

The psychology of the anti-vaccine movement

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For people who care about vaccines, the last 18 months have been a wild ride. Never has the world watched with such anticipation the development of a vaccine, to the point where even preliminary trial results made international headlines. On one hand, you might think that this could be the moment where the antivax movement was snuffed out: people would see up close the enormous care that goes into establishing that a vaccine is safe and people would see up close that vaccines save lives. But antivaxers also saw this as a once-in-a-lifetime moment to seize the agenda: they had time to prepare their strategy, and they did so with meticulous and coordinated care. At the time of writing, hesitancy about a COVID vaccine has extended deep enough into the mainstream that it threatens the ultimate goal of herd immunity. So now seems a good time to take stock of the empirical literature to ask: what types of people are nervous about vaccines, and what drives them?

The vaccine-hesitant are more likely to have a conspiracy mentality

Some people have a worldview that it's commonplace for groups of elites to conduct elaborate and sinister hoaxes on the public, and to do so in near-perfect secrecy. They think this is just how the world works, and to believe anything else is naïve. Obviously if you have this worldview you're going to be open-minded to conspiracies of all sorts (even ones that are logically incompatible: e.g., studies show that the more people think that Princess Diana was murdered, the more they think she is still alive!)

If there's one thing that people need to know about the vaccine-hesitant, it's that they're more likely to have this conspiracist worldview. How do we know? Some years ago, my colleagues and I asked people around the world the extent to which they believed four world-famous conspiracies. For example, to what extent did they believe Princess Diana was murdered? To what extent did they believe the USA knew 9/11 was going to happen and allowed it to happen anyway? We then crunched those scores together, and correlated them

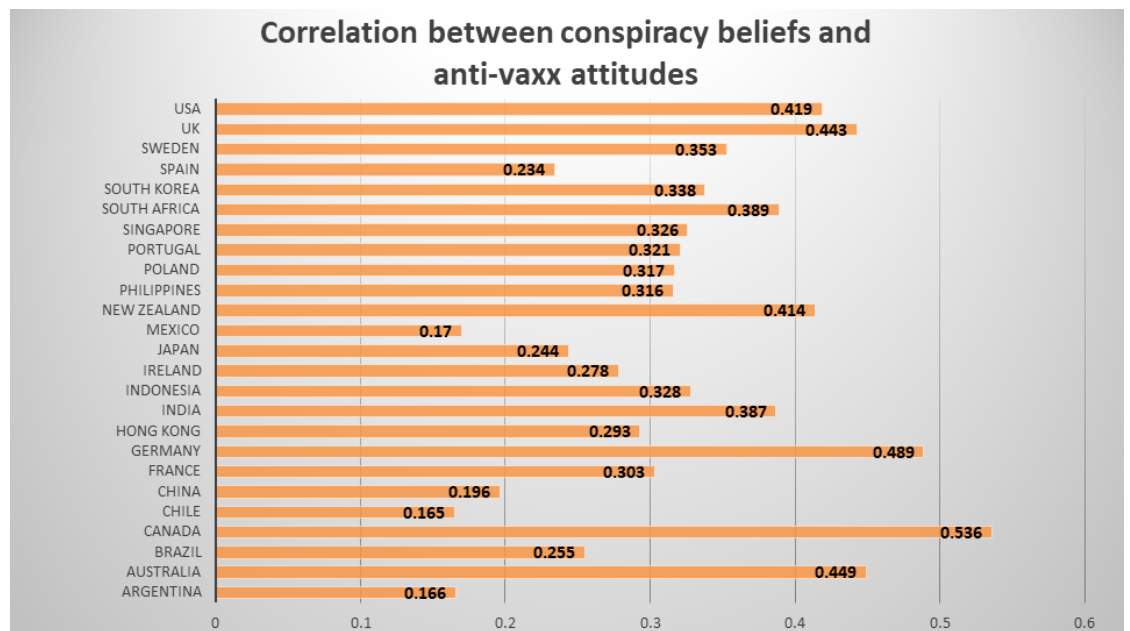


Figure 1. Correlations between conspiracy endorsement and anti-vaccination attitudes in 25 regions.

with anti-vaccination attitudes. The results – which you can see in [Figure 1](#) – were stunning. In many countries – particularly those in the West – you could predict with a degree of certainty how vaccine-hesitant someone was by simply knowing whether they thought Princess Diana was murdered, or 9/11 was an inside job.

