



Research Article

Assessing misinformation recall and accuracy perceptions: Evidence from the COVID-19 pandemic

Misinformation is ubiquitous; however, the extent and heterogeneity in public uptake of it remains a matter of debate. We address these questions by exploring Americans' ability to recall prominent misinformation during the COVID-19 pandemic and the factors associated with accuracy perceptions of these claims. Comparing reported recall rates of real and "placebo" headlines, we estimate "true" recall of misinformation is lower than self-reporting suggests but still troubling. Supporters of President Trump, particularly strong news consumers, were most likely to believe misinformation, including ideologically dissonant claims. These findings point to the importance of tailoring corrections to address key correlates of misinformation uptake.

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Research questions

- As misinformation spread in the early days of the pandemic, to what extent could Americans faithfully recall prominent misinformation about COVID-19?
- What factors are most strongly associated with accuracy perceptions of misinformation, including misinformation from foreign sources?
- What political characteristics are most strongly associated with susceptibility to misinformation, and how do they interact with news consumption?

Essay summary

- Using a national survey of U.S. adults [$n = 1,045$] fielded from May 2–3, 2020, we examined the extent of public recall of prominent misinformation about the COVID-19 pandemic and the factors associated with accuracy perceptions of those claims.
- Across all categories, "true" recall (self-reported recall of actual misinformation headlines minus self-reported recall of "placebo" headlines) averaged 7%. While significantly lower than self-

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reported true recall, this figure is significantly higher than past estimates of true recall of electoral misinformation, suggesting that the threat has grown in recent years and in new contexts.

- Approval of President Trump, even more than partisanship, was a strong predictor of incorrectly believing misinformation to be true.
- Trump supporters were also more susceptible to believing ideologically incongruent misinformation propagated by foreign sources.
- Trump supporters who were high news consumers were the most likely to believe misinformation, suggesting the need for tailored correction interventions and strategies based on the correlates of misinformation uptake.

Implications

As the 2024 election approaches, a familiar admonition sounds: the threat of foreign influence in U.S. elections through the spread of misinformation. Whereas the threat from Russia featured prominently in the last two major elections, concerns about China have increasingly taken center stage. As American attitudes and U.S. policy toward China have become more acrimonious since 2020, China has worked to amplify Russian misinformation while also expanding its own misinformation campaigns on social media abroad (Harold et al., 2021; Repnikova, 2022). Although research on misinformation has thrived, particularly since the 2016 elections, scholars remain divided on the actual consequences of the threat (Guess et al., 2020). Just because misinformation exists does not mean that individuals are either exposed to it or take up that misinformation. And the threat, rather than being general, could be more acute among some demographics than others (Hall Jamieson & Albarracín, 2020; Uscinski et al., 2020).

The debate about the scale of the threat posed by misinformation remains lively in part because of problematic measurement. For example, one Kaiser Family Foundation report found that 78% of the public believes or is unsure about misinformation around the COVID-19 pandemic. However, the conclusions were based on a study that exposed individuals to a range of myths and asked whether individuals believed those to be true or false (Palosky, 2021). Other approaches emphasize the sheer volume of false claims as a proxy for the magnitude of the threat. For example, by November 2020, Facebook alone claimed to have labeled 167 million posts as false and fully removed more than 16 million posts for violating its misinformation policies (Clarke, 2021). These approaches produce sensational stories but may be misleading. Prior research on the 2016 U.S. presidential election suggests that self-reported misinformation recall rates may be significantly inflated by false recall (Allcott & Gentzkow, 2017; Oliver & Wood, 2014). Questions of recall may be increasingly important, given growing concerns about the capacity of new technologies, such as artificial intelligence-enabled language models, for creating credible misinformation at scale (Kreps et al., 2022).

We studied both the extent to which Americans faithfully recall misinformation and the factors associated with wrongly judging misinformation credible in the context of the COVID-19 infodemic. Whether citizens are able to faithfully recall misinformation may be even more important in a public health setting than in an electoral context. During an electoral campaign, false claims can affect assessments of a candidate, and those effects can persist even after the false claim is forgotten (Lodge et al., 1995). However, the extent of public recall of false claims, particularly about COVID-19 treatments, is important for shaping the extent to which those claims will lead people to adopt fake treatments and threaten public health.

To estimate “true” recall of prominent misinformation about the COVID-19 pandemic, we fielded a national survey of U.S. adults from May 2–3, 2020, and asked subjects to evaluate three types of headlines: *real* headlines from reputable news outlets that faithfully reported, what at the time, was the best current understanding about the COVID-19 pandemic; *misinformation* headlines that had circulated

widely on social media; and *placebo* headlines—false claims of equal plausibility (or, perhaps more accurately, *implausibility*) that we invented and that had not circulated widely on social media or other news outlets. We estimate *true recall* as the percentage self-reporting recall of actual prominent misinformation claims minus the percentage self-reporting recall of corresponding placebo headlines (Allcott & Gentzkow, 2017).

We found that true recall of COVID-19 misinformation was significantly lower than self-reports suggested; but significantly higher than previous estimates of true recall of political misinformation during the 2016 election. Across all substantive categories, we estimated that true recall of pandemic misinformation averaged 7%; by contrast, Allcott & Gentzkow (2017) estimated true recall of just over 1% for false claims from the 2016 election. This does not mean that most Americans were not exposed to misinformation about COVID-19 treatments or that misinformation did not indirectly influence beliefs and behaviors (Bridgman et al., 2020; Enders et al., 2020; Lodge et al., 1995; Loomba et al., 2021). However, it does suggest that most of this false information had been forgotten and was no longer readily accessible or salient in most Americans' minds (Zaller, 1992) at the time of our survey.

While true recall rates of misinformation were significantly lower than self-reported recall, our data points to another, oft-overlooked aspect of the over-saturated media environment about the pandemic: many struggled to correctly identify factual information as true. This is particularly concerning for real headlines about treatments for the virus, which only 41% of respondents, on average, correctly identified as true. This suggests the need for even greater and more consistent public health messaging of key facts to break through a chaotic and conflicting media environment.

Our analysis also showed that political lenses affected not just the uptake of political misinformation, but also public health misinformation. While past research has found evidence of partisan and ideological divides in susceptibility to COVID-19 misinformation (Calvillo et al., 2020; Hall Jamieson & Albarracín, 2020), we found that support for President Trump was a stronger predictor of believing misinformation than partisan affiliations. Trump supporters were significantly more likely to believe all categories of misinformation than non-Trump supporters—even ideologically incongruent misinformation from Chinese sources blaming the United States for the pandemic and praising the efficacy of China's response to it. Moreover, Trump supporters were not simply more likely to believe all claims about COVID-19; they were no more or less likely to believe that real headlines about the pandemic were true. This finding speaks to the critical importance of President Trump as a cue-giver (Uscinski et al., 2020) and conduit of pandemic misinformation (Evanega et al., 2020) rather than an intractable partisan divide. This has important implications for efforts to combat the spread of false claims and complements research showing that partisan divides in susceptibility to misinformation and conspiratorial beliefs are context-dependent (Enders et al., 2022).

Further, while past research has examined the relationship between news consumption and susceptibility to misinformation (Hall Jamieson & Albarracín, 2020; Enders et al., 2023), we found that this relationship was strongest among Trump supporters. Among strong news consumers, Trump supporters were more than twice as likely to believe pandemic misinformation than were those who did not support Trump. However, among low news consumers, the gap in propensity to believe misinformation was substantively small. A better understanding of precisely who is most likely to believe misinformation and why, coupled with recent research on the conditions under which corrections are (and are not) effective (Bailard et al., 2022; Carey et al., 2022), can inform more robust efforts to guard against misinformation.

These findings validate the attention that scholars have devoted to the study of misinformation corrections in recent years (Kreps & Kriner, 2022; Porter & Wood, 2022). Our findings corroborate the basis of those studies, which is that misinformation abounds and that individuals are exposed to it; however, our findings about true recall rates add important context about the scale of the threat, and our analyses of variation in accuracy perceptions speak to significant heterogeneity in misinformation uptake.

Taken together, our findings suggest the importance of more targeted interventions tailored to address the threat among groups most susceptible to misinformation uptake.

Findings

Finding 1: “True” recall of misinformation is significantly lower than self-reported recall.

Each survey respondent was asked to evaluate a series of headlines that were either real, prominent misinformation, or “placebo” (i.e., fake headlines invented by the researchers that had not circulated widely on social media). Typically, the headlines spanned two substantive categories: 1) headlines about the origins of/government response to COVID-19, and 2) headlines about treatments for the virus. For each headline, respondents were asked whether they recalled seeing the claim reported or discussed in recent months; respondents could answer “yes,” “no,” or “unsure.”

The top panel of Figure 1 plots the average percentage of respondents reporting that they remembered hearing about the headline claims across the six categories. Several findings are of note. First, across both topical categories, self-reported recall was highest for real headlines. On average, 58% of respondents recalled seeing the information in real headlines about the virus’s origins or the government response to it, and 50% recalled seeing the information in real headlines about treatments for the virus.

Second, a significant share of respondents reported recalling many false claims prominent in online misinformation. On average, 37% of respondents reported recalling prominent false claims about the virus’s origins/the nature of the government’s response, and 30% reported having seen prominent misinformation headlines about COVID-19 treatments. These self-reported figures are more than double self-reported recall of misinformation in the 2016 election (Allcott & Gentzkow, 2017).

However, our data also suggests that these high self-reported recall figures are grossly inflated. Significant shares of our sample also reported recalling our placebo headlines. We estimate *true recall* as the percentage self-reporting recall of actual prominent misinformation claims minus the percentage self-reporting recall of the placebo headlines in the same category (Allcott & Gentzkow, 2017). The bottom panel of Figure 1 presents our estimates of true recall of misinformation for each category. We estimate that true recall of prominent false claims about the virus’s origins/government response was approximately 11%. Perhaps more importantly, our estimate of true recall of misinformation about fake treatments for COVID-19 was just over 3%. These figures are significantly lower than self-reported recall, and they suggest that “true recall” of even some of the most prominent fake news claims—such as claims that drinking chlorine kills COVID-19—that provoked a flurry of media coverage and extensive fact-checking/debunking is limited.²

² For a parallel analysis of the percentages who reported recalling and believing headlines across categories, see Appendix Figure A1.

