

Why Misinformation Must Not Be Ignored

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Recent academic debate has seen the emergence of the claim that misinformation is not a significant societal problem. We argue that the arguments used to support this minimizing position are flawed, particularly if interpreted (e.g., by policymakers or the public) as suggesting that misinformation can be safely ignored. Here, we rebut the two main claims, namely that misinformation is not of substantive concern (a) due to its low incidence and (b) because it has no causal influence on notable political or behavioral outcomes. Through a critical review of the current literature, we demonstrate that (a) the prevalence of misinformation is nonnegligible if reasonably inclusive definitions are applied and that (b) misinformation has causal impacts on important beliefs and behaviors. Both scholars and policymakers should therefore continue to take misinformation seriously.

Public Significance Statement

This article refutes claims that misinformation is an insignificant issue. Through a critical literature review, we demonstrate that misinformation represents a nontrivial part of the information environment and can causally and adversely influence people's beliefs, decisions, and behaviors. We clarify through our discussion why misinformation continues to be a significant problem that should not be ignored by communicators and policymakers.

Keywords: misinformation, disinformation, information environment, informational influence, public discourse

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Misinformation¹ has received much public and scholarly attention in recent years. The fundamental question of how big a concern misinformation *should* be, however, has become a hotly debated topic. On the one hand, some scholars highlight the potential harms of misinformation and the dangers to public health and democracy (e.g., McKay & Tenove, 2021; Swire-Thompson & Lazer, 2020). On the other hand, critics of the concern over misinformation offer reassurance that we need not worry about its impact on the health of public discourse (e.g., Acerbi et al., 2022; Altay, Berriche, & Acerbi, 2023; Krause et al., 2022). For brevity, we label this the “minimizing” position.

Before we scrutinize two of the main arguments used to support the minimizing position, we note several points of general agreement. First, we concur that misinformation is not a new problem (e.g., Adams et al., 2023; Freiling et al., 2023; Scheufele et al., 2021). However, the scale and complexity of the problem have increased due to the evolution of the information environment and ensuing changes to incentives, transmission speeds, and the structure of online and offline media and communication networks, as well as emergence of the “post-truth” phenomenon (e.g., Capilla, 2021; Lasser et al., 2023; Terren & Borge-Bravo, 2021; Vosoughi et al., 2018). In this vein, a historical lens is useful; it can help prevent alarmism but also permit us to be alarmed when appropriate

(Benkler et al., 2018; Bennett & Livingston, 2018; Oreskes & Conway, 2023).

We also share the view that the deployment of interventions should be preceded by a risk-benefit analysis, as some low-impact misinformation may best be “left alone.” It is likely the case that media consumers show little interest in many issues and are thus *uninformed* rather than *misinformed* (Allen et al., 2020; Altay, Berriche, & Acerbi, 2023; Scheufele et al., 2021). Also, exposure to (mis)information certainly need not translate into engagement, persuasion, or influence in a deterministic one-to-one manner (Altay, Berriche, & Acerbi, 2023; Budak et al., 2024). When interventions are deployed, practitioners and researchers need to consider potential ancillary intervention impacts, such as increased polarization, generally enhanced skepticism, shifts in institutional trust, or curtailed freedom of expression (e.g., Hoes et al., 2024). We therefore agree that practitioners applying interventions should prioritize potentially consequential misinformation, such as false election- or health-related claims, over misinformation that is likely to be less harmful.

We also concur that, in some circumstances (e.g., in situations where experts have a good understanding of the facts), there may be benefit in selectively boosting truthful information instead of addressing misinformation (e.g., Acerbi et al., 2022). However, an exclusive focus on promoting truthful information would imply that even harmful disinformation and deception would remain unchallenged, which we find unacceptably risky; thus, we can and should do both, promote facts and curb misinformation (e.g., Holford et al., 2024; Tippett, 2010). Where knowledge is only developing based on emerging evidence, it will be particularly important to keep misinformation at bay to prevent it from filling an epistemic void. Such voids can exist in a psychological sense in the form of “data deficits”—knowledge gaps paired with high information demand (Shane & Noel, 2020)—or in the information environment in the form of “data voids,” if there is no or limited information available online on a particular emerging topic of interest (Golebiewski & Boyd, 2019).

