

Anne Gärtner
Faculty of Psychology

Workshop Open Science Practices

Part 2

Open Data and Materials

Overview

Time

13:30 – 13:40

13:40 – 14:10

14:10 – 14:50

14:50 – 15:05

15:05 – 15:50

15:50 – 17:20

17:20 – 17:35

17:35 – 18:05

18:05 – 18:25

Topic

Welcome

Open Access ([Anne](#))

Open Data and Materials ([Anne](#))

Break

Reproducible Analyses ([Alex + Christoph](#))

Practices ([Alex + Christoph](#))

Break

Questions

Wrap Up, Evaluation

Workshop material

MGK Open Science Module

 Registration

 Introduction

 W1 - Good Scientific Practice

 W2 - Research Data Management

 W3 - Research Transparency

 General Information

 0. Introduction

 1. Open Science

 2. Open Access

 3. Open Data, Materials, and Co.

 4. Reproducible Analyses

 5. Preregistration

 Opt.: Replication Research

 Workshop Slides

 Literaturverzeichnis

Outline

Introduction

- What is open data
- Data decay, Why open data

Privacy Protection with Open Data

Not only open, but FAIR

- Findable, accessible, interoperable, reproducible



Consent form template

Exercise

Summary

Open Data

Introduction

“Open Data should be available to everyone to access, use, and share.”

(GO FAIR, 2018)



Open Data

Introduction



Open Data Introduction

Data & analysis script availability (prevalence estimates)

	Data	Analysis scripts
Psychology (2014-2017) ¹	2% [1-4%]*	1% [0-1%]
Social Sciences (2014-2017) ²	7% [2-13%]	1% [0-3%]

¹Hardwicke et al. (2021)

*[95% confidence intervals]

²Hardwicke et al. (2020)

Data availability on request (selected studies)

	Data shared
141 articles published in four major APA journals (2004) ³	27%
516 ecology articles published (1991-2011) ⁴	20%
111 most highly-cited psychology & psychiatry articles (2006-2016) ⁵	14%

³Wicherts et al. (2006)

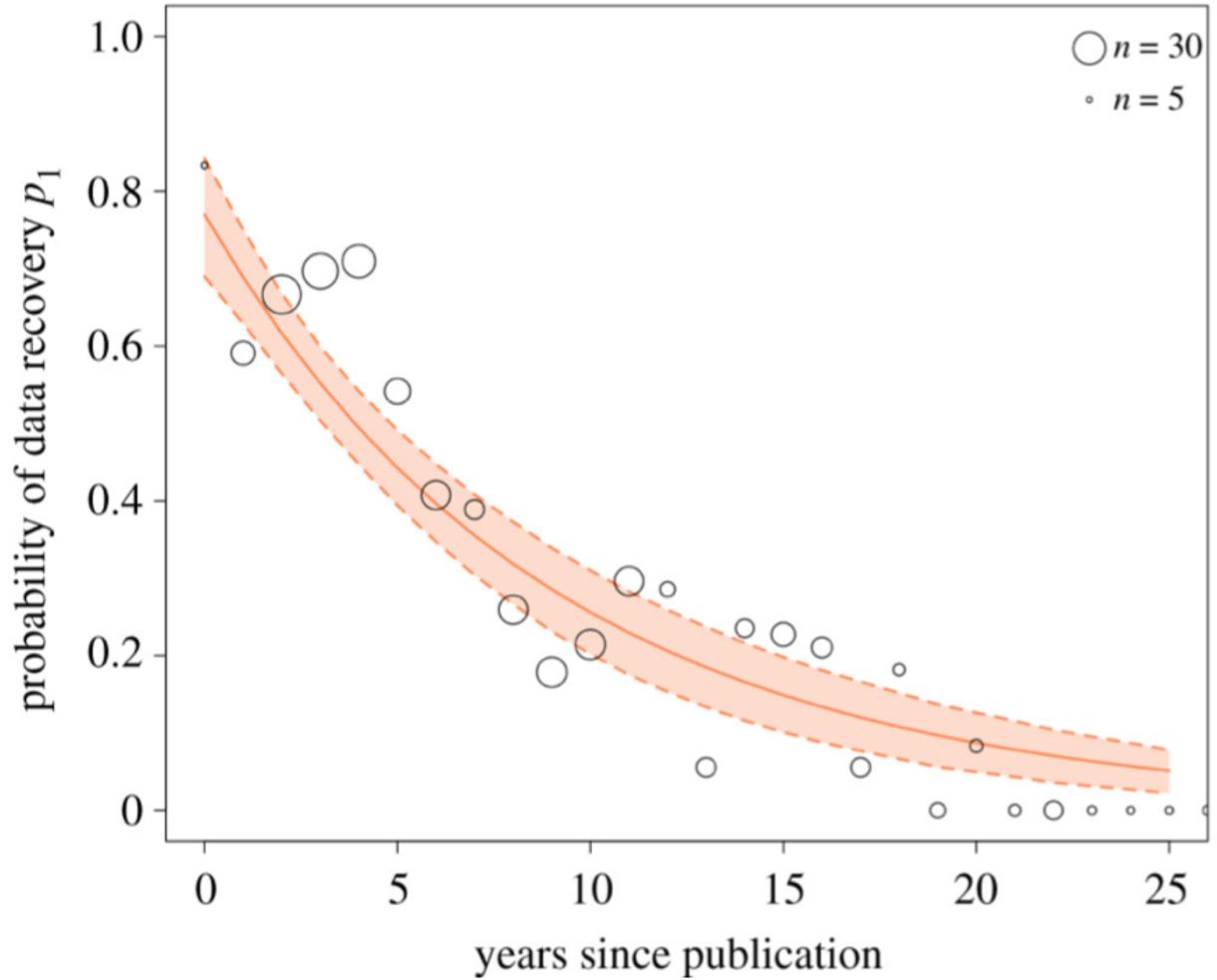
⁴Vines et al. (2014)

⁵Hardwicke & Ioannidis (2018)

Open Data

Data decay

- „probability of finding material for any publication **halves every 5.7 years**“
- „probability of recovering data for studies > 20 years ago is **close to zero**“



Open Data

Why open data?



Win the trust of other researchers



Others may derive new insights from your data that you did not think of
(secondary use)



Never again lose unpublished data (e.g., crashed hard drive)



Comply with the guidelines of funding agencies (e.g., DFG, NIH, ERC, Wellcome trust, Schweizerischer Nationalfonds), see for example DFG Guidelines for Handling Research Data
www.dfg.de/en/research_funding/proposal_review_decision/applicants/research_data/index.html#anker62237206



Open Data

Funders demand it

UK:



„We expect our researchers to maximise the availability of research data, software and materials with as few restrictions as possible. **As a minimum, the data underpinning research papers should be made available to other researchers at the time of publication. [...]**

Wellcome will also consider whether researchers have managed and shared their research outputs in line with our requirements, as a critical part of the end of grant reporting process“

USA:



„The NIH expects and supports the **timely release and sharing of final research** data from NIH-supported studies for use by other researchers. [...] ... are expected to include a plan for data sharing or state why data sharing is not possible.“

EU:



„FAIR (Findable, Accessible, Interoperable and Re-usable data) and open data sharing **should become the default for the results of EU-funded scientific research.**“

