

How to Read Science News and Spot Misinformation

The internet is buzzing with the latest news on coronavirus variants, climate change, and speculation about UFOs. Unfortunately, that also means misinformation is spreading fast.

With science-related news—including unfounded rumors—being released at a blistering pace on social media, we are constantly weighing the credibility of information. But how do we reliably do that?

HEALTHY SKEPTICISM

In your science classes, you ask questions about your experimental results. Did your experiment turn out as expected? Why or why not? The same approach to questioning applies outside of class, too. What is this [reporter, scientist, TikTok influencer] trying to tell me and why? What data are available? Do the data support the claims?

Even professional reporters aren't always asking the right questions. So you need to be sure that you are. In 2015, for example, gleeful headlines about the benefits of chocolate appeared around the world. "Why You Must Eat Chocolate Daily." "Pass the Easter Egg!" The stories originated from a real study with real data.

Reported in an online journal, called the International Archives of Medicine, the chocolate study might have appeared authentic to the untrained eye. But it was written by a journalist, John Bohannon, pretending to be a researcher, Johannes Bohannon. The paper was called "Chocolate with high cocoa content as a weight-loss accelerator."

Confessing his deeds in a Gizmodo article, Bohannon wrote that he wanted to know how easy it would be to turn bad science into big headlines. Many scientific journals, in which scientists publish results from their experiments, have excellent reputations and have high standards for the papers they publish.

But not all journals prioritize quality; and many are part of an industry of "predatory journals" that publish questionable science for a large fee and don't take time to review the merits of a study. Bohannon paid more than \$600 to the journal that published his paper. Within two

weeks of submission, the journal posted the paper without changing a word, Bohannon wrote in Gizmodo.

READING SIDE TO SIDE

To avoid falling for a hyped-up story, the Stanford History Education Group (SHEG) recommends using an online verification method called lateral reading.

In lateral reading, you open new tabs to quickly learn what you can about a story's source and content, rather than reading from top to bottom on a web page. If you had done this with a story about Bohannon's study, you would have quickly noticed that the Institute of Diet and Health he claimed to be associated with doesn't exist.

Mike Caulfield, director of blended and network learning at Washington State University, builds on the idea of lateral reading with a process he calls SIFT: stop, investigate the source, find additional coverage, and trace claims back to the original source.

STOP. When you see a post or article, pause before reading and consider whether the source is reputable.

INVESTIGATE THE SOURCE. Check the "About Us" section of a website. Look for other stories the author or creator shares to see if you can discover an agenda for posting a particular story.

FIND ADDITIONAL COVERAGE.

Removing bias from reporting is difficult, so seeing the news from multiple sources will help you understand it better. Suppose you have two headlines about a new study. One reads: "Treat-

ment X doubles survival rate for severe COVID-19 cases." Another says: "Treatment X only effective in 8% of severe COVID-19 cases." Both report the same facts: Treatment X increases survival rates of severe cases from 4% to 8%. But the sources interpret those facts differently.

TRACE CLAIMS TO THE ORIGINAL

SOURCE. You might find that a particular news story is years old, or that it has been reposted out of context. A story could also be based on a scientific claim that has been refuted. A claim that vaccines cause autism was made in a published article that was found to be fraudulent, but not until after it made the rounds in the media.

EVIDENCE VS. "EVIDENCE"

Just because you or someone you know falls sick after getting a flu vaccine doesn't mean that the vaccine causes the flu. Individual experience can't compare to a large, randomized study with a control group.

Remember Bohannon's chocolate study? The data were real. But the study only recruited 15 subjects. As Bohannon wrote in Gizmodo, a study measuring a large number of things about a small number of people is bound to give you false positives. And some reporters are happy to accept them without question.

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