Our analysis therefore departs from a platform of substantial, if partial, agreement with the minimizing

¹ Following Ecker et al. (2022), we use the term misinformation as an umbrella term encompassing all types of false or misleading information, including disinformation created and disseminated intentionally, to avoid constraining the discussion and to sidestep considerations of intent.

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position. However, in the remainder of this article, we rebut the two most expansive arguments leveled at concern over misinformation, namely that misinformation is not particularly widespread and that it has no meaningful causal impact on people's attitudes or behaviors. While we focus on these two arguments, naturally they cannot be entirely separated from related issues that we discuss more thoroughly elsewhere (Ecker et al., 2024; Lewandowsky, Ecker, et al., 2023; Lewandowsky et al., 2024; Tay et al., 2023, 2024).

Argument 1: Misinformation Consumption Is Low and Therefore of Minor Concern

Some scholars have argued that misinformation is of minor concern as it represents only a small fraction of the information that the average person consumes. For example, Altay, Berriche, and Heuer (2023; p. 1) postulated that “unreliable news, including false, deceptive, low-quality, or hyper-partisan news, represents a minute portion of people's information diet.” Acerbi et al. (2022; p. 3) argued that the amount of misinformation is so small that the impact even of effective misinformation interventions is bound to be “miniscule.”

The premise of this argument can be supported only if a narrow definition of misinformation is applied. Many studies taken as evidence for the “small-fraction” claim focused on obviously false online content through an analysis of a sample of “fake-news” websites (e.g., Allen et al., 2020: 98 URLs; Grinberg et al., 2019: 300 URLs; A. Guess et al., 2019: 21 URLs; A. M. Guess, Lockett, et al., 2020: 300 URLs; A. M. Guess, Nyhan, et al., 2020: 490 URLs; see Kozyreva et al., 2020). The choice of a constrained focus is typically not justified in these articles (nor does it need to be), although some explicitly point out the noncomprehensive nature of their analyses (e.g., Allen et al., 2020; A. M. Guess,

Nyhan, et al., 2020). The choice is also understandable, as it makes analyses tractable and avoids criticisms regarding objective classification of specific content. The classification problem may be overcome by approaches based on machine learning; for example, a recent study classifying climate-related tweets based on their content found that 15.5% were flagged as misinformation—more than a tiny fraction (Rojas et al., 2024). Thus, the “small-fraction” argument also depends on the methodology used for quantification. While studies that explore the prevalence of online fake news through source-based analyses are valuable within their specific context, such findings can be misinterpreted as evidence about the prevalence and significance of misinformation more generally, especially if they are discussed in articles that label concern over misinformation prevalence as “misinformation on/about misinformation” (Altay, Berriche, & Acerbi, 2023; p. 1; Budak et al., 2024; p. 84).

In fact, these source-based prevalence analyses exclude some of the most important segments of misinformation, such as dubious rhetoric espoused by politicians and other pundits and often broadcast through mainstream channels. Such rhetoric can include outright disinformation but also misleading arguments, scapegoating, and paltering (Muller, 2021; Rogers et al., 2017), as well as facts that are strictly speaking true but are decontextualized to promote misleading narratives (Goel et al., 2023). Moreover, most prevalence analyses ignore offline sources as well as online content disseminated through individuals' posts, closed platforms, podcasts, and channels such as YouTube.

