The Limited Effects of Partisan and Consensus Messaging in Correcting Science Misperceptions

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Abstract

The spread of COVID-19 misinformation highlights the need to correct misperceptions about health and science. Research on climate change suggests that informing people about a scientific consensus can reduce misinformation endorsement, but these studies often fail to isolate the effects of consensus messaging and may not translate to other issues. We therefore conduct a survey experiment comparing standard corrections with those citing a scientific consensus for three issues: COVID-19, climate change, and vaccination. We find that consensus corrections are never more effective than standard corrections at countering misperceptions and generally fail to reduce them with only one exception. We also find that consensus corrections endorsed by co-partisans do not reduce misperceptions relative to standard corrections, while those endorsed by opposition partisans are viewed as less credible and can potentially even provoke a backfire effect. These results indicate that consensus and partisan messaging in corrections are less effective than previous research suggests when compared to appropriate baseline messages.

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False and unsupported claims have spread widely since the start of the COVID-19 pandemic, fostering misperceptions about the origins of the novel coronavirus (SARS-CoV-2), the health risks it presents, and how to most effectively prevent and treat the illness it causes (Pennycook et al. N.d.). This misinformation continues to circulate despite extensive efforts by media organizations, social media companies, and health organizations to debunk it (Rogers 2020; World Health Organization 2020). The prevalence of these false claims threatens efforts to mitigate the deadly impact of the virus and potentially jeopardizes social welfare, mirroring the pattern observed with other health and science issues like climate change and vaccination (e.g., Frankovic 2019; Reinhart 2020).

One popular approach to debunking misinformation about scientific and health issues is presenting evidence of a scientific consensus that contradicts a false claim or belief (van der Linden et al. 2017; Koehler 2016). However, studies testing consensus messaging have several limitations. First, they often fail to isolate the effect of a consensus message itself and instead typically bundle information about a consensus with a correction message saying the claim is false. In addition, these studies largely focus on climate change, a highly polarized issue in which directionally motivated reasoning — a phenomenon in which individuals process information with a bias toward a preferred conclusion (Kunda 1990) — is seemingly common and the immediate stakes for most Americans are relatively low (e.g., van der Linden et al. 2014; van der Linden, Leiserowitz, and Maibach 2018).

Moreover, findings vary on which sources are most effective for corrections. The corrections tested in many science and health misinformation studies typically attribute their information to scientists and experts, who may be highly credible to some audiences (e.g., van der Linden et al. 2014; van der Linden, Leiserowitz, and Maibach 2018). However, other groups may distrust those sources and/or engage in directionally motivated reasoning when presented with counter-attitudinal information on controversial issues like climate change (Bolsen and Druckman 2018). As a result, scholars have examined whether co-partisan sources are more

effective at correcting misinformation (Berinsky 2017; Benegal and Scruggs 2018; Bolsen, Palm, and Kingsland 2019). However, messages from partisan sources are likely to be encountered by people who don't share the party affiliation of the speaker. These sources may be less effective at persuading people from the other party or even provoke negative reactions from them (e.g., Hart and Nisbet 2012; Swire et al. 2017). Moreover, the effectiveness of messages from scientists and partisan sources may vary across issues depending on the level of partisan polarization (which may strengthen directionally motivated reasoning) and perceived threat (which may strengthen accuracy motivations).

We therefore compare the effects of different sources and types of corrections on belief in misinformation, testing the relative effectiveness of a scientific consensus correction endorsed by scientists, co-partisans, or opposition partisans versus a standard, non-consensus correction. We further consider whether the relative effectiveness of different sources of consensus messaging varies between COVID-19 and other types of issues by comparing three issues — COVID-19, climate change, and vaccination — that differ in both partisan polarization and perceived threat. We hypothesized that co-partisan endorsements would be most effective for polarized issues, such as climate change, that we expected to trigger stronger directionally motivated reasoning. Conversely, we expected scientific sources to be most effective for issues like COVID-19 on which individuals perceive high levels of personal threat, which should instead increase accuracy motivated reasoning (Kunda 1990).

Our results indicate that consensus corrections are generally not more effective than non-consensus corrections. Consensus messages from scientists only reduce misperceptions compared to a misinformation-only baseline on the issue of climate change and are never measurably more effective than standard correction messages. Likewise, consensus corrections from co-partisans do not reduce misperceptions versus baseline and are not more effective than standard corrections on any issue. Conversely, corrections from opposition partisans were seen as less credible and even backfired among Democrats on climate change. Over-

all, our results suggest that the effectiveness of corrections using consensus messaging or partisan sources may be overstated. These findings underscore the importance of identifying the appropriate baseline for comparison when assessing the corrective effects of political messages.

Theoretical expectations

We specifically test the following hypotheses and research questions, which were preregistered prior to data collection.[1]

First, though prior studies have shown mixed results for the issues we consider (e.g., van der Linden, Leiserowitz, and Maibach 2018; Kreps and Kriner N.d.; Nyhan et al. 2014), meta-analyses show that exposure to corrective information typically reduces belief in misinformation (Chan et al. 2017; Walter et al. 2019). We therefore expect participants who receive a correction to rate false or unsupported claims about climate change (H1a), COVID-19 (H1b), and vaccination (H1c) as less accurate than those who receive misinformation but no correction.

Two forms of corrections should be especially effective: attributing consensus messages to scientists, which has been found to increase belief accuracy across partisan lines (e.g., van der Linden, Leiserowitz, and Maibach 2018), and attributing consensus messages to co-partisan elites, which may be especially effective for otherwise skeptical partisan groups (e.g., Benegal and Scruggs 2018). We therefore hypothesized that participants who are exposed to a message in which either co-partisans or scientists endorse a correction citing a scientific consensus would rate the claim being corrected as less accurate (H2a) and rate the source of the correction as more credible (H2b) than those who received an otherwise equivalent correction that does not cite a consensus.

[1] An anonymized version of our preregistration is available for peer review at `https://osf.io/bkfgh?view_only=09fbe1dde74641ee83cc2ea21a9618bf`.

However, we expect that the effects of these messages will differ by issue. Directionally motivated reasoning should be more common on issues with high levels of partisan polarization among elites (e.g., Druckman, Peterson, and Slothuus 2013), while accuracy motivated reasoning should be more common on issues with high levels of perceived threat (Kunda 1990; Vraga and Bode 2017). We therefore expected that co-partisan corrections citing a scientific consensus would decrease misinformation belief and increase the perceived credibility of the corrective source more relative to scientific consensus corrections for climate change, a more polarized issue, than for vaccination, a less polarized issue (H3a). We conversely expected scientific endorsement to be more effective than co-partisan endorsement for COVID-19, an issue of high personal threat (especially given the pandemic taking place when the study was conducted), compared to climate change, an issue of relatively lower personal threat (H3b).[2]

In addition, we examine the following preregistered research questions for which we have weaker expectations: whether consensus corrections from co-partisans or scientists would be more effective for misinformation belief about COVID-19 (RQ1); whether consensus corrections from scientists (versus co-partisans) would be more effective for COVID-19, an issue of high threat, than vaccination, an issue of relatively lower threat (RQ2); how an opposition partisan endorsement of a consensus correction (versus scientists) would affect misinformation belief for the more polarized issues of climate change and COVID-19 (RQ3); and whether a co-partisan endorsement of a consensus correction would have differing effects by party for the more polarized issues of climate change and COVID-19 (RQ4).[3]

[2]We consider threat as an issue-level variable that is hypothesized to increase accuracy motivated reasoning in our theory and preregistered analysis plan, but acknowledge that other studies conceptualize threat as an individual-level variable and/or expect that it would induce directionally motivated reasoning instead (e.g., Haas and Cunningham 2014; Weeks 2015; Groenendyk 2016). See footnote 6 below for a summary of exploratory results that consider perceived threat as an individual-level moderator.

[3]We preregistered a fifth research question about the effect of corrective messages on participants' willingness to sign a petition supporting increased funding for the issues in question, but found no significant results (see Table B8 in Online Appendix B), contradicting prior studies which find strong effects of consensus messages on opinion (e.g., van der Linden et al. 2014; van der Linden, Leiserowitz, and Maibach 2018).

