GESIS Leibniz-Institute
for the Social Sciences

Ethical questions in research with digital trace data

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Association

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CS3 Lab – Computational Survey and Social Science

June 18th , 2025

GESIS Services for Digital Behavioral Data

https://rrr.is/gesisdbd

GESIS Panel.dbd

GESIS Web Tracking

GESIS AppKit

GESIS Web Data

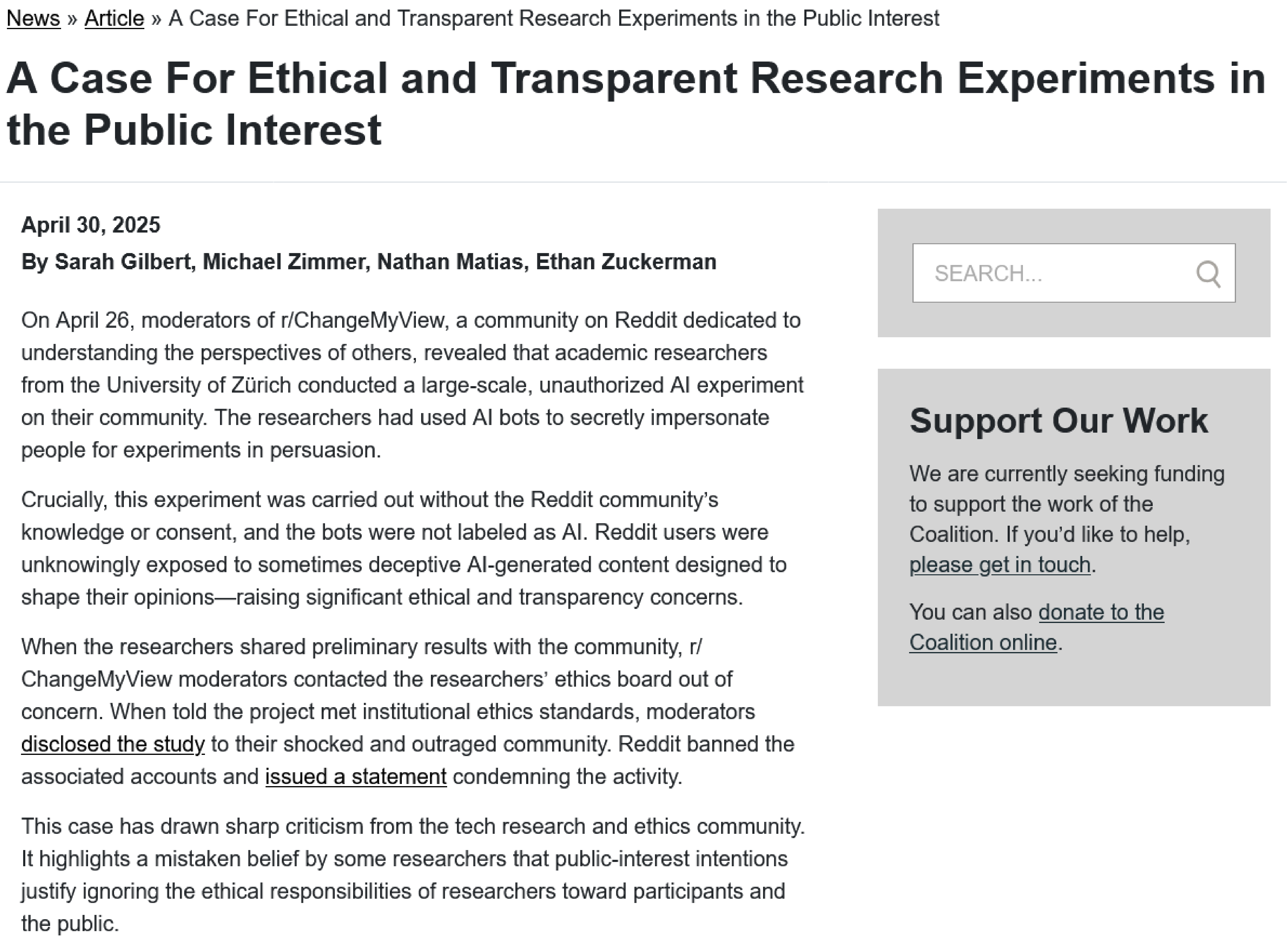
GESIS Methods Hub

GESIS Guides to Digital Behavioral Data

DBD Consulting

Main basis of this talk

Breuer, J., Stier, S., Lukito, J., Mangold, F., Wieland, M., Radovanović, D., Radovanović, D., Zens, M., Breuer, J., Weller, K., & Wagner, C. (2025). *Overview of Ethical Considerations when Working with Digital Behavioral Data (GESIS Guides to Digital Behavioral Data, 14)* (Version 1.0). GESIS - Leibniz-Institute for the Social Sciences. https://doi.org/10.60762/GGDBD25014.1.0



News » Article » A Case For Ethical and Transparent Research Experiments in the Public Interest

A Case For Ethical and Transparent Research Experiments in the Public Interest

April 30, 2025

By Sarah Gilbert, Michael Zimmer, Nathan Matias, Ethan Zuckerman

On April 26, moderators of r/ChangeMyView, a community on Reddit dedicated to understanding the perspectives of others, revealed that academic researchers from the University of Zürich conducted a large-scale, unauthorized AI experiment on their community. The researchers had used AI bots to secretly impersonate people for experiments in persuasion.

Crucially, this experiment was carried out without the Reddit community's knowledge or consent, and the bots were not labeled as AI. Reddit users were unknowingly exposed to sometimes deceptive AI-generated content designed to shape their opinions—raising significant ethical and transparency concerns.

When the researchers shared preliminary results with the community, r/ChangeMyView moderators contacted the researchers' ethics board out of concern. When told the project met institutional ethics standards, moderators disclosed the study to their shocked and outraged community. Reddit banned the associated accounts and issued a statement condemning the activity.

This case has drawn sharp criticism from the tech research and ethics community. It highlights a mistaken belief by some researchers that public-interest intentions justify ignoring the ethical responsibilities of researchers toward participants and the public.

Support Our Work

We are currently seeking funding to support the work of the Coalition. If you'd like to help, please get in touch.

You can also donate to the Coalition online.

Source: https://independenttechresearch.org/a-case-for-ethical-and-transparent-research-experiments-in-the-public-interest/

Further discussion & reporting:

- Blog post by Kevin Munger
- Blog posts by *Retraction Watch*[1][2]
- Bluesky thread by Casey Fiesler

Research ethics & digital trace data in practice

- despite the relevance of the issue, several systematic review studies have shown that **research ethics are often not (explicitly/properly) addressed in publications** based on digital trace data (Fiesler et al., 2024; Knöpfle et al., 2024, Lisker & Mihaljevic, 2025)

Key questions guiding our research activities

- **What can we do?**
  - legal regulations/frameworks
  - methods, data access, & resources

- **What should we do?**
  - **research ethics**
  - methodological rigor & data quality

Research ethics

- “Research ethics primarily concerns itself with the **responsible conduct of research**, emphasizing the **protection of human participants**, the **integrity of data**, and the **avoidance of harm**.” (Knöpfle et al., 2024, p. 335, emphasis added)
    - **closely related to but not synonymous with research integrity** (Emmerich, 2020) → honesty, transparency, and adherence to professional standards
    - despite the use in everyday language, ethics are **not a binary concept**

Different perspectives on research ethics

- deontology vs. consequentialism
- in a nutshell…
  - **deontology**: adherence to specific **norms and fundamental values** to guide decision-making
  - **consequentialism**: evaluation of **anticipated outcomes and their ethical implications**