Even studies that cast a wider net to include a large number of outlets do not necessarily capture the types of problematic rhetoric we refer to (e.g., Allen et al., 2020). To illustrate, Altay et al. (2022) found that during the initial phase of the COVID-19 pandemic, 2.3% of web traffic to news outlets went to online sources classified as untrustworthy by NewsGuard—a database of source reliability established by basic journalistic criteria—and such outlets attracted 14% of engagements on Facebook. Although 14% probably should not be interpreted as a dismissible share (also see Borges do Nascimento et al., 2022; Johnson et al., 2020), this approach disregards the fact that even problematic outlets such as Fox News or the popular German tabloid Bild were rated by NewsGuard as “generally trustworthy” (at the time); yet their reach and the dubious quality of some of their segments have established them as prime vectors of misinformation (Hoewe et al., 2020; Möller et al., 2020).

In light of this, some have noted that the field's focus on social media is disproportionate and that the dissemination of misinformation through politicians and mainstream media deserves more attention, in line with our own assessment (Allen et al., 2020; Altay, Berriche, & Acerbi, 2023). False and misleading claims made by leaders—from political elites to social media influencers—have great reach and can steer public opinion and debate (Åkerlund, 2020; Bene, 2017;



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Druckman et al., 2013). Influential elites can also bring hateful and conspiratorial rhetoric into the mainstream (e.g., QAnon-inspired celebrities and politicians; P. Graham & Dugmore, 2022; Lee et al., 2022). Messages from elites can serve as social cues that can set an agenda, shape public opinion, and legitimize problematic positions (Adida et al., 2023; Carmichael & Brulle, 2017; Darmofal, 2005; Hamilton & Safford, 2021).

To fully appreciate misinformation impacts, misleading information that falls short of literal falsity (e.g., information containing a formal or informal fallacy, or information from which people are likely to infer false conclusions) needs to be included in misinformation definitions (Ecker et al., 2022; van der Linden & Kyrychenko, 2024). Indeed, 73% of respondents in a recent survey of misinformation experts agreed with this definition (Altay, Berriche, & Heuer, 2023), and consumers also share this conceptualization (Hameleers et al., 2022). It is known that people mostly do not reason with, or remember, information in a literal manner; instead, they tend to abstract information away from specifics by relying on gist-based representations (Langdon et al., 2024; Reyna, 2021). For example, repeat exposure to (later retracted) claims in the media that “weapons of mass destruction” had been found in Iraq in 2003 not only led many citizens to believe in those claims (Lewandowsky et al., 2005), but even led people to believe that such weapons had been *used* against allied forces—something that was never reported but which people inferred (Kull et al., 2003). More generally, this means that even if online “fake news” is relatively rare, false beliefs formed at least in part from exposure to misinformation are quite common (Allen et al., 2020).

Finally, “small-fraction” arguments at least tacitly consider the audience to be homogeneous and all segments of society equally unlikely to encounter misinformation. However, this

is not the case; while “the average person” may not be greatly influenced by misinformation, subgroups of people are. For example, certain groups can be manipulated effectively with tailored, targeted misinformation (Dobber et al., 2021; Matz et al., 2017), consumers who spend much time on social media can be exposed to large amounts of misinformation through algorithmic curation and recommender systems (e.g., Diehl & Lee, 2022), and fringe groups can attract users who actively seek out misinformation (Broniatowski et al., 2023; Robertson et al., 2023). Therefore, some types of misinformation are primarily consumed by a small but vulnerable or committed audience (Budak et al., 2024). For example, most misinformation on Facebook has been found to be consumed within an engaged cluster of politically conservative users (González-Bailón et al., 2023); such minorities, which also tend to be highly active in the sharing of misinformation, can have an outsized impact on the online information environment (Baribi-Bartov et al., 2024). When misleading narratives take hold, even in a small segment of the population, they can lead to opinion minorities misperceiving themselves as the majority (and vice versa). Such pluralistic ignorance and false-consensus effects—actual minorities who are overrepresented in the media feeling emboldened, whereas actual majorities are cowed into silence—can affect public debate and policy-making (Leviston et al., 2013; Shamir & Shamir, 1997).²

On several fronts, therefore, arguing that one need not worry about misinformation because it represents only a small fraction of all information is an oversimplification and misrepresents the scope of the problem. Our claim is that (a) there is more misinformation in the environment than some analyses would suggest; (b) low prevalence does not mean misinformation should be ignored because it can still have adverse effects on some people; and (c) such effects may impact broader society if those people’s behaviors are influenced and their voices or actions have an outsized influence on public debate, health, or safety. In the next section, we address the evidence for adverse causal impacts of misinformation.

