



Editorial: Science in a Time of Crisis: Communication, Engagement and the Lived Experience of the COVID-19 Pandemic

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Editorial on the Research Topic

Science in a Time of Crisis: Communication, Engagement and the Lived Experience of the COVID-19 Pandemic

When we opened the call for this Research Topic in the summer of 2020, we never imagined that nearly 2 years later, we would be nearing 500 Million COVID cases worldwide, still debating COVID restrictions, continuing to argue about vaccine mandates, and wondering when or even if we'll see a final coronavirus surge or variant. The editors of this Research Topic have shared experiences, including multiple national lockdowns, quarantines due to exposure, or potential exposure. We have experienced separation from family and friends during times of love and loss and we have seen the rise of physical violence as a response to restrictions, which we have never witnessed before. In other ways, our lived experiences reflect the diversity of the countries where we live, with divergent political discourse about science and risk, different local/national mask requirements or bans, and diverse responses to COVID vaccines.

The articles in this Research Topic also reflect a diversity of experiences and a diversity of epistemological, theoretical, and methodological approaches, ranging from discourse analysis (Fernandes) to surveys (Motoki et al.) and from experimental research (Anderson and Sivakumar) to content analysis (Massarani and Neves). This collection emphasizes different domains of research and science communication practice, including the rhetoric of scientific communication (Schneider), public participation/democratic decision making (Prettner et al.), media and science journalism (Davies; Massarani and Neves; Oliveira et al.), risk perceptions and uncertainty (Anderson and Sivakumar; Fernandes), and scientific literacy (Motoki et al.). Taken together, the goal of this Research Topic is to contribute to the literature on social dimensions of COVID-19 by examining how communication relates to attitudes, practices, and values at critical times of high risk, high stakes, and prolonged uncertainty (Funtowicz and Ravetz, 1993).

In many ways this collection of articles also underlines the challenge of analyzing wicked problems in the making. This collection offer insights gathered at a specific moment in time, i.e., in the early phase of the pandemic, and the sense that researchers made of that moment of uncertainty, evolving risk, and confusion. These papers were written at a time when knowledge about the virus

was only beginning to emerge, when the vaccine was more a hope than a reality, and when most people thought of the COVID crisis as an episode rather than a long moment in our history. As a result, this collection offers both a careful analysis of the specific communicative situation indicative of the early phase of the pandemic and a way to reflect back on how, we as researchers, used specific framings and tacit assumptions when doing our analysis. Moreover, this collection offers a chance for us to learn and reflect on how difficult it is to develop adequate and effective responses to a global health crisis. The case of vaccines is a good example of how challenges emerged and evolved. In the early phase, the development of the vaccine was framed positively and appeared to generate hope; yet once in place, we saw the emergence of debates on vaccination mandates, concerns about vaccine efficacy, and uncertainty about the very status of the vaccine. Also, at least in the European context, while the call for expert-based policy making was loud in the early phase, uncertainty, complexity, and divergence dominates public debate today.

At the outset of the pandemic, we were hopeful, as Fearon et al. (2020) suggested, that this “pivotal moment for trust in science” would not be wasted. We wondered if the pandemic would be a bridging event; one that encouraged a new wave of social unity, focused on protecting human lives and building community. We expected the pandemic to contribute to heightened public attention on science and science policy. Indeed, prominent medical researchers, such as Dr. Maria Van Kerkhove (WHO) and Dr. Anthony Fauci (CDC), as well as many others in different national contexts, received considerable media attention throughout the pandemic. We hoped that increased attention on the role of science and medical research during the pandemic might provide opportunities to facilitate a greater connection between the public and scientists, encouraging a revival of public support for and engagement with science during a global crisis. A recent report by the Wellcome Global Monitor, based on a survey of more than 119,000 people in 113 countries, suggests that trust in science and scientists increased from 2018 to 2020 (Gallup, 2020). Yet the rise in trust was uneven, with greater increases among individuals with little self-reported knowledge of science and those with greater confidence in their national government (Gallup, 2020). Like these results, cases in this Research Topic emphasize the incredible complexity of responses to science and scientists during a global pandemic; highlight ways in which the connection between scientists and the public is mediated by political leaders and the media; and affirm that the role of science in society remains contested ground, shaped by divergent cultural and political perspectives.

“Citizens have a stake in the scientific advice that translates into policies” because the outcomes of these policies “directly affect their lives” (Prettner et al., results, para 4). Despite calls for citizen involvement in policy making and a robust body of scholarship and practice on public engagement in science, articles in this Research Topic suggest that government outreach and scientific communication about COVID, particularly in the U.S., the U.K, and Europe, were dominated by top-down, technocratic messaging strategies in the early phase of the COVID crisis. The technocratic approach generally

prioritizes scientific expertise, establishing science as the basis/justification for policy decisions. For example, Prettner et al. cited multiple claims and statements made by the Dutch Prime minister and other representatives of the Dutch government presenting experts as reliable, trustworthy sources of information and thus, the “right” group to make decisions and suggest solutions to the COVID pandemic. This framing often portrayed experts as deserving of “blind faith,” and as the COVID pandemic went on much longer than expected, this framing became the locus of highest contestation across many countries.

The implications and limitations of this adherence to technoscientific framing for public understanding was also explored in this Research Topic. Beall et al. found that among U.S. respondents, technoscientific framing increased the perceived validity of a scientific study for conservatives and lowered the validity for liberals. While technoscientific framing was only slightly effective in increasing the perceived validity of scientific findings, regulatory framing had no effect. The “staging of science” by the Dutch government, including their exclusionary approach to political deliberations and scientific discussions (i.e., not publishing transcripts or sharing meeting minutes) contributed to public criticism and perceptions of a secretive elite (Prettner et al.). Relying on diagnostic and prognostic framing, Prettner et al. demonstrate how the Dutch government’s emphasis on science was widely questioned, challenged, and contested on social media. Anderson and Sivakumar examined the relationship between trust in government agencies and individual interpretations of risk, finding that efforts to downplay risk increased perceived risks among individuals who trust government agencies. This finding highlights the complexities inherent in communicating trustworthiness and building or repairing trust during a crisis event.