<https://wellcome.ac.uk/funding/managing-grant/policy-data-software-materials-management-and-sharing>

<https://grants.nih.gov/grants/guide/notice-files/NOT-OD-03-032.html>

http://europa.eu/rapid/press-release_IP-18-4041_en.htm

Open Data

Journals demand it

- **TOP Level 3** = Data must be posted to a trusted repository, and reported analyses will be reproduced independently prior to publication.
- **TOP Level 2** = Data must be posted to a trusted repository. Exceptions must be identified at article submission.
- As of Dec 2020, the TOP factor website lists for psychology:
 - 1 journal with data transparency level 3
 - 14 journals with level 2

Journal	Total	Data Citation	↓	Data Transparency	Analysis Code Transparency
Meta-Psychology  LNU Open	27	3		3	3
Archives of Scientific Psychology  American Psychological Association	3	0		2	0
Journal of Research in Personality  Elsevier	19	0		2	2
Social Psychological Bulletin  PsychOpen	18	1		2	1
Collabra  University of California Press	20	2		2	2
Social Cognition  Guilford Press	13	2		2	2
Personality Science 	24	3		2	2
Cortex  Elsevier	23	3		2	2
Royal Society Open Science  Royal Society Publishing	14	2		2	2
Advances in Methods and Practices in Psychological Science  SAGE	25	2		2	2
Science  AAAS	11	2		2	2

<https://topfactor.org/>

Open Science Badges improve research

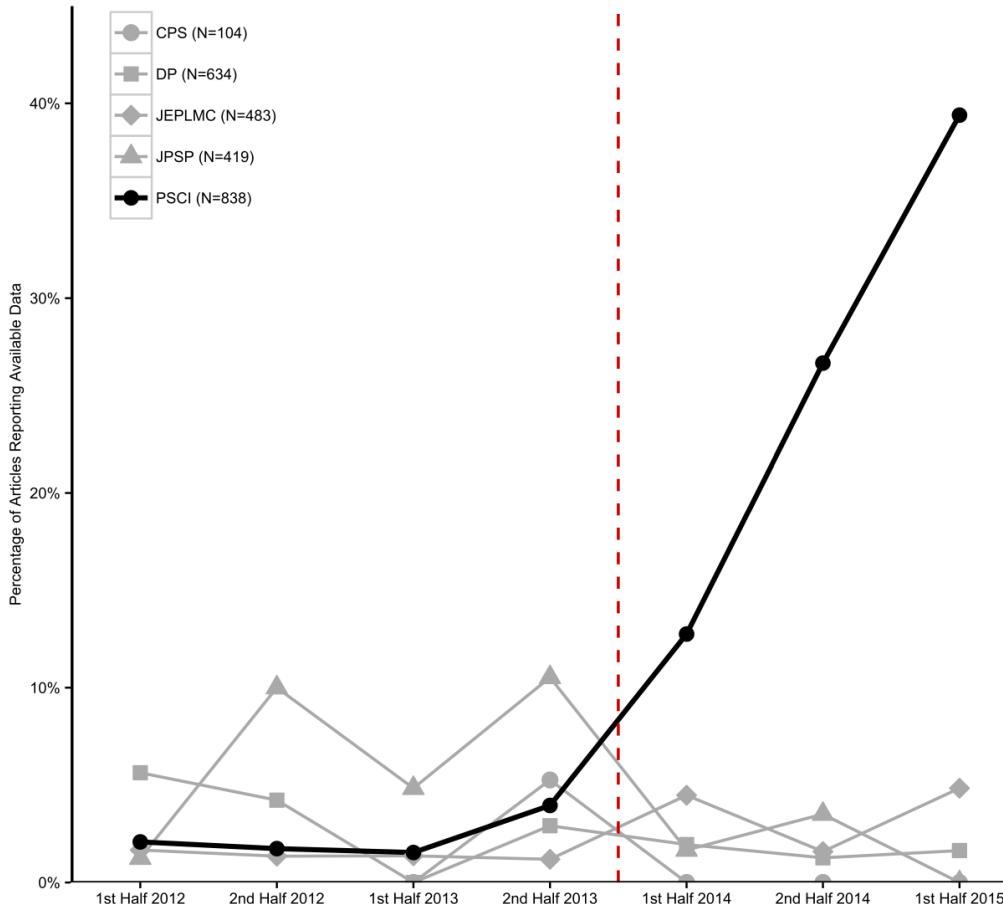


Fig 2. Reportedly available data. Percentage of articles reporting open data by half year by journal. Darker line indicates *Psychological Science*, and dotted red line indicates when badges were introduced in *Psychological Science* and none of the comparison journals. Underlying data (<https://osf.io/a29bt/>) and scripts (<https://osf.io/bdtng/>) to reproduce this figure can be found on the Open Science Framework.