Argument 2: Misinformation Has No Significant Causal Impacts

The second major claim put forward by critics is that misinformation does not have meaningful causal impacts on beliefs or behaviors (e.g., Adams et al., 2023; Altay, Berriche, & Acerbi, 2023; Freiling et al., 2023). Causality is, of course, a vexing issue throughout science. However, some

² Misinformation will obviously not have much impact on the already confidently misinformed, who self-select into consuming additional congenial misinformation. However, even though self-selection obviously occurs (Hart et al., 2009; Iyengar & Hahn, 2009), its influence should not be overstated (e.g., Djerf-Pierre & Shehata, 2017; A. M. Guess, 2021; Nelson & Webster, 2017). Even if misinformation consumption is voluntary, it does not follow that this consumption is generally harmless.



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critics have claimed that no problematic behaviors have been “reliably demonstrated empirically to be the outcome of misinformation” (Adams et al., 2023, p. 1436), that the relationship between misinformation and undesirable behaviors is merely “speculated” (ibid.), and that “with the exception of [an] unconscious priming study, [no] work examining the association between misinformation ... and behavior shows a causal link between the two” (p. 1445). Others have argued that “it is not clear if ... (mis)beliefs ever translate into behaviors” (Altay, Berriche, & Heuer, 2023, p. 8), or that there is no reliable evidence that “causally rather than correlationally link[s misinformation] to behavioral choices or attitudes that might be harmful” (Freiling et al., 2023, p. 228). Even if such claims are caveated so they do not rule out all potential causal links, they express the clear sentiment that there are typically no meaningful negative impacts of misinformation consumption.

The position that misinformation has no meaningful causal effects imagines that substantial segments of a population could form a false belief, such as the conviction that vaccines cause autism, either without being exposed specifically to the corresponding false claim or despite the exposure having no discernible consequence (Poland & Spier, 2010). On this view, the violent insurrection on January 6, 2021, at the U.S. Capitol and the partisan gap in COVID-19 vaccination rates between Republicans and Democrats—which is now associated with a widening gap in mortality rates (Wallace et al., 2022)—were unrelated to misinformation about a “stolen” election or the safety of vaccines (see Bolsen & Palm, 2022; M. H. Graham & Yair, 2024; Henricksen & Betz, 2022; Lee et al., 2022; Riley, 2022). This seems implausible (e.g., court documents suggested that the views of many of those arrested after the insurrection were shaped by election-fraud misinformation; McCarthy, 2021). To

provide additional examples, the view further implies that multiple lynchings of alleged child abductors in India in 2018 were not causally related to the false abduction rumors spreading on WhatsApp locally at the time (Gupta & Wilkinson, 2018) or that the 2024 anti-immigration riots in the United Kingdom that mainly targeted Muslims were unrelated to the misinformation about the religion of the alleged perpetrator of the Southport child murders (Holden & Smout, 2024). A strict interpretation of the “no causal impact” argument would even suggest that a counterfactual world with no misinformation would look just the same as the world we find ourselves in, and the argument also implies that information consumption or exposure *in general* has no causal impacts. This is not a credible position.

