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ABSTRACT

The COVID-19 pandemic heightened the urgency of working across lines of political difference to combat misinformation. This paper asks: Does having news literacy matter in reducing misperceptions, and importantly, *for whom* does having news literacy matter? Using a national survey of US adults ($N = 1700$) that included the largest set of COVID-19-related misperceptions examined to date ($k = 84$), we tested how the effects of news literacy on misperceptions vary across ideology and ideological media consumption. Although holding a higher level of news literacy is associated with fewer misperceptions in general, it helps conservatives less than it helps liberals. Moreover, although news literacy is associated with mitigating the misperception-inducing effect of ideological media consumption on both ends of the political spectrum, this potential benefit appears to be weaker for conservative media use than for liberal media use. Finally, the benefit of having news literacy is maximized among cross-cutting consumers of ideological media but dampened among like-minded consumers, particularly conservatives with heavy conservative media consumption. We discuss the implications of our findings for identifying subgroups for future news literacy interventions and understanding the potentials and challenges of using news literacy to combat misinformation in a polarized climate.

Introduction

The COVID-19 pandemic provides fertile ground for mis- and dis-information to spread especially due to the scientific uncertainty around a new virus. False information involving the pandemic became so critical that the World Health Organization (WHO, 2020) declared it the 'infodemic.' Research interest in understanding misperceptions expanded. Researchers have examined the spread of COVID-19-related false information in

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traditional and digital media spaces (Bridgman et al., 2020; Ordun et al., 2020). Other researchers studied variables that may impact COVID-19 misperceptions, such as political ideology (Calvillo et al., 2020; van Stekelenburg et al., 2021) and news literacy (Borah, Austin, et al., 2023; Guess et al., 2020).

The role of news literacy in combating misperceptions has often been studied (Craft et al., 2013; Vraga et al., 2021). However, the findings are far from conclusive (Carlson, 2018; Waisbord, 2018a, 2018b). The mixed results may be explained by moderating variables such as political ideology and ideological media consumption, which impact how people receive and process information (Borah, Austin, et al., 2023). In the current study, we extend this line of inquiry by not only examining how political ideology is related to news literacy and misperceptions, but also the interplay of these variables with like-minded and cross-cutting media use. In addition, past studies tend to examine a small number of misperceptions with most prominent media coverage, resulting in limited ability to draw robust conclusions about the relationship between news literacy and misperceptions. Advocating for a misperception repertoire approach to improve generalizability and representativeness with regards to the population of misperceptions, we use survey data on the largest set of COVID-19-related misperceptions ($k = 84$) studied to date, to the best of our knowledge. The findings help understand the roles of news literacy in mitigating misperceptions and identify subgroups formed along ideology and ideological media consumption patterns that are more or less likely to benefit from news literacy interventions.

Misinformation and disinformation

Freelon and Wells (2020) differentiate between disinformation and misinformation: They define disinformation as false information that is designed and spread intentionally, while misinformation is fake information circulated without the disseminators' knowledge. Moreover, Nyhan and Reifler (2010) offered an important distinction between misinformation, which regards the information itself, and misperceptions – defined as 'cases in which people's belief about factual matters are not supported by clear evidence and expert opinion' (p. 305).

Previous literature has identified a series of predictors for misperceptions. People with lower analytical thinking, lower numeracy skills, or higher 'bullshit receptivity' are more susceptible to the influence of misinformation and disinformation (Bago et al., 2020; Pennycook & Rand, 2020). In addition to these cognitive factors, socio-political factors such as feelings of deprivation (van Prooijen et al., 2018), political ideology (Calvillo et al., 2020; van Stekelenburg et al., 2021), and lower trust in institutions including science and scientists (Lewandowsky et al., 2013), journalists and the mainstream media (van der Linden et al., 2020), and government (Kim & Cao, 2016), are associated with higher likelihood of holding misperceptions. Scholars have also examined ways to help decrease misperceptions. Among them, one important factor is news literacy, which is defined as 'knowledge of the personal and social processes by which news is produced, distributed, and consumed, and skills that allow users some control over these processes' and consists of five domains – context, creation, content, circulation, and consumption – that address the role of news in society (Vraga et al., 2021).

News literacy holds promise in the fight against misinformation because it is malleable and can potentially respond to well-designed interventions. Other factors such as political ideology have emerged as an important predictor of misperceptions in health, science, and political domains, such as vaccination, climate change, gun control (Vraga et al., 2019) and the Iraq war and September 11 attack (Miller et al., 2016), perhaps due to the consistent and strong effects of political ideology on selective exposure (Stroud, 2011) and motivated reasoning (Taber & Lodge, 2006). However, it is extremely difficult, if not entirely impossible during a time of severe political polarization, to change one's political ideology once formed. In contrast, we can nourish news literacy as knowledge of news that citizens can acquire overtime to build resistance to mis- and disinformation.

News literacy and misperceptions

As one of the strategies to address misperceptions, scholars have emphasized the importance of improving media users' ability to understand contemporary media environments. There have been different conceptualizations of literacy related to (news/digital) media. For example, media literacy refers to 'the ability to access, analyze, evaluate and create messages in a variety of forms' (Livingstone, 2004, p. 3) and digital literacy focuses on how these skills are employed in order to understand and evaluate information in digital environments (Eshet, 2004). As defined earlier in this paper, news literacy focuses on the role of news in its conceptualization (Vraga et al., 2021). Research suggests that developing news consumers' ability to understand and navigate every process with respect to news can function as a proactive solution to combat misinformation (Vraga et al., 2021).

Although there is a wide variety of research on news literacy, its relationship with misinformation is far from conclusive. Correlational evidence supports the idea of news literacy as a proactive strategy of fighting misinformation. For example, observational research shows that people who already have an *existing* higher level of news literacy are less susceptible to misinformation and disinformation (e.g., Austin et al., 2021; Kahne & Bowyer, 2017; Vraga & Tully, 2019). However, when it comes to experimental studies aiming to decrease misperceptions by exposing people to news literacy interventions, the results are much less consistent. Except for the success of a few gamified interventions such as 'fake news game' (Roozenbeek et al., 2020) and the LAMBOOZLED! card game designed for educational settings (Chang et al., 2020), research indicates that it is challenging to craft effective campaign messages about news literacy that can directly decrease misperceptions. Scholars have studied short-term interventions that package news literacy tips into public service announcements (Guess et al., 2020), editorials (Hameleers, 2022), and social media posts (Tully et al., 2020). However, the evidence for the effectiveness of these messages in decreasing misperceptions is less consistent, with cases of both success (Guess et al., 2020; Hameleers, 2022) and failure (Vraga, Bode, et al., 2022; Vraga, Tully, et al., 2022) documented in the literature.

The mixed findings on the effects of news literacy on misperceptions can be explained by at least two underlying reasons. First, when looking solely at correlational studies, the evidence overwhelmingly suggests a positive correlation between having a high level of news literacy and being an informed citizen. Discrepancy in findings lies in experimental

studies. That is, the current scholarship agrees on the benefits of having an existing high level of news literacy, but is inconclusive on how to reach that goal, i.e., how to craft news literacy messages that are effective enough to combat misinformation, especially in one-shot experiments.

Beyond the nature of study, there may be a second reason for the mixed evidence: News literacy may be a necessary but insufficient condition for increasing misinformation recognition and rejection of conspiracies (Lewandowsky et al., 2017), which are examples of *news literacy behaviors* identified by Vraga et al. (2021). They argue that news literacy should be differentiated from news literacy behaviors, i.e., the actual performance and application of news literacy when engaging with news. Vraga et al. (2021) focus on additional predictors of news literacy behaviors that work in parallel with news literacy (e.g., social norms, perceived control). We extend this line of argument and investigate moderating variables that interact with news literacy to impact misinformation outcomes. Taking together these two underlying reasons for mixed findings on news literacy, this paper focuses on the question: what are the moderating factors that condition the application of people's existing level of news literacy? Before examining the conditional effects, we propose H1 based on previous correlational evidence:

H1: A higher level of news literacy is associated with a lower level of COVID-19 misperceptions.

The moderation effects of political ideology and ideological media use

In this article, we investigate two moderating factors: political ideology and ideological media consumption. A few pioneering studies have shown that political ideology can moderate the impact of news literacy, indicating that news literacy may be more helpful to combat misinformation among liberals than conservatives (Ashley et al., 2022; Borah, 2022; Borah, Austin, et al., 2023). For instance, Borah, Austin et al. (2023) demonstrated that liberals with higher news literacy hold fewer COVID-19 misperceptions, while conservatives, regardless of news literacy levels, hold a high level of misperceptions in general. Similarly, Ashley et al. (2022) showed the association between increased levels of news literacy and decreased COVID-19 misperceptions is stronger among liberals than conservatives.

Our approach advances this emerging scholarship in both theoretical and methodological terms. Theoretically, we investigate deeper into how much this ideological asymmetry is due to *individual trait differences* (being a liberal vs a conservative) and/or *information supply and consumption differences* (consuming liberal media vs conservative media). Methodologically, we extend prior studies by using the largest set of COVID-19-related misperceptions examined to date, aiming to provide more generalizable and comprehensive evidence on how news literacy works across ideological lines.

How would political ideology and ideological media consumption moderate the effects of news literacy? As discussed above, holding knowledge about the context, creation, content, circulation, and consumption of news does not necessarily entail that people will always effectively apply this knowledge in discerning information. Synthesizing psychological theories on motivated reasoning and worldview differences across ideologies as well as theorizations about ideological media, we argue that two potential

mechanisms may contribute to the ideological asymmetry in the application of news literacy: differences in (a) individual trait and (b) information supply and associated ideological media consumption.

Political ideology

In terms of individual trait differences, while there has been no established evidence to suggest that conservatives are less knowledgeable about news media than liberals, it is possible that stronger directional motivated reasoning among conservatives may attenuate or override the accuracy motivated reasoning required during the application of their knowledge. Outlining directional and accuracy motivations as the two basic forms of human reasoning, the theory of motivated reasoning (Taber & Lodge, 2006) suggests that while everyone generates automatic affective responses when encountering information, those driven by accuracy motivations tend to reflect on their opinion formation processes and recalculate their decisions, while those driven by directional motivations tend to go along with this affective reaction signaling their preexisting preference. Because successful application of news literacy involves reflection of the contexts and biases of news media and their consumers, when strong identity-based reasoning becomes the driving force, individuals are not motivated enough to apply news literacy to strive for accurate beliefs.