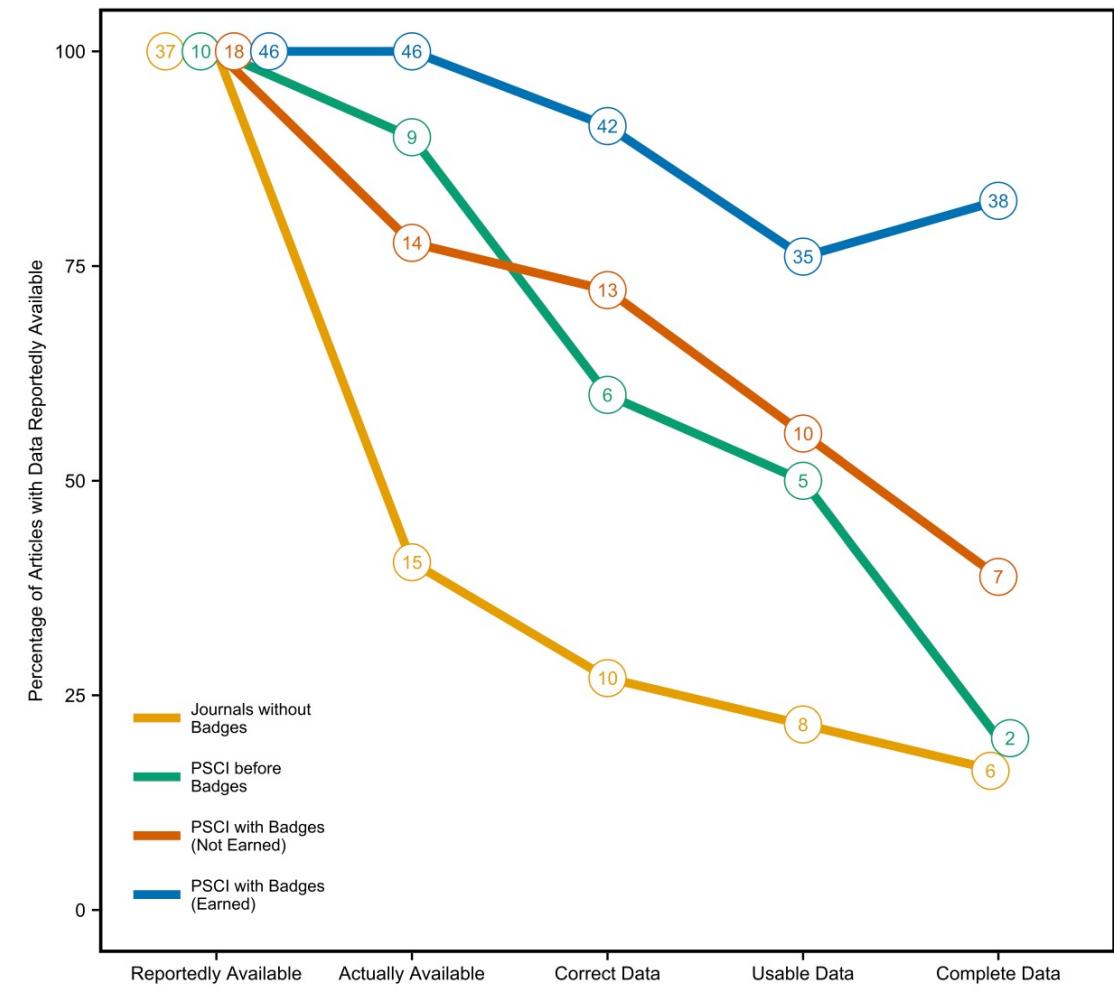


Fig 4. Actually available, correct, usable, and complete data. Percentage of articles with data reported available at an independent archive or personal website that were actually available, had correct data, had usable data, and had complete data. Once *Psychological Science* started offering badges, some articles reported availability but either did not apply for or earn a badge; others reported availability and did earn a badge. These are represented separately. Total number of articles reported in data points. Underlying data (<https://osf.io/srgjb/>) and scripts (<https://osf.io/d78cf/>) to reproduce this figure are available on the Open Science Framework.

Open Science Badges improve research

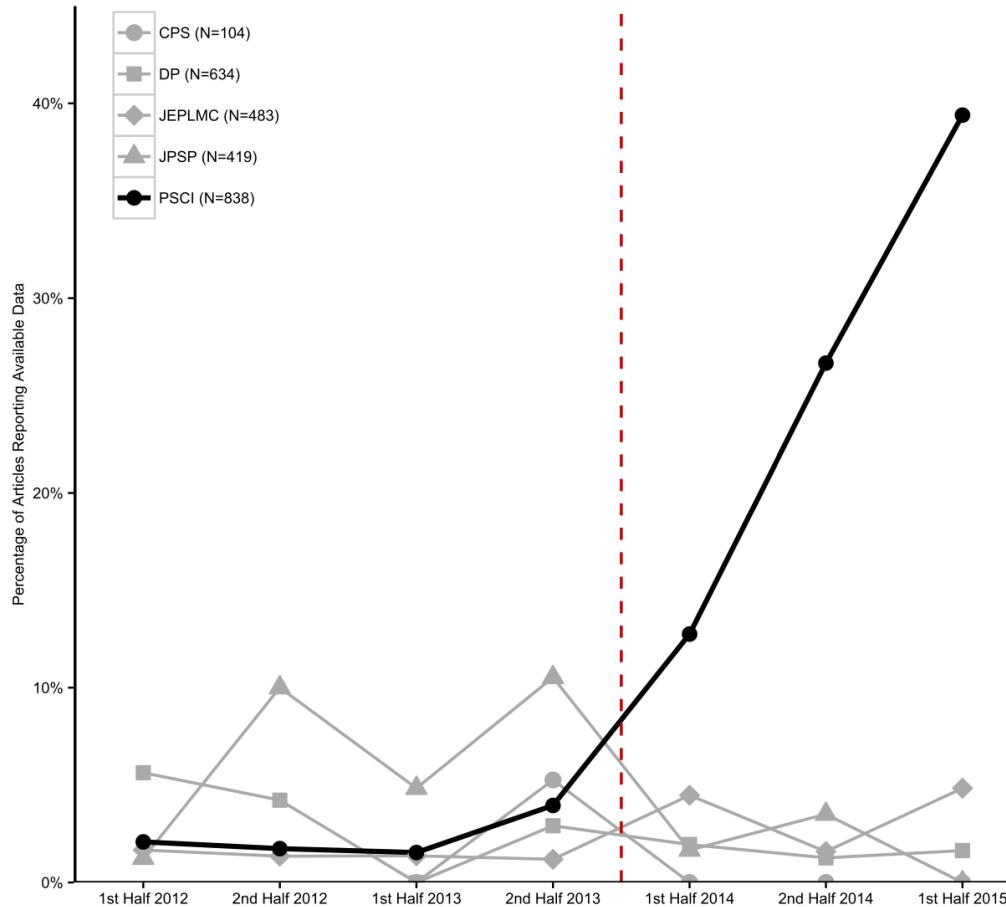


Fig 2. Reportedly available data. Percentage of articles reporting open data by half year by journal. Darker line indicates *Psychological Science*, and dotted red line indicates when badges were introduced in *Psychological Science* and none of the comparison journals. Underlying data (<https://osf.io/a29bt/>) and scripts (<https://osf.io/bdtng/>) to reproduce this figure can be found on the Open Science Framework.

