

# The Science of Science Communication

**Sara K. Yeo**

Associate Professor

Department of Communication

University of Utah

[sara.yeo@utah.edu](mailto:sara.yeo@utah.edu)

 @sarakyeo

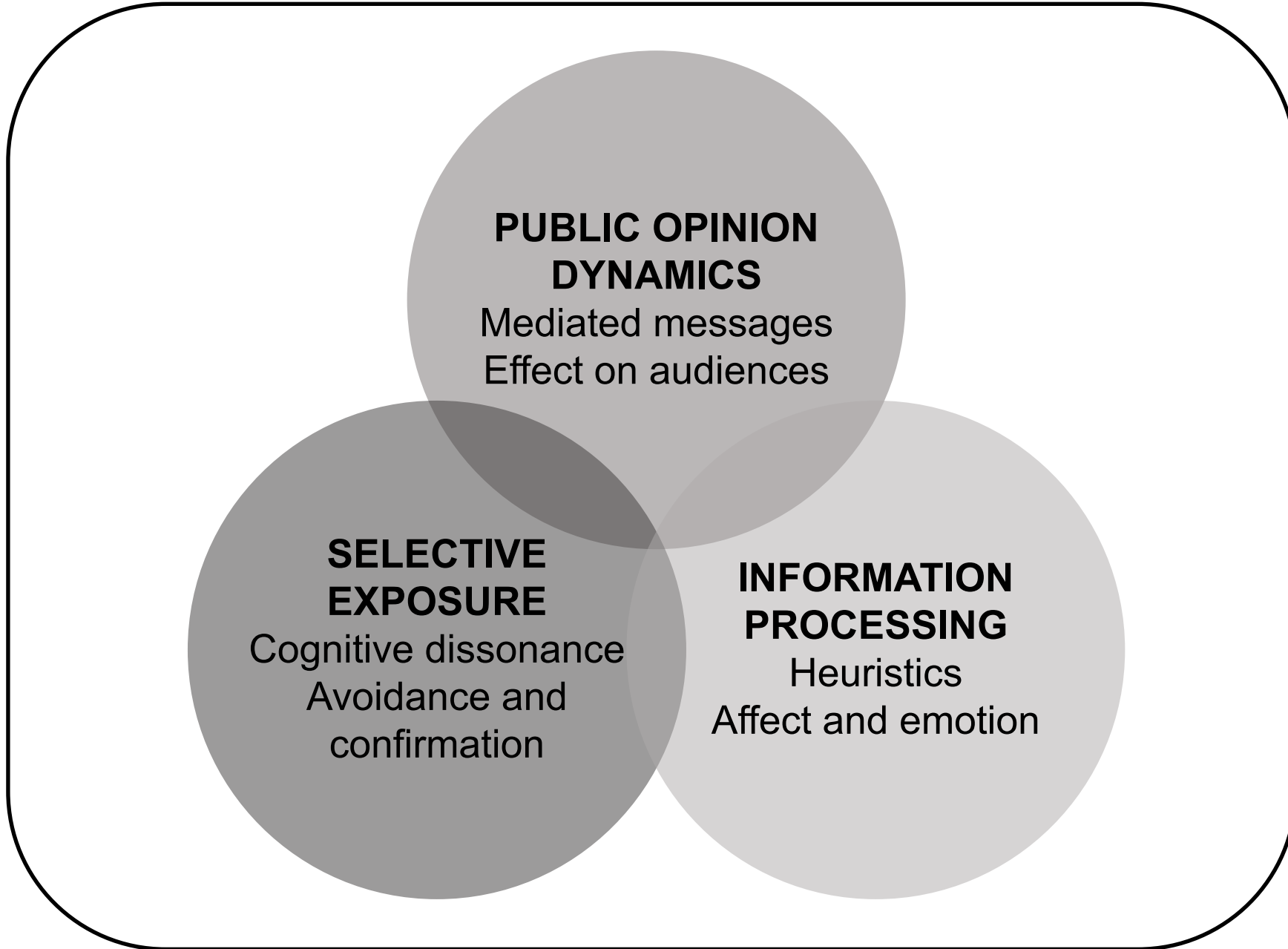


**STEM  
AMBASSADOR  
PROGRAM**  
BRIDGING SCIENCE & SOCIETY



*This material is based upon work supported by the National Science Foundation (DRL-1906864 and DRL-2120006). Any opinions, findings, conclusions, or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the NSF.*

