FACTS. FIGURES! FICTION?

By: Martin McKee, Yuxi Wang, Aleksandra Torbica and David Stuckler

Summary: Disinformation, or as we now say fake news, is not new, but the advent of social media now allows it to travel with unprecedented speed to ever larger audiences. It has enormous implications for public health. Some groups pursuing political goals have weaponised issues like vaccine safety. Others have discovered that by tapping into these concerns they can make large amounts of money, using them as clickbait. Health professionals need to understand this changing information environment, understanding the cognitive biases that favour the spread of fake news, proactively tackling its sources, and framing their messages in ways that reduce its impact.

Keywords: *Disinformation, Fake News, Anti-vaccination, Backfire Effect, Public Health*

> **#EHFG2019** – Lunch Workshop 1: Facts. Figures! Fiction?

Martin McKee is Professor of European Public Health at the London School of Hygiene and Tropical Medicine and Co-Director of the European Observatory on Health Systems and Policies, London, United Kingdom; **Yuxi Wang** is PhD candidate and **Aleksandra Torbica** is Associate Professor at the Centre for Research on Health and Social Care, Department of Social and Political Science, Bocconi University, Italy; **David Stuckler** is Professor at the Department of Social and Political Science and Dondena Research Centre, Bocconi University, Italy. Email: martin.mckee@lshtm.ac.uk

The evolution of fake news

In early 2018 former US President Barack Obama appeared in a video to warn about the dangers of what are termed "deepfakes".[1] Originally developed to manufacture images of celebrities in pornographic acts, deepfakes use artificial intelligence to make it look and sound as if someone is doing or saying something they are not. In that particular video, it cut away to show that Obama's words were being spoken by movie director and actor Jordan Peele, who has worked with the CEO of Buzzfeed Jonah Peretti to create what was extremely convincing imagery. The message was clear. You cannot trust anything anymore.

The creation of disinformation is not new. History has always been written by the victors, or at least by scholars and dramatists seeking to flatter them. Shakespeare's plays contain many examples, made more obvious as his plays span the transition between two royal dynasties in England.[2] Yet his messages were confined to a relatively small, even if politically important, section of the population. What changed was the technology to distribute disinformation to the masses. The first technological revolution was the printing press. By the 18th century this was being exploited by pamphleteers such as those who spread salacious stories about the alleged sexual adventures of Marie Antoinette.[3] Based in England, their objective was blackmail and they succeeded in extracting money from Louis XVI. But they also had a political impact, encouraging the actions of revolutionaries who would change the course of history.

Today, we are in the midst of a series of technological revolutions, many affecting what we see, hear, and read. And these have profound consequences for health. They include the artificial intelligence application that made possible the fake video of Obama but also the social media outlets that allowed it to be disseminated rapidly. Collectively, they have given us the term, "fake news".

Although this term was first used as long ago as 1925, in a Canadian magazine,[4] it has only become widely used in the past few years. In Europe, the term took off at the time of the European Union (EU) referendum in the United Kingdom when the Leave campaign engaged in a series of illegal activities.[5] One element of their strategy involved harvesting data on the interests and concerns of individuals to target them with misleading messages,[6] many drawn from the very large number of what have been termed Euromyths, now collected on a website by the European Commission.[7] A similar process took place in the United States, where many millions of unique and mostly misleading advertisements were aimed at individuals during Donald Trump's election campaign.[8] Bizarrely, Trump has now taken ownership of the term, using it as a means to attack the mainstream media as they seek to hold him to account.

What are fake news, misinformation and disinformation?

So what is fake news? A recent Parliamentary enquiry in the United Kingdom concluded that the term is often used with no clear idea of what it means.[9] The term has taken on a variety of meanings, including a description of any statement that is not liked or agreed with by the reader. The Members of Parliament (MPs) recommended that the term fake news should be rejected and replaced with agreed definitions of the words misinformation and disinformation.

Misinformation is where false or misleading information is provided but there is no intent to deceive. Disinformation is where information is purposely created to deceive people. In practice, however, it is often quite difficult to differentiate them because of the difficulty in ascertaining intent. For example, some of those spreading anti-vaccination messages genuinely do believe what they are saying, even if they are completely wrong, but there are others who are using it as an opportunity to undermine trust in democratic governments.

