SCERN Key Science Communication Research Articles

In the Science Communication Education Research Network (SCERN), we aim to teach our undergraduate students in *evidence-based science communication* skills and practice. As such, we need to keep up with the evidence in science communication research that informs effective science communication practice! Below we provide some science communication research syntheses and articles that can be useful in science communication research, practice, and training.

1. Here are a couple of shorter guides that synthesize evidence from science communication research into easy-to-use tools to guide effective science communication practice:
   - https://lternet.edu/stories/scrree-practice-briefs/ - Engagement Practice Briefs summarizing how effective public engagement is Strategic, Cumulative, Reciprocal, Reflexive, Equitable, and Evidence-based.
   - https://www.epa.gov/risk-communication/salt-framework - EPA framework for risk communication – Strategy, Action, Learning, and Tools.
   - https://web.uri.edu/inclusivescicomm/wp-content/uploads/sites/1568/ISC-Starter-Kit_FINAL.pdf - Inclusive Science Communication starter kit from the Metcalf Institute

2. Below, find some key papers (both primary research or reviews as indicated) related to key topics in science communication:

Communicating with different types of audiences

Audiences for Science Communication in the United States, Besley, *Environmental Communication*, 2018.
- Primary research
- This article uses latent profile analysis to classify different views that Americans hold regarding science and technology

The Partisan Brain: How Dissonant Science Messages Lead Conservatives and Liberals to (Dis)Trust Science, Nisbet et al, *Annals of the American Academy of Political and Social Science*, 2015.
- Primary research
- This article uses a national online experiment to analyze audience reactions to science messages and analyzes how both conservatives and liberals to respond to evidence that is dissonant to their own ideology

What are we talking about when we are talking about the audience? Exploring the concept of audience in science communication research and education, McCarthy and Grant, *Public Understanding of Science,* 2024
- Systematic review + Survey of experts
- This article summarizes different ways we can conceptualize our science communication audience, providing tools for our students to consider when thinking about who their audience is

Placing "trust" in science: The urban–rural divide and Americans' feelings of warmth toward scientists, Krause, *Public Understanding of Science*, 2023
- Primary research
- This article analyzes survey data to show that rural Americans feel "colder" towards the scientific community

Addressing misinformation

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Countering Misinformation and Fake News Through Inoculation and Prebunking, Lewandowsky and van der Linden, *European Review of Social Psychology*, 2021.

- Review article
- This article reviews the causes and impacts of misinformation as well as summarizing both ineffective and effective strategies to address misinformation, including data showing the efficacy of prebunking.

The misinformation recognition and response model: an emerging theoretical framework for investigating antecedents to and consequences of misinformation recognition, Amazeen, *Human Communication Research,* 2024

- Review/theoretical article
- This article presents a model for individual and message factors that lead to misinformation, recognition of misinformation, and cognitive and affective responses to misinformation.

Communicating about uncertain/evolving science

The Effects of Uncertainty Frames in Three Science Communication Topics, Gustafson and Rice, *Science Communication,* 2019

- Primary research
- This article tests different ways of framing messaging about uncertain science for different topics including climate change and GMO food labeling.

Communicating Scientific Uncertainty About the COVID-19 Pandemic: Online Experimental Study of an Uncertainty-Normalizing Strategy, Han et al, *Journal of Medical Internet Research*, 2021

- Primary research
- This article shows how transparency about uncertainty can lead to audience worry – but helping normalize and explain scientific uncertainty can mitigate these effects.

How the public evaluates media representations of uncertain science: An integrated explanatory framework, Ratcliff and Wicke, *Public Understanding of Science*, 2022

- Primary research
- This article tests how different audiences respond to disclosure of uncertainty about biomedical research; beyond this data, the intro outlines a useful conceptual framework for uncertainty communication.

Model uncertainty, political contestation, and public trust in science: Evidence from the COVID-19 pandemic, Kreps and Kriner, *Science Advances*, 2020

- Primary research
- This article examines the pros and cons of emphasizing vs downplaying uncertainty and how this impacts different political affiliations of audiences.

Strategic science communication

Science communication as political communication, Scheufele, *PNAS*, 2014.

- Review article
- This article outlines the importance of audience, framing, mediated communication, and political communication in issues of science and society.

Strategic science communication on environmental issues, Nisbet and Markowitz, *AAAS*, 2016.

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- White Paper
- This article outlines how to integrate science communication, informal science learning, and strategic communication using approaches such as framing and narrative to engage with publics about environmental issues.

Strategic science communication as planned behavior: Understanding scientists' willingness to choose specific tactics, Besley et al, *PLOS One,* 2019.

- Primary research
- This article assesses different factors influencing what science communication objectives scientists choose.

Beliefs, values, emotions, and trust in science

Beliefs, values and emotions: An interactive approach to distrust in science, Furman, *Philosophical Psychology*, 2024.

- Review article
- This article approaches science communication from a philosophical approach, analyzing how beliefs, values, and emotions interact to impact people's trust in science

Risk, communication and trust: Towards an emotional understanding of trust, Engdahl and Lidskog, *Public Understanding of Science,* 2012.

- Review article
- This article uses a theoretical approaches to explain that trust is not cognitive/rational but rather relational and emotional.

Science stories as culture: experience, identity, narrative and emotion in public communication of science, Davies et al, *Journal of Science Communication (JCOM),* 2019.

- Review article
- This article outlines a conceptual basis for a cultural approach to science communication, utilizing narrative, emotions, identity, and meaning-making.

Between Evidence and Emotions: Emotional Appeals in Science Communication, Taddicken and Reif, *Media and Communication*, 2020.

- Review article – editorial for a thematic issue
- This article summarizes the emotions of science communicators, emotional(ized) content, and the emotions of science communication audiences.

Building relationships in science communciation

A Relationship-Centered and Culturally Informed Approach to Studying Misinformation on COVID-19, Malhotra, *Social Media + Society*, 2020

- Review/opinion article
- This article discusses the cultural considerations needed for friends to correct misinformation within their own social circles and social media connections.

Relationship-centered engagement bridges the divide between science and management, and enhances climate adaptation, Weiss et al, *BioScience*, 2025

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- Primary research
- This article presents findings from interviews highlighting the cultural shifts that can help promote collaboration to implement actionable science.

Empowering long-term, relational research pathways: innovation and adaptation at the speed of trust within more-than-human and human communities, Laursen et al, *Emotion, Space, and Society*, 2025.

- Review article
- This article highlights how relationships promote applied research in place-based knowledge systems.