Trumpism, Climate and COVID: Social Bases of the New Science Rejection

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Abstract

Generalized structural equation modeling (GSEM) of 2021 US survey data tests Trumpism (approval of ex-president Trump) as an emergent political-identity indicator, descendant from the classical divisions by party and ideology but exerting its own distinct influence on two existentially important cases of science rejection: the reality of anthropogenic climate change (ACC), and vaccination against COVID-19.

Key findings:
1. Trumpism, modeled as an intervening variable, is predicted by ideology, party, and identification as white or Christian evangelical—as expected.
2. Trumpism also is predicted by agreement with or openness to seemingly unpolitical conspiracist beliefs—that NASA faked the Moon landings, or the Earth is really flat.
3. Trumpism is higher among Republicans who say that most of their friends belong to the same party ($friends \times party$ interaction).
4. Controlling for ideology, party and other factors, Trumpism strongly predicts rejection of ACC, and more weakly predicts rejection of COVID-19 vaccination.
5. This difference in the strength of Trumpism effects occurs because, although ACC and vaccine rejection have many parallels, their social bases also show areas of contrast:
   a. Whereas ACC rejection increases with age, vaccine rejection decreases with age, presumably because older people have a greater sense of mortality, are more accustomed to medical advice, and face higher risks from COVID-19.
   b. Conspiracist beliefs and lower income increase the likelihood of rejecting vaccination, while neither conspiracism nor income directly affect ACC rejection.
6. Views on vaccination and climate change are both predicted by an education $\times$ ideology interaction in which education increases the probability of science rejection among the most conservative, but lowers this probability among other groups.
   a. Similar interactions have been seen in many studies of climate change and other environmental topics.
   b. This suggests that similar information-filtering processes of biased assimilation and elite cues operate in both climate/environmental and pandemic realms.
7. Both climate-change and vaccine views exhibit wider partisan divisions among people with mostly same-party friends ($friends \times party$ interaction).
8. For ACC rejection, *indirect effects through Trumpism* significantly modify (strengthen or weaken) conclusions that might be drawn from the direct effects of most background characteristics (age, white, evangelical, ideology, party, friends and conspiracist beliefs).

9. For vaccine rejection, indirect effects through Trumpism are comparatively weak.

10. Despite many parallels between science rejection on climate change and vaccines, and links between both and conservative identity, cross-cutting divisions make both direct and indirect effects of Trumpism stronger for climate change than vaccines.

1. Introduction

Climate change has long been recognized by scientists as a major problem—potentially an existential threat to social and ecological systems (IPCC 2021; USGCRP 2017). The SARS-Cov2 virus with its variants emerged more recently, but quickly attained major threat status as well, causing over one million known deaths in the US and six million worldwide in its first two years; the true totals are likely much higher (WHO 2022; Adam 2022). Although the hazards posed by greenhouse warming and COVID-19 are quite different, diagnosis and mitigation prospects for both depend heavily on science. Unfortunately, scientific analysis, policy discussions, and even the basic reality of both threats have become targets of politicized science rejection in the US, making these deadly problems less tractable.

The arguments and tactics deployed against scientists and science-based mitigation for climate change on one hand, and COVID-19 on the other, have some basic elements in common (Lewandowsky and Cook 2020; Mann 2020; Wilson 2020). Moreover, science rejection in each case has been led by conservative media and political leaders, encouraging the wide partisan divisions seen on general-public surveys. Although these commonalities are well known, they leave further hypotheses worth testing. In what other respects do the social bases of science rejection on COVID-19 resemble those regarding climate change, which in turn follow more than 40 years of findings on the social bases of environmental concern (Shwom et al. 2015; Van Liere and Dunlap 1980)?

While the basic associations between political identity and views on climate change or COVID-19 are well established, common patterns involving other respondent characteristics such as age, gender, education, race or income have been less clear. The more immediate personal impacts of COVID-19 compared with climate change, and its more direct correlations with individual behavior, could drive some divergence in demographic patterns. Certain interaction effects that have been noted with climate change and other environment-related issues also remain untested regarding COVID-19. Finally, there are new elements in the US political landscape, including the mainstreaming of conspiracy beliefs and the leader-focused emergence of Trumpism—both of which link to climate and COVID views, but perhaps not to similar degrees.

