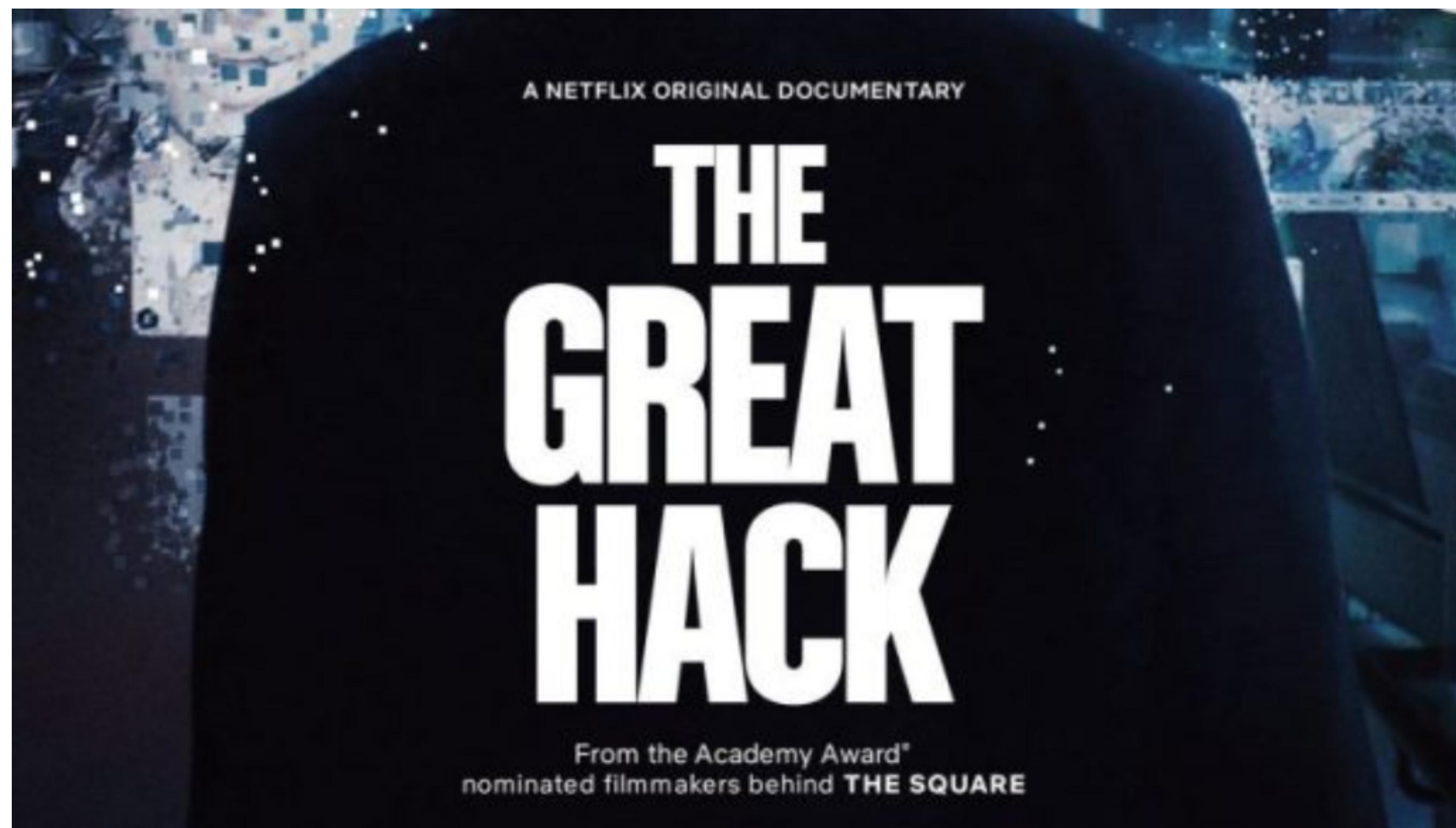


# **Social influence and misinformation online**

**Alberto Acerbi**



How to fix the National Health Service  
What is Gulenism?  
Introverts: overlooked and undervalued  
Rise of the wooden skyscraper





Barack Obama

Apr 21 · 28 min read

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## Disinformation Is a Threat to Our Democracy

Tech platforms need to recognize that their decisions have an impact on every aspect of society.



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IDEAS

## WHY THE PAST 10 YEARS OF AMERICAN LIFE HAVE BEEN UNIQUELY STUPID

It's not just a phase.

By Jonathan Haidt  
Illustrations by Nicolás Ortega

Illustration by Nicolás Ortega. Source: "Turris Babel," Coenraet Decker, 1679.

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[Home](#) / [News](#) / Managing the COVID-19 infodemic: Promoting healthy behaviours and mitigating the harm from misinformation and disinformation

# Managing the COVID-19 infodemic: Promoting healthy behaviours and mitigating the harm from misinformation and disinformation

Joint statement by WHO, UN, UNICEF, UNDP, UNESCO, UNAIDS, ITU, UN Global Pulse, and IFRC

132

Member States signed cross-regional statement  
on COVID-19 infodemic

[Read more](#)

• o o



# "Fake News" and disinformation

- As "fake news" proliferate, disinformation threatens democracy and efficient governance.
- There is [empirical evidence](#) that false news are spreading significantly "faster, deeper, and more broadly" than the true ones. An [MIT study](#) found that the top 1% of false news cascades diffused to 1,000 - 100,000 people, whereas the true ones rarely reached more than 1,000 people.



[Home](#) > [Live, work, travel in the EU](#) > [Coronavirus response](#) > [Fighting disinformation](#) > [Funded projects in the fight against disinformation](#)

## Funded projects in the fight against disinformation

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[Other existing tools](#)

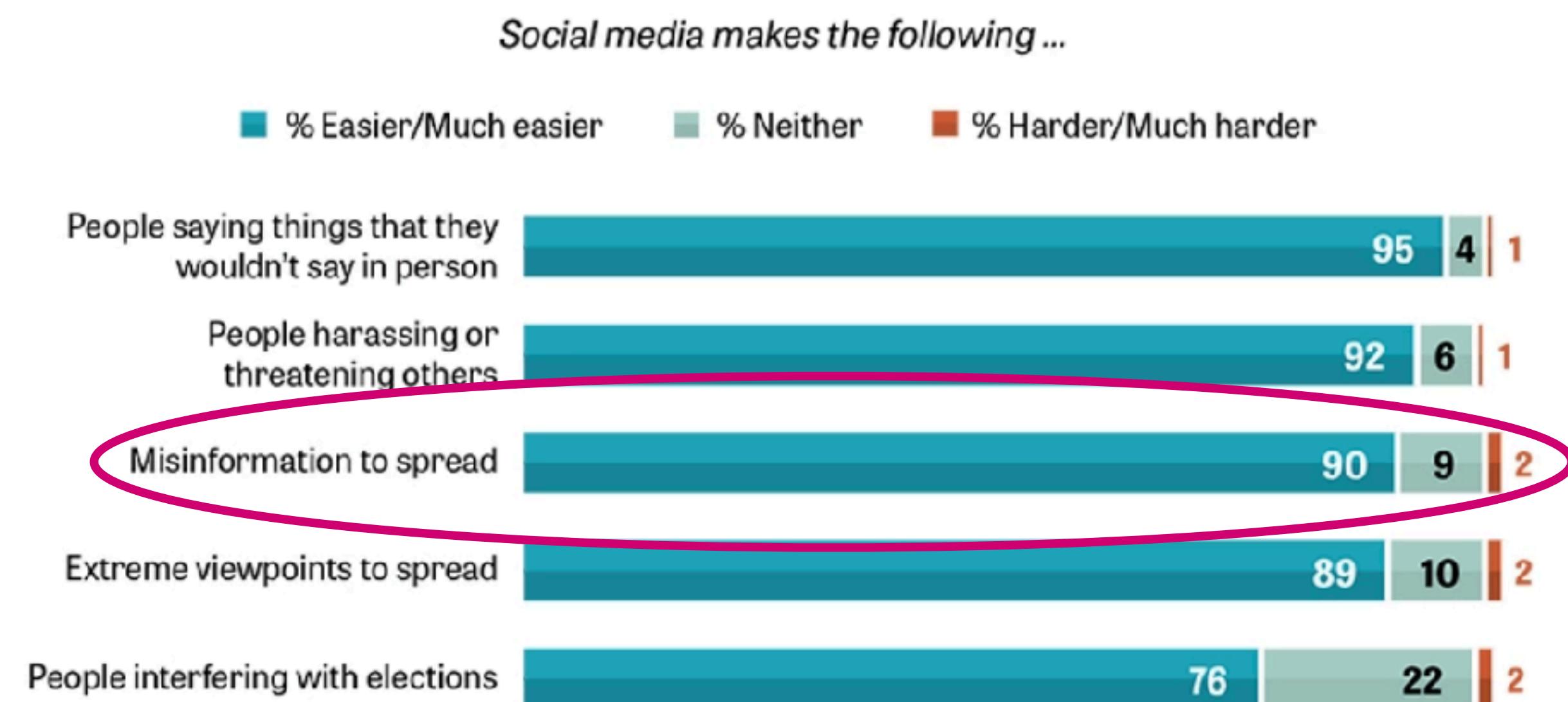
### Existing projects

Horizon 2020, the current research and innovation programme, has mobilised significant resources in addressing information veracity for social media and media. The Social Observatory for

FIGURE 9

**Perceived Ability of Social Media to Facilitate Potentially Threatening or Hurtful Content Online**

*To what extent does social media make the following easier or harder:*



Note: Due to rounding, percentages may sum to 100% ±1%.