Examination of antivaxx websites make it clear why this is: they believe that vested interests among elites have participated in an orchestrated campaign to exaggerate the benefits of medical interventions and to minimize their dangers. Who are these elites? In 2020, some fringe conspiracies emerged about COVID-19: e.g., that it was a myth designed to push mass vaccinations on the public and insert tracking devices into them. But much more mainstream is the theory that profit motives have corrupted Big Pharma to the point where they would knowingly inflict damage on the public, and knowingly pay off politicians and regulators to maintain the lie.

Do political leaders have an effect?

In short, yes. Among global leaders, Trump was an outlier in two ways. First, he had a record of expressing anti-vaccination views, including the long-discredited myth that vaccines can cause autism. Second, he is an unapologetic conspiracy theorist (on a range of topics). From a public health perspective this was an unusual – and unusually destructive – combination. Research by my colleagues and me (conducted in 2018) confirmed that Trump voters are more vaccine-hesitant than other Americans. And the reason for that is they were more prone to believe conspiracy theories. To his credit, Trump softened his controversial stance after his election, but the damage had been done. Vaccines had been drawn into the culture wars, creating an attitudinal whirlpool that sucked in a large, fresh cohort: conspiracy-driven conservatives. In 2021, there are now large state-level correlations between vaccine uptake in the USA and the percentage of people in those states who voted for Biden.

So is anti-vaccination now a conservative thing?

No, it's not that simple. In big population samples there is a tendency for conservatives to express more antivaxx views. But most of these people are only slightly vaccine-hesitant, and many would probably vaccinate regardless of their anxieties. More relevant are analyses that can identify the 'small pockets' of extreme anti-vaccination views that can actually cause a problem. When my colleagues and I recently did

that on a representative sample of Spaniards, we found two pockets of vaccine resistance. One was a cluster of highly educated people on the far left – people who gathered their information about science largely from niche blogs, forums and podcasts. The other was a cluster of young, poorly educated people who disproportionately identified as being from both the far left and the far right. The data remind us that it is important to set aside stereotypes about the vaccine-hesitant. Indeed, the antivaxx movement reflects an unusual alliance between groups of individuals who would normally be estranged: the far left and the far right; the highly educated and the poorly educated; the science-avoidant and the science-curious. What unites them, it seems, is a suspicion of elites and 'the system'.

Is alternative medicine part of the problem?

Many studies have shown an overlap between the antivaxx world and the world of complementary and alternative medicine (CAM). One possible reason for this is that CAM advocates subtly poisoning people's minds against vaccinations. But my own data suggest that this is probably not a factor: there's only a modest association between anti-vaccination views and people's trust in CAM staples like homeopathy, reiki and acupuncture. Instead, there is a large association between anti-vaccination views and people's *mistrust* of conventional interventions such as chemotherapy and anti-depressants. Rather than being a 'pull' factor that lures people into an antivaxx world, the data suggest that people are turning to CAM for the same reason they're turning away from vaccinations: a mistrust of the Western medical system.

What about straight-out fear?

Amid all the talk of ideology, conspiracies and culture wars, it is easy to lose track of a somewhat pragmatic reason why people might be vaccine-hesitant: fear of needles. My colleagues and I asked people the extent to which they felt 'disgust' or 'repugnance' at the thought of a bag of blood or someone getting an anaesthetic needle at the dentist. People's queasiness at the thought of needles and blood were associated with levels of vaccine hesitancy across 24 countries. It is possible that some of the suspicion of Western medicine described earlier might be driven by a need to lend an intellectual veneer to what is in fact a gut-level fear of needles and other medical triggers like hospitals and blood.