  (see, e.g., Knöpfle et al., 2024; Salganik, 2019)
- in practice typically a combination of both perspectives (Schlütz & Möhring, 2018)

Belmont Principles

National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979)

- **Respect for Persons**
- **Beneficence**
- **Justice**

→ **minimizing risks and harms** while **prioritizing the value of research**

- **different values and goals** that can be **evaluated differently** and **may even be conflicting** in specific situations (Iphofen, 2020; Israel, 2015)

Digital behavioral data / digital trace data

“DBD encompass **digital observations of human or algorithmic behavior**. DBD are generated (1) through **interactions and content production online** (e.g., on platforms such as Google, Facebook or websites on the World Wide Web) or (2) by **software or sensors for recording specific processes** (e.g., smartphones, RFID sensors, satellites, street view cameras, or web tracking).” (Wagner et al., 2025, p. 2; emphasis added)

Types of digital trace data

- **found data** (= not genuinely produced for research) vs. **designed data** (= genuinely produced for research)
- Hox (2017): **unintentional** vs. **intentional traces**
- Menchen-Trevino (2013)
  - **participation traces** (e.g., comments or posts) and **transactional data** (e.g., login data or logs more generally)
  - **horizontal** (e.g., all posts from a social media platform containing a specific hashtag) vs. **vertical trace data** (comprehensive usage data - potentially from different sources - for a limited group of users)

→ different implications for questions related to research ethics

Digital trace data & research ethics

- many ethical questions are the same for digital trace data and other types of data, but **some issues are unique or at least particularly pronounced/important**
- ethical questions arise in **all phases of the research process** when working with digital trace data
  - **Study design & data collection**
  - **Data processing & analysis**
  - **Publication & data sharing**

Study design & data collection

- **different data collection methods** raise specific ethical questions: e.g., APIs, web scraping, data donation (Breuer et al., 2020; Ohme et al., 2023)
- important distinction for ethical considerations:
    - **platform-centric** approaches:
        - sampling from one or more platforms based on relevant entities, such as users, topics, hashtags, search queries or time
        - data collection directly from platforms (typically via APIs or scraping)
    - **user-centric** approaches:
        - users recruited for the study (e.g., via existing panels)
        - data collected via dedicated research software (e.g., browser plugin) or donations of so-called data download packages (Carrière et al., 2024; van Driel et al., 2022)
        - often involves data linking: e.g., digital traces (possibly from multiple platforms) + surveys (Stier et al., 2020)

Study design & data collection

- aspects to consider:
  - **topics** (e.g., regarding sensitivity)
  - **data types** (e.g., text, image, video)
  - **sample** (e.g., vulnerable groups included)
  - **platform attributes & user expectations**
    - researchers are typically not part of the “imagined audience” of social media users (Marwick & boyd, 2011; Fiesler & Proferes, 2018)
    - ”Concerns over consent, privacy and anonymity do not disappear simply because subjects participate in online social networks; rather, they become even more important” (Zimmer, 2010, S. 324)
  - **contact** with the people whose data are being collected
    - in case of platform-centric collection, the term participant may not be appropriate (Breuer et al., 2023)
    - important for the possibility of obtaining **informed consent**