The analysis that follows tests Trumpism and openness to non-political conspiracy beliefs, alongside more traditional demographic characteristics, as predictors of rejecting (1) the reality of human-caused climate change, and (2) COVID-19 vaccination. Data are from a nationally
representative US survey conducted in mid-2021, when Trump was no longer in office. At that
time vaccinations had been approved and made widely available, but employer mandates were
not yet in effect. Because Trumpism emerged recently, growing out of traditional conservatism
but reversing some of its tenets, it is modeled here as an intervening variable that is potentially
predicted by many of the same demographic characteristics as climate and COVID responses,
while contributing further predictive power of its own.

2. Background

Conservative political identity has long been associated with lower concern about environmental
problems (Dietz et al. 2009; Van Liere and Dunlap 1980; Xiao and McCright 2017), including
the reality of anthropogenic climate change or ACC (Hamilton et al. 2015; McCright and Dunlap
2011; Shwom et al. 2015), and opposition to climate mitigation policies (Brown and Hamilton
2021; Stoughtenborough et al. 2014). Politics also played a large role in shaping the evolution of
US policy on COVID-19, affecting public perceptions of its seriousness as well as support for
public-health countermeasures from social distancing to mask wearing and vaccination. General-
public surveys find strong associations between political identity and individual COVID-related
behavior (e.g., Gadarian 2021; Graz et al. 2021; Hamilton and Safford 2021; Shao and Hao 2021;
Shephard et al. 2020; Sides et al. 2020), while aggregate analyses show corresponding
associations between county or state-level political indicators and public-health outcomes such as
stay-at-home compliance, vaccinations and death rates (e.g., Adolf et al. 2021; Allcott et al.

Survey research commonly operationalizes political identity through questions on ideology or
party, two dimensions that have become less distinct than they once were, due to US polarization
and party sorting (Brulle 2013; Fiorina and Abrams 2008; Guber and Miller 2013; McCright et
al. 2014). A more recent political indicator used in some studies has been support for
president/ex-president Trump. Trumpism exhibits additional effects beyond ideology or party,
but comparable to them in strength (Brown and Hamilton 2022; Graham et al. 2020; Safford et
al. 2021; Shao and Hao 2019). Shao and Hao (2021) present arguments and empirical support for
treating Trumpism as an intervening variable; a similar approach will be taken in this paper.

Conspiratorial thinking, particularly among conservatives, has been a conspicuous feature of US
politics at least since at least the 1950s (Hofstadter 1964), and appears to be growing in
prominence across a wide range of topics (Del Vicario et al. 2015; Van der Linden et al. 2020).
Although some conspiracy beliefs focus on political leaders (e.g., Obama is Muslim, or Trump
really won the 2020 election), many others have been directed against scientists (Lewandowsky
et al. 2013), on topics including climate change (Lewandowsky et al. 2016; Uscinski et al. 2017),
vaccinations (Goldberg and Richey 2020; Zachary et al. 2020) and COVID-19 (Cassesse et al.
2020; Hamilton 2022; Jamieson and Alabrackin 2020; Lewandowsky and Cook 2020). Clearly,
conspiratorial ideation plays a role in science rejection on both climate and COVID-19. Testing
specifically climate or COVID-related conspiracy beliefs as potential predictors of other opinions
on those topics would be circular, however. The analysis that follows instead tests a simple
indicator for openness to conspiratorial beliefs derived from questions that are not explicitly political, nor linked to climate or COVID.

Multiple studies on the social bases of views on climate change and other environmental problems have replicated two interaction effects involving political identity. The best-replicated interactions are information×political identity-type effects, in which, for example, concerns about climate change increase with education among liberals and moderates, but do not increase and may even decrease with education among the most conservative. Variations include party, ideology or worldview used as political-identity indicators; and education (Brown and Hamilton 2021; Hamilton 2008; Hamilton et al. 2015a; Safford et al. 2020; Shao et al. 2014, 2016; Tranter 2020), self-assessed understanding (Hamilton 2011; McCright and Dunlap 2011), tested science literacy (Hamilton et al. 2012; Drummond and Fischhoff 2017) or numerical literacy (Kahan et al. 2012; Zummo et al. 2020) as information indicators. Similar interactions have been found with non-climate dependent variables involving vaccines (Hamilton et al. 2015b), perceived local flooding or weather trends (Hamilton et al. 2016a, 2016b, 2018a), renewable energy (Hamilton et al. 2018b), and other environment-related issues (e.g., Hamilton and Safford 2015; Hamilton et al. 2014). In all of these findings the interactions take a similar form, often graphed as a right-opening megaphone shape: the best-educated partisans stand the farthest apart (e.g., Figure 3 of Hamilton et al. 2015a). Identity-based filtering of information, involving cues from partisan elites and biased acquisition and retention of information by individuals, is commonly cited to explain this strong pattern.