# Plan of the talk

- Misinformation is abundant on social media
  - Misinformation has a relative advantage over true information
  - Misinformation changes people behaviour
  - Misinformation is limited, often innocuous or mostly reinforcing pre-existent views
  - Why people are misinformed about online misinformation
  - Why this narrative is harmful and what we should do instead
- 

# A bit about myself...

- Research in the field of cultural evolution
- ~2015: application of cultural evolutionary theory to digital media
- “Big data needs big theory”

cultural evolution  
in the digital age

ALBERTO ACERBI

OXFORD

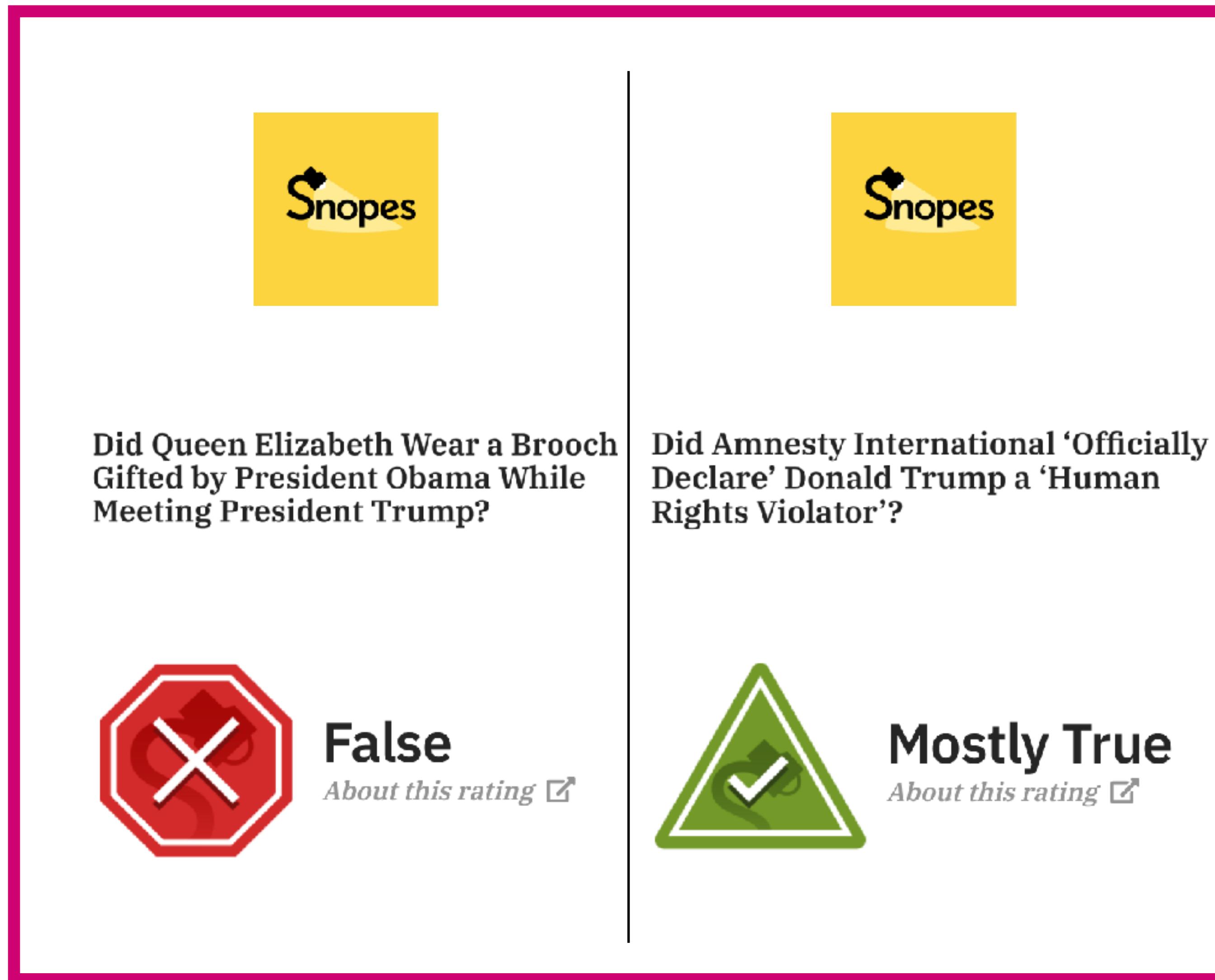
# Misinformation is abundant on social media?

- “0.15% of Americans’ daily media diet”, Allen et al., 2020
- “Only 1% of individuals accounted for 80% of fake news source exposures, and 0.1% accounted for nearly 80% of fake news sources shared”, Grinberg et al., 2019
- “The vast majority of Facebook users in our data did not share any articles from fake news domains in 2016 at all”, Guess et al., 2019
- “Of the 2.7 million tweets in our data, only 85,344 ( $\approx 3\%$ ) contain links to national news websites, fake or real. Of the tweeted news links, 3,269 ( $\approx 4\%$ ) come from websites with a history of publishing fake news”, Osmundsen et al., 2021

# Misinformation has a relative advantage with respect to true information?

- “False news reached more people than the truth; the top 1% of false news cascades diffused to between 1000 and 100,000 people, whereas the truth rarely diffused to more than 1000 people”
- “Falsehoods are 70 percent more likely to be retweeted on Twitter than the truth”
- “Falsehood also diffused faster than the truth” (~6 times faster)

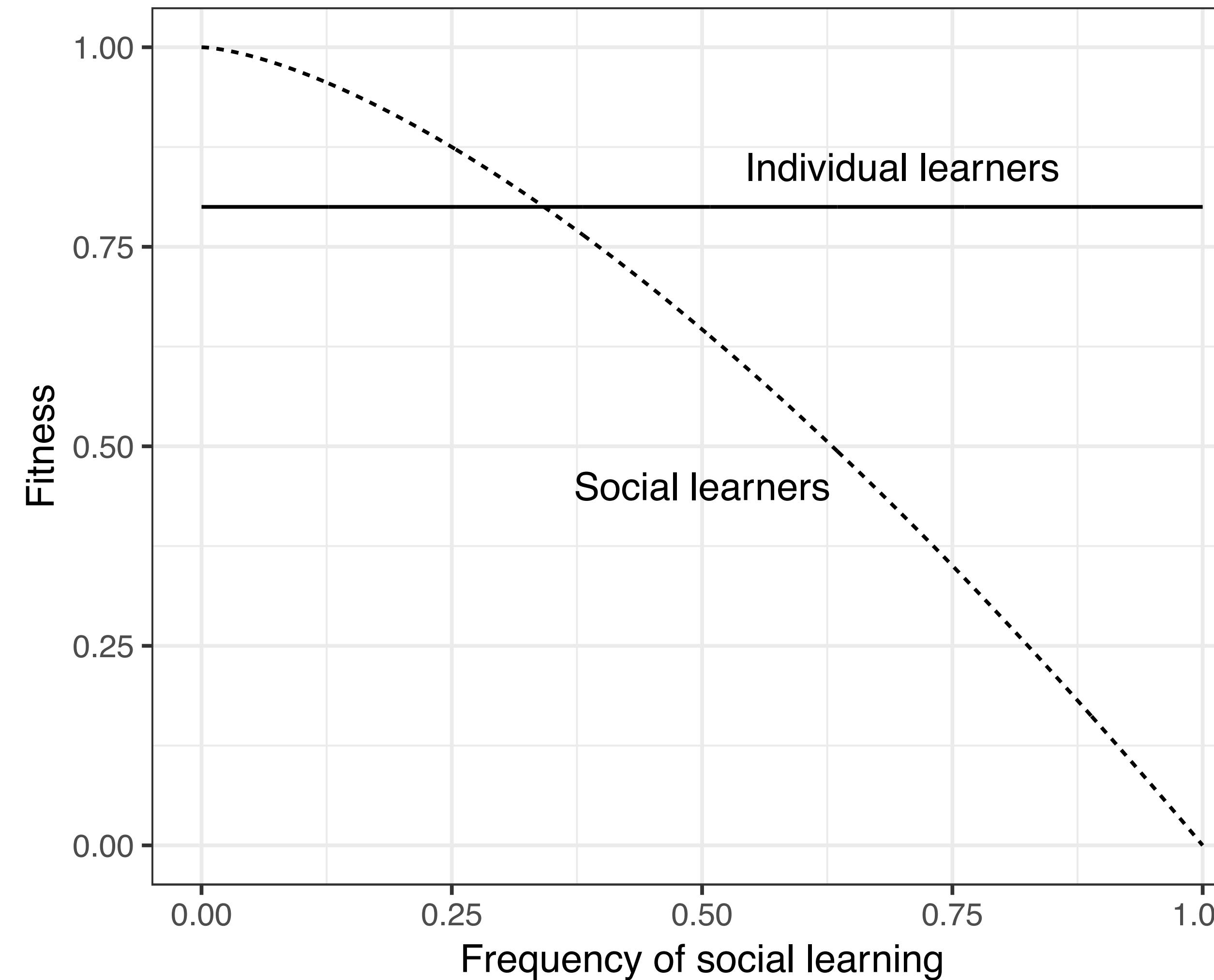
# Misinformation has a relative advantage with respect to true information?



