

## The communication of scientific research in news media: Contemporary challenges and opportunities

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**Abstract**

This commentary is based on a talk that was presented during the Australian Science Communicators Conference in February 2020. As a Ph.D. student, my research is focused on the investigation of methods of communicating science to public audiences. Within science communication, this talk discussed a case study that was completed as part of my Ph.D. This commentary details a review of a portion of the literature that I completed for my Ph.D. related to the misreporting of scientific research in news media. This review of the literature is relevant to the contemporary environment of scientific research reported in news media. I conclude by suggesting that given the challenging science and news media landscapes; scientists, science communicators and journalists must work more effectively together to uphold the integrity of their professions and to ensure that scientific research is more accurately reported in news media. Additionally, I argue that more research is needed that seeks to understand the relationships between scientists, science communicators and journalists to enable more effective working relationships between these professionals.

**Keywords**

Science and media

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**Commentary**

Science communication in practice can be described as the use of suitable dialogue, expertise, activities and channels to generate one or more of the following outcomes: awareness, interest, understanding, opinions and enjoyment of science [Burns, O'Connor and Stocklmayer, 2003]. Additionally, science communication can involve scientists, intermediaries and members of the public and this communication of science may be between specific groups or between large audiences [Burns, O'Connor and Stocklmayer, 2003]. Obvious examples of science communication to both public and more specific audiences include: mass media

(television, newspapers, news websites, social media, radio), scientific museum exhibitions, public events (such as the Pint of Science) [Pint of Science Australia, 2020], government lead public consultations, academic journal articles and academic and professional conferences [Australian Science Communicators, 2020].

Within the field of science communication, emphasis has previously been placed on improving the methods of communication by focusing on the content, delivery and accessibility of information [Iyengar and Massey, 2019]. However, poor strategies of communicating science are no longer thought to be the leading contributor to suspicion of science or misunderstandings of science. The polarisation of both the media and political landscapes are thought to be at the core of science communication issues [Iyengar and Massey, 2019]. This is especially relevant for controversial or political topics within science [Drummond and Fischhoff, 2017] such as climate change, vaccination, genetically modified foods and population level screening for disease. In addition to these challenges, there is wavering levels of public trust for scientists, scientific institutions, journalists and media.

In research conducted by the Pew Research Centre in the United States of America, 21% of respondents had a great deal of trust in scientists to act in the best interests of the public and 55% had a fair amount of trust in scientists to act in the best interests of the public [Funk, 2017]. Similarly, when the Pew Research Centre asked participants about their confidence of scientific leaders, 44% had a great deal of confidence in scientific leaders [Funk and Kennedy, 2019]. So, the good news is that the public do have confidence in scientists and scientific institutions. However, the not so good news is that the public do not have this same confidence in the media. Eight percent of respondents said they had great confidence in the news media to act in the best interests of the public [Funk and Kennedy, 2019] and 13% of respondents said they had great confidence in those running news media organisations [Funk and Kennedy, 2019]. However, despite trust in news media being relatively low, research conducted by Elderman showed that trust in journalism has increased [Ries et al., 2018]. This is an important finding because it is thought that the majority of the new-news content injected into the 24-hour news cycle still originates from the traditional news media written by traditional journalists [Muller, 2017]. However, social media are proving to break news before traditional media in some situations [Beaumont, 2009]. Additionally, despite a level of trust in journalism, the public are not necessarily engaging with the news. Research conducted by Elderman showed that 50% of respondents engaged with news less than weekly [Ries et al., 2018]. Additionally, Elderman reported that more than half of people do not know how to tell quality journalism from fake news and more than half of people are finding it harder to tell if a reputable news organisation have produced the news that they are consuming [Ries et al., 2018]. Whilst it is good news that the public trust scientists and journalists, contemporary challenges persist with social media breaking news, significant proportions of people not engaging with news or knowing what news sources they can rely on.