There is suggestive evidence that compared to liberals, conservatives tend to be stronger directionally motivated reasoners who are more resistant to updating preexisting beliefs (Flynn et al., 2017). Amodio, Jost, Master, and Yee (2007) explained the different processes used by liberals and conservatives in information processing, showing that conservatives strongly hold on to their judgments, while liberals are tolerant and open to new experiences. Jost et al. (2003) found that personal traits unfavorable to changes, like intolerance to uncertainty, system instability, and fear of threat and loss, were closely associated with political conservatives and motivated their resistance to changes. Similarly, Chan and Palmeira (2021) demonstrated that a persuasive action was less likely to sway conservatives, who tend to see the world as fixed, than liberals, who tend to see the world as malleable. In essence, conservatism resists 'change and justification of inequality' (Jost et al., 2003, p. 339). Such psychological traits can in turn result in strong directional motivated reasoning, making it less likely that people use news literacy to analyze the accuracy of information at hand or update their preexisting false beliefs. In line with the above evidence, we hypothesize that:

> H2: The association between news literacy and misperceptions will be moderated by political ideology. Specifically, the tendency for higher news literacy to be associated with lower misperceptions (see H1) will be stronger among liberals than conservatives.

Likeminded and cross-cutting consumption of ideological media

While individual trait differences in the strength of motivated reasoning serve as one possible mechanism, scholars contend that empirical evidence for this proposition has not always been consistent (Guay & Johnston, 2022). The observed difference between liberals and conservatives in how they apply news literacy in forming beliefs may be at

least partially due to differences in information supply and consumption of liberal/conservative media.

The rich literature on how individuals consume ideological media suggests that people have a strong tendency to seek like-minded media without systematically avoiding incongruent media (Garrett, 2009). While like-minded consumption is frequent, cross-cutting consumption of ideological media does occur. A Pew Research Center (2021) survey reports that 24% Republicans and 25% Democrats get news solely from like-minded media, while 34% of Republicans and 48% Democrats have turned to media sources with mixed (e.g., ABC, CBS, NBC) or opposite-leaning audiences (e.g., CNN/MSNBC for Republicans, Fox News/conservative talk radio for Democrats). Similarly, our own data show that 37% conservatives and 38% liberals engage in cross-cutting consumption of media opposite to one's view (Appendix 3 Table A3). In addition, Edgerly (2015) found that among the general US public, 16% have a 'conservative only' news repertoire and 12% have a 'liberal + online' news repertoire, while 12% of Americans are news omnivores, consuming media across the political spectrum.

The occurrence of cross-cutting and like-minded ideological media use can be shaped by multiple factors. Ideological extremity increases like-minded ideological media consumption, but does not influence cross-cutting consumption, supporting the argument that engaging in selective reinforcement seeking does not necessarily mean avoiding opinion challenges (Dvir-Gvirsman, Tsfati, & Menchen-Trevino, 2016; Garrett, 2009). On the other hand, cross-cutting consumption can also be driven by factors including expected utility of information (Knobloch-Westerwick & Kleinman, 2012), characteristics of media environment (Mutz & Martin, 2001), and political interest (Castro-Herrero et al., 2018). Politically sophisticated individuals, in particular, tend to seek out more information on political issues, contributing to an increased likelihood of cross-cutting media consumption (Castro-Herrero et al., 2018). Beyond individual factors, external elements also play a role in influencing cross-cutting exposure. Global crises, such as the COVID pandemic, often prompt individuals to seek more information to comprehend the complexities of the situation. This increased information-seeking behavior extends to the consumption of information sources, transcending ideological differences (Zoizner et al., 2022).

Research has theorized two pathways that ideological media consumption may shape beliefs in general. One pathway is *the supply of factual evidence*. Ideological media, in contrast to mainstream sources, focus on providing interpretive packages that help audiences make sense of the world in relation to their ideology, rather than providing factual reporting (Levendusky, 2013). Resulting from this, ideological media content can lack relevant facts, or misrepresent facts in a way that serves the ideological lens, thus making frequent uses more susceptible to misperceptions (Garrett et al., 2016; Garrett et al., 2019). However, research increasingly suggests that the supply of facts may not be the primary reason why ideological media consumption contributes to misperceptions, pointing to another pathway – *the supply of identity cues* (Garrett et al., 2016; Garrett et al., 2019; Weeks et al., 2023). Regularly cuing a shared identity and threats to the identity, ideological media distill political identities for audiences by 'refining and purifying our idea of who we are and how people like us think, feel, and act' (Young, 2023, p. 182). Supporting this pathway, Garrett et al. (2019) show that increased affective polarization, rather than sheer unawareness of facts, is the main reason why ideological media

contribute to misperceptions. In other words, ideological media provide abundant identity cues, which alter the strength of motivated reasoning processes (Rekker, 2021).

Explicating these two pathways in the context of our study, *like-minded and cross-cutting* ideological media consumption may *condition the application of one's news literacy* differently by altering the motivated reasoning processes. We consider the supply of identity cues first. We argue that one needs both the skill (i.e., existing news literacy) and the motivation to use that skill (i.e., desire to be accurate) in order to make informed judgments. As more frequent like-minded ideological media consumers are supplied with a higher volume of in-group identity cues, they tend to be driven more by directional motivation and less by accuracy motivation. This makes them less likely to perform and apply news literacy in belief formation. That is, when asked in abstract, one may be well aware of the limitations in news reporting (e.g., game frame) and the biases news consumers carry (e.g., confirmation bias), but they may not be sufficiently motivated to apply this knowledge in their own information processing because of the salient identity cues from their media diet.

In contrast, cross-cutting exposure of ideological media provides heterogeneous viewpoints and contrasting identity cues. Research argues that being in a conflicting information context encourages reflection of one's own and others' beliefs, which in turn increases accuracy-driven reasoning (Druckman, 2012). For example, being presented with cross-partisan cues can reduce directional motivation and increase accuracy (Druckman, 2012). Being exposed to contrasting identity cues and dissimilar views through cross-cutting exposure may help make accuracy considerations salient and illustrate the points about news production, news framing, and common biases in perceptions of news, opening up opportunities to apply news literacy.

We have proposed that like-minded (cross-cutting) ideological media consumers might benefit less (more) from having news literacy, through the pathway of identity cues supply. What further complicates the picture is that the pathway of factual evidence supply discussed earlier may also be at play: the content between conservative and liberal media may differ in how much they promote misinformation, potentially making like-minded and cross-cutting exposure having different implications for liberals and conservatives. Garrett and Bond (2021) suspected that there is a higher supply of misinformation promoting conservative positions than misinformation promoting liberal positions. Similarly, Vosoughi et al. (2018) argued that conservatives tend to trust sources that contain misinformation (e.g., Fox News and the Sean Hannity Show). Liberals, in contrast, have a higher level of trust in news sources known for disseminating accurate information (Vosoughi et al., 2018). During the COVID-19 pandemic, US conservative political elites repetitively made statements containing COVID-19 misinformation, which were picked up by conservative media. It might be possible that for liberal consumers who cross-cut to conservative media, having news literacy does not reduce misperception for them as much as it does for conservative consumers who cross-cut to liberal media, given that the former group get more misinformation than the latter group from their cross-cutting experience. While there is emerging evidence that conservative media use is associated with COVID-19 misperceptions (Borah, Lorenzano, et al., 2022; Jamieson & Albarracín, 2020), direct comparison on factual evidence supplied in liberal vs. conservative media has been scarce.

Taken together, we argue that it is useful to examine liberal media and conservative media consumption separately for liberals and conservatives. Table 1 clarifies the

Table 1. Four groups of ideological news consumers.

	Liberal media	Conservative media
Liberals	Like-minded liberal consumers	Cross-cutting liberal consumers
Conservatives	Cross-cutting conservative consumers	Like-minded conservative consumers

potential relationships between ideologues and their media use. It is useful to note that the mechanisms discussed so far – (a) individual traits and (b) information supplied by ideological media people consume (including supply of factual evidence and supply of identity cues) – are not mutually exclusive and are likely to work together. For example, testing interaction effects between partisanship and ideological media use, Garrett et al. (2019) showed that conservative media are more likely than liberal media to increase political misperceptions, and this mechanism is more prominent among Republicans than Democrats. Given the lack of conclusive empirical evidence, we ask our first research question about the interactive effects among political ideology, ideological media use, and news literacy:

RQ1: How will the association between news literacy and misperceptions be moderated by both political ideology and ideological media use?

The moderation effects of topics

Finally, people's misperceptions may differ by issue topics. In general, political misperceptions tend to be more persistent than health misperceptions (Walter & Murphy, 2018), especially among strong ideologues (Miller et al., 2016; Valenzuela et al., 2019). The same motivated reasoning mechanism driving acceptance of favorable misinformation applies in correcting misperceptions; interventions such as rating scales are more effective in correcting political misperceptions than non-political misperceptions (Amazeen et al., 2018). However, in the case of COVID-19 in the US, health protective behaviors are often viewed through a politicized lens (Hart et al., 2020; Stroebe et al., 2021), calling into question whether health-based misperceptions such as those about masking or vaccines in this context are different in nature than political misperceptions such as those about mass surveillance or politician misconduct. Categorizing the COVID-19 misinformation items into health-based items and political items, we examined the possible differences in the proposed effects across the misinformation topics. Our last research question asks:

RQ2: Will the effects proposed in H1, H2, & RQ1 differ between health-based and political misinformation topics?

Methods

Data

We conducted an online survey among US adults in November 2020 ($N = 1700$). To ensure data quality, we used the IQR method to eliminate outliers who took too short or too long to complete the survey (i.e., respondents whose time of completion was

less than Q1-1.5×IQR or more than Q3 + 1.5×IQR); the final sample for analysis contained 1564 respondents. Given the impacts of COVID-19 on rural America, we intentionally oversampled rural residents (32.74% rural). Respondents had an average age of 55.72 years old. 50.26% of respondents were female, and 75.51% of respondents were White. 40.66% had a bachelor's degree or above. 53.58% had an annual household income of less than $50 K. See Appendix 1 for more sample details.

Measures

Misperceptions about COVID-19

Participants indicated their agreement with 60 health-based misperceptions about COVID-19 and 24 political misperceptions about COVID-19 on a Likert scale (1 = strongly disagree to 7 = strongly agree). These misperception items came from the International Fact-Checking Network's dataset on fact-checked claims widely circulated on social media in the US from January to August 2020. Using these 84 items of COVID-19-related misperceptions, we conducted a series of Confirmatory Factor Analyses (CFA) and assessed their underlying latent constructs. By doing so, we evaluated if the misperception items consist of only one factor (i.e., 'general' misperceptions including both political and health-based ones) or two factors (i.e., separating political misperceptions from health-based misperceptions). Results of CFA indicated that the two-factor model separating political and health-based COVID-19 misperceptions (AIC = 444,824, BIC = 445,729, χ^2 = 24,513) showed a significantly better fit ($p < .001$) than the one-factor model assuming 'general' COVID-19 misperceptions (AIC = 449,058, BIC = 449,958, χ^2 = 28,750). Hence, we created political and health-based COVID-19 misperceptions variables by averaging them separately (health-based COVID-19 misperceptions: α = .98, M = 2.56, SD = 1.13; political COVID-19 misperceptions: α = .95, M = 3.14, SD = 1.25). All 84 misperception items are listed in Appendix 2.