# Misinformation has a relative advantage with respect to true information?

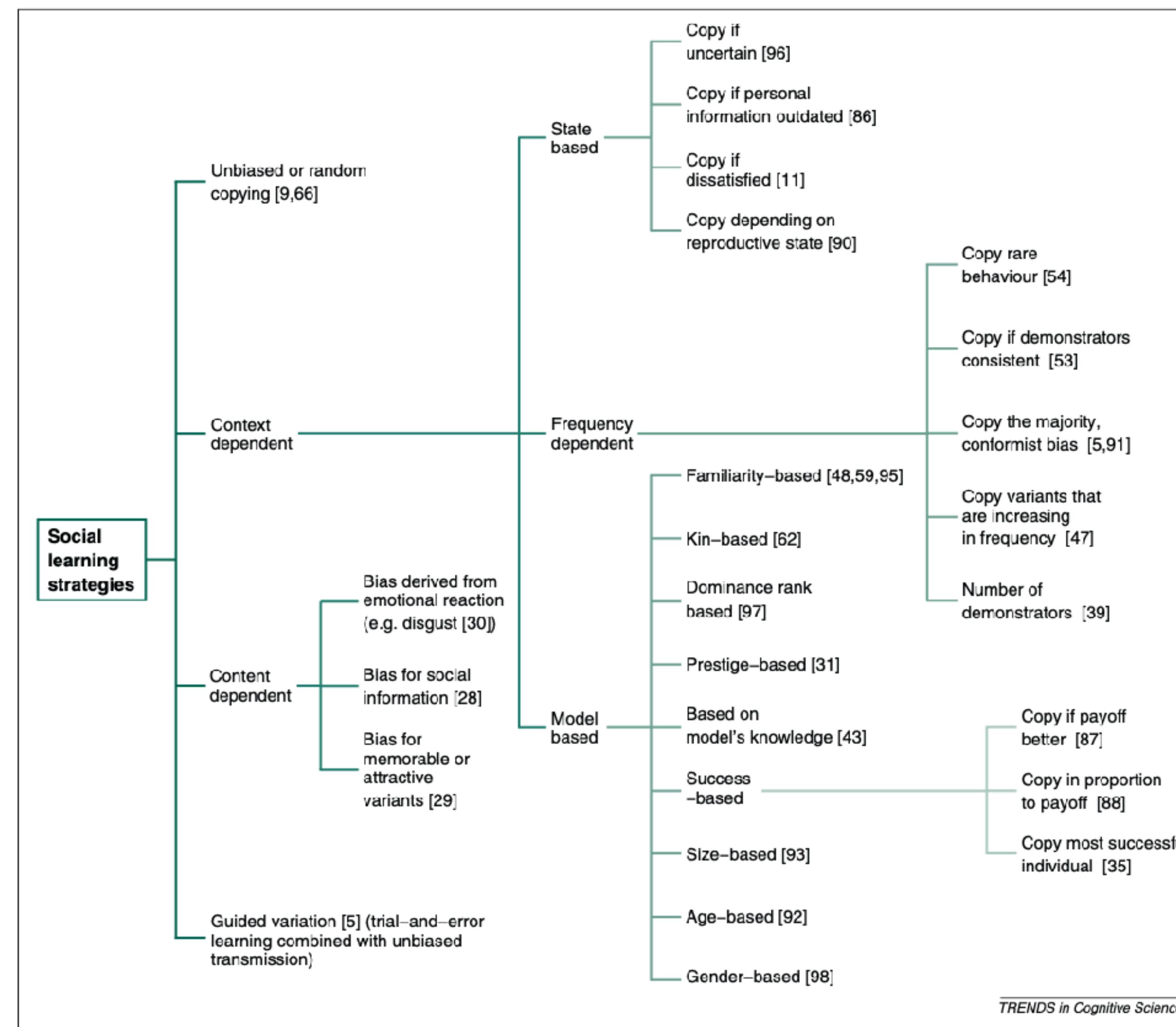
- Debunked rumours reached more people than confirmed rumours; the top 1% of debunked rumours cascades diffused to between 1000 and 100,000 people, whereas confirmed rumours rarely diffused to more than 1000 people”
- Debunked rumours are 70 percent more likely to be retweeted on Twitter than confirmed rumours
- Debunked rumours also diffused faster than confirmed rumours (~6 times faster)

# Misinformation changes people behaviour?



Rogers, 1988

# Misinformation changes people behaviour?



**Figure 1.** Social learning strategies for which there is significant theoretical or empirical support. The tree structure is purely conceptual and not based on any empirical data on homology or similarity of cognition. The sources given are not necessarily the first descriptions or the strongest evidence, but are intended as literature entry points for readers.

Rendell et al., 2011

# Misinformation changes people behaviour?

- Surprisingly, many experiments in cultural evolution show that participants tend to **discount social information**, especially when conflicts with one own previous knowledge.

# Misinformation changes people behaviour?

- Surprisingly, many experiments in cultural evolution show that participants tend to **discount social information**, especially when conflicts with one own previous knowledge.

without any social learning fit the best. Once again, this result suggests that players did not consistently use the social information provided in this treatment in any way captured by our models. Moreover, this information was

# Misinformation changes people behaviour?

- Surprisingly, many experiments in cultural evolution show that participants tend to **discount social information**, especially when conflicts with one own previous knowledge.

returns when taking social information into account. However, a considerable number of participants did not use social information under medium environmental variability. More-

# Misinformation changes people behaviour?

- Surprisingly, many experiments in cultural evolution show that participants tend to **discount social information**, especially when conflicts with one own previous knowledge.

individuals rarely did so. By the end of an experimental farm, only about 20% of participants choose to view social information. Thus, the better fit of the social model applies only in those cases, which are overall the minority. When participants did view social

# Misinformation changes people behaviour?

- Surprisingly, many experiments in cultural evolution show that participants tend to **discount social information**, especially when conflicts with one own previous knowledge.

*Journal of Evolutionary Psychology*, 7(2009)4, 309–329  
DOI: 10.1556/JEP.7.2009.4.4

## **BIASES FOR ACQUIRING INFORMATION INDIVIDUALLY RATHER THAN SOCIALLY**

**KIMMO ERIKSSON<sup>1,2\*</sup> AND PONTUS STRIMLING<sup>2</sup>**

Eriksson and Strimling, 2009

# Misinformation changes people behaviour?

- Surprisingly, many experiments in cultural evolution show that participants tend to **discount social information**, especially when conflicts with one own previous knowledge.



Evolution and Human Behavior

Volume 32, Issue 5, September 2011, Pages 334-342



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Original Article

An experimental comparison of human  
social learning strategies: payoff-biased  
social learning is adaptive but underused

Alex Mesoudi  

Mesoudi, 2011

# Misinformation changes people behaviour?

- Systematic review of experiments with adults where both social information and individual information are available shows that underuse of social information is **10 times** more common than correct/overuse.

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TRANSACTIONS B

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Review



**Cite this article:** Morin O, Jacquet PO, Vaesen K, Acerbi A. 2021 Social information use and social information waste. *Phil. Trans. R. Soc. B* 376: 20200052.  
<https://doi.org/10.1098/rstb.2020.0052>

## Social information use and social information waste

Olivier Morin<sup>1,2</sup>, Pierre Olivier Jacquet<sup>3</sup>, Krist Vaesen<sup>4</sup> and Alberto Acerbi<sup>5</sup>

<sup>1</sup>Institut Jean Nicod, DEC, ENS, EHESS, CNRS, PSL University, UMR 8129, Paris, France

<sup>2</sup>Minds and Traditions Research Group, Max Planck Institute for the Science of Human History, Jena, Germany

<sup>3</sup>Laboratoire de Neurosciences Cognitives et Computationalles (LNC2), Département d'Etudes Cognitives, INSERM, Ecole Normale Supérieure, PSL Research University, Paris, France

<sup>4</sup>School of Innovation Sciences, Eindhoven University of Technology, Eindhoven, The Netherlands

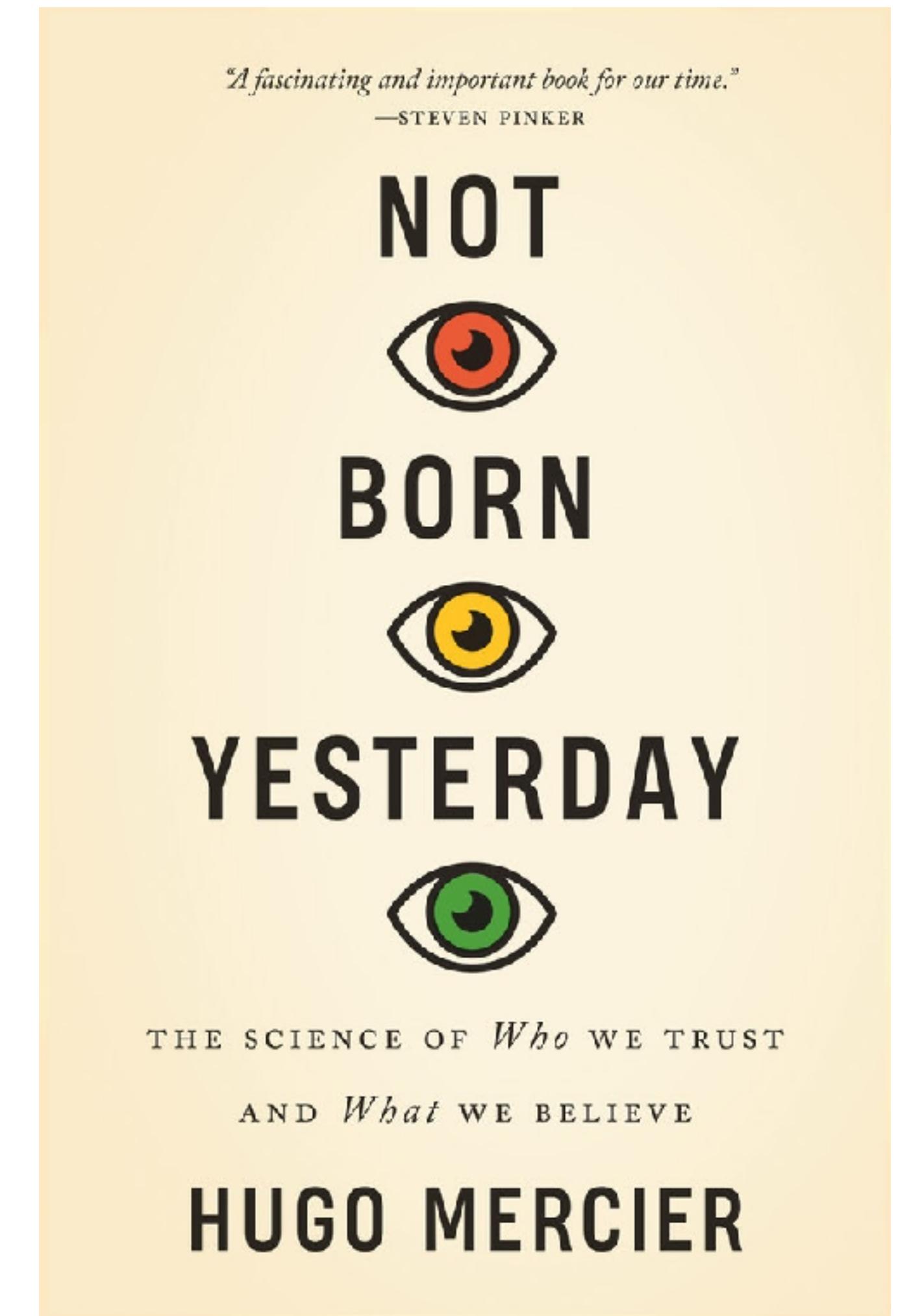
<sup>5</sup>Centre for Culture and Evolution, Brunel University London, London, UK

