs similar to those from the previous survey, this survey included a fourth dependent variable, intention to get the COVID-19 vaccine; we add this to our analysis because of its timeliness. The variables and their metrics are presented in Table 1. Since these variables were chosen from many to operationalize the dimensions from Study 1, we preregistered the analysis (<https://osf.io/qcdwg>).

Four multiple regressions were conducted, one for each DV,

including all listed IVs.

For both studies 1 and 2 we also entered the relevant predictors sequentially and, as it was expected, the coefficient for political ideology decreases with each new variable entered, but remains significant, a result which doesn't provide any additional information to benefit the present study, so it is not further addressed.

**Study 3.** To determine the balance of evidence on the impact of political ideology on COVID-19-related health attitudes and behaviors, we conducted a review of the COVID-19 behavioral literature using a database of behavioral studies (<http://tpl.fyi/covid-research-tracker>) covering published and unpublished work from psychology and cognitive science, economics, political science, and related areas; it does not include clinical studies or studies that focus on mental health. The search began November 6, 2020, and concluded January 2, 2021. We first scanned all entries for empirical studies of individual behaviors or beliefs (thus excluding discussion pieces, studies of natural language processing, examinations of policy timing, etc.) with COVID-related outcome measures either conducted in the U.S. exclusively or reporting separate analyses of data collected in the U.S. This search yielded 181 candidate papers. We then screened each paper to ensure that (a) political ideology was measured in some way (party ID, conservative-to-liberal scale, countywide vote share in the 2016 election, etc.), (b) the effect of political ideology on outcome variables was compared to at least one other predictor in the analysis, (c) the effects of political ideology and other predictors were reported using a standardized and hence interpretable measure of effect size—in most cases  $\beta$ , but in a handful of cases,  $\eta_p^2$  or odds ratios.

When studies reported multiple analyses of the same outcome variable, as in stepwise regressions, we examined the full model rather than a subset because the key question is the effect of ideology when holding all other measured variables constant. Studies that did not clearly report standardized effect sizes were excluded. Only main effects were considered; we note cases where the effect of an interaction term was larger than the effect of ideology. Forty-four papers were retained for analysis.

We counted the number of analyses that found political ideology to be a significant predictor of behaviors, beliefs, or attitudes and the number that found the effect of political ideology to be larger than all other predictors. Counts were based on absolute values and thus ignore direction, but no effects were in unexpected directions (i.e., conservatives reporting greater mask-wearing than liberals).

## 5. Results

**Study 1.** Because of the dual recruitment methods, age showed a bimodal distribution with a mean age of 47.8 (SD = 23.61) and two clusters, one around 20 and another between 60 and 80. Other demographics are shown below (Table 2).

Ideology was a significant predictor for all dependent measures and showed the largest effect for two of three dependent variables (see Table 3). COVID-19 knowledge and ideology contributed separate proportions of variance in all three models. Partial correlations make this explicit, as relationships between ideology and preventive behaviors,  $r(664) = 0.28$ , ideology and policy support,  $r(664) = 0.559$ , and ideology and risk perception,  $r(645) = 0.259$ , remain even when controlling for domain knowledge. In sum, lack of accurate information does not explain away the pattern.

**Study 2.** Mean age within the sample was 47.3 (SD = 18.33), with a more uniform distribution than in Study 1 (See Table 2). Ideology was a significant predictor for all dependent measures and showed the largest effect for three of four dependent variables (see Table 3). COVID-19 knowledge and ideology contributed separate proportions of variance in all four models, as in Study 1. Partial correlations controlling for COVID-19 knowledge show significant correlations between ideology and preventive behaviors,  $r(876) = 0.350$ , ideology and policy support,  $r(876) = 0.507$ , ideology and risk perception,  $r(876) = 0.147$ , and

ideology and vaccine intention,  $r(876) = 0.231$ . See Supplementary Materials for correlations. We note that the negative relationships between engaging in preventive behaviors and being white or being male are consistent with prior studies (Haischer et al., 2020; Hearne & Niño, 2021). It is unclear why domain knowledge showed a negative relationship with risk perception in Study 2.