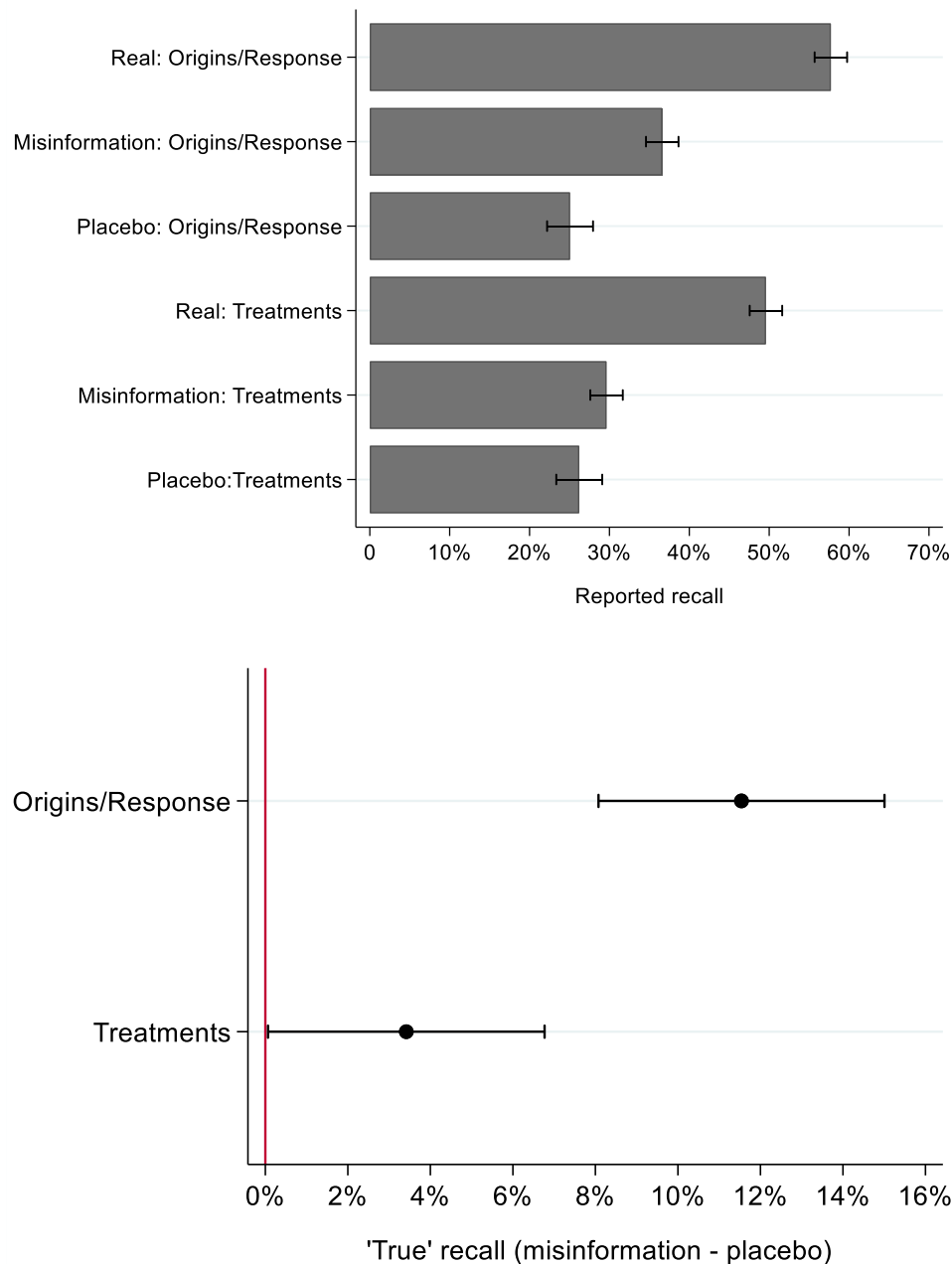


Figure 1. Self-reported recall vs. estimated “true” recall of misinformation. The top panel presents the percentage of respondents who self-reported recalling headlines in each category. The bottom panel presents our estimate of “true recall” – the difference in the percentage that self-reported recalling actual prominent misinformation headlines that circulated widely on social media minus the percentage that reported recalling invented “placebo” false headlines that did not circulate widely on social media in each category. I-bars present 95% confidence intervals.

Finding 2: Americans were generally better at identifying misinformation as false—including misinformation promoted by foreign sources—than factual headlines as true.

After answering our recall question, respondents evaluated the accuracy of each headline. Moreover, to examine whether Americans were more or less susceptible to believing misinformation propagated by foreign sources, after evaluating the headlines discussed previously, respondents also evaluated the

accuracy of three misinformation claims advanced on social media by Chinese government sources. Figure 2 presents the percentage of respondents who identified each category of headline as “true,” “false,” or who reported being “unsure.” Correct responses are indicated with numbers in a larger font. Respondents were generally better at flagging misinformation headlines as false than spotting real headlines as true. For example, 61% of respondents, on average, correctly identified misinformation headlines about COVID-19 treatments as false (60% similarly flagged our placebo treatment headlines as false), while only 41%, on average, correctly identified real headlines about virus treatments as true. Most respondents also correctly flagged misinformation promoted by Chinese government sources as false (61%), but one in five, on average, said they were true. The most important exception is that respondents struggled to identify misinformation claims about the origins of/response to the pandemic as false (only 46% correctly did so, on average).

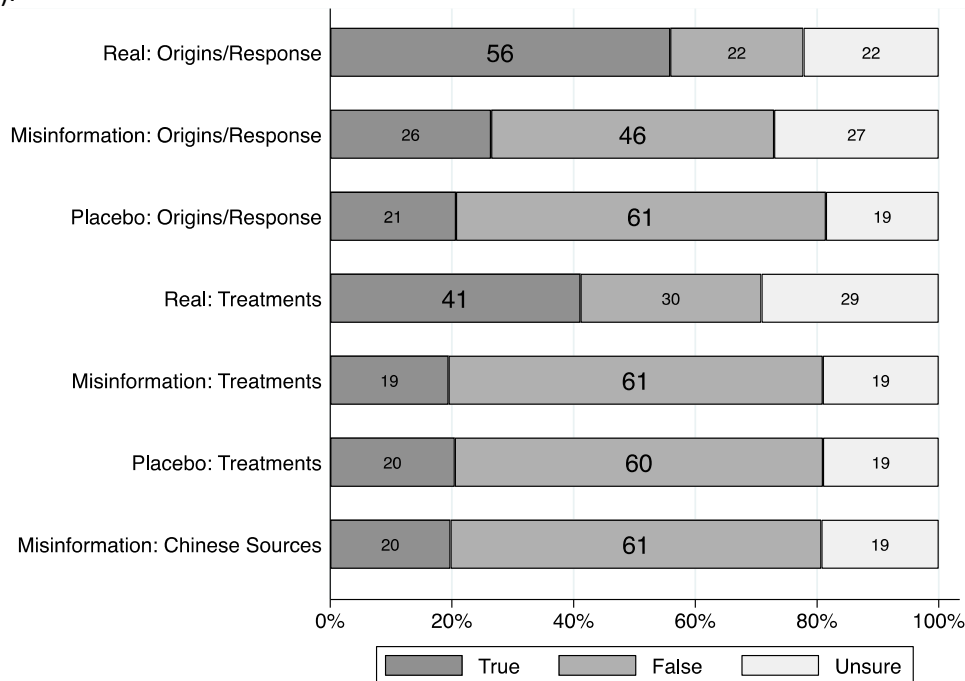


Figure 2. Percentage identifying headlines as true or false or unsure by category. Correct responses indicated by numbers in a larger font.

Finding 3: Approval of Trump was a stronger predictor than partisanship of believing misinformation – including that advanced by foreign sources.

To explore the factors associated with believing false claims, we estimated multinomial logit regressions modeling accuracy perceptions of each category of misinformation headline (origins/response; treatments; Chinese sources) as a function of partisan indicators for Democrats and Republicans; an indicator identifying respondents who approve of President Trump’s job performance; and a series of demographic control variables including educational attainment, gender, race, and age.³ While partisanship and approval of Trump were strongly related, a sizeable number of partisans held incongruent assessments of Trump in our survey. Support for Trump was high among co-partisan Republicans in our sample (over 80%) but not universal. Almost 15% of Democrats in our sample approved

³ For the associations between these demographic variables and accuracy perceptions, see Appendix Table A5.

of Trump's job performance, as did almost 40% of independents.⁴ This allowed us to examine the relative strength of the relationship between susceptibility to believing misinformation and partisanship vs. affinity toward the former president, who has a long track record of trafficking conspiracy theories (Hellinger, 2019) and whom past research identified as a major disseminator of COVID-19 misinformation in particular (Evanega et al., 2020).

After controlling for opinions toward Trump, we found little evidence of significant partisan divides across categories.⁵ By contrast, the model finds that support for President Trump was a strong and significant predictor of accuracy perceptions. Trump supporters were 14% more likely to believe misinformation about the virus's origins/government response and 10% more likely to believe misinformation about treatments than were respondents who did not support Trump, all else equal.⁶ Perhaps surprisingly, Trump supporters were also more likely (11%) to believe misinformation disseminated by Chinese sources, even though these false claims blamed the United States for the outbreak of the pandemic and praised China's response to it as uniquely successful. This suggests that Trump supporters were not only more likely to believe in conspiracy theories or false treatments that were broadly consistent with narratives on conservative media (and sometimes those of the President himself). Rather, they were also more susceptible to believe misinformation broadly, even ideologically incongruent claims that blamed the United States for the pandemic and implicitly criticized the Trump administration's handling of it by praising China's response as uniquely successful.

It is possible that Trump supporters were not uniquely likely to believe misinformation claims; rather, they could simply have been more likely to judge all headlines true. To test this alternate possibility, we estimated another multinomial logit model with an identical specification assessing the factors associated with accuracy perceptions of real headlines. As shown in Figure 4, approval of Trump was not a significant predictor of accuracy perceptions of real headlines. Trump supporters were no more likely to believe a real headline was true than false.⁷ Trump supporters were not more credulous of all headlines; rather, they were specifically more likely to believe misinformation.

⁴ These partisan approval figures are broadly comparable to those observed in contemporaneous Gallup surveys. See Gallup Presidential Job Approval Center, <https://news.gallup.com/interactives/507569/presidential-job-approval-center.aspx>.

⁵ Alternate analyses presented in the Appendix from models that exclude Trump approval find several statistically significant but substantively modest partisan differences (Appendix Figure A2). While some studies have found evidence that Republicans are more likely to believe misinformation about the pandemic than are Democrats (Calvillo et al., 2020; Freiling et al., 2023); others have found relatively scant evidence of major partisan divides (Hall Jamieson & Albarracín, 2020). In additional analyses, we also explored whether strong partisans from both sides of the aisle are more susceptible to COVID-19 misinformation (Druckman et al., 2021), but we found little evidence of this dynamic in our data.

⁶ Trump supporters were also significantly more likely to believe our placebo misinformation headlines (Appendix Figure A5).

⁷ Wald test cannot reject the null of no significant difference, $p < .10$, two-tailed test. Estimating separate analyses on real origins/response and treatments headlines separately similarly yield null results for Trump approval (Appendix Figure A4).