science, environment, risk



**PUBLIC OPINION  
DYNAMICS**

Mediated messages  
Effect on audiences

**SELECTIVE  
EXPOSURE**

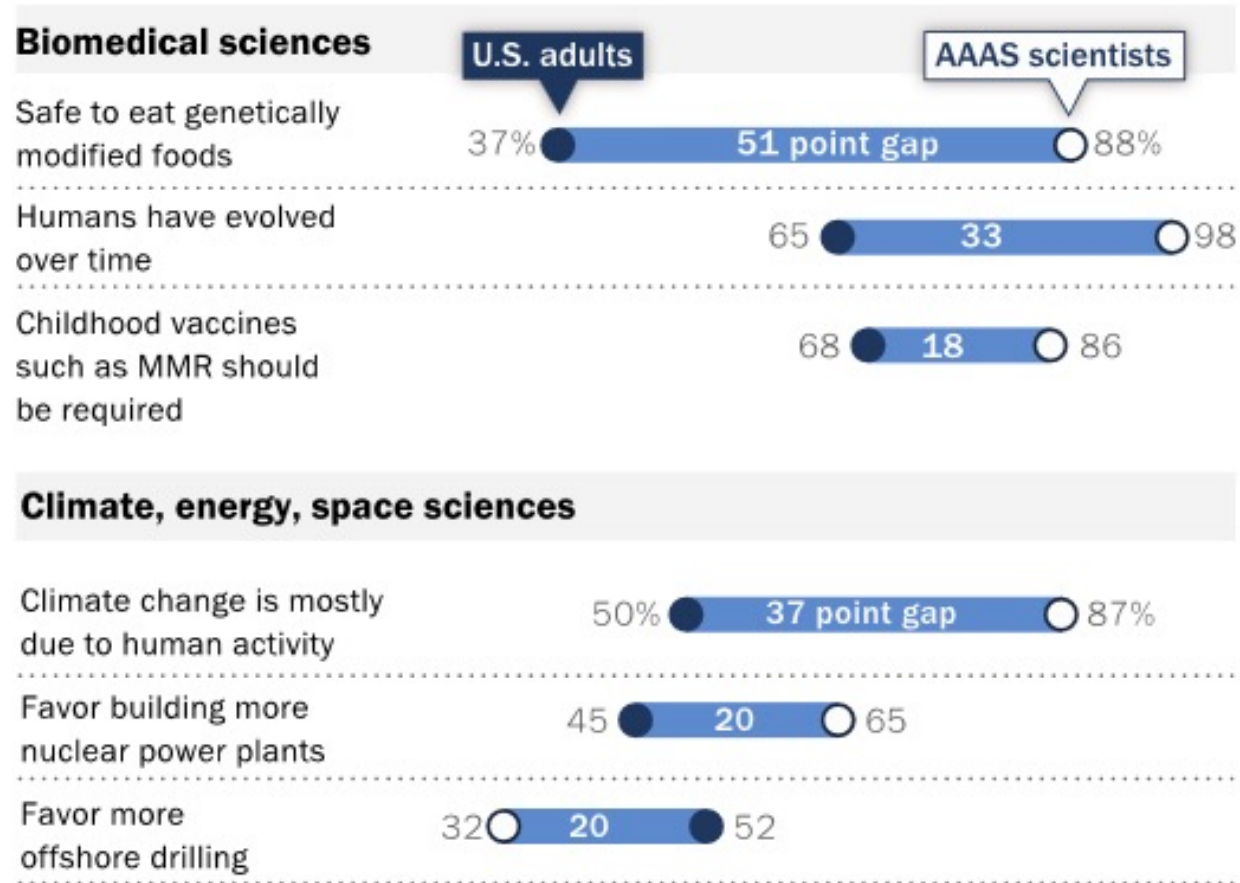
Cognitive dissonance  
Avoidance and  
confirmation

**INFORMATION  
PROCESSING**

Heuristics  
Affect and emotion

# WHY SCIENCE COMMUNICATION?

Pew Research Center. (2015). *Public and Scientists' Views on Science and Society*.



