Addressing Gaps in Digital Media Research

Pathways for Future Science and Policy

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Digital Mental Health

1 **Social media and mental health**

Introduction

2 **Measurement**

How to measure social media

3 **Objective data**

Sources of social media data

4 **Research timelines**

Timelines of research and policy

Social media and Mental Health

Social media and mental health

INCONSISTENT

Effects tend to be inconsistent across studies.

SMALL

Effects tend to be small or negligible.

LIMITED RELEVANCE

Results in limited understanding and hinders evidence-based intervention

Orben (2020); Sanders et al. (2023); Tang et al. (2021); Kaye et al. (2020); Valkenburg et al. (2022)

Social Media Measurement

Measurement of social media

Dose-response model: direct relationship between the amount social media is used and the subsequent mental and physical effects

- Oversimplifies complex social mechanisms and can obscure meaningful patterns

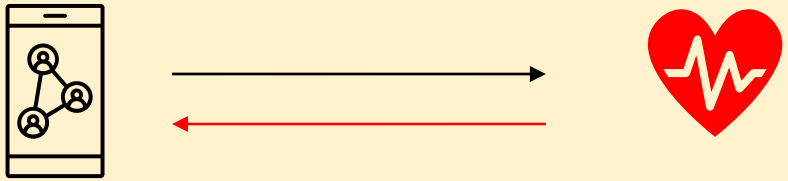
- This is reflected in our measurement approaches: screen time

Digital diet framework: the effects of a digital environment are determined by the quality and composition of digital experiences, not the quantity alone

Coyne et al., (2020); Hawkes, (2019); Orben et al. (2024); Kayne et al. (2020); Parry et al. (2021); Sonuga-Barke et al. (2024)

Causal relationships

- Frameworks make assumptions about the causal relationships
- Pervasive reliance on correlational research marks a challenge



Coyne et al., (2020); Hawkes, (2019); Orben et al. (2024); Kayne et al. (2020); Parry et al. (2021); Sonuga-Barke et al. (2024)

Individual differences

- Causal relationships may differ across individuals
- Most research is concerned with population level effects
- We need to appreciate the complexity of online environments

Orben et al. (2023); Sanders et al. (2023); Valkenburg et al. (2020)

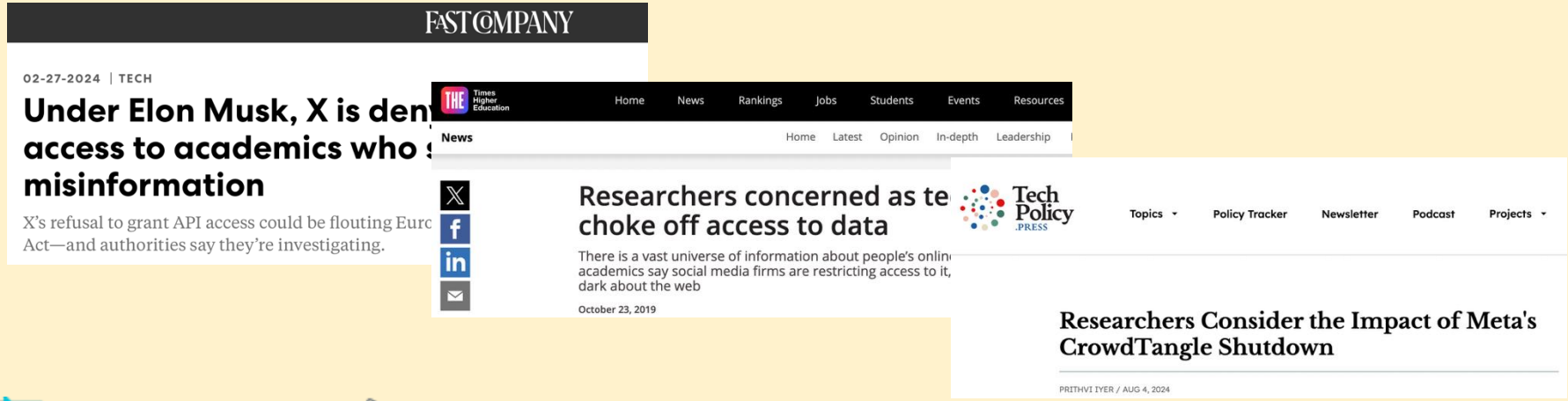
Summary

- Social media are complex environments that affect individuals in different ways
- The questions we ask reflect causal assumptions about the ways in which social media and mental health relate
- Funders make (implicit) assumptions about these causal effects and determine the questions being asked