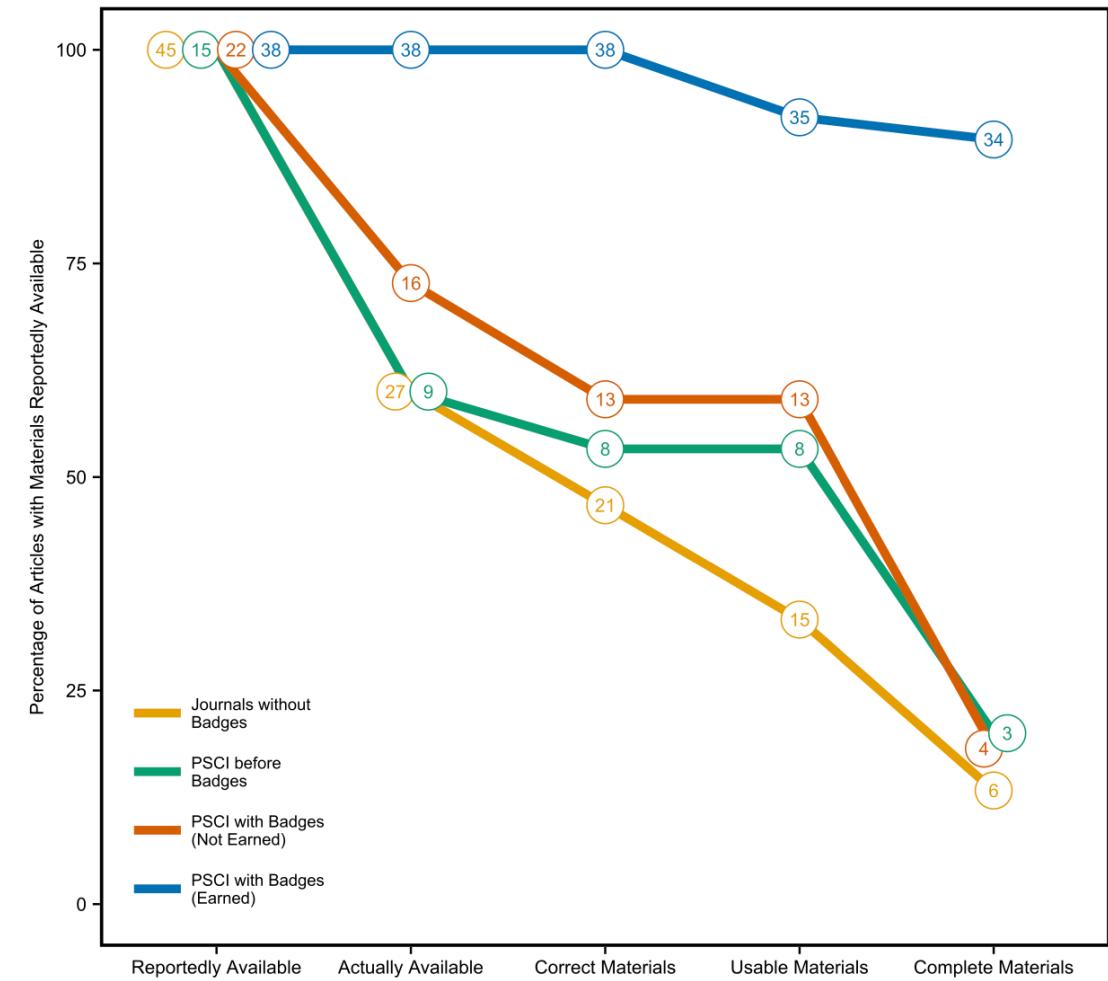


Fig 5. Actually available, correct, usable, and complete materials. Percentage of articles with materials reported available at an independent archive or personal website that were actually available, had correct materials, had usable materials, and had complete materials. Once *Psychological Science* started offering badges, some articles reported availability but did not earn a badge, and others reported availability and did earn a badge. These are represented separately. Total number of articles reported in data points. Underlying data (<https://osf.io/8ds2g/>) and scripts (<https://osf.io/fkqrj/>) to reproduce this figure are available on the Open Science Framework.

Data, Code and Material Sharing

From a strategical point of view

+ 25.36%
citation rate!

RESEARCH ARTICLE

The citation advantage of linking publications to research data

Giovanni Colavizza^{1,2}, **Iain Hrynaszkiewicz**^{3,4}, **Isla Staden**^{1,5}, **Kirstie Whitaker**^{1,6}, **Barbara McGillivray**^{1,6*}

1 The Alan Turing Institute, London, United Kingdom, **2** University of Amsterdam, Amsterdam, Netherlands,
3 Springer Nature, London, United Kingdom, **4** Public Library of Science, Cambridge, United Kingdom,
5 Queen Mary University, London, United Kingdom, **6** University of Cambridge, Cambridge, United Kingdom

Privacy Protection with Open Data

Can I share my data?



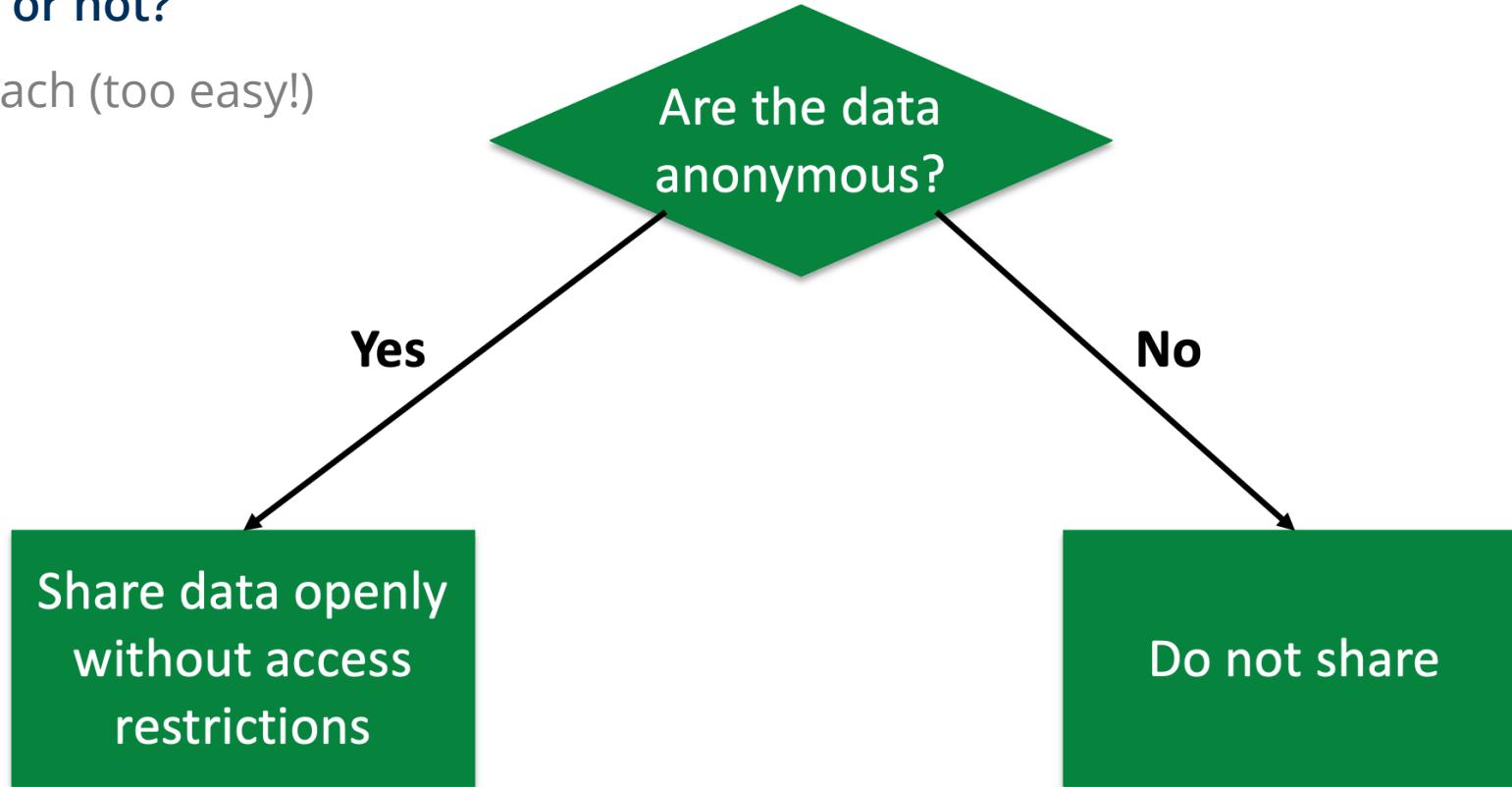
Many people do not
share their data out of
privacy concerns.
Is this justified?

Privacy Protection with Open Data

Can I share my data?

Anonymous or not?

A first approach (too easy!)



Privacy Protection with Open Data

Limits of sharing: Personal Data

What is Personal Data (1)

Data that can directly identify a person („identifier“)



Name



Email Address



Fingerprints

...



Address



Date of Birth



DNA

GDPR (2016)

Privacy Protection with Open Data

Limits of sharing: Personal Data

What is Personal Data (2)

Unique combinations of other data that allow to identify a single person.

.... who can be identified directly or indirectly, in particular by reference to [...] one or more factors specific to the [...] natural person. [...] To determine whether a natural person is identifiable, account should be taken of all the means reasonably likely to be used, such as singling out”
(GDPR, 2016)

Who is the male person, age 46, who studies psychology in the first semester at TU Dresden?

