

Dispelling Doubt: Effective Scientific Journalism in a Time of Polarisation

In an era of rapidly evolving information and ever-burgeoning scientific innovations, it can be disheartening to witness the persistent lack of trust in the scientific process and establishment particularly in regard to the COVID-19 pandemic. The need to communicate information regarding the virus, especially ways to prevent and treat symptoms in a simple and robust manner, was paramount, at the beginning of the pandemic. To address this need the authors wrote a short piece stressing the importance of scientific journalism in this endeavour suggesting that...

Science journalists have a fundamental responsibility in being accurate and unbiased but also have a social responsibility to inform, enlighten, and to serve as a bridge between the scientific establishment and the public. Science journalists must become beneficent mediators in order to help create an understandable and comprehensible stream of information for consumers to digest with the goal of humanising findings and both engaging and enticing the public toward action – even if that action is a simple acknowledgment of the truth.¹

With the new demands of the pandemic scientific reporting adjusted, with contributions becoming more frequent, timely, readily digestible and accessible. Despite this, public skepticism about science has remained a constant and significant hurdle to overcome, and in that sense scientific journalism has not met the simple goal of moving the public toward action and the acknowledgment of facts. The main reason for this failure was that those who were disseminating scientific information largely were ignorant of the powerful forces that undermined their efforts, and when they were aware they were ill-equipped to address these deleterious efforts. Furthermore, science writers are often unfamiliar with effective communication styles that take into account the psychology of persuasion, social identity and epistemic differences amongst their potential audience members.

Prior to the epidemic there was a large push to educate lay people in regard to general scientific literacy in hopes of building a public trust in scientific institutions and ultimately improving public health. This was mainly accomplished by science writers who became very proficient in interpreting and translating complex technological concepts into simple, understandable and consumable language. More recently those undertaking this lofty task have vastly underestimated the role of social identity and partisan politics in both information consumption, evaluation and adoption. The focus of science writers must now shift to making scientific information not only more easily consumable but also more relatable and relevant to a politically hyperpolarised society. By employing clear and concise language, to providing relatable examples, engaging commentary, acknowledging differences while focusing on a shared set of values, desires and concerns that emphasize self-benefit, and matching the delivery of their message to the epistemic style of the recipient,

science writers will be better able to convey complex scientific concepts in a manner that resonates with diverse audiences across a wide spectrum of political ideologies and hopefully rebuild trust in the process.

One major challenge in building this public trust continues to lie in the public's limited understanding of the prolonged and complicated nature of the scientific process. Science is a repetitive and self-correcting endeavour, subject to rigorous scrutiny and advancing from constant review and revision. Inappropriately, many lay individuals expect immediate answers and highly conclusive results, which of course can lead to hasty judgments and premature conclusions. Incomplete findings or contradictory information are often misinterpreted as confusion, a lack of credibility or deliberate deception, creating a loop of confirmation bias in which recipients only access information that supports their pre-existing beliefs, thus perpetuating a distrust in science as a whole. It is the responsibility of scientific journalism to educate the public about research methodology, fostering patience and appreciation for the meticulous process that underpins scientific progress.

One beneficial aspect of the pandemic is that the general public has become more interested and knowledgeable about the scientific process as whole. When the pandemic was still in its infancy there were concerns about studies being untrustworthy and not having adequate data, or that studies were being conducted hastily with small numbers of participants. Beyond that, there was controversy from conflicting results reported early on in the pandemic. To the scientifically literate eye, this was nothing more than what can be expected in the scientific process, but to lay people this was more concerning. Many lay people were unsure as to what information was trustworthy and whether they should adopt this information into their routine lives. This concern was warranted, as it was not unusual to see conflicting news reports making opposing claims: certain masks work while others don't, debating whether disinfecting groceries was necessary, touting unproven remedies, and even reporting/projecting mortality rates for different strains of COVID-19. The influx of the large volume of often disparate information that the public was expected to stay current on became simply overwhelming for most.