Objective social media data

Objective measures

- Research relies on user self-report to gain insight into the effects of digital media use
- Retrospective self-reports of media use are unreliable
- Objective data can provide detailed insights into user behaviour and motives but are difficult to obtain



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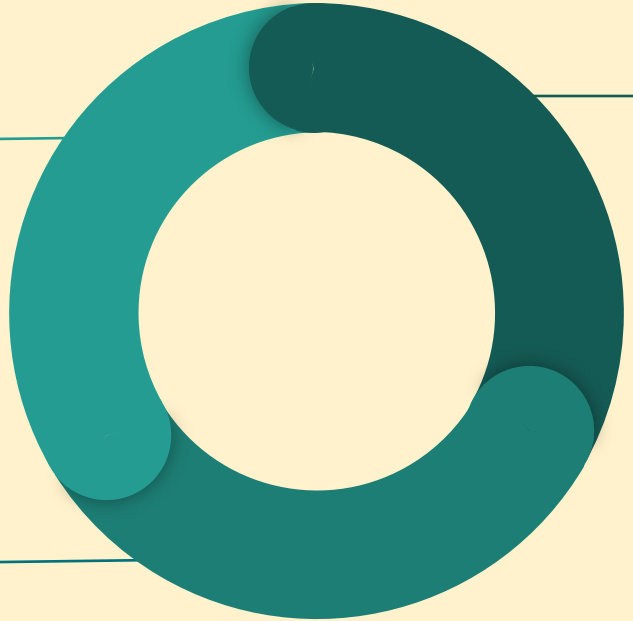
Orben & Przybylski (2019); Kaye et al. (2020); Parry et al. (2022); Twenge & Campbell (2018)

Solutions: Access to data and experimental intervention design

Access to data on user activities



Opportunities for external researchers to conduct randomised experiments

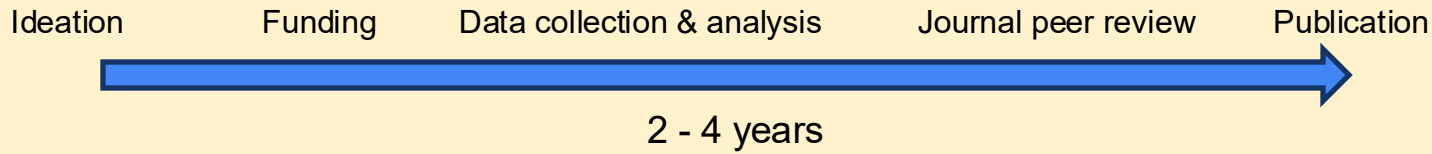
Vehicle safety testing: external researchers can design and conduct product tests before vehicles are designated appropriate for market (United Nations Economic Commission for Europe 1958 Agreement)

Access to data on content and algorithmic moderation processes

Research timelines

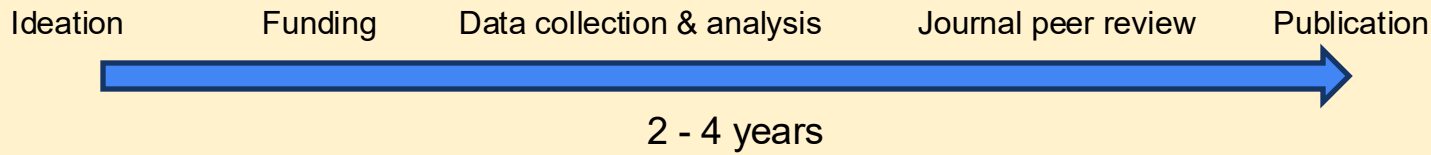
Problem: Mismatch between research and technology innovation timescale

