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Editorial: Evidence-based science communication in the COVID-19 era

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Editorial on the Research Topic Evidence-based science communication in the COVID-19 era

When [Jensen and Gerber \(2020\)](#) introduced *Evidence-Based Science Communication* (EBSC) in January 2020, no one could have anticipated how a global pandemic would change the world only a few weeks after its publication. The public health crisis that unfurled in spring and summer 2020 generated an unprecedented level of uncertainty about the public communication of science and its influence on regulatory decisions to deal with the pandemic. This was the backdrop for the decision by Frontiers to follow up on the original EBSC article with an entire Research Topic to discuss the implications of the concept for the pandemic and beyond. In total, we were grateful that we could accept and publish 10 manuscripts and 2 additional data reports by 56 authors in total.

All contributions were based on the EBSC premise that it is pivotal to understand and apply effective and inclusive means of science communication for modern society to deal with pressing societal challenges, such as the global public health emergency created by COVID-19. The question at stake was literally how human lives could be saved by acknowledging decades of social and behavioral science research that have provided us with a breadth of relevant evidence, alongside decades of lessons learned from experiments in practice.

Throughout the pandemic, governmental authorities worldwide struggled with public skepticism against mitigation measures such as mask-wearing, curfews, and, later, vaccinations — all of which could only be as effective as people's willingness to comply with the recommendations or regulations. The work published by [Jensen et al.](#) addressed exactly this key challenge. Their representative survey of the German population provides a thorough empirical analysis of predictors and outcomes associated with people's conspiracy beliefs about COVID-19 vaccinations and their attitudes toward mitigation measures, respectively. In coherence with the best available evidence on conspiracy mindedness, the study revealed correlations with trust in scientific and governmental information sources, respondents' self-assessment of being informed about science, and general conspiracy mindedness.

To analyse public health efforts in countering dis- and misinformation about COVID-19, [Madvig et al.](#) examined messages posted on the Danish Health Authority's Facebook page during the early months of the pandemic. The case study reveals an "invisible majority" quietly engaging with information on the page, while at the same time, communication staff at the Danish Health Authority dealt with the complaints and frustration of a clear minority, culminating in outright trolling once vaccinations came onto the agenda. Perhaps, the authors conclude, this form of debate with a minority is the price to pay for informing the majority via social media.

In this context of dealing with misinformation, the pandemic also emphasized how important it is to engage a wide variety of stakeholders. [Judd and McKinnon](#) concluded from their comprehensive literature review that, despite social inequalities manifesting also within the structures of science communication at large, there is very limited available evidence to guide our decisions as to which diverse, marginalized, and/or excluded groups to engage and the most effective ways of doing this. Despite increased research efforts recently being directed to issues of equity, diversity, and inclusion in science communication, the authors do not consider this attention to be "equitably distributed across historically under-served and minoritised audiences," which is why it did not sufficiently catalyze the systemic change "required to create inclusive science communication theory and practice."

One of the approaches to make public health communication more effective and inclusive is the use of visualizations for health literacy, which is why [Jarreau et al.](#) created a series of illustrated (sequential art) courses, so-called "flashcards," to conduct a survey experiment. They showed the illustrations to 1,775 health app users and tried to analyse potential effects on the participants' attitudes and intentions toward COVID-19. The study showed that viewing the flashcards was associated with improved self-efficacy and changes in the participants' behavioral intentions toward prevention.

Such visualizations of complex scientific processes and data in particular have been used particularly often in documentary films and cinema more generally. Yet what do we really know about how audiences respond to such visualizations? An essay by [Jensen et al.](#), published as part of this Research Topic, synthesized relevant research literature, highlighting key findings, research gaps, and directions for future investigation. The authors identified recurring methodological limitations in the existing body of evidence, thus confirming the research-practice divide as described in the EBSC model. Specifically, this article highlights the disconnect between film producers' focus on audiences and the under-developed research literature on audience responses. Nonetheless, the essay describes several broadly relevant findings relating to intelligibility, film content, and immersion.

The pandemic also reminded us how most science communication efforts lack methodologically robust ways of assessing effectiveness and impact in practice. By analyzing various evaluation reports and conducting a survey, [Ziegler et al.](#) provided further proof for this lack of evidence. Practitioners, however,

should also not be expected to become scholars of evaluation, the authors argue, which is why new forms of collaboration are needed. They recommend determining at which point external experts should be involved in evaluation and where to draw the line between evaluation and research.

Not only as part of impact evaluation but also far beyond, online surveys are now among the most commonly used methods in science communication research, particularly because they seem so easy and cheap to deploy. However, the temptation comes with a long list of pitfalls and limitations that many researchers do not seem to be sufficiently aware of, as [Kennedy et al.](#) suggest. They explain key principles of survey design and provide a best-practice guide on how to ensure data quality even when deploying surveys under time pressure in a public health crisis such as COVID-19. In one such survey during the pandemic, [Gibson et al.](#) showed that the sampled U.S. citizens' intent to act more environmentally consciously was correlated with their social media use and certain demographic characteristics.

A rare glimpse behind the scenes of social research was provided by the coordinators of eight science communication projects funded as part of the same EU programme ("Science with and for Society," SwafS). [Roche et al.](#) not only summarized their insights about changes in science-society relations during the pandemic but also shared how the global health crisis forced all eight projects to adapt their approaches, also discussing the subsequent implications for science communication policy and research funding.

The most recent contribution to our Research Topic by [Marín-González et al.](#) suggests that the pandemic has not changed researchers' views on interacting with the news media directly (in this case, academics and medical professionals from southern Europe involved in COVID-19 research themselves).

While the coronavirus reminded societies worldwide drastically of the importance of science communication in general, most contributions to this Research Topic have also emphasized the need for a quality assurance discourse and much more effective transfer mechanisms between scholarship and practice. The journey toward a more evidence-based science communication has clearly only just begun.

Author contributions

AG: Conceptualization, Writing—original draft, Writing—review and editing.

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Conflict of interest

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