**Study 3.** Out of 141 estimates from 44 studies, political ideology was a significant predictor of responses in 112 (79%; see Supplementary Materials for a table showing studies and characteristics, as well as breakdowns by type of IV). Moreover, ideology showed the largest effect on COVID-19-related outcomes in close to half of these estimates (62, or 44%). Factors that did sometimes surpass ideology were variables widely recognized as determinants of health behaviors: age ( $n = 8$ ), gender ( $n = 8$ ), education ( $n = 14$ ), and race/ethnicity ( $n = 7$ ), in addition to various measures of news consumption ( $n = 10$ ). To ensure that this result was not driven by a small subset of studies reporting many estimates, we counted the number of studies showing ideology to be the largest effect in half or more of the reported estimates. The result by study as opposed to analyses was similar: ideology was the most frequent best predictor in 17 of the 44 studies (39%). No other variable was the best predictor in nearly as many studies. Out of the 181 papers eligible for inclusion in Study 3, we counted 70 (39%) that did not include ideology as a variable.

## 6. General discussion

The data from these three studies show that the relation of political ideology to health behaviors in times of crisis is detectable and in a number of cases stronger than relationships between health behaviors and other routinely measured characteristics (Fullerton et al., 2021). People are heavily influenced by what those around them think and do (Cialdini, 1983), and by the beliefs they share, even when their health is at stake. We know that, for example, obesity and consequent diabetes diagnoses vary with community attitudes as do smoking, drinking, other aspects of nutrition, sexual health, and willingness to exercise (Christakis & Fowler, 2008; Kannan & Veazie, 2018). People not only rely on their immediate community, but also on groups that they identify with: Ideological effects in this sense—sets of beliefs that people inherit from their political community—are likely to influence many other health attitudes and behaviors. One example is vaccination, a health behavior that has been politicized for years (Parikh, 2008). The results of the studies presented here attest to the strength of the correlation between political ideology and COVID-19 health behavior. In contrast with prior studies that looked at ideology's role in moderating preventive behavior or in determining health outcomes for long-term, known risk factors, COVID-19 posed an immediate risk that needed to be mitigated, and merited swift action to safeguard both individual health and the welfare of the community. The COVID-19 pandemic and the societal polarization in the United States created the optimal setting for this inquiry, as opposing ideologies were publicizing contrasting views about COVID-19 and mitigation behaviors, through divergent interpersonal and traditional and social media channels. This observation is compatible with many classic models of health behavior – Health Belief Model (Rosenstock, 1974), the Theory of Planned Behavior (Ajzen, 1991), Social Learning Theory (Bandura, 1969) – which in various ways consider information availability and use some of the factors driving attitudes that determine behaviors in health-related crises.

People depend on their communities for many things including the substance of their causal beliefs. When a health crisis looms, when action must be taken but knowledge is non-existent or limited, as in the case of COVID-19, both social identity theory (Tajfel, 2010) and more recent perspectives in collective knowledge (Sloman & Fernbach, 2018) posit that people will turn to those they identify with and trust for advice and guidance. They will also forge strong communal links and reject information coming from opposing ideologies, even when doing so may be detrimental to their own health. Furthermore, these ideologically

**Table 2**  
Sample demographics for studies 1 and 2.

Political ideology (%)	Very Conservative	Moderately Conservative	Somewhat Conservative	Neither Conservative nor Liberal	Somewhat Liberal	Moderately Liberal	Very Liberal		
Study 1	16.2	17.5	10	15.6	11.4	16.6	12.6		
Study 2	9.4	20.1		29.1	17.4		12.4		
Race/ethnicity (%)	White (Caucasian)	Black (African-American)	Asian (Asian-American)	American Indian/Alaska Native	Hawaiian/Pacific Islander	Multiracial	Other		
Study 1	92.3	0.8	1.7	1.4	0.2	3.8			
Study 2	63.1	12.1	3.4	1.1		2.0	2.2		
Hispanic/Latino	Yes 3.9	No 96.1							
Work in a medical facility or other place where you come in daily contact with COVID-19 patients (%)							Yes	No	
							Study 1 1.9	98.1	
							Study 2 5.7	94.3	
Gender (%)							Male	Female	Other
Study 1							37.2	62.2	0.6
Study 2							47.8	50.4	1.8
Education (%)			High school/ GED	Trade school	Some college	College degree	Graduate studies (MA, PhD)	Professional degree (MD, JD)	
Study 1			13.6	2.4	40.7	23.1	18.1	2.1	
Study 2			5.8	32.1	21.6	10.7	18.6	11.2	
Know people in your community, school, or place of work who had/have COVID-19 (%)			Yes	No					
			62.1	34.9					

**Table 3**  
Political ideology as predictor for preventive behavior, policy support, risk perception, and vaccine intention in two surveys conducted in fall 2020 (Multiple regression, Study 1, N = 695; Study 2, N = 1000). Bolded values =  $p < .05$ ;  $\beta$  = standardized coefficients. See Methods for operationalizations of measures, which varied between studies.