Methods

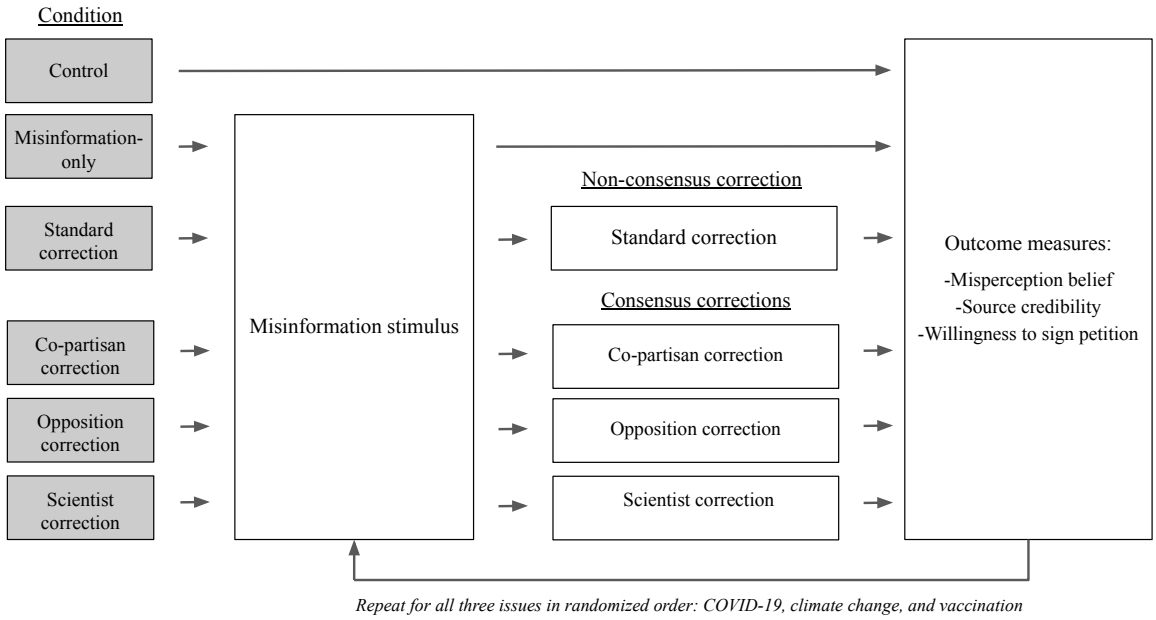
Study design

Our experimental design builds on Benegal and Scruggs (2018), which tested four treatments for climate change misinformation: no correction, a scientific consensus correction, a Republican endorsement of a scientific consensus correction, and a Democratic endorsement of a scientific consensus correction. However, since Benegal and Scruggs do not test a correction message that excludes a consensus component, it is unclear if the corrective effects they observe are due to the consensus treatments or simply exposure to any corrective information. We therefore add a condition in which respondents are exposed to a correction without any reference to consensus, which we refer to as a standard correction.

As Figure 1 illustrates, respondents were randomized into one of six conditions in a between-subjects design: a pure control group which saw no misinformation or correction; a misinformation-only condition in which respondents read an article containing misinformation about each issue; a standard correction condition in which respondents read each misinformation article and a corresponding factual correction immediately afterward; or three consensus correction conditions in which respondents read each misinformation article and a corresponding factual correction immediately afterward. The consensus corrections consisted of an endorsement of a scientific consensus supporting the corrective information. This endorsement was either attributed to a group of scientists, a group of Democratic elected officials, or a group of Republican elected officials. Respondents encountered each issue in random order and remained in the same condition for all three issues.

Each misinformation article claimed that the threat (climate change or COVID-19) or effectiveness (vaccines) of the topic in question was being exaggerated, arguing instead that COVID-19 is no more harmful than the seasonal flu, that climate change is no more harmful than natural temperature cycles, and that infectious diseases are no more harmful to unvac-

Figure 1: Survey flow diagram



cinated people than to vaccinated people. To the extent possible, we matched the language of the misinformation and correction articles to maximize parallelism and minimize issue-specific confounds. (The full survey instrument, including exact wording for all measures and stimuli, is provided in Online Appendix A.)

Before viewing the articles and outcome measures, participants answered demographic and attitudinal questions. Next, participants viewed the treatment stimuli and outcome questions. Misinformation, corrective information, and outcome questions were grouped by issue. Misinformation and correction articles were followed by an attention check (passage rates ranged from 62–66% for the misinformation articles and 77–85% for the correction articles). Within each issue block, participants rated each of the following on a four-point scale: the accuracy of the false claim in the misinformation article, the credibility of the correction article (if viewed), and their willingness to sign a petition supporting a policy aligned with the corrective information (see Table B8 in Online Appendix B for results for this measure).

Issue blocks were presented in random order. Filler articles were shown between issues to minimize order effects. All respondents were debriefed at the conclusion of the study.

Sample characteristics

Participants were recruited May 9–10, 2020 through the Lucid Marketplace online panel using quotas to mirror the age, race, gender, and region distribution for the U.S. adult population.[4] Lucid provides a larger, more diverse, and less professionalized respondent pool than Amazon Mechanical Turk and has been found to match population benchmarks and experimental findings from other survey panels (Coppock and McClellan 2019). Table B1 in the Online Appendix demonstrates sample balance across conditions. The study was approved by [redacted for peer review].

Results

Our analysis plan was preregistered with EGAP prior to fielding the study (`https://tinyurl.com/ybeg235d`); all deviations are labeled. Statistical analyses were conducted using OLS regression with robust standard errors. All experimental analyses below include indicators for co-partisan and opposition partisan corrections that were constructed using respondent partisan self-identification (including leaners) and our Democratic and Republican correction conditions. These results thus exclude pure independents for whom the co-partisan/opposition correction variables are not defined.

Following our preregistered analysis plan, we detected significant effects of issue order on the effects of our experimental manipulations (see Section B.1 in Online Appendix B for results and further discussion). Our study thus focuses exclusively on experimental results for the first issue seen by respondents, which was randomized.

[4]Most states were under shelter-in-place orders for COVID-19 when the study was conducted.

We also assessed our expectations of perceived personal threat and partisan polarization by issue. For threat, we expected COVID-19 to be seen as posing the most immediate risk to respondents' health and safety followed by the risk from not getting vaccinated (i.e., from other communicable diseases) and then climate change. However, the risks posed by COVID-19 and forgoing vaccination were not viewed as measurably different by our respondents, though both were seen as presenting greater immediate risks than climate change (see Table B2 in the Online Appendix). As expected, however, pre-treatment measures show the greatest partisan differences over the immediate health and safety risk of climate change followed by COVID-19 and then vaccination (Table B3).

We now consider the effects of the experimental treatments on belief in misinformation about each issue. Our research confirms previous findings that corrective information can reduce belief in false information about climate change. However, we did not find evidence that corrective information about COVID-19 and vaccination had similar effects. Results are presented in Table 1 and summarized graphically in Figure 2.[5]

Consistent with previous research, our first finding indicates that corrective information about climate change reduces misinformation belief relative to the misinformation-only condition (-0.16, $p < .05$). Effects were similar for scientist corrections (-0.17, $p < .05$) and co-partisan corrections (-0.14), though we could not reject the null hypothesis of no effect at the $p < .05$ level for the latter. We thus generally find support for H1a, which predicted that corrective information would reduce misinformation belief, on climate change.

By contrast, we find no measurable effects of any correction condition relative to the misinformation-only condition for the issues of COVID-19 and vaccination and thus do not find support for H1b and H1c, respectively. We note that COVID-19 misinformation had no measurable effect on misinformation belief, which was not reduced further by exposure to corrective information (similar to the findings in Carey et al. 2020). For vaccines, exposure

[5]These results are consistent when estimated using ordered probit (see Table B4 in the Online Appendix).