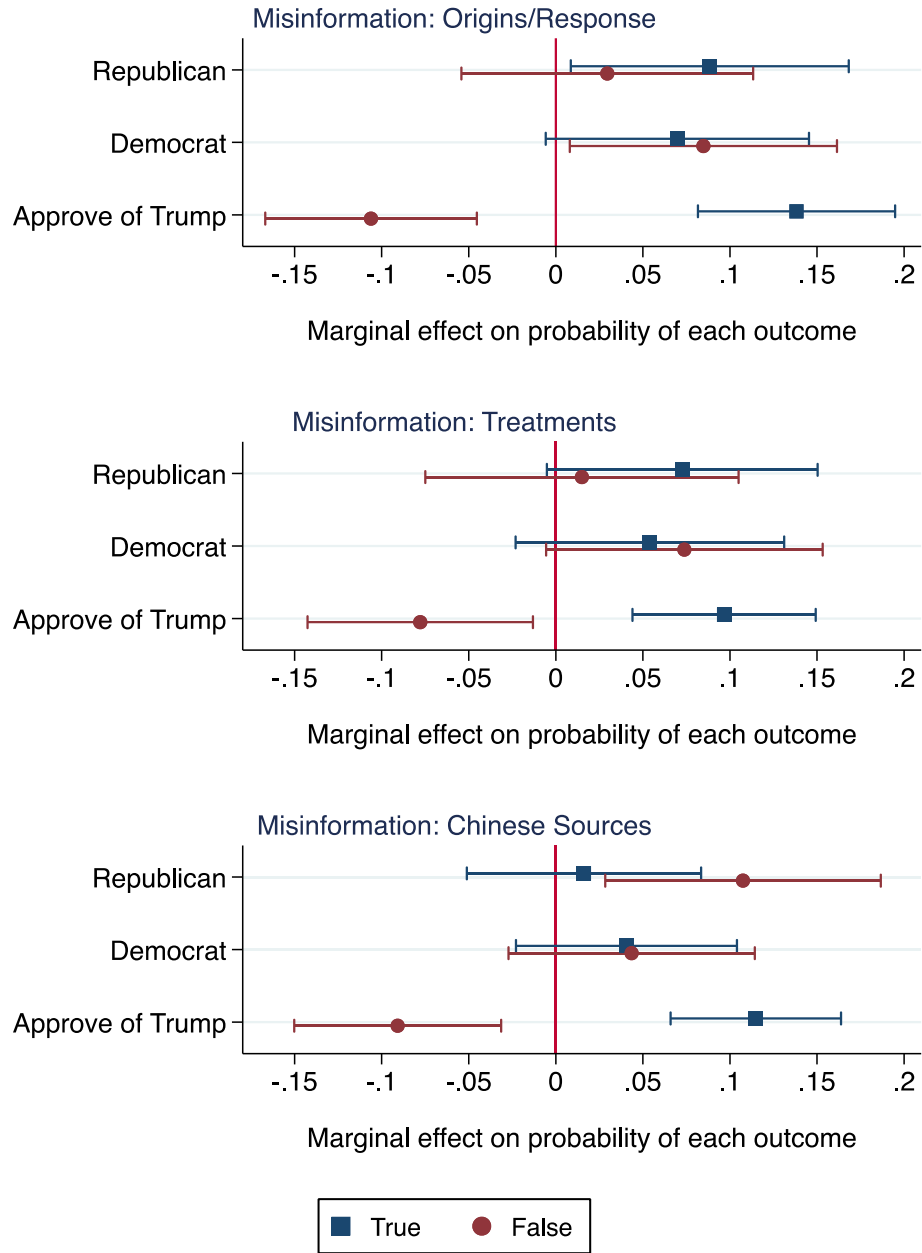


Figure 3. Approval of Trump is a stronger predictor of believing misinformation than partisanship. Marginal effects (vs. “unsure” baseline) from multinomial logit models controlling for educational attainment, income, race/ethnicity, gender, and age. I-bars present 95% confidence intervals.

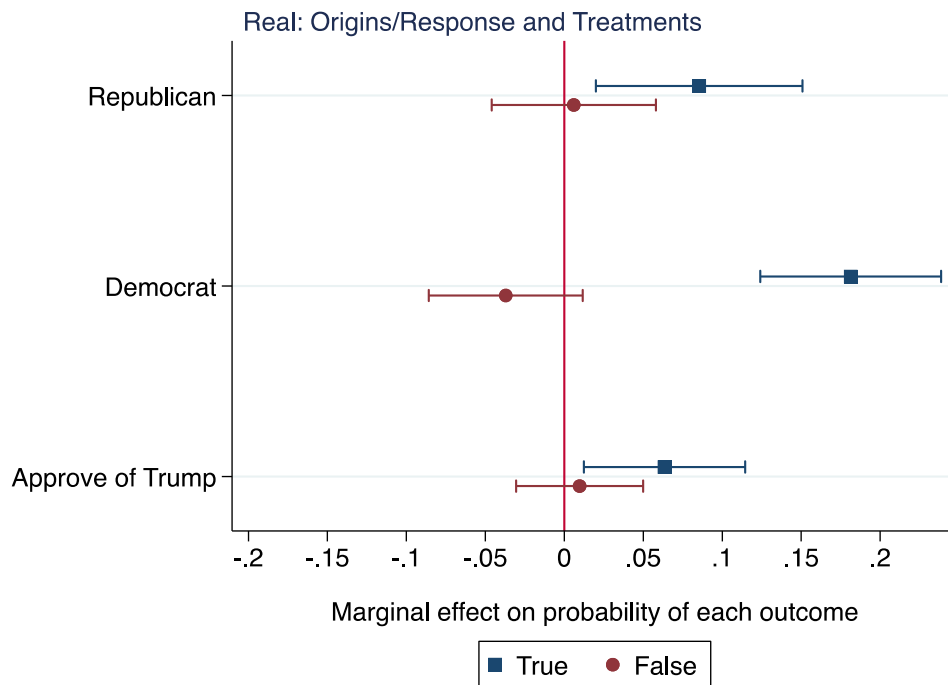


Figure 4. Approval of Trump is not a significant predictor of accuracy perceptions of real headlines. Marginal effects (vs. “unsure” baseline) from multinomial logit models controlling for educational attainment, income, race/ethnicity, gender, and age. I-bars present 95% confidence intervals.

Finding 4: Trump supporters who were most attuned to the news were the most susceptible to believing misinformation.

Finally, to explore whether the relationship between believing misinformation and Trump approval varies with news consumption, we estimated another multinomial logit model examining accuracy perceptions of headlines in all three misinformation categories.⁸ Specifically, we explored whether the positive relationship between Trump approval and believing misinformation observed previously was concentrated among less-informed respondents, high news consumers, or neither.

As shown in Figure 5, at low levels of news consumption, there was little difference in the propensity to believe misinformation between Trump supporters and those who did not support President Trump. By contrast, among those most attuned to the news the gap widened considerably. At the highest level of news consumption, a Trump supporter was more than twice as likely, on average, to believe false claims as an otherwise similar respondent who did not support President Trump. Rationally, greater news consumers should have more exposure to false claims, which could make them more likely to believe at least some misinformation. However, this relationship in which greater news consumption is correlated with greater exposure to and uptake of misinformation was most acute among Trump supporters. Our data is generally consistent with a logic outlined by Pennycook and Rand (2019) in which individuals lack careful reasoning and rely on heuristics such as familiarity. To the extent that the source of misinformation in these stages of the pandemic stemmed in part from the White House and ricocheted in Trump-supporting corners of social media, this may explain why highly attentive Trump supporters were the most likely to believe misinformation claims. Moreover, this logic might also explain why high news-consuming

⁸ Additional analyses reported in the Appendix show that the interactive relationship is strongest in the Treatments and Chinese Sources categories (Appendix Figure A6).

Trump supporters were also more likely to believe even ideologically incongruent misinformation from foreign sources if they relied more heavily on familiarity heuristics rather than motivated reasoning (Pennycook & Rand, 2019, 2021). Future research should examine these and alternate possible dynamics more directly.

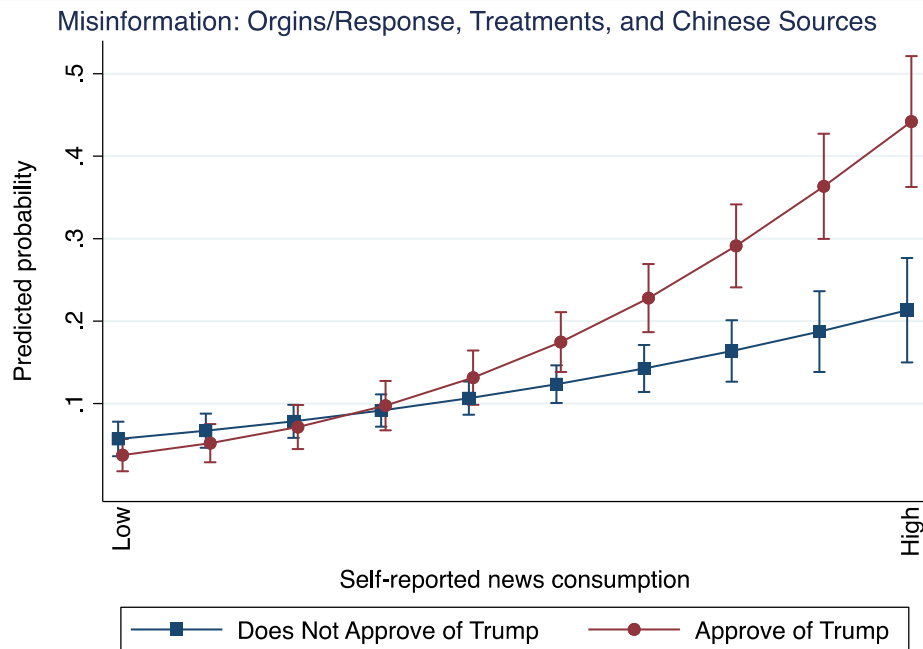


Figure 5. Trump approval and belief in misinformation (origins/response, treatments, and Chinese sources) by news media consumption. Marginal effects from multinomial logit models controlling for educational attainment, income, race/ethnicity, gender, and age. I-bars present 95% confidence intervals.

Methods

To estimate “true” recall of prominent misinformation about the COVID-19 pandemic and to analyze the relationships between partisanship, support for President Trump, news consumption, and accuracy perceptions of misinformation, we administered a national survey of U.S. adults through Qualtrics from May 2–3, 2020 ($n = 1,045$). Respondents were recruited via the Lucid platform, which employs quota sampling to produce samples matched to the U.S. population on age, gender, ethnicity, and geographic region. Sample demographics and comparisons to U.S. census figures and benchmark surveys are provided in Appendix Table A1.

Respondents were asked to evaluate ten headlines advancing some claim about the pandemic chosen from a larger pool of 22. The Appendix provides complete wording for each headline (Appendix Table A2) and additional information on the randomization of headlines. Many studies of misinformation examine accuracy perceptions of headlines (e.g., Luo et al., 2020); others examine images of social media posts featuring short statements akin to headlines (e.g., Loomba et al., 2021); and some recent studies have gauged the correlates of accuracy perceptions of misinformation in a longer full article format (e.g., Pehlivanoglu et al., 2021). Each approach has tradeoffs. Because exposure to headlines is consistent with the type of scrolling common online and, indeed, has been shown to affect readers’ memory, inferences, and behavioral intentions (Ecker et al., 2014), we focus on reported recall and accuracy perceptions of headlines. However, as a result, we cannot assess the correlates of accuracy perceptions when

respondents have access to greater contextual information than just what is captured in a headline (Pehlivanoglu et al., 2021). This is an important area for future research.

Each respondent evaluated a mix of real, prominent misinformation, and placebo headlines across two substantive topics (the origins of/government response to the virus; and treatments for the virus). To identify prominent misinformation and real headlines within each category, we searched news coverage in major U.S. newspapers and prominent fact-checking websites. For additional details, see the Appendix. Placebo headlines were created by the researchers for each topical category. Media searches confirmed that the claims advanced in these placebo headlines did not receive widespread media attention in early 2020. At the conclusion of the survey, all respondents received a debrief alerting them to which headlines were real vs. which ones were misinformation with links to sources of up-to-date information about COVID-19.

The two dependent variables were measured with the following questions, asked after each headline:

- Do you recall seeing this claim about COVID-19 reported or discussed in recent months? (Answer choices: *yes, no, or unsure*)
- Just your best guess, is this statement true? (Answer choices: *yes, no, or unsure*)

Following the metric created by Allcott & Gentzkow (2017), we estimated true recall as the difference in self-reported recall rates between prominent misinformation and placebo headlines.

The COVID-19 pandemic also affords an opportunity to examine public accuracy perceptions of misinformation promoted by foreign sources and to investigate whether the factors associated with accuracy misperceptions in such cases differ from those observed with respect to other types of misinformation. For example, Chinese officials openly pushed anti-American misinformation, such as the claim that the U.S. Army brought the coronavirus to Wuhan, on social media.⁹ Thus, after answering whether they recalled the headlines discussed previously and whether they perceived each as accurate or not, subjects were also asked to evaluate the accuracy of an additional pair of headlines chosen from a pool of three headlines. For the full wording of each headline and additional details about randomization, see Appendix Table A3.

To assess the relationships between partisanship, support for President Trump, social media use, and accuracy perceptions of prominent misinformation, including misinformation from foreign sources, we estimated a series of multinomial logit models. We measured partisanship using the standard Gallup question. We then asked respondents who initially identified as independents if they “leaned” toward one party or the other. Consistent with research showing that “leaners” have similar opinions and behaviors to other partisans (Petrocik, 2009), we code leaners as partisans.¹⁰ We measure support for President Trump using the standard Gallup presidential approval question; our indicator variable was coded 1 for those who approve of President Trump and 0 otherwise. All models also controlled for respondents’ self-reported income, educational attainment, gender, race/ethnicity, and age.

