Countering Vaccine Misinformation at Scale: From ChatBots to Influencers

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Alexandra Michel, MPH, CPH
International Vaccine Access Center
Johns Hopkins Bloomberg School of Public Health
amiche17@jh.edu
Overview

Misinformation: Spread, Impact and Scale

Communication Models

Countering Misinformation

Approaches
1. VIRA Chatbox
2. Pre-bunking Games
3. Community training
What do you think spreads more quickly on social media – misinformation or true information?
What do you think spreads more quickly on social media – misinformation or true information?

Results from a large MIT study of 126,000 news items circulated among 3 million Twitter users found that false news can spread far more quickly than true news items.

False news that reached 1,500 people did so six times faster than did true stories. And falsities were 70% more likely to be retweeted than truths, according to a model of the data.

Even the most popular true news stories rarely reached more than 1,000 people. The top 1% of false news stories reached between 1,000 and 100,000 people.
“A lie can get halfway around the world before the truth can put its pants on.”

COMMON SENSE with DOMINICK BONNY
Health misinformation has been identified as a major threat to public health, democracy, and global security.

I am urging all Americans to help slow the spread of health misinformation during the COVID-19 pandemic and beyond. Health misinformation is a serious threat to public health. It can cause confusion, sow mistrust, harm people’s health, and undermine public health efforts. Limiting the spread of health misinformation is a moral and civic imperative that will require a whole-of-society effort.

Vivek H. Murthy, M.D., M.B.A.
Vice Admiral, U.S. Public Health Service
Surgeon General of the United States

The Scale of Social Media

There are now at least 4.2 billion social media users around the world.

On average, more than 1.3 million new users joined social media every day during 2020.

Facebook alone has over 2 billion users worldwide.
Misinformation and Vaccine Hesitancy

False information shared on social media platforms has provided a popular mechanism for misinformation about vaccines to spread.

Social media serves as an important conduit of information, particularly for vaccine hesitant individuals, who are more likely to rely on online information.

Vaccine hesitancy has become a global phenomenon, affecting low-, middle-, and high-income countries alike.
How can we intervene at the scale of Facebook?

One of the challenges of countering misinformation is the sheer scale

- There’s simply no way to effectively debunk or respond to every current piece of misinformation
- Major social media platforms have been complacent or even intentionally amplified misinformation spread
- New misinformation emerges all the time
Misinformation is tricky, sticky, and fast

- Misinformation is “sticky” - even when we’ve been corrected and accepted that the misinformation is false, research suggests it can continue to influence our decisions and “sticks” in memory.

- Evidence of “backfire effects” – providing correct information can cause people to further strengthen their belief in false information.

https://firstdraftnews.org/articles/a-guide-to-prebunking-a-promising-way-to-inoculate-against-misinformation/
The Information Deficit Model

Let me tell you why you're wrong

Wow thank you so much

https://www.equallyours.org.uk/10-tips-for-talking-about-equality/
The Information Deficit Model

“...the most widely held, and simplest, model of what audiences need from science communication—what is known as the ‘deficit model’—is wrong...

This model depicts nonscientists simply as not yet informed about what science has to say on a topic. In this model...the task of communication is simply to explain the facts to the public.”
The Information Deficit Model

Communicating Science Effectively: A Research Agenda

Catherine na Nollag
@cafernblue

i still think my favourite thing that's ever happened to me on the internet is the time a guy said "people change their minds when you show them facts" and I said "actually studies show that's not true" and linked TWO sources and he said "yeah well I still think it works"

12:07 PM · 12/10/19 · Twitter for Android
A Cone of Silence Culture

“I find that the cone of silence culture in which scientists only speak and write for one another is still widely prevalent...I’ve argued that such attitudes are, in fact, detrimental and have created a vacuum, allowing anti-science movements to take hold and even flourish.”

- Dr. Peter Hotez

bettina makalintal @bettinamak · Apr 14
have been reading more academic writing recently and i just need to say: why do you have to write like that *sobs*
Approaches to Combatting Vaccine Misinformation

#1 ChatBots
What if there was a credible source you could ask any question about COVID-19 vaccines that was available 24/7?

- Anonymous
- Accessible
- Comprehensible
- Social listening
What if there was a credible source you could ask any question about COVID-19 vaccines that was available 24/7?

- Anonymous
- Accessible
- Comprehensible
- Customizable

Vaccine Information Resource Assistant (VIRA)
A major challenge for health care workers as well as the general public is that information on COVID-19 vaccines changes – a lot.