Table 1: Effects of information exposure on misinformation belief

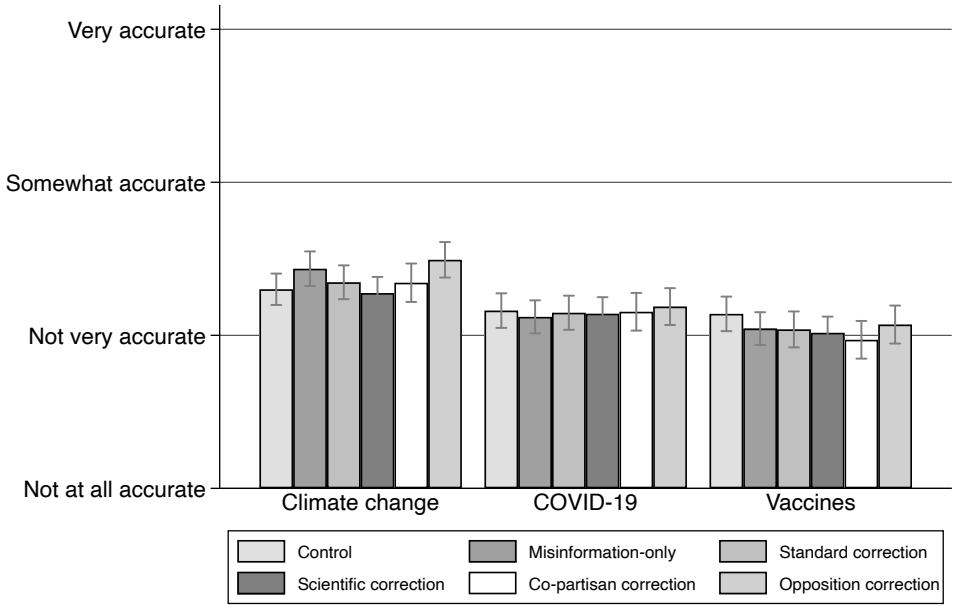
	Climate change	COVID-19	Vaccination
Effects versus pure control condition			
Misinformation-only	0.12	-0.02	-0.16*
	(0.08)	(0.08)	(0.08)
Standard correction	-0.03	-0.02	-0.21*
	(0.08)	(0.08)	(0.08)
Scientist correction	-0.05	0.03	-0.14
	(0.07)	(0.08)	(0.08)
Co-partisan correction	-0.02	-0.04	-0.17*
	(0.07)	(0.08)	(0.08)
Opposition correction	0.15*	0.03	-0.13
	(0.07)	(0.08)	(0.08)
Controls	✓	✓	✓
Effects versus misinformation-only condition			
Standard correction	-0.16*	0.00	-0.06
	(0.08)	(0.08)	(0.08)
Scientist correction	-0.17**	0.05	0.02
	(0.07)	(0.08)	(0.07)
Co-partisan correction	-0.14	-0.02	-0.01
	(0.08)	(0.08)	(0.07)
Opposition correction	0.03	0.05	0.03
	(0.08)	(0.08)	(0.08)
N	1756	1730	1783

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners). Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group.

to misinformation actually reduced misinformation belief (-0.16, $p < .05$), suggesting it was unpersuasive. These beliefs were not reduced further by exposure to corrective information, however.

We found little evidence to support our expectations that corrections in which scientists or co-partisans endorsed a scientific consensus would be more effective than standard corrections. Misinformation belief did not differ measurably between correction conditions for

Figure 2: Misinformation belief by issue and condition



Mean accuracy beliefs on a 1–4 scale ("Not at all accurate" to "Very accurate") with 95% confidence intervals.

any of the three issues, including COVID-19 (H2a; RQ1). Similarly, we find generally null results for the perceived credibility of scientist or co-partisan consensus corrections versus a standard correction (H2b; see Table B6), though respondents rated the scientist correction as more credible than the standard correction for climate change (0.14, $p < .05$). Finally, as reported in Table B5, we do not find the expected differences in co-partisan versus scientist correction effects across pairs of issues that differ most in expected polarization (climate change versus vaccination; H3a) and most in perceived personal threat (COVID-19 versus climate change; H3b).[6] Results are similar for perceived credibility (Table B7).

To better understand these results, we conducted exploratory analyses of manipulation check passage rates and response timing across conditions. These results suggest that the

[6] To further explore the moderating role of threat in the effectiveness of different sources of corrections, we conduct an exploratory analysis using respondents' pretreatment ratings of perceived threat of various issues as a moderating variable rather than issue-level threat as in H3 and Table 1 (see Table B9 in Online Appendix B). Across all issues, we find that the co-partisan correction is no less effective than the scientist correction among individuals perceiving high threat than among individuals perceiving low threat.

increased length and complexity of the consensus corrections may have made them more difficult to comprehend. First, as Table B10 shows, respondents in the conditions in which scientists, co-partisans, or opposition partisans cited a scientific consensus were generally less likely to correctly answer the manipulation check questions compared to those in the standard (non-consensus) correction groups.[7] We also find that individuals reading consensus corrections spent longer on the correction page than did individuals receiving the standard correction (see Table B11).

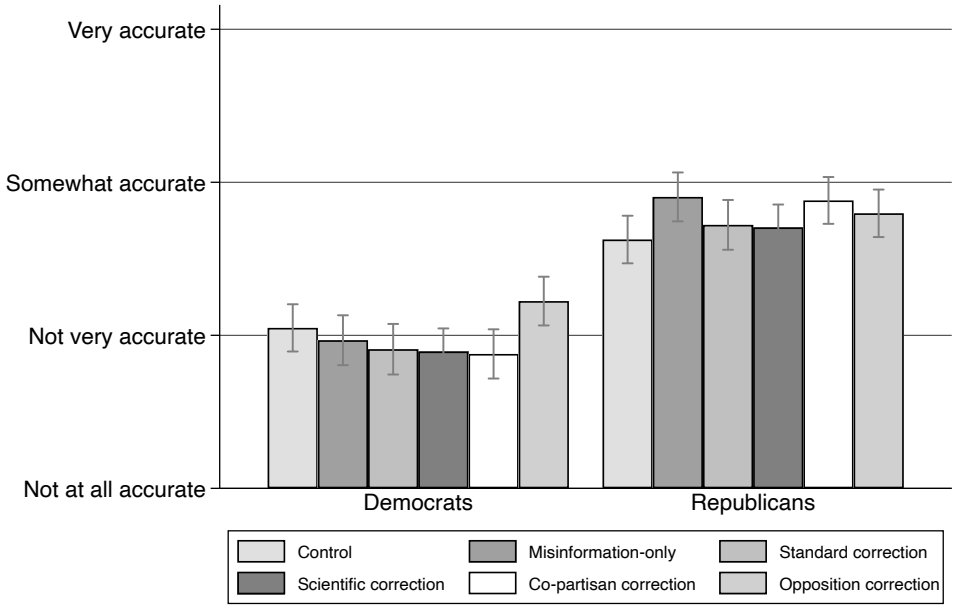
The consensus correction from opposition partisans was never more effective and was sometimes less effective than other correction messages on issues of partisan controversy. We find in an exploratory analysis that an opposition partisan correction is measurably less effective than a correction from scientists for climate change (-0.19, $p < .01$) and actually increases misinformation belief compared to baseline (0.15, $p < .05$). Comparable tests are null for COVID-19, another (somewhat) polarized issue. In addition, respondents receiving a consensus correction from opposition partisans rate the correcting source as significantly less credible than the standard correction for both climate change (-0.35, $p < .005$) and COVID-19 (-0.44, $p < .005$).

These effects varied substantially by party, though. As we show in Table B12, the opposition correction resulted in significantly greater misinformation belief on climate change among Democrats than did the scientist correction (0.34, $p < .005$), a difference that was measurably different than what was observed among Republicans ($p < .05$). Moreover, Democrats' belief in climate change misinformation *increased* versus baseline if they received the opposition partisan correction (0.21, $p < .05$). By contrast, such a backfire effect was not observed among Republicans.

This backfire effect is likely the result of an opposition party source cue rather than a

[7] These questions were not identical, however. Both had four options, but respondents assigned to the consensus corrections were asked to identify the consensus corrections' source and content (e.g., "Republican officials point to a scientific consensus that COVID-19 poses a risk"), whereas those reading the non-consensus correction were asked to identify only its content (e.g., "COVID-19 is more harmful than the seasonal flu").

Figure 3: Climate change misinformation belief by party



Mean accuracy beliefs on a 1–4 scale ("Not at all accurate" to "Very accurate") with 95% confidence intervals. Estimated among self-identified Democrats and Republicans (including leaners).

disconfirmation bias; the latter interpretation is inconsistent with increased Democratic belief in a climate change misperception generally unsupported by Democrats. Such a backfire may arise if respondents ignore or reject the content of the correction due to the presence of an opposition party cue, which provokes a negative response. We find in exploratory analysis that Democrats receiving the opposition correction answered the manipulation check correctly 16 percentage points less often than did Democrats receiving the scientist correction of climate change misinformation (see Table B13 in the Online Appendix).

