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Science, Celebrities, and
Public Engagement



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In April 2015, two prominent public scientists demonstrated, in radically different ways, the rising power of celebrity in science. That month, the talk show host and surgeon Mehmet Oz stood at the center of a maelstrom of controversy after a group of doctors told Columbia's dean of medicine they were dismayed that Oz remained on the medical school's faculty. They accused Oz of promulgating unproven health advice for personal gain. They argued that the public was being "misled and endangered." *Vox* magazine in the same month called Oz "arguably the most influential health professional in America," but lamented that over his career he had "turned away from science and embraced fame." As a consequence, on health advice, Oz was "leading America adrift."

The same month, astrophysicist Neil deGrasse Tyson debuted his *StarTalk* show on the National Geographic Channel. Reviewing the show, the *Los Angeles Times* called Tyson—head of New York's Hayden Planetarium, popular science writer, and experienced host of TV science shows—"the American face of science." The show gave him a platform to interview celebrities, such as film director Christopher Nolan and media mogul Arianna Huffington, about the influence of science in their lives. Having a scientist's perspective on late-night television was, the paper argued, "an idea whose time has seemingly come and, in a time when many people with influence believe that established facts are things to be voted on, an idea that can't come too soon."

Oz and Tyson are emblematic of a cultural trend: the larger role now played by celebrities in public discussions of science and science policy. To make sense of this development, we have written books that examine the ways celebrities have

influenced public understanding of science and science policy. *Is Gwyneth Paltrow Wrong About Everything? When Celebrity Culture and Science Clash* examines how celebrities from outside science—such as the actress Paltrow, Jenny McCarthy, Jessica Alba, and the self-styled Food Babe Vani Hari—make science-based claims and provide advice, much of which has little evidence to back it up. *The New Celebrity Scientists* examines a set of prominent scientists—including Tyson—to show how they have become famous and use their celebrity to spread scientific ideas through society. Based on our research, we argue that the influence wielded by such celebrities is unlikely to recede, and the pervasive nature of fame in modern life means scientists should view celebrity culture as an opportunity to engage citizens in science policy debates.

Researchers in science communication have long known that once citizens leave formal education, the primary source for information about science becomes the media, with audiences now seeking out information from Internet search engines and social media, such as Facebook, Twitter, and Instagram. Traditional and new media celebrity culture has become increasingly influential, as a seemingly endless stream of celebrities endorses products (books, shampoos), lifestyles (vegan, gluten-free), and ideas (pro-labeling of genetically modified organisms [GMOs], anti-vaccination).

At the same time, celebrities can use their visibility to inject scientific ideas into contested political discussions, drawing attention to the issue and mobilizing public action. As physicist Lawrence Krauss argued in the *Bulletin of the Atomic Scientists*, scientists with a public audience have an opportunity, and often a responsibility, to use their public profile to help set the terms of debate on science policy. Those scientists, he wrote, can "help combat scientific nonsense" and also "help steer public policy discussions toward decision making based on empirical evidence and sound theory."

Celebrities have more than just a strong cultural presence.

According to a comprehensive analysis in the *British Medical Journal*, celebrities also have substantial impact. They have a significant influence on a range of health behaviors, for example, cosmetic surgery, cancer screening, tanning, smoking—and even suicide rates. Moreover, studies have shown that celebrities have helped promote the marketing of unproven therapies and products, such as in the provision of questionable stem cell treatments. Although it is difficult to quantify, there seems little doubt that celebrities have played a role in the growth of trends such as colonics, gluten-free diets, juicing, and a range of other—largely evidence-free—health practices, such as cleansing and detox diets, all of which currently have markets worth billions of dollars.

Exploring the role and impact of celebrities on the public engagement with science and science policy, therefore, is not a frivolous endeavor. Celebrity statements about science can mislead or harm. But many incidences do not have clear-cut outcomes, producing instead cultural effects that are complex, contradictory, and contentious. Yet all of these examples of celebrity science create opportunities for the scientific community to engage with citizens.