Variable	Study	Preventive behaviors		Policy support		Risk perception		Vaccine intention	
		$\beta$	p	$\beta$	p	$\beta$	p	$\beta$	p
Political ideology	1	<b>.229</b>	<.001	<b>.490</b>	<.001	<b>.282</b>	<.001		
	2	<b>.369</b>	<.001	<b>.490</b>	<.001	<b>.088</b>	.013	<b>.277</b>	<.001
Age	1	-.006	.885	-.035	.328	<b>.172</b>	<.001		
	2	<b>.129</b>	<.001	<b>.042</b>	<b>.140</b>	<b>-.151</b>	<.001	<b>.136</b>	<.001
White	1	-.041	.417	-.014	.591	.042	.230		
	2	<b>-.151</b>	<.001	<b>-.112</b>	<.001	<b>-.100</b>	.003	<b>.038</b>	.245
Works with COVID patients/Healthcare worker	1	-.027	.417	-.034	.195	-.047	.178		
	2	-.048	.108	<b>.009</b>	<b>.740</b>	<b>.098</b>	.003	<b>.043</b>	.173
Male	1	<b>-.152</b>	<.001	<b>-.092</b>	.001	<b>-.110</b>	.002		
	2	<b>-.123</b>	<.001	<b>-.140</b>	<.001	-.013	.693	<b>.091</b>	.005
Years of education/Has college degree	1	-.022	.557	<b>-.065</b>	.032	.018	.646		
	2	.007	.821	<b>.002</b>	<b>.947</b>	-.053	.117	<b>.095</b>	.004
COVID knowledge score	1	<b>.274</b>	<.001	<b>.280</b>	<.001	<b>.207</b>	<.001		
	2	<b>.125</b>	<.001	<b>.166</b>	<.001	<b>-.115</b>	.001	<b>.122</b>	<.001
COVID perceived knowledge	1	-.062	.092	-.051	.083	-.046	.232		
	2	<b>.109</b>	<.001	<b>.089</b>	.002	-.018	.600	<b>.056</b>	.085
Knows people who had COVID	1	<b>.126</b>	.001	<b>.084</b>	.007	<b>.148</b>	<.001		
	2								
7-day state case trend	1	-.012	.707	-.001	.972	-.004	.901		
	2	-.022	.466	-.004	.883	.057	.080	<b>.003</b>	.924

driven behaviors, which may seem to impact mostly individuals or those from their social group, do have larger societal impact, as they drive support for public policy addressing the pandemic. They can also drive the pandemic itself. This study provides evidence that, in a health crisis, ideology should be thought of as a major determinant of health behavior.

Some have argued for psychological asymmetries across the partisan divide, appealing to evidence that conservatives are more gullible

(Lewandowsky et al., 2017) or less intelligent (Baron & Jost, 2019) than liberals. By these accounts, individual characteristics that covary with ideological group membership, rather than group identification itself, could be responsible for the differences in health behaviors seen here. Although such causal attribution questions are extremely difficult to settle, at minimum the link between ideology and health behaviors cannot be explained away by these accounts, as suggested by the separate proportions of variance attributable to ideology and COVID-19

knowledge in Studies 1 and 2. Moreover, some factors that differentiate ideological groups would predict the opposite of what we found. Liberals and conservatives are known to differ in their sensitivity to threat, with conservatives typically more threat averse (Jost, 2017) to personal threats, and liberals being more sensitive to collective (shared) threats (Choma et al., 2013). Multinational data suggest a relationship between conservatism and pathogen threat specifically (Tybur et al., 2016). This difference should have led to higher COVID-19 risk perception on the right, not the left (Calvillo et al., 2020). The observed polarized response to COVID-19 could be ideologically driven not by the perception of pathogen-specific risk, but by aversion to proposed COVID-19 mitigation solutions - in this case social distancing, closure of schools and businesses, etc., all perceived as diminishing personal liberties, a strong tenet of conservative ideology (Campbell & Kay, 2014).

The COVID-19 crisis has focused a spotlight on the ideological dimension of health. Even in the face of direct and dire personal consequences, health attitudes and behaviors are not just a question of personal risk, they seem to be strongly tied to the same forces that govern attitudes and behaviors about more obviously political issues. We propose that a primary reason for this is that people with only limited understanding of this complex issue (that is, nearly all people) rely on the social groups they identify with to make the determinations for them as to how they should act and behave. Political partisanship carries with it deeply rooted attitudes, values, and beliefs. When a partisan's ideological community commits to some dogma during a crisis, this dogma influences people's attributions of responsibility (e.g., the cause of hardship in the US is the actions of China as opposed to some people's refusal to wear masks). It also influences beliefs (e.g., about death rates due to COVID-19, or even if a pandemic exists), and the actions people are willing to take (e.g., social distancing or vaccination).