In an attempt to provide the public with quick and easy access to the most up to date findings, and to promote transparency, more formal scientific reporting adapted rapidly. Part of this involved ushering in a new era of unprecedented access to scientific preprints, allowing virtually anyone to observe the ongoing methodology within the scientific community. Up until this time this type and extent of information was reserved solely for those few researchers working on these studies, those reviewing these studies as journal referees, and journal editors. Although welcomed, this type of access also raised concerns about the credibility of many of these preprints, as they had not yet undergone the rigorous scrutiny of peer review.

Unfortunately, this concern seemed to generalise to all scientific studies and not just unreviewed preprints. The release of preprints

aimed to provide a glimpse into the ongoing efforts and newest findings on a wide variety of topics regarding the virus, whether these studies focused on mortality rates, the gestation period of the virus, or the effectiveness of masks. Importantly it is noteworthy that these studies, although not yet peer-reviewed, were still fundamentally valid and the overall findings did not vary substantively after review. Nelson et al., compared COVID-19 evidence presented in one hundred preprints to changes after peer review in subsequent journal publication. They reported a point estimate value change of an average of 6% during review; that the correlation between estimate values before and after review was high, and significantly that there was no systematic trends - which all support the value and robustness of evidence in preprints during the COVID-19 pandemic.²

While scientific journalism continued to evolve in its quest to disseminate information as rapidly as the spread of the virus, some peculiar geographic patterns began to emerge within different demographics, such as those observed across various counties within the United States (US). In the initial wave of COVID-19, it was noted that a majority of infections occurred in geographic regions characterized by a more politically liberal population. This pattern might be attributed to the higher population density of these areas, as many large cities in the US tend to lean leftward politically.³ However, as more scientific knowledge became available and precautions like masks, social distancing, and eventually vaccines became more widespread and promoted by good science reporting, this trend began to diminish.

Another distinct pattern emerged indicating higher infection rates in US counties that were relatively more politically conservative. There are multiple factors contributing to this trend, but one leading explanation suggests that this stems from the intense partisan nature of COVID-19 with disparate messages coming from media influencers and politicians who were unable or unwilling to provide accurate and reliable information about the ongoing pandemic. A particularly noteworthy correlation was observed between vaccination rates and subsequent mortality rates in these predominantly conservative counties, compared to counties characterised by opposing political views, which had higher vaccination rates and consequent lower mortality rates.³ This pattern suggests leading to disproportionate infections and deaths based on political ideology. Long gone are the days when beliefs about science and those about politics were seen as being independent. Unfortunately, science and politics now appear to be intrinsically intertwined.

This reckless disregard for science has been dismaying to the scientific community as it subverts the established efforts it has gone through to create an effective way to inform the public. The intersection of political/media influences with a once in a lifetime pandemic has created the opportunity for the proliferation of misguided misinformation but also the active spread of deliberate disinformation. This has created an environment that necessitates more efficient and effective science reporting to not educate the masses but to ensure that this information is presented in a manner that matches a person's epistemic style of thinking, and sociopolitical camp. This approach acknowledges the fact that it is often easier to simply reject novel scientific information off-hand than to reject one's own pre-existing political ideology, beliefs, attitudes and social identity. This rejection of science is an effective way to decrease the cognitive dissonance brought on by the novel scientific information often delivered by those seen as having unknown or poor credibility from another camp.

Therefore it is not enough simply to put out scientifically valid information and expect this to be readily adopted in this time of

heightened political polarisation. Of note researchers reported strong evidence of polarisation in beliefs about COVID-19 treatments even among highly trained professionals who were making treatment decisions regarding hydroxychloroquine and ivermectin.⁴ It appears that not only do people consume different types of information (confirmation bias), but they also evaluate and interpret this information in a politically biased manner, and the scientists themselves are not immune to this tendency.