News literacy

We adopted the battery on news literacy in Vraga and Tully (2019). The battery included 10 multiple-choice questions that assessed participants' knowledge of how news is produced, disseminated, and consumed. The answers were re-coded into 1 = correct and 0 = incorrect and summed (M = 5.66, SD = 2.31). See Appendix 2 for exact question wording.

Political ideology

Respondents reported their political ideology on a 5-point scale (1 = very liberal to 5 = very conservative, M = 3.19, SD = 1.16).

Ideological media use

Respondents reported their use of a variety of media sources on a 5-point Likert scale (1 = never to 5 = multiple times a day). We measured conservative media use by averaging respondents' use of 'The FOX News cable news channel, website or app from the Fox News cable news organization,' 'Conservative Talk Radio website or app from conservative talk radio (such as The Rush Limbaugh Show),' and 'Conservative online sources (such as *The American Spectator, Breitbart, The Daily Caller*, or *The Daily Mail*)' (α = .78, M = 1.91, SD = 1.09). We measured liberal media use by averaging respondents'

use of 'The CNN news channel, website, or app from the CNN cable news channel,' 'The MSNBC cable news channel, website or app from the MSNBC cable news organization,' and 'Liberal online sources (such as Democracy Now, The Intercept, Mother Jones, or Vox)' ($\alpha = .78$, $M = 1.99$, SD = 1.11).

Covariates

We also included a list of covariates based on their theoretical relevance to misperceptions. Respondents reported their institutional trust on a 0–100 slider (0 = not at all, 100 = very much) including trust in the US congress, trust in the scientific community, trust in the press, trust in academic researchers, trust in corporations and industry, and trust in the medical community ($\alpha = .91$, $M = 52.15$, SD = 24.01). We also controlled for general tendency to engage in COVID-19 information seeking (1 = very unlikely to 4 = very likely), asking how likely in the next week respondents were to seek information related to COVID-19 on social media, seek information related to COVID-19 with websites (but not social media), seek information related to COVID-19 from a doctor, seek information related to COVID-19 with families, friends or acquaintances in person, and seek information related to COVID-19 with TV, newspapers and radio ($\alpha = .85$, $M = 2.34$, SD = 0.80). We also controlled for age, gender, race, education, and income as reported in *Data* above.

Analytical strategies

To test our hypotheses and research questions, we used OLS regressions where all predictors were standardized to have a mean of 0 and a standard deviation of 1. We started with a main effect model to test H1 and added a two-way interaction term between news literacy and ideology to test H2. We also tested two-way interaction terms (a) between news literacy and liberal media use and (b) between news literacy and conservative media use. To test RQ1, we tested three-way interaction terms (a) between news literacy, ideology, and liberal media use, and (b) between news literacy, ideology, and conservative media use. Finally, to address RQ2, we separately estimated all the above models for health-based COVID-19 misperceptions and political COVID-19 misperceptions. VIF scores for all terms in all models are under 2.52, giving us confidence that the models do not suffer from multicollinearity. Ideology and ideological media use were analyzed as continuous variables and recoded into factors for visualizations only. Covariates are included in all models.

Results

Starting with main effects, news literacy was negatively associated with holding health-based ($\beta = -0.31$, 95% CI [−0.36, − 0.26], $p < 0.001$; Table 2, Model 1) and political misperceptions about COVID-19 ($\beta = -0.31$, 95% CI [−0.37, − 0.26], $p < 0.001$; Table 3, Model 1), confirming H1. In addition, compared to liberals, conservatives were more likely to hold health-based ($\beta = 0.15$, 95% CI [0.09, 0.21], $p < 0.001$; Table 2, Model 1) and political misperceptions ($\beta = 0.20$, 95% CI [0.14, 0.26], $p < 0.001$; Table 3, Model 1).

Importantly, the effects of news literacy were conditional on ideology and ideological media use. There were significant two-way interactions between news literacy and

Table 2. Predicting health-based COVID-19 misperceptions.

DV: Health-based misperceptions	Model 1			Model 2			Model 3			Model 4		
	β	CI	p	β	CI	p	β	CI	p	β	CI	p
(Intercept)	2.54	[2.50, 2.59]	<0.001	2.54	[2.50, 2.59]	<0.001	2.47	[2.43, 2.52]	<0.001	2.52	[2.47, 2.57]	<0.001
News literacy	−0.31	[−0.36, − 0.26]	<0.001	−0.30	[−0.35, − 0.25]	<0.001	−0.28	[−0.33, − 0.23]	<0.001	−0.30	[−0.35, − 0.24]	<0.001
Ideology	0.15	[0.09, 0.21]	<0.001	0.16	[0.10, 0.21]	<0.001	0.15	[0.09, 0.20]	<0.001	0.14	[0.08, 0.20]	<0.001
Conservative media use	0.28	[0.22, 0.34]	<0.001	0.26	[0.21, 0.32]	<0.001	0.21	[0.15, 0.26]	<0.001	0.23	[0.17, 0.29]	<0.001
Liberal media use	0.09	[0.03, 0.15]	0.006	0.10	[0.04, 0.17]	0.002	0.05	[−0.01, 0.12]	0.109	0.05	[−0.02, 0.12]	0.130
Institutional trust	−0.22	[−0.28, − 0.17]	<0.001	−0.22	[−0.27, − 0.16]	<0.001	−0.25	[−0.30, − 0.19]	<0.001	−0.25	[−0.30, − 0.19]	<0.001
Information seeking	0.08	[0.03, 0.14]	0.004	0.08	[0.03, 0.14]	0.004	0.09	[0.03, 0.14]	0.001	0.09	[0.03, 0.14]	0.002
Age	−0.22	[−0.27, − 0.17]	<0.001	−0.23	[−0.28, − 0.17]	<0.001	−0.17	[−0.23, − 0.12]	<0.001	−0.16	[−0.21, − 0.11]	<0.001
Female	−0.02	[−0.06, 0.03]	0.501	−0.02	[−0.07, 0.03]	0.457	−0.01	[−0.05, 0.04]	0.785	0.00	[−0.05, 0.05]	0.981
White	0.01	[−0.04, 0.06]	0.799	0.01	[−0.04, 0.06]	0.741	−0.01	[−0.05, 0.04]	0.839	−0.01	[−0.06, 0.04]	0.753
Education	−0.01	[−0.06, 0.04]	0.761	−0.01	[−0.06, 0.04]	0.778	−0.04	[−0.09, 0.01]	0.139	−0.04	[−0.09, 0.01]	0.131
Income	0.03	[−0.02, 0.08]	0.225	0.03	[−0.02, 0.08]	0.258	0.03	[−0.02, 0.08]	0.260	0.03	[−0.02, 0.08]	0.262
Rural	0.03	[−0.02, 0.07]	0.309	0.03	[−0.02, 0.08]	0.256	0.02	[−0.02, 0.07]	0.310	0.03	[−0.02, 0.08]	0.230
News literacy × Ideology				0.06	[0.01, 0.10]	0.016				0.04	[−0.02, 0.09]	0.233
News literacy × Conservative media use							−0.11	[−0.16, − 0.06]	<0.001	−0.11	[−0.17, − 0.05]	<0.001
News literacy × Liberal media use							−0.16	[−0.21, − 0.11]	<0.001	−0.15	[−0.21, − 0.09]	<0.001
Conservative media use × Ideology										−0.12	[−0.18, − 0.07]	<0.001
Liberal media use × Ideology										0.08	[0.02, 0.13]	0.004
News literacy × Conservative media use × Ideology										0.07	[0.02, 0.12]	0.006
News literacy × Liberal media use × Ideology										−0.10	[−0.15, − 0.05]	<0.001
R²		0.39			0.39			0.43			0.44	

Note: Table shows standardized coefficients, 95% CIs, and p-values from OLS regressions.

Table 3. Predicting political COVID-19 misperceptions.

DV: Political misperceptions	Model 1			Model 2			Model 3			Model 4		
	β	CI	p	β	CI	p	β	CI	p	β	CI	p
(Intercept)	3.12	[3.08, 3.17]	<0.001	3.13	[3.08, 3.17]	<0.001	3.07	[3.03, 3.12]	<0.001	3.09	[3.03, 3.14]	<0.001
News literacy	−0.31	[−0.37, − 0.26]	<0.001	−0.30	[−0.36, − 0.25]	<0.001	−0.29	[−0.34, − 0.23]	<0.001	−0.30	[−0.35, − 0.24]	<0.001
Ideology	0.20	[0.14, 0.26]	<0.001	0.21	[0.15, 0.27]	<0.001	0.20	[0.14, 0.25]	<0.001	0.19	[0.13, 0.26]	<0.001
Conservative media use	0.47	[0.41, 0.53]	<0.001	0.45	[0.39, 0.51]	<0.001	0.41	[0.35, 0.47]	<0.001	0.42	[0.35, 0.49]	<0.001
Liberal media use	−0.06	[−0.12, 0.01]	0.084	−0.04	[−0.11, 0.02]	0.202	−0.08	[−0.14, − 0.01]	0.024	−0.09	[−0.16, − 0.02]	0.012
Institutional trust	−0.40	[−0.46, − 0.34]	<0.001	−0.39	[−0.45, − 0.33]	<0.001	−0.42	[−0.47, − 0.36]	<0.001	−0.41	[−0.47, − 0.35]	<0.001
Information seeking	0.03	[−0.02, 0.09]	0.259	0.03	[−0.02, 0.09]	0.262	0.04	[−0.02, 0.09]	0.211	0.04	[−0.02, 0.09]	0.199
Age	−0.12	[−0.17, − 0.06]	<0.001	−0.13	[−0.18, − 0.07]	<0.001	−0.09	[−0.14, − 0.03]	0.002	−0.08	[−0.14, − 0.03]	0.003
Female	0.01	[−0.04, 0.06]	0.691	0.01	[−0.04, 0.06]	0.759	0.02	[−0.03, 0.07]	0.486	0.02	[−0.03, 0.07]	0.393
White	0.04	[−0.02, 0.09]	0.187	0.04	[−0.01, 0.09]	0.155	0.03	[−0.02, 0.08]	0.279	0.03	[−0.02, 0.08]	0.310
Education	−0.04	[−0.10, 0.01]	0.110	−0.04	[−0.10, 0.01]	0.116	−0.07	[−0.12, − 0.01]	0.014	−0.07	[−0.12, − 0.01]	0.014
Income	0.03	[−0.03, 0.08]	0.343	0.02	[−0.03, 0.08]	0.401	0.02	[−0.03, 0.08]	0.386	0.02	[−0.03, 0.07]	0.418
Rural	0.02	[−0.03, 0.07]	0.481	0.02	[−0.03, 0.07]	0.390	0.02	[−0.03, 0.07]	0.484	0.02	[−0.03, 0.07]	0.410
News literacy × Ideology				0.08	[0.03, 0.13]	0.002				0.04	[−0.02, 0.10]	0.203
News literacy × Conservative media use							−0.06	[−0.11, − 0.00]	0.037	−0.07	[−0.13, − 0.01]	0.027
News literacy × Liberal media use							−0.15	[−0.20, − 0.09]	<0.001	−0.13	[−0.19, − 0.07]	<0.001
Conservative media use × Ideology										−0.08	[−0.13, − 0.02]	0.006
Liberal media use × Ideology										0.00	[−0.05, 0.06]	0.868
News literacy × Conservative media use × Ideology										0.02	[−0.03, 0.08]	0.358
News literacy × Liberal media use × Ideology										−0.06	[−0.11, − 0.01]	0.031
R²		0.49			0.49			0.50			0.51	