Across substantive categories, the models show that approval of Trump is a strong and statistically significant predictor of incorrectly judging misinformation to be true. Moreover, after controlling for opinions toward Trump, the partisan gaps in accuracy perceptions (observed in models without Trump approval; see Appendix Figure A2) are small, and many are no longer statistically significant.

To explore whether Trump supporters are simply more likely to believe all headlines—not just misinformation—we estimated an additional multinomial logit for accuracy perceptions of real headlines.

⁹ For example, see: Edward Wong, Matthew Rosenberg, and Julian Barnes, “Chinese agents helped spread messages that sowed virus panic in U.S., officials say,” *The New York Times*, April 22, 2020; Julian Barnes, Matthew Rosenberg, and Edward Wong, “As virus spreads, China and Russia see openings for disinformation,” *The New York Times*, March 28, 2020.

¹⁰ Additional analyses that do not code “leaners” as partisans yield substantively similar results (Appendix Figure A3).

As shown in Figure 4, Trump supporters were not significantly more likely to judge real headlines as true than false.

A final multinomial logit includes the interaction of Trump approval and a measure of news consumption. To measure news consumption, our survey asked respondents how often they used three sources—TV news, newspapers, and Facebook or other social media sites—to stay up-to-date on the news. For each source, respondents answered on a four-point scale ranging from 1 (not at all) to 4 (a great deal). From these, we created an additive index of news consumption.¹¹ Figure 5 shows that the gap between Trump supporters and opponents is concentrated among high-news consumers.

Because inattentive respondents can inject noise into survey data, weaken correlations, and lead to null results (Berinsky et al., 2021), we also replicated our analyses excluding “speeders” who completed the survey much faster than most respondents (Greszki et al., 2015). In all cases, results are substantively similar (Appendix Figures A8–A10).

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¹¹ Estimating separate regressions examining the interaction of Trump approval and reliance on each media source for news individually yields similar results across media sources (Appendix Figure A7).

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Competing interests

The authors declare no competing interest.

Ethics

All survey protocols were approved by Cornell University's Institutional Review Board (Protocol #2004009569). All survey respondents provided informed consent before beginning the survey. Gender and race/ethnicity were queried with standard measures for matching to U.S. Census figures.

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Data availability

All materials needed to replicate this study are available via the Harvard Dataverse: <https://doi.org/10.7910/DVN/3QR1MA>

Appendix

I. Survey sample

Our survey sample of 1,045 adult Americans was recruited by Lucid. Lucid employs quota sampling to produce samples matched to the U.S. population on age, gender, ethnicity, and geographic region (Coppock & McClellan, 2019). The survey was fielded via Qualtrics from May 2–3, 2020. The demographic composition of our samples and comparisons to those of prominent social science surveys and U.S. Census American Community Survey statistics are provided in Table A1.

Table A1. Comparative sample demographics.

	Lucid Survey	2020 ANES	2021 GSS	U.S. Census
<i>Demographics</i>				
Black	13%	9%	12%	12%
Latino	8%	9%	11%	19%
Female	50%	54%	56%	51%
% College degree	46%	44%	47%	38%
Median age	44 years	52 years	53 years	39 years
<i>Political Characteristics</i>				
Republican	34%	31%	23%	
Democrat	37%	35%	34%	
Ideology (% moderates)	34%	22%	35%	

Note: All Census figures taken from the 2020 Census.

II. Additional details on identifying real, misinformation, and Placebo headlines

Our study estimated true recall and accuracy perceptions of misinformation across two categories of misinformation: 1) claims about the origins of the novel coronavirus and the government response to it, and 2) claims about treatment or antidotes for COVID-19.

To identify prominent headlines within each category, we searched news coverage in prominent U.S. newspapers and prominent fact-checking websites. Table A2 reports a complete list of all 22 headlines used in our recall analysis. All eight of the misinformation headlines were covered in the *New York Times*, with six also receiving coverage in the *Washington Post* or *USA Today*. Each headline was also debunked by either *Politifact* or *Snopes*, with six of the eight headlines being debunked on both sites; three were debunked on the World Health Organization’s COVID-19 “Mythbusters” webpage.¹² In sum, the claims in five of our headlines were debunked in five of these six sources; the claims of two of our headlines were debunked in four of these sources; and the claim of one of our headlines was debunked in three of these sources.

To provide points of comparison, we conducted similar searches of major news outlets to identify a parallel set of four headlines describing factual information about the origins of/government response to

¹² Schwarz et al. (2007) employ a similar approach, assessing whether individuals could distinguish between the facts and myths on a Center for Disease Control flyer about the flu vaccine. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters>

the virus, as well as four headlines presenting factual information about treatments for the virus. The core information in each of these headlines is featured in both the *New York Times* and *Washington Post*.

To account for the potential over-reporting in self-reported recall of misinformation, we followed prior research (Allcott & Gentzkow, 2017) and constructed three parallel sets of “placebo” fake news headlines that we invented. Media searches confirm that the claims advanced in these placebo headlines did not receive widespread media attention in early 2020. Comparing reported recall of prominent misinformation arguments and fabricated fake news arguments in the placebo group provides a measure of “true recall,” allowing us to generate a more precise estimate of how much misinformation about COVID-19 subjects have actually seen and remembered.

Table A2. Complete list of headlines by category and veracity.

Number	Type	Headline
<i>Origins/Response</i>		
1	Real	Scientists Have Strong Evidence Coronavirus Originated Naturally: Nothing suggests the virus was ‘man-made,’ experts say
2	Real	Apple and Google are Building a Coronavirus Tracking System into iOS and Android
3	Real	Restrictions Are Slowing Coronavirus Infections, New Data Suggest
4	Real	Cities That Went All In on Social Distancing in 1918 Emerged Stronger for It
5	Misinformation	5G Syndrome Maps Perfectly with Coronavirus Outbreaks
6	Misinformation	Bill Gates May Have Created Coronavirus to Microchip People
7	Misinformation	HHS Document Released Instructing MN Senator To Overcount COVID-19 Deaths
8	Misinformation	China Accused of Major Coronavirus Cover-up as Chilling Satellite Pics “Show Extent of Corpse Burning in Wuhan”
9	Placebo	Coronavirus Was a Bioweapon Created by Iran to Punish the West for Crippling Economic Sanctions
10	Placebo	Amazon is Including Hidden Devices in Select Products to Measure Social Distancing
11	Placebo	Wildly Inaccurate Coronavirus Models were Created by Climate Change Activists to Reduce Greenhouse Gas Emissions
<i>Treatments</i>		
12	Real	No Benefit, Higher Death Rate in Patients Taking Hydroxychloroquine for COVID-19
13	Real	“Such a Simple Thing to Do”: Why Positioning COVID-19 Patients on their Stomachs Can Save Lives
14	Real	Drug Used to Treat Ebola May Help COVID-19 Patients, Preliminary Results Suggest
15	Real	Plasma Treatment Being Tested in New York May be Coronavirus “Game Changer”
16	Misinformation	Advice from Japanese Doctors Treating Coronavirus Cases: Drinking water every 15 minutes reduces your risk of contracting the virus

17	Misinformation	Using a Hair Dryer to Breathe in Hot Air Can Cure COVID-19 and Stop its Spread
18	Misinformation	There is an Expired Patent on the Coronavirus that Causes COVID-19, as well as on a Vaccine that Cures It
19	Misinformation	Good News: Coronavirus Destroyed By Chlorine Dioxide
20	Placebo	Acupuncture is Surprisingly Effective at Treating Those with Severe Coronavirus Symptoms
21	Placebo	Pharmaceutical Companies are Slowing Clinical Trials to Increase Price of COVID-19 Treatment
22	Placebo	Corona Beer Consumption has been Linked to the Spread of Coronavirus in the Southwest

III. Random assignment of headlines

The real and misinformation headlines summarized in Table A2 were organized into six question blocks on Qualtrics. Four blocks contained one real and one misinformation story from each of the two substantive categories (i.e., origins/response and treatments). For example, the first such block contained headlines 1, 5, 12, and 16 from Table A2. Each respondent was asked to evaluate two of these, chosen at random. The remaining two blocks were comprised of placebo headlines; the first placebo block contained the three placebo headlines for the origins/response category (i.e., headlines 9–11), while the second contained the three placebo headlines for the treatment category (i.e., headlines 20–22). Each subject was asked to evaluate ten headlines. Two headlines were selected at random from each of the first set of four blocks with real and misinformation headlines. One headline was selected at random from each of the two placebo blocks. The order with which the headlines drawn from each block was presented was randomized across respondents.

IV. Self-reported recall and belief of headlines across categories

The top panel of Figure A1 replicates the top panel of Figure 1 from the text, but with the percentage of subjects who self-reported recalling *and* believing headlines in each of our nine categories. The bottom panel of Figure A1 presents the difference in the percentage who reported recalling and believing prominent misinformation and placebo headlines in each topical category. This metric suggests further limitations on the reach of misinformation prevalent on social media. Only 14% of respondents, on average, reported recalling and believing misinformation headlines about COVID-19 treatments, and 19% reported recalling and believing misinformation headlines about the virus's origins and the government response to the pandemic. Moreover, the percentage reporting that they recalled and believed misinformation about treatments is statistically indistinguishable from the corresponding figure in the corresponding placebo group. Individuals also struggled to recall and believe factual information, particularly about the efficacy of treatments (or lack thereof). On average, only one in three respondents recalled and believed factual headlines conveying COVID-19 treatment information.

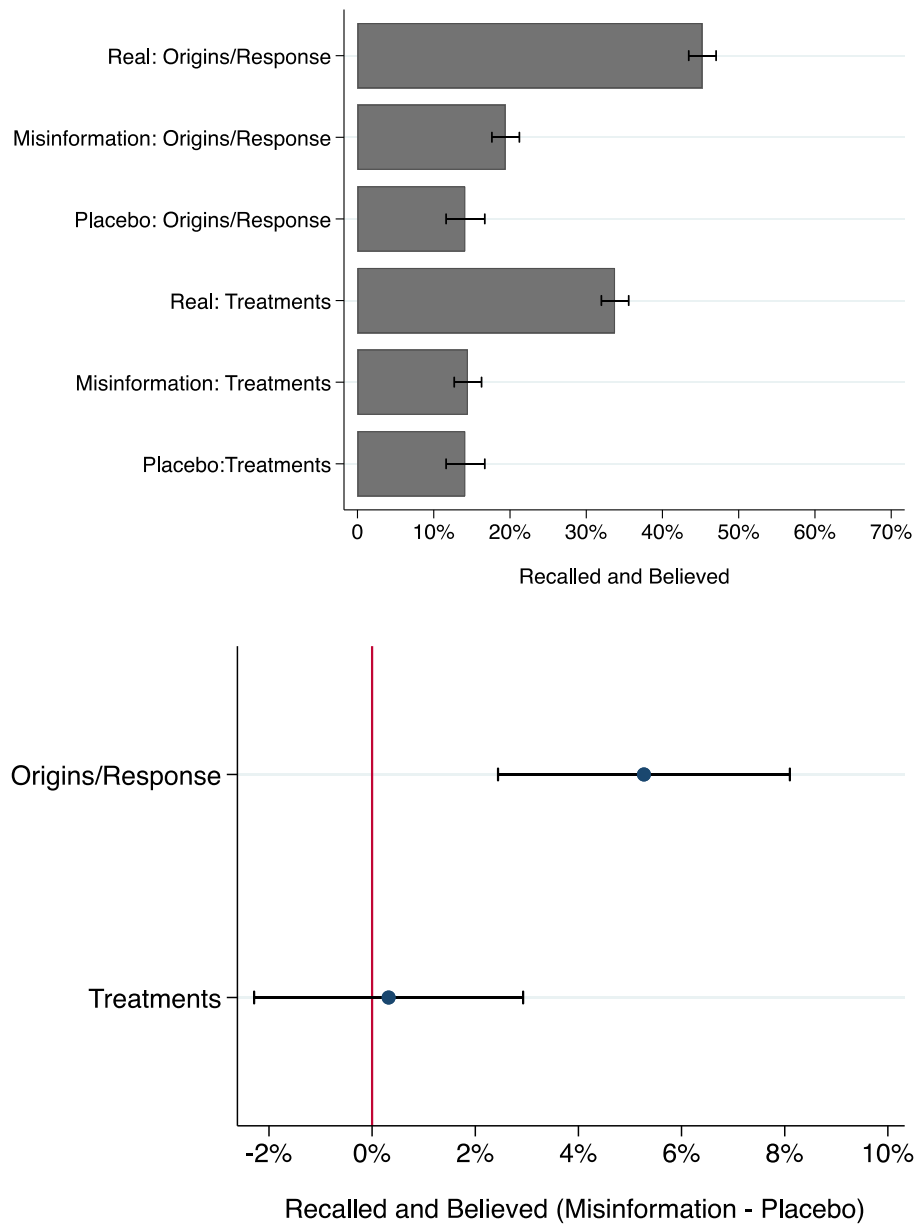


Figure A1. Percentage that recalled and believed real, misinformation, and Placebo headlines. I-bars indicate 95% confidence intervals around each mean.

