
How to avoid the misinformation trap? Understanding science denialism via behavioural science

ESMH summer school
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Science denialism



HIV

...more than 300 000 additional deaths in South-Africa (Chigwedere et al., 2008).



Climate Change

...250 000 additional deaths between 2030 and 2050 (WHO, 2014)



Tabacco

...Tobacco kills around 6 million people each year. (WHO, 2015).



Vaccination

...1.5 millionen unvaccinated children die each year (UNICEF, 2014).

Motivated rejection of science

The more one believes Diana is still alive the more one believes that she was murdered.

(Wood, Douglas & Sutton 2012)

Vested interests:

Personal or group gains linked to motivated rejection of science.

Personal identity expression:

Non-conformity as an expression of the preferred self-image.

Social identity:

Refusing to vaccinate due to norm pressure.

Fears and phobia:

Fear of needles leading to vaccine hesitancy.



Techniques of denial



Fake Experts



Impossible Expectation



Conspiracy Theories



False Logic



Selectivity

Person 1 asserts proposition X.
Person 1 is arrogant/stupid/blue eyed/works for WHO.

‘Mr. Schmid claims that health communication works. We know that he is still very young and only looking for a great career. If someone like him states such nonsense, we should be very skeptical about health communication.’



False Balance

“journalists ignore scientific consensus’ greater weight of evidence and apply a biased 50/50 weight to the presentation of contrasting positions, that is, they apply *false balance*”

The reality

...



Scientific Consensus

Science Denier



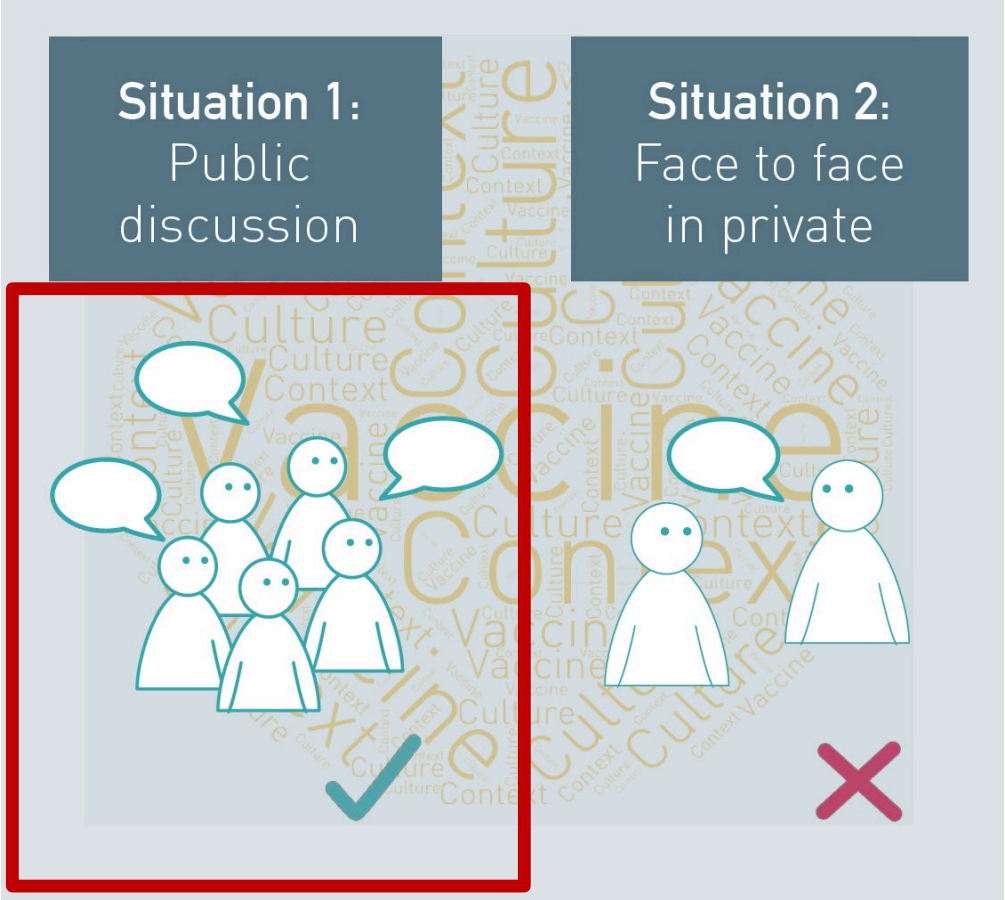
In media (talkshow etc.)



