

Vaccineren tegen nepnieuws

Sander van der Linden

18/1/2020

Professor of Social Psychology in Society
Department of Psychology, University of Cambridge

@Sander_vdLinden

Defining “fake news”

**INVASION
OF
FAKE NEWS!**



Doorgestuurd

Nederlandse Omroep
Stichting
NOS
NOS.nl - Nieuws, Sport en Ev...
nos.nl

woax

Corona-infectie bij medewerkers
Chinees Restaurant kyoto in
Rotterdam-Noord.
Medewerkers in quarantaine. LEES
MEER:

<https://nos.nl> http://38.media.tumblr.com/776a42e607a0796d13256ca4c1e60327/tumblr_mxwkqclCb51s6blrxo1_400.gif

15:07

Hoe Janet Ossebaard (53) uit Bathmen graancirkels verruilde voor massaal gelezen corona-complotten

VIDEO Corona is maar een griepje, bedacht door multimiljonair Bill Gates en mogelijk geholpen door 5G. Het zijn de bijzondere opvattingen van complotdenker Janet Ossebaard (53) uit Bathmen. Ze verruilde haar graancirkelcentrum voor de verspreiding van massaal gelezen corona-complotten. Maar achter die wondere wereld van deze complotkoningin schuilt ook een duistere kant. Een portret.

RTLnieuws

RTL Nieuws

Bekijk de laatste uitzending

Nieuws Economie Sport Entertainment Tech Lifestyle EditieNL Uitzendingen

Nederland sluit alle scholen en universiteiten

44 minuten gelezen



DINSDAG 14 NOVEMBER 2017

De Telegraaf

SPRAAKMAKEND DE GROOTSTE!

Italië huilt na nieuwe stunt Oranje-killer Zweden *telesport*

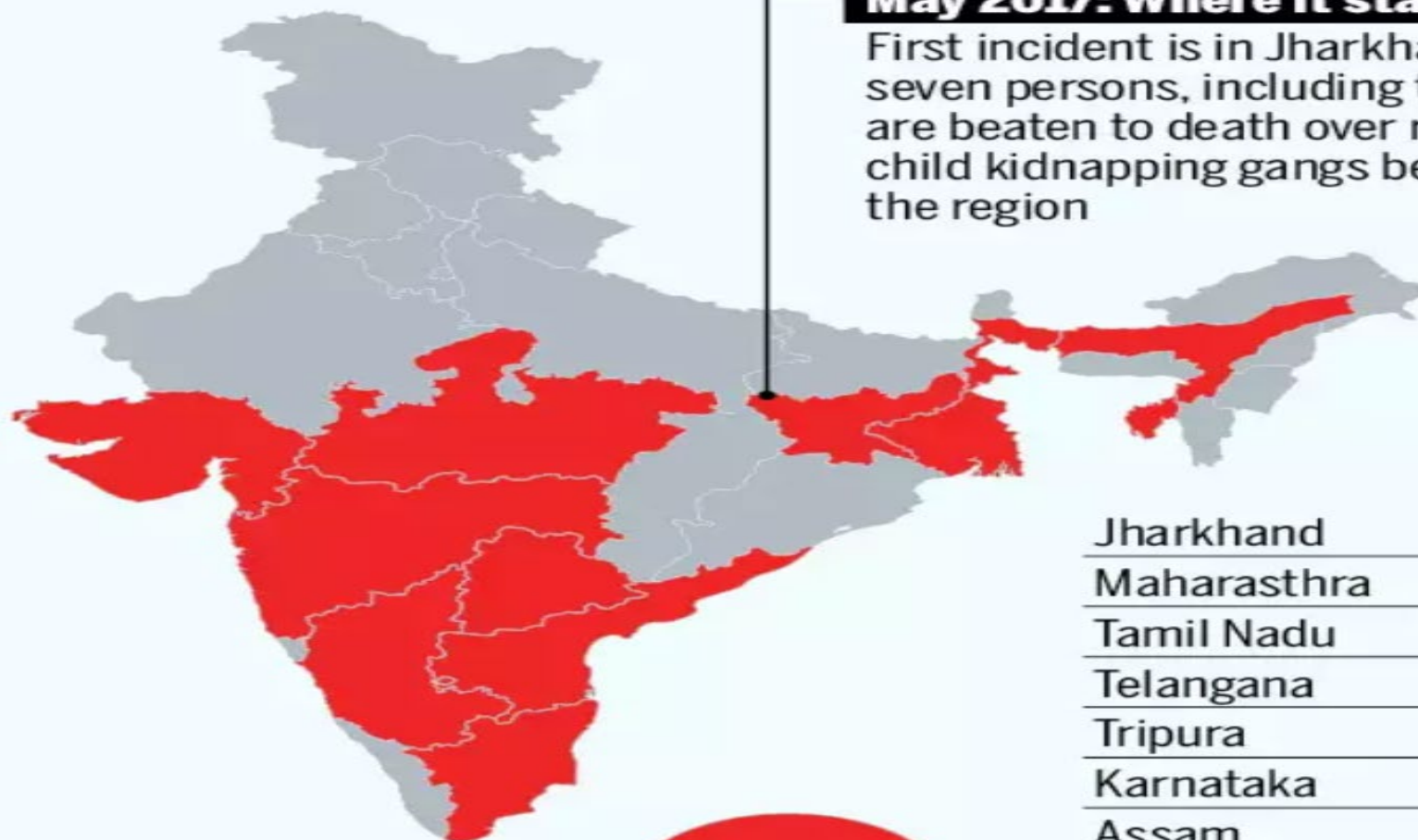
Kabinet wijst in brief nadrukkelijk naar Kremlin

Nepnieuwswlawine

WHERE FAKE NEWS ON WHATSAPP LED TO LYNCHINGS

May 2017: Where it started

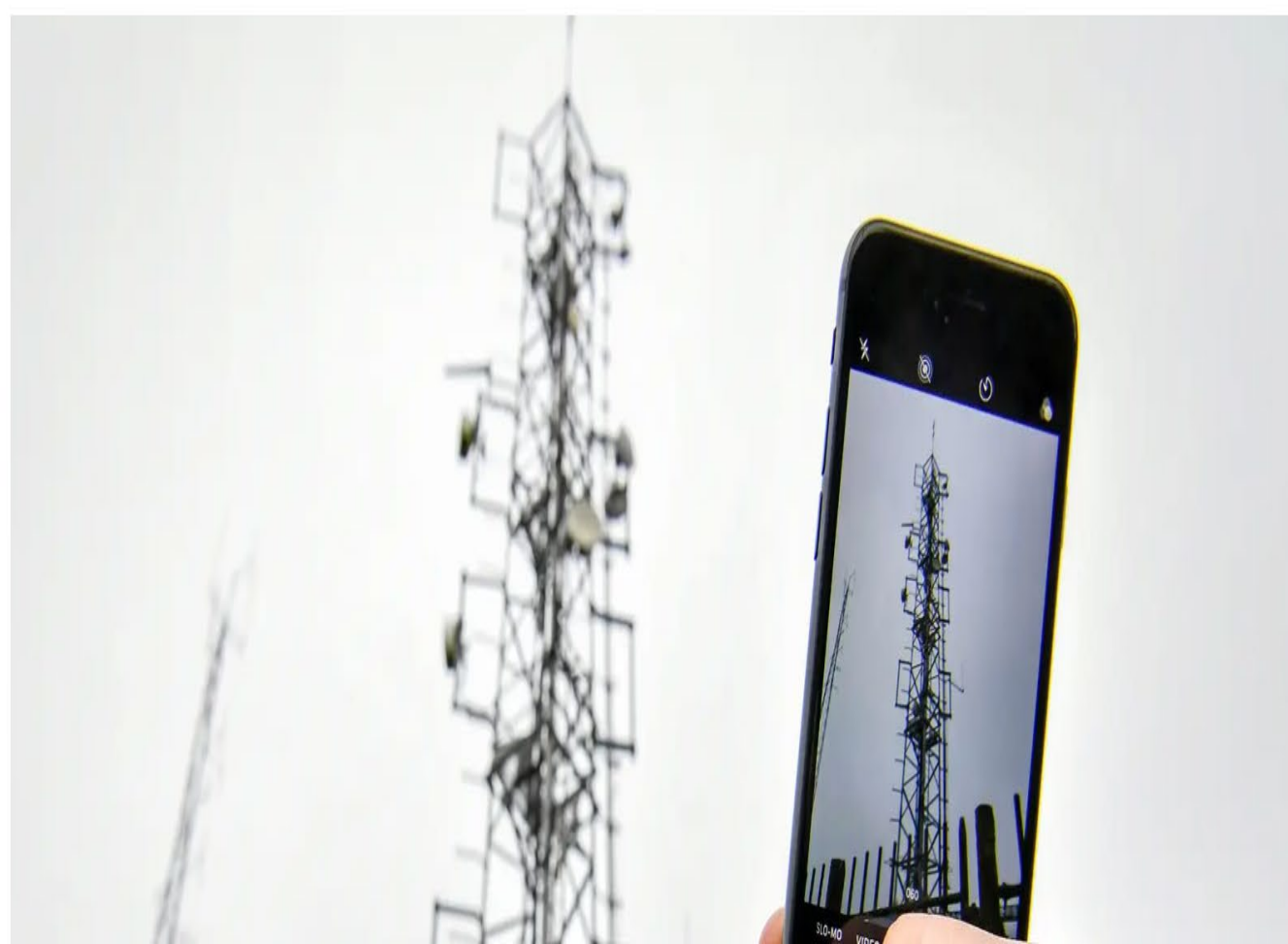
First incident is in Jharkhand when seven persons, including two brothers, are beaten to death over rumours of child kidnapping gangs being active in the region