Findings such as this may provide some insight into the causes of regional or even country wide variation in the use of putative politicised treatments, and suggest that this variation is driven not solely by patient preference but also by physician beliefs. This research implies that there are apparent limits of expertise and exposure to scientific evidence in the presence of such implying that those with more scientific literacy may simply be more sophisticated at bolstering their pre-existing beliefs by hand picking information that adopts to their established views/values. Therefore, journalists will need to take this into account and be sure to appeal to the common values of both liberals and conservatives by emphasizing desirable actions and consequences that are important across the spectrum.

Although a bit surprising the above findings are really driven home by researchers who reported that higher exposure to conservatism in a given congressional district was associated with higher COVID-19 age-standardized mortality rates, a finding that held even after taking into account things like social characteristics, and hospital ICU capacity.⁵ Using models adjusting for political/social metrics and vaccination rates, a more conservative voter political lean independently remained significantly associated with a higher COVID-19 mortality rate. This was seen for the overall time period for COVID as well as separately for both Delta and Omicron variant waves, and even for models that adjusted for baseline health and obesity/diabetes. This distressing data suggests that it is not enough for health organisations or journalists to simply put out reliable and valid information to their intended audience but that their messages need to be tailored to the recipient's ideology making self-benefit appeals in an effort to diminish political differences in ideology.⁶

The issue of weeding out accurate and reliable studies and parsing scientific information remains a challenge for most science consumers. Science is still actively being conducted, and there are still new findings almost daily regarding COVID-19; however, we are no longer "in the dark," as some would say in terms of some basic facts. The data is clear that masks do help reduce the spread of the virus; that infections from contaminated surfaces is substantially less within 24 hours; and the mortality rate of COVID is higher than that of the seasonal influenza. However, misinformation and disinformation remain so prevalent that the FDA has found it necessary to dedicate an official webpage to stopping the spread of misinformation related to COVID by debunking falsehoods related to vaccine impurities, effectiveness, linkages to monkey pox and repeated vaccination, amongst other topics.⁷

Despite efforts such as this and the abundance of accurate, reliable, and accessible information from credible sources, large portions of the public still do not have trust in basic facts. This leads to what could be an even bigger issue that is yet to be truly faced: the lack of trust in scientists themselves. This distrust is not new, tracing back long before the pandemic emerged. Science was once practiced by a select elevated to near-mythical status, admired for their incomprehensible measurements and awe-inspiring adventures like Darwin's voyage or Humboldt's climate experiments. Scientists were often romanticized along with their studies. However, science



shifted in the twentieth century with the rise of “Big Science”, funded largely by wealthy nations with science being taught in massive lecture halls and becoming more mainstream. While some scientists pursued societally beneficial endeavours, others focused on more deleterious or purely fiscal applications, and this shift may have altered the public perception of science primarily from exploration to gain, transforming scientists from “Gentleman Naturalists” to government-funded lab coats, inadvertently leading to issues of source credibility with many refusing to believe the objectivity and credibility of those delivering the message.

Rebuilding trust in science is a continuous endeavour that will require efforts from the scientific community, science writers and the public. In a world flooded with information, it is imperative to make scientific media more accessible and comprehensible to the everyday

person. It is vital to educate the public about the intricacies and iterative nature of the scientific process, dispelling misconceptions and fostering patience. But it is not enough to simply convey knowledge in an accurate and easily digestible manner. By employing relatable examples, engaging rhetoric, and appealing to a shared self-benevolence and values while acknowledging an understanding of competing viewpoints, science writers must bridge the gap between complex scientific concepts and public understanding/acceptance in a highly partisan environment.⁸ Effective science reporting must acknowledge and address the confirmation bias and differences in data evaluation and interpretation as being an inexplicable result of a hyperpolarised society. To address this, it is important to utilise what is known about the psychology of persuasion and communication, which often means communicating in a calm, warmer, respectful and inclusive manner emphasizing common ground and shared identity, and importantly to craft both the content of messages and the delivery approach to the intended recipients.

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