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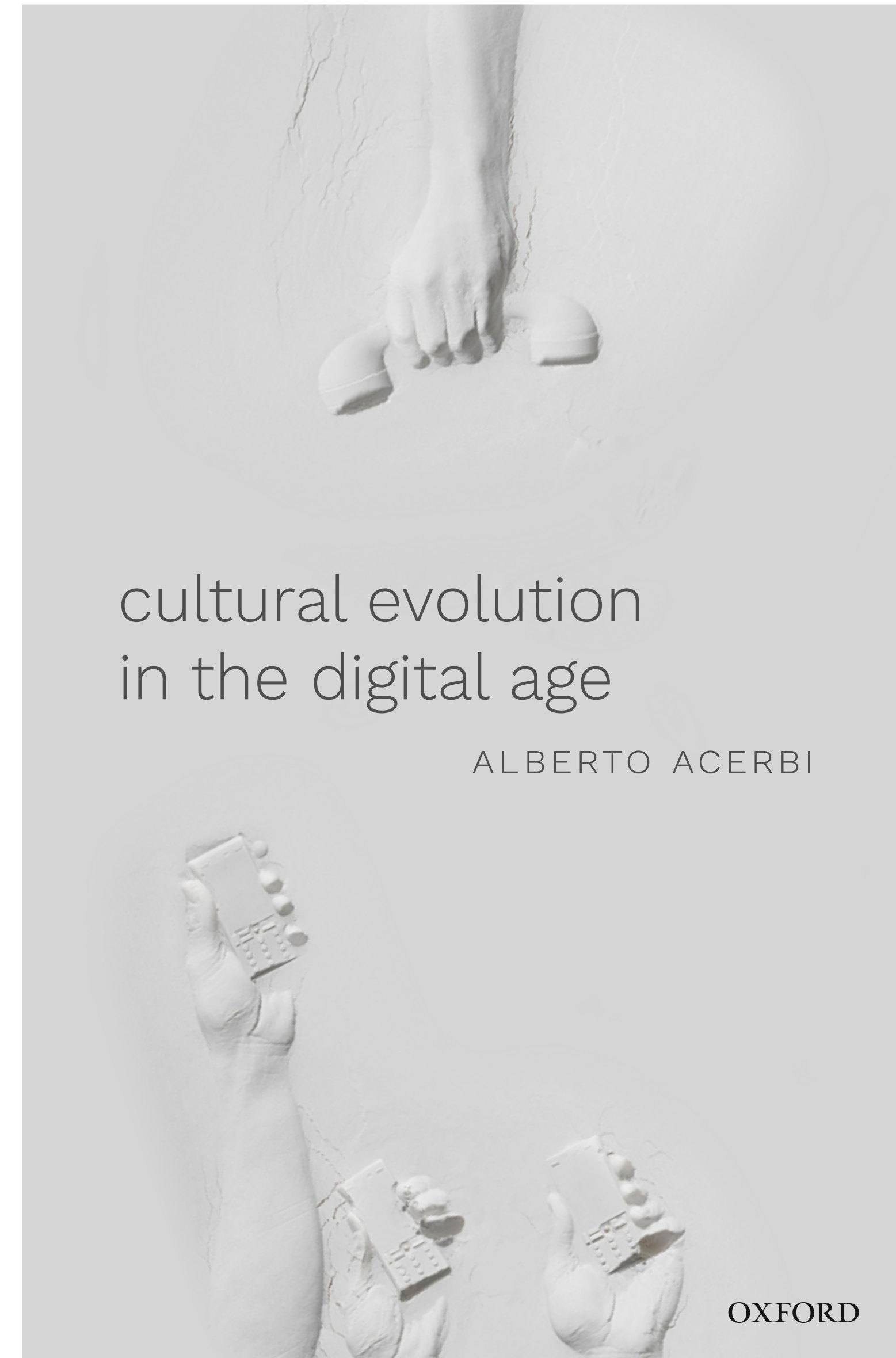
Misinformation: the long view

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Brunel University London

- 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 as cognitively attractive content

- Humans are wary learners

- A low amount of misinformation is expected (and consistent with empirical data on social media)

- Focus on the overall condition of the online information ecosystem

- Accuracy-oriented VS goal oriented motivations

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- Accuracy-oriented VS goal oriented motivations - what about engagement?