Total
27

Jharkhand	7
Maharashtra	5
Tamil Nadu	3
Telangana	2
Tripura	2
Karnataka	2
Assam	2
Gujarat	1
West Bengal	1
Andhra Pradesh	1
Madhya Pradesh	1

Vandals set 50 cellphone masts in the UK on fire because of a conspiracy theory linking the coronavirus with 5G



Hundreds die in Iran over false belief drinking methanol cures coronavirus

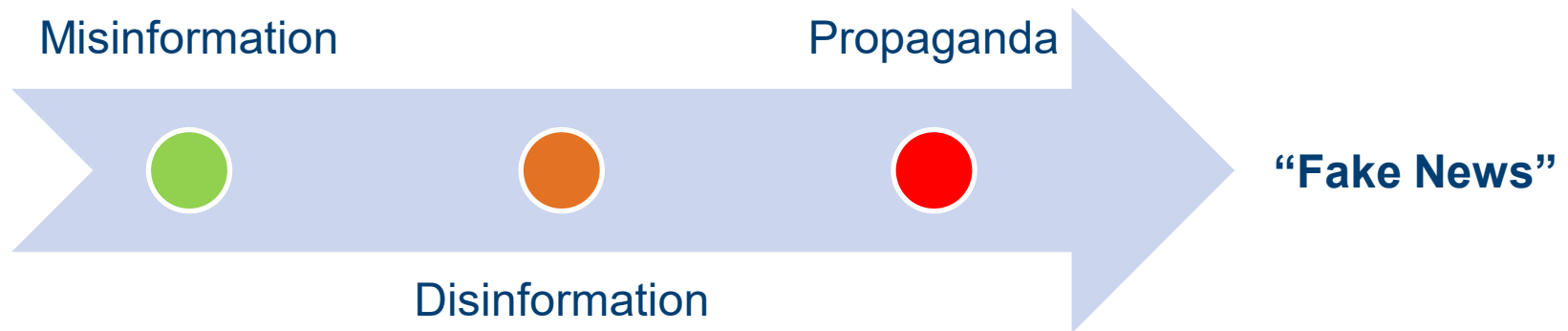
Posted Tue 28 Apr 2020 at 7:14am



What is “fake news”?

(van der Linden, Roozenbeek, Oosterwoud, Compton, & Lewandowsky, 2017)

- **Misinformation**
 - “False or incorrect information” (including human error).
- **Disinformation** (misinformation + intent)
 - “The purposeful spread of false or incorrect information with the explicit intent to cause harm or to confuse and deceive others”.
- **Political Propaganda** (disinformation + political agenda)
 - “Institutionalized or state-run public indoctrination campaigns”.



What to do about it?

General Article

Debunking: A Meta-Analysis of the Psychological Efficacy of Messages Countering Misinformation



Man-pui Sally Chan¹, Christopher R. Jones²,
Kathleen Hall Jamieson², and Dolores Albarracín¹

¹Department of Psychology, University of Illinois at Urbana-Champaign, and ²The Annenberg Public Policy Center, University of Pennsylvania

Misinformation and Its Correction: Continued Influence and Successful Debiasing


Stephan Lewandowsky¹, Ullrich K. H. Ecker¹, Colleen M. Seifert²,
Norbert Schwarz², and John Cook^{1,3}

¹University of Western Australia, ²University of Michigan, and ³University of Queensland



Psychological Science in the
Public Interest
13(3) 106-131
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DOI: 10.1177/1529100612451018
http://pspi.sagepub.com





Journal
Political Communication >
Volume 37, 2020 - Issue 3


1,849
Views


6
CrossRef citations
to date

1540
Altmetric

Articles

Fact-Checking: A Meta-Analysis of What Works and for Whom

Nathan Walter ✉, Jonathan Cohen , R. Lance Holbert & Yasmin Morag
Pages 350-375 | Published online: 24 Oct 2019

Download citation <https://doi.org/10.1080/10584609.2019.1668894> 



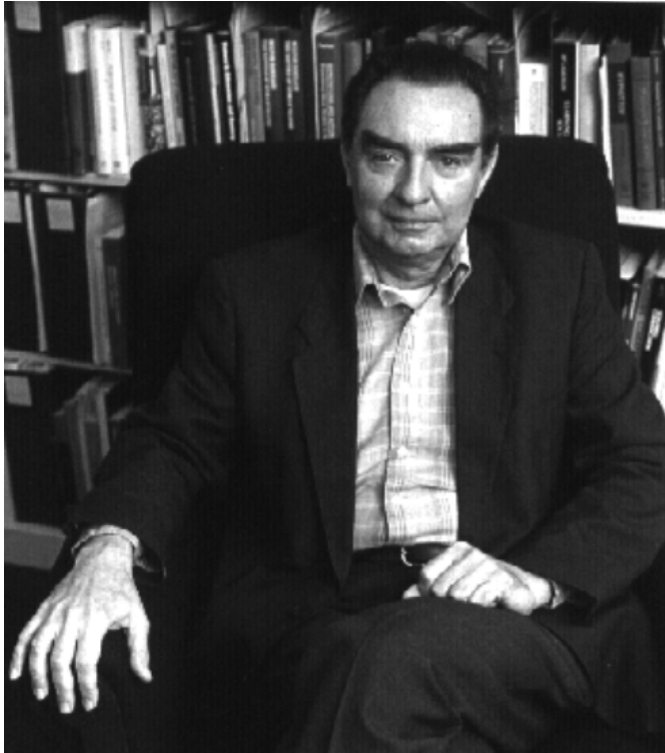
EXTRA! EXTRA!
READ ALL ABOUT IT!
PANTS ON FIRE!