Informed consent

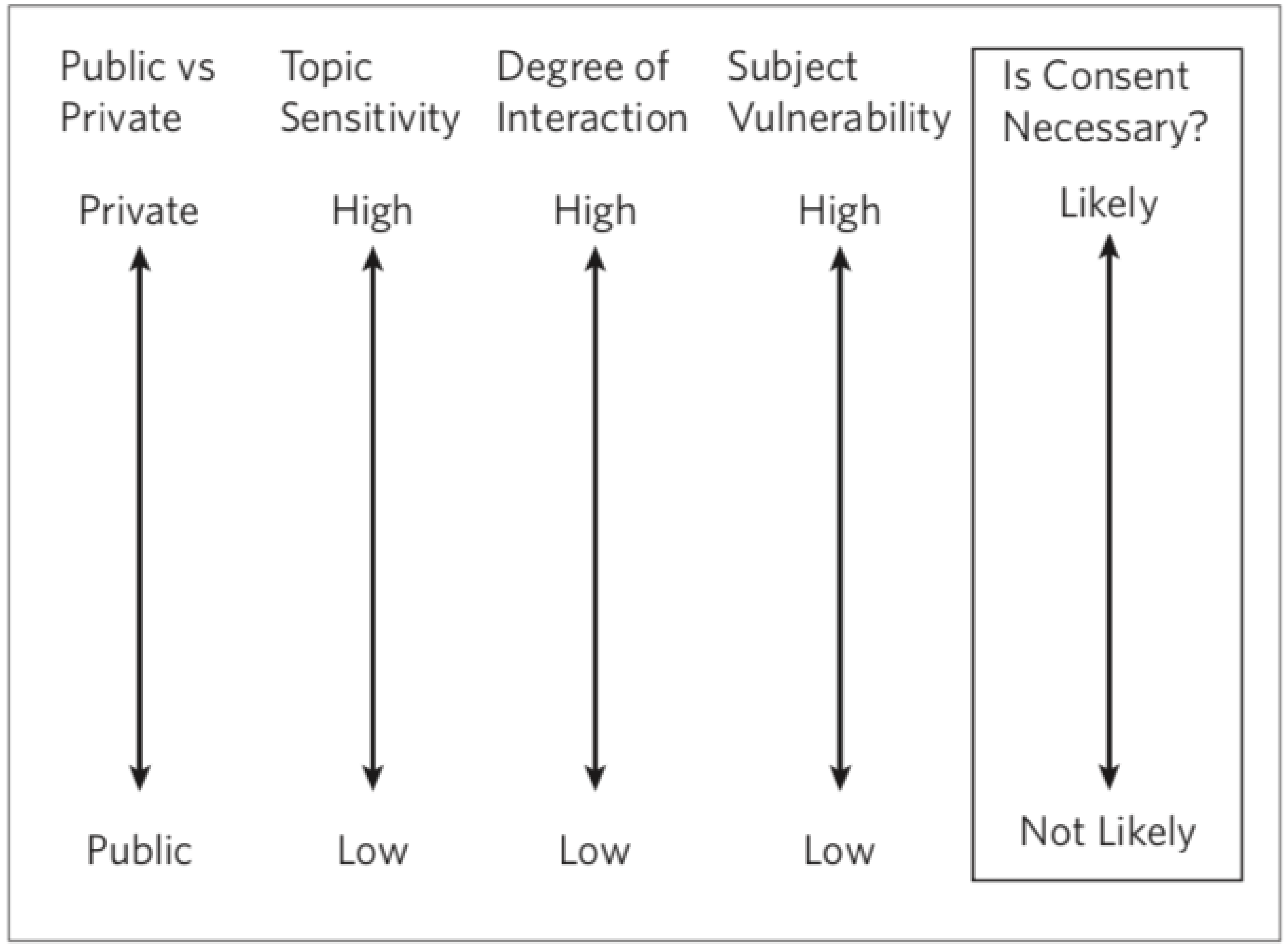
- informed consent is relevant from a legal as well as an ethical perspective
    - sidenote: informed consent is arguably the “safest” option but only one of the possible legal bases for collecting and processing personal data according to the GDPR (another relevant one for academic research is legitimate interest)
- informed consent should **appropriately inform participants about the nature and purpose of the data collection in a comprehensible manner**
    - possibility to provide additional “technical details” via optionally available supplementary information (Breuer, Al Baghal et al., 2021)

Informed consent

- informed consent may be very difficult or even impossible to obtain in platform-centric approaches
    - there are/can be solutions, however, such as the *Bartleby* tool by Zong & Matias (2022) or working together with moderators or instance admins on decentral platforms like *Mastodon* (Wähner et al., 2024)
- **different options of implementing informed consent** (esp. for user-centric approaches): e.g., granular consent for multiple data types or dynamic consent for longitudinal studies (Breuer et al., 2025)