Ideological communities do not only offer particular ways of understanding issues. People rely on their community to maintain knowledge for them. Most people do not delve into the complexities of how processes like disease transmission and infection work. But even the more thoughtful members of society may also have their causal understanding influenced by their ideological community. Those who seek to understand how the virus is transmitted may rely on scientific criteria to evaluate sources; but they might also construct or accept causal beliefs that justify their ideological community's view. They might conclude, for instance, that they are protected from the disease by a deity<sup>1</sup> or that the only protections are the mitigation measures suggested by the CDC. As a result, people's sense of understanding is often a function of the access they have to relevant knowledge: that is, access to the information available in the group about the specific issue, and their perception and understanding of others' attitudes and behaviors in their chosen community. If one believes that others whom they identify with and trust understand something, one's own sense of understanding is increased (Rabb et al., ), regardless of one's actual understanding. Because we often outsource actual knowledge, it is this sense of understanding that is likely to determine our confidence in the position we take and the actions we perform.

An issue that was not fully addressed in this study is directionality. One may argue that this may be explained by conservative audiences being more individualistic and self-centric, while liberal ones are more collectivistic in nature, with different probably locus of control when it comes to COVID-19. We don't know if that was the case from the get-go, and we can only speculate based on the data from the study. Green and colleagues, who we cite, suggest that it came down to elite cues - which further validates our use of SIT. Partisanship (and political interest) drove the message: Leaders from one group said, "don't worry about

<sup>1</sup> In the USC Dornsife "Understanding Coronavirus in America" survey, roughly 65% of respondents selected prayer as an activity performed in the last seven days "to keep yourself safe from coronavirus." See <https://covid19pulse.usc.edu>.

this" and from another said, "this is a huge deal." We don't have direct evidence, but it seems safe to argue that both elites' cues and ideological values played a role in determining the directionality of political influence.

This study is not without limitations. Study 1 used a convenience sample, although the pattern of principal concern was seen again in study 2, which used a nationally representative sample, and in nearly half of the findings reviewed in study 3. Some research papers reviewed in study 3 were unpublished at the time of the analysis; although errors in some may emerge during the peer review process, we believe the consistency of the pattern across so many studies outweighs the conditional nature of the evidence. Study 3 was not a systematic literature review; it is possible that omitted research from this period would change the proportions of significant and largest effects reported. Although COVID-19 presented a unique opportunity to study health behaviors in a national public health crisis, the social and political environment in which the pandemic happened was also particular, with the United States experiencing the most polarized political discourse in decades, and 2020 was an election year. These may have amplified the measured effect of political ideology. Even so, national and international news suggest that ideological partisanship seems to be here to stay, at least for some time, and it is prone to continue to influence our lives and social discourse for years to come.

## 7. Public health implications

According to these studies, in an ideologically polarized society like the one we find today in the United States, partisanship is strongly linked to how people respond to a major public health crisis. The COVID-19 pandemic has exposed societal rifts that were confined to the political realm and projected them onto behaviors that govern health and responses to social demands aimed at protecting the population from a potentially lethal pathogen. The breadth of evidence provided by multiple studies has both methodological and conceptual implications: Ideological partisanship/political ideology should be a required variable in any study looking at health-related attitudes, beliefs, and behaviors and more broadly, because of its dependence on the ideological community, it should be conceptualized as a social determinant of health. The hope is that this classification will only be a temporary one, and that American society will manage to address its ideological rift and reach a societal consensus. From all social determinants of health, ideological partisanship may be the easiest to mitigate by launching an information campaign that manages to reach all segments of society through their thought leaders and information channels. Or, because some segments of society may simply not be listening to any perspectives outside their bubble, it may prove the most difficult. Only time will tell.

## Authors contribution

Mugur V. Geana, contributed to the conceptualization, literature search, study design, methodology, data collection, data analysis, validation, writing of original draft and review and editing.

Nathaniel Rabb contributed to conceptualization, methodology, literature search, data collection, data curation, data analysis, validation, and writing of original draft and review and editing.

Steven Sloman, contributed to conceptualization, methodology, investigation, and writing of original draft and review and editing.

## Human subjects approval

Study 1 of this research was approved by the University of Kansas Institutional Review Board.

## Declaration of competing interest

The authors have nothing to disclose, no conflicts of interest.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssmph.2021.100950>.

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