V. Misinformation by foreign sources

The COVID-19 pandemic also affords an opportunity to examine public accuracy perceptions of misinformation promoted by foreign actors and to investigate whether the factors associated with accuracy misperceptions in such cases differ from those observed with respect to other types of misinformation. For example, Chinese officials openly pushed anti-American conspiracy theories, such as the claim that the U.S. Army brought the coronavirus to Wuhan, on social media (Barnes et al., 2020; Wong et al., 2020).

Accordingly, after answering whether they recalled the headlines discussed previously and whether they perceived each as accurate or not, subjects were also asked to evaluate the accuracy of three

additional headlines (Table A3). The claims of all three headlines were debunked in both the *New York Times* and *Washington Post*. Headlines 1 and 2 capture arguments made by Chinese sources that the virus either originated in the U.S. or that the U.S. Army brought the virus to Wuhan. While the claims in the two headlines are not necessarily incompatible, we worried that if exposed to both, some respondents might view them as such, which could affect their accuracy perceptions. As a result, respondents were randomly assigned to evaluate the accuracy of one of these two headlines (i.e., the first Chinese Source Misinformation question block contained these two headlines, and each respondent was randomly assigned to view either headline 1 or headline 2). All respondents then evaluated the accuracy of headline 3, arguing that only China has been successful in combating the virus. Figure 2 in the text presents the average percentage of respondents who believed the three headlines in the Chinese Source Misinformation category (half of the headline evaluations concerned headline 3; and the other half of the headline evaluations concerned headlines 1 and 2).

Table A3. Misinformation headlines from Chinese sources.

Number	Type	Headline
1	Misinformation	U.S. Army Brought Coronavirus Epidemic to Wuhan
2	Misinformation	COVID-19: Further Evidence the Virus Originated in the U.S.
3	Misinformation	The Chinese Method of Combatting Coronavirus is the Only One that has Proved Successful

VI. Additional analyses of accuracy perceptions

Figures 3–5 in the text graphically illustrate results from a series of multinomial logit regression models. Descriptive statistics for all variables in the analyses are presented in Table A4. The full results from these models are presented in Tables A5–A7.

Table A4. Descriptive statistics for all variables in analysis.

Characteristic	Mean	SD	Min	Max
<i>Political</i>				
Republican (with leaners)	.40	.49	0	1
Democrat (with leaners)	.46	.50	0	1
Republican (no leaners)	.34	.47	0	1
Democrat (no leaners)	.37	.48	0	1
Trump approval	.41	.49	0	1
<i>News Measures</i>				
TV News	3.11	.94	1	4
Newspapers	2.43	1.09	1	4
Facebook and social media	2.67	1.07	1	4
Additive news index	8.22	2.19	3	13
<i>Demographics</i>				
Educational attainment	4.07	1.65	1	8
College degree	.46	.50	0	1
Income	3.52	1.74	1	6
Age	44.78	16.59	18	97
Female	.50	.50	0	1
Black	.13	.34	0	1
Latino	.08	.28	0	1

Note: Median income range was \$40,000–\$59,999.

Table A5. Multinomial logit models of accuracy perceptions for misinformation headlines used to produce Figure 3.

	Origins/Response		Treatments		Chinese Sources	
	True	False	True	False	True	False
Republican	0.72*	0.59**	0.80*	0.39	0.41	0.75**
	(0.28)	(0.22)	(0.38)	(0.24)	(0.30)	(0.23)
Democrat	0.63*	0.82**	0.83*	0.76**	0.37	0.49*
	(0.26)	(0.19)	(0.37)	(0.19)	(0.29)	(0.20)
Approve of Trump	0.58*	-0.21	0.77**	-0.02	0.91**	0.04
	(0.23)	(0.18)	(0.29)	(0.21)	(0.27)	(0.19)
Education	0.19**	0.12**	0.22**	0.05	0.37**	0.17**
	(0.05)	(0.05)	(0.07)	(0.05)	(0.06)	(0.05)
Income	0.02	0.05	0.11	0.01	0.10	0.04
	(0.05)	(0.04)	(0.07)	(0.05)	(0.06)	(0.04)
Age	-0.01*	0.01*	-0.02**	0.01**	-0.02**	0.02**
	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
Female	-0.71**	-0.46**	-0.83**	-0.19	-0.76**	-0.40**
	(0.16)	(0.13)	(0.20)	(0.14)	(0.18)	(0.14)
Black	0.28	-0.78**	0.31	-0.54*	0.44	-0.60**
	(0.25)	(0.21)	(0.33)	(0.21)	(0.27)	(0.21)
Latino	0.24	-0.03	-0.14	-0.18	0.25	-0.22
	(0.29)	(0.24)	(0.41)	(0.25)	(0.33)	(0.24)
Constant	-0.97*	-0.72*	-1.47**	0.17	-1.47**	-0.47
	(0.42)	(0.30)	(0.55)	(0.32)	(0.45)	(0.32)
Observations	1,856	1,856	1,890	1,890	1,876	1,876

Note: All models are multinomial logit regressions; "unsure" is the omitted baseline category in each model. Robust standard errors clustered on respondent in parentheses. All significance tests are two-tailed. ** $p < .01$, * $p < .05$.

Table A6. Multinomial logit model examining Trump approval and accuracy assessments of real headlines used to produce Figure 4.

	Real Headlines	
	True	False
Republican	0.45* (0.18)	0.33 (0.18)
Democrat	0.93** (0.16)	0.44** (0.17)
Approve of Trump	0.36* (0.15)	0.37* (0.15)
Education	0.10** (0.04)	0.08* (0.04)
Income	0.11** (0.03)	-0.07 (0.03)
Age	0.00 (0.00)	0.00 (0.00)
Female	-0.58** (0.11)	-0.48** (0.11)
Black	-0.18 (0.17)	-0.34 (0.17)
Latino	-0.05 (0.21)	0.13 (0.19)
Constant	-0.77** (0.26)	-0.26 (0.28)
Observations	3,758	3,758

Note: All models are multinomial logit regressions; "unsure" is the omitted baseline category in each model. Robust standard errors clustered on respondent in parentheses. All significance tests are two-tailed. ** $p < .01$, * $p < .05$.

Table A7. Multinomial logit model examining interaction of Trump approval and news consumption and accuracy perceptions of misinformation used to produce Figure 5.

	All Misinformation	
	True	False
Republican	0.46* (0.23)	0.55** (0.17)
Democrat	0.33 (0.22)	0.62** (0.14)
Approve of Trump	-0.66 (0.61)	0.22 (0.41)
News consumption	0.20** (0.05)	0.05 (0.03)
Approve of Trump X News consumption	0.14* (0.07)	-0.04 (0.05)
Education	0.19** (0.05)	0.11** (0.03)
Income	0.01 (0.04)	0.03 (0.03)
Age	-0.01** (0.00)	0.01** (0.00)
Female	-0.62** (0.14)	-0.35** (0.10)
Black	0.27 (0.21)	-0.65** (0.15)
Latino	0.01 (0.27)	-0.17 (0.17)
Constant	-2.34** (0.45)	-0.55 (0.30)
Observations	5,594	5,594

Note: All models are multinomial logit regressions; "unsure" is the omitted baseline category in each model. Robust standard errors clustered on respondent in parentheses. All significance tests are two-tailed. ** $p < .01$, * $p < .05$.

Partisan differences without Trump approval

Partisanship and opinions toward President Trump are strongly correlated, but not perfectly so in our data. The analyses in the text show that approval of Trump is a stronger predictor of believing misinformation than partisanship; indeed, partisan gaps all but disappear when including Trump approval in the model. However, we do find evidence of partisan gaps when estimating identical models to those described in the text but excluding Trump approval. Figure A2 presents the results. Republicans were both significantly more likely to believe misinformation headlines about the origins of the virus/government response to the pandemic and less likely to believe they were false than were Democrats ($p < .05$, two-tailed Wald test of coefficients). Democrats were significantly more likely to correctly flag misinformation headlines about COVID-19 treatments as false than were Republicans ($p < .05$, two-tailed Wald test of coefficients). By contrast, the partisan gaps in accuracy perceptions of misinformation from Chinese sources were substantively much smaller.

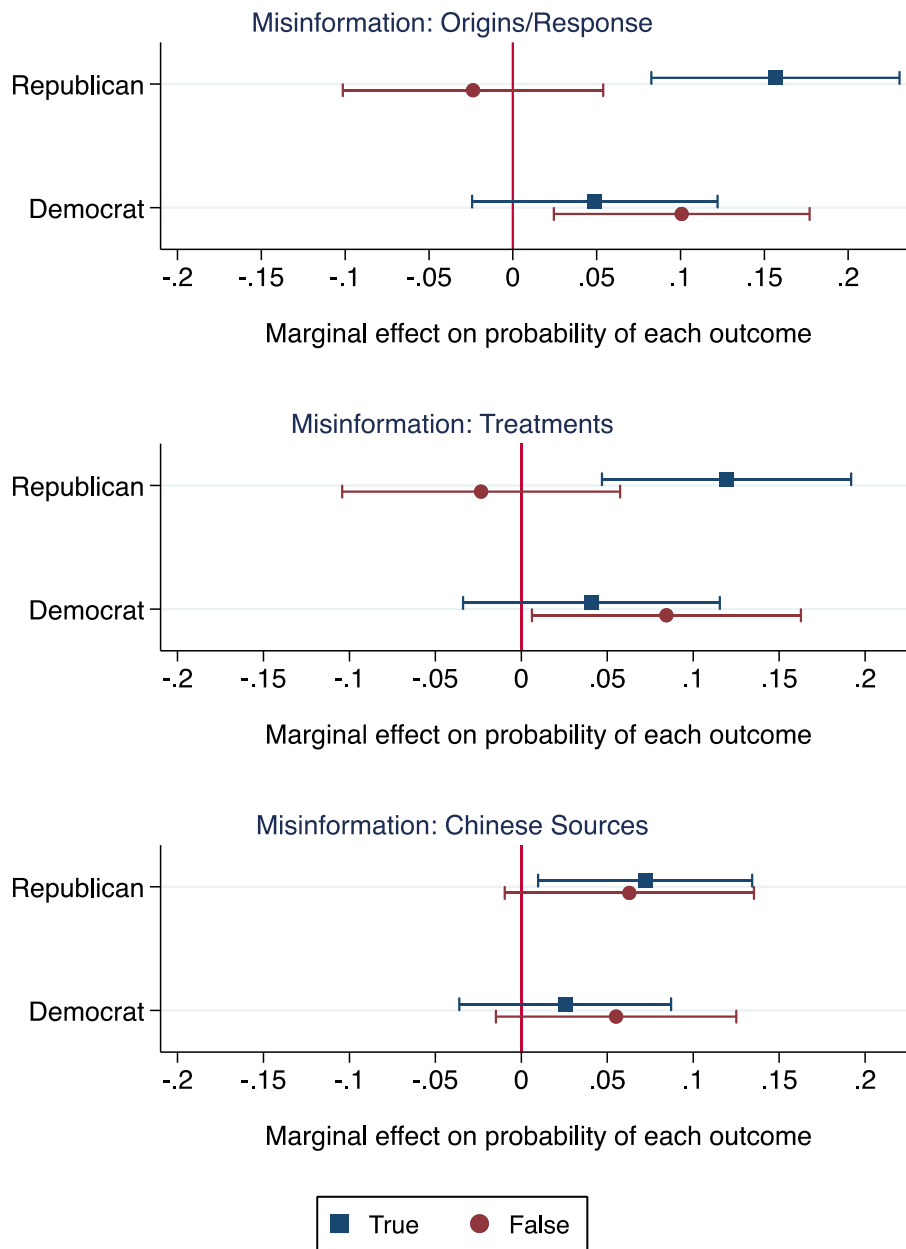


Figure A2. Partisan gaps in accuracy perceptions, excluding Trump approval. I-bars indicate 95% confidence intervals around each mean.