A second, less dramatic interaction effect follows from survey reports that Americans increasingly choose to associate with people of their own political persuasion, a pattern that intensifies polarization (Iyengar and Westwood 2015; Pew 2016, 2017). Political identity×friends-type interactions have been confirmed in several recent studies involving local weather trends (Hamilton et al. 2018a) wildlife management (Hamilton et al. 2020), and local weather or climate (Hartter et al. 2020). Their common form is that political-identity effects are stronger, or partisan gradients steeper, when most of the respondent’s friends are reported as belonging to the same political party. This may be especially true for conservatives.

The next sections test these propositions as a common set of predictors for climate-change and COVID vaccination responses, using a nationwide US survey conducted in 2021.

3. Data and Methods

3.1 POLES 2021 Survey

Data analyzed here are from the Polar, Environment and Science survey, conducted in summer and early fall 2021. POLES 2021 focused on public views and knowledge about science-related topics including COVID-19, climate change, and the Earth’s polar regions. Some questions replicated those asked five years earlier on the POLES 2016 survey (Hamilton 2016, 2018; Brown and Hamilton 2021). In addition, the 2021 survey carried new questions relating to
COVID-19, and others reflecting changes in the US political context. Finally, and necessitated by the pandemic-driven shift from telephone interviewing to online data collection, the newer survey carried attention-check items to screen out thoughtless respondents—such as those who answered all the questions too quickly, or “straightlined” their agreement or disagreement with blocks of incompatible statements. Research protocols were approved by the Institutional Review Board for the Protection of Human Subjects in Research at the University of New Hampshire (IRB-FY2021-38), and the online questionnaire distributed in two stages: June/July and September/October 2021. After quality screening, we obtained 1,134 valid completions.

Sampling for this survey, organized by Qualtrics, aimed for a nationally-representative profile of US adults with respect to age, gender, race, education and political party. The sample met these targets, but the profile categories employed were broad (e.g., three age groups; college vs. non-college education), and reflect only one-way marginals, rather than multi-way tables available from the US Census. For better representation we calculated probability weights based on age/gender/race tables from the 2020 US Census; four levels of education from the 2019 Current Population Survey; and political party inferred from July 2020 Gallup polls. These weights are applied consistently in all analyses that follow.

Table 1 lists variables analyzed here, with weighted response summaries and codes used for modeling. The variables include background characteristics, political indicators, and two conspiracy questions, along with three endogenous (intervening or dependent) variables of interest: approval of former president Trump, views on climate change, and COVID-19 vaccination status. Although probability weighting improved demographic representation, these adjustments made almost no difference for endogenous variable distributions. Whether unweighted or weighted, the mean Trump approval (Trumpism) was 3.9 (on a 1–7 scale); 29 or 30 percent rejected the idea of ACC (NoACC); and 22 percent said they were not planning to get vaccinated against COVID-19 (NoVax). The fractions rejecting ACC and vaccination appear somewhat similar (30 and 22 percent) but these are not the same people; only 9 percent of the sample falls in both camps.

The questions about flat Earth and Moon landings are unusual for such research, although topic-specific conspiracy beliefs are well known in public discussion of both climate change and vaccination. In our survey 10 percent agreed the Earth is flat, while 12 percent agreed that NASA did not land on the Moon; a further 9–17 percent said they are unsure. These results are similar to those of other recent nationwide surveys that asked Moon landing or flat Earth questions (Economist/YouGov 2021; Farleigh Dickenson 2022). See Hamilton (2022) for comparisons to agreement with other science-based statements that are undoubtedly true, such as the Earth is billions of years old.

Comparing results from the June/July and September/October survey stages, the conspiracy responses are nearly identical. There are no significant changes in Trump approval, nor in the proportions rejecting ACC or COVID-19. Vaccination eligibility in the US was rolled out by age
group in 2021, so older respondents would have had more time to obtain vaccinations, especially in the survey’s June/July stage. Consequently, our coding contrasts those who are either fully vaccinated, partly vaccinated, or plan to be vaccinated, versus those who do not plan to be vaccinated. This proportion showed only a slight, nonsignificant drop from summer to early fall. Because any differences in key variables are minor and nonsignificant, we pool summer and fall responses for Table 1 and the analyses that follow.

