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COMMENT

Beyond incivility: supporting scientists' efforts to correct misinformation online

Commentary on

Scholars under attack — Navigating the dark side of public engagement and science communication in a politicised (online) environment

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Abstract

Correction of misinformation is a top priority for scientific organizations. Concern over misinformation is particularly prominent in social media, which is characterized by incivility. Because correcting misinformation online can expose scientists to uncivil responses or personal attacks, understanding barriers and motivations to correct misinformation among individual scientists is critical to identifying how institutions can best support scientists to maintain engagement in public communication of science. In this commentary, we review survey data of scientists at land-grant universities in the United States ($n = 413$) and find that a tendency to self-censor is not related to scientists' propensity to correct misinformation in social media. Deliberative aspirations, however — or the prospect of opening up peoples' minds to other perspectives — are related to behavioral intentions to correct misinformation for women scientists, in particular, as shown by a significant gender interaction effect. We conclude with specific recommendations that support motivations aligned with deliberative aspirations.

Keywords

Public engagement with science and technology

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1 ▪ Scientists' public engagement in online media environment

Scientists and their institutions are increasingly called upon to correct misinformation, defined as false or inaccurate information regardless of intent to mislead [Oliveira et al., 2024]. Scientists occupy a distinctive position in misinformation correction because they are widely perceived as epistemic authorities [Kienhues et al., 2020]. As a result, their participation in public discussions of misinformation may shape how audiences interpret and evaluate contested claims. Concerns about misinformation have prompted calls for institutional responses to maintain trust in science [National Academies of Sciences, Engineering and Medicine, 2025]. Scientists themselves identify correcting misinformation and sharing accurate information as key motivators for engaging in public communication [Bennett et al., 2022; Besley et al., 2016]. Misperceptions about science occur among different systems and social networks, requiring a multi-level approach to addressing misinformation [Scheufele & Krause, 2019]. Understanding how individual scientists approach misinformation is an integral part of building institutions that will support their efforts.

Social media offers an important venue for correcting misinformation because of its scale and visibility. Observed corrections can correct misperceptions at scale in social media [Bode & Vraga, 2025]. At the same time, these environments are frequently characterized by uncivil communication, which refers to violations of communication norms that lead to a range of negative speech behaviors, including name-calling, racist remarks, and inconsistencies or falsehoods, among others [Avalle et al., 2024; Bormann et al., 2022]. Such hostile opinion climates may discourage participation in contentious discussions. Because misinformation and incivility often appear together in online conversations [Cinelli et al., 2021; Kim & Kesari, 2021], scientists who attempt to correct misinformation may encounter conflictual interactions.

Addressing misinformation may require more than simply presenting accurate claims; it can involve engaging with the beliefs that shape how individuals interpret information [Fraser, 2023]. Understanding scientists' motivations and perceived barriers for such engagement is critical.

This study examines motivations and barriers that may shape scientists' intentions to correct misinformation on social media. Specifically, we investigate whether a willingness to self-censor, a tendency to withhold opinions in conflictual environments, acts as a barrier to correction. We also analyze whether deliberative aspirations, defined as motivations to encourage reflection and reasoning among audiences, predict corrective intentions. We also examine whether these relationships differ for women scientists, who face distinct experiences related to incivility in online communication [Waldman et al., 2018].

2 ▪ Motivations and barriers to misinformation correction in online media spaces

Hostile opinion climates and conflict that occur in social media spaces may deter scientists from engaging in addressing misinformation. This resistance may be particularly pronounced for individuals with a high willingness to self-censor, meaning those who tend to withhold their opinions when they perceive disagreement from others [Hayes et al., 2010]. People who

self-censor in hostile opinion climates are also less likely to engage in public political activities [Hayes et al., 2006]. In social media, people choose not to correct misinformation because of a norm to avoid conflict in their interpersonal communication in these spaces [Chadwick et al., 2024]. Therefore, people who have a tendency to self-censor in controversial opinion climates may experience a barrier to addressing misinformation in social media environments.

At the same time, scientists may be motivated to address misinformation, potentially overcoming the barrier of a challenging opinion environment through a desire to increase engagement with science. This motivation often reflects deliberative aspirations, or scientists' desire to foster reflection and contemplation about the topic at hand. Scientists view communication as a way to educate audiences, make a difference in the world, and stimulate curiosity and critical thinking skills [Besley et al., 2018; Farias et al., 2025; Wilkinson et al., 2022].

These dynamics suggest competing pressures shaping scientists' engagement. On one hand, conflictual online environments may create self-protective incentives to avoid contentious interactions. On the other hand, motivations to encourage public reflection and engagement with science may encourage scientists to intervene in misinformation discussions.

3 ▪ Gender and misinformation correction

Scientists are increasingly being called upon to do more reciprocal communication outreach that engages scientists with non-technical audiences in dialogic, co-created forms of communication [Kelp, 2025]. Women scientists often do relational and communicative labor within science [Papadelos & Beasley, 2025], yet they may also experience greater harassment in online communication environments [McDonald et al., 2020]. These dynamics make it particularly important to understand what motivates or discourages their participation in correcting misinformation. Some research suggests women may be more likely to avoid communication environments that are uncivil and have greater tendencies toward self-censorship or conflict avoidance [Coffé & Bolzendahl, 2017; Hayes et al., 2006; Wolak, 2022]. At the same time, women scientists are particularly interested in getting people to think more, engage in dialogue, and create conversations when they participate in science communication [Wilkinson et al., 2022]. Some research shows women are more likely to correct misinformation on social media when they think the issue is important and relevant [Gurgun et al., 2024]. Issue relevance may encourage a desire to encourage thoughtful public contemplation on those issues. Together, this research suggests that women scientists may be particularly motivated to engage in misinformation correction on social media to engage people in their topic in ways that encourage reflection and deep consideration.