Research timescale

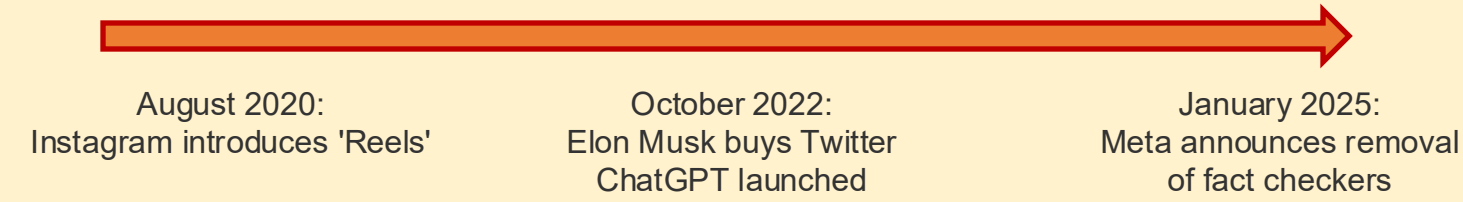


Problem: Mismatch between research and technology innovation timescale

Research timescale

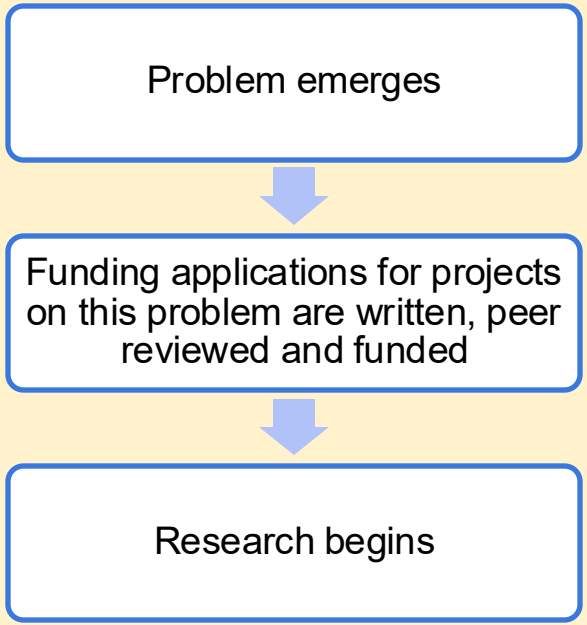


Technology innovation

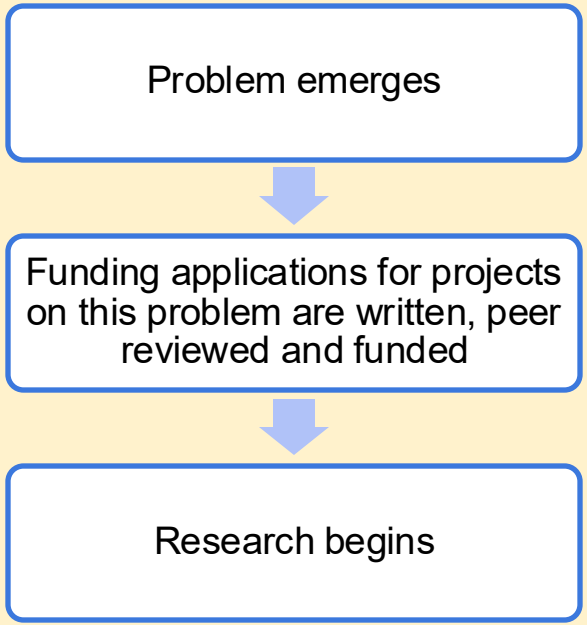


Solutions

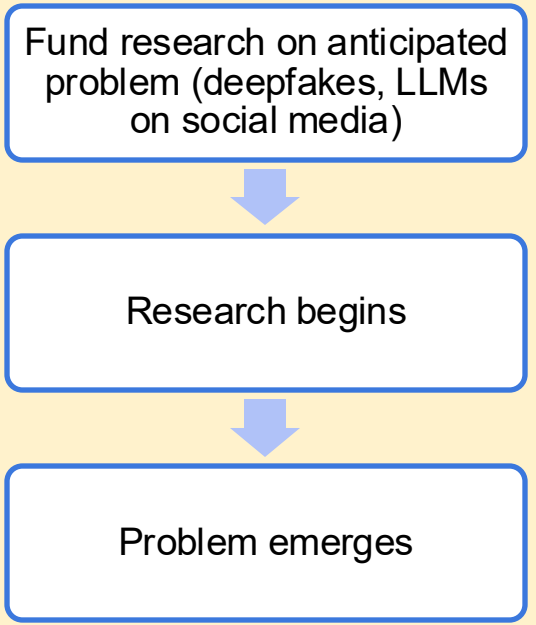
Conventional, project-based funding model