3.2 Analytical Methods

Among the endogenous variables listed in Table 1, approval of former president Trump (Trumpism) has a clearly ordinal character, ranging from 1 (strongly disapprove) to 7 (strongly approve). Most respondents leaned toward one extreme or the other, leaving few in the middle. Response choices on two other questions (climate change and vaccination) are not clearly ordinal, but offer a few distinct and salient choices. Two of these choices, rejecting the scientific consensus on ACC, and deciding against COVID-19 vaccination, have notably adverse consequences—delaying climate-change mitigation efforts, or worsening the pandemic. Both choices have often been linked to conservative identity, including Trump support. For analysis here, those choices are represented by the dichotomously coded variables NoACC (reject anthropogenic climate change) and NoVax (reject COVID-19 vaccination).

Among the exogenous variables in Table 1, age is measured in years. Income, education, ideology and party are ordinal items that tend to have monotonic and roughly linear effects in large samples; they are treated as approximately continuous here. Codes for education, ideology and party are centered on zero, for their use with interaction effects. Indicators for race (white) and religion (Christian evangelical) flag two other factors widely described as correlates of Trump approval, views on climate change, and COVID-19 vaccination. Gender is treated dichotomously here, although our survey question was more nuanced. Ten out of 1,134 respondents identified their gender as nonbinary, and six others declined to answer this question. Although substantively intriguing, these subsets are too small for interpretable analysis.

Conspiracist ideation has become very prominent in US political discourse. The most widespread false conspiracy beliefs relate directly to our variables of interest: assertions that Trump really won the 2020 election, that climate change is a hoax, or that COVID-19 vaccinations contain microchips or are worse than the disease. Obviously, such conspiracy beliefs will predict views on Trump, climate or vaccines. The conspiracist variable defined in Table 1 tries for a less tautological indicator by combining openness or agreement with two extreme beliefs that, unlike Trump, climate or vaccines, have not been explicitly linked to conservative identity: that NASA faked the Moon landings, or that the Earth is flat rather than round. Few respondents in our survey agreed with both views, but more than a third agreed with or were open to at least one.

Trumpism is a comparatively recent phenomenon of unknown durability, unlike party, ideology and demographic characteristics that have been central to “social bases” research for five decades (e.g., Van Liere and Dunlap 1980; Jones and Dunlap 1992; Xiao et al. 2019). Trumpism’s
emergence as a new characteristic, somewhat distinct from party and ideology, suggests we might view it now as an intervening variable, partly predicted by traditional background factors, and perhaps conspiracist ideation, while contributing further explanatory power of its own. Intervening-variable hypotheses call for structural equation modeling—or in this case with ordinal or dichotomous endogenous variables, generalized structural equation modeling (GSEM) based on ordered logistic regression (Figure 1). Data management and calculation of GSEM models, with probability weights and robust standard errors, were carried out using Stata 16.1.

4. Results

4.1 GSEM modeling

Results from the GSEM analysis (outlined schematically in Figure 1) modeling climate-change and vaccination responses as a function on demographic and identity/belief characteristics, with Trumpism as an intervening variable, appear in Table 2. GSEM applies generalized linear modeling (GLM) to a structural equation modeling framework. In this case, the GLM aspect involves ordinal distribution families and logit link functions, with probability (sampling) weights as described in section 3.1. Table 2 shows weighted logit regression coefficients with their robust standard errors, the latter calculated by a generalized Huber/White/sandwich estimator. Stars summarize $p$-value results from hypothesis tests based on these robust standard errors.

As expected, conservatives, Republicans, whites and evangelicals all are significantly more likely to approve of Trump. Trumpism also is predicted by openness or belief in seemingly unpolitical conspiracy beliefs—that NASA faked the Moon landings, or the Earth is really flat. Finally, as detailed in the next section on interactions, Trumpism is higher among Republicans who say that most of their friends belong to the same party.