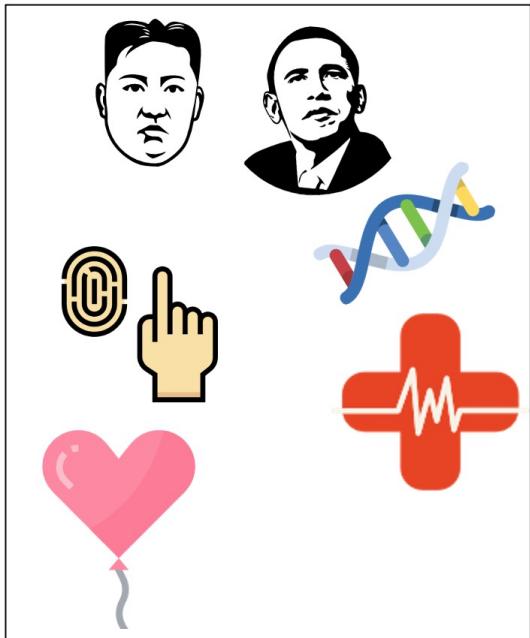
Full text of the GDPR: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R0679&from=EN>

Privacy Protection with Open Data

Limits of sharing: Personal Data

What is Sensitive Data?

According to § 9(1) GDPR:

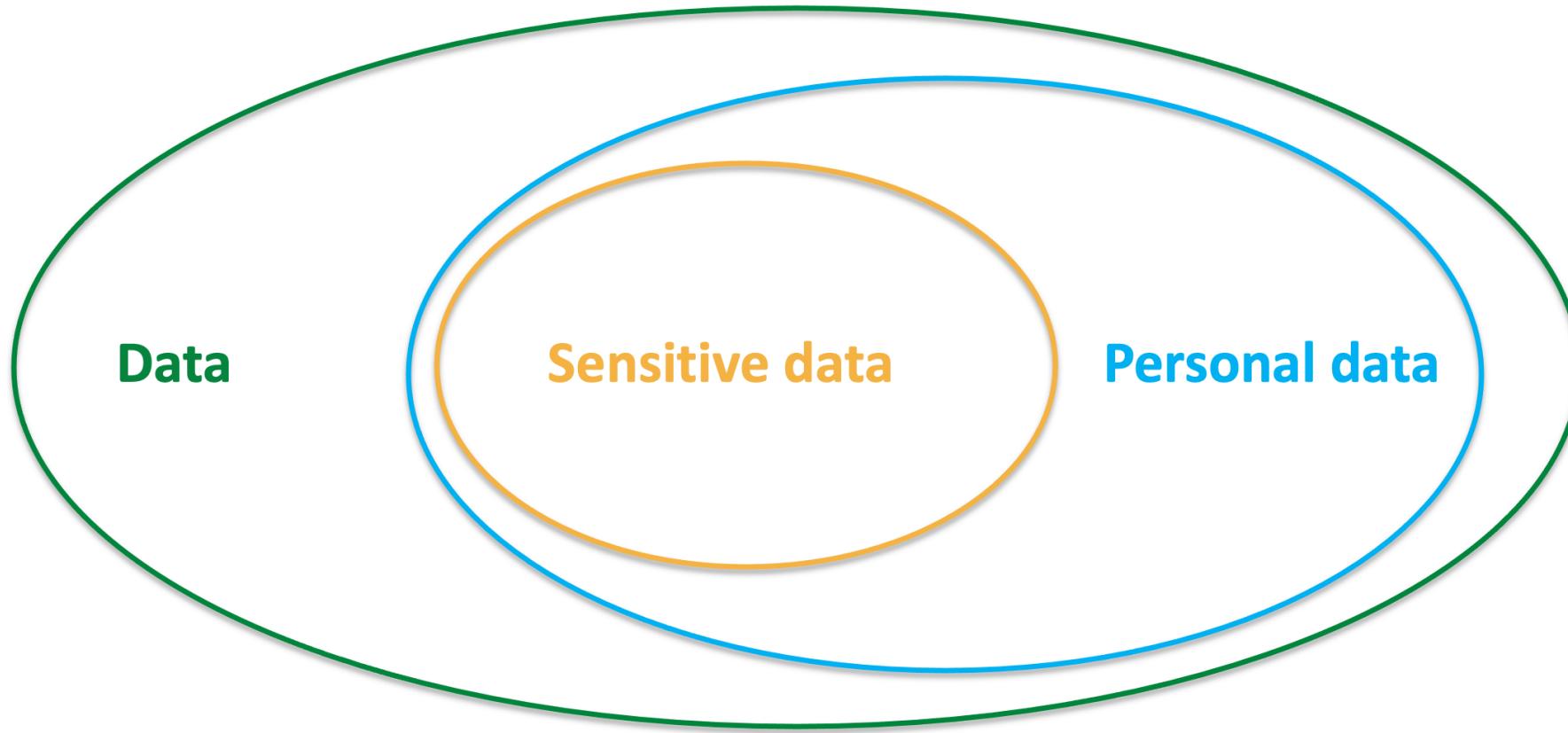


- Ethnic group, political attitudes, religious beliefs, membership to a union
- Genetic data
- Biometric data allowing re-identification
- Health data
- Data on sexual life or sexual preferences

GDPR (2016)

Privacy Protection with Open Data

Limits of sharing: Personal Data



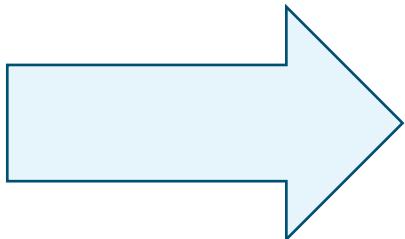
GDPR (2016)

Privacy Protection with Open Data

Data Processing: Personal Data

"Processing [of personal data] shall be lawful only if [...] the data subject has given consent to the processing of his or her personal data **for one or more specific purposes**."

(GDPR 2016 §6(1))



You are not allowed to collect, analyze, or share personal data if the participant did not consent to it.

Consent must be given to one or more specific purposes!

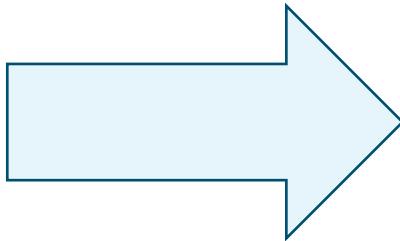
Privacy Protection with Open Data

Data Processing: Sensitive Data

"(1) Processing [of sensitive data] shall prohibited.

(2) Paragraph 1 shall not apply if [...] the data subject has given **explicit consent** to the processing of those [...] data for one or more **specified purposes**."

(GDPR 2016 §9(1-2))



You are not allowed to collect, analyze, or share sensitive data if the participant did not explicitly consent to it.

Privacy Protection with Open Data

Data Processing: Sensitive Data

Explicit consent must contain:

- A **statement** specifying the **nature of the data** being collected, details of automated decisions (if applicable), details of the data to be internationally transferred and the **risks** of the transfer.
- An **explicit action** by a subject agreeing with the statement (“I agree”)

After you have read our data privacy information sheet, please indicate if you agree with the data processing of your personal data by clicking on “I agree” or “I do not agree”.

van den Heuvel (2017)

Privacy Protection with Open Data

Data Processing: Sensitive Data

Explicit consent must contain:

- A **statement** specifying the **nature of the data** being collected, details of automated decisions (if applicable), details of the data to be internationally transferred and the **risks** of the transfer.
- An **explicit action** by a subject agreeing with the statement (“I agree”)

Recommendation:

Do not measure sensitive data at all if you do not need to.