Disinformation takes many forms. The most widely used taxonomy was developed by Claire Wardle, and goes from satire and parody, where there is no intention to cause harm but some people are still fooled, to fabricated content that is completely false and is designed to deceive and to do harm.[10]

> Familiarity with false information or, fake news, increases the likelihood that it will be believed

Many aspects of health have been subject to disinformation but vaccines stand out as one of the most frequent targets. Italy has been one of the countries in Europe most severely affected by the anti-vaccine movement.[11] An analysis of videos on YouTube aimed at Italians found a striking increase in the number of videos, but especially among those attacking vaccination.[12] It also provided a graphic demonstration of what is termed confirmation bias,[13] with videos criticising vaccination more likely to be liked and to be viewed than those providing an objective assessment of the benefits of vaccination.

A recent paper from the United States examined in detail where these messages are coming from.[14] The authors identified three main sources that were tweeting misleading information on vaccines. The first was a group of accounts that had previously been linked to the Russian government. They were disseminating messages that were both pro- and anti-vaccine. The apparent intention was to create divisions and polarise opinion, as well as creating confusion. This is a well-known tactic used in accounts from this source. For example, they have been extremely active in spreading messages in the United States that are both for and against the #BlackLivesMatter movement and gun control.[15] The second category involves a number of sophisticated bots, mostly run by anti-vaccine groups, but with many different motives. Some are from those who genuinely believe that vaccines cause harm. Others are from conspiracy theorists and others who simply oppose any form of government action. Some of these accounts combine automated messaging with human activity, making them difficult to detect but there are now quite sophisticated tools using artificial intelligence that can identify bots with a high degree of certainty. The third category includes content polluters, again with a variety of motives. Some are used to spread malware, knowing that anti-vaccine messages are likely to be disseminated widely. Others attract traffic to sites that have been monetarized, such as those with advertisements.

Understanding and changing people's views

The question then arises as to what can be done about this problem. Just as we differentiate misinformation from disinformation, it is important to separate out the two reasons why people have incorrect beliefs. They can be uninformed or they can be misinformed. If they are uninformed, then providing the correct information may be effective. There is much evidence of the need for misconceptions to be corrected. Surveys repeatedly show that members of the public are wrong on many contemporary issues.

Unfortunately, it is often not enough to tell people the truth. In one study, when individuals were presented with information reporting myths and facts about influenza vaccination, they could separate the two quite easily if asked immediately afterwards. Yet, only 30 minutes later, most were unable to do so.[16]

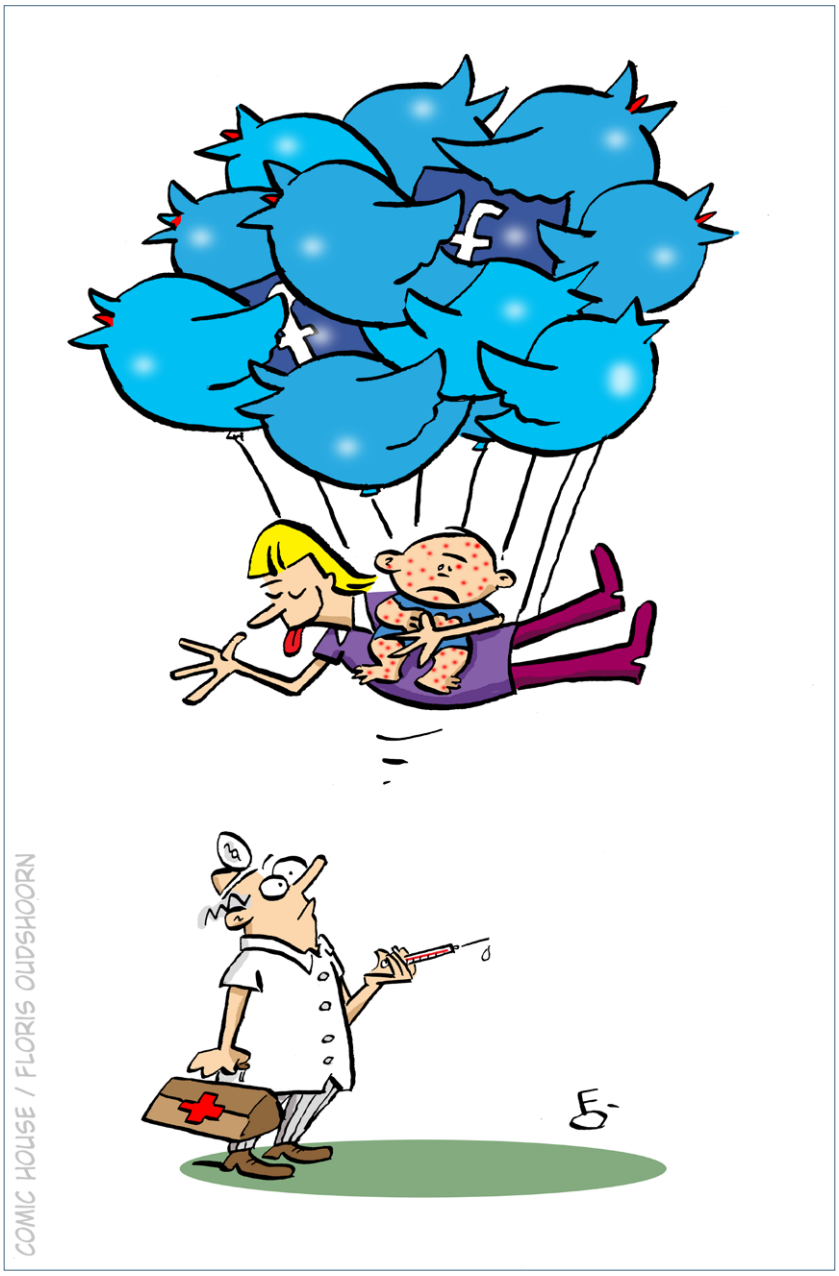
The real problem is that many people are not so much uninformed but misinformed. They hold views that are shaped not by a lack of knowledge but by fundamental biases. To understand this, it is necessary to use theories of motivated reasoning. When people try to find out about something, they are motivated by two goals. The first is to find the truth, where they look for and consider carefully all