Need for informed consent

Factors affecting consent



Source: McKee & Porter (2009), p. 88

Data processing & analysis

- anonymization/pseudonymization
  - digital trace data can contain many types of direct or indirect identifiers
    - these may also include data from others
    - combinations of metadata can be used for identifying individuals (Sloan et al., 2020)
    - example of URLs from web tracking: profile names/IDs in the path or parameters, search strings, geo coordinates, location names…
- data linking
  - can increase sensitivity of the data + (re-)identification risk
- inferred attributes (using ML, NLP, computer vision)
  - may be wrong
  - can increase sensitivity of the data
  - have not been provided by the individuals (→ consent)

Publication & data sharing

- **protecting participants**/individuals whose data were collected vs. **increasing transparency** & **maximizing the value of data** by making it reusable
- **full raw data are often difficult or impossible to share** due to legal and/or ethical considerations
    - digital trace data are often **personal** and can be **proprietary** and/or **sensitive**
    - legal & ethical considerations are key reasons why researchers do not share social media data (Akdeniz et al., 2023)
- several publications provide some **guidance on sharing digital trace data** (esp. social media data), including ethical considerations (Breuer, Borschewski et al., 2021; Bishop & Gray, 2017; Williams et al., 2017)

Specific vs. general(izable) guidance

- no “one-size-fits-all“ solutions
- decisions in research ethics depend on the specific case
- trade-off between concreteness and applicability across contexts