Top 10 Fake News Articles by Facebook Engagements

1 — 1,204,400 — Babysitter transported to hospital after inserting a baby in her vagina

2 — 1,145,470 — FBI seizes over 3,000 penises during raid at morgue employee's home

3 — 1,125,031 — Charles Manson to be released on parole, to Johnson County, TX

4 — 1,042,032 — Police: Chester Bennington Was Murdered

5 — 993,205 — Morgue employee cremated by mistake while taking a nap

6 — 981,423 — Angry Woman Cuts Off Man's Penis for Not Making Eye Contact During Sex - TRENDING

7 — 966,498 — Female Legislators Unveil 'Male Ejaculation Bill' Forbidding The Disposal Of Unused Semen

8 — 914,429 — President Trump Orders the Execution of Five Turkeys Pardoned by Obama

9 — 690,437 — Elderly woman accused of training her 65 cats to steal from neighbors

10 — 672,093 — Couple hospitalized after man gets his head stuck in his wife's vagina

- Not all cultural traits are equal

Real faces

Masks

Caricatures

Made-up faces

Portraits

- 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

Acerbi, 2019

- 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

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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

Fessler et al., 2014

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• documented in news, but also e.g. literature, song lyrics

Negative emotions
Average number of times negative emotions words were used each year

Source: Billboard Hot 100 chart

Positive emotions
Average number of times positive emotions words were used each year

