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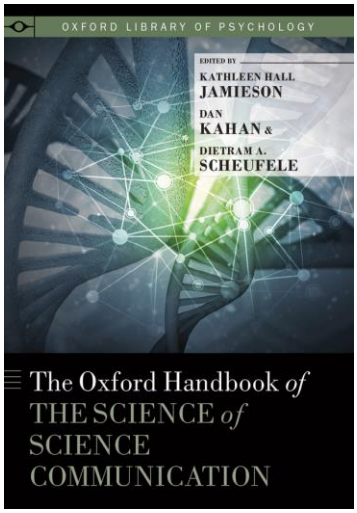
Handbook of the Science of Science Communication published by Oxford University Press

Experts examine the perception gap between scientists and public and best practices in communicating science

From vaccinations to climate change, nuclear power to fracking, the weight of scientific evidence and the perceptions of the public are often deeply at odds. Political controversies arise over issues in which the science has long been settled as well as those involving emerging technologies for which the best available evidence is needed as a guide for thoughtful policy decisions. The rapidly changing media environment further complicates the communication of sound science.

To illuminate these and other issues, Oxford University Press has published **The Oxford Handbook of the Science of Science Communication**, which draws on the expertise of leading scholars in six countries. The handbook is the first in a series to be overseen by the Annenberg Public Policy Center's program in the Science of Science Communication.

Aimed at researchers, scholars, students, and those on the front lines who must convey complex scientific ideas to policy makers and the public, the handbook offers up-to-date scholarship on communicating consequential and controversial science topics from nanotechnology and genetically modified organisms (GMOs) to the need for vaccinations.



The handbook offers empirical approaches to communicating science – the *science* of science communication – with evidence derived by the scientific method. It is edited by Kathleen Hall Jamieson, director of the Annenberg Public Policy Center of the University of Pennsylvania; Dan Kahan, a professor of law and psychology at Yale Law School; and Dietram A. Scheufele, a professor of science communication at the University of Wisconsin-Madison.

The clear communication of science is an imperative in today's world, where there's more complex science for the public to understand than any one person could reasonably know. As the three editors write: "Members of a modern democratic society must become experts not *in* any particular form [of science]… but rather *at* reliably discerning who knows what about what."

The handbook assesses the media landscape from news and entertainment to blogs and films, and the role of "elite intermediaries," including scholarly journals, museums, and foundations. It examines ways to overcome human biases such as confirmation bias and endpoint bias, which are, respectively, the tendencies to confirm one's beliefs and to put too much weight on the endpoint in a trend. It looks at the growing incidence of retractions, which has been characterized in the media as a sign that science is broken rather than as evidence that the self-correcting nature of science is working. The handbook also presents case studies that consider the specific communication challenges in discussing polarized topics such as GMOs, vaccinations, and climate change.

Jonathan F. Fanton, president of the American Academy of Arts & Sciences, calls the handbook "a comprehensive and much-needed resource for anyone concerned with the faithful and effective communication of science."

The chapters include:

- On the sources of ordinary science knowledge and extraordinary science ignorance (Dan Kahan, Yale University)
- What the public thinks and knows about science – and why it matters (William Hallman, Rutgers University)
- Science as "broken" vs. science as "self-correcting" (Joseph Hilgard and Kathleen Hall Jamieson, University of Pennsylvania)
- Is there a retraction problem? And, if so, what do we know about how it is and can be addressed? (Adam Marcus and Ivan Oransky, Retraction Watch)
- The role of funding organizations: Foundations (Elizabeth Good Christopherson, Rita Allen Foundation)
- The (changing) nature of scientist-media interactions (Sara Yeo, University of Utah, and Dominique Brossard, University of Wisconsin-Madison)
- New models of knowledge-based journalism (Matthew Nisbet, Northeastern University, and Declan Fahy, Dublin City University, Ireland)
- How narrative functions in entertainment to communicate science (Martin Kaplan, University of Southern California, and Michael Dahlstrom, Iowa State University)
- Using frames to make scientific communication more effective (James Druckman, Northwestern University, and Arthur Lupia, University of Michigan)
- Understanding and overcoming fear of the unnatural in discussion of GMOs (Robert Lull, University of Pennsylvania, and Dietram Scheufele, University of Wisconsin-Madison)

The chapters emerged from a 2014 conference opening the Science of Science Communication program at the Annenberg Public Policy Center. The policy center was established in 1994 to educate the public and policy makers about the media's role in advancing public understanding of political, health, and science issues at the local, state, and federal levels.

About the editors:

Kathleen Hall Jamieson is the Elizabeth Ware Packard Professor at the Annenberg School for Communication of the University of Pennsylvania and the Walter and Leonore Annenberg Director of its Annenberg Public Policy Center. The author of four award-winning Oxford University Press books on political and press communications, she is co-founder of FactCheck.org, which researches the veracity of claims made by political players. Its SciCheck feature was launched in 2015 to expose the misuse of scientific evidence in political discourse.

Dan Kahan is the Elizabeth K. Dollard Professor of Law and Professor of Psychology at Yale Law School. He is a member of the Cultural Cognition Project, an interdisciplinary team of scholars who use empirical methods to examine the impact of group values on perceptions of risk and science communication.

Dietram A. Scheufele is the John E. Ross Professor in Science Communication and Vilas Distinguished Achievement Professor at the University of Wisconsin-Madison and in the Morgridge Institute for Research. His research deals with the interface of media, policy, and public opinion. He has co-chaired the National Academies of Sciences, Engineering, and Medicine's Roundtable on Public Interfaces of the Life Sciences, and vice-chaired the recent Academies' consensus report on "Communicating science effectively: A research agenda."