Just as it is safe to assume that people do not believe and act on everything they hear or see, it is also safe to assume that they *do* believe and act on *some* things. This is the *raison d’être* for advertising and marketing (which is also not always effective but can be assumed to generally have at least a small impact; see Coppock et al., 2020; Matz et al., 2017; Norman et al., 2016), and there is also a *prima facie* case that people and organizations promote misinformation because it serves their purposes (Bernays, 1928; Kumar et al., 2016; Reid, 2019; Sama, 2019). Moreover, misinformation is not a homogeneous phenomenon. Even if much misinformation is inconsequential, specific instances—as per the examples provided in the preceding paragraph—can still be highly consequential (Allen et al., 2024). This is especially true when taking into account repeated, systematic exposure—such as the tobacco industry’s decades-long disinformation campaign (Oreskes & Conway, 2010; Proctor, 2012) and the impact of anti-Ukraine propaganda in Russia (Krishnarajan & Tolstrup, 2023; Roozenbeek, 2024)—and potential effects beyond direct relevant beliefs (e.g., influences on public debate, institutional trust, polarization, etc.; Lauer, 2021; Lewandowsky et al., 2019; Lorenz-Spreen et al., 2023; Mauk & Grömping, 2024; Ognyanova et al., 2020).

There is, in fact, clear-cut experimental evidence that misinformation can affect beliefs, attitudes, and reasoning, as well as behavioral intentions (for a review, see Ecker et al., 2022; also see Chia et al., 2023; Loomba et al., 2021). With regard to observable behaviors, the evidence is more nuanced but likewise suggests demonstrable misinformation impacts. For example, one recent study that combined a behavioral-intention measure with a measure of self-reported behavior found that (changes in) false beliefs predicted (changes in) reactionary collective action (i.e., support for and participation in antilockdown or antielection protests; Thomas et al., 2024).

However, misinformation research demonstrating behavioral impacts is hindered by at least two factors. First, behavioral impacts are notoriously difficult to measure, which can lead to both under- and overestimation. To illustrate, poor survey design and expressive or careless



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responding can, at least in principle, lead to overestimation of misinformation impacts (Altay, Berriche, & Acerbi, 2023). On the flipside, some measures will be limited in what they capture, such as measures of online-sharing intentions that may not capture potentially substantial offline sharing (Chia et al., 2023; Nurse et al., 2022). Experimental research thereby typically faces the challenge of measuring the impacts of a single exposure to misinformation, often using a single-item measure of behavior that can be difficult to align with the specific piece of misinformation presented.

Second, ethical concerns surrounding exposure of research participants to potentially harmful misinformation limit experimenters' ability to ascertain impacts (Greene et al., 2023; van der Linden & Kyrychenko, 2024). Studies that have tested for direct behavioral impacts have therefore mostly done so with relatively innocuous measures and have produced mixed findings (e.g., MacFarlane et al., 2021; Mattingly & Yao, 2022; Spampatti et al., 2024; Tay et al., 2022; for reviews in the context of health misinformation, see Borges do Nascimento et al., 2022; Schmid et al., 2023). Given these constraints, we must be careful to set reasonable standards of evidence, keeping in mind that (initial) lack of causal evidence in the domains of tobacco and climate change has been used by industry actors to deter and delay policy action (Oreskes & Conway, 2010).

Such ethical constraints do not apply in the same manner outside the laboratory (e.g., market research to identify persuasive messages; Hewitt et al., 2024; Oreskes, 2010). Field research using causal-inference methodologies (e.g., instrumental-variable analysis) has repeatedly and consistently produced results that attest to the adverse consequences of misinformation. For example, antirefugee misinformation on social media has been causally connected to racially motivated hate crimes in Germany (Müller & Schwarz, 2021;

also see Adena et al., 2015; Voigtländer & Voth, 2015). Consumption of U.S. cable news programs that disseminated misinformation about COVID-19 has been causally linked to reduced adherence to public health measures (Ash et al., 2024; Bursztyn et al., 2020; Simonov et al., 2022). Vaccine misinformation has been causally associated with reduced vaccination intention and uptake (Allen et al., 2024; Motta & Stecula, 2021; Pierri et al., 2022; also see Chia et al., 2023; Kim et al., 2022; Loomba et al., 2021, 2023; Ruggeri et al., 2024; Wilson & Wiysonge, 2020). There is even evidence that technically true but misleading vaccine information can have a greater negative impact than objectively false vaccine misinformation, both in a controlled experimental setting and when scaled to exposure on social media, in further support of a wider definition of misinformation (Allen et al., 2024; van der Linden & Kyrychenko, 2024). Although further research is needed, the argument that misinformation has no effects on behaviors is not consistent with this body of empirical evidence.