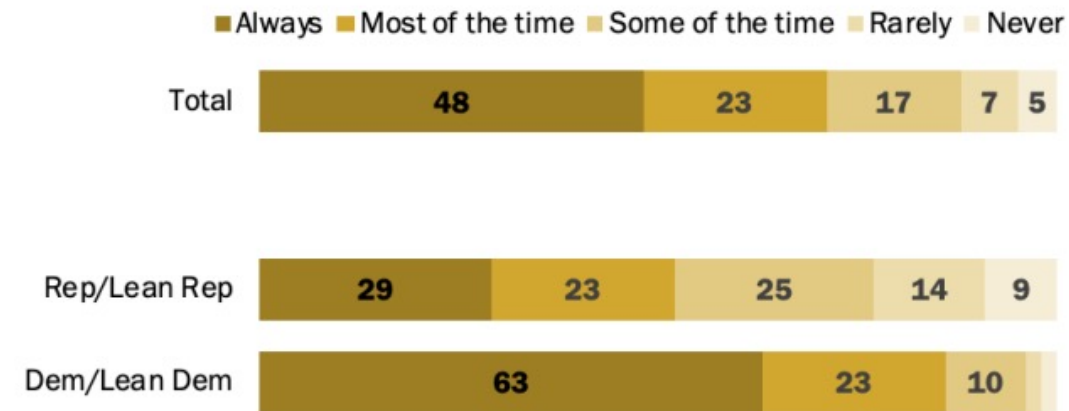
# WHY SCIENCE COMMUNICATION?

Pew Research Center. (2020). *Republicans, Democrats Move Even Further Apart in Coronavirus Concerns.*

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## About seven-in-ten Americans say masks should be worn in public places at least most of the time

*Thinking about the coronavirus and your own local area, when people in your community go to public places where they may be near others, how often do you think they should wear a mask? (%)*



Note: No answer responses not shown.

Source: Survey of U.S. adults conducted June 16-22, 2020.

PEW RESEARCH CENTER

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# SOME THINGS MAY NEVER CHANGE...

National Science Board. (2020). *Science and Engineering Indicators 2020* (NSB-2020-7). National Science Foundation.

