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COMMENT

The engagement paradox: how negative feedback shapes visibility-oriented science communication on TikTok

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

TikTok has become an increasingly important platform for communication, yet it remains understudied in science communication research. This commentary addresses this gap by discussing findings from an exploratory interview study with social scientists who actively communicate about science on TikTok. Drawing on in-depth, semi-structured interviews and one author's platform experience, we examine the types of hostility researchers encounter and how they cope with criticism and harassment in their digital public engagement. A central and counter-intuitive finding is that participants often normalise, and sometimes value negative responses as these inspire content, provoke discussion, and boost engagement. Thus, hostility is reframed as a form of communicative capital. This dynamic exemplifies the "Engagement Paradox," defined here as the tension in which negative feedback simultaneously acts as validation and as a strategic resource to enhance visibility. We conclude by discussing how the infrastructural arrangements of platforms and their political-economic foundations shape science communication and highlight the norms they (re)create amid the post-normal conditions of science communication.

Keywords

Digital science communication; Scholarly communication; Popularization of science and technology

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1 ▪ Introduction

Recent global research has shown that in 53 out of 68 countries, people primarily encounter information about science on social media platforms like Facebook, YouTube, Instagram, and TikTok [Mede et al., 2025]. With 1.59 billion monthly users worldwide, including 421 million aged 18–24, TikTok has become one of the most significant platforms for reaching younger audiences [Statista, 2025]. For science communication, TikTok offers both opportunities and challenges: it extends reach to new audiences but also exposes communicators to hostility.

By science hostility we refer to expressions of an antagonistic stance toward science, researchers, or scientific institutions [Bucchi & Neresini, 2004; Rutjens et al., 2022]. In this paper, we focus specifically on researchers, where such hostility manifests in forms ranging from verbal aggression to threats or coordinated attempts to silence. Researchers have long faced hostility, whether over climate change, vaccination, or gender studies [Holton, 2000; Gauchat, 2012; Rutjens et al., 2022]. Survey studies show that such attacks undermine credibility, provoke silencing, and discourage researchers from public engagement [Gewin, 2018; Seeger et al., 2024; Marcinkowski et al., 2025]. What has changed due to platformisation of public communication is that the algorithmic design of social media platforms may amplify hostility and weave it into the very conditions of communication. The growing societal relevance of this dynamic is reflected in recent public debates about platform logics. For instance, the Oxford Dictionary selected "rage bait" as the Oxford Word of the Year 2025. The term denotes strategically crafted online content designed to provoke anger, outrage, or polarisation in order to maximise user engagement and algorithmic visibility [Oxford University Press, 2025].

To examine how hostility manifests and how communicators respond, we conducted ten semi-structured interviews with social science communicators active on TikTok. Although research and public recognition of STEM communication on TikTok are growing [Frick et al., 2025], social science communicators remain understudied; therefore, we focused on this group. Participants were identified through keyword searches (e.g. "sociology", "social sciences", "anthropology") and iterative engagement with TikTok's algorithmic recommendation system. Of 34 creators contacted, ten agreed to participate.

Interviewees had follower counts ranging from several thousand to over 100,000 and were all affiliated with higher education institutions, from graduate students to full professors. All produced English-language content focused on the social sciences. The sample included five women and five men. Interviews were conducted via Zoom between November and December 2023, lasted 35 to 123 minutes, and were held in English. Methodology is also one of the main limitations of this study: a small sample size, a focus on English-language content, self-selection in recruitment, and data collected in 2023.

Interviews revealed a surprising dynamic, which adds to the discourse on science hostility and which we describe as the Engagement Paradox: negative feedback is at once a risk for legitimacy and wellbeing and a resource for visibility. What typically constitutes a threat can, under algorithmic conditions, become a means of gratification.

Hostility thus functions not only as a liability but also as a communicative asset. This raises fundamental questions about infrastructural arrangements, their underlying political economy, the ways in which they shape science communication, and the norms they (re)produce.

