



How Academics Can Rebuild Trust in Science

The tools for overcoming declining trust in science lie in science itself.

Science is currently experiencing a reputation crisis. In previous years it has emerged that many landmark studies are **not replicable** and some have even been **exposed** for questionable methodologies or simple data errors. The media has caught on and is adding fuel to the fire in the form of **ridicule**, feeding the public's scepticism of institutions and intellectualism in general.

This is a trust-based crisis, which is among the most difficult of crises to solve, especially as the phenomenon is **proliferating** across government, business and media. But it is incumbent on the scientific community to regain this trust. The public is not only a beneficiary of scientific advancements. It elects members of parliament, senators and congresspeople who make decisions about funding studies and institutes. Businesses that fund research are also under unprecedented public scrutiny.

Public scepticism will be hard to overcome. While many have merely lost trust in the scientific community, others have become completely deaf to its self-correcting efforts, clinging to ideas that have been disproved by science itself at the expense of new research. Despite the fact that in 2010, *The Lancet* **retracted** the paper that first suggested a link between vaccines and autism and a mountain of evidence to the contrary, the **anti-vax movement** persists and even seems to be gaining momentum.

Fortunately, academia has an ace in the hole: science itself.

Turning the tide

By turning to well-established ideas that it has itself produced, the academic community has a solid base from which to respond. It begins with looking at why people react the way they do to information and what we can do about it.

In their paper, "**Perseverance of Social Theories: The Role of Explanation in the Persistence of Discredited Information**", Craig Anderson, Mark Lepper and Lee Ross found that even after the initial evidential basis for certain beliefs has been totally refuted, people fail to make appropriate revisions to those beliefs. People's theories survive virtually intact even when personal beliefs based on inconclusive data from everyday experiences are corrected.

Another **study** by Gregory Berns and colleagues examined what happens when an individual's judgement conflicts with that of a group. It has previously been established that individuals will often conform to the group's thinking because it is unpleasant to stand out. Berns *et al.* find that this conformity is associated with decreased activity in the part of the brain that controls reason, and increased activity in the regions of the brain where

perceptions are formed. This makes it hard for anyone to stand up for science or even consciously believe in it when they conform to entire online communities of sceptics. An **INSEAD study on Reddit** showed that wild theories peddled by users with little credibility spread much better than credible information. The researchers also found that the polarising nature of debate on the platform made it very hard for people to remain neutral as they entered the fray. When people have a choice of being for or against an idea, many swing in the wrong direction.

Why fake news proliferates

The proliferation of fake news is being driven by customised social media news feeds that provide ideological echo chambers for their users. People often share fake news knowingly, maybe because they believe in it but also because they gain social approval in the form of likes and shares from the likeminded.

Fake news is also easier to understand. It is couched in simple ways and designed to provoke outrage. Science on the other hand, while thorough, presents people with uncertainty. People are not particularly likely to share information they do not think they understand, nor to spend time trying to understand it. Discomfort with the content and fear of standing out make people less likely to share scientific ideas or developments.

In their book *Denying to the Grave*, Sara Gorman and Jack Gorman, however, argue that people are more likely to share ideas if they feel they can grasp the key concepts. There is also some evidence that making people aware of their biases and the way in which they are processing persuasive messages can help them rethink their attitudes. In one **experiment**, researchers exposed subjects to a message from either a likeable or dislikeable source. Some subjects were specifically told not to let “non-message” factors affect their judgement of the message. When subjects were already being persuaded by such a factor (e.g. the authority of the speaker), being alerted to a possible bias resulted in more careful scrutiny of the message and less bias in interpreting it.

The opportunity for science

This presents science with a few key opportunities to start turning the tide. First, the scientific community needs to acknowledge that it has some problems. Honesty about the scientific method, why many studies produce flawed results and how science’s self-correcting mechanism works, would be a start.

Personal beliefs are persistent. If we want to

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influence them, we have to alter the way information itself is presented. Ways to do this could include distilling the information into shorter form and including more background. Explaining the reason a certain study was carried out can give the public more context, teach them the history of the issue and even show how the study of the subject has advanced over time. Crucially, it will also be important to be transparent about the limits of the study and where it should advance. This may sound like a mammoth task, which requires nothing short of an academic paper to explain it all, but there are new technologies that can enable this such as **short animated videos** or even gamification.

Methods like these can help people to reconsider ideas in a non-exhausted or non-loaded state, especially one in which self-esteem isn’t threatened: Those who lack confidence can’t be expected to contradict ideas of a group which comforts them. According to Gorman and Gorman, a person with low self-esteem will be resistant to overly technical scientific arguments that have the not-so-hidden message “Even though you are not smart enough to understand what we scientists are telling you, believe us anyway.”

Scientists also need to market themselves better. They should aim to become more relatable. Putting a face to studies can increase people’s receptivity to them. An exemplar in this regard is **Neil deGrasse Tyson** who attracts 10 million followers on Twitter. He makes science easy to understand, while putting the advances of science in context. His awe for study rubs off on others. So do his disarming jokes.



Stephen Hawking isn’t on Twitter, but his book, ***A Brief History of Time***, does an admirable job of explaining the origin of the universe, space and time, as well as the search for a unifying theory that can describe the universe in a coherent way. He also boasts in the opening pages that he has “sold more books on physics than Madonna has on sex”.

To many academics, this might seem an effort they have little time for. But whether we like it or not, we are engaged in an information war. It will be crucial to better position our work and ourselves in order to disarm doubters and give us a better share of voice.

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