Study suggests context in science reporting affects beliefs about, and support for, science

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How the media frame stories about science affects the public's perception about scientific accuracy and reliability, and one particular type of narrative can help ameliorate the harm to science's reputation sometimes caused by different journalistic approaches to scientific storytelling, according to a new study led by a University at Buffalo researcher.

"What our experiment shows is that the way the news media talk about science focuses too much attention on individuals in a way that doesn't accurately describe the way science actually works," says Yotam Ophir, an assistant professor of communication in UB's College of Arts and Sciences and the paper's lead author.

Ophir stresses that the public benefits from reports of scientific errors, but that benefit can be even greater if media coverage of failure includes mention that ongoing scrutiny is one of the hallmarks of the scientific enterprise.

Science is a process. It's not a set of eureka moments and brilliant discoveries. It's about a community of scholars who continuously, skeptically and constructively check each other's work, Ophir points out. And since much of the public's knowledge about science comes from the media, the absence of reporting on the community-based, self-correcting nature of science is worrisome.

"This becomes a problem when science makes mistakes—and science will inevitably make mistakes," says Ophir, an expert on the effect of media content on audiences. "When this happens, the narrative frequently shifts to a description of crisis, a moment that could lead people to lose faith in the reliability of science itself."

He says the media can better communicate the values of science by explaining how identifying and correcting scientific mistakes is evidence of a healthy scientific process. And the key is a new type of story, according to the study's findings published in the journal Public Understanding of Science.

Ophir and co-author Kathleen Hall Jamieson, a professor of communication at the University of Pennsylvania, call this story "problem explored." Its efficacy for explaining how science works emerged from their online study involving nearly 4,500 participants between the ages of 18 and 81.

To begin, the researchers performed a comprehensive content analysis. They identified that science stories generally fall into three broad categories:

- There is the "honorable quest," a story that chronicles a scientific achievement with a hero scientist who has produced reliable
and consequential knowledge.

- The "counterfeit quest" is a story that initially reports a scientific success later found to be fraudulent, unethical or methodologically flawed.
- "Science is broken" relates to issues of replicability, an inherent part of the scientific process through which scientists repeat an experiment to see if their results match those of a previous published experiment. Replicability failures are often framed as evidence that science is broken.

Ophir and Jamieson also introduced, along with a control story unrelated to science, another narrative.

"In this new condition, which we call 'problem explored,' stories of replication failures and those about prominent research that's later found to be wrong remain part of the narrative, but failures are explained to be part of the scientific process," he says.

"We found the scientific failure narratives to be most detrimental to trust in science," says Ophir. "But if you better contextualize a failure story, we found it possible to ameliorate those detrimental effects.

"Contextualizing explains the nature of science. It's this processes of reassessment and re-evaluation that makes science strong." As an example, Ophir points to the U.S. Centers for Disease Control and Prevention's temporary halting of delivery of Johnson & Johnson's COVID-19 vaccine after reports surfaced of rare clotting events in some patients.

"The vaccine received federal approval, but was then pulled. How do you talk about this without creating distrust in science?" he asks. "The cynical way would be to use the case as evidence that science doesn't work, but that's misleading. What happened is that science worked exactly as it should. Concerns arose after approval; the data was re-examined; and scientists concluded that the risks were minimal and redeployed the vaccine.

The "problem explored" narrative, in addition to putting scientific failures in context, also generates a slipstream that restores some of the lost faith resulting from "science is broken" stories.

That the "problem explored" narrative didn't surface as part of the researchers' content analysis could be due to a number of factors. News directors might question whether such stories are newsworthy. Researchers themselves might be reluctant to share stories of successful replication as opposed to more novel advances.

But it's not just the media, and Ophir says this research is not about finger pointing.

"There is an interaction between sources and journalists," he says. "The 'science is broken' story, which is relatively recent, is something that came from scientists themselves. However well intentioned, the narrative they promoted and the way journalists accepted and framed the stories created indications of scientific unreliability."

Just as Ophir says this study suggests how a contextually framed story can provide insights into a healthy scientific process, the research also speaks to a healthy relationship between scientists and journalists.

"This is not about blame," he says. "I strongly believe that journalists do their best to serve the public. It's our job as scientists to provide them with stories that better contextualize our work."


Provided by University at Buffalo