OM, 0000-0002-6216-1307; AA, 0000-0001-5827-8003

Social information is immensely valuable. Yet we waste it. The information we get from observing other humans and from communicating with them is a cheap and reliable informational resource. It is considered the backbone of

# Epistemic vigilance

- Consider the possibility of deception
- More sophisticated cognitive mechanisms (plausibility checking, trust calibration, reasoning, etc...)
- “default” state: not accepting new information



Mercier, 2020

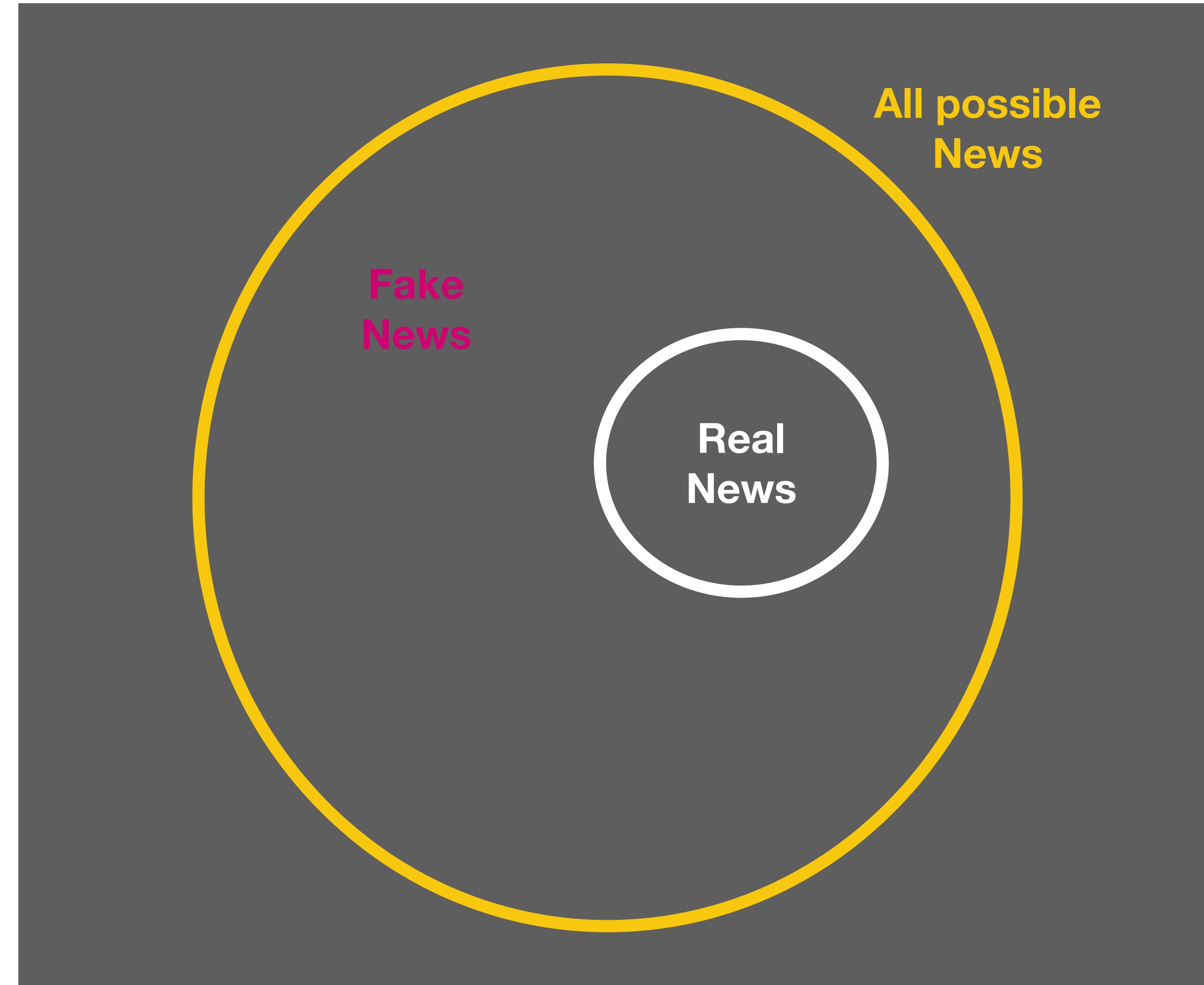
# Misinformation is often innocuous

## Top 10 Fake News Articles by Facebook Engagements

<b>1</b>  <b>1,204,400</b> Babysitter transported to hospital after inserting a baby in her vagina	<b>2</b>  <b>1,145,470</b> FBI seizes over 3,000 penises during raid at morgue employee's home	<b>3</b>  <b>1,125,031</b> Charles Manson to be released on parole, to Johnson County, TX	<b>4</b>  <b>1,042,032</b> Police: Chester Bennington Was Murdered	<b>5</b>  <b>993,205</b> Morgue employee cremated by mistake while taking a nap
<b>6</b>  <b>981,423</b> Angry Woman Cuts Off Man's Penis for Not Making Eye Contact During Sex - TRENDING	<b>7</b>  <b>966,498</b> Female Legislators Unveil 'Male Ejaculation Bill' Forbidding The Disposal Of Unused Semen	<b>8</b>  <b>914,429</b> President Trump Orders the Execution of Five Turkeys Pardonned by Obama	<b>9</b>  <b>690,437</b> Elderly woman accused of training her 65 cats to steal from neighbors	<b>10</b>  <b>672,093</b> Couple hospitalized after man gets his head stuck in his wife's vagina

# The cognitive appeal of misinformation

- Specific content favours cultural traits' success (e.g. negative content, threat-related information, disgust, etc.)
- Misinformation, less constrained by reality, can be manufactured to exploit attractive features



# Negative content

- negative information is better remembered and transmitted than positive information
- information framed negatively is considered more truthful than the same information framed positively
- documented in news, but also e.g. literature, song lyrics