Assessing effects

There are innumerable examples of celebrity culture having a clearly harmful impact on popular views of science, particularly in the realm of health. This can be seen most sharply in the anti-vaccination movement. Vaccination rates in many developed countries have been falling. Although there are diverse reasons for this decline, Seth Mnookin argued in *The Panic Virus* that the circulation of scientifically inaccurate information—facilitated by celebrities such as Jenny McCarthy and her former romantic partner, actor Jim Carrey—has played a significant role in this clearly harmful social trend.

Research studies have shown that other areas where the celebrity voice has hurt public discourse include the perceived health value of gluten-free diets and high-dose vitamins and the health risks of GMOs. In all of these cases, the celebrities with scientifically unsupported views have played a prominent role, clouding public debates and fostering health practices that are not supported by the available evidence.

Yet celebrities have also had beneficial effects on public discourse about science and health. Earvin “Magic” Johnson’s 1991 revelation that he was HIV positive, for example, had an effect on public attitudes toward the condition. Adult men surveyed after the announcement, according to one study, were more concerned about an acquaintance getting HIV, were interested in getting more information about HIV and AIDS, and were more likely to discuss HIV and AIDS with friends. But the wider public response is varied and not always clear-cut. Adolescents, by contrast, had a mixed response to Johnson’s announcement. A study found that a majority of adolescents said Johnson’s announcement increased their awareness of the condition, but fewer than half said the

revelation had changed their perception about their own risk of contracting HIV.

Celebrities who advocate on environmental issues also have impact. When he collected his 2016 Oscar for best actor, Leonardo DiCaprio used his acceptance speech to describe climate change as “the most urgent threat facing our entire species.” As described by the *Washington Post*, the actor had long been outspoken about environmental concerns, such as ocean conservation. These interventions have impact. According to one study of celebrities and climate change news, stars, such as DiCaprio, serve as a hook for journalists, allowing mass-market publications such as *People*, *Variety*, and *Cosmopolitan* to take environmental issues to a wider audience. Celebrity conservationists also have complex—and often contentious—public impact. David Suzuki, for example, used his fame to bring public attention to conservation biology. A household name in Canada, he argued over decades of media work for environmental protection of species and ecosystems, notably through his work as anchor of the long-running television show *The Nature of Things*. A book on conservationists who became celebrities, *Nature’s Saviours*, found that in the early 1990s, Suzuki used his fame and influence to establish the Vancouver-based David Suzuki Foundation, a nonprofit that works with business and government to, among other goals, protect the climate and nature.

Even when celebrities engage in public discussions that are thoughtful, relatively informed, and done with the best of intentions, the social impact can be complex, multi-factorial, and less than ideal. The prominent US journalist Katie Couric, for example, used her cultural capital to raise awareness of colon cancer. In 2000 Couric, who lost her husband to the disease, underwent a live colonoscopy on the *Today* show as part of a week-long series that promoted colon cancer awareness. Health researchers in one study found her campaign had a significant impact on people’s use of the procedure. The number of colonoscopies performed by each of 4,000 gastrointestinal endoscopists increased from 15 per month before the campaign to 18 per month after it, an increase that lasted for nine months. The researchers called the behavior change the “Katie Couric effect.” Although the impact of Couric’s actions have largely been praised, other scholars raised concerns that it increased worry and may have led to some expensive and inappropriate medical interventions.

A similarly complex case was actress Angelina Jolie’s decision to get genetic testing and prophylactic surgery for breast cancer. Although Jolie’s disclosures have, in general, been viewed in a positive light, their actual impact on public health, cancer prevention, and knowledge appears to be mixed. One study, for example, found the “Jolie effect” did increase awareness and information-seeking about cancer, but another found that her announcement was “not associated with improved understanding.” This kind of complex response, one scholar noted in the *British Medical Journal*, is evident after other celebrity

disclosures of a cancer diagnosis or cancer screening. Indeed, public health scholars writing in the *Journal of the National Cancer Institute* suggested that celebrities should refrain from involvement in complex topics, such as cancer screening, and limit their health advice and advocacy to topics that are clear and relatively uncontroversial, such as advising citizens not to smoke or not to drive while intoxicated.