2 ▪ Types of hostility

Based on ten interviews with social scientists active as TikTok creators and complemented by one author's own experience as a communicator [Lukan, 2023], the analysis focuses deliberately on communicators of social science topics. These actors typically present content of high socio-political relevance, which makes them particularly susceptible to public contestation and reaction. Across the interviews, the communicators consistently described three types of hostility:

- **Hateful comments.** The most frequent form, ranging from insults about appearance and competence to sexist, racist, or homophobic slurs. Female and minority creators reported being targeted disproportionately, echoing broader evidence of gendered and racialised harassment in academia [Gewin, 2018]. Anti-science remarks were also common, dismissing expertise or attacking research fields as illegitimate.
- **Doxxing.** Several participants described fears that their private information might be exposed. Even without actual incidents, the threat of doxxing shaped behaviour and possibility of exposure created a persistent sense of vulnerability [Massanari, 2018].
- **Malicious flagging.** A less visible but particularly disruptive tactic was the misuse of TikTok's reporting function. Some creators had content removed or accounts suspended after waves of coordinated reports. They interpreted this not as an error but as an organised attempt to silence them, consistent with analyses of flagging as a weaponised governance tool [Crawford & Gillespie, 2016].

These three forms echo patterns documented in broader studies of hostility toward science [Nogrady, 2021; Seeger et al., 2024]. On TikTok, however, their significance is heightened: because the platform treats every interaction as engagement, hostile acts are not marginal interruptions but part of the infrastructure of visibility itself.

3 ▪ Coping strategies

The strategies of the interviewees to cope with hostility on TikTok varied, yet all revealed the double-edged nature of hostility; three distinct sets of practices became apparent:

First, some communicators focused on deflecting and reappropriating, turning hostile comments into new content. As one creator explained: "I make content out of it, I make a joke out of it". TikTok's video-reply function enabled this, allowing them to confront hostility directly, often with humor or irony. Creators shared a common understanding that making use of the platform's built-in features could boost the visibility of their content: "Platforms like us to use their features, so sometimes I bite back [through video reply] /…/ it definitely increases your reach."

Second, others engaged more *earnestly*, treating hostile remarks as prompts for explanation and constructive discussion. As one participant stated: "There are people who ask questions in good faith. I respond and then we have conversations and I say that I understand where they are coming from, and I say that I am doing this because I am operating with data that supports what I'm saying. I think there are exchanges that are meaningful to have." This reflects that social media platforms offer opportunities for bi-directional communication between science and the public [Fischhoff & Scheufele, 2013].

Third, a more *defensive* set of practices emerged: protective strategies such as avoiding self-disclosure, blocking accounts, or maintaining backup profiles in case of de-platforming. According to one creator: "I removed all possible identifying information, I don't give my name, nothing on the internet that is linked to me in real life is linked to my social media handle /…/ I don't even film outside in an identifiable location where someone might recognise something. If they can't doxx me, I'll be safer."

Responses to science hostility have been described in terms of divergent strategies of *fear control*, where researchers withdraw or self-censor, and *danger control*, where they confront hostility through protective or adaptive practices [Marcinkowski et al., 2025]. Our interviews indicate that TikTok communicators largely adopted the latter, confronting and strategically managing hostility, even as they recognised its costs.

In platformised environments such as TikTok, a further step becomes apparent: hostility is not only managed but also reframed as a form of communicative capital. What in other contexts functions as a deterrent to participation here serves to extend reach and visibility. Several interviewees articulated this paradox, noting that negative interactions were algorithmically rewarded: "You are here threatening me, but in the end it's just me getting all the views, so I can say thank you."