Bebbington et al., 2017

# Negative content

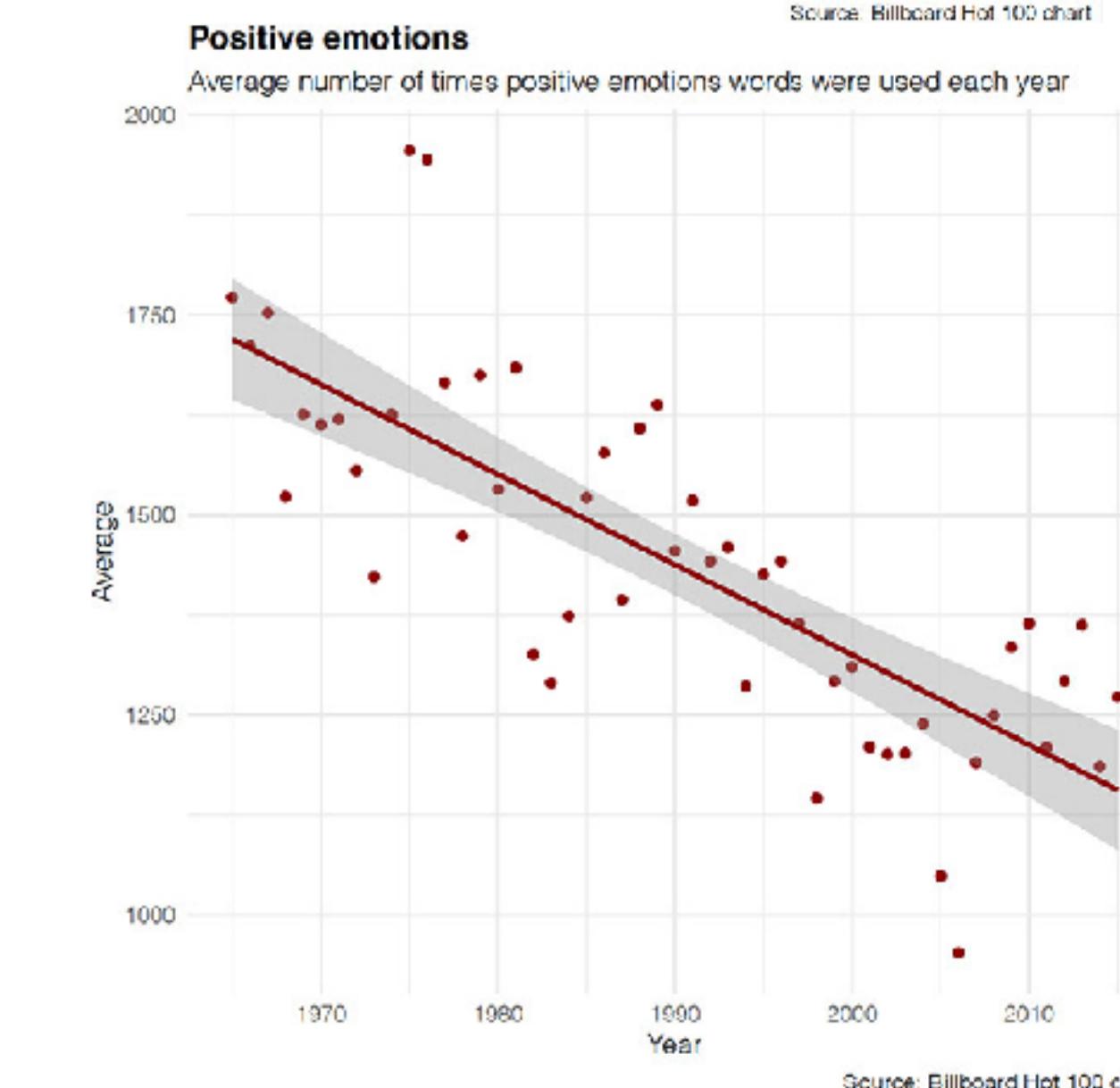
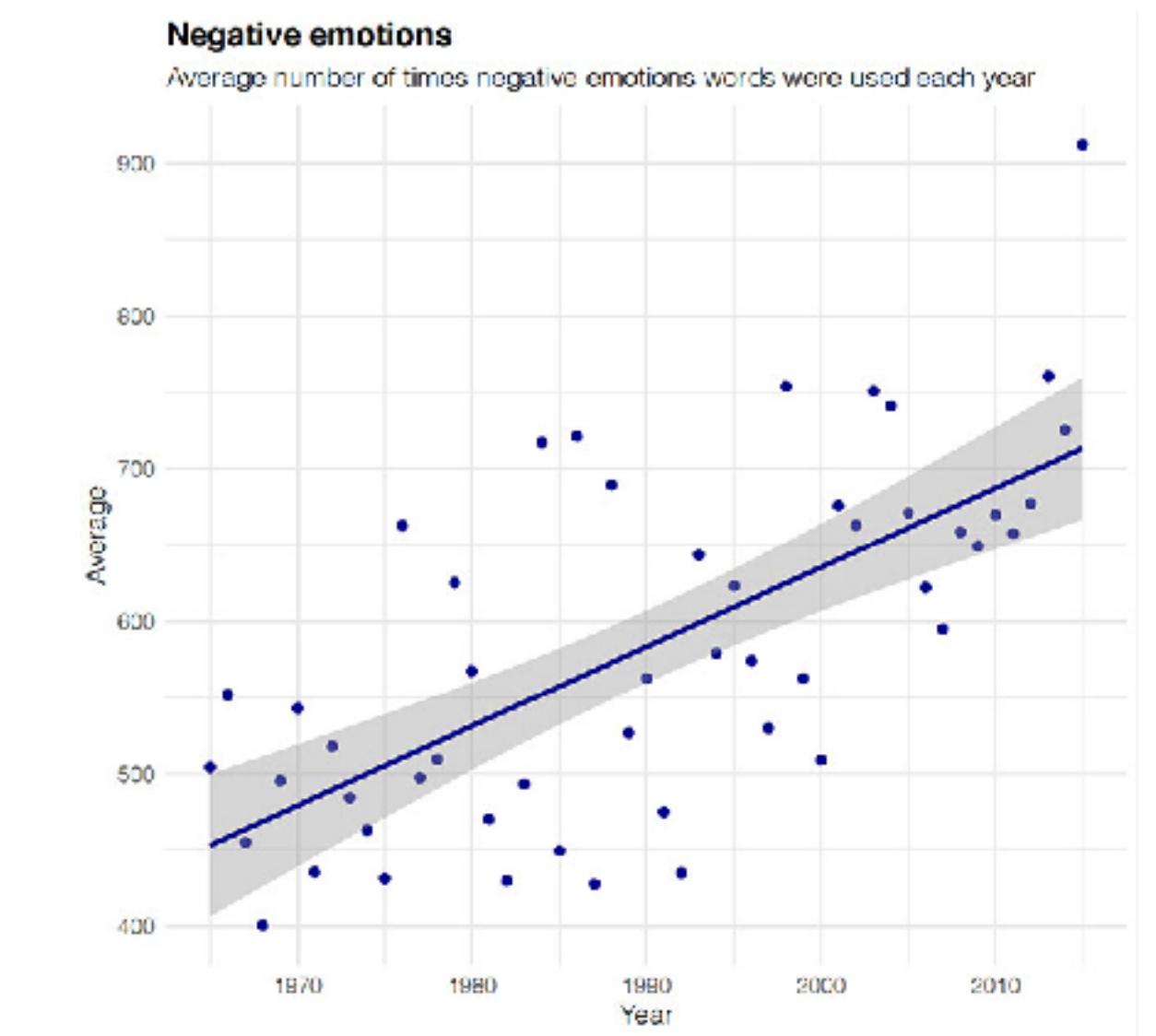
- negative information is better remembered and transmitted than positive information
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When civil litigation cases go to trial, 60% of plaintiffs lose, winning no money

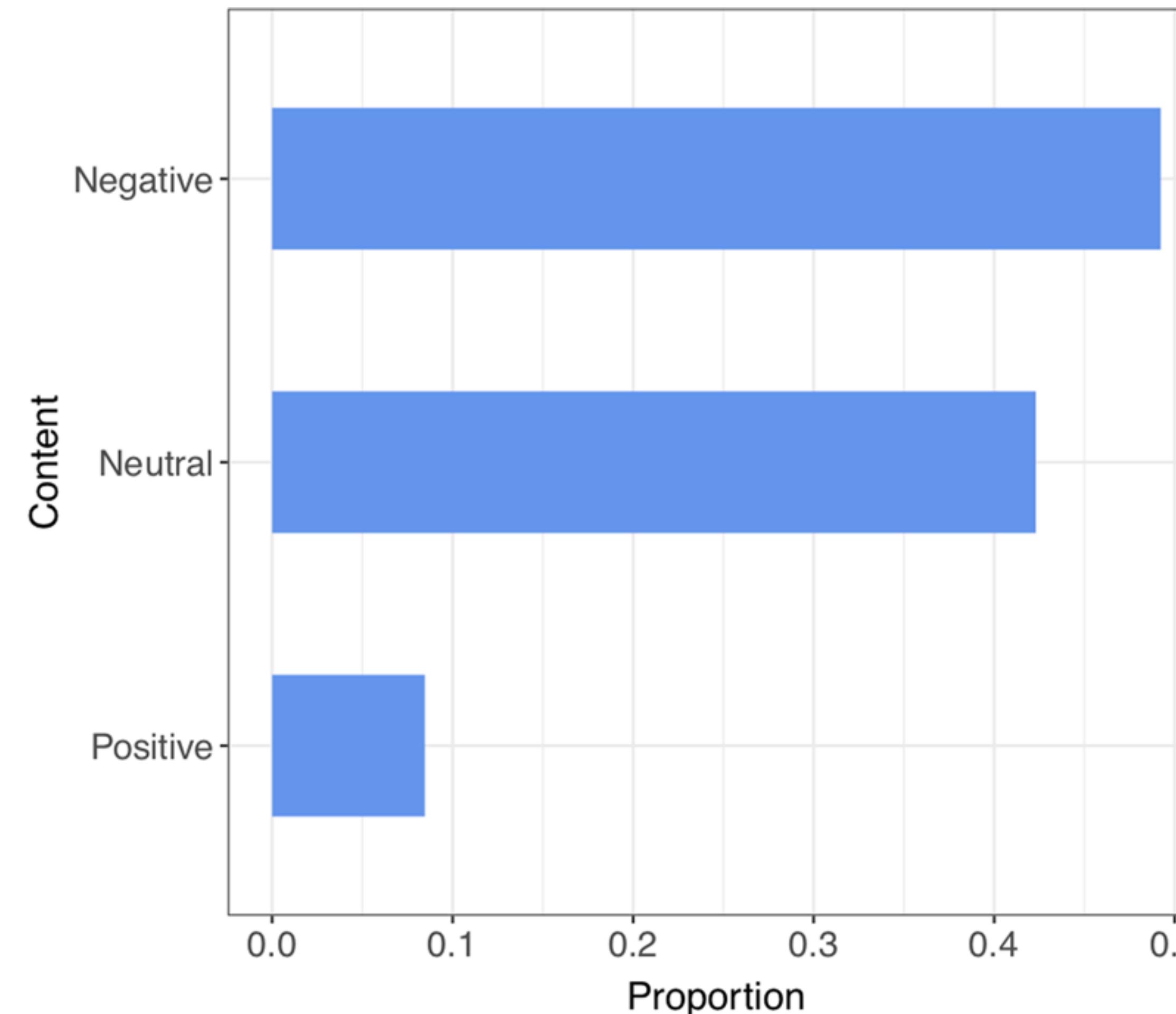
When civil litigation cases go to trial, 40% of plaintiffs succeed and win money