50/50



Target group



Step 1: Identify the technique	Step 2: Identify the topic	Step 3: Respond with key message
Conspiracies Example: The government is systematically hiding the real data.	Threat of disease Example: Diseases are under control. There is absolutely no need to ask children to run the risk of vaccination.	Example: „Being a researcher does not make a vaccination expert, and your source is a so-called fake expert. Among vaccine researchers there is wide consensus that diseases are only under control if we stay vigilant and continue to vaccinate. There are small children and people with diseases who cannot be vaccinated – we all have a responsibility to protect them by being vaccinated. Vaccine-preventable diseases can be very severe, and still cause millions of deaths per year. ”
Fake experts Example: A new research manifest signed by 30 university researchers has been published. It says that...	Trust Example: The government receives kick-back from the pharmaceutical industry – it is a very profitable business for them.	Example: „Mr Jones’ conspiratory notion completely ignores the mass of scientific evidence produced by independent scientists all over the world on the benefits of vaccination in protecting public health and wellbeing. It also overestimates the power and tries to discredit the motives of health authorities everywhere.”
Selectivity Example: This paper proves that 30% of people who are vaccinated against measles are not protected against the virus.	Alternatives Example: Natural prevention is so much better for our children than chemical and artificial solutions.	Example: „Mr Jones is using false logic when claiming that something is bad because it is not natural. Sometimes unnatural is good – for example hip replacement – sometimes it is bad – for example chemical weapons. I will repeat what is supported by an overwhelming body of scientific evidence: There are no alternatives that are as safe and effective as vaccines. ”
Impossible expectations Example: I am not against vaccination, but I will not recommend it to anyone until it is 100% safe.	Effectiveness Example: The progress in health today is due to clean drinking water, better housing and better living conditions in general – not vaccination.	Example: „Mr Jones is cherry picking the data. The fact is that there is overwhelming scientific evidence showing that vaccination has saved the lives of millions, some say more than 20 million people, and it is one of the most succesful public health interventions ever. ”
Misrepresentation / False logic Example: Vaccines are unnatural and therefore unhealthy for a natural organism like the human being.	Safety Example: How can I vaccinate my daughter if her safety cannot be guaranteed?	Example: „Expecting 100% safety is impossible; no medical product or intervention, from aspirin to heart surgery, can ever be guaranteed 100% safe. What we do know for sure is that the risks of these vaccine-preventable diseases far outweigh those of vaccines. In the worst of cases, these diseases kill. ”



THIRD EDITION
for pilot training

Best practice guidance //

How to respond to vocal vaccine deniers in public



FIGURE 1

Through your employer or professional organizations you are part of, have you taken part in any formal trainings regarding the spread of false information?

Weight-of-Evidence Reporting: '(...) calls on journalists not to determine what's true but, instead, to find out where the bulk of evidence and expert thought lies on the truth continuum and then communicate that to audiences.'

Dunwoody, 2005



Important note!

In the following program, opposing standpoints may be presented equally, although there is only scientific evidence for one standpoint. Since journalists are anxious to report as fairly as possible, in some cases this so-called false balance occurs. By implementing false balance journalists aim to equally weigh opposing perspectives on a topic. Thus, pro- and contra-arguments are presented to express different opinions. In debates about opinions this serves to increase fairness and is widely regarded as good journalism.