LIES

...to keep you
...the face of reality

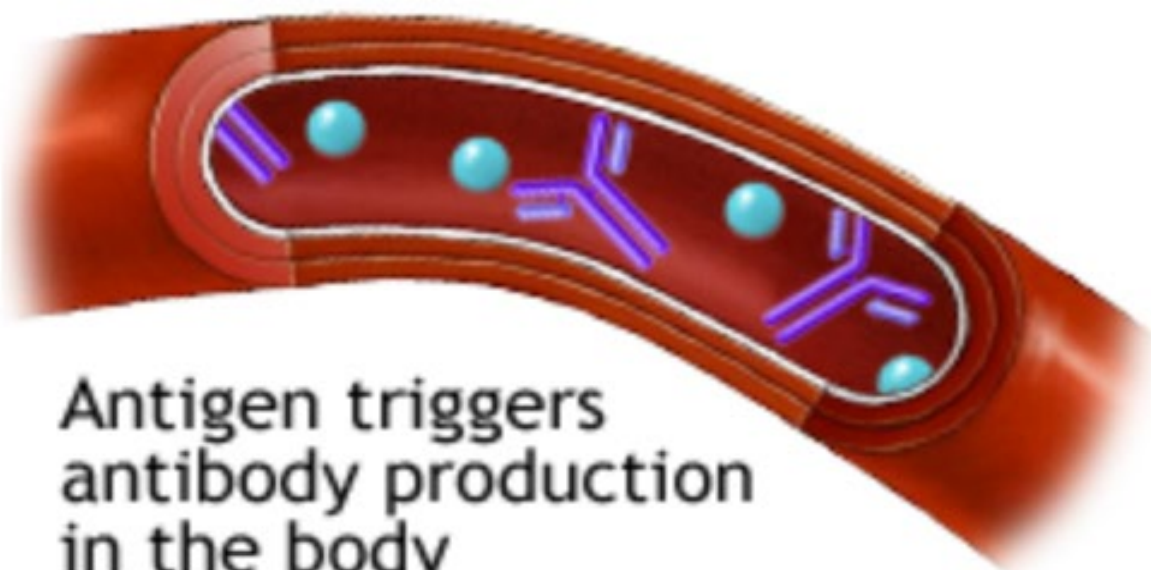
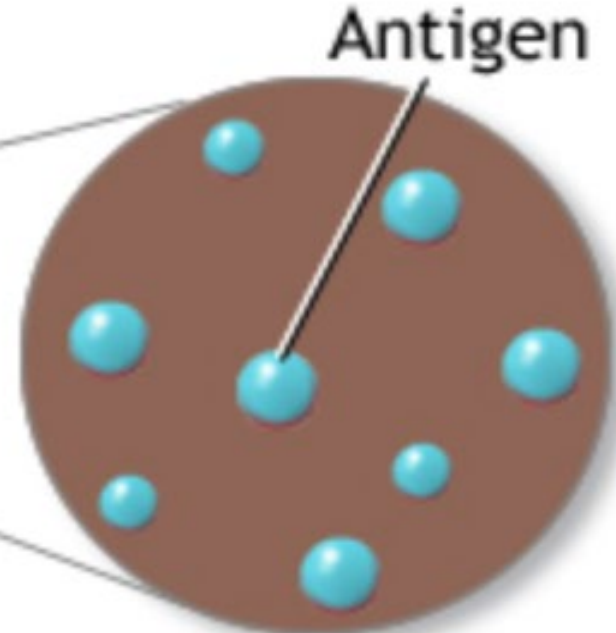
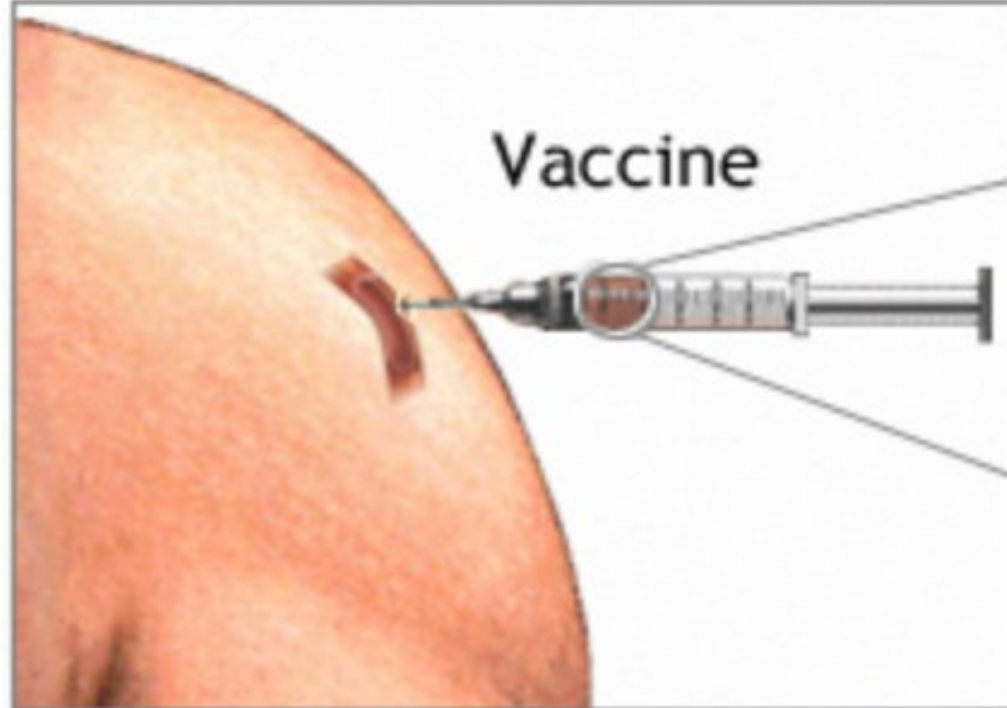
...Lies

The psychology of persuasion (Yale School)

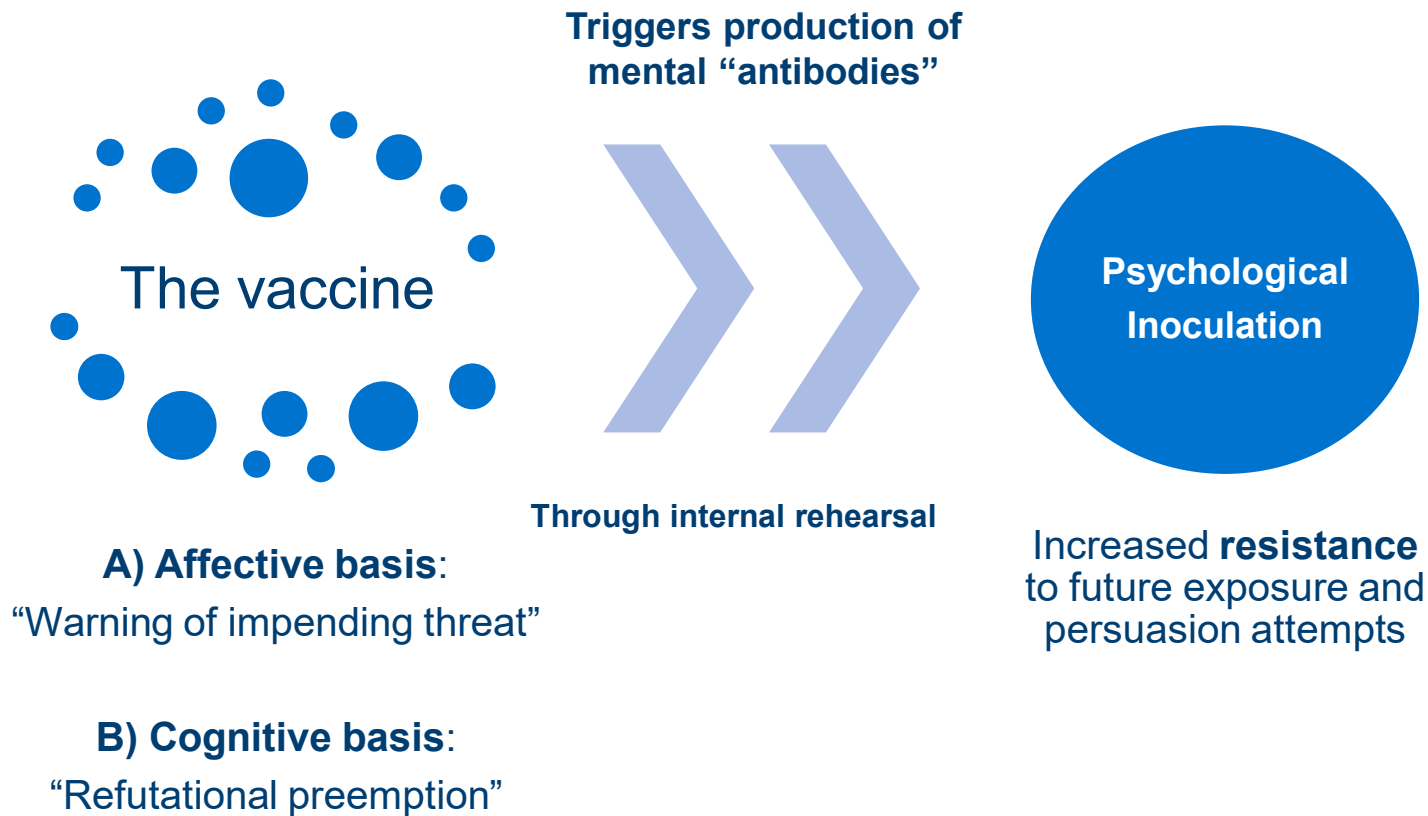


William McGuire





The process of psychological “inoculation”



NOS op3

NOS OP3 • BUITENLAND • TECH • 23-01-2017, 21:24 • AANGEPAST 23-01-2017, 21:24

Zo vaccineer je mensen tegen nepnieuws

Foutieve informatie - nepnieuws - is plakkerig, het blijft hangen en het verspreidt zich snel. "Het is net een virus", zegt Sander van der Linden, onderzoeker aan de Universiteit van Cambridge. Daarom heeft Van der Linden (30) [onderzoek gedaan](#) naar een 'vaccin'. En hij heeft 'm gevonden: "Met een klein beetje van het virus, bouw je meer resistentie op. Dat is het idee."