Finally, we found per RQ4 that the co-partisan correction was measurably less effective ($p < .05$) among Republicans than Democrats for climate change (perhaps because the source was less plausible). These partisan differences in co-partisan and opposition correction effects for climate change are illustrated in Figure 3. No such effect was found for COVID-19.

Conclusion

Consistent with prior research, we find that corrections citing a scientific consensus can effectively correct misperceptions about climate change. However, this effect does not extend to the other highly salient health and scientific issues of COVID-19 and vaccination. We generally found little evidence that consensus messages from either scientists or co-partisans were more effective than standard corrections, contradicting prior research (van der Linden, Leiserowitz, and Maibach 2018; Benegal and Scruggs 2018). The effects of these messages did not vary with issue-level differences in partisan polarization or perceived threat.

We also find that, among Democrats, opposition party endorsements of the scientific consensus lead to significantly *greater* belief in misinformation (on climate change) and lower credibility ratings of the corrective source (on all issues) relative to the scientist endorsement. We specifically observe a backfire effect on climate change, our study's most polarized issue and thus the one for which Democrats are presumably most likely to believe Republicans have differing interests (Lupia and McCubbins 1998). In contrast, we may not have observed a backfire effect for COVID-19 and vaccination because Democratic and Republican elites are (somewhat) less polarized on these issues. Nonetheless, given the ineffectiveness of co-partisan corrections and the risk of backfire against corrections from opposition partisans, fact-checkers might consider avoiding partisan-sourced corrections entirely.

One potential mechanism for why consensus corrections are no more effective than standard corrections is that consensus corrections are lengthier and more complex, which may have reduced respondents' understanding of the corrective information. Consensus corrections require both a source of consensus and the content of a correction, whereas standard corrections only require the latter. This increased length and complexity could have dissuaded respondents from reading the entire message or made the message less comprehensible or persuasive (Lowrey 1992). The greater clarity and brevity of a correction without consensus

may therefore be more effective in real-world contexts where audiences often lack interest, time, or both.

This study has several limitations. First, the corrections did not cite any outside sources in order to maintain the plausibility of the consensus corrections and to avoid confounding source effects across the three issues. This design choice may have reduced the effectiveness of the corrections we tested. Second, exposure to our misinformation articles *decreased* belief in a vaccine misperception and had no measurable effect on the two other misperceptions we tested. Future studies should consider how to increase the validity of these stimuli, which may have been seen as implausible or simply not convincing enough to overcome respondents' prior beliefs. Third, our study did not include accuracy incentives or other mechanisms to deter expressive responding; as with any survey, we cannot rule out the possibility that some respondents answered insincerely. Fourth, future research should determine how to avoid order effects in correction studies with multiple issues.

Our results nonetheless provide important evidence that neither partisan sources nor consensus messages are more effective than the baseline set by standard approaches to correcting misinformation. Future studies should ensure that they use proper baselines for comparison (e.g., comparing effects against standard approaches to correcting science- or health-related misperceptions) when assessing the effects of corrective messaging.

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Online Appendix A

This study is being conducted by [redacted for peer review]. We ask for your attention for a few minutes and we thank you for your attention and your responses. Your participation is voluntary and you may decline the survey or withdraw at any time. No information that identifies you will be collected or retained by the researchers. However, any online interaction carries some risk of being accessed. Do you consent to participate in the survey?
-Yes
-No

[Demographics]

How old are you?
-Under 18
-18 - 24
-25 - 34
-35 - 44
-45 - 54
-55 - 64
-65 - 74
-75 - 84
-85 or older

In what state do you currently reside?
-Alabama
-Alaska
-Arizona
-Arkansas
-California
-Colorado
-Connecticut
-Delaware
-District of Columbia
-Florida
-Georgia
-Hawaii
-Idaho
-Illinois
-Indiana
-Iowa
-Kansas
-Kentucky
-Louisiana

-Maine
-Maryland
-Massachusetts
-Michigan
-Minnesota
-Mississippi
-Missouri
-Montana
-Nebraska
-Nevada
-New Hampshire
-New Jersey
-New Mexico
-New York
-North Carolina
-North Dakota
-Ohio
-Oklahoma
-Oregon
-Pennsylvania
-Rhode Island
-South Carolina
-South Dakota
-Tennessee
-Texas
-Utah
-Vermont
-Virginia
-Washington
-West Virginia
-Wisconsin
-Wyoming
-Puerto Rico
-I do not reside in the United States

What is your gender?
-Male
-Female
-Nonbinary/Two spirit
-Other
-Prefer not to say

Please check one or more categories below to indicate what race(s) you consider yourself to

be.
-White
-Black or African American
-American Indian or Alaska Native
-Asian/Pacific Islander
-Multi-racial
-Other

Are you of Hispanic, Latino, or Spanish origin?
-Yes
-No

What is the highest degree or level of school you have completed?
-Did not graduate from high school
-High school diploma or the equivalent (GED)
-Some college
-Associate's degree
-Bachelor's degree
-Master's degree
-Professional or doctorate degree

Generally speaking, do you usually think of yourself as a Republican, a Democrat, an Independent, or something else?
-Republican
-Democrat
-Independent
-Something else

[If Democrat is selected]
Would you call yourself a strong Democrat or a not very strong Democrat?
-Strong Democrat
-Not very strong Democrat

[If Republican is selected]
Would you call yourself a strong Republican or not a very strong Republican?
-Strong Republican
-Not very strong Republican

[If Independent or Something else is selected]
Do you think of yourself as closer to the Republican Party or to the Democratic Party?
-Closer to the Republican Party
-Closer to the Democratic Party
-Neither

Generally, how interested are you in politics?
-Extremely interested
-Very interested
-Somewhat interested
-Not very interested
-Not at all interested

Do you approve or disapprove of the way Donald Trump is handling his job as President?
-Strongly approve
-Somewhat approve
-Somewhat disapprove
-Strongly disapprove

[Scientific trust]

How often would you say scientists do a good job conducting research?
-All or most of the time
-Some of the time
-Only a little of the time
-None of the time

How often would you say scientists provide fair and accurate information when making statements about their research?
-All or most of the time
-Some of the time
-Only a little of the time
-None of the time

[Pre-treatment threat battery]

You will now see a series of statements. For each one, please rate the extent to which you agree.

COVID-19, the illness caused by the novel coronavirus, poses an immediate risk to my health and safety.
-Strongly agree
-Somewhat agree
-Neither agree nor disagree
-Somewhat disagree
-Strongly disagree

The state of the economy poses an immediate risk to my health and safety.
-Strongly agree
-Somewhat agree

-Neither agree nor disagree
-Somewhat disagree
-Strongly disagree

Climate change poses an immediate risk to my health and safety.
-Strongly agree
-Somewhat agree
-Neither agree nor disagree
-Somewhat disagree
-Strongly disagree

Not getting vaccinated for an infectious disease such as tetanus, measles, or mumps would pose an immediate risk to my health and safety.
-Strongly agree
-Somewhat agree
-Neither agree nor disagree
-Somewhat disagree
-Strongly disagree

Illegal immigration poses an immediate risk to my health and safety.
-Strongly agree
-Somewhat agree
-Neither agree nor disagree
-Somewhat disagree
-Strongly disagree

[Political knowledge]

The next set of questions helps us learn what types of information are commonly known to the public. Please answer these questions on your own without asking anyone or looking up the answers. Many people don't know the answers to these questions, but we'd be grateful if you would please answer every question even if you're not sure what the right answer is. It is important to us that you do NOT use outside sources like the Internet to search for the correct answer. Will you answer the following questions without help from outside sources?
-Yes
-No

For how many years is a United States Senator elected - that is, how many years are there in one full term of office for a U.S. Senator?
-Two years
-Four years
-Six years
-Eight years
-None of these

-Don’t know

How many times can an individual be elected President of the United States under current laws?
-Once
-Twice
-Four times
-Unlimited number of terms
-Don’t know

How many U.S. Senators are there from each state?
-One
-Two
-Four
-Depends on which state
-Don’t know

Who is currently the Prime Minister of the United Kingdom?
-Richard Branson
-Boris Johnson
-David Cameron
-Theresa May
-Margaret Thatcher
-Don’t know

For how many years is a member of the United States House of Representatives elected - that is, how many years are there in one full term of office for a U.S. House member?
-Two years
-Four years
-Six years
-Eight years
-For life
-Don’t know

[Experimental section (issue order randomized)]

[Issue: Climate change]

[Misinformation (shown to respondents not in the control group)]

You will now be asked to read the headline and beginning of an article discussing climate change. Please do so carefully and take your time while reading.