of the evidence, so as to reach the best conclusion. The second are partisan, where they look for evidence that will fit their prior beliefs. In practice, everyone pursues both of these goals to some extent. The question is why some people place so much emphasis on the partisan goals at the expense of the accuracy ones.

One of the classic studies in this area involved asking subjects to synthesise evidence that would allow them to explain an issue to someone else.[17] The two issues selected were both known to evoke strong feelings: gun-control and affirmative action. In both cases, the prior positions of the subjects were noted. The computer tracked the information that they searched and the time that they spent reading different arguments, with the material being clearly labelled as to where it came from.

The researchers found evidence of a series of different biases. Subjects regarded evidence that they agreed with as being stronger and more relevant than anything they disagreed with. They actively denigrated evidence they disagreed with while accepting evidence they agreed with at face value. When they were given control over the sources that they looked at, they actively sought out anything that would support their views and avoided anything that would challenge them. Even when people were presented with exactly the same evidence, they could take completely different messages from it.

The same can be seen with vaccines. In one study, while many people were willing to accept evidence of the effectiveness of human papilloma virus vaccine, some went to considerable lengths to undermine it.[18] These were people who had particular views on individual responsibility, traditional gender norms, or who believed that this particular vaccine condoned sexual activity.



Recognising the backfire effect

But surely there is something we can do. For those of us who live in what we believe to be a rational, evidence informed world, isn't it possible to engage in a dialogue where we challenge false beliefs? For example, if someone has been given incorrect information, surely it would be possible to provide correction from an authoritative source? Not necessarily.

In one study, parents were presented with information from the US Centres for Disease Control.[18] This challenged the widespread myth that the MMR (measles, mumps and rubella) vaccine causes autism. Overall, it did reduce the extent to which the false claims were believed, but those who were already opposed to vaccination said that they were even less likely to have the child vaccinated.

Observations such as this are manifestations of what has been called the backfire effect.[16] It takes several forms.

Familiarity with false information or, fake news, increases the likelihood that it will be believed. Quite simply, if a lie is repeated often enough, many people will believe that it is true. This is even the case when repeating it simply to challenge it.

Overkill occurs whenever many different reasons are given as to why it is wrong. People like simple explanations and multiple counterarguments simply cause confusion.

Polarised attitudes are important. When people are given information that is contrary to their beliefs, they selectively recall any evidence or arguments that oppose it. In this way, they reinforce the pre-existing beliefs, no matter how wrong they are.

Finally, messages that cause fear can be counter-productive, either because they're simply not believed or because the activity in question appeals to people who are attracted to risk-taking.

How to best communicate the facts in support of public health

So what can be done? Many proposed solutions respond to the evidence of backfire effects. For example, one can state the facts, and then introduce the myth, rather than the other way round and then can debunk the myth, ending with the scientific fact. A common recommendation is to avoid repeating myths. Above all, messages should be kept simple. Trying to wear people down by multiple counterarguments simply confuses them. In some cases, it may be better to avoid the facts altogether and simply appeal to people's values and norms. And it is important to avoid implying that activities that are very rare are actually common. Appeals to fear can work, but they need to be used selectively and with care.