Trumpism in turn strongly predicts rejection of ACC, and more weakly predicts rejection of COVID-19 vaccination. Although the positive signs of these effects are unsurprising, their significance is noteworthy because the model already controls for ideology and party (as well as education×party and friends×party interactions). Trumpism thus exhibits an independent, additive effect on science rejection for both issues, beyond the effects of traditional political-identity indicators.

A difference in the strength of Trumpism effects regarding climate and COVID reflects the fact that, although climate change and vaccine rejection have many parallels, their social bases also have areas of contrast. (1) Whereas ACC rejection increases with age, vaccine rejection decreases with age, presumably because older people have a greater sense of mortality, are more
accustomed to medical advice, and face higher risks from COVID-19. (2) Lower household income and openness to conspiracy beliefs increase the likelihood of rejecting vaccination, whereas neither conspiracism nor income directly affect climate views.

Modeling Trumpism as an intervening variable, as done in Figure 1/Table 2, raises the possibility that background factors could exert indirect effects through Trumpism, in addition to their direct effects. Such indirect effects are approximated as products of coefficients along a sequence of paths from exogenous to final endogenous variables. Where the sequence includes one positive and one negative coefficient, the indirect effect is negative. Where the sequence includes either two positive or two negative coefficients, the indirect effect is positive. For ACC rejection, indirect effects through Trumpism significantly modify (strengthen or weaken) conclusions that might be drawn from the direct effects of most background characteristics (age, white, evangelical, ideology, party, friends and conspiracist beliefs). For example, the total effect of evangelical religion on ACC rejection is significantly stronger if we consider not only its positive direct effect, but also its positive indirect effect through Trumpism: evangelicals are more likely to support Trump, and Trump supporters are more likely to reject ACC.

Regarding vaccine rejection, on the other hand, indirect effects of background and belief characteristics through Trumpism are comparatively weak. Despite many parallels between science rejection on climate change and vaccines, and links between both and conservative identity, cross-cutting divisions make both direct and indirect effects of Trumpism stronger for climate change than vaccines.

Because the predictors education, ideology, friends and party appear also in interaction terms, their main effects in Table 2 can be interpreted as the effect of that variable, when its interacting counterpart equals zero. For example, the main effects shown for education on Trumpism, NoACC and NoVax represent the effects of education when ideology = 0; that is, the effects of education among ideological moderates. Among moderates, education has no effect on Trumpism. As the “moderate” lines in panels a and b of Figure 2 show, however, even among moderates, education decreases the probability of rejecting ACC or vaccination.

Similarly, the main effects of having same-party friends correspond to their effect when party = 0, that is, the effect of same-party friends among independents. Having mostly same-party friends increases the probability that independents will support Trump, but has basically no effect on independents’ ACC or vaccination views (middle or “independent” lines in panels a–c of Figure 3).
4.2 Interaction effects

Views on climate change and vaccination are both predicted by education×ideology interactions in which education increases the probability of science rejection among the most conservative, but lowers this probability among other groups. Figure 2 visualized these two interactions using margins plots, adjusted for other covariates in the GSEM model of Table 2. Figure 2a shows that, other things being equal, the probability of rejecting ACC rises steeply with education among extremely conservative respondents, is unaffected by education among those who describe themselves as fairly conservative, but decreases with education among all other groups, from moderate conservatives to extreme liberals. Figure 2b similarly shows that the probability of rejecting COVID vaccination rises with education among extreme conservatives, but declines with education among all other groups. Interactions of roughly similar character have been seen in many studies of climate change and other environmental topics. This finding suggests that similar information-filtering processes of biased assimilation and elite cues operate in both climate/environmental and pandemic realms.

Both climate-change and vaccination views exhibit greater partisan divisions among people with mostly same-party friends (friends×party interaction). Trumpism also is higher among people with mostly same-party friends. Figure 3 visualizes these three significant interactions. In each case, the gap between Republicans and Democrats widens when most of the respondent’s friends identify with the same party they do. Almost 90 percent of Republicans with mostly same-party friends approve of Trump, compared with less than 70 percent of Republicans with mixed or different-party friends (Figure 3a). Impacts on climate and vaccine rejection are smaller in magnitude but also significant, and go in the same direction. It bears emphasizing that the margins plots in Figures 2 and 3 are calculated from the GSEM model in Table 2, adjusting for the effects of education, religion, ideology, party and other covariates.