CLIMATE CHANGE THREAT EXAGGERATED

New evidence shows that the threat of climate change is overstated. Climate change's impact is no more harmful than natural temperature cycles, but only the most severe cases of climate change's impacts are publicized. In reality, climate change rarely hurts anyone, and even those people are only minorly affected.

Which of the following statements best summarizes the article that you just read?
-The threat of climate change is underestimated.
-The threat of climate change is exaggerated.
-The threat of flooding is underestimated.
-The threat of flooding is exaggerated.

[Correction introduction (shown to respondents not in the control or misinformation-only groups)]

You will now be asked to read the headline and beginning of another article discussing climate change. Please do so carefully and take your time while reading.

[Standard correction/manipulation check (only shown to respondents in that condition)]

Climate Change Poses a Real Threat
Climate change presents a substantial risk. Climate change is much more harmful than changing weather patterns and has serious long-term consequences. The threat of climate change is NOT overstated.

Which of the following statements best summarizes the article that you just read?
-Climate change poses a risk.
-Climate change DOES NOT pose a risk.
-Flooding poses a risk.
-Flooding DOES NOT pose a risk.

[Scientist consensus correction/manipulation check (only shown to respondents in that condition)]

Scientists Point to Scientific Consensus: Climate Change Poses a Real Threat
A group of scientists called attention to the clear scientific consensus that climate change presents a substantial risk. Climate change is much more harmful than changing weather patterns and has serious long-term consequences. The threat of climate change is NOT overstated.

Which of the following statements best summarizes the article that you just read?
-Scientists point to a scientific consensus that climate change poses a risk.
-Elected officials point to a scientific consensus that climate change poses a risk.
-Scientists point to a scientific consensus that climate change DOES NOT pose a risk.
-Elected officials point to a scientific consensus that climate change DOES NOT pose a risk.

[Democratic consensus correction/manipulation check (only shown to respondents in that condition)]

Democratic Elected Officials Point to Scientific Consensus: Climate Change Poses a Real Threat
A group of Democratic elected officials called attention to the clear scientific consensus that climate change presents a substantial risk. Climate change is much more harmful than changing weather patterns and has serious long-term consequences. The threat of climate change is NOT overstated.

Which of the following statements best summarizes the article that you just read?
-Democratic officials point to a scientific consensus that climate change poses a risk.
-Republican officials point to a scientific consensus that climate change poses a risk.
-Democratic officials point to a scientific consensus that climate change DOES NOT pose a risk.
-Republican officials point to a scientific consensus that climate change DOES NOT pose a risk.

[Republican consensus correction/manipulation check (only shown to respondents in that condition)]

Republican Elected Officials Point to Scientific Consensus: Climate Change Poses a Real Threat
A group of Republican elected officials called attention to the clear scientific consensus that climate change presents a substantial risk. Climate change is much more harmful than changing weather patterns and has serious long-term consequences. The threat of climate change is NOT overstated.

Which of the following statements best summarizes the article that you just read?
-Republican officials point to a scientific consensus that climate change poses a risk.
-Democratic officials point to a scientific consensus that climate change poses a risk.
-Republican officials point to a scientific consensus that climate change DOES NOT pose a risk.
-Democratic officials point to a scientific consensus that climate change DOES NOT pose a risk.

[Outcome measures]

The next few questions will ask about your beliefs and opinions. Please respond as honestly as possible.

In your view, how accurate is the following claim? “Climate change is no more harmful than natural temperature cycles.”
-Very accurate

-Somewhat accurate
-Not very accurate
-Not at all accurate

Suppose someone asks you to sign a petition that supports increasing funding to combat climate change. How likely would you be to sign the petition?
-Very likely
-Somewhat likely
-Not very likely
-Not at all likely

In your opinion, how credible was the article you read titled {"Climate Change Poses a Real Threat" / "Scientists Point to Scientific Consensus: Climate Change Poses a Real Threat" / "Democratic Elected Officials Point to Scientific Consensus: Climate Change Poses a Real Threat" / "Republican Elected Officials Point to Scientific Consensus: Climate Change Poses a Real Threat"}? (shown to respondents not in the control or misinformation-only groups; respondents shown the headline of the article they viewed)
-Very credible
-Somewhat credible
-Not very credible
-Not at all credible

[Filler item and manipulation check; either cooking or birdwatching article (randomized) shown if climate change is first or second issue]

You will now be asked to read the headline and beginning of an article. Please do so carefully and take your time while reading.

Five Sauces for the Modern Cook

At Travis Lett's Los Angeles, USA restaurant, they use the five basic types of sauces that appear over and over again on menus and in cookbooks that feature the kind of vegetable-heavy, flavor-dense food that cooks and eaters favor today: yogurt sauce, pepper sauce, herb sauce, tahini sauce and pesto. "We're constantly appropriating elements from dishes we've done in the past to create new combinations," Lett said. There's a lesson here: To improve your cooking, learn how to make and use sauce like a professional.

Which of these individuals was featured in the article you just read?
-Travis Lett, Los Angeles chef
-James Johnson, New York chef
-Steve Clifford, Chicago chef
-John Wright, Miami chef What Do You Need for Birdwatching?

The most basic equipment required for bird watching is your eyes, though you will need more

if you intend to make this a serious hobby. You should use a notepad and pencil to make a note of location, time, date, weather and habitat. As soon as you see a bird that you do not recognize, you will need to have access to a good field guide. A field guide is a book that provides descriptions of birds to assist you in their identification. Finally, binoculars are pretty essential. A good pair well looked after will last you a lifetime.

What activity was the focus of the article you just read?
-Birdwatching
-Hiking
-Boating
-Swimming

[Issue: COVID-19]

[Misinformation (shown to respondents not in the control group)]

You will now be asked to read the headline and beginning of an article discussing COVID-19, the illness caused by the novel coronavirus. Please do so carefully and take your time while reading.

COVID-19 THREAT EXAGGERATED
New evidence shows that the threat of COVID-19 is overstated. COVID-19's impact is no more harmful than the seasonal flu, but only the most severe cases of COVID-19 are publicized. In reality, few cases of COVID-19 actually need hospitalization, and most people who do go to the hospital recover quickly

Which of the following statements best summarizes the article that you just read?
-The threat of COVID-19 is underestimated.
-The threat of COVID-19 is exaggerated.
-The threat of the seasonal flu is underestimated.
-The threat of the seasonal flu is exaggerated.

[Correction introduction (shown to respondents not in the control or misinformation-only groups)]

You will now be asked to read the headline and beginning of another article discussing COVID-19, the illness caused by the novel coronavirus. Please do so carefully and take your time while reading.

[Standard correction/manipulation check (only shown to respondents in that condition)]

COVID-19 Poses a Real Threat
COVID-19 presents a substantial threat. The novel coronavirus is much more infectious and has a much higher mortality rate than the flu. The threat of COVID-19 is NOT overstated.

Which of the following statements best summarizes the article that you just read? -COVID-19 is more harmful than the seasonal flu.
-The seasonal flu is more harmful than COVID-19.
-H1N1 is more harmful than the seasonal flu.
-The seasonal flu is more harmful than H1N1.

[Scientist consensus correction/manipulation check (only shown to respondents in that condition)]

Scientists Point to Scientific Consensus: COVID-19 Poses a Real Threat
A group of scientists called attention to the clear scientific consensus that COVID-19 presents a substantial threat. The novel coronavirus is much more infectious and has a much higher mortality rate than the flu. The threat of COVID-19 is NOT overstated.

Which of the following statements best summarizes the article that you just read?
-Elected officials point to a scientific consensus that COVID-19 poses a risk.
-Scientists point to a scientific consensus that COVID-19 DOES NOT pose a risk.
-Scientists point to a scientific consensus that COVID-19 poses a risk.
-Elected officials point to a scientific consensus that COVID-19 DOES NOT pose a risk.