Source: Billboard Hot 100 chart
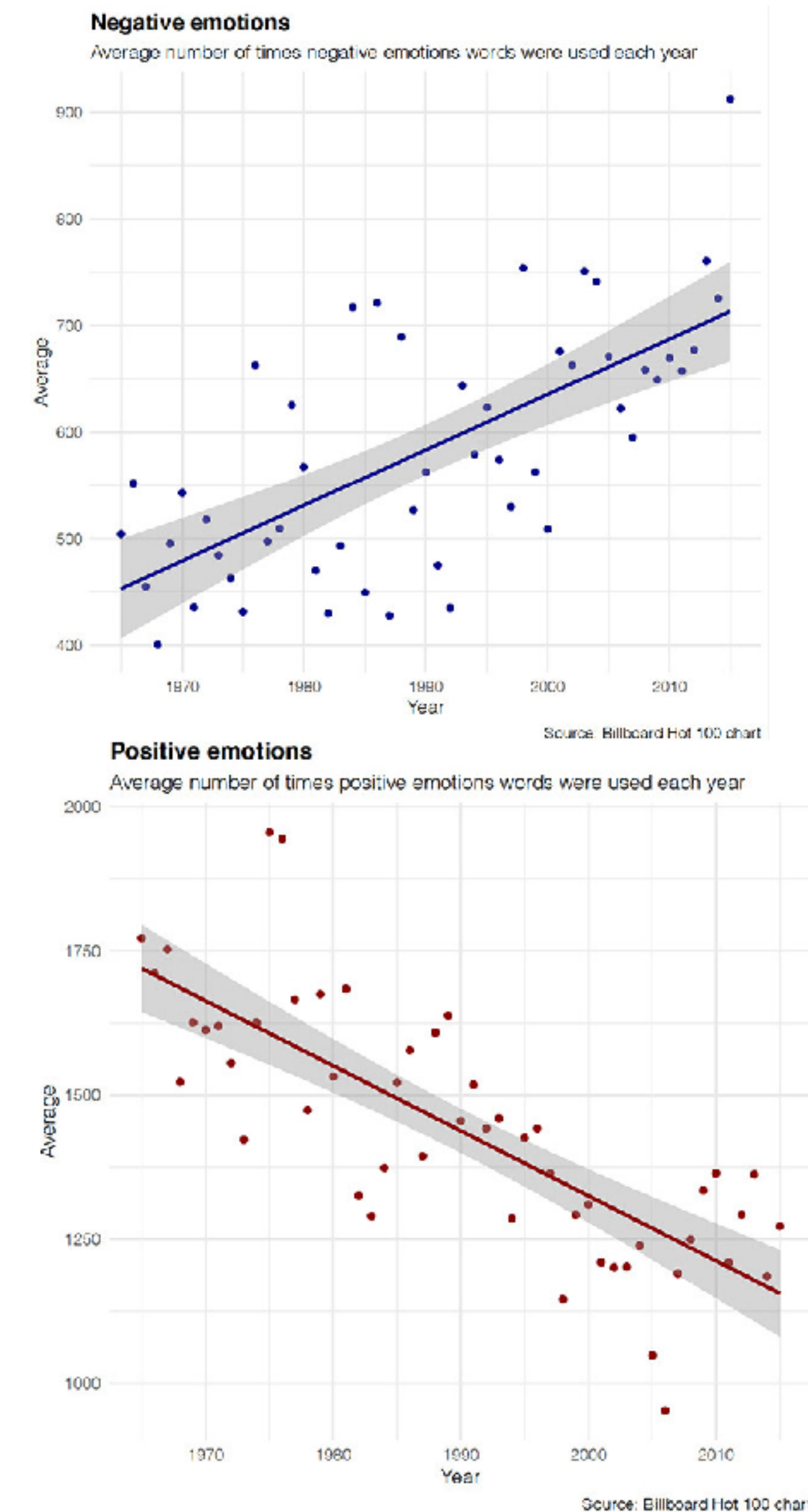
Acerbi et al., 2019
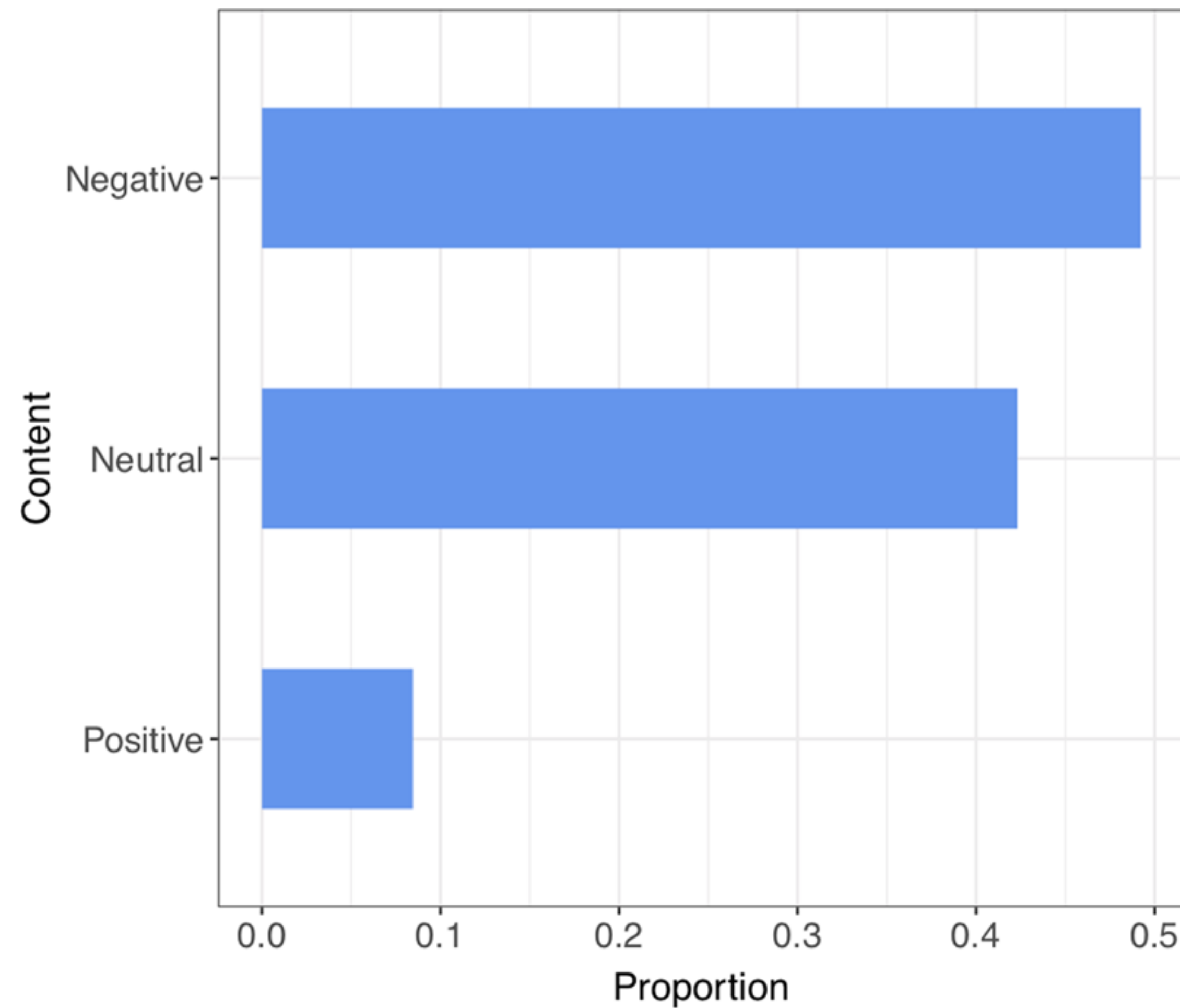
Negative content 5 times more common than positive content in "fake news"