5. Discussion and Conclusion

GSEM analysis of a nationally representative US survey conducted in mid-2021 found both commonalities and differences in the social bases of rejecting the reality of anthropogenic climate change, and the personal decision for COVID-19 vaccination. Prominent similarities include:

- Similar education×ideology interactions, such that probabilities of science rejection (disbelief in anthropogenic climate change, or determination not to be vaccinated) rise with education among extreme conservatives, but decline with education among other ideological groups.
- Having mostly same-party friends increases the probability of science rejection among Republicans.
- Even among respondents of similar ideology, party, education and friend identification, Trumpism raises the probability of science rejection.

Notable contrasts between climate and COVID responses include:
• The probability of rejecting ACC increases with age, whereas the probability of vaccine rejection decreases with age.
• Women also are more likely than men to reject vaccination, but similar (other things being equal) in their beliefs about ACC.
• Vaccine rejection occurs more often in low-income households. Income has little net impact on climate-change views.
• Openness or agreement with non-political conspiracy beliefs increases the likelihood of vaccine rejection, but has little effect on climate views.
• The net effects of Trumpism are much stronger regarding climate change than regarding vaccination, reflecting other cross-cutting differences (such as gender and age) noted above.

Trumpism plays a significant role as intervening variable in our analysis, consistent with the conclusions of Shao and Hao (2021). Indirect effects of Trumpism on ACC rejection add significantly to the direct effects of white or evangelical identity, ideology, party, and both the education×party and friends×party interactions—strengthening the positive total effect in each case. However, being opposite in sign, the indirect effects through Trumpism weaken the total effect of age and gender on ACC rejection. Trumpism’s direct effect on vaccine rejection is comparatively weak so none of its indirect effects are significant.

The multiple impacts of Trumpism on these two existentially consequential cases of science rejection reinforce the importance of studying Trumpism itself as an emergent sociopolitical identity. Unsurprisingly, in these data Trump approval tends to be higher among respondents who identify as white, evangelical, conservative or Republican—and particularly, among Republicans who have mostly Republican friends. Less obviously, Trumpism also is higher among respondents who agree with or are open to two fringe, seemingly nonpolitical conspiracy beliefs—that Earth is flat, or NASA faked the Moon landings. Overtly political conspiracy beliefs, in particular that Trump “won” the 2020 election, or regarding COVID-19 and vaccinations, play central roles in Trumpism today. Hamilton (2022) noted associations between Trump approval and other conspiracy or science-rejecting views: Trumpists indicate higher agreement not only that the Earth is flat and Moon landings were faked, but that vaccinations implant tracking microchips, and COVID-19 dangers have been exaggerated by scientists. At the same time, they express lower agreement that the Earth is billions of years old, humans evolved from earlier forms of life, human activities are changing the climate, or vaccines are mostly beneficial. These results suggest that Trump followers are more inclined to believe conspiracies, and disbelieve scientists, in general—and not just in regard to specifically Trump-endorsed propositions.
6. References


Table 1: Variables in this analysis, with probability-weighted response percentages from 2021 survey \((n = 1,134)\) and codes used for modeling (Table 2).

Endogenous variables

**Trumpism** — Strongly disapprove of former president Trump (1, 37%); somewhat disapprove (2, 4%); lean toward disapproving (3, 5%); neither approve nor disapprove (4, 8%); lean toward approving (5, 7%); somewhat approve (6, 16%); strongly approve (7, 23%).

**NoACC** — Which of the following do you think is more accurate? Climate change is not happening now (1, 5%); climate change is happening now, caused mainly by natural forces (1, 24%); Climate change is happening now, caused mainly by human activities (0, 64%); don’t know (0, 7%).

**NoVax** — Which of the following describes your own situation, regarding vaccination against COVID-19? I do not plan to be vaccinated (1, 22%); I plan to be vaccinated but have not done so yet (0, 14%); I have received first dose of a 2-shot vaccine (0, 9%); I am fully vaccinated (single dose of 1-shot, or both doses of 2-shot) (0, 54%).

Exogenous variables

**Age** — Range 18 to 94 years, mean 46 years.

Gender (Female) — Female (1, 52%); Male (0, 47%). Missing values: about 2% identified as non-binary or gave no answer.

Race (White) — White non-Hispanic (1, 74%); Black or African American (0, 9%); Hispanic (0, 10%); Asian American (0, 4%); Native American (0, 1%); other or mixed (0, 2%); prefer not to say (0, <1%).