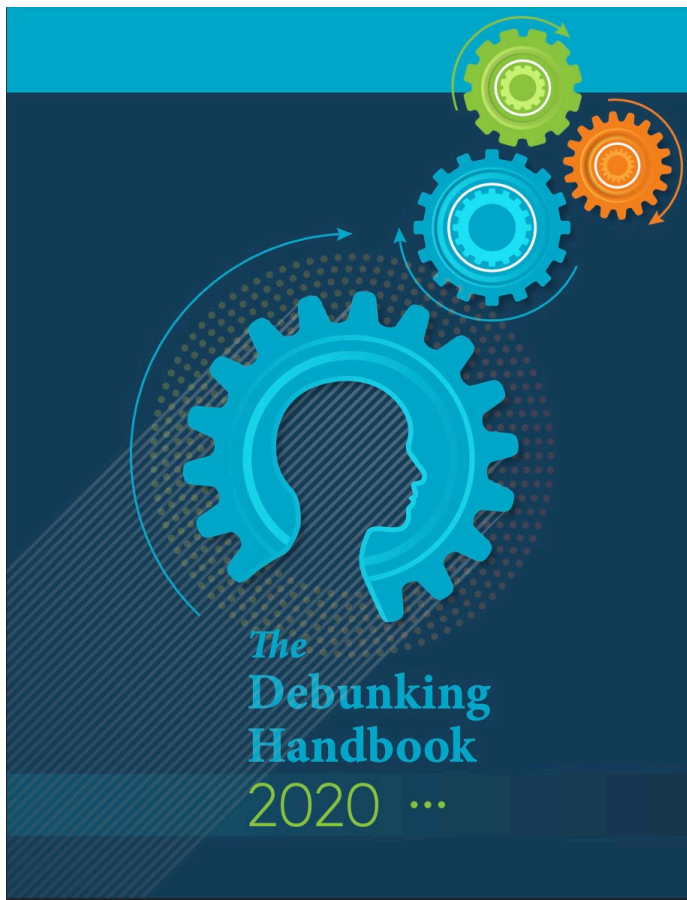
However, this becomes problematic in science reporting - because science is about facts and not opinions. In most cases, an advocate for science is invited and, in addition, someone who represents an unscientific standpoint. This may make the debate more exciting, but it also creates the false impression that both positions are of equal value. The most common example is climate change: about 97 percent of scientists agree that climate change is caused by humans. However, people who deny human-caused climate change are still being invited on television. The scientific facts are distorted by these falsely balanced reports.

We wish you good entertainment for the next programme.

Influence of Messages of Science Denialism in Public Discussions

Authors: Philipp Schmid ✉, **Marius Schwarzer**, **Cornelia Betsch**





Debunk often and properly

FACT

Lead with the fact if it's clear, pithy, and sticky—make it simple, concrete, and plausible. It must "fit" with the story.

WARN ABOUT THE MYTH

Warn beforehand that a myth is coming... mention it once only.

EXPLAIN FALLACY

Explain how the myth misleads.

FACT

Finish by reinforcing the fact—multiple times if possible. Make sure it provides an alternative causal explanation.

Debunking

Lewandowsky, S., Cook, J., Ecker, U. K. H., Albarracín, D., Amazeen, M. A., Kendeou, P., Lombardi, D., Newman, E. J., Pennycook, G., Porter, E. Rand, D. G., Rapp, D. N., Reifler, J., Roozenbeek, J., Schmid, P., Seifert, C. M., Sinatra, G. M., Swire-Thompson, B., van der Linden, S., Vraga, E. K., Wood, T. J., Zaragoza, M. S. (2020). *The Debunking Handbook 2020*. <https://doi.org/10.17910/b7.1182>

Exposure to a weakened form of misinformation...

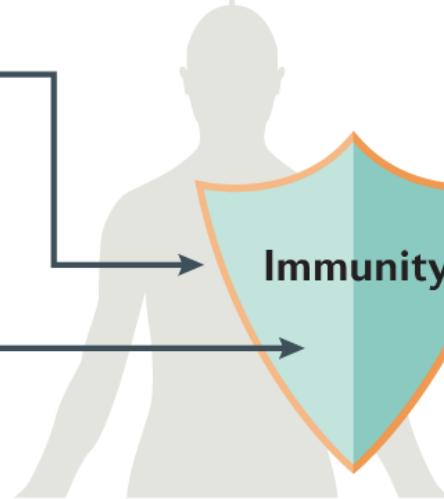
- Neutralized misinformation
- Immunity across topics
- Post-inoculation talk