Acerbi, 2019

- One third of articles classified as "threat-related" information

- ~50%: "gossip"
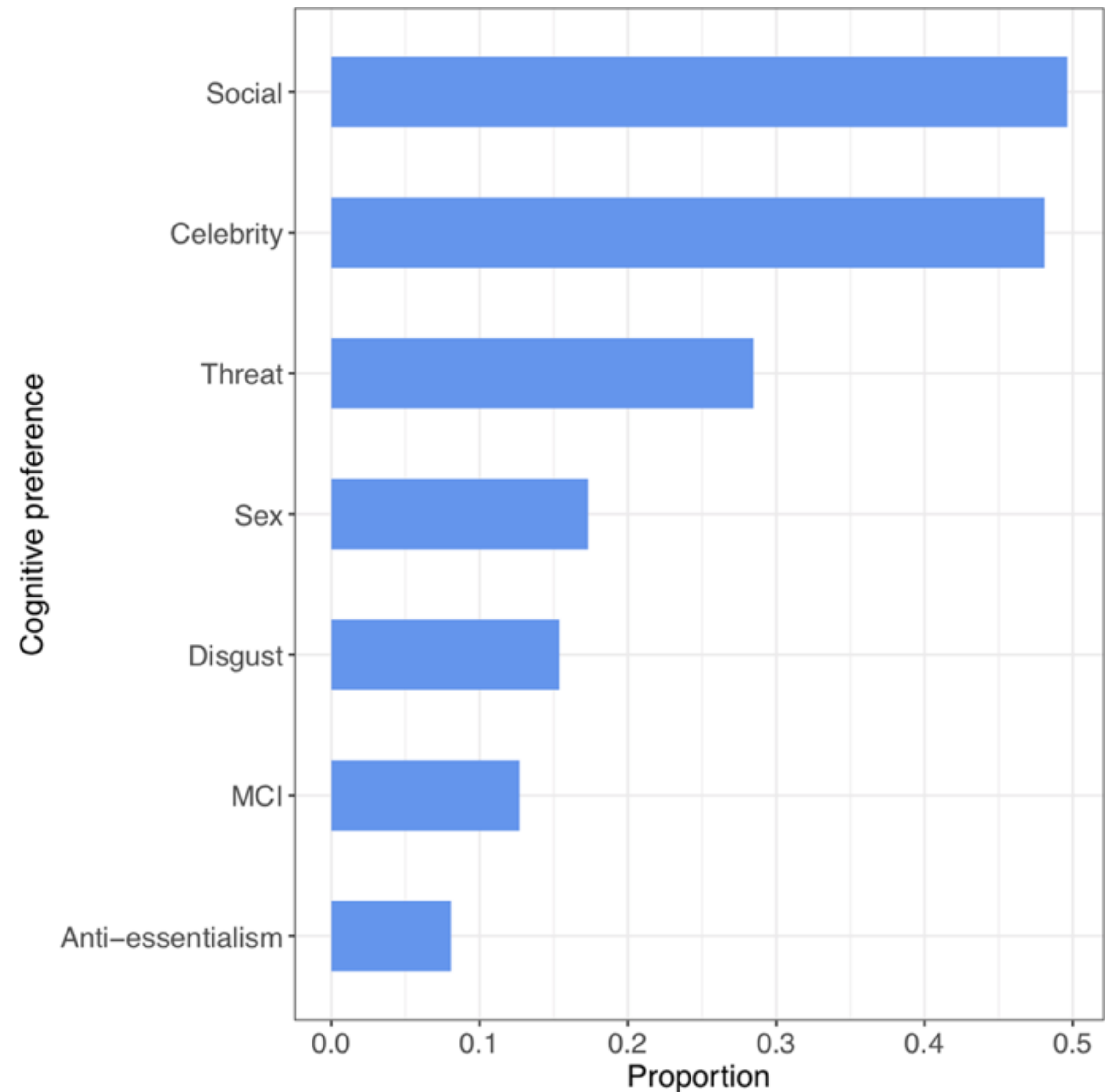
- Misinformation is low-quality information that spreads because of drawback of online communication

- Misinformation is high-quality information that spreads because of efficiency of online communication (quality = cognitive appeal)