If you have to, take extra special care.

Open data: Consent form

Template from TUD

7 Informationen zum Datenschutz

7.1 Was passiert mit meinen Daten?

[ERHEBUNG OHNE SCHLÜSSELTABELLE = ANONYM:] Folgende Daten werden ausschließlich zur Kontaktaufnahme zu Ihrer Person verarbeitet: Name, Adresse und Telefonnummer [GGF. WEITERE EINFÜGEN]. Wir versichern, dass die Daten unverzüglich gelöscht werden, sobald die Datenerhebung beendet ist. Alle weiteren Angaben, die Sie im Rahmen dieses Forschungsprojektes machen, werden anonymisiert erfasst und können auf keinen Fall mit den personenbezogenen Daten in Verbindung gebracht werden.

[ERHEBUNG MIT SCHLÜSSELTABELLE = PSEUDONYM:] Folgende Daten werden ausschließlich zur Kontaktaufnahme zu Ihrer Person verarbeitet: Name, Adresse und Telefonnummer [GGF. WEITERE EINFÜGEN]. Wir versichern, dass die Daten unverzüglich gelöscht werden, sobald die Datenerhebung beendet ist.

Bezüglich der studienrelevanten Daten erfolgt die Datenerhebung pseudonymisiert. Das bedeutet zum besonderen Schutz Ihrer persönlichen Daten wird das gesamte gewonnene wissenschaftliche Material unmittelbar nach der Datenerhebung durch einen Zahlen- und Buchstabencode gekennzeichnet, der keinerlei Hinweis auf Ihre Initialen oder Ihren Namen zulässt. Die wissenschaftlichen Daten, die in dieser Studie erhoben werden, können durch eine Zuordnungsliste Ihrer Person prinzipiell wieder zugeordnet werden. Allerdings kann dies nur durch den Studienleiter geschehen, der die Zuordnungsliste sicher und getrennt von den übrigen Daten verwahrt. Die Zuordnungsliste wird [WANN? Z.B. nach Abschluss der Datenerhebung] datenschutzkonform gelöscht.

Open data: Consent form

Template from TUD

[IN JEDEM FALL ANFÜGEN:] Infofern dies nicht anders gesetzlich bestimmt ist oder Sie im Einzelfall ausdrücklich eingewilligt haben, erfolgt keine Übermittlung von personenbezogenen Daten an Dritte. Die Weitergabe der Daten im Rahmen von wissenschaftlichen Kooperationsprojekten erfolgt ausschließlich in anonymisierter Form zu statistischen Zwecken, d.h. es kann keinerlei Verbindung zu Ihrer Person hergestellt werden. Die Forschungsergebnisse werden in wissenschaftlich üblicher Form (u.a. Open Science Plattformen) und in Gruppen zusammengefasst veröffentlicht. Wir sichern zu, dass aus den Veröffentlichungen keinerlei Rückschlüsse auf natürliche Personen möglich sind.

7.2 Ist meine Teilnahme freiwillig?

Die Teilnahme am Forschungsprojekt ist freiwillig. Eine Nichtteilnahme hat keine Folgen! Sie können Ihre Einwilligung verweigern oder jederzeit ohne Angabe von Gründen mit Wirkung auf die Zukunft widerrufen und aus der Studie ausscheiden, ohne dass Ihnen dadurch irgendwelche Nachteile entstehen. Es ist aber auch möglich, dass Ihr Studienleiter entscheidet, Ihre Teilnahme an der Studie vorzeitig zu beenden. Die Gründe hierfür können sein, dass Sie nicht den Erfordernissen der Studie entsprechen oder dass bei der Versuchsdurchführung der Eindruck entsteht, dass eine weitere Teilnahme an der Studie nicht in Ihrem Interesse ist.

Open data: Consent form

Template from TUD

7.3 Auskunfts- und Widerrufsrecht

Falls Sie Ihre Einwilligung widerrufen möchten, informieren Sie bitte Ihren Studienleiter oder schreiben Sie eine formlose E-Mail. In diesem Fall werden die zu Ihrer Person verarbeiteten Daten umgehend (vor Beendigung der Datenerhebung) gelöscht, sofern keine Rechtsgründe entgegenstehen. Alle personenbezogenen Daten werden ohnehin [WANN? Z. B. nach Abschluss des Forschungsprojektes] datenschutzgerecht gelöscht.

Sie können jederzeit schriftlich Auskunft über die zu Ihrer Person verarbeiteten Daten sowie die möglichen Empfänger dieser Daten, an die diese übermittelt wurden, verlangen. Eine Antwort steht Ihnen mit der Frist von einem Monat nach Eingang des Auskunftsersuchens zu.

7.4 Datenschutzbeauftragter und Aufsichtsbehörde für den Datenschutz

Sie können sich jederzeit an den Datenschutzbeauftragten der TU Dresden, Herrn Jens Syckor (informationssicherheit@tu-dresden.de, Tel. +49 351 463-32839) sowie an die zuständige Aufsichtsbehörde für den Datenschutz (<https://www.saechsdsb.de/impressum-datenschutzerklaerung>) wenden.

Privacy Protection with Open Data

Can I share my data?

Please keep your promises!



Not only open, but FAIR

FAIR principles

The FAIR principles



Findable



Accessible



Interoperable



Reusable

Good research data management

Not only open, but FAIR

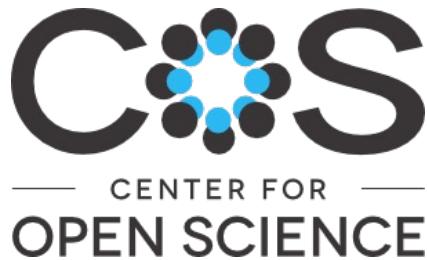
Findable



Metadata and data should be easy to find for both humans and computers. Machine-readable metadata are essential for automatic discovery of datasets and services.

<https://www.go-fair.org/fair-principles/>

Step 1 Find a home for your data (Find a specialized data repository on re3data.org)



General data repositories



OpenNEURO
Neuroimaging

Specific data repositories

Icon from flaticon.com

Not only open, but FAIR

Findable

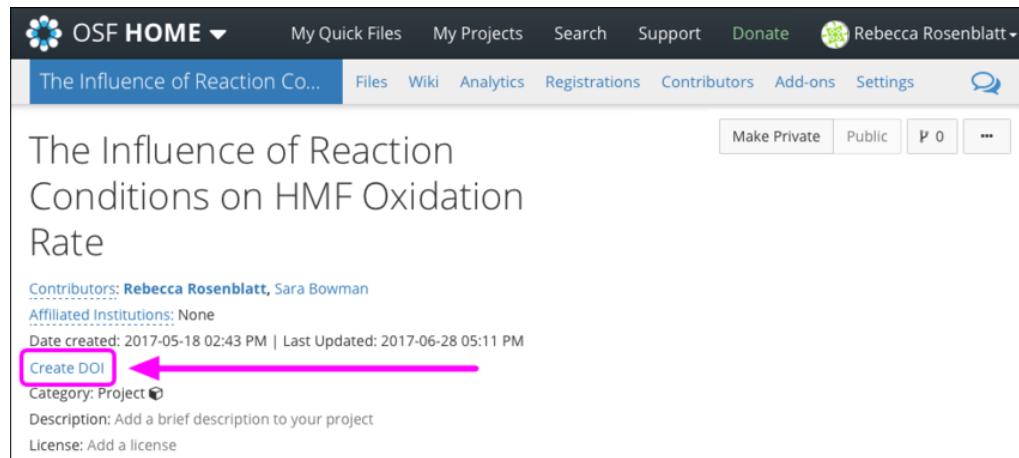


Metadata and data should be easy to find for both humans and computers. Machine-readable metadata are essential for automatic discovery of datasets and services.