# Negative content

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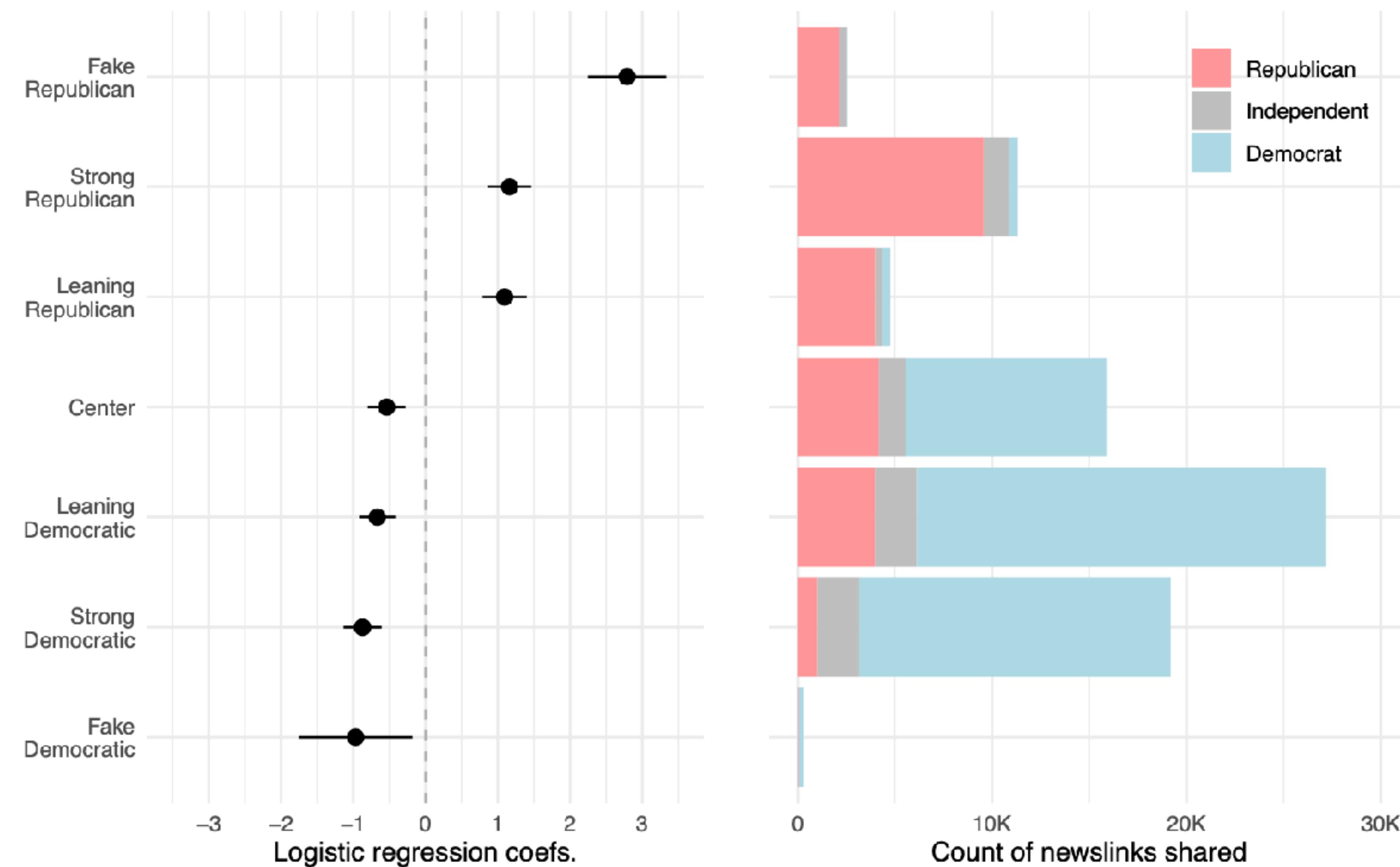


# Negative content



Negative content **5 times** more common than positive content in “fake news”

# Misinformation is often innocuous...or reinforce pre-existing views



# Why do many believe in large impact/prevalence of misinformation?

- Specific content favours cultural traits' success:
  - A general negativity bias towards new technologies
  - Preference for simple explanations
  - Preference for threat-related information
  - Perceived difficult to spot misinformation
  - Third-person effect (belief that *other* people are gullible)

# Why do many believe in large impact/prevalence of misinformation?

	United Kingdom (N=300)		United States (N=300)	
Negative attitude towards new technologies	r = .16 **	b = .08 *	r = .01	b = .01
Preference for simple explanations	r = .13 **	b = .05	r = .14 *	b = .08 **
Preference for threat-related info	r = .17 **	b = .02	r = .10	b = .05
Perceived difficulty to spot misinformation	r = .14 *	b = .03	r = .14 *	b = .07
Third-person effect	r = .28 ***	b = .10 ***	r = .30 ***	b = .08 ***

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Third-person effect	r = .28 ***	b = .10 ***	r = .30 ***	b = .08 ***

# Third-person effect

13. How much of the information that you see on Facebook do you believe to be true?

*Asked of those that currently have a Facebook account*

- |   |     |
|---|-----|
| All or most of it .....                       | 5%  |
| Only what I get from friends and family ..... | 34% |
| A little of it .....                          | 47% |
| Almost none of it .....                       | 13% |

14. Do you think most people on Facebook...

*Asked of those that currently have a Facebook account*

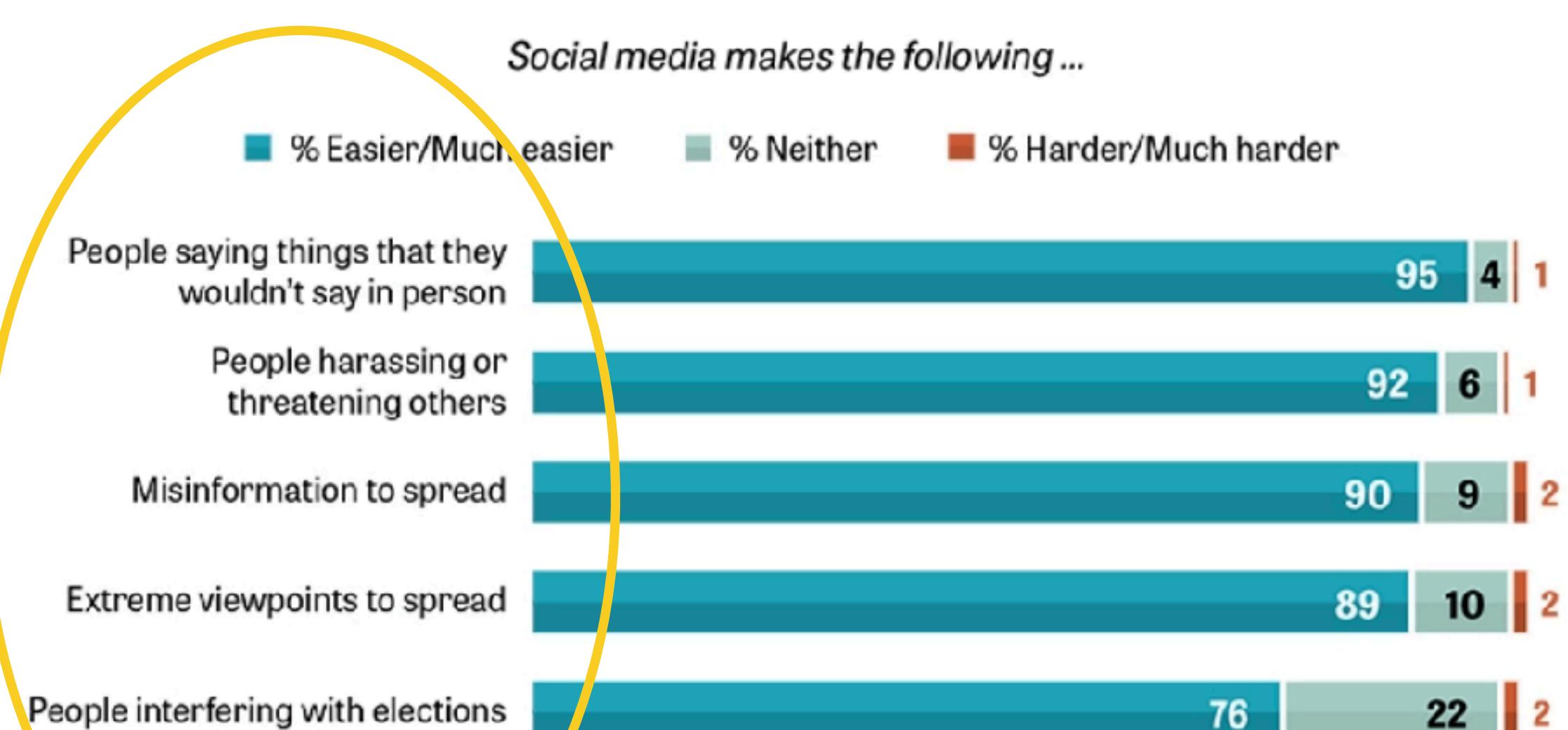
- |   |     |
|---|-----|
| Are too quick to believe all or most of what they see ..... | 81% |
| Can distinguish between what is true and what isn't .....   | 19% |

# Third-person effect

FIGURE 9

## Perceived Ability of Social Media to Facilitate Potentially Threatening or Hurtful Content Online

To what extent does social media make the following easier or harder:



Note: Due to rounding, percentages may sum to 100% ±1%.

FIGURE 3

## Perceived Effect of Social Media on Civic and Social Activities

To what extent does social media make the following easier or harder for you:

A horizontal bar chart titled "Social media makes the following ...". The y-axis lists seven activities: "Connecting with family and friends", "Connecting with people who share your interests or views", "Staying engaged with your local community", "Finding information you need", "Freely expressing yourself", "Participating in politics", and "Voting". For each activity, there are three bars representing "% Easier/Much easier" (blue), "% Neither" (green), and "% Harder/Much harder" (red). The percentages are: Connecting with family and friends (74, 23, 3), Connecting with people who share your interests or views (71, 26, 3), Staying engaged with your local community (65, 32, 3), Finding information you need (59, 31, 9), Freely expressing yourself (43, 42, 14), Participating in politics (35, 52, 13), and Voting (18, 74, 8).