Rogers, 1988
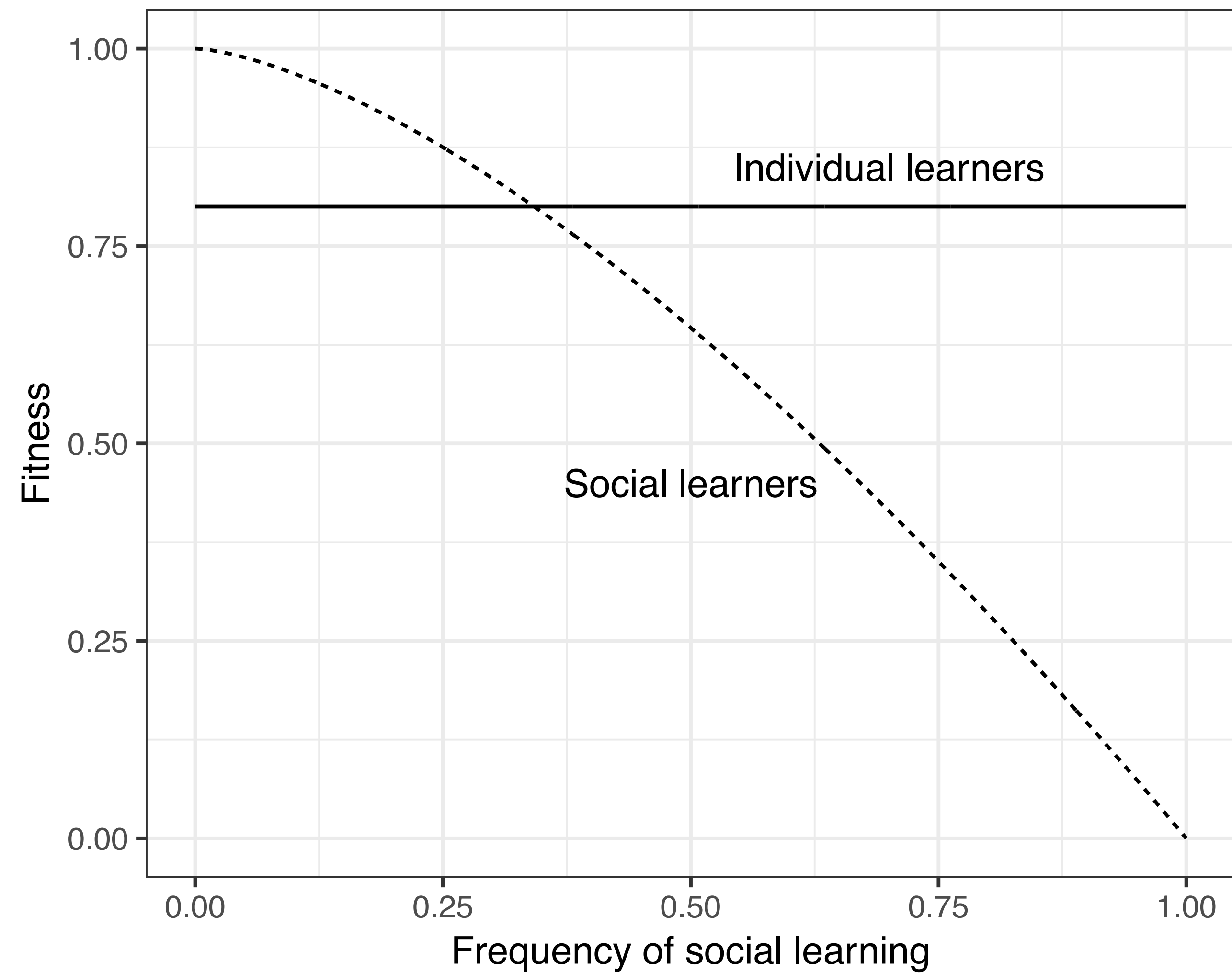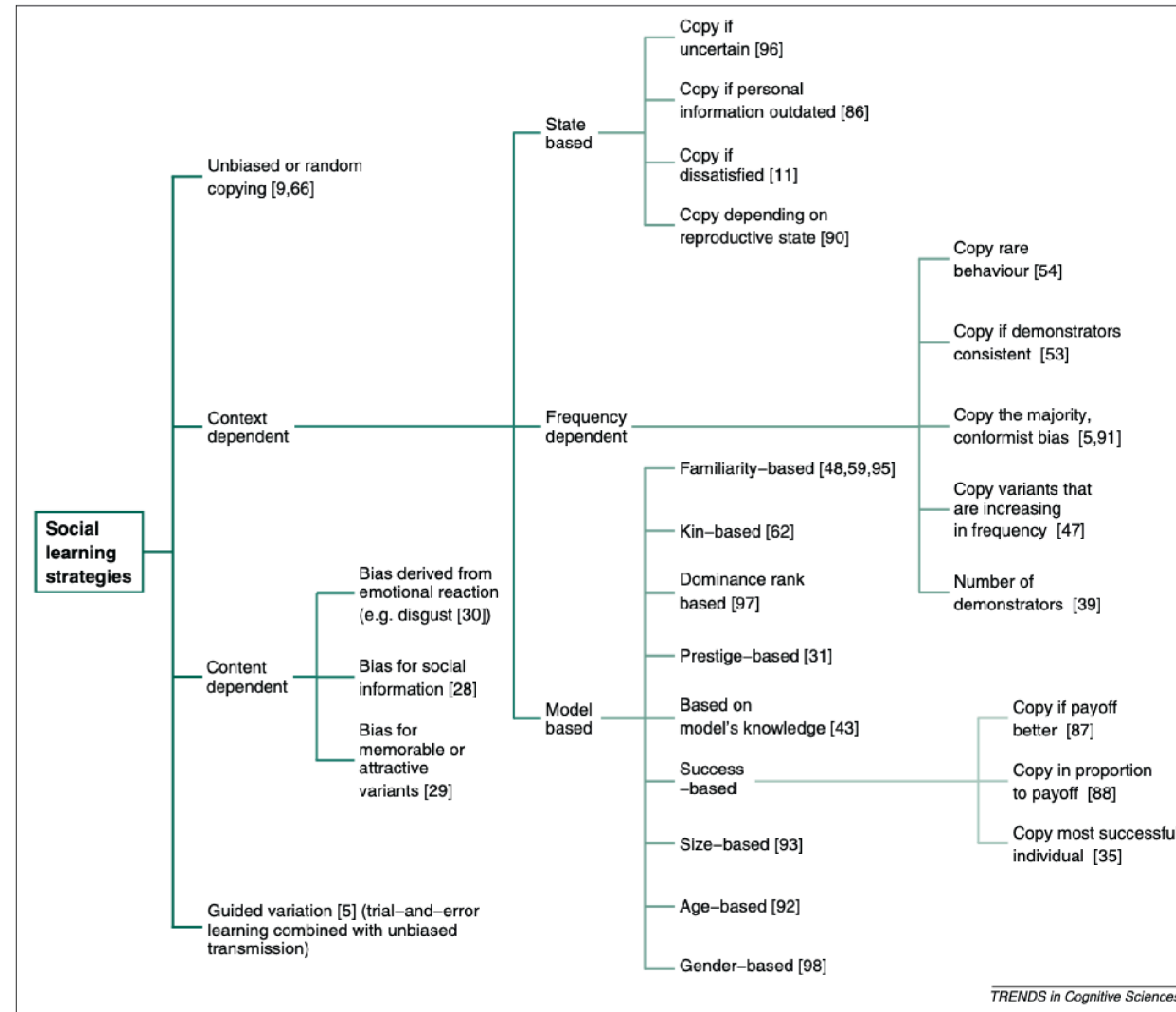
Figure 1. Social learning strategies for which there is significant theoretical or empirical support. The tree structure is purely conceptual and not based on any empirical data on homology or similarity of cognition. The sources given are not necessarily the first descriptions or the strongest evidence, but are intended as literature entry points for readers.