Excluding leaners

Consistent with research showing that “leaners” have similar opinions and behaviors to other partisans, the partisan indicators used in the analyses reported in the text include those who “lean” toward one party or the other as partisans. As a robustness check, we also re-estimated this analysis with partisan indicators excluding “leaners.” Figure A3 presents the results. The results are substantively similar to those presented in Figure 3. In additional models excluding Trump approval, we see evidence of modest partisan differences, with Democrats being more likely than Republicans to reject misinformation as false and

Republicans modestly more likely than Democrats to label it as true. Trump approval is again a stronger predictor of accuracy perceptions.

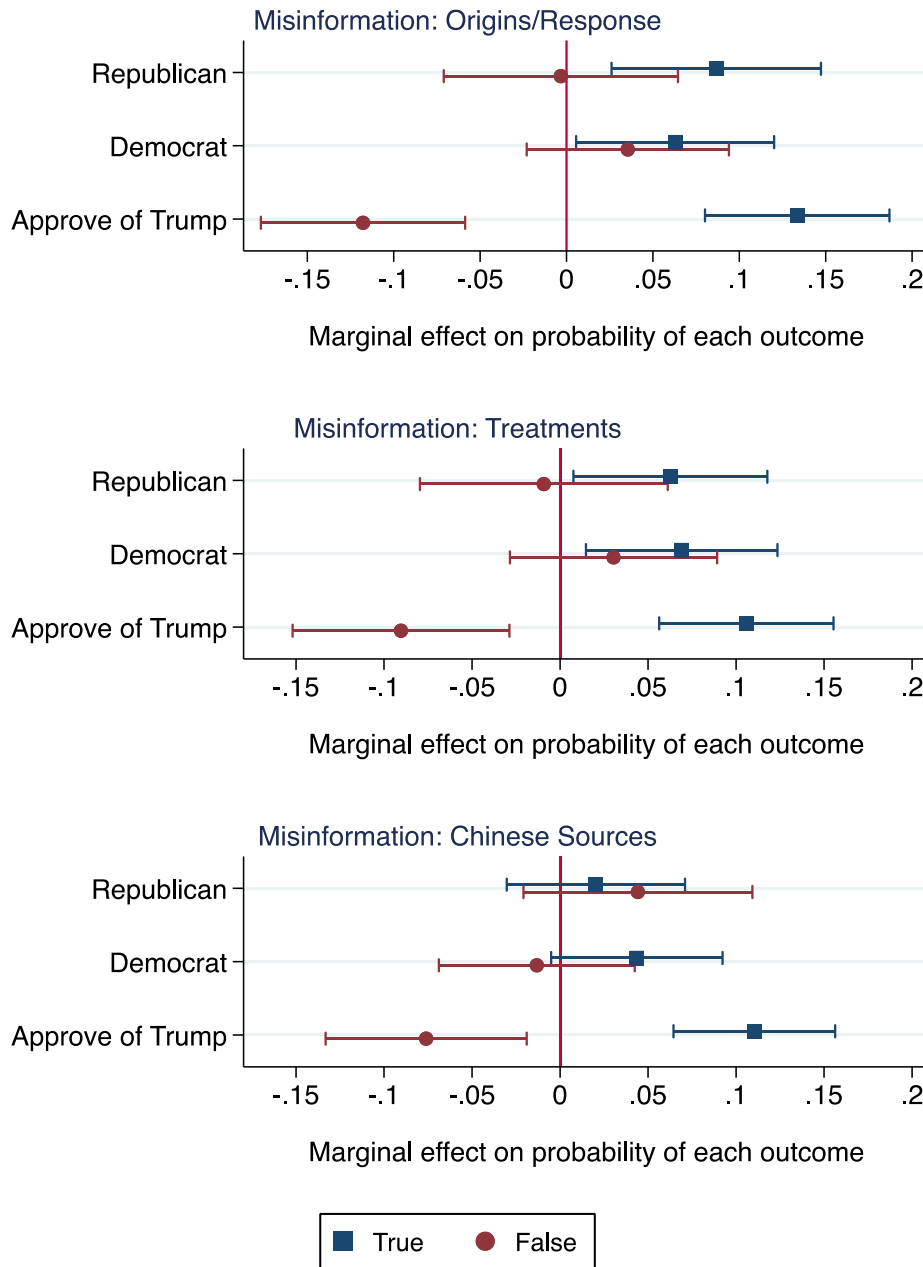


Figure A3. Replicating partisanship/Trump approval analysis excluding “leaners.” I-bars indicate 95% confidence intervals around each mean.

Trump approval and accuracy perceptions of real headlines

Figure 4 in the text shows that Trump approval was not a significant predictor of accuracy perceptions toward real headlines. This analysis pooled real headlines about both the origins of/response to the virus and treatments for the virus. Figure A4 shows similar results estimating separate multinomial logits for each category.

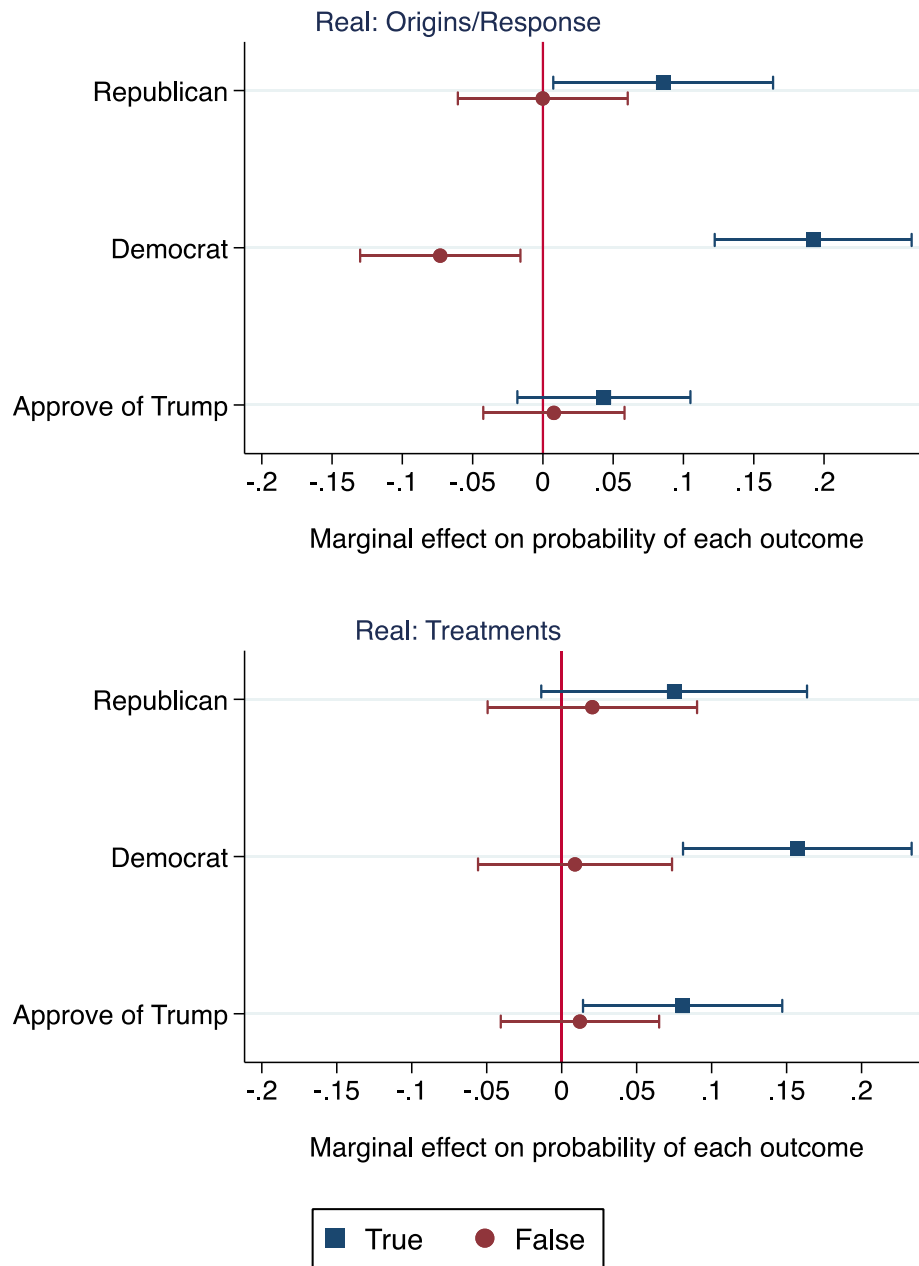


Figure A4. Trump approval and accuracy perceptions of real headlines by category. I-bars indicate 95% confidence intervals around each mean.

Trump approval and Placebo headlines

Figure 3 in the text shows that Trump approval was a significant predictor of believing prominent misinformation headlines. Figure A5 shows that Trump supporters were also significantly more likely to believe our placebo headlines—false claims about the pandemic that we created and that did not circulate on social media.