Specific vs. general(izable) guidance

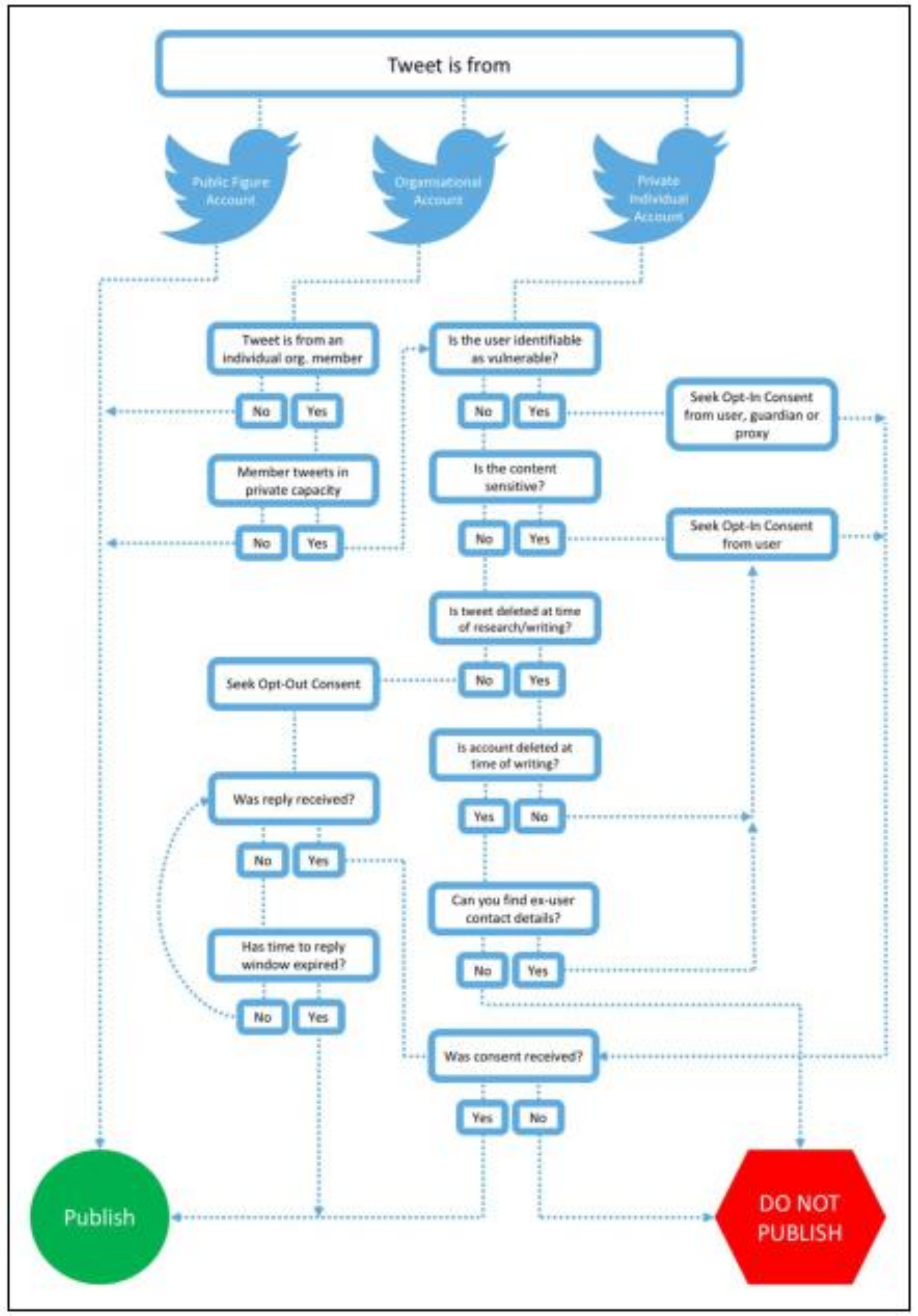