Rendell et al., 2011

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

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> 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

Efferson et al., 2007

- 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-

Touch et al., 2009

- 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

McElreath et al., 2007

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BIASES FOR ACQUIRING INFORMATION INDIVIDUALLY RATHER THAN SOCIALLY

KIMMO ERIKSSON[1,2*] AND PONTUS STRIMLING[2]

Eriksson and Strimling, 2009

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Evolution and Human Behavior

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

Original Article

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

Alex Mesoudi

Mesoudi, 2011

- 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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Review

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Social information use and social information waste

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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

Morin et al., 2021

- Consider the possibility of deception

- More sophisticated cognitive mechanisms (plausibility checking, trust calibration, reasoning, etc…)

- "default" state: not accepting new information
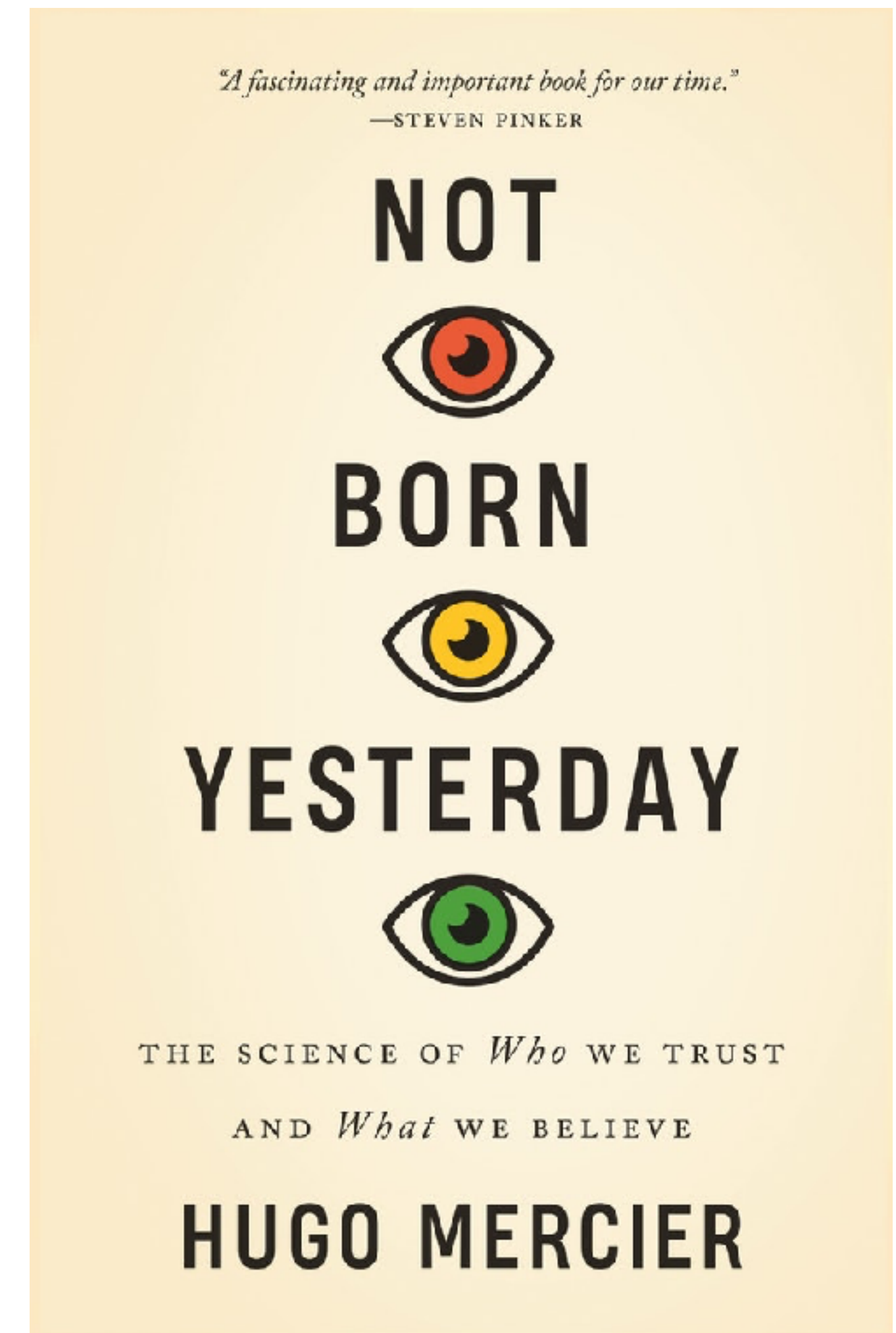
Mercier, 2020