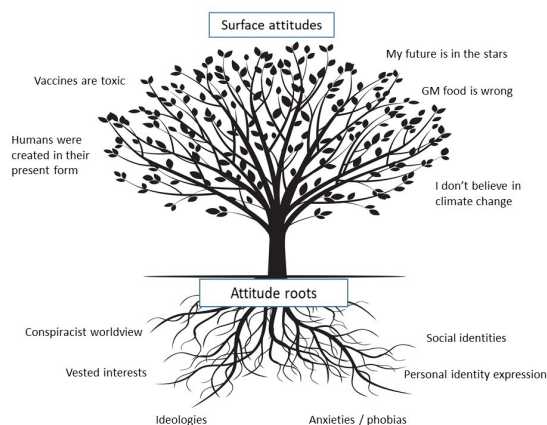


Figure 2. A model of attitude roots applied to the motivated rejection of science. Everything that lies above the ground is a “surface attitude,” representing the science-skeptical attitude that people articulate. Underground are “attitude roots,” the worldviews, ideologies, identities, and fears that motivate surface attitudes and make them resilient in the face of contradictory evidence.

What can I say to influence vaccine-hesitant people?

As a life science or health professional it's probably best to stick to the usual rulebook: the vast majority of people are being vaccinated, and the dangers of not vaccinating are much greater than the dangers of vaccinating, which are extremely small. This is a simple and effective formula for most people.

For people with more elaborate antivaxx reservations, the simple truth is that most of them have already heard the ‘official’ version of vaccines, so just repeating evidence is probably not going to be enough. My advice is to try to peer beyond what people say (the ‘surface attitudes’), and

to listen to what is *underpinning* what they are saying (the ‘attitude roots’). This model of science communication is reflected in the tree metaphor of Figure 2. Attitude roots are what lies beneath the surface: the fears, worldviews, vested interests and identity issues that drive the anti-science attitudes and make them resilient in the face of logic and evidence.

For science-sceptics, persuasive messages can be more effective when people acknowledge and align with these underlying motivations. If someone's vaccine hesitancy is motivated by fears about needles and medical intervention, it might be useful to focus on the role of vaccines in reducing the need for injections and medical interventions once people get sick. (Another pragmatic reform is to stop using the needle as the image that media and health providers use as the international symbol of vaccinations.) To the extent that people mistrust the pharmaceutical industry, it might make sense to anticipate and defuse that mistrust. Scientists are mistrustful by nature and want to test things out all the time. This includes testing the claims of Big Pharma! That's why the health system has (sceptically) constructed layers of regulation and testing that can flush out and shake down unrealistic claims.

It shouldn't be the sole responsibility of health providers to master the arts of science communication: the whole community bears that responsibility to educate each other. But if you do find yourself in that situation, it's good to keep in mind the basic principles of communication: start with the audience and work backwards, acknowledge aspects of their position, find common ground, and seek out hidden fears. ■

Matthew Hornsey is Professor in Management at the University of Queensland, with his research interest including the psychological motivations for people to reject scientific consensus, e.g., climate change skepticism and anti-vaccination beliefs.

Further reading

Data on conspiracy beliefs and fear of needles comes from:

- Hornsey, M.J., Harris, E.A., and Fielding, K.S. (2018) The psychological roots of anti-vaccination attitudes: A 24-nation investigation. *Health Psychol.* **37**, 307–315 DOI: 10.1037/hea0000586

Data on Trump comes from

- Hornsey, M.J., Finlayson, M., Chatwood, G., and Begeny, C.T. (2020) Donald Trump and vaccination: The effect of political identity, conspiracist ideation and presidential tweets on vaccine hesitancy. *J. Exp. Soc. Psychol.* **88**, 103947 DOI: 10.1016/j.jesp.2019.103947

Data on alternative medicine comes from

- Hornsey, M.J., Lobera, J., and Díaz-Catalán, C. (2020) Vaccine hesitancy is strongly associated with distrust of conventional medicine, and only weakly associated with trust in alternative medicine. *Soc. Sci. Med.* **225**, 113019 DOI: 10.1016/j.socscimed.2020.113019

Data on small pockets of resistance comes from

- Hornsey, M.J., Edwards, M., Lobera, J., et al. (2021). Resolving the small-pockets problem clarifies the role of education and political ideology in shaping our understanding of vaccine skepticism. *Br. J. Psychol.* DOI: 10.1111/bjop.12500