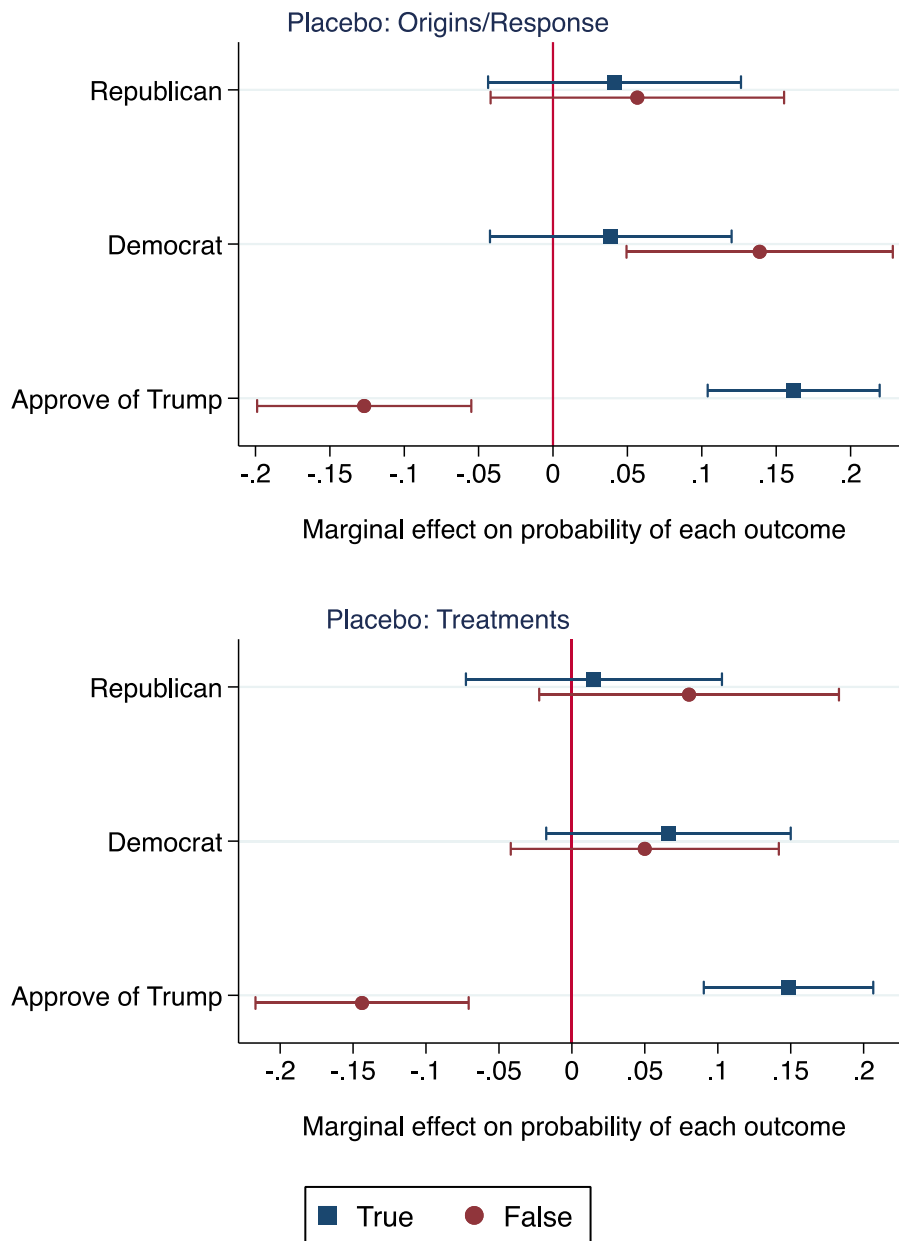


Figure A5. Trump approval and accuracy perceptions of Placebo headlines. I-bars indicate 95% confidence intervals around each mean.

Trump approval, news consumption, and propensity to believe misinformation by category

In the text, we pooled the three categories of misinformation in our study (i.e., origins/response, treatments, and Chinese sources) to analyze the interactive relationship between Trump approval and news consumption and the propensity to believe misinformation. In Figure A6, we present the results from multinomial logits that estimate this relationship for each category of misinformation separately. For misinformation about COVID-19 treatments and misinformation from Chinese sources, we observe a strong interactive relationship: as news consumption increased, the gap between Trump supporters and

non-supporters widened significantly. With respect to accuracy assessments of misinformation about the origins of the virus/the government response to it, we do not find evidence of an interactive relationship.

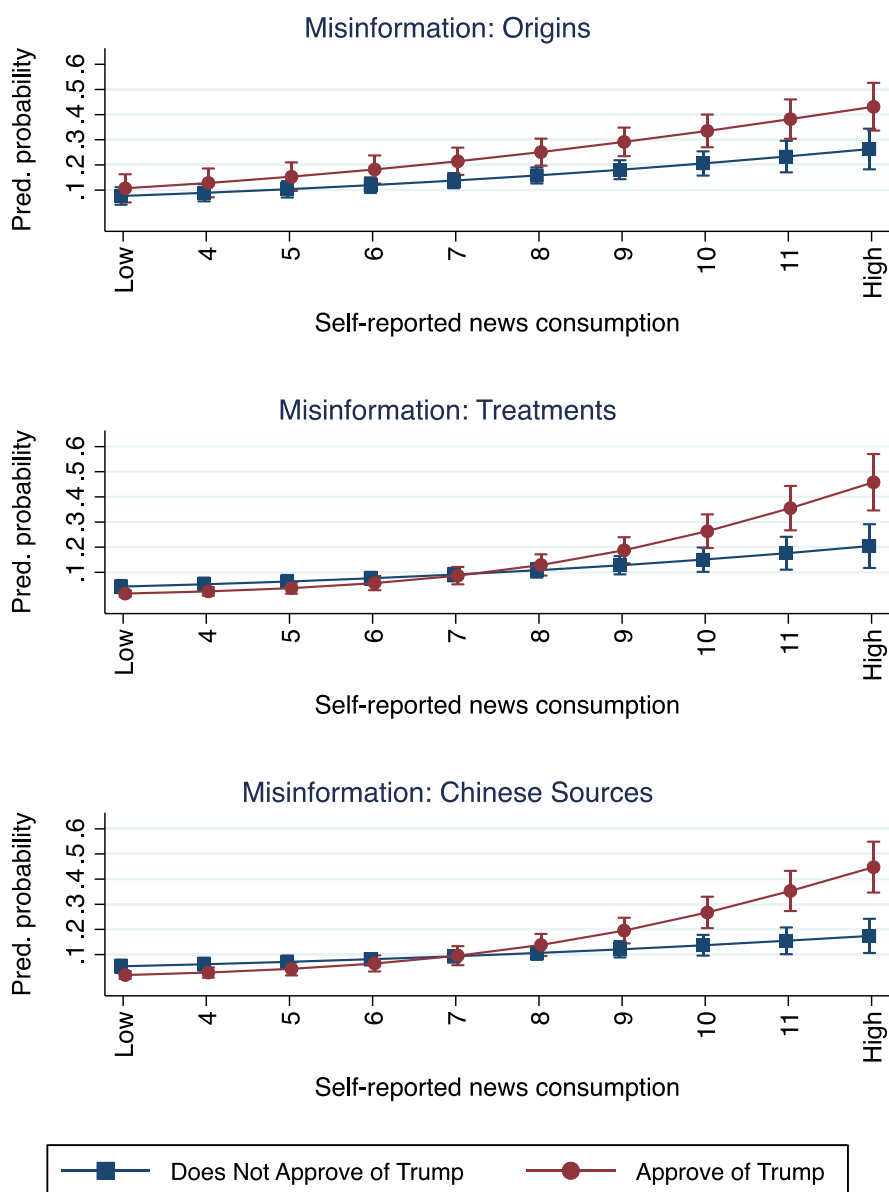


Figure A6. Trump approval and news consumption, by category of misinformation. I-bars indicate 95% confidence intervals around each mean.

The interaction of Trump approval and news consumption by source

The analyses in the text used an additive index of news consumption based on respondents' answers to how much they used three sources to follow the news: TV news, newspapers, and social media. To examine whether the interactive relationship is different for different news sources, we estimated three multinomial logit models in which we examine reliance on each news source individually, as well as its interaction with Trump approval. Figure A7 presents the results. In each case, we find that the gap

between Trump supporters and non-supporters grows as consumption of news through the specified medium increases. We find little evidence of different relationships across media sources.

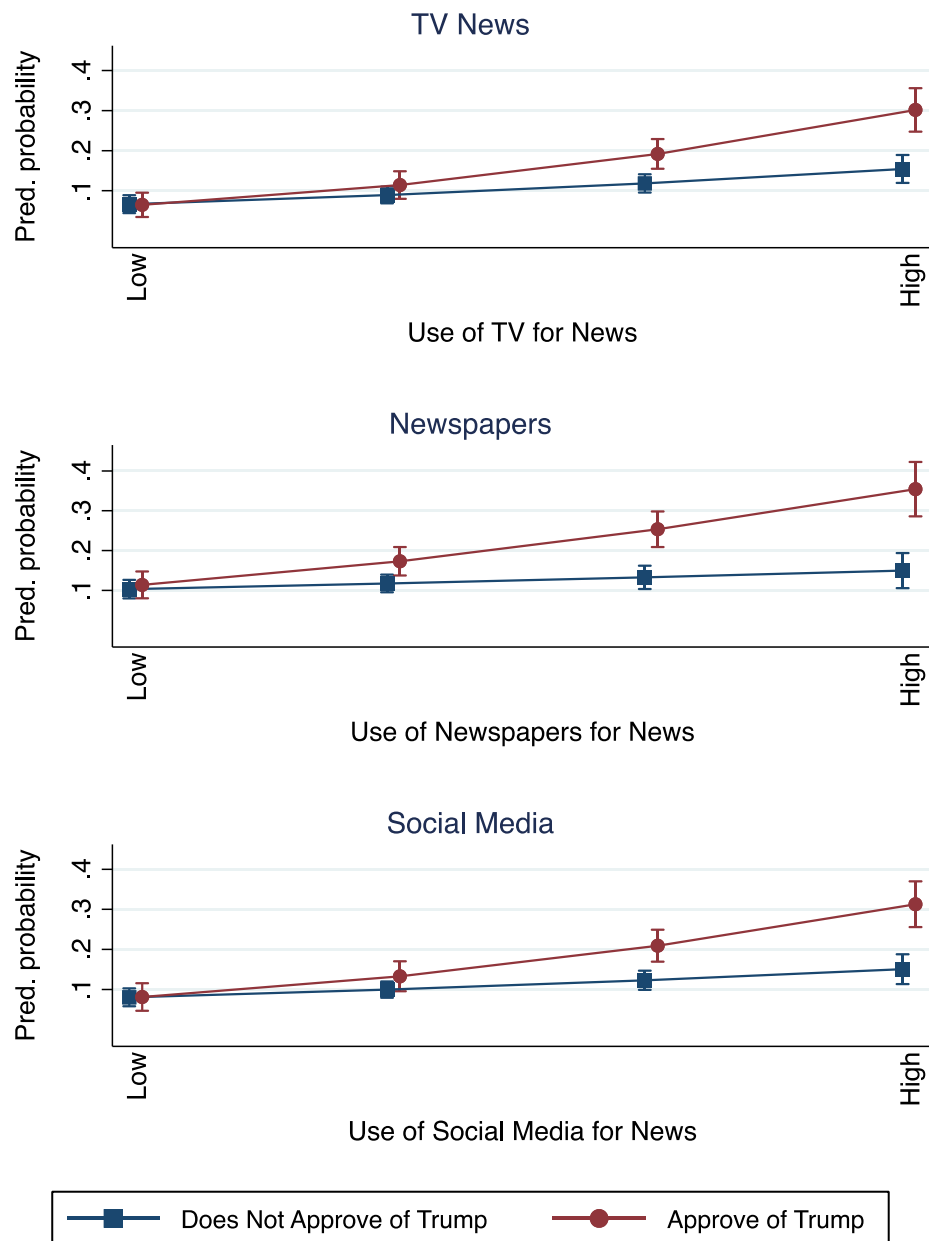


Figure A7. Interaction of Trump approval and news consumption by source. I-bars indicate 95% confidence intervals around each mean.

Robustness to excluding survey “speeders”

Inattentive survey respondents can inject noise into data, which can weaken correlations and inflate the prospects of null findings (Berinsky et al., 2021). While our survey did not include screener questions, we were able to identify “speeders” who completed the survey more quickly than most respondents. The bottom ten percent of survey takers completed the survey in roughly two and a half minutes or less. As a robustness check, we re-estimated all our analyses excluding these “speeders”. Figure A8 replicates our

“true recall” analyses excluding speeders. Figure A9 replicates our assessment of partisanship, Trump approval, and propensity for believing misinformation. Figure A10 replicates our analysis of the interactive relationship of Trump approval and news consumption with the propensity to believe misinformation. All results are substantively similar to those presented in the text. This is consistent with Greszki, Meyer, and Schoen (2015), who found that “speeding” often has little effect on marginal distributions and the results of explanatory models.