Note: Table shows standardized coefficients, 95% CIs, and p-values from OLS regressions.

ideology for both health-based misperceptions ($\beta = 0.06$, 95% CI [0.01, 0.10], $p = 0.016$; Table 2, Model 2) and political misperceptions ($\beta = 0.08$, 95% CI [0.03, 0.13], $p = 0.002$; Table 3, Model 2). Figure 1 illustrates the interactions by showing the linear relationships between news literacy and misperceptions respectively for liberals (reporting *very liberal* or *liberal)*, moderates (reporting *moderate)*, and conservatives (reporting *conservative* or *very conservative*). News literacy helped conservatives less than it helped liberals in decreasing misperceptions, confirming H2.

In addition, news literacy also had significant two-way interactions both with the use of conservative media and that of liberal media. By and large, the interaction patterns were consistent for health-based and political misperceptions (Table 2, Model 3; Table 3, Model 3). Figure 2 illustrates these interactive patterns by visualizing the regression slopes respectively for those with higher versus lower use of ideological media (median split). Taken together, the patterns suggest that for heavy consumers of ideological media in general, news literary and holding misperceptions were more strongly associated than for low ideological media consumers. While heavier use of conservative media was generally associated with more misperceptions, news literacy mitigated this association by closing the gap between heavier and lighter conservative media users. The pattern is even more drastic for liberal media use: higher use of liberal media was associated with more misperceptions among those with low news literacy but was associated with fewer misperceptions among those with high news literacy.
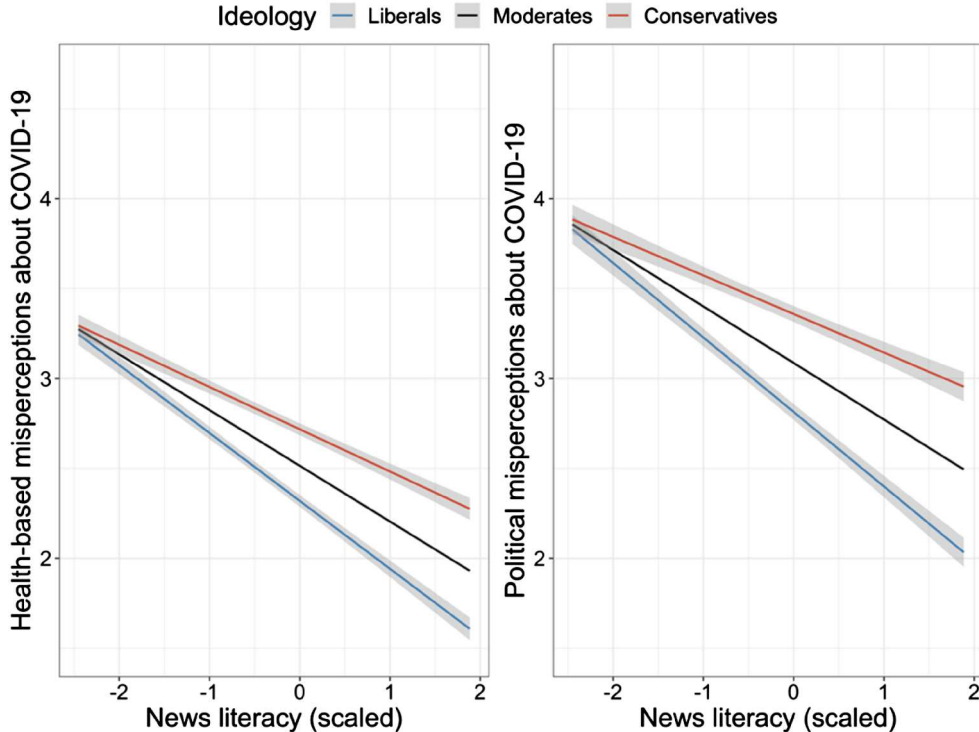

Figure 1. Two-way interactions between news literacy and ideology.

(a) Predicting health-based misperceptions

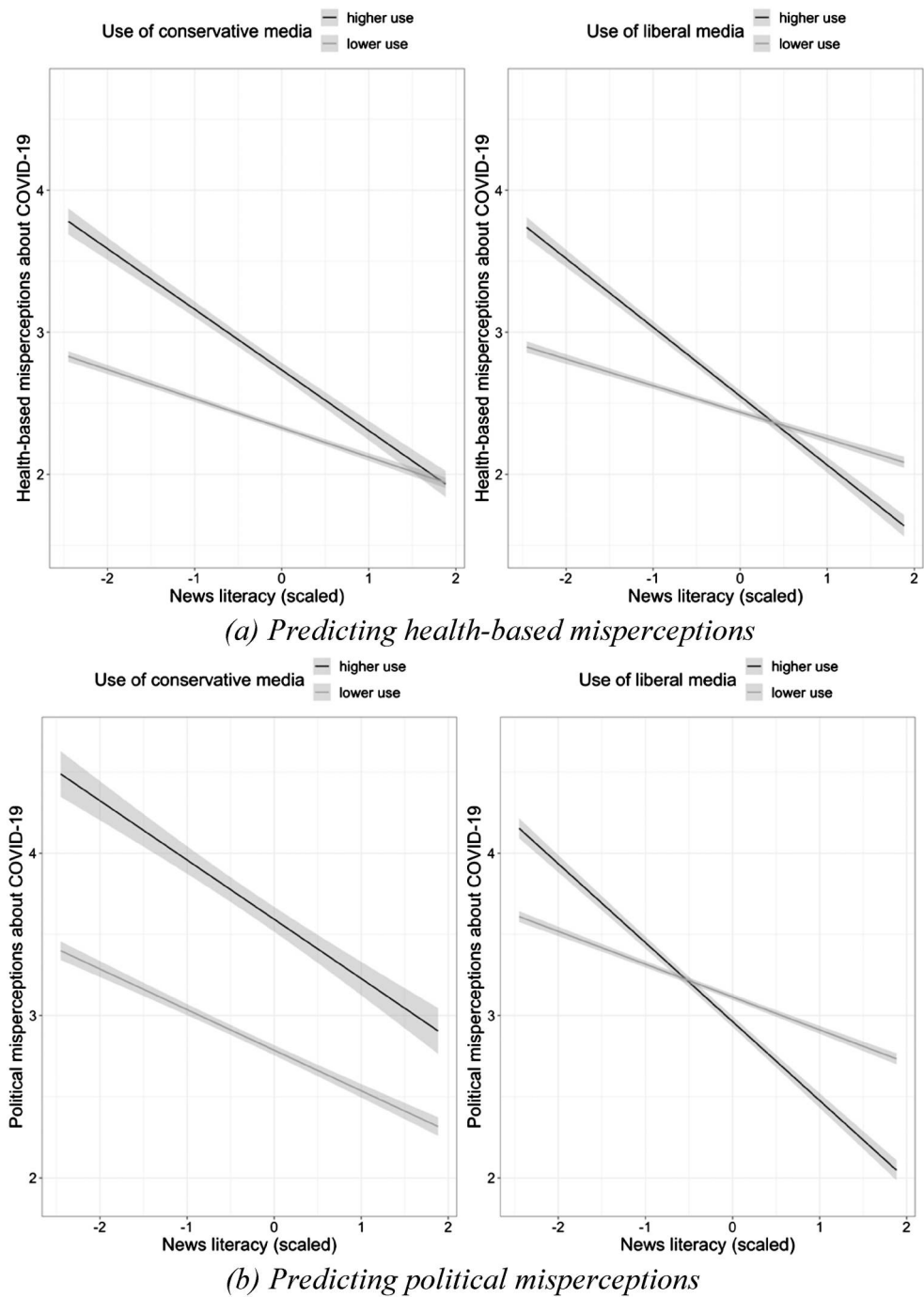*(b) Predicting political misperceptions*

Figure 2. Two-way interactions between news literacy and ideological media use.