This is the essence of the Engagement Paradox. It describes the structural tension in platformised science communication whereby negative feedback — such as hostility, hate, or antagonistic engagement — simultaneously undermine legitimacy and wellbeing while functioning as a resource for algorithmic visibility and reach. Hostility is both harmful and productive, both a liability and an asset, both a threat to legitimacy and a source of amplification. One communicator reflected on the nature of online hostility, reframing hate comments as an indicator of success within the algorithmic logic of the platform: "In the end, I take it [hostility] as a sign I'm doing something right. The algorithm brought me to you."

The engagement paradox reveals something new about science communication on social media. While existing literature on hostility towards science has mostly framed it as a threat that limits individual agency [Gewin, 2018; Seeger et al., 2024; Marcinkowski et al., 2025], our exploratory study shows a different perspective: hostility towards science is not only viewed critically by scientists but is also used strategically as a tool to increase visibility.

4 ▪ TikTok as infrastructure

The Engagement Paradox suggests that hostility on TikTok is not merely interpersonal but infrastructural. Infrastructures are relational systems in which social and technical elements co-evolve until they become embedded in practice and effectively invisible [Bowker & Star, 1999; Fecher et al., 2021]. Once integrated, they co-shape norms, values, and possibilities of action. TikTok increasingly functions in this way: it is not only a platform on which science communication occurs but a socio-technical environment that structures visibility, attention, and interaction.

From the perspective of infrastructural studies, TikTok illustrates what Fecher et al. [2024] describe as the platformisation of science, the process through which digital platforms become constitutive infrastructures of scientific work. It denotes a structural transformation in how research is organised, mediated, and governed, as scientific communication and

collaboration increasingly depend on digital architectures originally designed for scalability, interoperability, and data extraction [da Silva Neto & Chiarini, 2023]. With its rapidly expanding global user base and strong uptake among younger cohorts, TikTok is evolving from an entertainment platform into a significant information environment. Its continued growth and increasing use for news and knowledge acquisition position it as an emerging arena in which scientific visibility and public engagement are negotiated.

TikTok differs from other social media platforms, although many have started to imitate its features. While Facebook, Instagram, and YouTube primarily deliver content based on users' followings, TikTok is algorithm-driven. Its For You Page presents content not according to a user's social connections, but based on what the algorithm determines will capture and sustain their attention. This assessment relies on behavioural data such as likes, shares, watch time, and completion rates, rather than follower networks. As a result, the platform prioritises engagement, favouring content with high retention and interaction [Gerbaudo, 2024]. User engagement is therefore crucial: the more people interact with a video, the more likely the platform is to amplify it and increase its reach [Abidin, 2020].

This platform design is central to the Engagement Paradox: because hostile comments, controversy, or antagonistic exchanges all increase measurable engagement, they can algorithmically enhance visibility, turning negativity into a structural resource for reach. In the context of science communication on TikTok every interaction, including hostile ones, feeds the algorithmic calculus of visibility. Within this economy of attention, sentiment is secondary to circulation. What matters is engagement rather than epistemic quality. The result is a communicative environment in which antagonism becomes infrastructurally productive. As one communicator remarked: "Sometimes I look at the comments and I see a sexist dude commenting, I reply back with something mean like connect your brain cells or something /…/ dude, you are just increasing my engagement rates."

TikTok's affordances, short-form videos, algorithmic curation, and engagement metrics, encode communicative values that might differ from those of science. They privilege speed, affect, and reach over accuracy, reflexivity, and trust. Platform logics incentivise science communicators to seek out, learn, and engage with viral content to remain visible on TikTok. In addition to science-related content, communicators produce entertaining videos to boost visibility: "I sing along to performances from America's Got Talent. It is completely out of my topic, but it resets the algorithm and then my other [science] content will start picking up /…/ if you scroll through my content, there will be six videos on sociology and one or two random ones that have nothing to do with it."