<https://www.go-fair.org/fair-principles/>

Step 1 Find a home for your data (Find a specialized data repository on re3data.org)

Step 2: Give your data a DOI (or another persistent identifier)



The screenshot shows a project page on the OSF. The title is "The Influence of Reaction Conditions on HMF Oxidation Rate". Below the title, it says "Contributors: Rebecca Rosenblatt, Sara Bowman" and "Affiliated Institutions: None". It also shows the date created as "2017-05-18 02:43 PM | Last Updated: 2017-06-28 05:11 PM". At the bottom left, there is a button labeled "Create DOI" with a pink arrow pointing to it. Other buttons include "Make Private", "Public", "P 0", and "...".

Icon from flaticon.com

Not only open, but FAIR

Findable



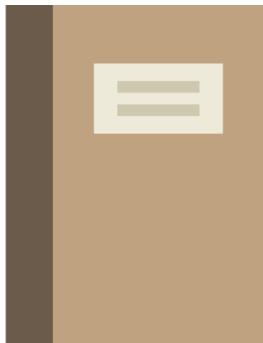
Metadata and data should be easy to find for both humans and computers. Machine-readable metadata are essential for automatic discovery of datasets and services.

<https://www.go-fair.org/fair-principles/>

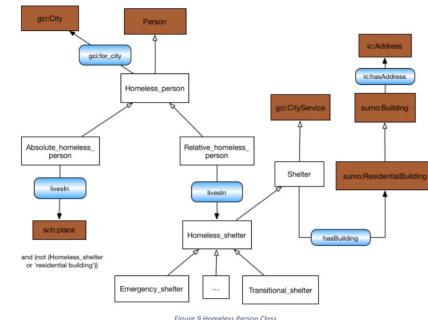
Step 1 Find a home for your data (Find a specialized data repository on [re3data.org](#))

Step 2: Give your data a DOI (or another persistent identifier)

Step 3: Describe your data with metadata („Data that provides information about other data“)



Codebook



Existing metadata standards
www.rd-alliance.org/

Open Lab Notebooks: SciNote

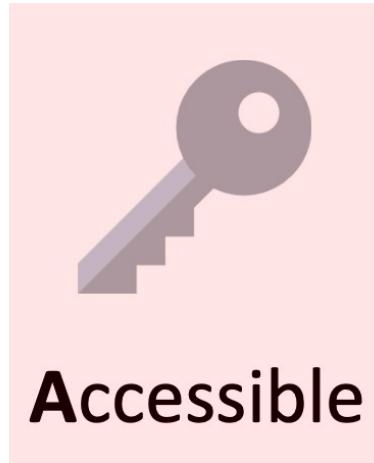
Not only open, but FAIR

FAIR principles

The FAIR principles



Findable



Accessible



Interoperable



Reusable

Good research data management

Not only open, but FAIR

Accessible



Once the user finds the required data, she/he needs to know how can they be accessed, possibly including authentication and authorisation.

<https://www.go-fair.org/fair-principles/>

“Open data should be available to everyone to access, use, and share.” (GO FAIR, 2018)

What can you do if your data is sensitive?

- Is all your data sensitive? Maybe you can openly share parts of your data.
- Restrict the access to your data to a relevant group (e.g., to researchers) and be clear and transparent about why you restrict the access and how people can gain access
- Publish only metadata

Not only open, but FAIR

FAIR principles

The FAIR principles



Findable



Accessible



Interoperable

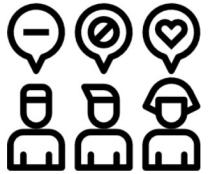


Reusable

Good research data management

Not only open, but FAIR

Interoperable



The data usually need to be integrated with other data. In addition, the data need to interoperate with applications or workflows for analysis, storage, and processing.

<https://www.go-fair.org/fair-principles/>

Interoperability: Do not use proprietary data formats or software

Format / Software	Proprietary	Open
Text files	Word (.doc), Pages (.pages)	Open Office (.odt), .txt, LaTeX
Spreadsheets	Excel (.xls), Numbers (.numbers)	Open Office (.ods), .csv
Video	.avi, .wmv, .mov, .qtvr, .rv	.mpg, .mp4
Audio	.wma, .ASF, .ra, .wav	.mp3
Presentations	PowerPoint (.ppt), Keynote (.key)	PDF, HTML
Statistical Analyses	SPSS (.sav), Matlab (.m), SAS (.sas), Stata (.dta)	R, JASP (.jasp), Python
Experimental Software / Questionnaires	E-Prime, Presentation, SurveyMonkey, UniPark	PsychoPy, Limesurvey, formr

Not only open, but FAIR

FAIR principles

The FAIR principles



Findable



Accessible



Interoperable



Reusable

Good research data management

Not only open, but FAIR

Reusable



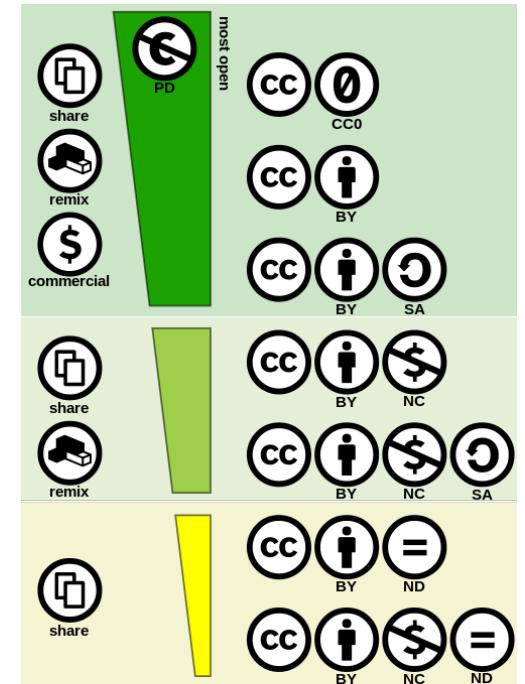
The ultimate goal of FAIR is to optimise the reuse of data. To achieve this, metadata and data should be well-described so that they can be replicated and/or combined in different settings.

