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COMMENT

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

Birte Fähnrich, Carla Almeida, Clemens Dietrich Blümel, Daniel Edler, Benedikt Fecher, Niels G. Mede and Nataliia Sokolovska

Abstract

Hostility towards science has emerged as a significant challenge in contemporary science communication, particularly in increasingly politicised and digitally mediated public environments. Scholars across diverse disciplines are confronted with harassment, delegitimisation, political interference, disinformation, and personal attacks, especially when engaging in public communication. This editorial introduces the JCOM commentary set "Scholars Under Attack" and situates hostility towards science within broader transformations of media ecosystems, political polarisation, and contested epistemic authority. The article argues that current debates remain conceptually fragmented and empirically underdeveloped, with limited comparative and longitudinal evidence regarding the scope, forms, and consequences of hostility directed at researchers. To address these gaps, the editorial proposes a working definition of hostility towards science as practices, discourses, and actions that undermine the authority, credibility, or integrity of scientific actors, knowledge, and institutions in politicised public arenas. The commentary set brings together interdisciplinary and international perspectives from Europe, the Americas, Africa, and Australia, highlighting how experiences of hostility vary across political systems, institutional contexts, disciplines, and social identities. The contributions examine online harassment, gendered hostility, misinformation, academic freedom, institutional shortcomings, and the paradoxical dynamics of visibility in digital communication. Collectively, they emphasise the need for more systematic empirical research, stronger institutional support structures, and nuanced conceptual approaches that distinguish hostility from legitimate critique while recognising the democratic importance of public science communication.

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1 ▪ Hostility towards science as the dark side of public engagement in a politicised (online) environment

Across the globe, scientists are confronted with mounting pressures, including political interference and funding cuts, personal threats and physical attacks, anti-intellectual and populist resentments among the public, and increasing disinformation [Academic Freedom Index, 2025]. Attacks on science became especially visible during the COVID-19 pandemic. Researchers and public health officials in various countries reported that a range of threats to their personal safety and well-being challenged their professional activities [National Academies of Sciences, Engineering and Medicine, 2023]. Today, political and public attacks on science span various fields, such as climate science, gender studies, animal research, gene engineering, and social media research. Hostility towards science is strongly intertwined with science communication, i.e. "all forms of communication by and about the sciences, within science (…) as well as in the science-external public sphere" [Kessler et al., 2019, p. 244]. While aiming at consensual, constructive, civil, and deliberative science-society dialogue, public outreach also has unintended consequences, including heightened exposure to conflict, scrutiny and hostility. Therefore, the "bright side" of science communication is contrasted with a "dark side".

Despite the apparent rise in reports of hostility towards scientists, the empirical evidence remains inconclusive. Consequently, the analysis of contemporary debates necessitates more evidence and reflection. From a research perspective, various caveats should be considered when interpreting current debates about scholars under attack.

Firstly, it is far from clear what we are actually talking about when addressing hostility, hate, anti-science, harassment, etc. In the literature, we find a wide variety of definitions and concepts from different disciplinary backgrounds and theoretical perspectives. However, the various strands of this research have so far paid insufficient attention to one another.

Secondly, the development of a more systematic empirical picture of attacks against scientists is still in progress, with research in this area still at a deficient stage. The field is characterised by case studies and qualitative research methods, which are rarely integrated. The absence of robust empirical evidence poses challenges in conducting cross-study comparisons and evaluating the scope and severity of the phenomenon. Reliable assessments of whether attacks on scientists are increasing over time are hardly possible [Gauchat, 2012].

Thirdly, extant evidence suggests that antagonism towards science resists simple black-and-white interpretations. Instead, it is embedded in broader societal developments and changing media ecosystems [Fähnrich, 2021; Mede & Schäfer, 2020; Jasanoff, 2002; Limoges, 1993]. In this context, attacks on researchers must be understood in the light of communicative polarisation in which political and epistemic authority is increasingly contested.

Fourthly, based on the available evidence, hostility does not affect the scientific community uniformly; indeed, some fields are more severely affected, and some academic groups have fewer means of resistance. The vulnerability of researchers is significantly influenced by their gender, nationality, ethnicity, seniority, disciplinary field, and institutional position. International comparisons further emphasise this point: experiences of hostility towards

scientists differ markedly across national contexts, political cultures, and science systems [Rutjens et al., 2022; Nisbet, 2005].

Fifthly, the prevailing discourse in this regard is predominantly oriented towards the experiences and consequences for those affected. But, a comprehensive understanding also requires attention to the actors behind hostile practices and their motivations. Existing research indicates that underlying factors contributing to hostility towards science include ideological opposition, political mobilisation, distrust in institutions, and strategic attempts to gain visibility [Oksanen, 2026; Rekker, 2021; Altenmüller et al., 2024]. But there is still too little evidence about those actors and rationales on the "dark side" to paint a systematic picture.