The logic of engagement that sustains the platform's profitability conflicts with the public mission of science, which depends on credibility, transparency, and reflexive critique [Burawoy, 2021]. Nonetheless, the same features that create this normative tension also lower the opportunity and transaction costs of public engagement for researchers. With minimal effort, they can reach audiences that traditional scientific infrastructures could never access. The accessibility and scalability that make TikTok commercially successful also make it attractive as a tool for scientific outreach.

In this sense, TikTok exemplifies the ambivalence of using non-scientific infrastructures for scientific purposes. It offers efficiency and visibility while embedding communicative norms that diverge from scientific ideals. Hostility, rather than disrupting communication, becomes part of the mechanism that sustains it. As Fecher et al. [2021] observe, infrastructures carry

the values of their makers and users. TikTok carries the values of the attention economy, where visibility substitutes for validity and engagement eclipses expertise.

5 ▪ Conclusion and implications

The Engagement Paradox reveals how platform logics invert dynamics of science communication: what should undermine legitimacy instead fuels visibility. This tension highlights the growing distance between the values of science, for instance accuracy, reflexivity, and trust, and the affordances of social media that often reward speed, controversy, and attention regardless of sentiment.

Given that most people worldwide now encounter science-related information primarily through social media [Mede et al., 2025], maintaining a presence on these platforms has become a structural condition for public visibility in science. In this context, science communicators on TikTok serve a mediating function by translating and situating research within digitally networked publics. The interviewees in this study addressed socio-politically salient issues such as feminism, toxic masculinity, social inequality, and political polarisation. This mediating role is particularly evident in practices where hostile or critical comments are transformed into opportunities for discussion. By engaging commenters in public threads or private exchanges, communicators reframe antagonism as a pedagogical opportunity and enact forms of bidirectional communication between science and its audiences [Fischhoff & Scheufele, 2013].

As recent scholarship recognises, TikTok as an infrastructure fosters post-normal conditions of science communication [Frick et al., 2025]. Post-normal science communication refers to contexts where facts are uncertain, values are contested, stakes are high, and decisions are urgent [Nicolaisen, 2022]. TikTok intensifies these conditions by embedding science communication within fast-paced, affect-driven, and highly participatory publics. Epistemic authority is routinely challenged in comment threads, misinformation circulates rapidly, and scientific claims are evaluated alongside competing value positions. At the same time, societal stakes are amplified: as more people encounter science primarily via social media, communicative dynamics on these platforms shape public trust, political attitudes, and policy-relevant debates. In this sense, TikTok does not merely host post-normal communication; it infrastructurally reproduces and accelerates it. Hostility on TikTok is therefore not an incidental by-product but part of the communicative architecture itself, shaping how science becomes visible in practice [Fecher et al., 2024]. In this context, the Engagement Paradox should be understood as a structural feature rather than merely an individual coping strategy for dealing with online hostility towards science.

Under platformised conditions, communicators encounter the Engagement Paradox: hostility threatens both legitimacy and wellbeing, yet can be transformed into algorithmically rewarded visibility within the attention economy. This dynamic may incentivise communicative styles — antagonism, irony, speed, and affect — that align with platform logics but sit uneasily with scientific norms of accuracy, reflexivity, and trust. As Jamieson [2017] warns, when science communication diverges from scientific norms, it may affect science's institutional credibility. Science communicators operate within environments whose norms are not anchored in scientific practice; participation therefore requires strategic awareness of how visibility is generated and authority reconfigured.

The challenge is to engage these infrastructures deliberately, harnessing their connective capacities while preserving the institutional and epistemic foundations on which scientific legitimacy depends. A key implication is therefore whether — and under what conditions — the strategic appropriation of negativity, including practices similar to "rage bait," yields legitimacy gains for individual communicators while imposing legitimacy costs on science as an institution. Addressing this requires further research, particularly audience-centred and longitudinal studies that can trace how platform dynamics shape trust, authority, and public understanding of science over time. Our exploratory design — based on ten interviews with English-language social science communicators — also limits generalisability and highlights the need for broader comparative work across disciplines, languages, and platform contexts.

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