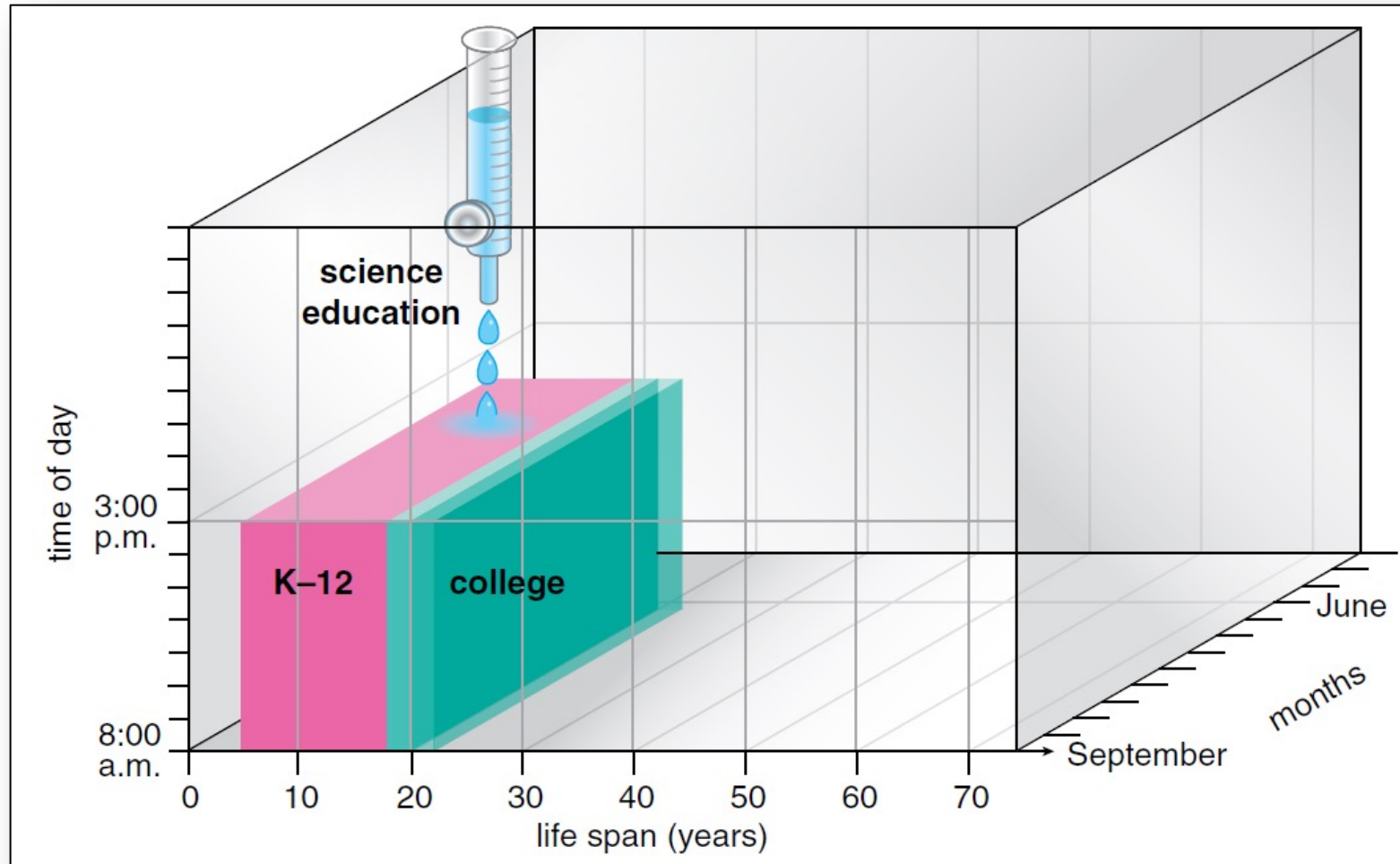
Factual knowledge is limited

Limited frameworks

Chronically distracted

# MOST OF US LEARN SCIENCE OUTSIDE THE CLASSROOM

Falk, J. H., & Dierking, L. D. (2010). The 95 percent solution: School is not where most Americans learn their science. *American Scientist*, 98(6), 486-493.