Scientists have also consciously adapted to celebrity culture to make themselves and their ideas part of public discussion. Tyson, for example, has been a career-long advocate for scientific literacy. But he has also used his media profile to advocate for his particular scientific interests. In 2012, he lobbied in various venues for an increase in funding for the National Aeronautics and Space Administration. The head of New York's Hayden Planetarium made the case for space in congressional testimony, in his book *Space Chronicles*, in a long feature in *Foreign Affairs*, in media interviews, and on *Late Night with Jimmy Fallon*. Tyson, who sat on the space agency's advisory board, used his fame to engage citizens with his arguments about the social, political, and economic value of space exploration.

Celebrity and public engagement

As these examples demonstrate, celebrities and celebrity culture have an influential role in shaping how citizens and policy makers encounter and make sense of complicated, often health-related science. Scientific institutions, therefore, should not dismiss celebrity or merely mourn its claimed harmful effects on scientific understanding. The scientific enterprise, instead, should view occasions where celebrity and science meet as opportunities to engage audiences in a deep way about science and scientific thinking.

There are several ways to do this. First, the scientific community needs to speak out when a celebrity issues an inaccurate or misleading pronouncement on scientific issues. But decades of research has shown that communicating facts on their own has little impact on audience understanding. Science communication researchers have long identified a fundamental principle underlying the communication of scientific ideas and information. To have a meaningful impact, communication must also address an audience's values, ideologies, and motivations. With this knowledge as a foundation, scientists should not see their work as just fact-correction or fact-checking. They should view each piece of communication as an opportunity to engage in a discussion of the issues. Their long-term aim should be to build trust with citizens. An alliance with certain celebrities who have large followings and are motivated by a similar commitment to rigor and evidence has the potential to assist in this effort.

As an example of the benefits of active engagement, *Vox* reported in October 2015 that Oz met with health professionals to understand how his show affects public health. According to *Vox*, the new season of the show featured more

skepticism, more debunking of dubious products, and more explanations of the scientific process. The reporter concluded that *The Dr. Oz Show* was "hardly an exemplar of scientific thinking," but its host "does seem to be taking seriously his promise to improve the rigor of his show."

Second, the scientific community should invest in scientists who can become a trusted public voice. In its Nov. 26, 2008, edition, *Discover* magazine named Tyson as one of its 10 most influential people in science. That didn't happen by accident. His reputation was forged over decades, and the scientific community invested in his success. For example, the National Science Foundation awarded him more than \$1 million to develop the *StarTalk* radio show that became the basis for his 2015 National Geographic TV show.

Third, those of us who study and write about the role of celebrities, and celebrity scientists, need to be clear about how uncertainties, cognitive biases, and self-interest can fuzz the boundaries between science and politics. Experts often disagree over issues, such as breast cancer screening, the severity of and best ways to address climate change, or the most important priorities for public investment in science. Moreover, social science research on scientific controversies, such as those surrounding GMOs or vaccines, shows that people's reasons for their beliefs may have less to do with not understanding science than with cultural or political factors. Celebrities and scientists alike who link scientific facts to prescribed ways of acting may thus often themselves be using, consciously or unconsciously, the mantle of science to advance agendas that have a subjective element. In addition, celebrities can play a powerful role in framing what a particular position on a scientific issue—such as GMOs or climate change—signals to the world. Being for or against GMO labeling, for example, can help to define the type of individual you are. It becomes part of your personal brand. This is one reason the same individual can reject the scientific consensus around GMOs and accept it on climate change.

Finally, we need to continue to research the nature and impact of celebrity in public engagement with science. Celebrity culture isn't going away. Indeed, social media will likely intensify its sway and ubiquity. According to one recent study of science communication, audiences are motivated to look for scientific information when they feel strongly about an issue, when they notice it covered in the media, and when they have to address it at school or work. The rise in celebrity culture will doubtless create multiple and regular opportunities for scientists and clinicians to spread evidence-based and credible scientific ideas as part of an ongoing public discussion of science—if the scientific community is prepared and willing to engage.

Timothy Caulfield is a Canada Research Chair in Health Law and Policy at the Faculty of Law and the School of Public Health, University of Alberta, and Declan Fahy is a lecturer in the School of Communications, Dublin City University.