**Income** — household income less than $15k (1, 14%); $15–30k (2, 18%); $30–70k (3, 37%); $70–120k (4, 18%); $120–200k (5, 10%); over $200k (6, 4%).

**Education** — High school or less (–1, 35%); technical school or some college (0, 28%); college graduate (1, 23%); postgraduate work (2, 14%).

Religion (Evangelical) — Identify as Christian Evangelical (1, 17%); other Protestant (0, 11%); other Catholic (0, 20%); other Mormon (0, 1%); Jewish (0, 3%); Muslim (0, 3%); Buddhist (0, 1%); Hindu (0, <1%); atheist (0, 4%); agnostic (0, 4%); something else (0, 15%); nothing in particular (0, 19%).

**Ideology** — Extremely liberal (–3, 11%); fairly liberal (–2, 16%); moderate, lean liberal (–1, 12%); moderate, lean neither (0, 19%); moderate, lean conservative (1, 10%); fairly conservative (2, 16%); extremely conservative (3, 16%).

**Party** — Democrat (–1, 47%); Independent (0, 10%); Republican (1, 37%); other or don’t know (coded as missing, 5%).

**Friends** — Do most of your friends prefer the same party you do (1, 44%); most prefer different parties (0, 15%); about evenly divided (0, 26%); don’t know (0, 15%).

**Conspiracist** — Sum of moonfake, NASA astronauts did not land on the Moon—disagree (1, 71%), unsure (2, 17%), agree (3, 12%); and earthflat, the Earth is flat, not round—disagree (1, 80%), unsure (2, 9%), agree (3, 10%). **Conspire** ranges from 2 (disagree with both conspiracies, 64%) to 6 (agree with both conspiracies, 3%).
Table 2. Logit coefficients (with robust standard errors) from a probability-weighted generalized structural equation model (GSEM) with ordinal (Trumpism) or binomial (NoACC, NoVax) distribution family and logit link function. Estimation sample \( n = 1,061 \); variable definitions, coding and descriptive statistics are given in Table 1.

<table>
<thead>
<tr>
<th>Exogenous</th>
<th>Trumpism</th>
<th>NoACC</th>
<th>NoVax</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>-0.016 (0.005)**</td>
<td>0.021 (3.60)***</td>
<td>-0.023 (0.007)**</td>
</tr>
</tbody>
</table>
| **Female**| -0.209 (0.166) | 0.011 (0.195) | **0.621 (0.207)***
| **White** | 0.743 (0.201)*** | 0.044 (0.249) | -0.001 (0.271) |
| **Income**| 0.005 (0.083) | -0.020 (0.091) | **-0.237 (0.105)*** |
| **Evangelical** | 0.601 (0.199)** | 0.352 (0.219) | -0.040 (0.245) |
| **Education** | -0.074 (0.097) | **-0.302 (0.125)*** | -0.392 (0.154)* |
| **Ideology** | **0.298 (0.059)***** | 0.101 (0.067) | **0.302 (0.073)***** |
| **Education**×ideology | 0.004 (0.044) | **0.146 (0.051)**** | **0.166 (0.065)*** |
| **Friends** | **0.553 (0.159)***** | -0.059 (0.206) | -0.090 (0.235) |
| **Party**  | **1.100 (0.117)***** | -0.118 (0.158) | 0.023 (0.183) |
| **Friends**×party | **0.506 (0.165)**** | **0.703 (0.219)**** | **0.505 (0.251)*** |
| **Conspiracist** | **0.524 (0.082)***** | 0.050 (0.091) | **0.269 (0.099)**** |
| **Trumpism** | .... | **0.204 (0.054)***** | **0.100 (0.059)**† |

†\( p < 0.10 \) *\( p < 0.05 \) **\( p < 0.01 \) ***\( p < 0.001 \) (two-tailed tests)
Figure 1: Schematic representation of the generalized structural equation model (GSEM).

Figure 2: Education × ideology interaction effects on probability respondent rejects reality of anthropogenic climate change (a) or does not intend to get vaccinated for COVID-19 (b). Adjusted margins plots based on the GSEM model in Table 2.
Figure 3: *Friends × party* interaction effects on probability respondent approves of ex-President Trump (a), rejects reality of anthropogenic climate change (b) or does not intend to get vaccinated for COVID-19 (c). Adjusted margins plots based on the GSEM model in Table 2.