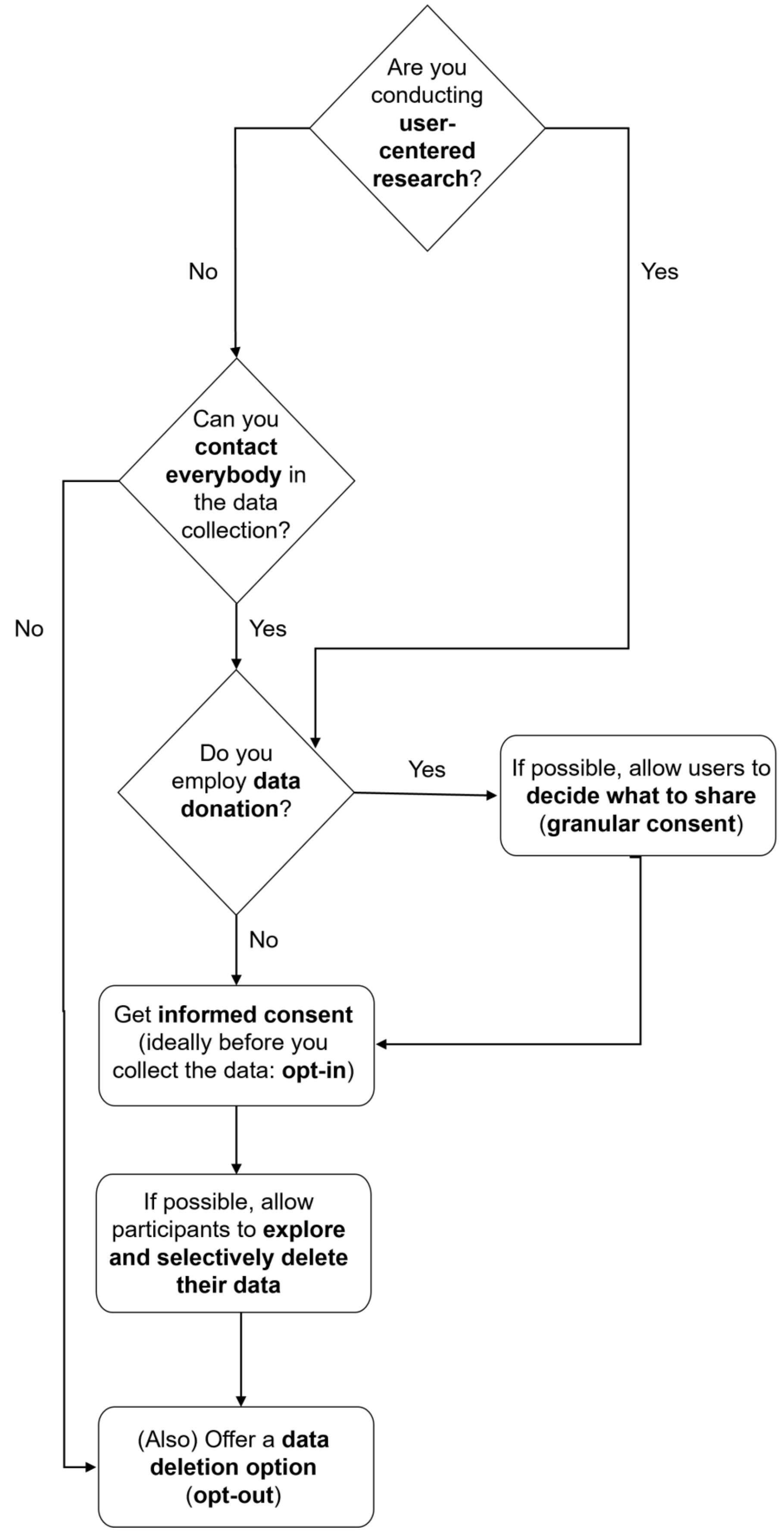