To address RQ1, we examined three-way interactions among news literacy, ideology, and ideological media use. Figure 3 illustrates the effects. When predicting health-based misperceptions (Figure 3, panel a), there was a significant three-way interaction among
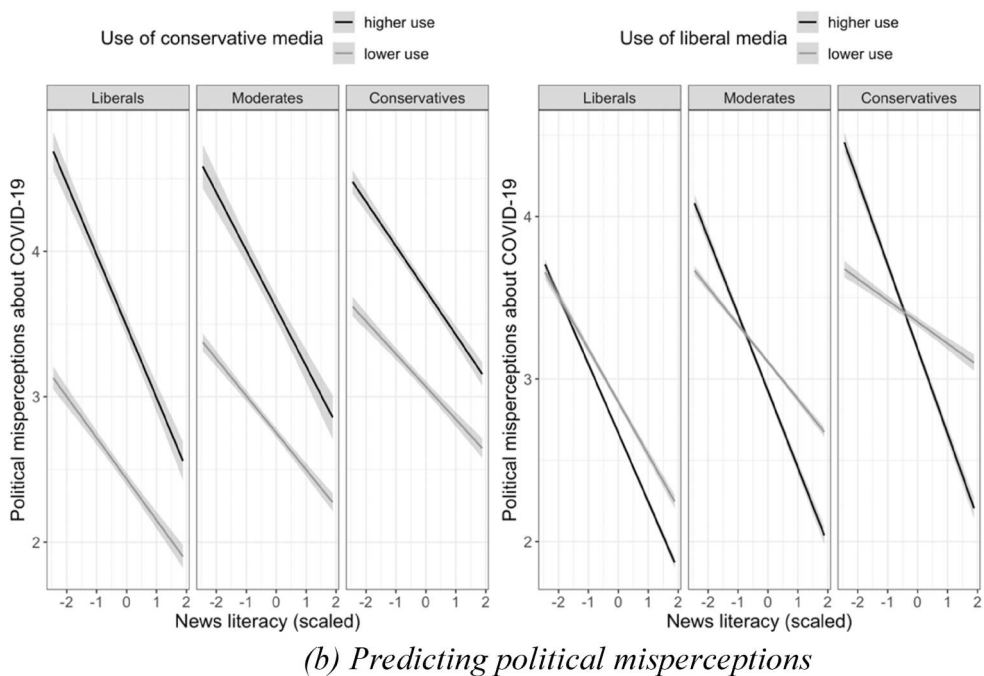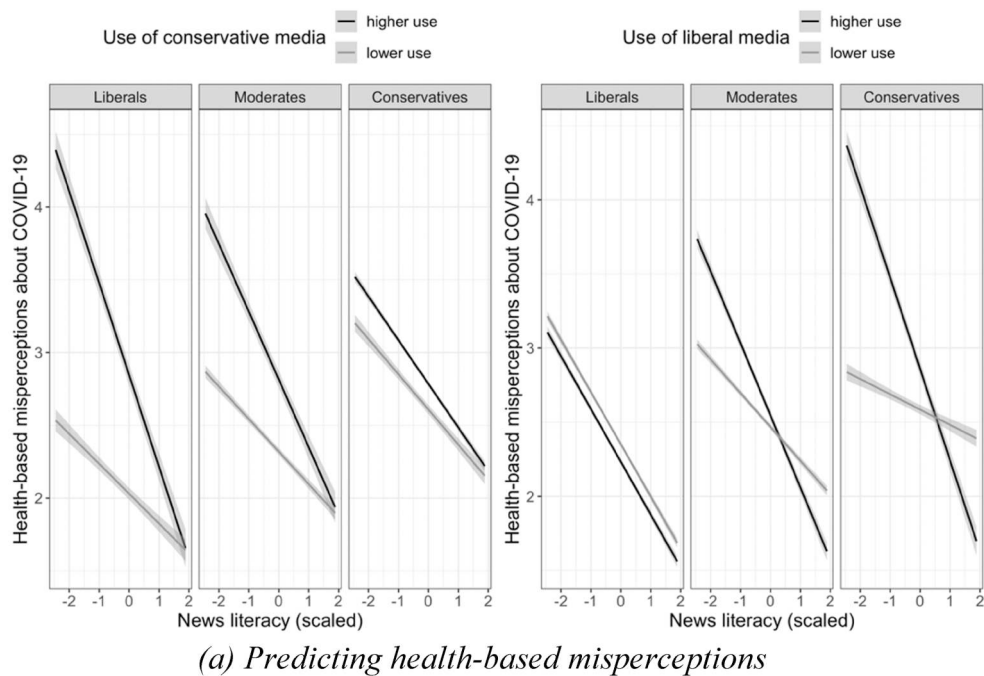
(a) Predicting health-based misperceptions

(b) Predicting political misperceptions

Figure 3. Three-way interactions among news literacy, ideology, and ideological media use.

news literacy, ideology, and conservative media use (Table 2, Model 4). Specifically, we found that the mechanism shown above – that news literacy can mitigate the effects of conservative media use – helped conservatives less than it helped liberals. Further,

there was a significant three-way interaction among news literacy, ideology, and liberal media use (Table 2, Model 4). Specifically, we found that for liberals, higher news literacy was consistently related to fewer misperceptions regardless of the frequency of liberal media use, whereas for conservatives, the potential protection from enhanced news literacy was stronger for heavier than lighter consumers of liberal media.

Turning to political misperceptions (Figure 3, panel b), we found a significant three-way interaction among news literacy, ideology, and the use of liberal media that paralleled the interaction for health-based misperceptions: whereas improved news literacy was associated with misperception reduction for liberals with heavy or light liberal media use alike, the benefit of high news literacy was particularly prominent for conservatives consuming heavier than lighter liberal media (Table 3, Model 4). However, there was no three-way interaction among news literacy, ideology, and the use of conservative media (Table 3, Model 4). That is, for political misperceptions, the extent to which a high level of news literacy can counteract the effect of conservative media use did not vary across ideology. For both liberals and conservatives, having a high level of news literacy closes the gap between heavy and light conservative media consumers in holding political misperceptions. However, the effect size is small: even among people with perfect news literacy scores, consuming more conservative media is still associated with more misperceptions.

Summarizing findings addressing RQ2, we find that overall, findings are consistent for health-based and political misperceptions. This is true for the main effect of news literacy (H1), the interaction between news literacy and political ideology (H2), as well as the interaction between news literacy, political ideology, and liberal media consumption (RQ1). It is only in how news literacy, political ideology, and conservative media consumption interact where we see differences for health-based and political misperceptions. As described above, news literacy benefits liberals who crosscut to conservative media more than conservatives who consume like-minded media in decreasing health-based misperceptions; but news literacy has a similar size of effect for these two groups with regard to political misperceptions, highlighting the stickiness of political misperceptions for all consumers of conservative media.

Discussion

Taken together, our findings underscore the political asymmetry in how well news literacy works to decrease misperceptions. Using the largest COVID-related misperceptions repertoire to date, we find that having a high level of news literacy helps conservatives less than it helps liberals, consistent with past research (Borah, 2022; Borah, Austin, et al., 2023). By and large, this pattern holds true for both health-based and political misperceptions about the COVID-19 pandemic. Further, we advance existing research by highlighting how ideological media consumption and ideology together interplay with news literacy in shaping misperceptions. While consuming conservative media is associated with more misperceptions for all audiences, having news literacy can help cross-cutting liberal audiences but not like-minded conservative audiences in decreasing misperceptions. That is, conservatives with heavier use of conservative media will hold more misperceptions than conservatives with lighter use of conservative media, and having news literacy does very little to counteract this. On the other hand,

liberals with heavier conservative media consumption will also hold more misperceptions than liberals with lighter conservative media consumption, but if they have high news literacy, this undesirable association between misperceptions and cross-cutting consumption of conservative media will be weaker. In other words, having news literacy plays a buffering role for liberals who crosscut to conservative media.

In contrast, while consuming liberal media is not always related to misperceptions, having news literacy helps both like-minded liberal audiences and cross-cutting conservative audiences in decreasing misperceptions. Liberals with heavier liberal media consumption do not differ in misperceptions compared to liberals with lighter use of liberal media, and having news literacy is consistently beneficial for both subgroups. News literacy also has a pronounced benefit for cross-cutting conservative consumers: conservatives with heavier use of cross-cutting liberal media will hold fewer misperceptions than conservatives with a lighter use of liberal media *only when they have high news literacy*. When they have low news literacy, this cross-cutting consumption results in more misperceptions, possibly due to the lack of the news literacy skills to analyze both audience biases and media biases, which can result in perceiving true factual statements as false. This is in line with our argument that one's news literacy makes the most difference when they face conflicting identity cues and evidence supplied by cross-cutting consumption.

Since this study aims to address for whom news literacy may matter, it is worthwhile to contextualize our findings within the rapidly growing literature that explores the feasibility and effectiveness of news literacy-based interventions. The current study is correlational in nature and hence cannot make causal claims about the effectiveness of news literacy interventions. That said, given the rising interest in designing and implementing such interventions and the mixed experimental evidence as reviewed above, our results can contribute to this literature by emphasizing the importance of considering the moderating roles of ideology and ideological media consumption.

Our findings point to both hopes and challenges in using news literacy to inform citizens about verifiable truth across the political spectrum. It is encouraging to see that despite the ideological differences, a higher level of news literacy is associated with more informed beliefs about COVID-19. This reaffirms the benefit of nourishing news literacy and empowering citizens to be savvier news consumers. However, besides the open question of how to effectively improve news literacy in a population, we also consistently find that conservatives are less likely to benefit from having a high level of news literacy, especially when they frequently use conservative media. Moreover, the association between enhanced news literacy and misperception reduction appears to be weaker for heavier consumers of conservative than liberal media, perhaps reflecting the higher prevalence of misinformation on conservative media outlets (Garrett & Bond, 2021) and hence the difficulty for mitigation. This adds to the broader research that conservatives can be more susceptible to misinformation, potentially resulting from the high dosage of misinformation in like-minded media they consume (Garrett & Bond, 2021). Our work thus provides support for the argument that news literacy alone may be necessary but insufficient to inoculate citizens from misinformation (Vraga et al., 2021).

Our findings also speak to the broader literature on the effects of cross-cutting information exposure on democratic outcomes (Bakshy et al., 2015; Goldman & Mutz, 2011). We offer evidence that speaks to the nuances of whether cross-cutting exposure might

help citizens to be better informed. The effect of cross-cutting exposure depends on the type of media and audiences' level of news literacy. For conservatives, cross-cutting exposure (i.e., using liberal media) may decrease both health-based and political misperceptions about COVID-19, but only when they have a high level of news literacy. For liberals, however, cross-cutting exposure can be counter-productive: using conservative media increases both health-based and political misperceptions for liberals, and while news literacy may help mitigate some of the harm for *health-based* beliefs, liberals with a high level of news literacy still hold more *political* misperceptions when they use more conservative media.

Our findings also provide implications for identifying which audience segments are more likely to benefit from improved news literacy. Given the growing interest in developing interventions aiming to enhance the public's news literacy (e.g., Roozenbeek et al., 2020), identifying audience groups most likely to benefit from improved literacy is crucial. In line with our arguments made earlier in the paper, our results suggest that cross-cutting media consumption provides an opportunity for the application of news literacy in belief formation, suggesting that news literacy intervention efforts should pay special attention to cross-cutting ideological media consumers. For example, among consumers of liberal media, the reduction in misperceptions between those with high versus low news literacy was much more pronounced for conservatives crossing the ideological cutting to consume these outlets than like-minded liberals, and this pattern holds for both COVID-19 health misperceptions and those more political in nature. A mirroring pattern was also observed for cross-cutting liberals consuming conservative media as compared with like-minded conservative consumers, although the difference was dampened for political misperceptions. Taken as a whole, these findings highlighted that news literacy interventions might be particularly promising and necessary for cross-cutting media consumers, although our cross-sectional survey data cannot pinpoint the exact causal direction or mechanism. It might well be the case that cross-cutting exposure somehow has cultivated a more nuanced understanding of how news is produced and consumed in the polarized media ecology, i.e., reversed causality. That said, given the urgency to address the challenge of misinformation, our correlational analyses nevertheless pointed to this important connection between news literacy and cross-cutting media use while highlighting the practical implications to guide targeted interventions.

This study has several limitations worth noting. First, our data is correlational in nature and non-representative of the national population, and therefore cannot pin down the exact causal directions or rule out confounders. Future research is encouraged to employ experimental or longitudinal designs to improve causal inference, such as by incorporating novel techniques to exogenously manipulate news literacy. That said, given the growing interest in news literacy interventions, our results can still make a significant contribution by suggesting the importance of considering moderators including political ideology and ideological media consumption. It may be desirable for future research aiming at validating the theoretical mechanisms we proposed in this study to directly measure accuracy and directional motivated reasoning, and test potential effects of motivated reasoning in mediating the influence of political ideology and ideological media consumption.