Conventional, project-based funding model

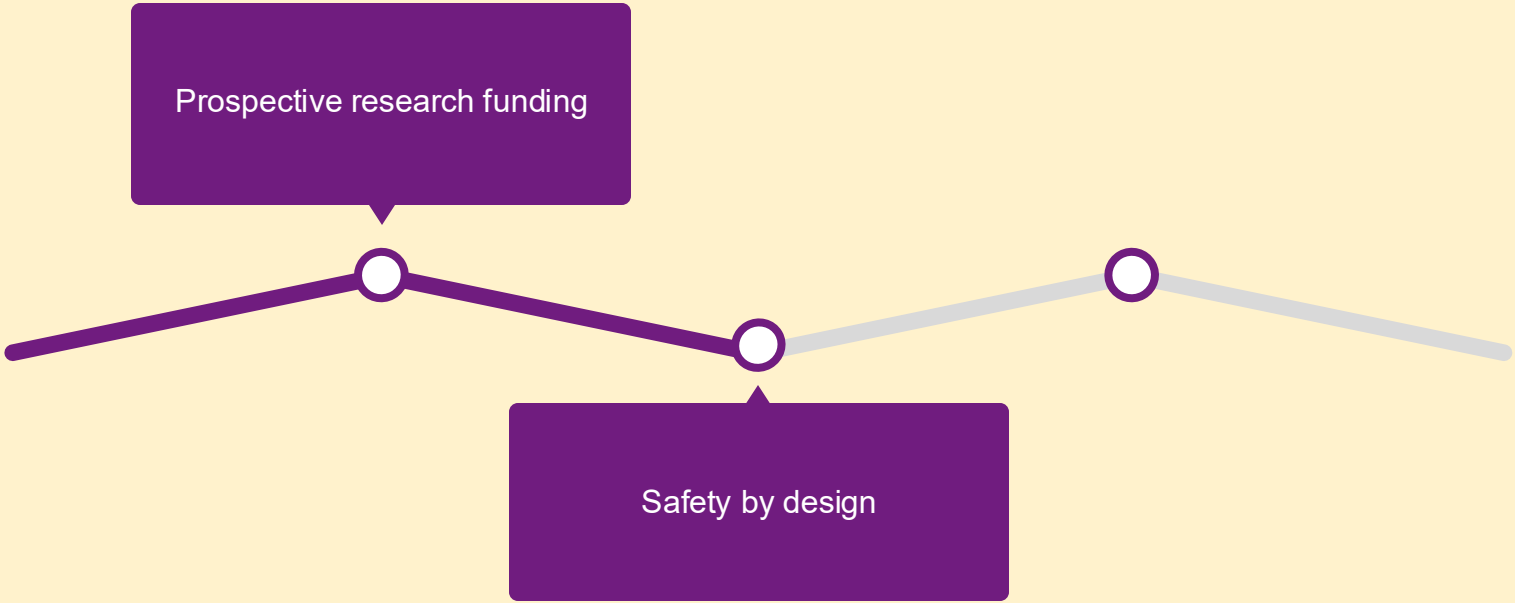


Alternative, prospective funding model



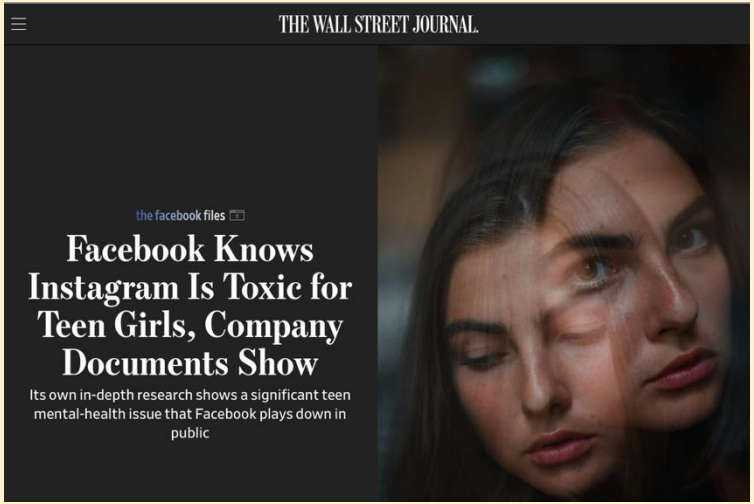
- Higher risk at level of each individual study
- At cumulative level, more likely to produce forward-looking evidence needed

Solutions



Safety by design

- Current picture:
  - “Aspects of Instagram exacerbate each other to create a perfect storm”
  - “Sharing or viewing filtered selfies in stories made people feel worse”
  - - Internal Meta research report leaked to Wall Street Journal, 2021