# A NEW MEDIA ENVIRONMENT



# A NEW MEDIA ENVIRONMENT

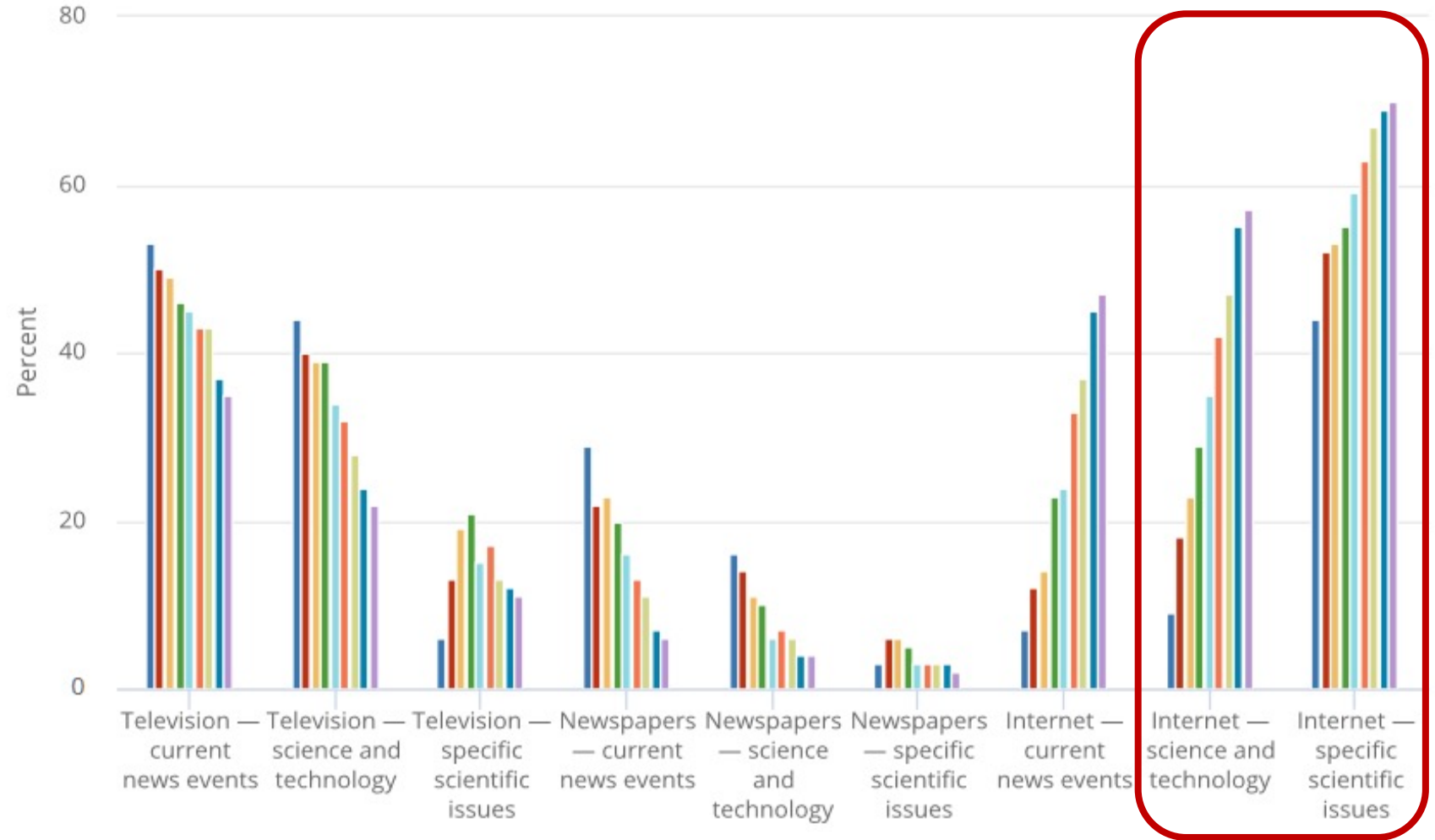


Mother Jones

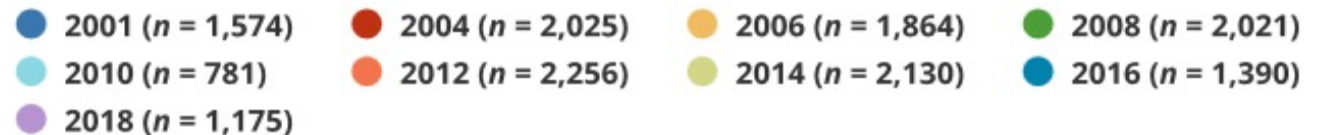




Primary source respondents used to learn about current news events, science and technology, and specific scientific issues: 2001–18



National Science Board. (2020). *Science and Engineering Indicators 2020* (No. NSB-2020-7). Arlington, VA: National Science Foundation.