If disinformation is a threat to public health, what can be done more generally? First, the health community must challenge politicians who lie. Too often we have been reluctant to do so for fear of being seen as political. Yet the political determinants of health have been clear at least since Virchow called for action against the aristocracy, and the church that supported them, when he investigated a typhus epidemic in Silesia in the 19th century.[19] If we believe in evidence, surely it is a natural consequence that we will confront those who lie so blatantly, no matter what their position? Second, it is essential to tackle the threat that disinformation poses to the democratic process. At the very least, the public should know who pays for political advertising and the authorities should be able to respond to it in real time. Finally, it is important to engage seriously with technology companies themselves. They already can decide what is seen and what is not seen. It is already possible to install software that will link messages to fact checking sites. Should this not be the default setting? It is also possible to deny advertising revenues to those distributing hate messages. And even if governments fail to act, we should call for action, such as boycotts of companies that advertise on websites that peddle lies designed to create hatred and division.

Reference

1 Romano A. Jordan Peele's simulated Obama PSA is a double-edged warning against fake news. *Vox*. 2018-04-18 ; Available at: https://www.vox.com/2018/4/18/17252410/jordan-peele-obama-deepfake-buzzfeed

2 Dickson A. *Royal Shakespeare: a playwright and his king*. 2016 Available at: https://www.bl.uk/shakespeare/articles/royal-shakespeare-a-playwright-and-his-king

3 Hanrahan J. Blackmail, *Scandal, and Revolution: London's French Libellistes,* 1758–92. 2008, Manchester: Manchester University Press.

4 McKernon, E., *Sifting fake news from truth. MacLean's Magazine,* 1925 (Nov 15th): p. 32.

5 BBC News. *Vote Leave drops appeal against fine*. 2019; Available from: https://www.bbc.com/news/uk-politics-47755611

6 Cadwalladr, C. Vote Leave faces scrutiny over £50m football contest. *The Guardian* 2018-05-20; Available from: http://www.theguardian.com/politics/2018/may/20/vote-leave-scrutiny-facebook-data-football-contest-brexit

7 European Commission in the UK. *Euromyths*. 2017; Available from: https://blogs.ec.europa.eu/ECintheUK/euromyths-a-z-index/

8 Allcott, H. and M. Gentzkow, Social media and fake news in the 2016 election. *Journal of economic perspectives,* 2017. 31(2): p. 211–36.

9 House of Commons, *Disinformation and 'Fake News': Interim Report*. 2018, London: Digital, Culture, Media, and Sport Committee.

10 Wardle C. Fake news. *It's complicated*. 2018- 12-10. Available at: https://medium.com/1st-draft/fake-news-its-complicated-d0f773766c79

11 Expert Panel on effective ways of investing in health, *Vaccination Programmes and Health Systems in the European Union*. Brussels: European Commission, 2018.

12 Donzelli G. et al., *Misinformation on vaccination: A quantitative analysis of YouTube videos*. Hum Vaccin Immunother 2018; 14(7): 1654–1659.

13 Nickerson, R.S., *Confirmation bias: A ubiquitous phenomenon in many guises*. Review of general psychology, 1998. 2(2): p. 175.

14 Broniatowski, D.A., et al., Weaponized Health Communication: Twitter Bots and Russian Trolls Amplify the Vaccine Debate. *Am J Public Health,* 2018. 108(10): p. 1378–1384.

15 Starbird K. *The Surprising Nuance Behind the Russian Troll Strategy*. 2018-10-20; Available from: https://medium.com/s/story/the-trolls-within-how-russian-information-operations-infiltrated-online-communities-691fb969b9e4

16 Rossen, I., M.J. Hurlstone, and C. Lawrence, Going with the Grain of Cognition: Applying Insights from Psychology to Build Support for Childhood Vaccination. *Front Psychol,* 2016. 7: p. 1483.

17 Taber, C.S. and M. Lodge, Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science,* 2006. 50(3): p. 755–769.

18 Kahan, D.M., et al., Who fears the HPV vaccine, who doesn't, and why? An experimental study of the mechanisms of cultural cognition. *Law Hum Behav,* 2010. 34(6): p. 501–16.

19 Virchow, R.C., Report on the typhus epidemic in Upper Silesia. 1848. *Am J Public Health,* 2006. 96(12): p. 2102–5.