We collected data in a single country with high levels of polarization; further work should examine whether our findings hold across national contexts, including countries

with multiparty systems. We find that in our data on US adults, the effects we observe largely hold consistent across health-based and political misperceptions about COVID-19, in line with previous research on the politicization of COVID-19 in the US (Hart et al., 2020). Future studies should seek to expand generalizability to other topics and national contexts. Given the variety of misperceptions we uncovered from the COVID-19 pandemic, we believe it is important for future studies to broaden the misperception repertoire and avoid using a limited set of belief items.

Conclusion

In searching for ways to combat misinformation that work across lines of difference, the idea that conservatives are more susceptible to misinformation than liberals has been debated and tested. While much attention focuses on the political asymmetry in the holding of misperceptions, this paper investigates how a potential solution – news literacy – may work across groups of ideologues and ideological media consumers. Our findings offer both hope and caveat. Although holding a higher level of news literacy is associated with fewer misperceptions in general, it helps conservatives less than it helps liberals. Moreover, although news literacy is associated with mitigating the misperception-inducing effect of ideological media on both ends of the political spectrum, this potential benefit appears to be weaker for conservative media use than for liberal media use. Finally, the benefit of having news literacy is maximized among cross-cutting consumers of ideological media but damped among like-minded consumers, particularly conservatives with heavy conservative media consumption. Together, the findings suggest that while news literacy functions as an important factor in decreasing misperceptions, asymmetries lie in the extent of its benefits. Interventions aiming at improving news literacy might be particularly fruitful among cross-cutting consumers of ideological media. It remains a challenge to enhance the benefits of news literacy among like-minded conservative media consumers, potentially calling for larger shifts in social norms and media environments beyond individual knowledge.

Disclosure statement

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References

Amazeen, M. A., Thorson, E., Muddiman, A., & Graves, L. (2018). Correcting political and consumer misperceptions: The effectiveness and effects of rating scale versus contextual correction formats. *Journalism & Mass Communication Quarterly*, *95*(1), 28–48. https://doi.org/10.1177/1077699016678186

Amodio, D. M., Jost, J. T., Master, S. L., & Yee, C. M. (2007). Neurocognitive correlates of liberalism and conservatism. *Nature Neuroscience*, *10*(10), 1246–1247. http://doi.org/10.1038/nn1979

Ashley, S., Craft, S., Maksl, A., Tully, M., & Vraga, E. K. (2022). Can news literacy help reduce belief in COVID misinformation? *Mass Communication and Society*, *26*(4), 695–719. https://doi.org/10.1080/15205436.2022.2137040.

Austin, E. W., Borah, P., & Domgaard, S. (2021). COVID-19 disinformation and political engagement among communities of color: The role of news literacy. *Harvard Kennedy School Misinformation Review*, *1*(7). https://doi.org/10.37016/mr-2020-58.

Bago, B., Rand, D. G., & Pennycook, G. (2020). Fake news, fast and slow: Deliberation reduces belief in false (but not true) news headlines. *Journal of Experimental Psychology. General*, *149*(8), 1608–1613. https://doi.org/10.1037/xge0000729

Bakshy, E., Messing, S., & Adamic, L. A. (2015). Exposure to ideologically diverse news and opinion on Facebook. *Science*, *348*(6239), 1130–1132. https://doi.org/10.1126/science.aaa1160

Borah, P. (2022). The moderating role of political ideology: Need for cognition, media locus of control, misinformation efficacy, and misperceptions about COVID-19. *International Journal of Communication*, *16*(26), 3534–3559.

Borah, P., Austin, E., & Su, Y. (2023). Injecting disinfectants to kill the virus: Media literacy, information gathering sources, and the moderating role of political ideology on misperceptions about COVID-19. *Mass Communication and Society*, 1–27. https://doi.org/10.1080/15205436.2022.2045324

Borah, P., Lorenzano, K., Vishnevskaya, A., & Austin, E. (2022). Conservative media use and COVID-19 related behavior: The moderating role of media literacy variables. *International Journal of Environmental Research and Public Health*, *19*(13), 7572. https://doi.org/10.3390/ijerph19137572.

Bridgman, A., Merkley, E., Loewen, P. J., Owen, T., Ruths, D., Teichmann, L., & Zhilin, O. (2020). The causes and consequences of COVID-19 misperceptions: Understanding the role of news and social media. *Harvard Kennedy School Misinformation Review*, *1*(3). https://doi.org/10.37016/mr-2020-028

Calvillo, D. P., Ross, B. J., Garcia, R. J., Smelter, T. J., & Rutchick, A. M. (2020). Political ideology predicts perceptions of the threat of COVID-19 (and susceptibility to fake news about it). *Social Psychological and Personality Science*, *11*(8), 1119–1128. https://doi.org/10.1177/1948550620940539

Carlson, M. (2018). The information politics of journalism in a post-truth age. *Journalism Studies*, *19*(13), 1879–1888. https://doi.org/10.1080/1461670X.2018.1494513

Castro-Herrero, L., Nir, L., & Skovsgaard, M. (2018). Bridging gaps in cross-cutting media exposure: The role of public service broadcasting. *Political Communication*, *35*(4), 542–565. https://doi.org/10.1080/10584609.2018.1476424

Chan, E. Y., & Palmeira, M. (2021). Political ideology moderates consumer response to brand crisis apologies for data breaches. *Computers in Human Behavior*, *121*, 106801. https://doi.org/10.1016/j.chb.2021.106801

Chang, Y. K., Literat, I., Price, C., Eisman, J. I., Gardner, J., Chapman, A., & Truss, A. (2020). News literacy education in a polarized political climate: How games can teach youth to spot misinformation. *Harvard Kennedy School Misinformation Review*, *1*(4). https://doi.org/10.37016/mr-2020-020.

Craft, S., Ashley, S., & Maksl, A. (2013). Measuring news media literacy: How knowledge and motivations combine to create news-literate teens. http://hdl.handle.net/10355/34713.

Druckman, J. N. (2012). The politics of motivation. *Critical Review*, *24*(2), 199–216. http://doi.org/10.1080/08913811.2012.711022

Dvir-Gvirsman, S., Tsfati, Y., & Menchen-Trevino, E. (2016). The extent and nature of ideological selective exposure online: Combining survey responses with actual web log data from the 2013 Israeli Elections. *New Media & Society*, *18*(5), 857–877. http://doi.org/10.1177/1461444814549041

Edgerly, S. (2015). Red media, blue media, and purple media: News repertoires in the colorful media landscape. *Journal of Broadcasting & Electronic Media*, *59*(1), 1–21. https://doi.org/10.1080/08838151.2014.998220

Eshet, Y. (2004). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia*, *13*, 93–106.

Flynn, D. J., Nyhan, B., & Reifler, J. (2017). The nature and origins of misperceptions: Understanding false and unsupported beliefs about politics. *Nature and Origins of Misperceptions. Political Psychology*, *38*, 127–150. https://doi.org/10.1111/pops.12394

Freelon, D., & Wells, C. (2020). Disinformation as political communication. *Political Communication*, *37*(2), 145–156. https://doi.org/10.1080/10584609.2020.1723755

Garrett, R. K. (2009). Echo chambers online?: Politically motivated selective exposure among Internet news users. *Journal of Computer-Mediated Communication*, *14*(2), 265–285. http://doi.org/10.1111/jcmc.2009.14.issue-2

Garrett, R. K., & Bond, R. M. (2021). Conservatives' susceptibility to political misperceptions. *Science Advances*, *7*(23), eabf1234. https://doi.org/10.1126/sciadv.abf1234

Garrett, R. K., Long, J. A., & Jeong, M. S. (2019). From partisan media to misperception: Affective polarization as mediator. *Journal of Communication*, *69*(5), 490–512. https://doi.org/10.1093/joc/jqz028

Garrett, R.K., Weeks, B., & Neo, R. (2016). Driving a wedge between evidence and beliefs: How online ideological news exposure promotes political misperceptions. *Journal of Computer-Mediated Communication, 21*, 331–348.

Goldman, S. K., & Mutz, D. C. (2011). The friendly media phenomenon: A cross-national analysis of cross-cutting exposure. *Political Communication*, *28*(1), 42–66. https://doi.org/10.1080/10584609.2010.544280

Guay, B., & Johnston, C. D. (2022). Ideological asymmetries and the determinants of politically motivated reasoning. *American Journal of Political Science*, *66*(2), 285–301. http://doi.org/10.1111/ajps.v66.2

Guess, A. M., Lerner, M., Lyons, B., Montgomery, J. M., Nyhan, B., Reifler, J., & Sircar, N. (2020). A digital news literacy intervention increases discernment between mainstream and false news in the United States and India. *Proceedings of the National Academy of Sciences*, *117*(27), 15536–15545. https://doi.org/10.1073/pnas.1920498117

Hameleers, M. (2022). Separating truth from lies: Comparing the effects of news media literacy interventions and fact-checkers in response to political misinformation in the US and Netherlands. *Information, Communication & Society*, *25*(1), 110–126. https://doi.org/10.1080/1369118X.2020.1764603

Hart, P. S., Chinn, S., & Soroka, S. (2020). Politicization and polarization in COVID-19 news coverage. *Science Communication*, *42*(5), 679–697. https://doi.org/10.1177/1075547020950735

Jamieson, K. H., & Albarracín, D. (2020). The Relation between Media Consumption and Misinformation at the Outset of the SARS-CoV-2 Pandemic in the US. *Harvard Kennedy School Misinformation Review*. http://doi.org/10.37016/mr-2020-000

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129*, 339–375. https://doi.org/10.1037/0033-2909.129.3.339

Kahne, J., & Bowyer, B. (2017). Educating for democracy in a partisan age: Confronting the challenges of motivated reasoning and misinformation. *American Educational Research Journal*, *54*(1), 3–34. https://doi.org/10.3102/0002831216679817

Kim, M., & Cao, X. (2016). The impact of exposure to media messages promoting government conspiracy theories on distrust in the government: Evidence from a two-stage randomized experiment. *International Journal of Communication*, *10*(20), 3808–3827.