# WEB-2.0 TECHNOLOGIES AND SCIENCE

**Sb ScienceBlogs™** Go to

Last 24 Hrs Life Science Physical Science Environment Humanities Education Politics Medicine

## Environment

 **Will we see shorter, more focused IPCC reports from now on? The short answer is no**  
Posted by [William M. Connolley](#) on March 4, 2015


...duced by a mostly Republican cast of sponsors in both the Senate, would require that EPA use only publicly available, ... in writing regulations and seek to remake the membership and procedures of the agency's science advisory panels"



**U.S. House prepares to vote on controversial EPA 'secret science' and science advice bills**  
Opponents say measures designed to hamper regulatory efforts  
[NEWS.SCIENCEMAG.ORG](#)

Like · Comment · Share

**New Scientist @newscientist** · 1h  
Cyborg cockroach has its nerves controlled wirelessly: [ow.ly/JVTnS](#)



RETWEETS 112 FAVORITES 73

11:30 PM - 4 Mar 2015 · Details

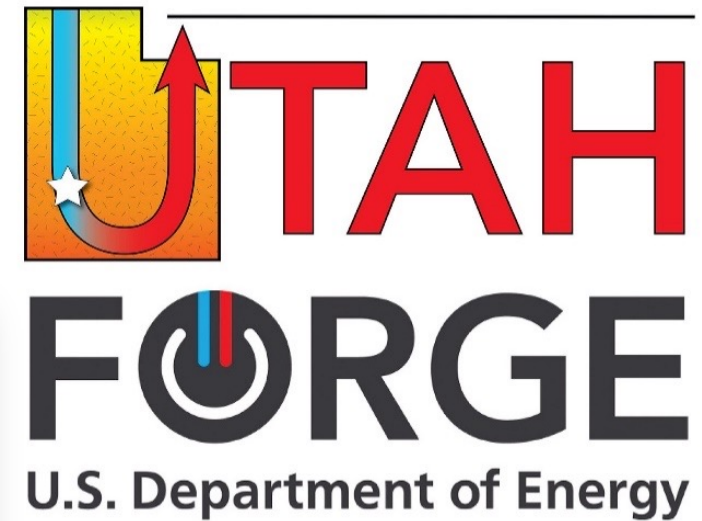
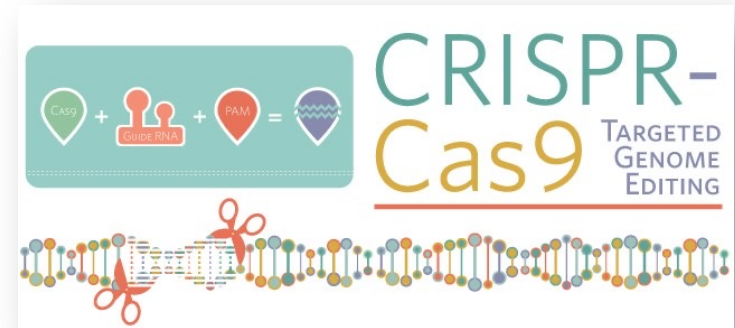
Reply to @newscientist

**Apocalypse @SteveGriffin** · 1h  
@newscientist Really, I suppose they pull wings off of flies for fun as well. Where's the morality? Sorry, I forgot, we're human & have none

# THE NATURE OF SCIENTIFIC PROBLEMS IS CHANGING

Increased pace and complexity

Concerns outpacing capacity





*“Speaking up for the importance of science to society is our only hope...”*

Leshner, A. I. (2015). Bridging the opinion gap. *Science*, 347(6221), 459.

The National Academies of  
SCIENCES • ENGINEERING • MEDICINE

REPORT

# Communicating SCIENCE Effectively

A Research Agenda

National Academies of Sciences, Engineering, and Mathematics. (2017). *Communicating Science Effectively: A Research Agenda*. Washington, D.C.: The National Academies Press.

## The Science of Science Communication

Organized by *Ralph Cicerone, Baruch Fischhoff, Alan Leshner, Barbara Schaal and Dietram Scheufele*

### Overview

This colloquium was held in Washington, D.C. May 21-22, 2012. The meeting surveyed the state of the art of empirical social science research in science communication and focused on research in psychology, decision science, mass communication, risk communication, health communication, political science, sociology, and related fields on the communication dynamics surrounding issues in science, engineering, technology, and medicine with five distinct goals:

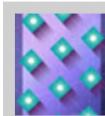
- » To improve understanding of relations between the scientific community and the public
- » To assess the scientific basis for effective communication about science
- » To strengthen ties among and between communication scientists
- » To promote greater integration of the disciplines and approaches pertaining to effective communication
- » To foster an institutional commitment to evidence-based communication science



### COLLOQUIUM LINKS

- » [General Information](#)
- » [Agenda](#)
- » [Speaker Bios](#)

## The Science of Science Communication III (SSCIII) Inspiring Novel Collaborations and Building Capacity



November 16-17, 2017; Washington, D.C.