Safety by design

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  - “Sharing or viewing filtered selfies in stories made people feel worse”
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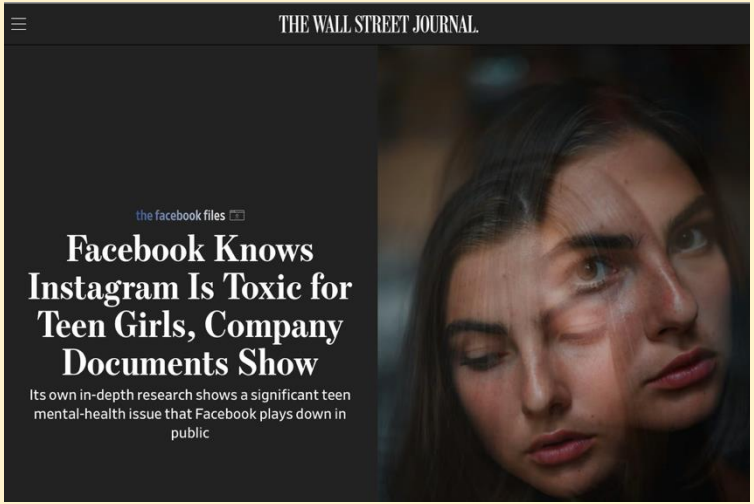
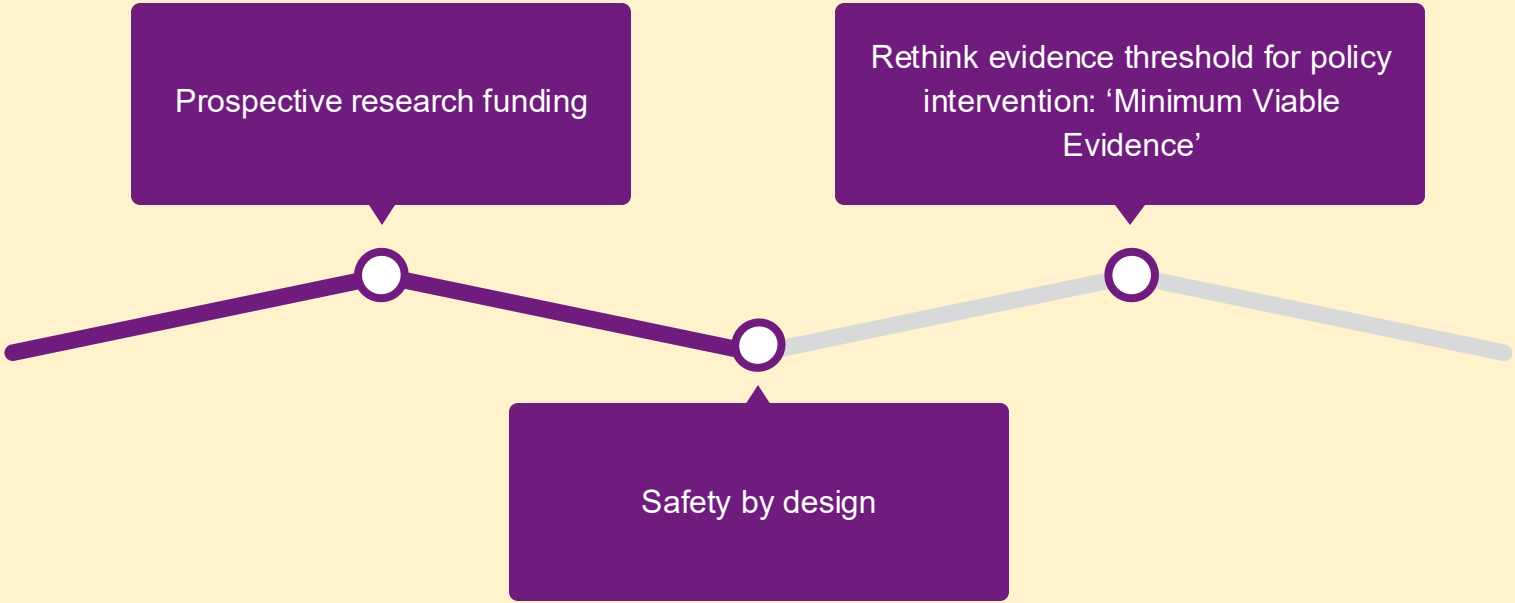
- Safety by design:
  - Designing platforms with users' safety as a primary objective
  - May conflict with profit maximisation