Inoculating against misinformation

Science

SHARE



Inoculating against misinformation

0

Sander van der Linden^{1,*}, Edward Maibach², John Cook², Anthony Leiserowitz³, Stephan Lewandowsky^{4,5}

+ See all authors and affiliations



Science 01 Dec 2017:
Vol. 358, Issue 6367, pp. 1141-1142
DOI: 10.1126/science.aar4533



0

Article

Info & Metrics

eLetters

 PDF

ADVANCED
SCIENCE NEWS

www.advancedsciencenews.com

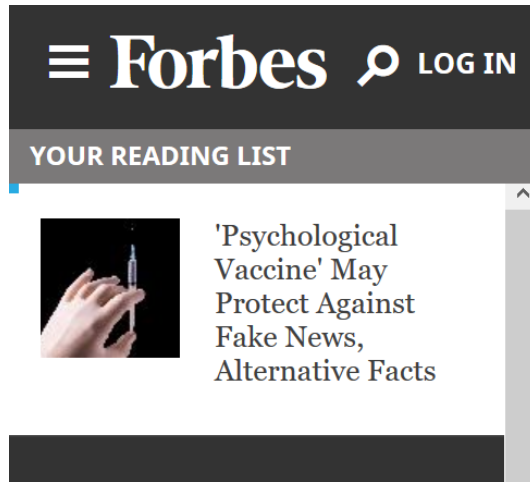
Global
Challenges


www.global-challenges.com

Inoculating the Public against Misinformation about Climate Change


[Sander van der Linden](#),* [Anthony Leiserowitz](#), [Seth Rosenthal](#), and [Edward Maibach](#)

A psychological vaccine against fake news



Forbes  LOG IN

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 'Psychological Vaccine' May Protect Against Fake News, Alternative Facts



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NEWS

Home UK World Business Politics Tech Science Health Education Enter

UK England N. Ireland Scotland Alba Wales Cymru

Cambridge scientists consider fake news 'vaccine'



SECTIONS  SEARCH **Los Angeles Times** **SUBSCRIBE**
Sale: 12 wks / 99¢

SATURDAY MAR. 18, 2017 MOST POPULAR LOCAL SPORTS ENTERTAINMENT POLITICS OPINION PLACE AN AD



Science / Science I

It's possible to 'vaccinate' Americans against fake news, experiment shows

Defence Against the Dark Arts?

"Your defences must therefore be as flexible and inventive as the arts you seek to undo"

—Professor Snape





SLE
CHT
NIEUWS

Van nepnieuws naar chaos. Hoe slecht ben jij?! Lok zoveel mogelijk volgers.

SPEEL DE GAME



A good
way to



fight
bad news



VOLGERS

215

GELOOFWAARDIGHEID



DNF

@DNF | GEHEIME INFORMATIE VOOR
IEDEREEN.

Nu online! De Nieuwe
Fakkel: GEHEIME INFORMATIE
VOOR IEDEREEN.

Toch die andere

Plaatsen

A psychological vaccine against fake news

npr WSHU news arts & life music programs shop

BBC Sign in News Sport Weather Shop Earth Travel

NEWS

Home Video World UK Business Tech Science Stories Entertainment & Arts

TODAY'S NEWS IN VERTICAL VIDEO
DOWNLOAD THE APP

Spot Fake News By Making It
MEDIA
March 18, 2018 · 8:03 AM ET
Heard on Weekend Edition Sunday

4:06
+ QUEUE
DOWNLOAD
EMBED
TRANSCRIPT

NPR's Lulu Garcia-Navarro talks with Sander van der Linden of the Cambridge Social Decision-Making Lab about his online game which tries to teach players about fake news by making them produce it.

Technology

Game helps players spot 'fake news'

🕒 22 February 2018

📱 🐦 🗨️ ✉️ ➦ Share

REUTERS | Video Edition: US | UK | IN | CN | JP

World Business Technology Innovations Entertainment Oddly Enough Most Popular

TECHNOLOGY

BAD NEWS

From fake news to chaos! How bad are you? Get as many followers as you can.

CONCEAL FALSIFY PLAY THE GAME MOCK

DISCREET

WHISPER TWIST

About the game
For educators
Press kit
Challenge your friends



The Fake News Game: Bad News! (getbadnews.com)



The Fake News Game (www.getbadnews.com)

FOLLOWERS

8

CREDIBILITY



take about a minute.

Let's get started by borrowing someone else's credibility to gain a bit of a following. What do you want to do?

Fake an official
Twitter account

Impersonate
someone important

The Fake News Game: Six Badges (DEPICT SCALE)



NEWS

Home
 Moments
 Notifications
 Messages



Search Twitter



Tweet

Tweets
65Followers
224K

Follow

Warren Buffet

@warrenbuffet99

United States

Joined December 2016

Tweet to Warren Buffet

3 Followers you know



Photos and videos



Misspelled account posing as Warren Buffett commands readers to 'learn people's names'

Pinned Tweet

**Warren Buffet** @warrenbuffet99 · Aug 26

Here's what's cool:

- 1 saying 'thank you'
- 2 apologizing when wrong
- 3 showing up on time
- 4 being nice to strangers
- 5 listening without interrupting
- 6 admitting you were wrong
- 7 following your dreams
- 8 being a mentor
- 9 learning and using people's names
- 10 holding doors open

Follow Refresh · View all

SuperSkills Limited @Sup...

Follow

Promoted



45 Ranch Substation @SO...

Follow



Ramona Substation @SO...

Follow

Find people you know

END Game



 [Replay](#)

 [Share](#)

**MISSION
ACCOMPLISHED!**

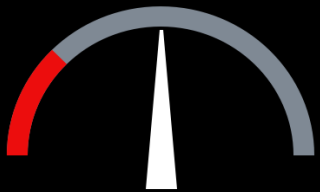
Congratulations! You've mastered the art of disinformation and collected a loyal army of 10657 followers.
#highscore! This is your certificate proving you're a fake news expert!

Results

FOLLOWERS

0

CREDIBILITY



Johnson Crude Oil
@JohnsonCrudeOil

Hey @LeoDiCaprio, it's snowing and freezing in New York. Could use some of that global warming you're always going on about!

Unreliable 1 2 3 4 5 6 7 Reliable

Inoculating against misinformation (Roozenbeek & van der Linden, 2019)

nature > palgrave communications > articles > article

palgrave
communications

HUMANITIES
SOCIAL SCIENCES

Article | [OPEN](#) | Published: 25 June 2019

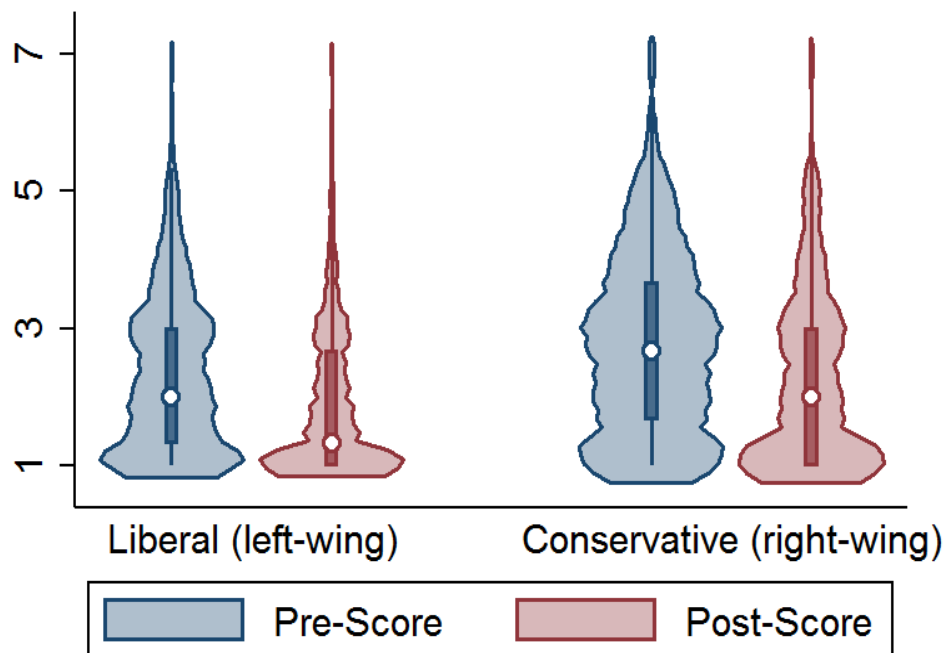
Fake news game confers psychological resistance against online misinformation

Jon Roozenbeek & Sander van der Linden 

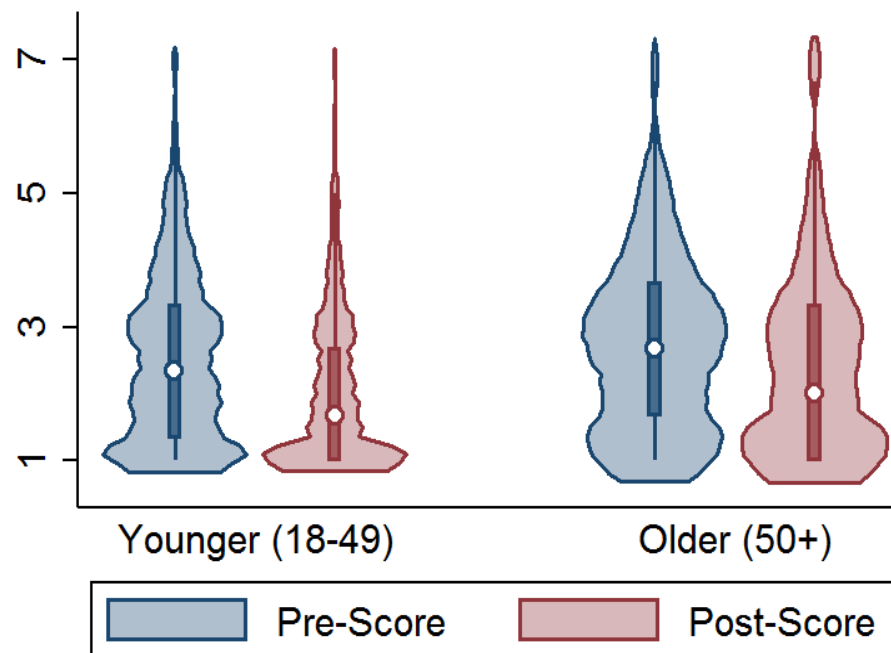
Palgrave Communications 5, Article number: 65 (2019) | [Download Citation](#) ↓