[Democratic consensus correction/manipulation check (only shown to respondents in that condition)]

Democratic Elected Officials Point to Scientific Consensus: COVID-19 Poses a Real Threat
A group of Democratic elected officials called attention to the clear scientific consensus that COVID-19 presents a substantial threat. The novel coronavirus is much more infectious and has a much higher mortality rate than the flu. The threat of COVID-19 is NOT overstated.

Which of the following statements best summarizes the article that you just read?
-Democratic officials point to a scientific consensus that COVID-19 DOES NOT pose a risk.
-Republican officials point to a scientific consensus that COVID-19 DOES NOT pose a risk.
-Democratic officials point to a scientific consensus that COVID-19 poses a risk.
-Republican officials point to a scientific consensus that COVID-19 poses a risk.

[Republican consensus correction/manipulation check (only shown to respondents in that condition)]

Republican Elected Officials Point to Scientific Consensus: COVID-19 Poses a Real Threat
A group of Republican elected officials called attention to the clear scientific consensus that COVID-19 presents a substantial threat. The novel coronavirus is much more infectious and has a much higher mortality rate than the flu. The threat of COVID-19 is NOT overstated.

Which of the following statements best summarizes the article that you just read?
-Democratic officials point to a scientific consensus that COVID-19 poses a risk.

-Democratic officials point to a scientific consensus that COVID-19 DOES NOT pose a risk.
-Republican officials point to a scientific consensus that COVID-19 poses a risk.
-Republican officials point to a scientific consensus that COVID-19 DOES NOT pose a risk.

[Outcome measures]

The next few questions will ask about your beliefs and opinions. Please respond as honestly as possible.

In your view, how accurate is the following claim? "COVID-19 is no more harmful than the seasonal flu."
-Very accurate
-Somewhat accurate
-Not very accurate
-Not at all accurate

Suppose someone asks you to sign a petition that supports increasing funding to combat COVID-19. How likely would you be to sign the petition?
-Very likely
-Somewhat likely
-Not very likely
-Not at all likely

In your opinion, how credible was the article you read titled "COVID-19 Poses a Real Threat"? / "Scientists Point to Scientific Consensus: COVID-19 Poses a Real Threat" / "Democratic Elected Officials Point to Scientific Consensus: COVID-19 Poses a Real Threat" / "Republican Elected Officials Point to Scientific Consensus: COVID-19 Poses a Real Threat"? (shown to respondents not in the control or misinformation-only groups; respondents shown the headline of the article they viewed)
-Very credible
-Somewhat credible
-Not very credible
-Not at all credible

[Filler item and manipulation check; either cooking or birdwatching article (randomized) shown if COVID-19 is first or second issue]

You will now be asked to read the headline and beginning of an article. Please do so carefully and take your time while reading.

Five Sauces for the Modern Cook

At Travis Lett's Los Angeles, USA restaurant, they use the five basic types of sauces that appear over and over again on menus and in cookbooks that feature the kind of vegetable-

heavy, flavor-dense food that cooks and eaters favor today: yogurt sauce, pepper sauce, herb sauce, tahini sauce and pesto. “We’re constantly appropriating elements from dishes we’ve done in the past to create new combinations,” Lett said. There’s a lesson here: To improve your cooking, learn how to make and use sauce like a professional.

Which of these individuals was featured in the article you just read?
-Travis Lett, Los Angeles chef
-James Johnson, New York chef
-Steve Clifford, Chicago chef
-John Wright, Miami chef What Do You Need for Birdwatching?

The most basic equipment required for bird watching is your eyes, though you will need more if you intend to make this a serious hobby. You should use a notepad and pencil to make a note of location, time, date, weather and habitat. As soon as you see a bird that you do not recognize, you will need to have access to a good field guide. A field guide is a book that provides descriptions of birds to assist you in their identification. Finally, binoculars are pretty essential. A good pair well looked after will last you a lifetime.

What activity was the focus of the article you just read?
-Birdwatching
-Hiking
-Boating
-Swimming

[Issue: Vaccines]

[Misinformation (shown to respondents not in the control group)]

You will now be asked to read the headline and beginning of an article discussing vaccinations. Please do so carefully and take your time while reading.

VACCINE EFFECTIVENESS EXAGGERATED
New evidence shows that the effectiveness of vaccines is overstated. Infectious diseases (such as tetanus, measles, and mumps) are no more harmful to unvaccinated people than to vaccinated people, but only the rarest cases of vaccines that work are publicized. In reality, few vaccines actually help anyone, and vaccinated people still get sick just as often.

Which of the following statements best summarizes the article that you just read?
-The effectiveness of vaccines is underestimated.
-The effectiveness of vaccines is exaggerated.
-The effectiveness of antibiotics is underestimated.
-The effectiveness of antibiotics is exaggerated.

[Standard correction/manipulation check (only shown to respondents in that condition)]

You will now be asked to read the headline and beginning of another article discussing vaccinations. Please do so carefully and take your time while reading.

Vaccines Are Effective
Not getting vaccinated presents a substantial threat. Unvaccinated people are at a much higher risk of contracting diseases (such as tetanus, measles, and mumps) than vaccinated people. The effectiveness of vaccines is NOT overstated.

Which of the following statements best summarizes the article that you just read?
-Antibiotics are effective.
-Vaccines are effective.
-Antibiotics are NOT effective.
-Vaccines are NOT effective.

Scientists Point to Scientific Consensus: Vaccines Are Effective
A group of scientists called attention to the clear scientific consensus that not getting vaccinated presents a substantial threat. Unvaccinated people are at a much higher risk of contracting diseases (such as tetanus, measles, and mumps) than vaccinated people. The effectiveness of vaccines is NOT overstated.

Which of the following statements best summarizes the article that you just read?[8] -Scientists point to a scientific consensus that vaccines are NOT effective.
-Scientists point to a scientific consensus that vaccines are effective.
-Scientists point to a scientific consensus that COVID-19 poses a risk.
-Elected officials point to a scientific consensus that COVID-19 DOES NOT pose a risk.

Democratic Elected Officials Point to Scientific Consensus: Vaccines Are Effective
A group of Democratic elected officials called attention to the clear scientific consensus that not getting vaccinated presents a substantial threat. Unvaccinated people are at a much higher risk of contracting diseases (such as tetanus, measles, and mumps) than vaccinated people. The effectiveness of vaccines is NOT overstated.

Which of the following statements best summarizes the article that you just read?
-Democratic officials point to a scientific consensus that vaccines are NOT effective.
-Democratic officials point to a scientific consensus that vaccines are effective.
-Republican officials point to a scientific consensus that vaccines are NOT effective.
-Republican officials point to a scientific consensus that vaccines are effective.

Republican Elected Officials Point to Scientific Consensus: Vaccines Are Effective

[8]Due to a survey editing error, the language in this manipulation check deviates from the preregistration, which instead described the following response options for this item: "Scientists point to a scientific consensus that vaccines are NOT effective," "Scientists point to a scientific consensus that vaccines are effective," "Elected officials point to a scientific consensus that vaccines are NOT effective," and "Elected officials point to a scientific consensus that vaccines are effective."

A group of Republican elected officials called attention to the clear scientific consensus that not getting vaccinated presents a substantial threat. Unvaccinated people are at a much higher risk of contracting diseases (such as tetanus, measles, and mumps) than vaccinated people. The effectiveness of vaccines is NOT overstated.

Which of the following statements best summarizes the article that you just read? -Democratic officials point to a scientific consensus that vaccines are NOT effective. -Republican officials point to a scientific consensus that vaccines are effective. -Democratic officials point to a scientific consensus that vaccines are effective. -Republican officials point to a scientific consensus that vaccines are NOT effective.

[Outcome measures]

The next few questions will ask about your beliefs and opinions. Please respond as honestly as possible.