Knobloch-Westerwick, S., & Kleinman, S. B. (2012). Preelection selective exposure: Confirmation bias versus informational utility. *Communication Research*, *39*(2), 170–193. https://doi.org/10.1177/0093650211400597

Levendusky, M. S. (2013). Why do partisan media polarize viewers? *American Journal of Political Science*, *57*(3), 611–623. https://doi.org/10.1111/ajps.12008

Lewandowsky, S., Ecker, U. K. H., & Cook, J. (2017). Beyond misinformation: Understanding and coping with the "post-truth" era. *Journal of Applied Research in Memory and Cognition*, *6*(4), 353–369. https://doi.org/10.1016/j.jarmac.2017.07.008

Lewandowsky, S., Gignac, G. E., & Oberauer, K. (2013). The role of conspiracist ideation and worldviews in predicting rejection of science. *PLoS One*, *8*(10), e75637. https://doi.org/10.1371/journal.pone.0075637

Livingstone, S. (2004). Media literacy and the challenge of new information and communication technologies. *The Communication Review*, *7*(1), 3–14. https://doi.org/10.1080/10714420490280152

Miller, J. M., Saunders, K. L., & Farhart, C. E. (2016). Conspiracy endorsement as motivated reasoning: The moderating roles of political knowledge and trust. *American Journal of Political Science*, *60*(4), 824–844. https://doi.org/10.1111/ajps.12234

Mutz, D. C., & Martin, P. S. (2001). Facilitating communication across lines of political difference: The role of mass media. *American Political Science Review*, *95*(1), 97–114. https://doi.org/10.1017/S0003055401000223

Nyhan, B., & Reifler, J. (2010). When corrections fail: The persistence of political misperceptions. *Political Behavior*, *32*, 303–330. https://doi.org/10.1007/s11109-010-9112-2

Ordun, C., Purushotham, S., & Raff, E. (2020). Exploratory analysis of Covid-19 tweets using topic modeling, UMAP, and DiGraphs. *arXiv preprint arXiv:2005.03082*.

Pennycook, G., & Rand, D. G. (2020). Who falls for fake news? The roles of bullshit receptivity, overclaiming, familiarity, and analytic thinking. *Journal of Personality*, *88*(2), 185–200. https://doi.org/10.1111/jopy.12476

Pew Research Center. (2021, February 22). *About a quarter of Republicans, Democrats consistently turned only to news outlets whose audiences aligned with them politically in 2020*. https://www.pewresearch.org/journalism/2021/02/22/about-a-quarter-of-republicans-democrats-consistently-turned-only-to-news-outlets-whose-audiences-aligned-with-them-politically-in-2020/.

Rekker, R. (2021). The nature and origins of political polarization over science. *Public Understanding of Science*, *30*(4), 352–368. https://doi.org/10.1177/0963662521989193

Roozenbeek, J., van der Linden, S., & Nygren, T. (2020). Prebunking interventions based on "inoculation" theory can reduce susceptibility to misinformation across cultures. *Harvard Kennedy School Misinformation Review*, *1*(2), https://doi.org/10.37016//mr-2020-008

Stroebe, W., vanDellen, M. R., Abakoumkin, G., Lemay, E. P., Schiavone, W. M., Agostini, M., Bélanger, J. J., Gützkow, B., Kreienkamp, J., Reitsema, A. M., Abdul Khaiyom, J. H., Ahmedi, V., Akkas, H., Almenara, C. A., Atta, M., Bagci, S. C., Basel, S., Berisha Kida, E., Bernardo, A. B. I., … Leander, N. P. (2021). Politicization of COVID-19 health-protective behaviors in the United States: Longitudinal and cross-national evidence. *PLoS One*, *16*(10), e0256740. https://doi.org/10.1371/journal.pone.0256740

Stroud, N. J. (2011). *Niche news: The politics of news choice*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199755509.001.0001

Taber, C. S., & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science*, *50*(3), 755–769. https://doi.org/10.1111/j.1540-5907.2006.00214.x

Tully, M., Vraga, E. K., & Bode, L. (2020). Designing and testing news literacy messages for social media. *Mass Communication and Society*, *23*(1), 22–46. https://doi.org/10.1080/15205436.2019.1604970

Valenzuela, S., Halpern, D., Katz, J., & Miranda, J. (2019). The paradox of participation versus misinformation: Social media, political engagement, and the spread of misinformation. *Digital Journalism*, *7*(6), 802–823. https://doi.org/10.1080/21670811.2019.1623701

van der Linden, S., Panagopoulos, C., & Roozenbeek, J. (2020). You are fake news: Political bias in perceptions of fake news. *Media, Culture & Society*, *42*(3), 460–470. https://doi.org/10.1177/0163443720906992

van Prooijen, J.-W., Staman, J., & Krouwel, A. P. M. (2018). Increased conspiracy beliefs among ethnic and Muslim minorities. *Applied Cognitive Psychology*, *32*(5), 661–667. https://doi.org/10.1002/acp.3442

van Stekelenburg, A., Schaap, G., Veling, H., & Buijzen, M. (2021). Investigating and improving the accuracy of US citizens' beliefs about the COVID-19 pandemic: Longitudinal survey study. *Journal of Medical Internet Research*, *23*(1), e24069. https://doi.org/10.2196/24069

Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news online. *Science*, *359*, 1146–1151. https://doi.org/10.1126/science.aap9559

Vraga, E., Tully, M., & Bode, L. (2022). Assessing the relative merits of news literacy and corrections in responding to misinformation on Twitter. *New Media & Society*, *24*(10), 2354–2371. https://doi.org/10.1177/1461444821998691

Vraga, E. K., Bode, L., & Tully, M. (2022). Creating news literacy messages to enhance expert corrections of misinformation on twitter. *Communication Research*, *49*(2), 245–267. https://doi.org/10.1177/0093650219898094

Vraga, E. K., Kim, S. C., & Cook, J. (2019). Testing logic-based and humor-based corrections for science, health, and political misinformation on social media. *Journal of Broadcasting & Electronic Media*, *63*(3), 393–414. https://doi.org/10.1080/08838151.2019.1653102

Vraga, E. K., & Tully, M. (2019). News literacy, social media behaviors, and skepticism toward information on social media. *Information, Communication & Society*, *0*, 1–17. https://doi.org/10.1080/1369118X.2019.1637445

Vraga, E. K., Tully, M., Maksl, A., Craft, S., & Ashley, S. (2021). *Theorizing News Literacy Behaviors. Communication Theory*, *31*, 1–21. https://doi.org/10.1093/ct/qtaa005

Waisbord, S. (2018a). The elective affinity between post-truth communication and populist politics. *Communication Research and Practice*, *4*(1), 17–34. https://doi.org/10.1080/22041451.2018.1428928.

Waisbord, S. (2018b). Truth is what happens to news: On journalism, fake news, and post-truth. *Journalism Studies*, *19*(13), 1866–1878. https://doi.org/10.1080/1461670X.2018.1492881

Walter, N., & Murphy, S. T. (2018). How to unring the bell: A meta-analytic approach to correction of misinformation. *Communication Monographs*, *85*(3), 423–441. http://doi.org/10.1080/03637751.2018.1467564

Weeks, B. E., Menchen-Trevino, E., Calabrese, C., Casas, A., & Wojcieszak, M. (2023). Partisan media, untrustworthy news sites, and political misperceptions. *New Media & Society*, *25*(10), 2644–2662. https://doi.org/10.1177/14614448211033300

WHO. (2020). Novel Coronavirus(2019-nCoV). https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200202-sitrep-13-ncov-v3.pdf.

Young, D. G. (2023). *Wrong: How media, politics, and identity drive our appetite for misinformation*. Johns Hopkins University Press. Kindle Edition.

Zoizner A., Sheafer T., Castro L., Aalberg T., Cardenal A. S., Corbu N. , de Vreese C., Esser F., Hopmann D. N., Koc-Michalska K., Matthes J., Schemer, C., Splendore, S., Stanyer, J., Stępińska, A., Štětka, V., Strömbäck, J., Theocharis, Y., & Van Aelst, P. (2022). The effects of the COVID-19 outbreak on selective exposure: Evidence from 17 countries. *Political Communication*, *39*(5), 674–696. doi:10.1080/10584609.2022.2107745

Appendices

Appendix 1. Details on Sampling

We recruited survey respondents online via Qualtrics. In the data collection, we aimed to mimic the US adult population while intentionally oversampling rural residents given the impacts of COVID-19 on rural America. We applied following quota constraints: female 51%, male 49% (±5%); race: Non-Hispanic White 62.3%, Non-Hispanic Black 12.4%, Hispanic 17.3%, Asian 5.4%, Other Race 2.6% (±5%); Area: rural 50% and 50% urban/suburban (±15%). With this quota, we retrieved a sample broadly comparable to the US adult population in terms of gender and race, but older and slightly better educated than the census data. Since we oversampled the rural population on purpose, our sample also contains a higher percentage of the rural population. In terms of attrition rate, we have 3675 recorded responses and retrieved 1700 completed responses (46.3%, who answered all attention check questions correctly and completed the survey).

Appendix 2. Measures

1. Misperception items

(a) Health-based misperceptions ($n = 60$)
- Flu vaccine increases coronavirus risk.
- Seasonal flu is more deadly than COVID-19
- Says wearing face masks is more harmful to your health than going without one.
- Only certain face masks are effective and others, such as cloth masks, are not.
- 'When using a medical mask, you're supposed to wear the white side out when you're not sick.'
- Vitamin C can prevent the new coronavirus infection.
- COVID-19 will stop spreading as summer comes.

- Young adults or children are less likely to catch COVID-19.
- No vegetarian has contracted COVID-19.
- Gargling water with salt or vinegar can eliminate the coronavirus.
- Wearing face masks can cause carbon dioxide toxicity and hence can weaken immune system.
- Many countries have reached the standard for herd immunity.
- Thermal scanners can detect COVID-19.
- Ultra-violet (UV) lamps can be used to disinfect and are safe for humans and pets.
- Hydroxychloroquine is effective in curing COVID-19
- A coronavirus vaccine used on dogs or bovine can be used to prevent COVID-19 on people.
- Miracle Mineral Solution, Miracle Mineral Supplement, Master Mineral Solution – will cure the coronavirus.
- Only N95 masks can prevent the spread of COVID.
- Sunlight actually can kill the novel coronavirus.
- Drinking alcohol beverages can help prevent COVID-19.
- The coronavirus can survive on surfaces for up to 17 days.
- Ibuprofen ramps up coronavirus 10 times.
- Children will be separated from their parents for coronavirus treatment.
- Malaria medications are effective to treat COVID-19.
- 15 minutes in a sauna will kill the coronavirus.
- Eating bananas prevents coronavirus.
- Boiled orange peels with cayenne pepper are a cure for coronavirus.
- We inherited a broken test for COVID-19.
- The US Centers for Disease Control and Prevention (CDC) has revised down its death toll for COVID-19.
- A spray could protect against the coronavirus outbreak.
- Consuming silver particles will prevent or treat COVID-19.
- Drinking a bleach solution will prevent you from getting the coronavirus.
- Cocaine kills coronavirus, scientists are shocked to discover that this drug can fight the virus.
- COVID-19 existed before 2019.
- Mosquitoes can spread COVID-19 from person to person.
- The results prove that asymptomatic people cannot transmit COVID-19 and masks are therefore unnecessary.
- Commercial mouthwash could protect against COVID-19.
- Says kitchen worker in viral video is potentially spreading coronavirus by blowing into food containers.
- COVID-19 is a bacterium that is easily treated with aspirin or a coagulant.
- Coronavirus contains HIV insertions.
- The new coronavirus can be cured by drinking one bowl of freshly boiled garlic water.
- Weed or cannabis can kill coronavirus.
- Scientists said coronavirus will render most male patients infertile.
- High levels of sulfur dioxide in Wuhan 'may be a sign of mass cremations of victims of the coronavirus.'
- Popping bubble wrap exposes people to coronavirus.
- People of color may be immune to the coronavirus because of melanin.
- The new coronavirus is a kind of common cold.
- CDC issued facial hair recommendation for novel coronavirus prevention.
- The blood test for coronavirus costs $3200.
- Novel coronavirus has a 99.7% survival rate.
- Drinking water or other liquid is effective in preventing COVID-19 infection.
- Supermarkets are recalling coronavirus-infected toilet paper.
- Italy has decided not to treat their elderly for this virus.
- Inhaling steam can kill the novel coronavirus.
- There are no reliable tests for a specific COVID-19 virus.
- Alkaline diet protects against the coronavirus.