<https://www.nature.com/articles/s41599-019-0279-9>

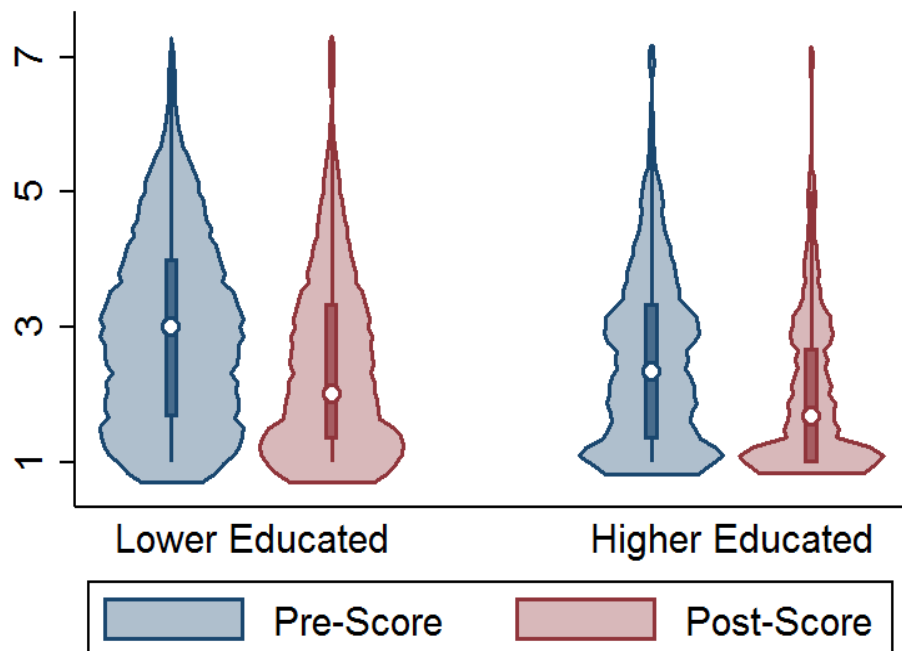
A



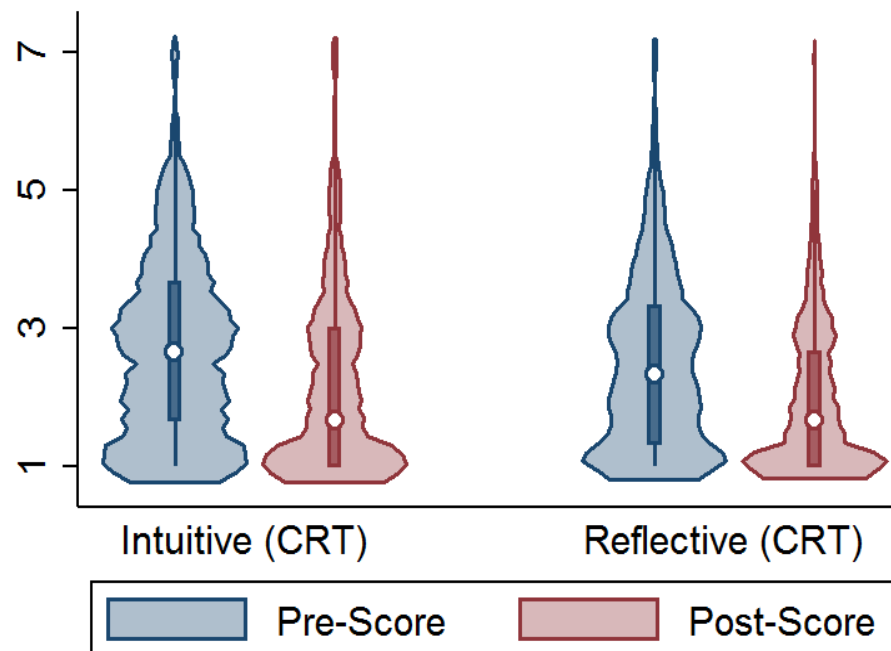
B



C



D



Randomized replication

Bad News

Your next objective is to complete a game. In the frame underneath you can start. The game takes +-15 minutes to complete. At the end of the game, you will receive a secret password. **You will have to enter this password in order to continue to the next page!**




The screenshot shows a game interface with a bright yellow background. The words 'BAD NEWS' are written in large, bold, red capital letters. Below this, there are some blue and black rectangular shapes, possibly representing game elements or a progress bar. The interface is contained within a browser window frame with visible scrollbars.



Melisa Basol

Tetris

Your next objective is to play a game. In the frame underneath you can start. You have to reach as high a level as possible. **After +-15 minutes of good performance, you will automatically move to the next page.** Double click on Tetris to start the game. You can use the arrow keys to move the blocks.



The screenshot shows the title screen of the Tetris game. The word 'TETRIS' is written in large, colorful, stylized letters. Below it, the name 'Lucio PANEPINTO' and the year '2014' are displayed. The background is black with a decorative border.

ading: Good News about Bad News: Gamified Inoculation
osts Confidence and Cognitive Immunity Agai...

Share: [f](#) [🐦](#) [g+](#) [in](#)

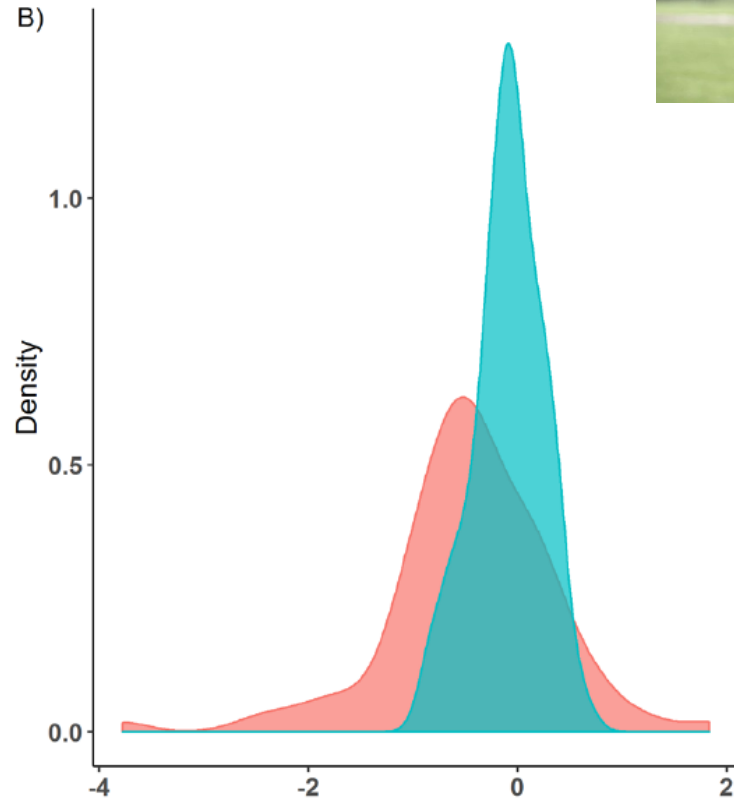
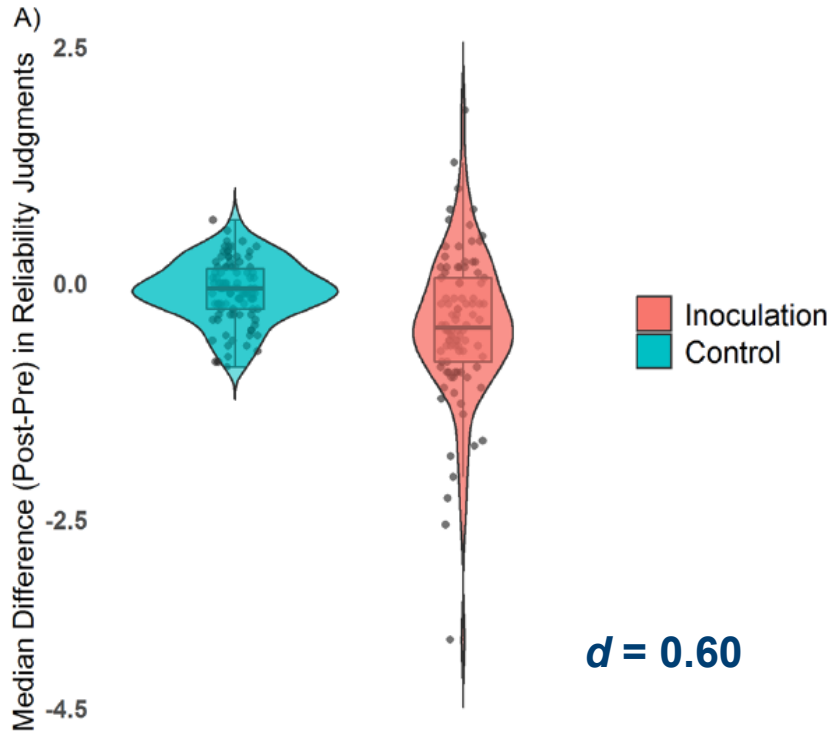
Special Collection: **Public Acceptance and Rejection of Science in a 'Post-Truth' World**