Highlighting the complexity of a one-size-fits all approach and the diversity of responses we described at the top of this editorial, there were also differences in the use and application of technoscientific-framing across countries. Massarani and Neves documented greater reliance on the technoscientific approach in the U.S. and the UK compared to an emphasis on political frames, manipulation, and distortion of information in Brazil. Oliveira et al. present evidence of strong criticisms of scientific claims and health institutions’ recommendations by the Brazilian political elite, including President Jair Bolsonaro and his son. Thus, in this case, scientific sources used technoscientific framing to refute statements made by prominent political actors. These studies illustrate the crucial role of political leaders and their ideologies in the dynamics of communication on COVID-19.

Within this Research Topic, social media emerged as a key space for critical engagement, resistance, and contestation of science, politics, and social action. Politicians, academics, science communicators, and citizens took to Twitter and other social media sites to learn, to document individual and collective experiences, to make sense of what was happening, and to refute others’ claims (Davies; Oliveira et al.; Prettner et al.). YouTube and other online video platforms were popular places to go to see videos of protests, tributes to health workers, and watch question-and-answer sessions about COVID, local

policies, and/or how to make a mask out of a cotton t-shirt (Oliveira et al.; Schneider). Academia and academic life were also performed through social media during the COVID crisis. Davies highlights scholars' use of social media networks and technologies to document their experiences of disruption, express care for others, seek support or advice, and to critique inequity and injustice within and outside of academia.

Scholarship on legacy media, especially newspapers, is heavily represented in several pieces in this Research Topic (Delicado and Rowland; Fernandes; Massarani and Neves; Oliveira et al.). In some instances COVID-19 coverage gave journalism a new breath of life as in many countries there was an increase in citizens' trust in conventional media sources, especially "quality" media outlets (Gallup, 2020). This adds to the social responsibility of legacy media in reporting scientific knowledge and its limits; in creating images of scientists; in examining science's social contexts, contingencies and constraints; and in bridging the science-policy nexus. The COVID pandemic has also posed new challenges and ethical questions for journalism: for instance, in the midst of an unprecedented public health emergency, how does news coverage shape public images of science? how can journalists address scientific uncertainty and risk and what happens when they do? Delicado and Rowland examined more than 600 images, many from newspapers in Portugal and Spain, to evaluate representations of science early in the pandemic. Their findings suggest that newspaper images were more eclectic than those curated for government websites. Most of the images they identified relied on stereotypes of science performed at a laboratory bench and confined to a test tube. While the images of scientists were egalitarian in terms of gender, the authors note a lack of ethnic diversity in published visual representations of scientists.

Scientific uncertainty and the framing of uncertainty by scientists and government representatives was at the core of several articles in this Research Topic. In this collection, Fernandes shows how media can discursively reconstruct scientific uncertainty and scientific error in different ways. Prettner et al.'s paper suggests that the Dutch government's framing of uncertainty evolved over the course of the pandemic, shifting from something that necessitated expert advice and control, to a factor external to expert advice, to an unavoidable force that affected expert advice and government decisions. Thus, it is not only the legacy media that reconstruct uncertainty and define it in myriad, sometimes contradictory, ways. The expert profiled in Schneider's article also normalizes the acknowledgment of uncertainty and change. This is an approach often encouraged by scholars and practitioners of risk communication (Lundgren and McMakin, 2018), but rarely exhibited by experts, likely related to the aforementioned adherence to the technoscientific approach to communication. This tension, between presenting scientists as knowledgeable experts and the need to understand and admit that scientific

expertise evolves over time, opens up important questions for future research: How can scientists remain credible and legitimate while embracing uncertainty? How do technoscientific messages that highlight different forms of uncertainty influence public perceptions of science and scientific recommendations?

Except for Brazil, all the cases studied in this Research Topic are part of the Global North. Although several Northern countries were badly affected by the pandemic, other world regions also suffered enormously and yet these regions have received less attention from media and from scholars of science and risk communication. Understanding how public health policies, communication practices and public engagement played out in India, Mexico and South Africa, but also in the different Asian countries (see current crisis in Shanghai in 2022 due to the strict zero-COVID policy and related lock-downs; or COVID around the Olympic games), is a vital task for future studies on communication. This effort would complement cross-national studies of COVID policy responses (see for example, Jasanoff et al., 2021) and highlight and develop messaging and engagement strategies that span multiple cultural perspectives and realities. Oliveira et al.'s article and many other in this Research Topic highlight the continued "monopoly of information, in the hands of the few" and most of the articles highlighted elite voices and concerns. These patterns stress the need for scholars like us, in the fields of science and risk communication, to broaden our lens beyond elite groups in an effort to mitigate existing inequalities and democratize the potential impact of our work.

As we close this Research Topic, there remain important opportunities for additional research on the barriers to inclusive and diverse representations of science and scientists in media and society and the innovative use of social networks and web-based media platforms to shape and challenge cultural symbols of academia and institutionalized inequalities. Likewise, the future of science communication practice, in the media and elsewhere, will continue to be influenced by the losses, experiences, insights, and challenges that the pandemic created. Identifying, analyzing and understanding these impacts will remain a key task for communication research and practice.

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DW, AC, and UF contributed equally to the conceptualization of this manuscript. The authors contributed to the writing of this article in the order they are presented. All authors contributed to the article and approved the submitted version.

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