Activity	% Easier/Much easier	% Neither	% Harder/Much harder
Connecting with family and friends	74	23	3
Connecting with people who share your interests or views	71	26	3
Staying engaged with your local community	65	32	3
Finding information you need	59	31	9
Freely expressing yourself	43	42	14
Participating in politics	35	52	13
Voting	18	74	8

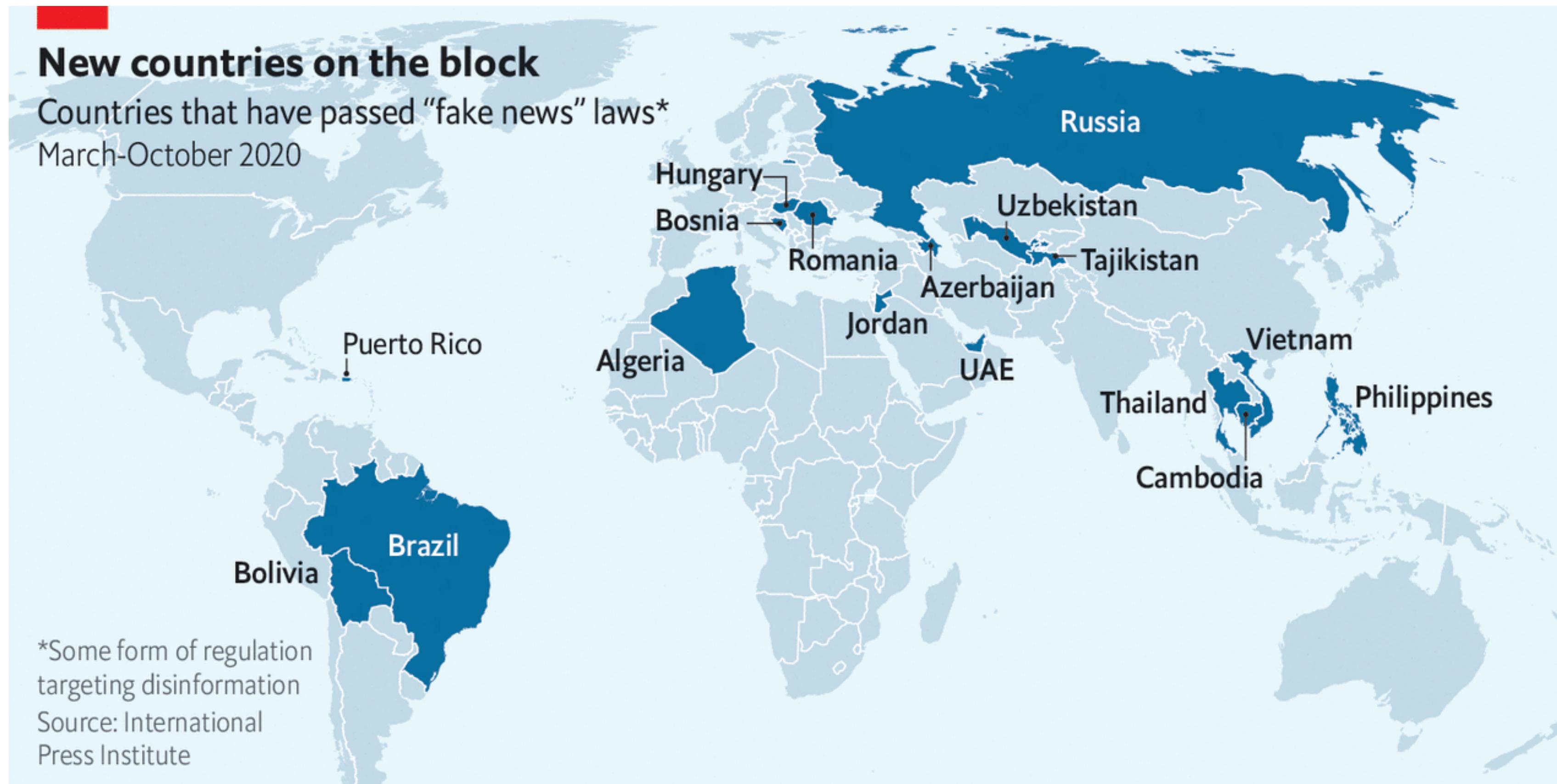
Note: Due to rounding, percentages may sum to 100% ±1%.

# Why this narrative is harmful and what we should do instead

- No obvious support for misinformation being widespread online, and more effective in spreading than true information
- No obvious support for misinformation changing ideas/behaviours, some other options (“entertainment”, reinforcing pre-existent views)
- Belief in large impact/prevalence of misinformation associated to third-person effect
- Why should we care? In any case, less misinformation is better...

# Why this narrative is harmful and what we should do instead

- Misinformation is used to restrict freedom of press

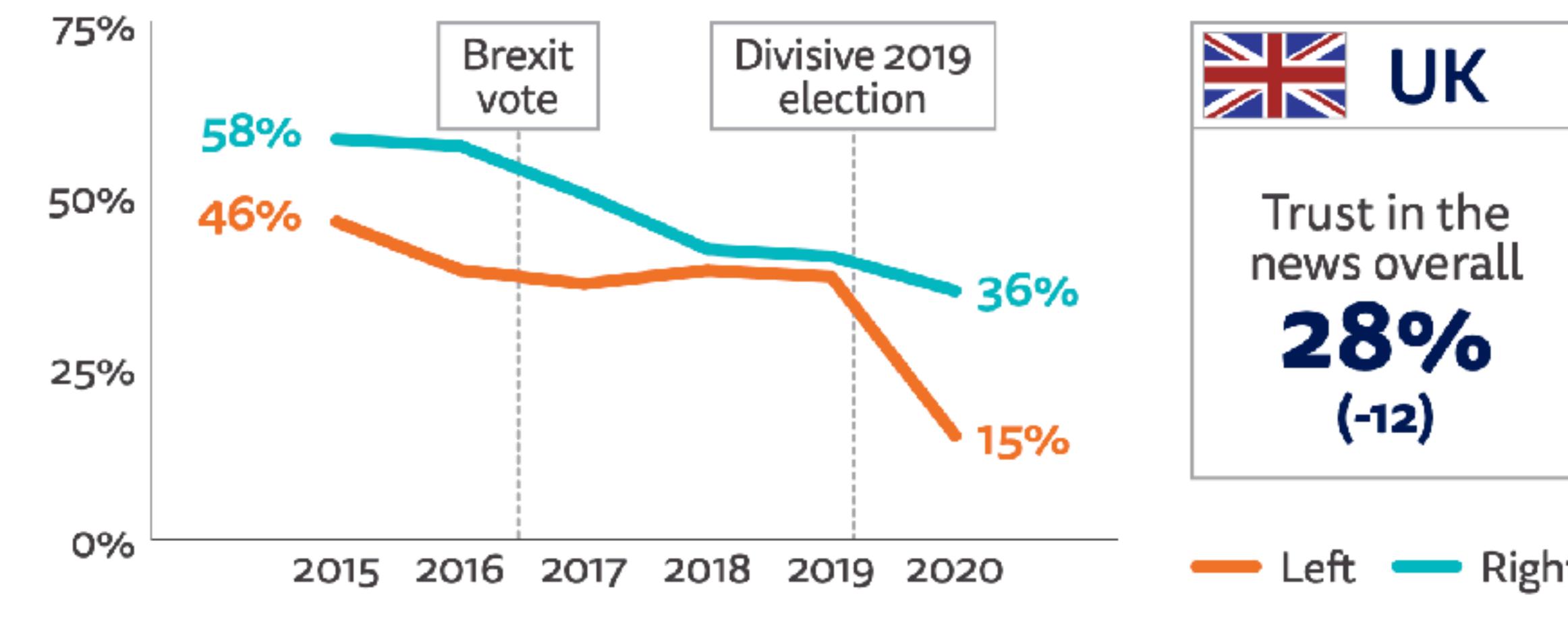


The Economist

The Economist, 2021

# Why this narrative is harmful and what we should do instead

- Misinformation narrative linked to decline in trust of politics, reliable news, institutions



# Why this narrative is harmful and what we should do instead

- We have limited resources!
- Misinformation provides an easy-to-conceptualise and (possibly) easy-to-tackle solution to complex social and cultural problems, but if the solution is wrong the problems will remain!



*So credulous is “The Great Hack” that if Cambridge Analytica had not shut down, its bosses would be using the movie as a testimonial,*  
The Economist

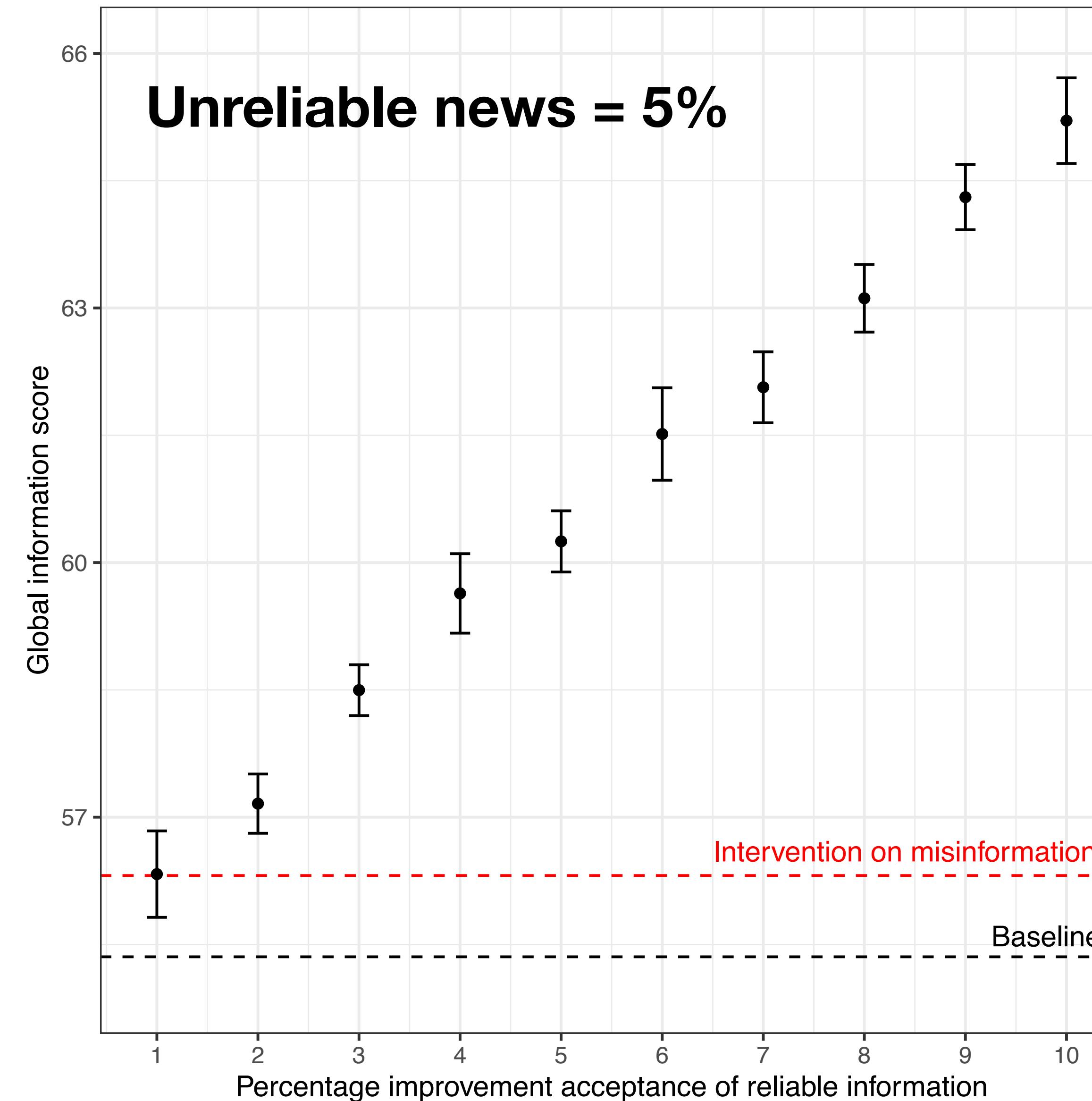
# Why this narrative is harmful and what we should do instead

- Focus on other aspect of the social/digital media systems, e.g. trust in reliable news, how to enhance positive effects, algorithms, etc.
- Focus on the problems themselves...