Research Articles

Good News about Bad News: Gamified Inoculation Boosts Confidence and Cognitive Immunity Against Fake News

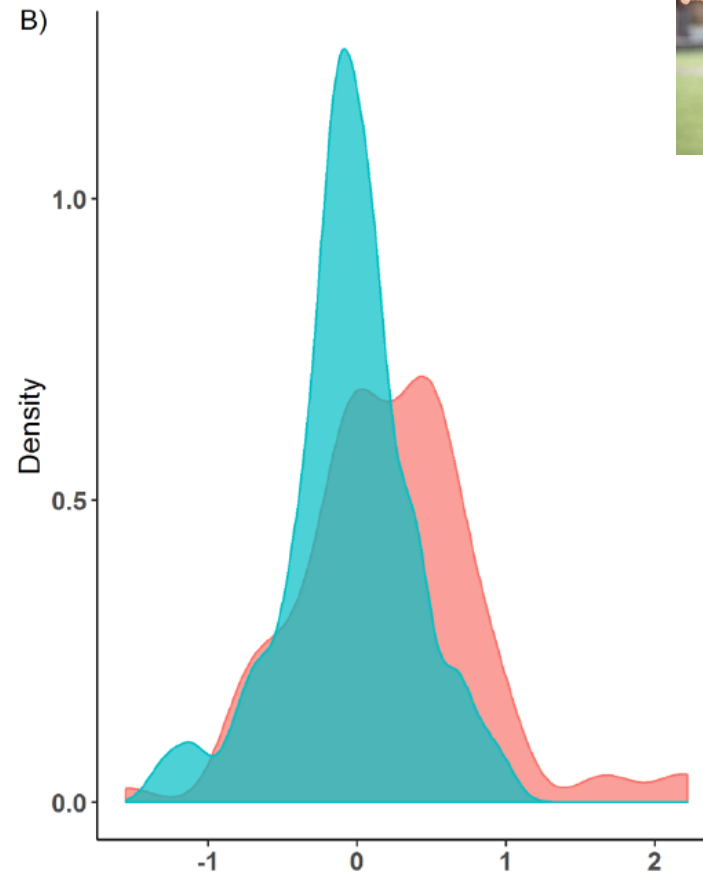
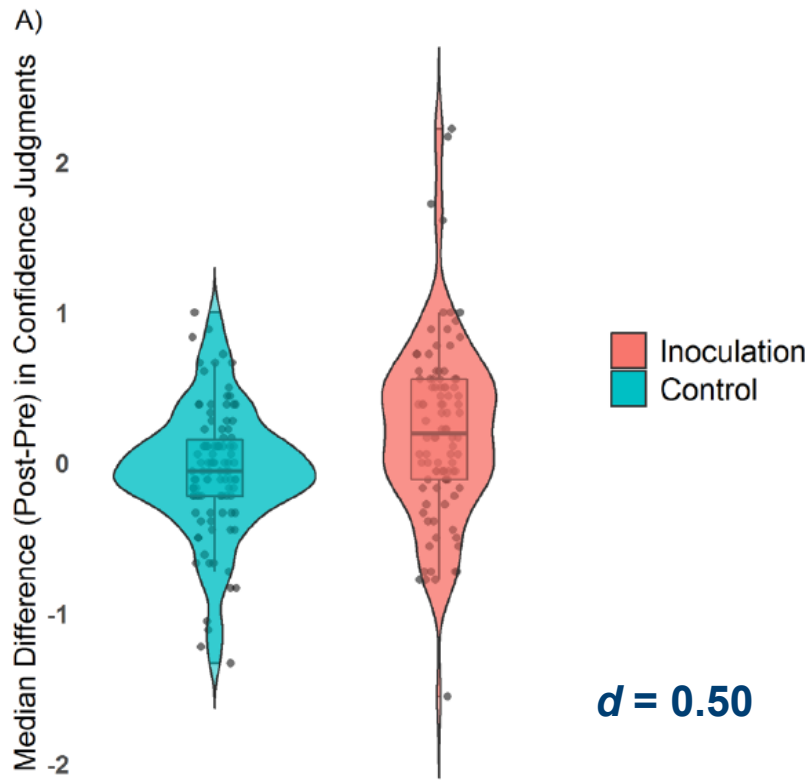
Authors: **Melisa Basol, Jon Roozenbeek, Sander van der Linden** 

Confidence judgments (n = 197)



Melisa Basol

Confidence judgments (n = 197)



Melisa Basol

Preregistered randomized replication



Rakoem Maertens

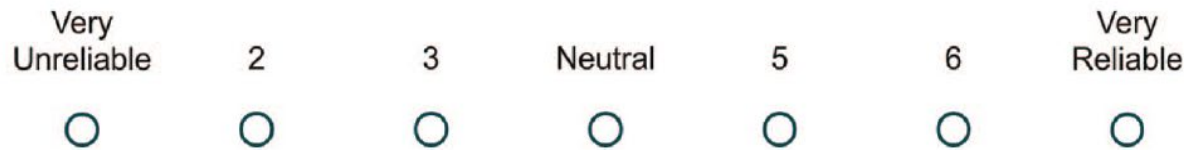


Figure 3. Example test item using the conspiracy technique. See the online article for the color version of this figure.

Long-Term Effectiveness of Inoculation Against Misinformation: Three Longitudinal Experiments

Rakoen Maertens, Jon Roozenbeek, Melisa Basol, and Sander van der Linden
University of Cambridge

This study investigates the long-term effectiveness of active psychological inoculation as a means to build resistance against misinformation. Using 3 longitudinal experiments (2 preregistered), we tested the effectiveness of *Bad News*, a real-world intervention in which participants develop resistance against misinformation through exposure to weakened doses of misinformation techniques. In 3 experiments ($N_{\text{Exp1}} = 151$, $N_{\text{Exp2}} = 194$, $N_{\text{Exp3}} = 170$), participants played either *Bad News* (inoculation group) or *Tetris* (gamified control group) and rated the reliability of news headlines that either used a misinformation technique or not. We found that participants rate fake news as significantly less reliable after the intervention. In Experiment 1, we assessed participants at regular intervals to explore the longevity of this effect and found that the inoculation effect remains stable for at least 3 months. In Experiment 2, we sought to replicate these findings without regular testing and found significant decay over a 2-month time period so that the long-term inoculation effect was no longer significant. In Experiment 3, we replicated the inoculation effect and investigated whether long-term effects could be due to item-response memorization or the fake-to-real ratio of items presented, but found that this is not the case. We discuss implications for inoculation theory and psychological research on misinformation.