Tweet is from
Public Figure Account
Organisational Account
Private Individual Account
Tweet is from an individual org. member
No
Yes
Member tweets in private capacity
No
Yes
Is the user identifiable as vulnerable?
No
Yes
Seek Opt-In Consent from user, guardian or proxy
Is the content sensitive?
No
Yes
Seek Opt-In Consent from user
Is tweet deleted at time of research/writing?
Seek Opt-Out Consent
No
Yes
Is account deleted at time of writing?
Yes
No
Was reply received?
No
Yes
Can you find ex-user contact details?
Has time to reply window expired?
No
Yes
No
Yes
Was consent received?
Yes
No
Publish
DO NOT PUBLISH

Figure 1. Decision flow chart for publication of Twitter communications.

Source: Williams et al. (2017), p. 1163

Specific vs. general(izable) guidance


Are you conducting **user-centered research**?
No
Yes
Can you **contact everybody** in the data collection?
No
Yes
Do you employ **data donation**?
Yes
If possible, allow users to **decide what to share** (**granular consent**)
No
Get **informed consent** (ideally before you collect the data: **opt-in**)
If possible, allow participants to **explore and selectively delete their data**
(Also) Offer a **data deletion option** (**opt-out**)

Adapted from Breuer, Weller, & Kinder-Kurlanda (2023)

Some general recommendations

- Prioritize **informed consent** when possible.
- Implement **data minimization**: Collect only the data necessary for addressing a specific research question.
- **Only link** data **when** it is **necessary for an analysis**.
- When sharing data, be **"As open as possible, as closed as necessary"**
    - if possible/applicable, use anonymization/pseudonymization procedures, access control, trusted repositories, and consider novel/alternative sharing approaches, such as synthetic data or "non-consumptive use"/remote code execution (see, e.g., van Atteveldt et al., 2020)
- Engage in **ongoing ethical reflection** throughout the research process.
- Consult **ethics guidelines** and **IRBs/review boards.**

Further resources

- franzke, a. s., Bechmann, A., Zimmer, M., Ess, C. & the Association of Internet Researchers (2020). *Internet research: Ethical guidelines 3.0*. https://aoir.org/reports/ethics3.pdf
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Thank you for your attention!

Looking forward to your comments & questions!

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