Finally, hostility does not only produce negative systemic effects. In certain instances, confrontational dynamics have been observed to result in increasing public visibility, the mobilisation of counter-publics [Lukan & Fecher, 2026] or the intensification of endeavours aimed at exposing mis- and disinformation [Anderson et al., 2026]. Handling public backlash well and withstanding its detrimental effects can also be rewarding for science communicators and can foster agency and resilience [Mede & Volk, 2026]. While acknowledging these dynamics does not negate the personal and professional repercussions for those targeted, it does, however, impede conventional assessments and necessitate more diversified analytical perspectives.

To address these issues, this JCOM commentary set aims to contribute to a broader understanding of hostility towards science as it brings different strands of research, including different disciplinary and national perspectives, scopes of analysis, as well as conceptual and methodological approaches together. As a starting point, we offer a working definition that reflects this perspective and may help to pave the way for a more systematic and nuanced debate. We use the term hostility towards science to describe: "*Persistent or situational practices, discourses, and actions that (intentionally or unintentionally) delegitimise or devalue scientific knowledge, methods, actors, or institutions by undermining their authority, credibility, or integrity. In this understanding, hostility towards science is highly situated in, and particularly relates to, politicised and mediated public arenas.*"

With this working definition, we aim to distinguish hostility from legitimate scepticism or critique. The understanding foregrounds intent, mode, and effect: hostility towards science manifests when engagement with science shifts from the critical evaluation of claims to the undermining of scientific authority or the intimidation of those who represent it. The perspective remains broad enough to encompass diverse expressions ranging from strategic campaigns of denial and populist rhetoric to harassment, incivility, and personal attacks against researchers. By framing hostility towards science as a highly relational and contextually situated phenomenon, this perspective allows for analytical flexibility across disciplines and issue areas, offering a shared reference point for comparison and helping to develop a broader understanding of the phenomenon.

2 ▪ Introducing the commentaries: experiences, contexts and responses

Building on this conceptual orientation, this JCOM commentary set brings together nine articles from different disciplinary backgrounds. The contributions span experiences and

authors from Europe and the United States, as well as the Global South — including Venezuela and South Africa. They thus mirror distinct forms of hostility towards science depending on democratic traditions, levels of institutional trust, legal protections, and the historical trajectory of science-society relations. The commentaries provide innovative empirical assessments using a variety of methods, offer conceptual explications, and develop ways to advance research and practice. Some focus on the emotional and professional consequences of online harassment or misinformation, while others foreground organisational, legal, or policy-related dimensions. Together, the contributions demonstrate that scholars under attack are active agents who continuously negotiate visibility, responsibility and risk in politicised public arenas.

Drawing on international collaboration spanning Australia, the United States, Mexico, Kenya, and Europe, the article Walking the Line: Balancing the Benefits of Public Engagement Against the Risks of Harassment and Attack examines the growing risks faced by scientists and communicators when engaging with the public. Egelhofer et al. [2026] explore how the increasing demand for engagement intersects with rising harassment and political backlash. They also propose strategies to foster resilience while maintaining constructive dialogue.

Looking at the situation in Latin America, the commentary The Erosion of Academic Freedom in Venezuela by Villalobos Fontalvo and Gomez Gamboa [2026] examines the gap between the recognition of academic freedom as a human right and its erosion under authoritarian regimes, using Venezuela as a key example. It shows how state policies and repression restrict research, expression, and the circulation of knowledge. The piece highlights weaknesses in current protections and proposes ways to strengthen academic freedom and democratic science communication in the Americas.

Oksanen [2026] examines in his article The Price of Speaking Out and helps to draw a European Landscape of Online Harassment. The contribution examines online harassment across multiple European countries, including Finland, France, Germany, Ireland, Italy, and Poland. Using survey data, the author highlights the prevalence, distribution, and consequences of harassment among academics. He identifies risk factors such as public engagement and disciplinary background and calls for stronger institutional and cultural responses.

Blümel and Brandt [2026] discuss how increasing societal polarisation contributes to attacks on researchers in their contribution Dealing with Societal Conflicts: Attacks Against Researchers as Effects of Polarised Debates. They situate these dynamics within broader political and social conflicts and discuss their implications for science-society relations.

The article Beyond Incivility: Supporting Scientists' Efforts to Correct Misinformation Online [Anderson et al., 2026] takes a United States perspective and investigates the motivations and barriers to correcting misinformation on social media. The authors emphasise the importance of deliberative aspiration — particularly among women scientists — and offer recommendations for institutional support to sustain public engagement in contentious online spaces.

Eizmendi-Iraola and Peña-Fernandez [2026] present a paper entitled From Visibility to Vulnerability: How Women Scientists Face Gendered Hostility in Science Communication, focusing on Spain. Their commentary reveals how media visibility can expose particularly women researchers to gendered forms of hostility, including attacks on their competence

and sexist remarks. The authors emphasise structural gender inequalities and call for institutional policies grounded in a gender-sensitive perspective.