- "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

reviewed in Altay et al., 2021

- Broad focus on the social/digital media system, e.g. trust in reliable news, how to enhance positive effects, algorithms, etc.

- 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
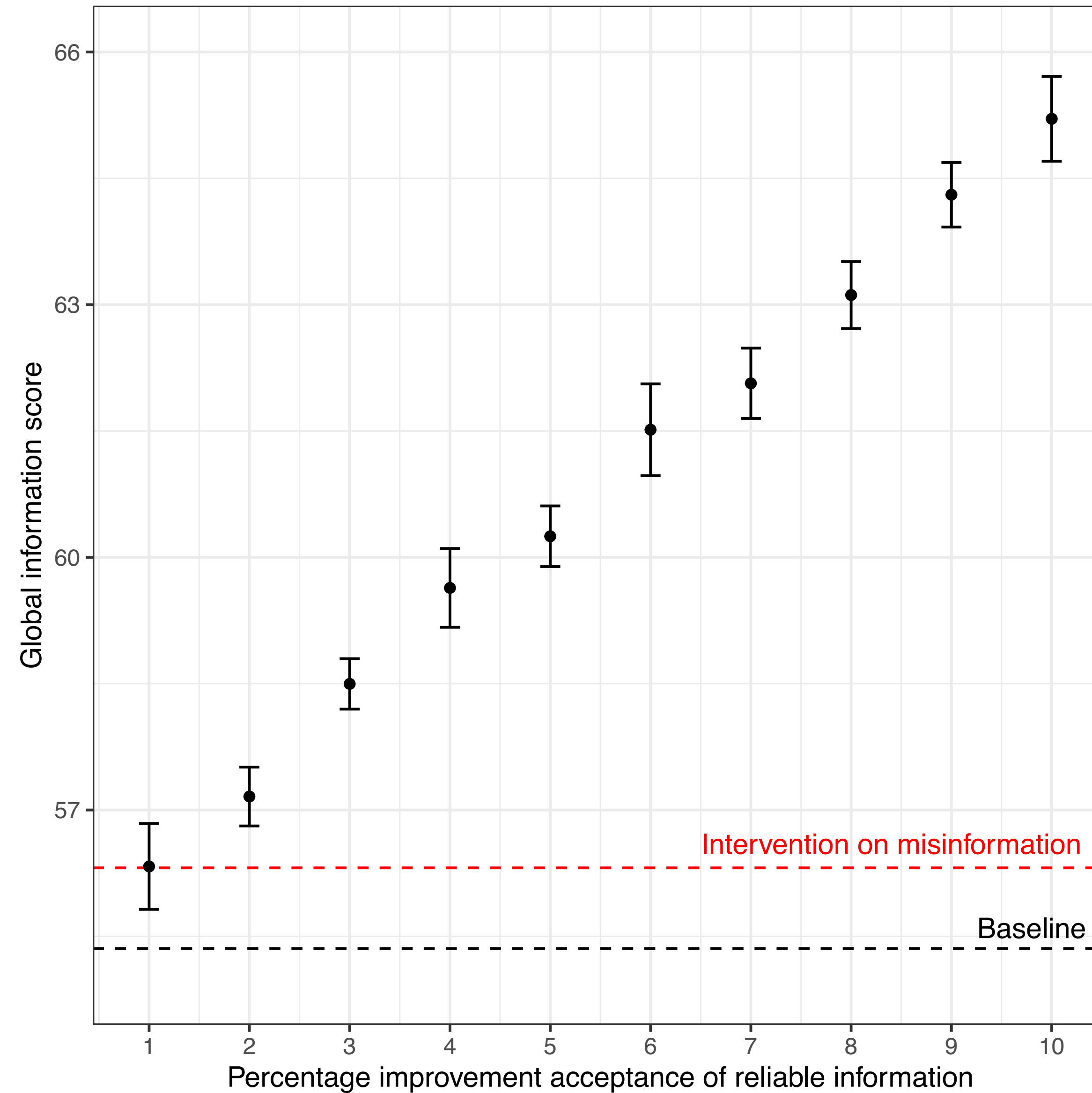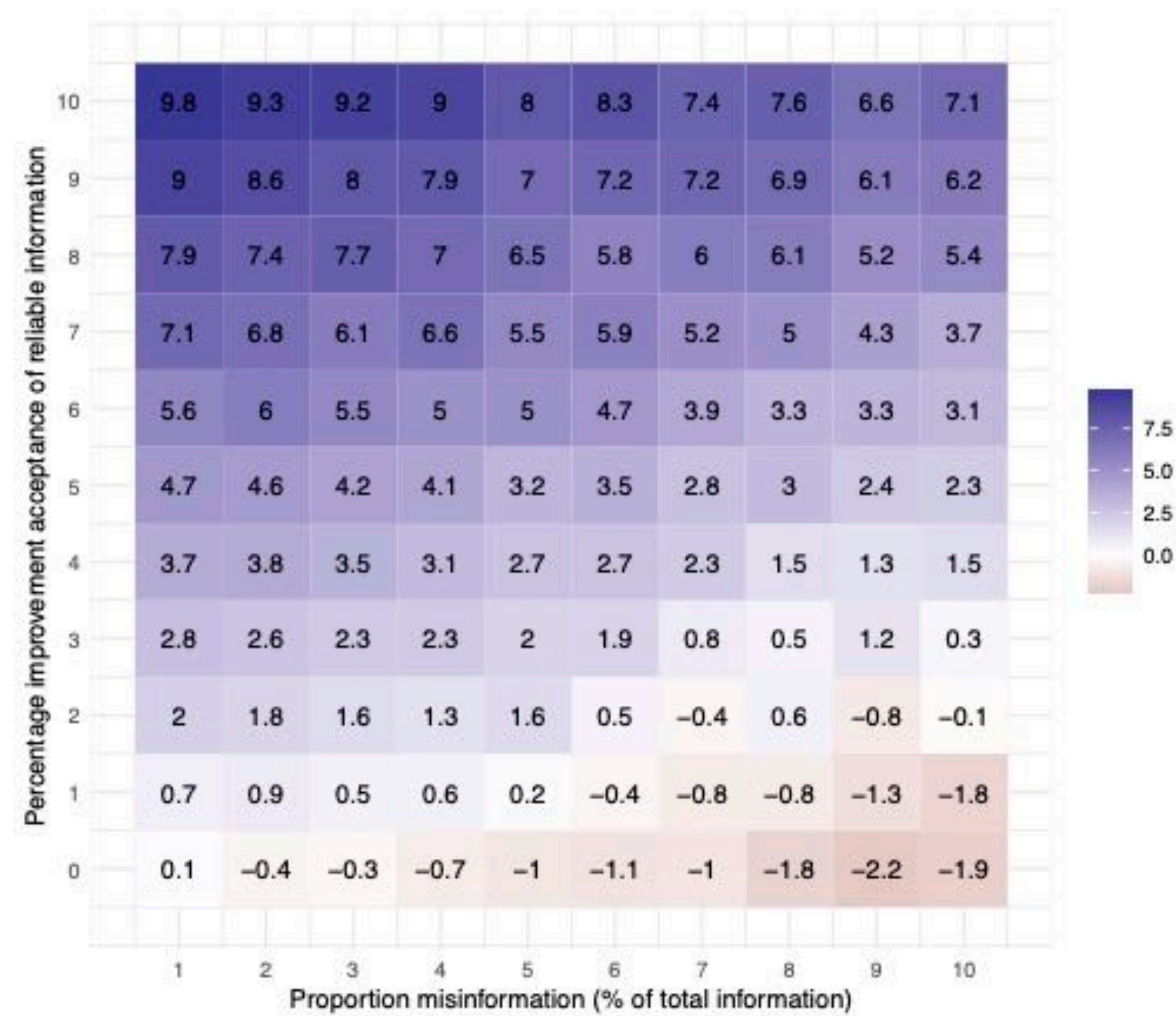
Altay et al., 2022

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Misinformation in the Digital Age : Comparative Contexts and Policy Lessons

Thank you!

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