

Yale study concludes public apathy over climate change unrelated to science literacy

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Are members of the public divided about climate change because they don't understand the science behind it? If Americans knew more basic science and were more proficient in technical reasoning, would public consensus match scientific consensus?

A study published today online in the journal *Nature* [Climate Change](#) suggests that the answer to both questions is no. Indeed, as members of the public become more science literate and numerate, the study found, individuals belonging to opposing cultural groups become even more divided on the risks that climate change poses.

Funded by the National Science Foundation, the study was conducted by researchers associated with the Cultural Cognition Project at Yale Law School and involved a nationally [representative sample](#) of 1500 U.S. adults.

"The aim of the study was to test two hypotheses," said Dan Kahan, Elizabeth K. Dollard Professor of Law and Professor of Psychology at Yale Law School and a member of the study team. "The first attributes [political controversy](#) over climate change to the public's limited ability to comprehend science, and the second, to opposing sets of [cultural values](#). The findings supported the second hypothesis and not the first," he said.

"Cultural cognition" is the term used to describe the process by which individuals' group values shape their perceptions of societal risks. It refers to the unconscious tendency of people to fit evidence of risk to

positions that predominate in groups to which they belong. The results of the study were consistent with previous studies that show that individuals with more egalitarian values disagree sharply with individuals who have more individualistic ones on the risks associated with nuclear power, gun possession, and the [HPV vaccine](#) for school girls.

In this study, researchers measured "[science literacy](#)" with test items developed by the National Science Foundation. They also measured their subjects' "numeracy"—that is, their ability and disposition to understand quantitative information.

"In effect," Kahan said, "ordinary members of the public credit or dismiss scientific information on disputed issues based on whether the information strengthens or weakens their ties to others who share their values. At least among ordinary members of the public, individuals with higher science comprehension are even better at fitting the evidence to their group commitments."

Kahan said that the study supports no inferences about the reasoning of scientific experts in climate change.

Researcher Ellen Peters of Ohio State University said that people who are higher in numeracy and science literacy usually make better decisions in complex technical situations, but the study clearly casts doubt on the notion that the more you understand science and math, the better decisions you'll make in complex and technical situations. "What this study shows is that people with high science and math comprehension can think their way to conclusions that are better for them as individuals but are not necessarily better for society."

According to Kahan, the study suggests the need for science communication strategies that reflect a more sophisticated understanding of cultural values.

"More information can help solve the climate change conflict," Kahan said, "but that information has to do more than communicate the scientific evidence. It also has to create a climate of deliberations in which no group perceives that accepting any piece of evidence is akin to betrayal of their cultural group."

More information: The polarizing impact of science literacy and numeracy on perceived climate change risks, *Nature Climate Change*, [DOI: 10.1038/NCLIMATE1547](https://doi.org/10.1038/NCLIMATE1547)

Provided by Yale University

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