To analyze the barriers and aspirations related to intentions to correct misinformation in social media, we conducted a survey of U.S. scientists at land-grant institutions ($n = 413$) in May-June 2022 (see Choi et al. [2023] for detailed information about sampling for this study). The sample consisted of scientists in life sciences, social sciences, math/computer sciences, physical sciences, humanities, agriculture, and material sciences and engineering from 25 land-grant universities in the United States. Scientists were sampled across six geographic regions and from different institution types (e.g., tribal colleges and universities, historically Black colleges and universities, and the original public universities established with the

Land-Grant Act). We asked several items related to demographics, willingness to self-censor, perceptions of misinformation, and deliberative motivations to correct misinformation (see the supplementary materials for the full item wording and descriptive statistics). In order to explore intentions to correct misinformation on social media, we conducted a hierarchical linear regression.

Land-grant universities in the United States have a distinctive mission that emphasizes outreach and dissemination of research through extension and engagement programs [Sternberg, 2014]. As a result, scientists at these universities may have more incentives and institutional support to participate in public communication activities.

4 ▪ Results and conclusions

Our analyses predicting U.S. scientists' intentions to correct misinformation reveal several key patterns (see Table 1). First, perceptions about misinformation matter. Intention to correct misinformation on social media is positively related to levels of perceived prevalence of misinformation ($B = .15$, $p \leq .001$), personal responsibility to correct misinformation ($B = .10$, $p \leq .05$), and perceived efficacy of the corrective techniques ($B = .40$, $p \leq .001$). Therefore, this suggests scientists will intervene with misinformation when they believe misinformation is widespread, feel a responsibility to address it, and believe corrective efforts can be effective. This pattern is consistent with research on other forms of science communication showing that perceived responsibility and a sense of efficacy are associated with scientists' engagement in communication activities [Besley et al., 2018; Kahlor et al., 2016]. Institutions can support removal of barriers, such as lack of time or resources, that might get in the way of addressing misinformation. For instance, they can provide communication skills training courses that might bolster scientists' corrective behavior by strengthening beliefs about the effectiveness of corrective behavior.

The second important finding in our analysis is a relationship between deliberative motivations and behavioral intentions to correct misinformation in social media for women ($B = .56$, $p \leq .05$). In other words, for women scientists, correcting misinformation may be linked to normative commitments to deliberation and public reasoning rather than simply the correction of inaccurate information. Institutions can provide pathways for science communication among groups that invite dialogue and co-creation with communities, such as offices of extension or deliberative democracy centers. For social media spaces in particular, institutions can provide access to science communication specialists that provide assistance or consultation on development of communication that encourages deeper audience engagement and processing (e.g., through narratives or interactive formats).

Finally, our results found that willingness to self-censor and the interaction term between gender and willingness to self-censor are not related to behavioral intentions to correct misinformation. While scientists are increasingly called upon to address misinformation, concerns about incivility or backlash do not likely prompt any self-protection that would deter them from misinformation correction in social media. Decisions to correct misinformation may be driven more by strategic communication motivations than perceived risks.

A limitation of this study is that it does not directly examine the perspectives of LGBTQIA+ scientists in science communication [Orthia & Roberson, 2024]. Future research should more fully explore these perspectives, particularly in relation to the incivility dynamics that

Table 1. Predicting U.S. scientists' intentions to correct misinformation on social media ($n = 413$). Note. *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$.

Predictors	Zero-order correlations	β
Block 1: Demographics		
Gender (women = 1)	.16***	-.33
Race (White = 1)	-.01	-.10*
Incremental R^2 (%)		3.3***
Block 2: Willingness to Self-censor		
Willingness to self-censor	-.06	-.01
Incremental R^2 (%)		1.0
Block 3: Perceptions on Misinformation		
Perceived prevalence of misinformation	.19***	.15***
Personal responsibility to correct misinformation	.26***	.10*
Perceived efficacy of corrective techniques	.46***	.40***
Incremental R^2 (%)		24.1***
Block 4: Deliberative Motivations		
Deliberative motivations to correct misinformation	.24***	-.01
Incremental R^2 (%)		0.03
Block 5: Interactions		
Willingness to self censor $\times$ Gender		-.10
Deliberative motivations $\times$ Gender		.56*
Incremental R^2 (%)		1.0
Total R^2 (%)		28.0

social media poses, to better understand how these experiences shape participation and engagement in science communication.

The promotion of practices that support deliberative motivations by scientists acknowledges the importance of audience reflection and reasoning. Considerable emphasis is placed on dialogic and participatory approaches to science communication that rely on sustained interactions among scientists and publics. While dialogue is essential to addressing scientific challenges in equitable ways, promoting communication practices by scientists that engage audiences where they spend their time and cognitive efforts is critical — particularly as information environments evolve rapidly in the digital media age. Notably, concerns about self-protection in conflictual online environments were not associated with intentions to correct misinformation, suggesting that motivations centered on fostering audience reflection may outweigh anticipated interpersonal costs of engagement. When scientists identify deeper reasoning among audiences as a communication goal, they may more carefully consider how audiences process misinformation through existing values and orientations. Clearer objectives can enhance the effectiveness of science communication [Besley & Dudo, 2022]. Supporting scientists in developing and acting on motivations to encourage audience reflection moves science communication beyond approaches and practices that continue to reinforce the deficit model.

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