- The COVID-19 vaccine has a microchip that tracks the location of the patient.
- The COVID-19 vaccine will lead to infertility in women.
- mRNA vaccines are capable of altering or damaging human DNA.
- There are severe, life-threatening side effects from the Pfizer-BioNTech COVID-19 vaccine.

(b) Political misperceptions ($n = 24$)
- No Democrats voted for the Coronavirus Aid, Relief, and Economic Security (CARES) Act that offers the stimulus package.
- The coronavirus Aid, Relief, and Economic Security (CARES) Act gives members of Congress a pay increase.
- COVID-19 is a scapegoat to deflect blame for an economic disaster.
- COVID-19 is invented to harm President Trump's re-election chances.
- Pope Francis and two aides tested positive for coronavirus.
- Queen Elizabeth II was tested positive for coronavirus.
- Joe Exotic was tested positive for coronavirus in prison.
- Contact tracing of COVID-19 is government surveillance of the mass public.
- Nancy Pelosi tried to secure funds for abortion through a coronavirus bill.
- Obama family flew to private island to escape coronavirus pandemic.
- Dr. Anthony Fauci advised the public not to wear face masks to prevent spreading or being infected by the coronavirus.
- Dr. Anthony Fauci was on the Clinton Foundation board for 20 years and currently serves on Gates Foundation.
- 5G technology has caused the coronavirus.
- Bill Gates is using the coronavirus to push a vaccine with a microchip capable of tracking people.
- The United States military developed the coronavirus as a bioweapon.
- The Chinese government engineered the coronavirus in a lab.
- The coronavirus escaped from a lab in Wuhan.
- The pharmaceutical industry is involved in the spread of the coronavirus.
- Doctors often misreport pneumonia and COPD deaths as being caused by COVID-19 in order to garner federal funding for their hospitals. (Plandemic)
- Negative COVID-19 tests are often suppressed by officials.
- In fall 2020, the U.S. federal government released plans to force every citizen to get a COVID-19 vaccine.
- The research and development of Pfizer COVID-19 vaccine, which proved to be 90% effective against SARS-CoV-2 in November 2020, was funded by U.S. President Donald Trump's Operation Warp Speed.
- The pharmaceutical company Pfizer and FDA purposely held off on releasing positive interim results about a COVID-19 vaccine candidate until after the election.
- COVID-19 was intentionally targeted at minority communities.

2. News literacy battery (multiple choice questions; correct answers are bolded)

(1) If you wanted to get a job as a news reporter in the US, you would need to get a license from: [The Federal Communications Commission, The Federal Trade Commission, The Society of Professional Journalists, **News reporters are not required to be licensed**]
(2) In 1983, around 50 companies owned most of the media outlets that Americans consumed. How many companies own most of the media we consume today? [100, 50, 25, **5**]
(3) When it comes to reporting the news, the main difference between a website like Google News and a website like CNN.com is that: [Google focuses on national news, while CNN focuses on local news, **Google does not have reporters who gather information, while CNN does,** Google has more editors than CNN does, Google charges more money for news than CNN does]

(4) Which of the following news outlets does not depend primarily on advertising for financial support? [CNN, The New York Times, Newsweek magazine, **PBS**]

(5) The number of racial/ethnic minorities portrayed as criminals in the news: [Accurately represents the proportion of minorities in the US population, Under-represents the proportion of minorities in the US population, **Over-represents the proportion of minorities in the US population**]

(6) Coverage of election campaigns in the news usually focuses on [**Who's winning,** In-depth analysis of where candidates stand on the issues, The candidates' educational background, The candidates' prior public service records]

(7) One common criticism of the news is that it is not objective. What do people who make this criticism typically mean by it? [The reporter only gives the facts of the story, The reporter's story relies too much on the opinions of people who are neutral, **The reporter puts his or her opinion in the story,** The reporter doesn't make the purpose of the story clear]

(8) People most often seek out news and information that: [**Aligns with their views of the world,** Differs from their views of the world, Requires effort to find, None of the above]

(9) Most people think negative messages in the media have: [A greater effect on themselves than other people, **A greater effect on other people than themselves,** The same effect on themselves as other people, Have no effect on anyone]

(10) People who watch a lot of television content often think the world is: [**More violent and dangerous than it actually is,** Less violent and dangerous than it actually is, Just as violent and dangerous as it actually is]

Appendix 3. Associations between variables

Table A1. Correlation between ideology and news literacy (nl1–nl10 represents the 1st to the 10th item in the news literacy scale; see Appendix 2).

	Ideology	News literacy	nl1	nl2	nl3	nl4	nl5	nl6	nl7	nl8	nl9	nl10
Ideology	1.00	−0.03	0.01	0.01	−0.03	0.01	−0.19	0.06	0.10	−0.05	−0.03	−0.02
News literacy	**−0.03**	1.00	0.50	0.51	0.43	0.61	0.51	0.43	0.58	0.54	0.30	0.39
nl1	**0.01**	0.50	1.00	0.19	0.19	0.33	0.19	0.14	0.28	0.16	−0.01	−0.01
nl2	**0.01**	0.51	0.19	1.00	0.10	0.26	0.16	0.15	0.20	0.21	0.07	0.12
nl3	**−0.03**	0.43	0.19	0.10	1.00	0.29	0.16	0.05	0.21	0.13	0.00	0.03
nl4	**0.01**	0.61	0.33	0.26	0.29	1.00	0.25	0.15	0.35	0.22	0.05	0.07
nl5	**−0.19**	0.51	0.19	0.16	0.16	0.25	1.00	0.08	0.19	0.19	0.05	0.16
nl6	**0.06**	0.43	0.14	0.15	0.05	0.15	0.08	1.00	0.18	0.15	0.03	0.12
nl7	**0.10**	0.58	0.28	0.20	0.21	0.35	0.19	0.18	1.00	0.24	0.08	0.06
nl8	**−0.05**	0.54	0.16	0.21	0.13	0.22	0.19	0.15	0.24	1.00	0.08	0.20
nl9	**−0.03**	0.30	−0.01	0.07	0.00	0.05	0.05	0.03	0.08	0.08	1.00	0.07
nl10	**−0.02**	0.39	−0.01	0.12	0.03	0.07	0.16	0.12	0.06	0.20	0.07	1.00

Table A2. Correlation between all variables.

	Health based misperception	Political misperception	News literacy	Ideology	Conservative media use	Liberal media use	Institutional trust	Info seeking	Age	Female	Race (white)	Education	Income	Rural
Health based misperception	1.00	0.81	−0.43	0.21	0.47	0.19	−0.16	0.16	−0.36	−0.08	−0.05	−0.02	0.04	0.01
Political misperception	0.81	1.00	−0.36	0.39	0.5	−0.03	−0.38	−0.02	−0.22	−0.07	0.05	−0.1	−0.02	0.07
News literacy	−0.43	−0.36	1.00	−0.03	−0.28	−0.24	−0.06	−0.23	0.35	−0.09	0.16	0.13	0.09	0.06
Ideology	0.21	0.39	−0.03	1.00	0.27	−0.36	−0.39	−0.24	0.17	−0.12	0.21	−0.07	−0.03	0.12
Conservative media use	0.47	0.5	−0.28	0.27	1.00	0.36	−0.02	0.25	−0.25	−0.24	0.02	0.13	0.17	−0.04
Liberal media use	0.19	−0.03	−0.24	−0.36	0.36	1.00	0.47	0.52	−0.31	−0.11	−0.2	0.25	0.2	−0.17
Institutional trust	−0.16	−0.38	−0.06	−0.39	−0.02	0.47	1.00	0.45	−0.04	−0.03	−0.13	0.22	0.18	−0.18
Info seeking	0.16	−0.02	−0.23	−0.24	0.25	0.52	0.45	1.00	−0.2	−0.04	−0.17	0.16	0.14	−0.16
Age	−0.36	−0.22	0.35	0.17	−0.25	−0.31	−0.04	−0.2	1.00	0	0.24	−0.01	−0.05	0.06
Female	−0.08	−0.07	−0.09	−0.12	−0.24	−0.11	−0.03	−0.04	0	1.00	−0.13	−0.13	−0.18	0.08
Race (white)	−0.05	0.05	0.16	0.21	0.02	−0.2	−0.13	−0.17	0.24	−0.13	1.00	−0.04	0.01	0.34
Education	−0.02	−0.1	0.13	−0.07	0.13	0.25	0.22	0.16	−0.01	−0.13	−0.04	1.00	0.45	−0.14
Income	0.04	−0.02	0.09	−0.03	0.17	0.2	0.18	0.14	−0.05	−0.18	0.01	0.45	1.00	−0.15
Rural	0.01	0.07	0.06	0.12	−0.04	−0.17	−0.18	−0.16	0.06	0.08	0.34	−0.14	−0.15	1.00

Table A3. Cross-cutting and likeminded media use breakdown among liberals and conservatives. We used two separate scales to measure the use of conservative media and the use of liberal media, as described in the methods. Respondents reported their frequency of media use by choosing from: never, monthly, weekly, once a day, multiple times a day.

	Conservative media use	Liberal media use
Liberals	*(Cross-cutting)* 37.59% of liberals reported using at least one conservative media source monthly or more frequently; 62.41% reported never.	*(Likeminded)* 83.96% of liberals reported using at least one liberal media source monthly or more frequently; 16.04% reported never.
Conservatives	*(Likeminded)* 73.85% of conservatives reported using at least one conservative media source monthly or more frequently; 26.15% reported never.	*(Cross-cutting)* 36.75% of conservatives reported using at least one liberal media source monthly or more frequently; 63.25% reported never.