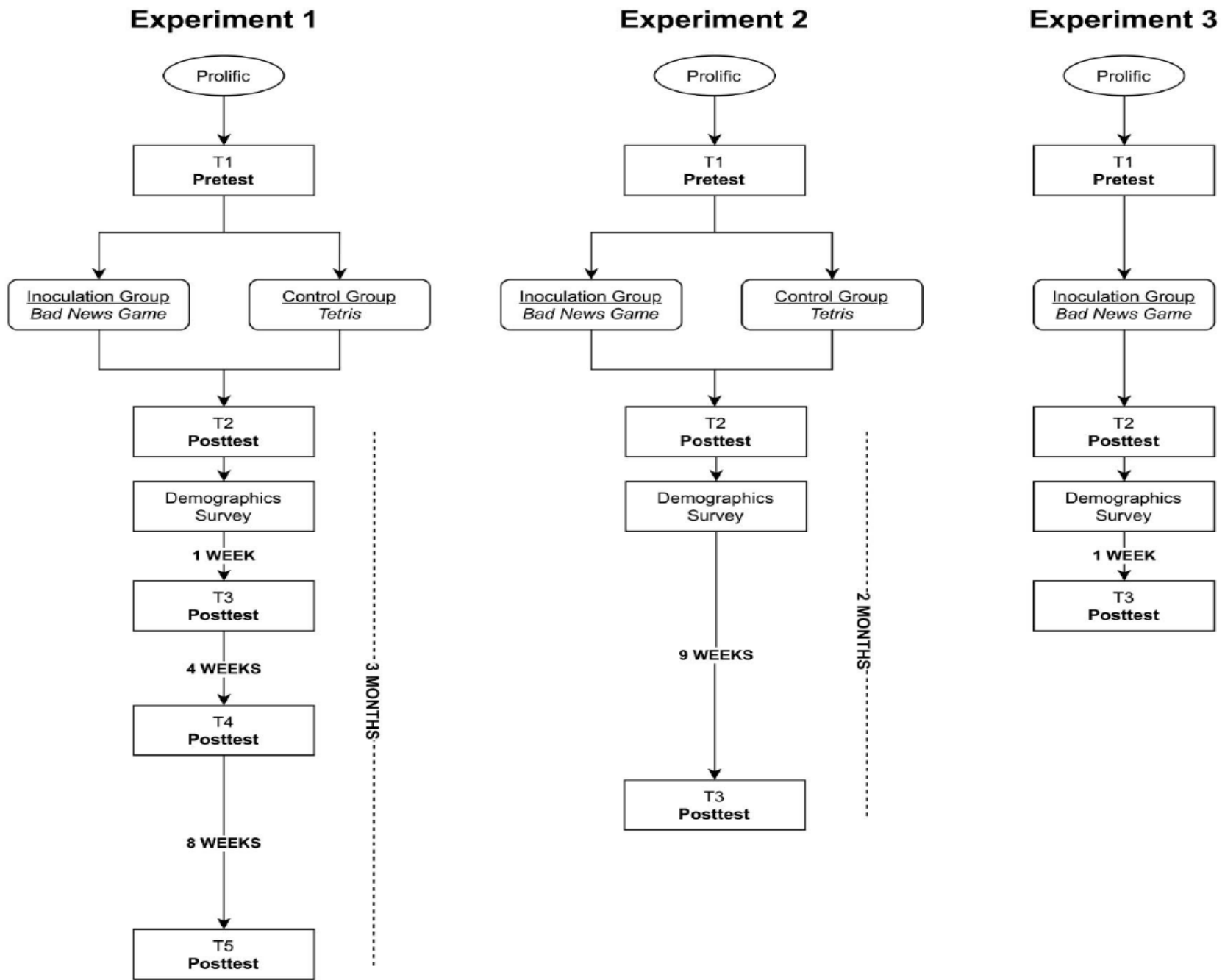


Figure 2. Overview of experiment flowchart of Experiments 1, 2, and 3.

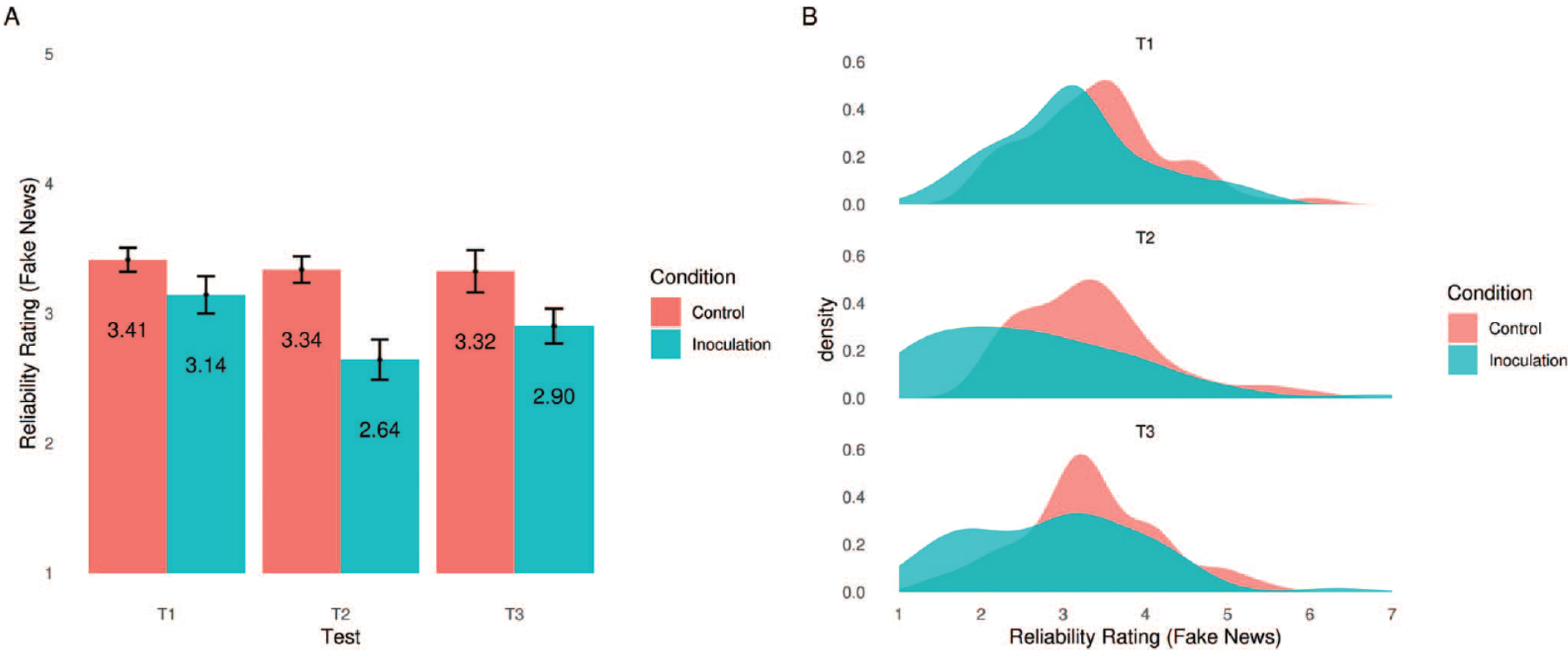


Figure 5. Reliability ratings of fake news items, separated by time and condition in Experiment 2.¹⁹ Panel A: plot of average fake news reliability ratings. Panel B: density plots of the same results. T1 = pretest; T2 = posttest (0 months); T3 = posttest (2 months). $N = 110$. Error bars represent 95% confidence intervals. See the online article for the color version of this figure.

Disentangling Item and Testing Effects in Inoculation Research on Online Misinformation: Solomon Revisited

Educational and Psychological
Measurement

1–23

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journals.sagepub.com/home/epm



Jon Roozenbeek¹ , Rakoен Maertens¹,
William McClanahan¹ and Sander van der Linden¹

Bad News Around the World: A Global Vaccination Program

HARVARD KENNEDY SCHOOL | SHORENSTEIN CENTER ON MEDIA, POLITICS, AND PUBLIC POLICY

HARVARD KENNEDY SCHOOL
Misinformation
Review

EXPLORE
the review

SUBMIT
an essay

Spreading the vaccine....

BAD
NEWS
SWE

Från Fejkade nyheter till
kaos! Hur lågt kan du gå?
Försök få så många följare
som du kan!

BÖRJA SPELA

SLE
CHT
NIEUWS

Van nepnieuws naar chaos. Hoe
slecht ben jij?! Lok zoveel
mogelijk volgers.

SPEEL DE GAME

BAD
NE
WS

النسخة العربية

ابدأوا اللعبة



Foreign &
Commonwealth
Office

***Bad News* is available in 15 additional languages**

Bad News Around the World: A Global Vaccination Program

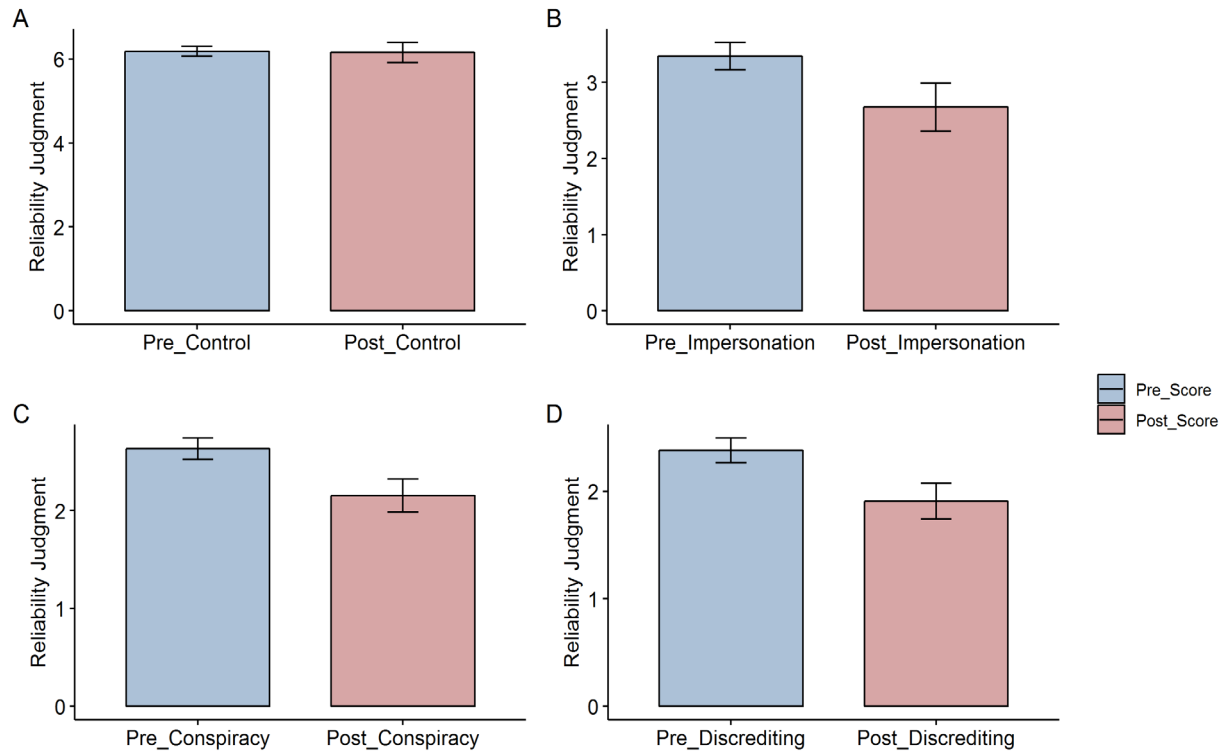
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HARVARD KENNEDY SCHOOL
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Review