In their contribution, The Engagement Paradox: How Negative Feedback Shapes Visibility-Oriented Science Communication on TikTok, Lukan and Fecher [2026] draw on interviews with social scientists to explore how researchers experience internet hostility on TikTok. Based in Slovenia and Germany, the authors introduce the concept of the "engagement paradox", whereby negative feedback simultaneously serves as both a source of validation and a driver of visibility in platform-based communication — and thus can have unexpected side effects.

The article Scientists under Fire: Lessons from the Omicron Case by Waddilove et al. [2026] examines the case of scientists in South Africa who identified the Omicron variant of SARS-CoV-2. Drawing on insights from interviews, the authors analyse the backlash faced by two scientists — one with extensive experience in public communication and the other with less experience — after sharing their findings, exploring the forms and impacts of public hostility. The text reflects on the broader implications for science communication in politically sensitive contexts, emphasising the need for protective and supportive structures.

The commentary Beyond Expectation: Institutional and Structural Gaps in Supporting Scholars Engaged in Public Science Communication by Schmitt and Reich [2026] addresses systemic shortcomings in the support institutions provide to scholars engaged in public science. The contribution highlights the discrepancy between the expectations placed on researchers and the structural conditions that influence their capacity to participate safely and effectively in science communication practice.

3 ▪ Ways forward

This JCOM commentary set aims to contribute to a more nuanced, structured and globally informed understanding of hostility towards science by bringing together diverse voices and contexts. The commentaries also highlight a number of persistent research gaps that warrant further systematic investigation. These include, among others:

- the lack of longitudinal data on the intensity, forms and consequences of science hostility;
- the need for comparative and cross-cultural research on exposure, vulnerability and resilience;
- unresolved conceptual boundaries between criticism, scepticism and hostility;
- limited empirical evidence about the actors, motivations, and organisational structures behind attacks on scientists;
- insufficient evidence on the effectiveness of institutional support mechanisms and policy interventions.

Addressing these gaps will require more interdisciplinary collaboration, methodological innovation, and closer dialogue between researchers, institutions, and policymakers. We hope that this collection will provide a point of reference for this endeavour.

Unlike conventional research articles, commentaries facilitate reflection on emerging phenomena, conceptual debates, and lived experiences that are not yet fully captured by standardised methodologies. Through this section, we aim to promote a more reflective and analytically robust discourse on hostility towards science and scientists — one that recognises risks without resorting to alarmism and supports public engagement as a fundamental aspect of democratic knowledge societies.

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About the authors

Birte Fähnrich is Adjunct Professor at the Institute for Media and Communication Studies at Freie Universität Berlin. Birte is also employed as a senior policy officer at the German Federal Ministry of Reseach, Technology and Space. Her research focusses on (strategic) communication at the intersection of science and politics, activism and advocacy, and organizational communication.

birte.faehnrich@fu-berlin.de

Carla Almeida is a science communicator and researcher at the Museu da Vida Fiocruz, in Rio de Janeiro, Brazil, where she teaches on the Diploma Course in Communication and

Popularization of Science and on the Master's in Communication of Science, Technology and Health. In her research, Almeida focuses on science-theatre and science, media and society.

almeidacarla@gmail.com

Clemens Blümel is a sociologist, specialising in the sociological studies of science and technology. His research interests include: science and technology studies, innovation studies, network analysis, governance of biomedicine (with a specific focus on synthetic biology), as well as studies into digital scholarly practices. Currently, Clemens is a project leader at the German Centre for Higher Education Research and Science Studies.

bluemel@dzhw.eu

Daniel Edler is Director of Research, Evaluation and Information Management at Brazil's National Secretariat on Drug Policies and Asset Management (SENAD/MJSP) and a postdoctoral fellow at the State University of Rio de Janeiro (UERJ). He is also a research associate at the Centre for the Study of Violence at the University of São Paulo (NEV/USP) and at the Group of Studies of New Illegalisms at Fluminense Federal University (GENI/UFF). He holds a PhD in Politics and International Studies from King's College London.

danieledler@usp.br

Benedikt Fecher is the Managing Director of Wissenschaft im Dialog. He is a science researcher and previously headed the 'Knowledge & Society' research programme at the Alexander von Humboldt Institute for Internet and Society. His research focuses on issues at the intersection of technology, science and society. His main areas of interest include open science, science communication and evaluation.

benedikt.fecher@w-i-d.de

Niels G. Mede (PhD University of Zurich) is Assistant Professor of Science Communication in the Strategic Communication Group at Wageningen University & Research (WUR), The Netherlands. His work focuses on public opinion and communication about science and science-related issues, criticism and harassment of scientists, digital media, and survey methods.

niels.mede@wur.nl

Nataliia Sokolovska is head of the research programme "Knowledge and Society". She works on the interface between academia, policymaking and society and is interested in ways to provide better decision-making based on evidence from research. Nataliia is also co-editor of the blog journal Elephant in the lab, which takes a critical look at the scientific system. Prior to her position at HIIG, Nataliia gained extensive experience in online journalism and worked as an editor and project manager in the Ukrainian and Russian departments of Deutsche Welle.

nataliia.sokolovska@hiig.de

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