<https://www.go-fair.org/fair-principles/>

Step 1: Choose a license

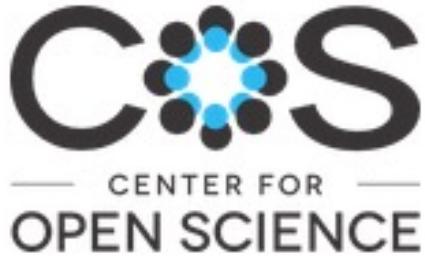
Step 2: Make your analysis code reproducible

- **!!! Always comment your code !!!**
- Choose a **coherent file / function naming system** and coding style. Consult programming language style guides (e.g., <http://adv-r.had.co.nz/Style.html>)
- Consider **version control**
- Record the used **packages and software**
- Write a **README** with details on the workflow if code fragments need to be combined



Data, Code and Material Sharing

Platforms



www.osf.io



www.figshare.com

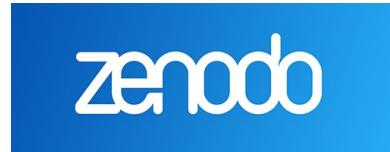


leibniz-psychology.org

PsychArchives

www.psychdata.de

PsychData



www.zenodo.org



A public repository of unthresholded statistical maps,
parcellations, and atlases of the brain

www.neurovault.org



OpenNEURO
www.openneuro.org



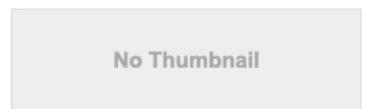
www.github.com

Data, Code and Material Sharing

Our own studies: OPARA, GitHub, OSF

Data and Material for "Should we detach from detachment? Regulatory and post-regulatory effects of emotion downregulation"

Subtitle: Collaborative Research Centre 940 subproject A5 "Volitional emotion regulation: The costs of control"



Datum
2021

Autor
Gaertner, Anne

Metadaten
Zur Langanzeige

Zusammenfassung
These files provide first level fMRI data for reproducing the results of "Should we detach from detachment? Regulatory and post-regulatory effects of emotion downregulation" by Kersten Diers and colleagues. Due to the upload limit on OSF, the materials have been partitioned. Behavioral data, second level fMRI data, ROI masks, materials such as the experimental design and paradigms, the preprint and scripts can be found at OSF: <https://osf.io/mg5ac/>.

URI
<https://opara.zih.tu-dresden.de/xmlui/handle/123456789/1951>
<http://dx.doi.org/10.25532/OPARA-120>

The screenshot shows the OPARA study page. At the top, there's a navigation bar with links like 'Why GitHub?', 'Team', 'Enterprise', 'Explore', 'Marketplace', 'Pricing', and a search bar. Below the navigation is a header for the repository 'pjawinski / emotion' (Public). The main content area has tabs for 'Code', 'Issues', 'Pull requests', 'Actions', 'Projects', 'Wiki', and 'Settings'. Under the 'Code' tab, it shows 'main' branch, 1 branch, 0 tags, and a commit history for 'pjawinski Update README.md ...' dated 29 Nov 2021. Below the commit history is a file viewer for 'README.md' which contains the following text:

Individual differences in inhibitory control are not related to emotion regulation

This page contains the analysis scripts referring to our manuscript entitled '[Individual differences in inhibitory control are not related to emotion regulation](#)' ([PsyArXiv](#)). We provide a reproducible and portable R environment, all statistical analysis scripts, and the original dataset to re-run our code. Please find [additional materials on the OSF](#).

Abstract

Although cognitive control and emotional control have been proposed to rely on similar cognitive processes, their specific relationship is not well understood. Given that down-regulation of negative emotion requires inhibiting or limiting the

Individual differences in inhibitory control: A latent variable analysis

Contributors: Anne Grtner, Alexander Strobel

Date created: 2019-06-05 05:20 PM | Last Updated: 2021-09-15 11:18 AM

Identifier: DOI 10.17605/OSF.IO/2FWM4

Category: Project

Description: Inhibitory control represents a central component of executive functions and focuses on the ability to inhibit control, correlations between these tasks are rather small, partly because of the task impurity problem. In each other yet separable functions have been identified: prepotent response inhibition and resistance to distractors. To extend previous literature by additionally accounting for speed-accuracy trade-offs, thereby potentially increasing control tasks (stroop task, antisaccade task, stop-signal task, Eriksen flanker task, shape-matching task, word-name task) (combining response times and error rates). In line with previous studies, we found generally low zero-order correlation scores, we were not able to replicate a satisfactory model with good fit to the data. By using inverse efficiency scores, four out of six tasks demonstrated significant factor loadings. Our results highlight the difficulty in finding robust indicators and accounting for speed-accuracy trade-offs.

License: CC-By Attribution 4.0 International 

Has supplemental materials for [Individual differences in inhibitory control: A latent variable analysis](#) on PsyArXiv

The screenshot shows the OSF storage page for the project. It has a sidebar with 'Files' and a main area with a table of contents. The table of contents includes:

- Individual differences in inhibitory control: A latent variable analy... (modified 2020-10-16 04:19 PM)
- OSF Storage (Germany - Frankfurt)
 - Data and Analyses
 - Analyses in AMOS
 - Analyses in SPSS
 - Data trimming
 - list of measures.pdf (modified 2020-10-16 04:19 PM)
 - Preprint
 - Grtner_Inhibitory Control_Preprint.pdf (modified 2019-07-08 03:39 PM)
 - Supplementary Material
 - Grtner_Inhibitory Control_Supplementary Material.pdf (modified 2019-07-08 03:39 PM)
 - Talk DPPD 2021

Exercise

Group Discussion

Form groups of 2-3 people from similar fields

10 min. discussion:

- How can you foster Open Data (and Open Material) in your working group? What would be small steps to start?
- If you don't do it yet: What are the (perceived) barriers that prevent you from doing it?



Summary

Open Data and Materials

3 Easy Steps

How you can improve your OS record (almost) without effort

1. Upload (stimulus) material that you create on an open repository
2. Ask to see the data when you are reviewing a paper & recommend open sharing when possible (see also Peer Reviewers' Openness Initiative: <https://opennessinitiative.org/>)
3. Hand out a standard consent form to your participants before you conduct a study; ask for consent to publish the data.

Further recommendations

Further resources

Workshop on reproducible workflow: [Part 1](#) | [Part 2](#)

Arslan, R. *Maintaining privacy with open data*. Presentation slides available on <https://osf.io/9j27d/>
DGPs (2017). *Data management in psychological science. Specification of the DFG guidelines*. By Felix Schönbrodt, Mario Gollwitzer, and Andrea Abele-Brehm on behalf of the DGP's Executive Board. psyarxiv.com/vhx89/

GDPR (2016). *General Data Protection Regulation*. Information on gdpr-info.eu/ or eugdpr.org/, full text available on eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679

Minocher, R., Atmaca, S., Bavero, C., McElreath, R., & Beheim, B. (2021). Estimating the reproducibility of social learning research published between 1955 and 2018. *Royal Society Open Science*, 8(9), 210450. <https://doi.org/10.1098/rsos.210450>

White, T., Blok, E., & Calhoun, V. D. (2022). Data sharing and privacy issues in neuroimaging research: Opportunities, obstacles, challenges, and monsters under the bed. *Human Brain Mapping*, 43(1), 278-291. <https://doi.org/10.1002/hbm.25120>

Thank you!

Credentials

The creation of this workshop material was partially funded by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG; SFB 940/3).

Some slides of the workshop were taken or adapted from the Open Science Workshop Materials of the LMU Open Science Center: <https://osf.io/zjrhu/wiki/home/>



These slides were created by Anne Gärtner. The work is licensed under a [Creative Commons Attribution 4.0 International License](#). That means, you can reuse these slides in your own workshops, remix them, or copy them, as long as you attribute the original creators.



Break! (15 min)