EXPLORE
the review

SUBMIT
an essay

Roozenbeek, van der Linden, &
Nygren (2020)



Welcome to Sweden!

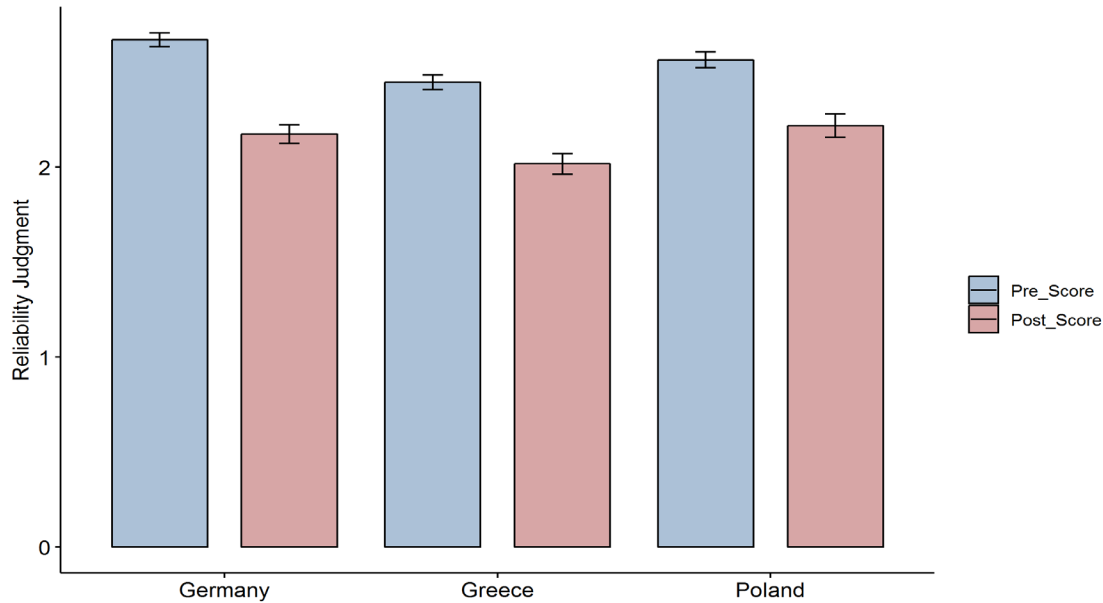
Bad News Around the World: A Global Vaccination Program

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HARVARD KENNEDY SCHOOL
Misinformation
Review

EXPLORE
the review

SUBMIT
an essay



$d = 0.37$

Bad News on Exhibit

UF



CENTER FOR
PUBLIC INTEREST
COMMUNICATIONS
UNIVERSITY OF FLORIDA




MENU

GIVE

2021 RESEARCH PRIZE IN PUBLIC INTEREST COMMUNICATIONS

Bad News Junior (www.getbadnews.com/junior)



 Unknown person
@UnknownPerson | I'm happy!

Attention: school will be
CLOSED tomorrow!

[Post this on Twitter](#)

COVID-19 inoculation game with UK Govt + WHO + UN



COVID-19 inoculation game with UK Govt + WHO + UN

6,336
LIKES

CREDIBILITY

manipulation tactics remain the same. Time to connect the dots.

 **JOEL**
In: Not Co-fraid group

this global NGO covering up that eating kiwis actually CURES the virus - Khrakozia knew all along but KEPT IT HIDDEN!

23 likes

POST THIS IN "NOT CO-FRAID"

NOT THIS ONE



JOEL

It's a wonderful world

Oh, how I need a Quarantini (or 5)! 🍸 🍸 🍸



STEPHANIE

Today at 07:18 a.m.

Big Pharma-owned company destroyed PRECIOUS RAINFOREST to fund its MULTI-PLY TOILET PAPER MONOPOLY! Profiting from CORONA!

#ToiletPaperVsNature 🗉

318 likes



United Nations @UN · Oct 9

Want to learn how to spot and resist misinformation?

New game by @GOVUK and @Cambridge_Uni can help you understand the strategies used to create & spread misinformation, and how to tackle them. goviralgame.com

6,388
LIKES



SHARE THIS!

**THE PEOPLE'S
REPUBLIC OF
KHTAKOZIA REPORTS
NO CORONAVIRUS
CASES**

and your objective is simple,
you are to expose the tactics

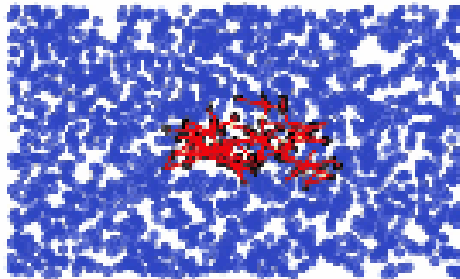
ATTACK THIS!

NOT THIS ONE

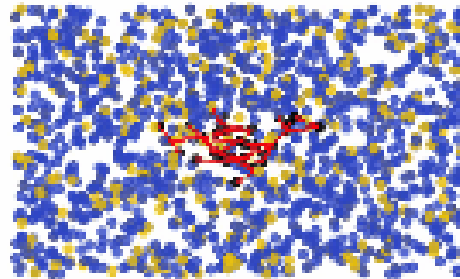
Herd Immunity Against Misinformation

Herd Immunity: How It Works

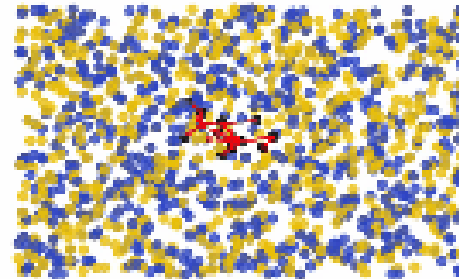
Percent Vaccinated: 0%



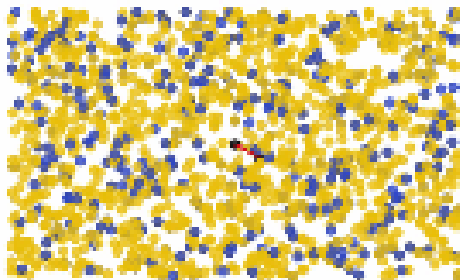
Percent Vaccinated: 25%



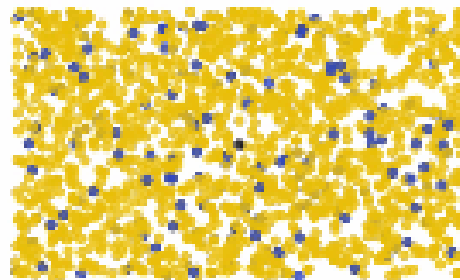
Percent Vaccinated: 50%



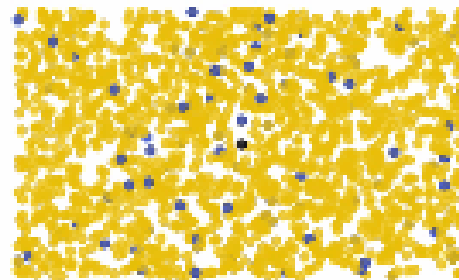
Percent Vaccinated: 75%



Percent Vaccinated: 90%



Percent Vaccinated: 95%



• Infected • Unvaccinated • Vaccinated



Foreign &
Commonwealth
Office



UNIVERSITY OF
CAMBRIDGE
Social Decision-Making Lab

Thank you



Cabinet Office



BILL &
MELINDA
GATES
foundation