A few additional points deserve mention here.

- a. Some have argued that undesirable behaviors primarily arise from convenience, habits, social norms, values, or identity-driven motivation rather than knowledge deficits or misinformation (e.g., Scheufele et al., 2021). Naturally, many factors influence behaviors (despite a bias toward perceptions of monocausality; see Nisbett & Ross, 1980), but even the formation of norms, values, and identities does not occur in an information vacuum. Rather, it is itself critically shaped by (mis)-information processing. For example, biased school curricula in colonized countries such as Australia or the United States have shaped the identities of almost an entire populace for decades (e.g., Fozdar & Martin, 2021). Further, just because behaviors can have diverse individual-level determinants does not preclude misinformation having effects of its own. Conversely, if some effect of misinformation on a behavior is established, it would be equally fallacious to propose that misinformation is the only causal driver of said behavior. In other words, a causal factor does not need to be the *only* causal factor in order to be relevant.³ We therefore disagree with the suggestion that concerns around misinformation are justified only “if misinformation is indeed the sole contributor to these [negative] effects, rather than one of several factors” (Adams et al., 2023, p. 1441).

³ In law, this principle is reflected in the doctrine of joint and several liability, which ascertains that an individual offender can be held responsible for negligent, reckless, or wrongful behavior even if there are other perpetrators (Kornhauser & Revesz, 2009).



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- b. Related to the preceding point, the claim that we can ignore knowledge deficits because addressing such deficits is unlikely to bring about behavior change is also questionable. While high-quality information on its own can be insufficient to influence behavior (e.g., see [van der Linden, 2014](#)), the utility of promoting true information and refuting false information has been clearly demonstrated. For instance, smoking-risk information that increases health concerns has a proven effect on motivation to quit (e.g., [McCaul et al., 2006](#)), which in turn affects cessation behavior (e.g., [McCuller et al., 2006](#)). The tobacco industry's disinformation campaign was based on internal studies showing that smokers would be motivated to quit if they had good information on the harms of smoking ([Oreskes & Conway, 2010](#); [Proctor, 2012](#)). Moreover, as an example of the joint effect of misinformation and individual-level determinants, misinformation has been employed to foster rationalization of existing undesirable behaviors (e.g., information minimizing the risks of e-cigarettes may lead smokers to rationalize and sustain their consumption even if it does not cause the behavior in the first place; [McCausland et al., 2020](#)).
- c. Finally, some have argued that relying on individual-focused misinformation interventions is a flawed approach against the backdrop of the attention economy and an information environment dominated by platforms providing algorithmically curated content (e.g., [Scheufele et al., 2021](#)). We agree that online platforms are part of the problem (e.g., [Lewandowsky et al., 2020](#)), not least because

the entanglement of humans and algorithms has far-reaching consequences, for example, by dynamically configuring people's social network ([Lewandowsky, Robertson, et al., 2023](#)). Ideally, social science should take into account both individual-level and systemic factors ([Chater & Loewenstein, 2023](#)), and examine both direct and indirect causes of the information disorder, including the impacts of the attention economy and algorithmic information curation, along with potential remedies including but not limited to those focused on individuals (also see [Budak et al., 2024](#)).