Organized by **Karen Cook**, Stanford University; **Baruch Fischhoff**, Carnegie Mellon University; Alan Leshner, American Association for the Advancement of Science (Emeritus); and Dietram Scheufele, University of Wisconsin–Madison

## Advancing the Science and Practice of Science Communication: Misinformation About Science in the Public Sphere

Organized by: **May Berenbaum**, Dietram Scheufele, William K. Hallman, Andrew Hoffman, Liz Neeley and Czerne M. Reid

## The Science of Science Communication II

This colloquium was held in Washington, D.C. September 23-25.

**Organizers:** Ralph Cicerone, National Academy of Sciences; Baruch Fischhoff, Carnegie Mellon University, Alan Leshner, AAAS, Barbara Schaal, Washington University in St. Louis, and Dietram Scheufele, University of Wisconsin, Madison

### COLLOQUIUM LINKS

- » [Overview](#)
- » [Program Videos and Summaries](#)
- » [Speaker Bios](#)

## Reimagining Science Communication in the COVID Era and Beyond: The 5th National Academies Science Communication Colloquium

# Laughing With Science: The Influence of Audience Approval on Engagement

Science Communication  
2020, Vol. 42(2) 195–217

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Michael A. Cacciatore<sup>1</sup> ,  
Amy B. Becker<sup>2</sup>, Ashley A. Anderson<sup>3</sup>,  
and Sara K. Yeo<sup>4</sup> 

# Predicting Intentions to Engage With Scientific Messages on Twitter: The Roles of Mirth and Need for Humor

Science Communication  
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Sara K. Yeo<sup>1\*</sup> , Leona Yi-Fan Su<sup>2\*</sup>,  
Michael A. Cacciatore<sup>3</sup> ,  
Meaghan McKasy<sup>4</sup>, and Sijia Qian<sup>1</sup>

## Following science on social media: The effects of humor and source likability

Public Understanding of Science  
1–17

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Sara K. Yeo   
University of Utah, USA

Michael A. Cacciatore   
University of Georgia, USA

Leona Yi-Fan Su   
University of Illinois at Urbana-Champaign, USA

Meaghan McKasy   
Utah Valley University, USA

Liane O'Neill  
University of Utah, USA

## Scientists as comedians: The effects of humor on perceptions of scientists and scientific messages

Public Understanding of Science  
2020, Vol. 29(4) 408–418

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Sara K. Yeo   
The University of Utah, USA

Ashley A. Anderson   
Colorado State University, USA

Amy B. Becker   
Loyola University Maryland, USA

Michael A. Cacciatore   
University of Georgia, USA

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Michael A. Cacciatore  
Ashley A. Anderson

# Emotion and humor as misinformation antidotes

Sara K. Yeo<sup>a,1</sup> and Meaghan McKasy<sup>b</sup>

<https://www.pnas.org/doi/10.1073/pnas.2002484118>

<sup>a</sup>Department of Communication, University of Utah, Salt Lake City, UT 84112-0491; and <sup>b</sup>Department of Communication, Utah Valley University, Orem, UT 84058-6703

Sara K. Yeo  
University of Utah, USA

Michael A. Cacciatore  
University of Georgia, USA

Leona Yi-Fan Su  
University of Illinois at Urbana-Champaign, USA

Meaghan McKasy  
Utah Valley University, USA

Liane O'Neill  
University of Utah, USA

and scientific messages

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Sara K. Yeo  
The University of Utah, USA

Ashley A. Anderson  
Colorado State University, USA

Amy B. Becker  
Loyola University Maryland, USA

Michael A. Cacciatore  
University of Georgia, USA



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[andrew.george@utah.edu](mailto:andrew.george@utah.edu)



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