

Overconfidence bolsters anti-scientific views, study finds

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Historically, the scientific community has relied on educating the public

in order to increase agreement with scientific consensus. New research from Portland State University suggests why this approach has seen only mixed results.

"Human opposition to scientific consensus is an extremely important topic. For many years, smart people thought that the way to bring people more in line with scientific consensus was to teach them the knowledge they lacked," said Nick Light, a PSU assistant professor of marketing. "Unfortunately, educational interventions haven't worked very well."

Light's research titled "Knowledge overconfidence is associated with anti-consensus views on controversial scientific issues," was published recently in *Science Advances*.

"Our research suggests that there may be a problem of overconfidence getting in the way of learning, because if people think they know a lot, they have minimal motivation to learn more," Light said. "People with more extreme anti-scientific attitudes might first need to learn about their relative ignorance on the issues before being taught specifics of established [scientific knowledge](#)."

The paper examined attitudes about eight issues with scientific consensus on which anti-consensus views persist: climate change, [nuclear power](#), genetically modified foods, the big bang, evolution, vaccination, homeopathic medicine and COVID-19. Light said they found that in general, as people's attitudes on an issue get further from scientific consensus, their assessments of their own knowledge of that issue increases, but their actual knowledge decreases. Take COVID-19 vaccines, for example. The less an individual agrees with the COVID-19 vaccine, the more they believe they know about it, but their factual knowledge is more likely to be lower.

"Essentially, the people who are most extreme in their opposition to the

consensus are the most overconfident in their knowledge," Light said. "Our findings suggest that this pattern is fairly general. However, we did not find them for climate change, evolution, or the big bang theory."

The degree to which attitudes on an issue are tied up with political or religious identities could affect whether this pattern exists for that issue, Light added.

"For [climate change](#), for example, attitudes in line with science tend to be held by liberals, whereas for an issue like genetically modified foods, liberals and conservatives tend to be fairly split in their support or opposition," he said. "It could be that when we know our in-groups feel strongly about an issue, we don't think much about our knowledge of the issue."

The consequences of these anti-consensus views are widespread, including property destruction, malnutrition, financial hardship and death. Educational interventions to shift views may not work unless individuals first get an accurate picture of their own knowledge of an issue's complexities.

"The challenge then becomes finding appropriate ways to convince anti-consensus individuals that they probably aren't as knowledgeable as they think they are," Light said.

Shifting focus from individual knowledge to the influence of experts is one possibility raised by Light and his coauthors. The power of social norms despite personal views is also impactful. In Japan, for example, many people wore COVID-19 transmission-reducing masks not to mitigate personal risk, but to conform to a societal norm.

"People tend to do what they think their community expects them to do," Light said. While blindly following the consensus isn't generally

recommended, if anti-consensus attitudes create [dangerous situations](#) for the community, "it is incumbent on society to try to change minds in favor of the [scientific consensus](#)."

More information: Nicholas Light et al, Knowledge overconfidence is associated with anti-consensus views on controversial scientific issues, *Science Advances* (2022). [DOI: 10.1126/sciadv.abo0038](https://doi.org/10.1126/sciadv.abo0038)

Provided by Portland State University

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