



Medical Misinformation

UWA School of Psychology researcher **Ullrich Ecker** provides some insights on why medical mud sticks and the best ways to remedy this.

In 1998, a *Lancet* paper and the associated press conference suggested a link between the common MMR vaccine and autism. By 2002, this suggestion had received widespread media coverage and vaccination rates dropped substantially (mainly in Britain but also elsewhere). This sounds like a prime example of science informing the public to help people make well-informed decisions, if it were not for one tiny wrinkle: the whole thing was a hoax. There was no evidence for the purported link, the paper was retracted and the first author convicted of scientific misconduct.

Misinformation comes in many guises

Scientific fraud is not the only source of health misinformation. Companies rely on misinformation to sell energising wristbands, “detox” fruit-juice mixes and homeopathic remedies. Prime-time television and other media—inadvertently or not—support them in their endeavour. Pharmaceutical corporations likewise aim to promote the utility and safety of their products, but they are not as interested in publicising studies showing adverse or null drug effects.

Some misinformation results from “collective statistical illiteracy”, the widespread inability in patients, journalists and doctors to make sense of probabilities and base rates. An example was the surge

in abortions in Britain after the 1995 “pill scare”, initiated by reports that third-generation contraceptives led to an alarming “100% increase” in blood-clot risk (in effect, a less alarming risk increase from 0.0001 to 0.0002%).

There are also lots of common health myths of unknown origin, some harmless or maybe even beneficial (don’t mix antibiotics with alcohol), but others less benign, such your overweight child will magically “grow out of it”.

Finally, there is a growing trend to obtain health information from the internet. Apart from the obvious lack of credibility, one concern around the dissemination of misinformation is that people prefer to pass on information that is likely to evoke an emotional response, in particular disgust or fear.

Belief in misinformation


Misinformation can have important

consequences. In the case of the MMR vaccine scare, these included major outbreaks of mumps and measles in Britain and Ireland, resulting in hospitalisation and death, as well as enormous amounts of money wasted on unnecessary follow-up research.



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So it is concerning that even after exposing the vaccine hoax, many people continue to believe the misinformation now. But why are the effects of misinformation so resilient and belief in it so long-lasting?

On a cognitive level, people have a hard time unbeliving something they once believed. Simple “that’s-not-true” retractions are largely ineffective for two reasons. First, when people try to make sense of a causal relationship or an unfolding event, they build a mental model. A retraction creates a gap. Such a gap feels uncomfortable and people use the easily available misinformation



despite knowing it has been retracted. People often prefer an incorrect model of the world to an incomplete model.

Second, retractions can fail because they necessarily repeat the misinformation. Explaining that the vaccine doesn’t cause autism repeats the vaccine-autism association, making it more familiar. It is well-known that people are more likely to believe and trust familiar assertions—I’ve heard this before, there must be something to it! Hence the retraction can potentially backfire and increase reliance on misinformation. This is most likely in older adults because familiarity-based memory declines less with age than more controlled memory processes.

Furthermore, pre-existing beliefs contribute to the persistence of misinformation. People have a bias to cherry-pick information that supports what they already believe, while ignoring information that challenges their world views. So people who reject vaccination schemes (e.g. as an undue form of government intervention) will also be more likely to believe in the autism link.

Similarly, many parents will prefer to see ADHD as a genetically-determined disease and may reject considering other factors—it helps them avoid feelings of guilt and shame, and does not require them to question their parenting methods.

Debunking misinformation

So are health campaigns just flogging a dead horse? Fortunately, no. Several communication techniques make debunking misinformation more effective.

To avoid increasing the familiarity of myths, always start with the facts—“many studies have shown that the MMR vaccine is safe”. The common “myths vs. facts” approach is inefficient and can lead to an

increased belief in the myths.

Knowing that any retraction leaves a gap, it is important to fill it, so a retraction should always be accompanied by a plausible alternative scenario.

For example, explaining that autism is caused by an interaction of genes and in-utero levels of testosterone allows parents to “let go” of the vaccine misinformation. Explaining why the misinformation was given in the first place (e.g. the scientist involved had a financial conflict-of-interest) can also help.

Finally, people with strong beliefs may not be open to rational arguments. Aggressive attempts to alter beliefs will only lead to alienation and stronger insistence on the misinformation. Framing a correction in a non-threatening way, however, can help, such as focusing on the benefits the alternative brings with it.

Vaccination sceptics may be more likely to have their children immunised if they are adequately informed of the risks associated with non-immunisation while at the same time their scepticism is respected.

Ed. You can contact the author at ullrich.ecker@uwa.edu.au

Further reading (see links at MedicalHub.com.au):
‘collective statistical illiteracy’ www.psychologicalscience.org/journals/pspi/pspi_8_2_article.pdf

‘pill scare’ www.ncbi.nlm.nih.gov/pubmed/10652971
‘grow out of it’ <https://theconversation.edu.au/mondays-medical-myth-dont-worry-kids-will-grow-out-of-their-puppy-fat-4194>

‘entrenched bias’ www.shapingtomorrowworld.org/ideologyScience.html

‘debunking misinformation’ www.shapingtomorrowworld.org/Debunking-Handbook-now-freely-available-download.html

‘framing a correction’ http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1017189 ●

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