Despite these reported issues on the public's trust and confidence in scientists and the media, it is important to remember that the reporting of scientific research in news media remains imperative to society. Media both shape and reflect public opinion [Caulfield et al., 2014]. The public receive a significant amount of their scientific and medical information from the media [Caulfield et al., 2014; Phillips et al., 1991]. Media coverage of scientific and medical issues can influence

government policy [King, Schneer and White, 2017] and impact healthcare decision making [Johnson, 1998]. Those who receive their medical information from the media are not limited to general audiences but include content experts such as healthcare professionals and policy makers [Geller, Bernhardt and Holtzman, 2002]. Additionally, it has been argued that, scientists, many of who are funded by the government, should work toward a model that makes their research findings accessible [Finch et al., 2013]. This accessibility would mean additional opportunities for scientific research to become available to journalists to be written about in news media. However, as a significant proportion of scientific research remains restricted via journal paywalls, the public rely on journalists to report on science with journalists having limited access to journal articles and having to rely solely on information such as press releases.

News media articles covering scientific research that are based on press releases are known to be problematic. For example, it has been shown that, science and health related news that was based on a press release, the main sources of exaggeration, were the press releases themselves [Sumner, Vivian-Griffiths, Boivin, Williams, Bott et al., 2016]. This is in contradiction to the belief that journalists may be largely responsible for the misreporting of scientific news [Dentzer, 2009]. Establishing the source of misreporting or exaggerating of scientific research in news media is important because, misrepresented scientific and medical research can have adverse outcomes [Sumner, Vivian-Griffiths, Boivin, Williams, Venetis et al., 2014]. Both wide reaching and detrimental misreporting (the questioned association between smoking and lung cancer in the 1950s) [Oreskes and Conway, 2010] and superficially harmless misreporting (eating six chocolate bars a week can reduce the risk of a heart attack in 2017) [Donnelly, 2017] can be confusing and disrupt the public's trust in science [Sumner, Vivian-Griffiths, Boivin, Williams, Venetis et al., 2014]. However, established information about science or health is not always considered news worthy [Bomlitz and Brezis, 2008].

What is considered by scientists to be the strongest form of evidence, a systematic review of independent studies, is less likely to be reported by the media than other weaker levels of evidence [Bomlitz and Brezis, 2008]. Novel unproven scientific findings are reported in the media more often than established findings [Bomlitz and Brezis, 2008]. For example, it is known that newspapers under-report randomised trials compared to less rigorous observational studies [Bartlett, Sterne and Egger, 2002] and that news media reporting on health stories often ignore the quality of research, exaggerate potential benefits, inadequately cover risks and costs of treatment and do not consistently identify balanced expert spokespersons [Wilson et al., 2010]. Whilst all this does sound negative, there does exist opportunities for scientists, science communicators and journalists to produce content for the public about science that is constructive.

As the public, including content experts, receive their scientific information from the media and as media [Geller, Bernhardt and Holtzman, 2002] and coverage of scientific and medical issues can influence government policy [King, Schneer and White, 2017] and impact healthcare decision making [Johnson, 1998] more research is needed to understand the contemporary challenges and opportunities in communicating science to the public via media. Given contemporary challenges such as the polarisation of both the media and political landscapes [Iyengar and Massey, 2019] and the levels of public trust and confidence in science [Funk, 2017]

and media being threatened [Funk and Kennedy, 2019], it is important that the public are provided with balanced, accurate and critically interpreted information. The challenges that exist in the face of this contemporary environment are not for scientists or journalists to battle on their own. Instead, these challenges must be tackled by way of scientists, science communicators and journalists working collaboratively to produce constructive content that the public are confident in and feel are a trustworthy source. Collaboration to establish trustworthy content will be imperative with the new wave of communication challenges such as fake news, social media bots, trolls [Iyengar and Massey, 2019] and to the integrity of the professions of scientists, science communicators and journalists.

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