

TRILOBITES

Are You Confused by Scientific Jargon? So Are Scientists

Scientific papers containing lots of specialized terminology are less likely to be cited by other researchers.

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Polje, nappe, vuggy, psammite. Some scientists who study caves might not bat an eye, but for the rest of us, these terms might as well be ancient Greek.

Specialized terminology isn't unique to the ivory tower — just ask a baker about torting or an arborist about bracts, for example. But it's pervasive in academia, and now a team of researchers has analyzed jargon in a set of over 21,000 scientific manuscripts. They found that papers containing higher proportions of jargon in their titles and abstracts were cited less frequently by other researchers. Science communication — with the public but also among scientists — suffers when a research paper is packed with too much specialized terminology, the team concluded.

These results were published Wednesday in Proceedings of the Royal Society B.

Jargon can be a problem, but it also serves a purpose, said Hillary Shulman, a communications scientist at Ohio State University. "As our ideas become more refined, it makes sense that our concepts do too." This language-within-a-language can be a timesaver, a way to precisely convey meaning, she said. However, it also runs the risk of starkly reminding people — even some well-educated researchers — that they aren't "in the know."

"It's alienating," said Dr. Shulman.

Two scientists recently investigated how the use of jargon affects a manuscript's likelihood of being cited in other scientific journal articles. Such citations are an acknowledgment of a study's importance and relevance, and they're used to estimate a researcher's productivity.

Alejandro Martínez, an evolutionary biologist, and Stefano Mammola, an ecologist, both at the National Research Council in Pallanza, Italy, started by collecting scientific papers. Using the Web of Science, an online platform that allows subscribers to access databases of scholarly publications, they zeroed in on 21,486 manuscripts focused on cave research.

Cave science is a particularly jargon-heavy field, Dr. Martínez said. That's because it attracts a diverse pool of researchers, each of whom brings their own terminology. Anthropologists, geologists, zoologists and ecologists all end up meeting in caves, he said. "They like the rocks or the bugs or the human remains or the wall paintings."

To compile a list of cave-related jargon words, Dr. Martínez combed over the glossaries of caving books and review studies. He settled on roughly 1,500 terms (including the four that appear at the beginning of this article).

Dr. Mammola then wrote a computer program to calculate the proportion of jargon words in each manuscript's title and abstract. Papers with a higher fraction of jargon received fewer citations, the researchers found. And none of the most highly cited papers — with more than 450 citations — used jargon in their title, while almost all had abstracts where fewer than 1 percent of the words were jargon.

As citations are often viewed as a metric of academic success, jargon has a negative effect on a paper, Dr. Martínez and Dr. Mammola propose. Fewer citations can mean that a paper isn't getting read and remembered, which is bad news for science communication overall, the team concluded.

Other researchers have found, however, that using less-common words — a form of jargon — can be beneficial. David Markowitz, a psychology of language researcher at the University of Oregon, analyzed the abstracts of nearly 20,000 proposals for funding from the National Science Foundation. His results, published in 2019, revealed that abstracts that contained fewer common words tended to garner more grant funding. "Jargon doesn't always associate with negative outcomes," Dr. Markowitz said.

But clear communication should always be a goal in science, said Sabine Stanley, a planetary scientist at Johns Hopkins University. "It's important to step back and always remind yourself as a scientist: how do I describe what I'm doing to someone who is not doing this 24/7 like I am?"

Dr. Stanley recently participated in the Up-Goer Five Challenge at the annual meeting of the American Geophysical Union. Inspired by an xkcd comic explaining the Saturn V rocket in plain language by Randall Munroe (an occasional Times contributor), the event challenges participants to communicate their science using only the thousand most-common words in the English language (a text editor is available).

"It's quite challenging," said Dr. Stanley, who presented new results from the Mars InSight lander.

The title of her talk? "A Space Computer Named In Sight Landed on the Red World Last Year and Here Is What We Found So Far."