To illustrate, one recent article showed that temporarily changing users' social media feed from algorithmically curated to reverse-chronological (i.e., ordered by recency) reduced user engagement but had little effect on attitudes and polarization ([A. M. Guess et al., 2023](#)). This is important to know, although of course such null effects should not be overstated. This is because any misinformation promoted through algorithms could still affect users indirectly through its influence on others or public discourse and because users were only "freed" from curated content for a relatively short period of time (while all advertising, including political ads during an election campaign, continued to be shown). Moreover, even well-designed and well-powered studies may fail to produce evidence for such misinformation impacts if they are conducted after saturation has occurred and participants have already formed a relatively stable opinion or intention (also see [de Saint Laurent et al., 2022](#)). Another recent study demonstrated that the substantial ideological segregation on Facebook is driven *both* by individual choices such as sharing posts, joining a group, or following an organization's page (with such groups and pages identified as potent misinformation vectors) *and* algorithmic amplification ([González-Bailón et al., 2023](#)). In the larger scheme of things, applying individual-level interventions need not prohibit or prevent the implementation of more systemic interventions ([Sunstein, 2023](#)), and interventions that target misinformation should only be seen as part of the solution, without disregard for other, potentially more destructive factors.

Conclusion

Misinformation research sits at a friction point between respect for freedom of expression on the one hand and the protection of civil, authentic democratic discourse and harm prevention on the other. The debate on the significance of misinformation and its impacts is an important one, and it is crucial that both the arguments presented in this debate and, in particular, the inferences and conclusions drawn from these arguments are sound. Some scholars have taken issue with perceived "alarmism" and a presumed "moral panic"



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regarding the risks and harms associated with misinformation (Altay, Berriche, & Acerbi, 2023; Jungherr & Schroeder, 2021; Scheufele et al., 2021). We acknowledge that some commentators may have exaggerated the negative consequences of misinformation in some specific cases, singling out misinformation as a primary cause of problematic outcomes among other potential causes. Such exaggeration may have negative implications: For example, it has been argued that overstating the threat from foreign disinformation campaigns might play into the hands of malicious actors by fostering polarization and promoting a passive victim mentality that absolves domestic leaders from their responsibilities for healthy discourse (Belogolova et al., 2024). Platforms themselves may benefit from the inflation of misinformation threats because it frames the narrative in a way that assigns power to the platforms' content, thereby potentially helping them sell advertising (J. Bernstein, 2021). Just as we ought to be careful not to dismiss or minimize causal misinformation impacts, we should take care not to exaggerate or overgeneralize causal impacts of both misinformation and interventions. We therefore call for more research into the causal impacts of misinformation (and interventions), using both experimental and field-based causal-inference methodologies (also see Tay et al., 2023, 2024).

However, we disagree with the “moral panic” stance given that major attacks on democracy (e.g., the U.S. Capitol Riots) and any significant health impact or death resulting from misinformation (directly or indirectly) must be viewed as morally concerning. It is not irrational to be alarmed when alarming things are happening. Whether existing research has under- or overestimated the seriousness of the misinformation threat is not entirely clear, but the available evidence supports the position that misinformation is a threat to democracy, public health, science communication, and evidence-informed

policymaking. The way such evidence is framed and presented has an impact on how this evidence influences policymaking (Collins et al., 2017; Hansson, 2020). History has shown that arguments minimizing the significance of a problem can be appropriated as intellectual cover by malicious actors who engage in ideologically motivated science denial and disinformation campaigns (e.g., Kata, 2012; Oreskes & Conway, 2010)—ironically while sometimes seeking to silence those they disagree with despite their proclaimed allegiance to free speech (Franks, 2024; French, 2022). In the misinformation arena specifically, misrepresentations have already had an impact on policy and research activities (A. Bernstein & Marritz, 2022; Calo & Starbird, 2024; Lewandowsky, Ecker, et al., 2023).

Establishing misinformation as a cause of misguided beliefs and behaviors does not mean it should be conceptualized exclusively as such; misinformation can be a cause of problematic outcomes while also being a symptom of deeper, potentially more destructive societal issues (Lewandowsky et al., 2017; Tay et al., 2024). We hope that this article helps sharpen the debate on misinformation and its impacts, which requires nuance and consideration of all available evidence and is aided neither by alarmism nor minimization.

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