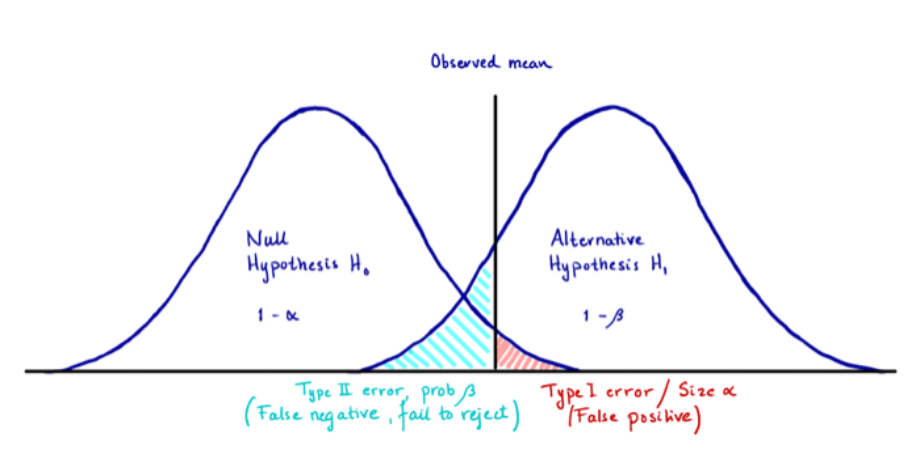


Solutions


Prospective research funding
Rethink evidence threshold for policy intervention: ‘Minimum Viable Evidence’
Safety by design

Risk-based thresholding of evidence needed before policy action

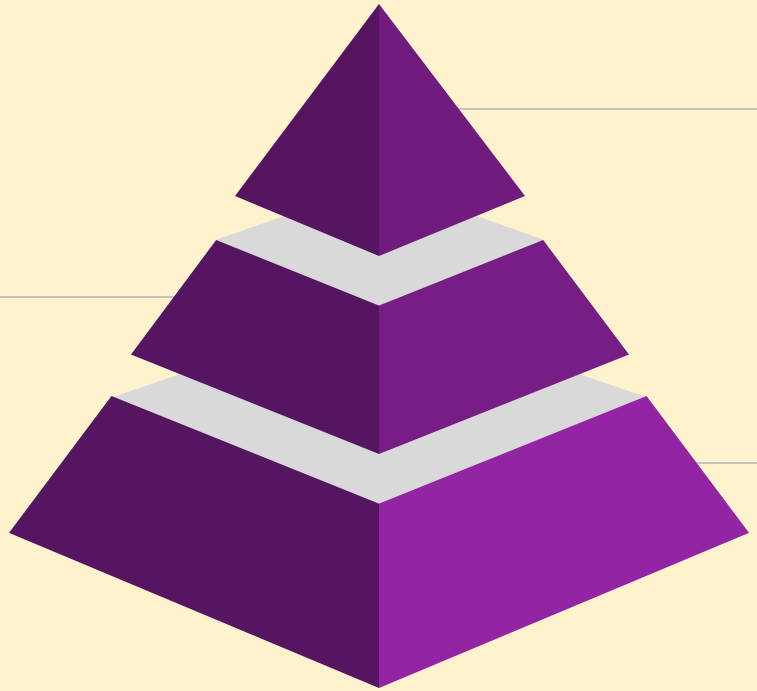
- Aim of routine science: minimise risk of **false positives**
- But in some cases, the **risk** of false negatives is greater than the risk of false positives
- Solution: reevaluate relative risk of false positives and false negatives, sometimes intervening when a lower threshold of evidence is reached for harms than in routine science



Orben & Matias (in Press), *Science*

Conclusions

Social media research ecosystem



Problem: Lack of good measurement

1 **Solution: Funders have more specific expectations for the questions they fund**

Problem: Lack of access to data and research resources

2 **Solution: Policy mandated data and research resources**

Problem: Speed mismatch between research and technology progress

3 **Solution: Altered threshold of evidence needed to begin testing interventions**

Thank you!

Digital Mental Health Group

We are a research team led by Dr Amy Orben, based at the MRC Cognition and Brain Sciences Unit at the University of Cambridge. We study how living and growing up in a time of rapid digitalisation influences mental health and wellbeing.

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