...builds immunity against later misinformation

Warning of risk of being misled



- Pre-emptive refutations
- Fact-based
 - Logic-based
 - Source-based



Myth

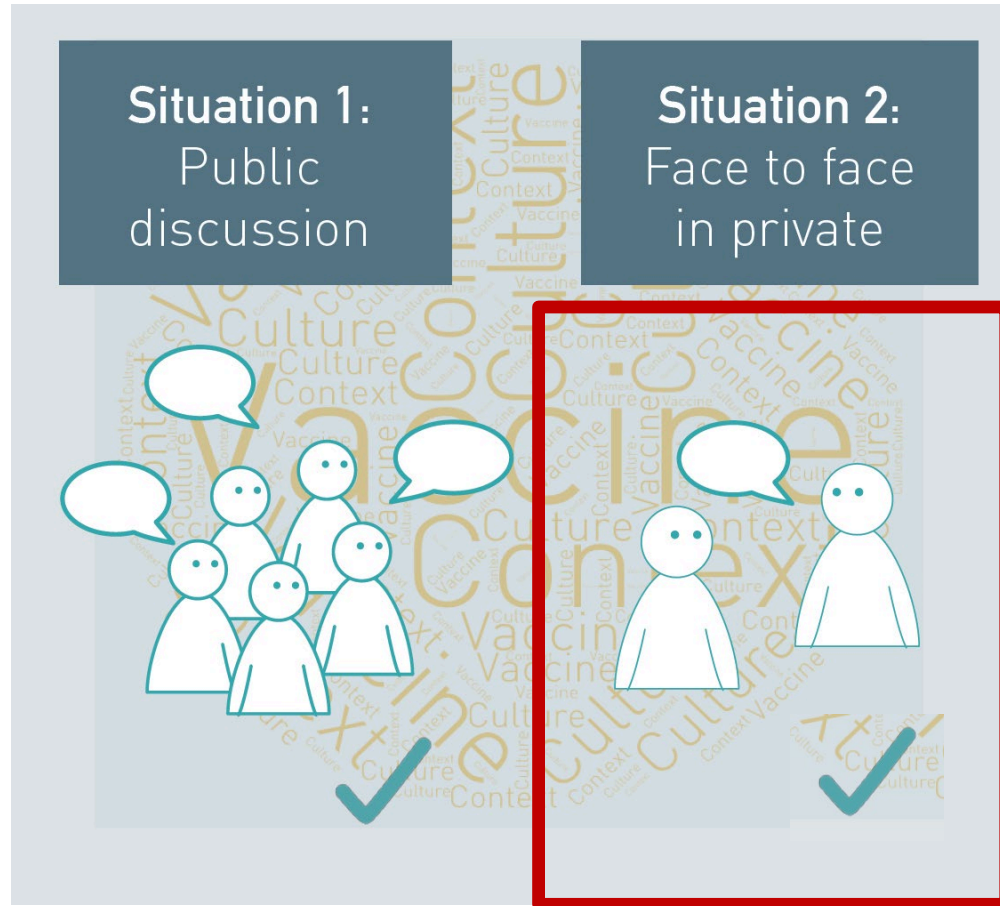
Myth

Myth

Inoculation

Ecker, U. K., Lewandowsky, S., Cook, J., Schmid, P., Fazio, L. K., Brashier, N., ... & Amazeen, M. A. (2022). The psychological drivers of misinformation belief and its resistance to correction. *Nature Reviews Psychology*, 1(1), 13-29.

Target group



Jitsuvax.info



Co-funded by the Horizon 2020 programme of the European Union



The screenshot shows the homepage of the Jitsuvax website. At the top, the logo 'Jitsu VAX' is displayed in white and yellow. Below the logo is a navigation bar with three options: 'Discover', 'Home' (which is highlighted with a yellow underline), and 'Search'. The main content area has a dark blue background. In the center, the word 'WELCOME' is written in large, white, sans-serif capital letters. Below 'WELCOME' is an illustration of a group of five diverse people standing on a grey platform that is part of a balance scale. To the left of the scale, a dashed yellow arrow points from the text 'BROWSE' to the 'Discover' link in the navigation bar. Below 'BROWSE' is the text: 'EXPLORE THE "ATTITUDE ROOTS" UNDERPINNING ANTI-VACCINATION ARGUMENTS.' To the right of the scale, another dashed yellow arrow points from the text 'SEARCH BY KEY TERMS' to the 'Search' link in the navigation bar. Below 'SEARCH BY KEY TERMS' is the text: 'SEARCH OUR DATABASE OF COMMON THEMES BY KEYWORD OR TERMS YOU'VE HEARD.' At the bottom of the page, a white text block reads: 'This is a learning resource designed to equip you with context that can help balance arguments and debunk vaccine disinformation.'