VIRA is a tool to help both groups stay up-to-date

https://www.bmorevaxxed.org/ambassador-providers/
Empathy is an essential tool when communicating with vaccine hesitant individuals.

You **CANNOT** effectively address an individual’s doubts or concerns about any health topic without the following:

- build trust
- show understanding/empathy
- promote open communication
Both young participants and advocates said messages achieved credibility through

(1) message directness and

(2) the establishment of rapport between the user and chatbot through conversational syntax and empathetic, reflective statements.
Establishing Credibility
Empathetic responses used casual, nontechnical language to answer questions using evidence in what participants said was a transparent, contextualized response. A young woman described the style as, “kind of sticking to the facts in a colloquial/conversational manner—doesn’t feel like I’m reading a newspaper or a research paper”

Authority as Elitism
Young participants considered the use of a testimonial-style quote attributed to a Harvard physician to be elitist. One male advocate responded by saying, “Why do I care? It’s throw[ing] that he just has a title at my face” (Participant 08). Advocates aged >30 years agreed that the testimonial was not helpful, citing the politicization of doctors and science and suggesting the chatbot display testimonials from frontline health workers, such as emergency medical technicians.
Project Debater is the first AI system that can debate humans on complex topics. The goal is to help people build persuasive arguments and make well-informed decisions.
Chatbots help us learn more about what questions people have:

- Identify emerging misinformation
- Identify concerns
- Identify best practices for responding
Approaches to Combatting Vaccine Misinformation
#2 Prebunking Games
What if we changed our approach altogether?

Rather than seeing if we can undo the damage caused by misinformation *after the fact*, we focused on preventing misinformation from ever taking hold in the first place?
Pre-bunking

Preemptively exposing people to weakened doses of the techniques used to spread misinformation as a way to “inoculate” them against these tactics

Pre-emptive + Debunk = Prebunk

Prebunking interventions based on “inoculation” theory can reduce susceptibility to misinformation across cultures

This study finds that the online “fake news” game, Bad News, can confer psychological resistance against common online misinformation strategies across different cultures. The intervention draws on the theory of psychological inoculation: analogous to the process of medical immunization, we find that “prebunking,” or preemptively warning and exposing people to weakened doses of misinformation, can help cultivate “mental antibodies” against fake news. We conclude that social impact games rooted in basic insights from social psychology can boost immunity against misinformation across a variety of cultural, linguistic, and political settings.
Pre-bunking

A team of social psychologists at the Cambridge Social Decision-Making Lab has created a series of games to immunize the public against misinformation by letting players take on the role of a fake news producer.
Bad News, Go Viral!, Harmony Square

The goal is to build your own fake news empire and gain as many followers as possible while maintaining credibility.

https://www.getbadnews.com/#intro

GO VIRAL! is a 5-minute game that helps protect you against COVID-19 misinformation. You’ll learn about some of the most common strategies used to spread false and misleading information about the virus.

https://www.goviralgame.com/books/go-viral/

You, the player, are hired as Chief Disinformation Officer. Over the course of 4 short levels, your job is to disturb the square’s peace and quiet by fomenting internal divisions and pitting its residents against each other.

https://harmonysquare.game/en
Pre-bunking Games

“We find significant and meaningful reductions in the perceived reliability of manipulative content across all languages, indicating that participants’ ability to spot misinformation significantly improved. Relevant demographic variables such as age, gender, education level, and political ideology did not substantially influence the inoculation effect.”

https://misinforeview.hks.harvard.edu/article/global-vaccination-badnews/
The Cranky Uncle game uses cartoons and critical thinking to fight misinformation. The game was developed by Monash University scientist John Cook, in collaboration with creative agency Autonomy. The game is now available for free on iPhone, Android, and as a browser game.

https://crankyuncle.com/game/
Approaches to Combatting Vaccine Misinformation

#3 Training Community Members
Coursera Training for Parents and Teachers

**COVID Vaccine Ambassador Training: How to Talk to Parents**

*4.9* 1,201 ratings | 99%

Rupali J. Limaye, PhD, MPH, MA

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**Embajador de la Vacuna COVID: Cómo Hablar con los Padres**

Rupali J. Limaye, PhD, MPH, MA

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3 Communication Techniques for Vaccine Conversations

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How to Spot and Debunk Common Vaccine Misinformation
When scientists fail to engage, trolls will fill the void.
Questions, comments, strongly worded letters