In your view, how accurate is the following claim? "Infectious diseases (such as tetanus, measles, and mumps) are no more harmful to unvaccinated people than to vaccinated people."
-Very accurate
-Somewhat accurate
-Not very accurate
-Not at all accurate

Suppose someone asks you to sign a petition that supports increasing funding to provide vaccines meant to treat infectious diseases (such as tetanus, measles, and mumps). How likely would you be to sign the petition?
-Very likely
-Somewhat likely
-Not very likely
-Not at all likely

In your opinion, how credible was the article you read titled "Vaccines Are Effective" / "Scientists Point to Scientific Consensus: Vaccines Are Effective" / "Democratic Elected Officials Point to Scientific Consensus: Vaccines Are Effective" / "Republican Elected Officials Point to Scientific Consensus: Vaccines Are Effective"? (shown to respondents not in the control or misinformation-only groups; respondents shown the headline of the article they viewed)
-Very credible
-Somewhat credible
-Not very credible
-Not at all credible

[Filler item and manipulation check; either cooking or birdwatching article (randomized) shown if vaccines is first or second issue]

You will now be asked to read the headline and beginning of an article. Please do so carefully and take your time while reading.

Five Sauces for the Modern Cook

At Travis Lett's Los Angeles, USA restaurant, they use the five basic types of sauces that appear over and over again on menus and in cookbooks that feature the kind of vegetable-heavy, flavor-dense food that cooks and eaters favor today: yogurt sauce, pepper sauce, herb sauce, tahini sauce and pesto. "We're constantly appropriating elements from dishes we've done in the past to create new combinations," Lett said. There's a lesson here: To improve your cooking, learn how to make and use sauce like a professional.

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What activity was the focus of the article you just read?
-Birdwatching
-Hiking
-Boating
-Swimming

[End matter]

We sometimes find people don't always take surveys seriously, instead providing humorous, or insincere responses to questions. How often do you do this?
-Never
-Rarely
-Some of the time
-Most of the time
-Always

It is essential for the validity of this study that we know whether participants looked up any information online during the study. Did you make an effort to look up information during the study? Please be honest; you will still be paid and you will not be penalized in any way

if you did.
-Yes, I looked up information
-No, I did not look up information

Do you have any comments on the survey? Please let us know about any problems you had or aspects of the survey that were confusing.

[textbox]

Thank you for answering these questions. The purpose of this study is to understand how effective different types of corrective information are at countering misinformation. During this survey, participants were exposed to commonly circulated false claims surrounding the severity of COVID-19, the impacts of climate change, and the effectiveness of vaccines. These claims are false. The truth, as corroborated by credible sources, is that COVID-19 is more infectious and has a higher mortality rate than the flu, climate change is more than changing weather patterns and poses a real threat, and vaccines are effective in preventing disease.

Thank you again for your participation. Please do not share any information about the nature of this study with other potential participants. This research is not intended to support or oppose any political candidate or office. This research has no affiliation with any political candidate or campaign and has received no financial support from any political candidate or campaign. Should you have any questions about this study, please contact [redacted for peer review].

Online Appendix B

Table B1: Sample descriptive and balance statistics

	Control	Misinfo-only	Standard	Scientist	Democrat	Republican	Total
Gender							
Male	53%	56%	54%	55%	55%	52%	54%
Female/other	47%	44%	46%	45%	45%	48%	46%
Education							
Less than bachelor's	54%	52%	55%	53%	55%	52%	53%
College graduate	46%	48%	45%	47%	45%	48%	47%
Race/ethnicity							
Non-white	26%	24%	26%	27%	26%	27%	26%
White	74%	76%	74%	73%	74%	73%	74%
Age							
18–34	29%	29%	30%	30%	28%	31%	31%
35–44	20%	22%	20%	23%	22%	23%	23%
45–54	15%	15%	15%	15%	15%	13%	13%
55–64	18%	18%	18%	17%	18%	17%	17%
65+	17%	17%	16%	15%	17%	16%	16%

Sample totals calculated among respondents with non-missing data among 6645 total respondents.

Table B2: Pre-treatment risk perceptions

	Coefficient (SE)
Climate change	-0.62***
	(0.02)
COVID-19	-0.04*
	(0.02)
Constant	4.20***
	(0.01)
Differences between issues	
Climate change - COVID-19	-0.57***
	(0.02)
N	16248
Respondents	6519

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated for climate change, COVID-19, and the risk of not getting vaccinated (reference category).

Table B3: Pre-treatment risk perceptions by party

	Coefficient (SE)
Climate change	-0.26***
	(0.02)
Climate change × Republican	-0.75***
	(0.04)
COVID-19	0.07***
	(0.02)
COVID-19 × Republican	-0.23***
	(0.03)
Republican	-0.18***
	(0.03)
Constant	4.28***
	(0.02)
Relative polarization between issues	
Climate change × Republican - COVID-19 × Republican	-0.52***
	(0.03)
N	16248
Respondents	5422

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors clustered by respondent. Estimated among self-identified Democrats and Republicans (including leaners) for climate change, COVID-19, and the risk of not getting vaccinated (reference category).

Table B4: Effects of information exposure on misinformation belief (ordered probit)

	Climate change	COVID-19	Vaccination
Effects versus pure control condition			
Misinformation-only	0.15	-0.01	-0.18*
	(0.09)	(0.10)	(0.09)
Standard correction	-0.05	-0.03	-0.26**
	(0.09)	(0.10)	(0.10)
Scientist correction	-0.08	0.05	-0.16
	(0.09)	(0.09)	(0.09)
Co-partisan correction	-0.02	-0.03	-0.20*
	(0.09)	(0.10)	(0.09)
Opposition correction	0.18*	0.05	-0.15
	(0.09)	(0.09)	(0.10)
Controls	✓	✓	✓
Effects versus misinformation-only condition			
Standard correction	-0.20**	-0.02	-.08
	(0.09)	(0.10)	(0.09)
Scientist correction	-0.23**	0.05	0.02
	(0.09)	(0.09)	(0.09)
Co-partisan correction	-0.17*	-0.03	-0.02
	(0.09)	(0.09)	(0.09)
Opposition correction	0.03	0.05	0.03
	(0.09)	(0.09)	(0.09)
N	1756	1730	1783

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). Ordered probit models with robust standard errors (cutpoint omitted). Estimated among self-identified Democrats and Republicans (including leaners). Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group.

Table B5: Pooled model of information exposure effects on misinformation belief

	Coefficient (SE)
Misinformation-only	-0.14
	(0.08)
Misinformation × climate	0.29**
	(0.11)
Misinformation × COVID-19	0.12
	(0.11)
Misinformation + standard correction	-0.18*
	(0.08)
Misinformation + standard correction × climate change	0.17
	(0.11)
Misinformation + standard correction × COVID-19	0.16
	(0.11)
Misinformation + scientist correction	-0.15
	(0.08)
Misinformation + scientist correction × climate change	0.10
	(0.11)
Misinformation + scientist correction × COVID-19	0.18
	(0.11)
Misinformation + co-partisan correction	-0.14
	(0.08)
Misinformation + co-partisan correction × climate change	0.10
	(0.11)
Misinformation + co-partisan correction × COVID-19	0.10
	(0.11)
Misinformation + opposition correction	-0.13
	(0.09)
Misinformation + opposition correction × climate change	0.28*
	(0.11)
Misinformation + opposition correction × COVID-19	0.16
	(0.12)
Climate change	0.18*
	(0.08)
COVID-19	-0.03
	(0.08)
Controls	✓
Co-partisan - scientist correction (vs. vaccination)	
Climate change	0.01
	(0.11)
COVID-19	-0.07
	(0.11)
Difference	-0.08
	(0.11)
N	5269

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners). Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group. Issue differences are estimated versus the baseline issue of vaccination.

Table B6: Effects of correction condition on perceived credibility

	Climate change	COVID-19	Vaccination
Scientist correction	0.14*	0.09	-0.04
	(0.06)	(0.05)	(0.06)
Co-partisan correction	-0.01	-0.06	-0.04
	(0.07)	(0.06)	(0.06)
Opposition correction	-0.35***	-0.44***	-0.30***
	(0.07)	(0.06)	(0.06)
Controls	✓	✓	✓
N	1162	1133	1181

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners). Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group.