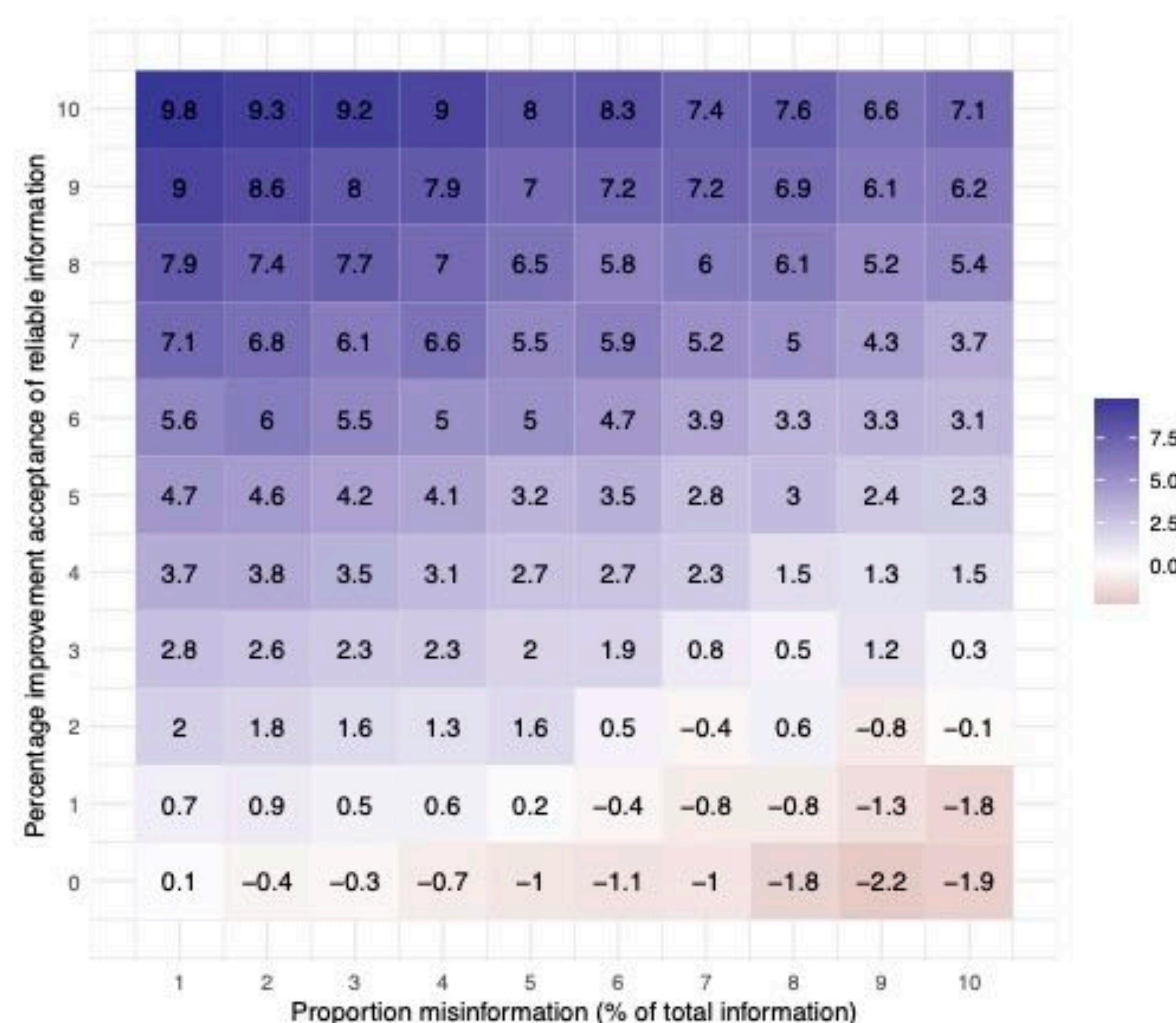
# Focus on other aspects of the social/digital media system

- Individual-based model where agents are exposed to pieces of news
- News can be reliable/unreliable (5% unreliable)
- Individuals have a probability to accept reliable (60%) and unreliable (30%) news.
- We calculate a “global information score” = number of pieces of reliable information accepted minus the number of pieces of misinformation accepted, normalised with the overall amount of news

# Focus on other aspects of the social/digital media system

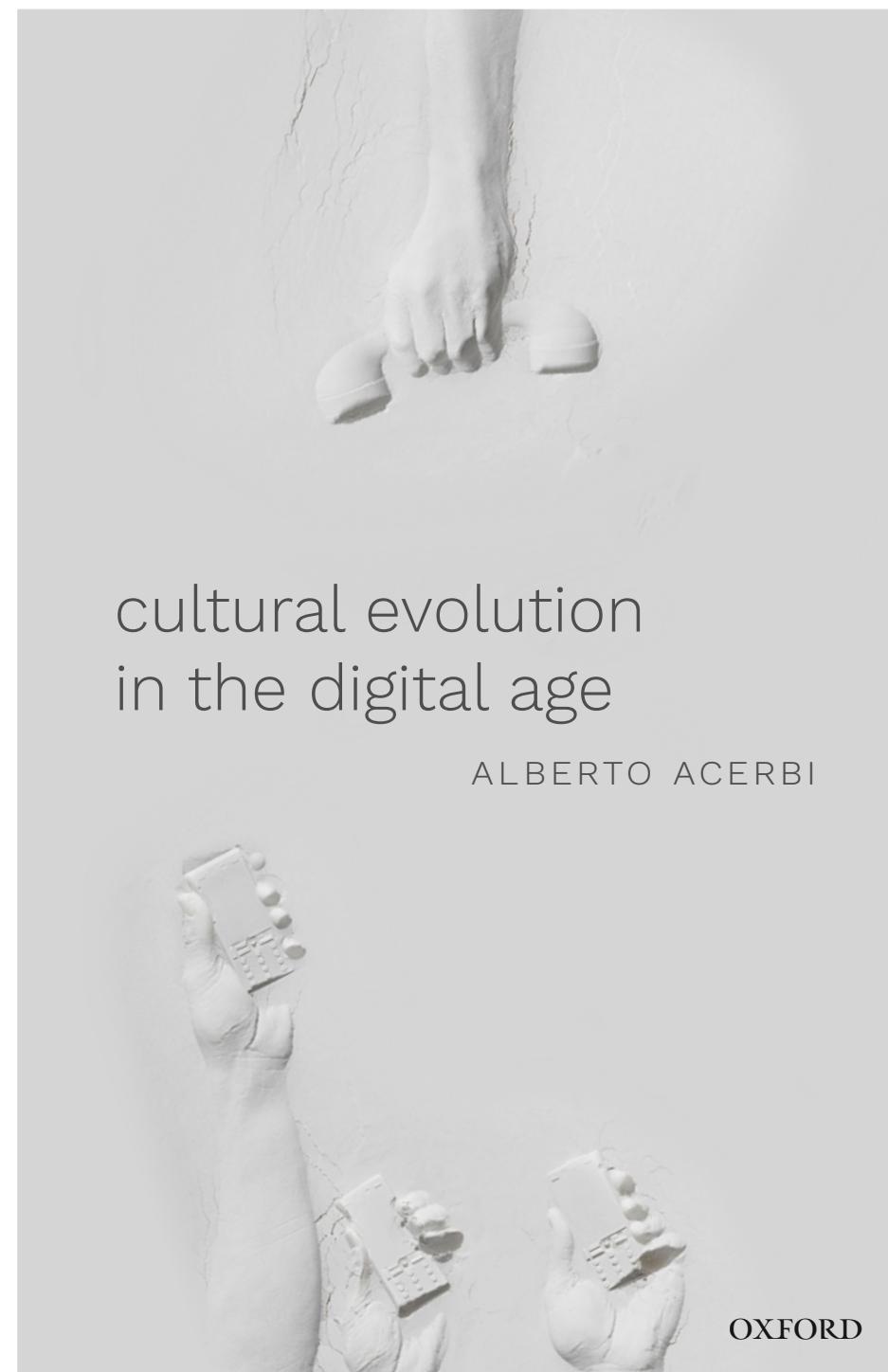


# Focus on other aspects of the social/digital media system



# Conclusion

- Social media have a huge impact on how information is produced and communicated
- It is important to research this and to strive for the better
- An overly negative approach is probably not justified and scarcely productive
- A broader focus on social media (and on the socio-economical context) is a way forward



**Thank you!**

 @acerbialberto

 acerbialberto.com