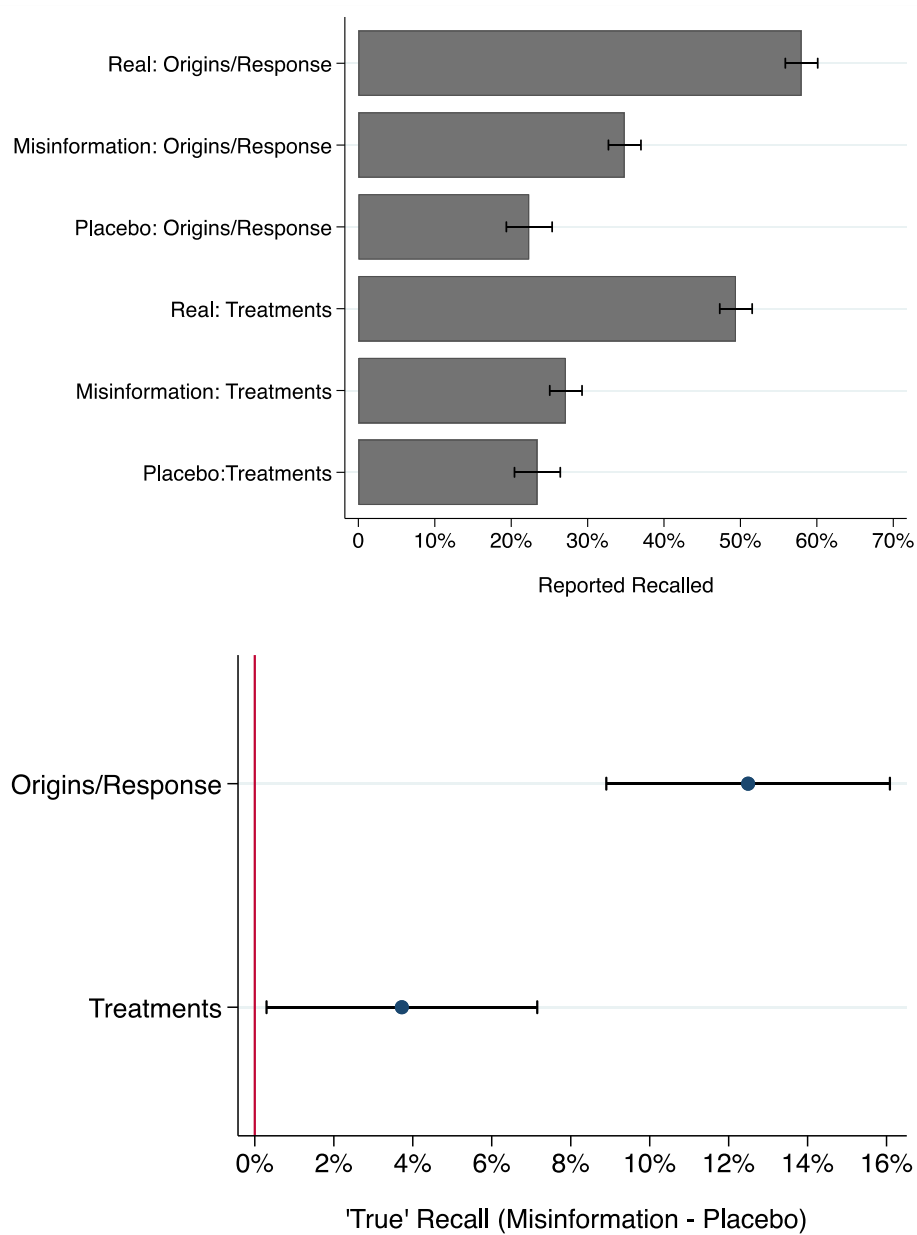


Figure A8. Replicating true recall analysis dropping “speeders.” I-bars indicate 95% confidence intervals around each mean.

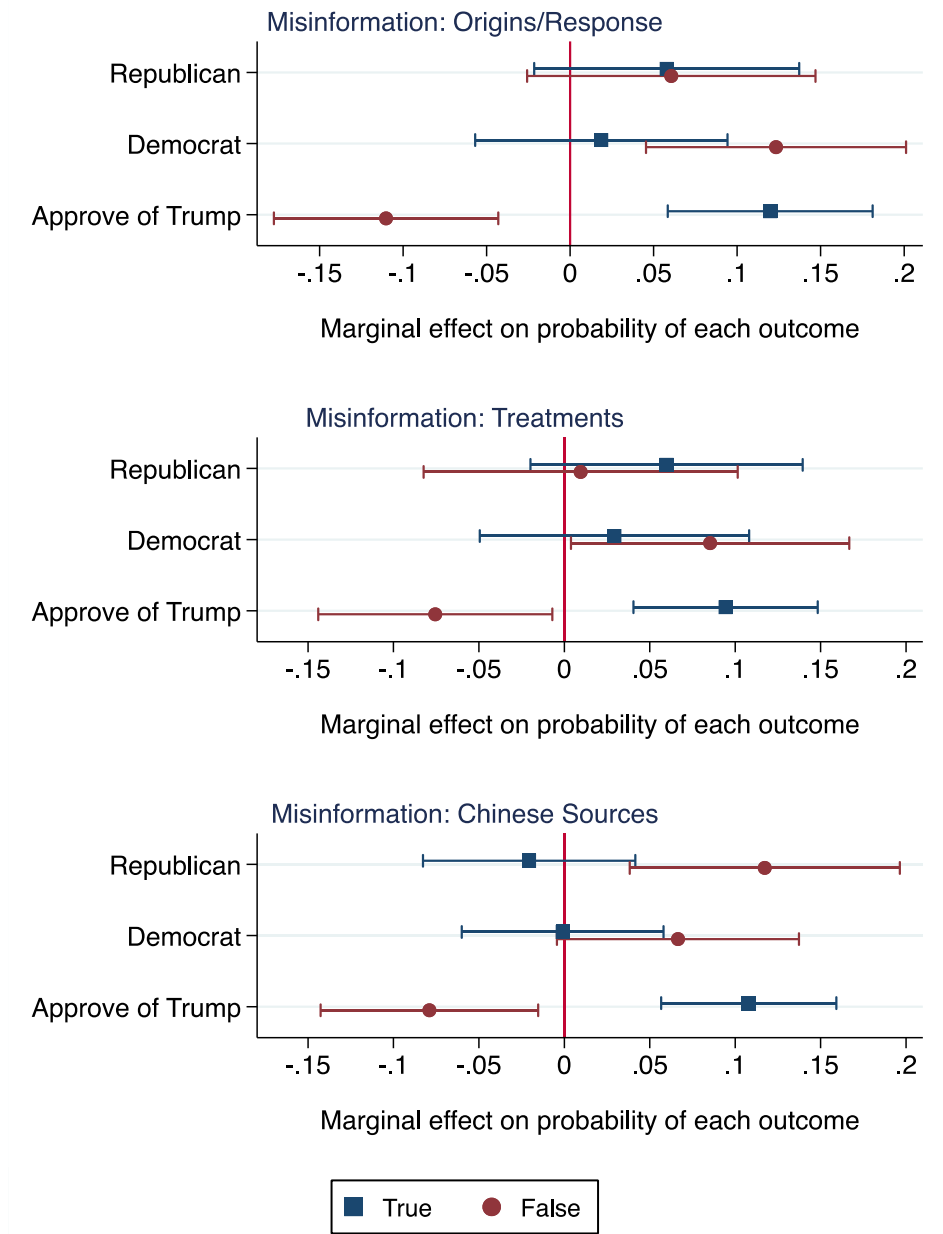


Figure A9. Trump approval and belief in misinformation dropping “speeders.” I-bars indicate 95% confidence intervals around each mean.

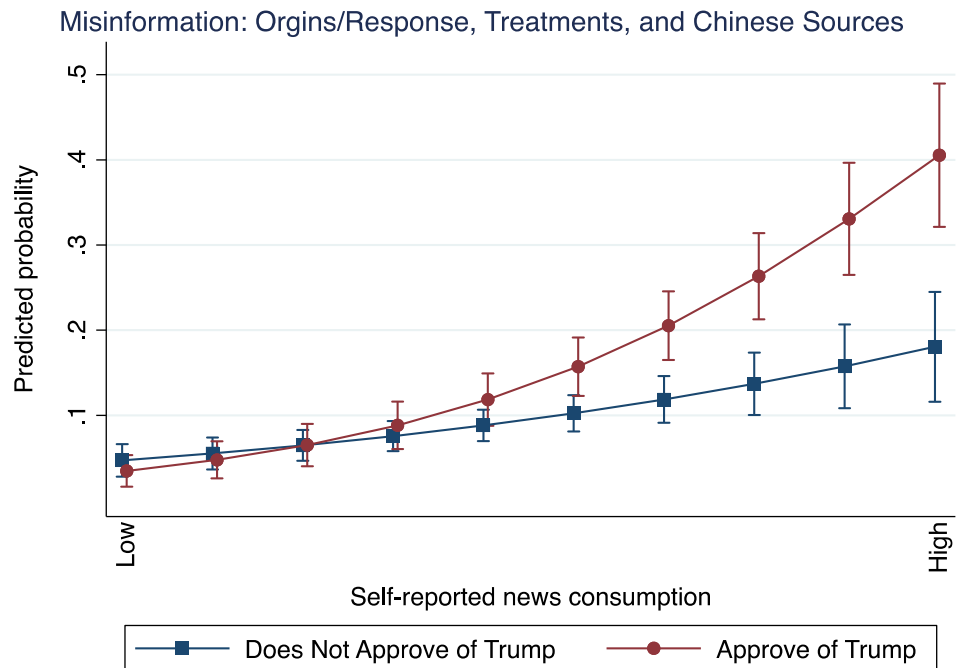


Figure A10. Trump approval, news consumption, and belief in misinformation dropping “speeders.” I-bars indicate 95% confidence intervals around each mean.

VII. Full question wording for all variables used in the analysis

Recall and accuracy perceptions

For each of the headlines in SI Table 2, subjects were asked two questions:

1. Do you recall seeing this claim about COVID-19 reported or discussed in recent months?

Answer choices: yes; no; unsure

2. Just your best guess, is this statement true?

Answer choices: yes; no; unsure.

News consumption by media source

1. How much, if at all, do you use each of the following approaches for staying up-to-date on the news?

- Watching television news programs that report the day's news
- Reading a newspaper (printed or online version)
- Seeing or reading links to news stories on Facebook or other social media sites

Answer choices: a great deal; a fair amount; only a little; not at all.

Political partisanship

1. In politics, as of today, do you consider yourself a Republican, a Democrat, or an Independent?

Answer choices: Republican; Democrat; Independent; Other/don't know.

2. As of today, do you lean more toward the Democratic Party or the Republican Party? (asked only of those who selected "independent" to previous question)

Answer choices: Democratic Party; Republican Party; Neither/don't know.

Trump approval

1. Do you approve or disapprove of the way Donald Trump is handling his job as president?

Answer choices: approve; disapprove; don't know.

Demographics

1. What is your gender?

Answer choices: male; female; prefer not to say.

2. What best describes your race/ethnicity? Check all that apply.

Answer choices: American Indian; Asian; Black or African American; Hispanic; White; Other.

3. What is your average income range?

Answer choices: Below \$20,000; \$20,000–\$39,999; \$40,000–\$59,999; \$60,000–\$79,999; \$80,000–\$99,999; \$100,000 or more.

4. What is the highest level of education you have completed?

Answer choices: less than high school; high school/GED; some college; 2-year college degree; 4-year college degree; master's degree; doctoral degree; professional degree.