Table B7: Pooled model of correction condition on perceived credibility

	Coefficient (SE)
Scientist correction	-0.03
	(0.06)
Scientist correction× climate change	0.18*
	(0.09)
Scientist correction× COVID-19	0.11
	(0.08)
Co-partisan correction	-0.05
	(0.06)
Co-partisan correction× climate change	0.06
	(0.09)
Co-partisan correction× COVID-19	-0.02
	(0.08)
Opposition correction	-0.29***
	(0.06)
Opposition correction × climate change	-0.07
	(0.09)
Opposition correction × COVID-19	-0.15
	(0.09)
Climate change	-0.37***
	(0.07)
COVID-19	-0.05
	(0.06)
Controls	✓
Co-partisan - scientist correction effect by issue (versus vaccination)	
Climate	-0.12
	(0.08)
COVID-19	-0.13
	(0.08)
Difference	-0.01
	(0.08)
N	3476

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners). Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group.

Table B8: Effects of information exposure on likelihood of signing petition

	Climate change	COVID-19	Vaccination
Misinformation-only	0.03	0.02	-0.01
	(0.07)	(0.06)	(0.06)
Misinformation + standard correction	0.07	-0.01	0.01
	(0.07)	(0.06)	(0.06)
Misinformation + scientist correction	-0.02	-0.01	0.03
	(0.07)	(0.06)	(0.06)
Misinformation + copartisan correction	0.06	-0.09	0.02
	(0.07)	(0.06)	(0.06)
Misinformation + opposition correction	-0.07	-0.09	0.07
	(0.07)	(0.06)	(0.06)
Controls	✓	✓	✓
N	1752	1724	1779

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners).

Table B9: Effects of information exposure on misinformation belief by perceived threat

	Climate change	COVID-19	Vaccination
Misinformation-only	0.21	0.44	0.17
	(0.18)	(0.23)	(0.24)
High threat	-0.30*	-0.35*	-0.00
	(0.13)	(0.17)	(0.15)
Misinformation × high threat	-0.10	-0.50*	-0.35
	(0.19)	(0.24)	(0.26)
Standard correction	0.02	0.30	0.08
	(0.18)	(0.21)	(0.32)
Standard correction × high threat	-0.07	-0.39	-0.31
	(0.20)	(0.25)	(0.33)
Scientist correction	0.20	0.39	0.10
	(0.15)	(0.24)	(0.21)
Scientist correction × high threat	-0.35*	-0.39	-0.26
	(0.17)	(0.25)	(0.23)
Co-partisan correction	0.12	0.26	-0.21
	(0.15)	(0.22)	(0.23)
Co-partisan correction × high threat	-0.17	-0.34	0.04
	(0.18)	(0.24)	(0.25)
Opposition correction	0.08	-0.01	0.46
	(0.17)	(0.24)	(0.24)
Opposition correction × high threat	0.07	0.04	-0.66**
	(0.19)	(0.25)	(0.26)
Controls	✓	✓	✓
(Co-partisan × high threat) - (scientific × high threat)	0.17	0.05	0.30
	(0.16)	(0.25)	(0.27)
N	1752	1728	1783

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners). Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group.

Table B10: Manipulation check success rate by experimental condition

	Climate change	COVID-19	Vaccination
Scientist correction	-0.08***	-0.05	-0.05
	(0.03)	(0.03)	(0.03)
Co-partisan correction	-0.05	-0.11***	-0.09**
	(0.03)	(0.03)	(0.03)
Opposition correction	-0.16***	-0.10***	-0.10***
	(0.03)	(0.03)	(0.03)
Controls	✓	✓	✓
N	1170	1140	1184

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners). All effects are relative to the standard correction condition.

Table B11: Time spent on correction page by experimental condition

	Climate change	COVID-19	Vaccination
Scientist correction	4.31***	5.55***	6.39***
	(1.32)	(1.93)	(1.51)
Co-partisan correction	11.06***	7.18***	5.88***
	(2.08)	(1.30)	(1.43)
Opposition correction	5.37***	8.71***	11.05***
	(1.41)	(1.89)	(2.61)
Controls	✓	✓	✓
N	1171	1137	1188

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners). Individuals who spent longer than 10 minutes on the correction page are omitted. All effects estimated relative to the standard non-consensus condition. Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group.

Table B12: Effects of information exposure on misinformation belief by party

	Climate change	COVID-19
Misinformation-only	0.01	0.01
	(0.10)	(0.11)
Misinformation × Republican	0.24	-0.07
	(0.15)	(0.16)
Misinformation + standard correction	-0.16	-0.04
	(0.10)	(0.10)
Misinformation + standard correction × Republican	0.26	0.05
	(0.15)	(0.16)
Misinformation + scientist correction	-0.13	-0.00
	(0.10)	(0.10)
Misinformation + scientist correction × Republican	0.17	0.08
	(0.15)	(0.15)
Misinformation + co-partisan correction	-0.18	-0.11
	(0.10)	(0.10)
Misinformation + co-partisan correction × Republican	0.36*	0.15
	(0.15)	(0.16)
Misinformation + opposition correction	0.21*	0.03
	(0.10)	(0.11)
Misinformation + opposition correction × Republican	-0.12	0.00
	(0.15)	(0.16)
Controls	✓	✓
N	1756	1730

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners). Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group.

Table B13: Manipulation check success by experimental condition and party

	Climate change	COVID-19	Vaccination
Scientist correction	-0.06	-0.04	-0.06
	(0.04)	(0.04)	(0.04)
Republican	0.02	0.12*	0.09
	(0.04)	(0.05)	(0.05)
Scientist × Republican	-0.05	-0.02	0.01
	(0.06)	(0.06)	(0.06)
Co-partisan correction	-0.05	-0.09*	-0.07
	(0.04)	(0.04)	(0.04)
Co-partisan correction × Republican	0.00	-0.04	-0.04
	(0.06)	(0.06)	(0.06)
Opposition correction	-0.22***	-0.17***	-0.07
	(0.04)	(0.04)	(0.04)
Opposition correction × Republican	0.12*	0.14*	-0.05
	(0.06)	(0.06)	(0.06)
Controls	✓	✓	✓
Differences by party			
Democrats: Opposition - scientific	-0.16***	-0.13***	-0.01
	(0.04)	(0.05)	(0.04)
Republicans: (Opposition + opposition × Republican)	0.02	0.03	-0.07
- (scientific + scientific × Republican)	(0.05)	(0.05)	(0.04)
N	1170	1140	1184

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors. Estimated among self-identified Democrats and Republicans (including leaners). Effects are relative to the standard, non-consensus condition. Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group.

Order effects

We reject the null hypothesis that all the order terms in Table B14 are jointly zero (F(12, 5268) = 3.58; $p < .005$).[9] The preregistration states "If we observe substantial evidence of heterogeneity in experimental effects by issue order, we will assess the robustness of our results to restrict the models specified above to the first issue shown to respondents." We find that the results differ substantially between the results in the main text and those in Table B14. We therefore focus on results from the first issue shown to respondents.

Table B14: Pooled model of order effects on perceived accuracy

	Coefficient (SE)
Misinformation-only	-0.01
	(0.05)
Misinformation × second issue	0.01
	(0.05)
Misinformation × third issue	0.09
	(0.05)
Misinformation + standard correction	-0.08
	(0.05)
Misinformation + standard correction × second issue	0.05
	(0.06)
Misinformation + standard correction × third issue	0.17***
	(0.06)
Misinformation + scientist correction	-0.05
	(0.04)
Misinformation + scientist correction × second issue	0.08
	(0.05)
Misinformation + scientist correction × third issue	0.15**
	(0.05)
Misinformation + co-partisan correction	-0.07
	(0.05)
Misinformation + co-partisan correction × second issue	0.10
	(0.06)
Misinformation + co-partisan correction × third issue	0.14*
	(0.06)
Misinformation + opposition correction	0.02
	(0.05)
Misinformation + opposition correction × second issue	-0.01
	(0.06)
Misinformation + opposition correction × third issue	0.08
	(0.06)
Second issue seen	-0.08
	(0.04)
Third issue seen	-0.19***
	(0.04)
N	15632
Respondents	5269

* $p < 0.05$, ** $p < 0.01$, *** $p < .005$ (two-sided). OLS models with robust standard errors clustered by respondent. Estimated among self-identified Democrats and Republicans (including leaners). Controls included for political interest and knowledge, trust in science, Trump approval, nonwhite race/ethnicity, college education, gender, party, and age group.

[9] This F-test includes all constitutive terms (the indicators for appearing second or third and all interactions with those variables). Due to a typo, the list of terms included in the F-test was omitted from the preregistration.