



Open Science

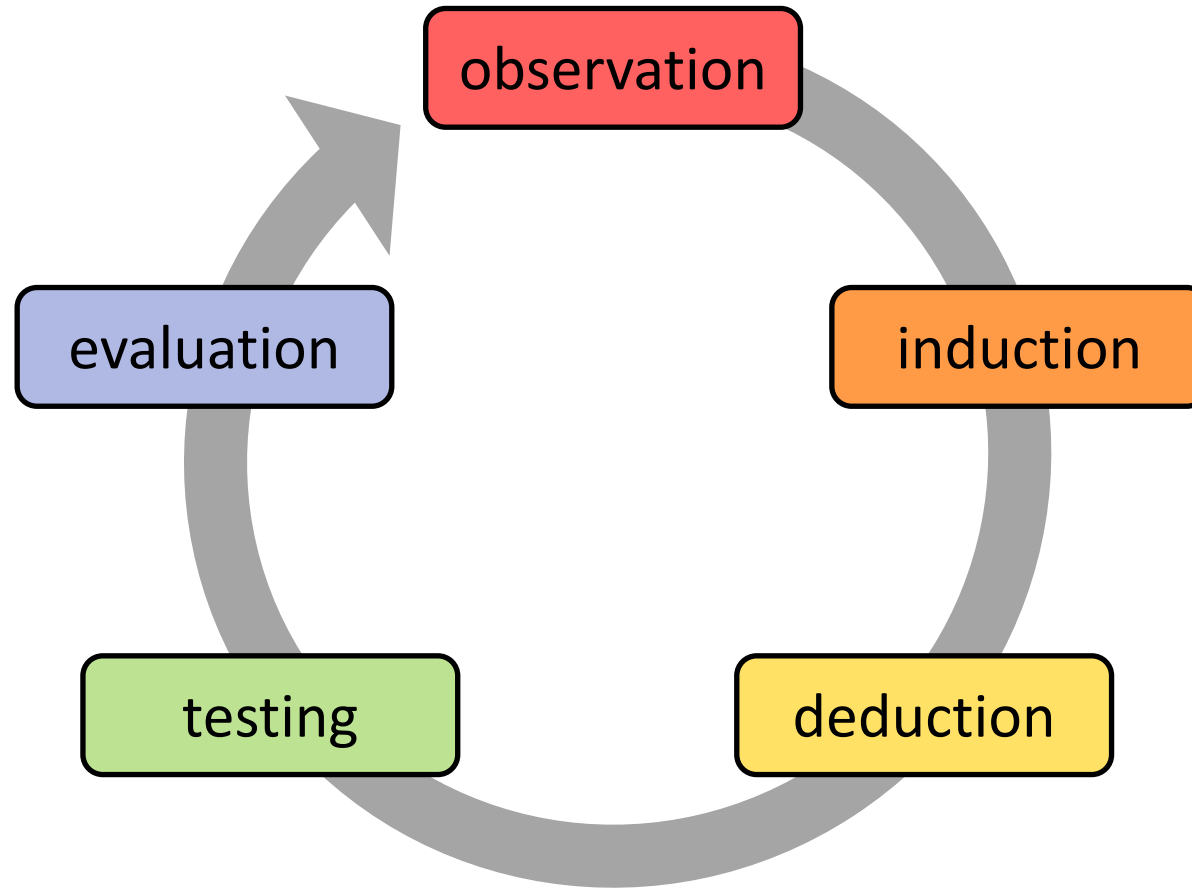
The Open Empirical Cycle

Hanne Oberman

Materials by Herbert Hoijtink, Bianca Kramer & Jeroen Bosman; re-use license: CC BY



The Empirical Cycle



The Empirical Cycle in Practice

observation

Step 1: Preparation

induction

Step 2: Formulate research hypotheses

deduction

Step 3: Planning of data collection and analysis; write Data Management Plan

Step 4: Get approval from the (medical) ethical testing committee

Step 5: Pre-registration (or registered report)

testing

Step 6: Execution of data collection and analyses

evaluation

Step 7: Write report; publish pre-print

Step 8: Publish (meta-)data and analyses

Step 9: Having your report reviewed

Step 10: Publish open access

observation

Step 1: Preparation

Reviewing:

- Review literature
- Gaps in the literature
- Quality of the literature
- Variables that are not covered in the literature

Writing:

- Writing it up sharpens thoughts
- Write down your research questions:
 1. New questions
 2. Replication studies
 3. Exploratory studies

Step 2: Formulate Research Hypotheses

induction

A research hypothesis is a verbal representation of the expected relations between the variables resulting from Step 1.

Step 3: Planning of Data Collection and Analysis

deduction

Design:

- Describe research design
- Exploration?
- Replication?

Data:

- Describe population
- Describe variables
- Derived variables?

Analyses:

- Statistical model
- Formal hypotheses
- Power analyses or updating
- Missing data?
- Data exclusion?

→ Data Management Plan

Step 4: Get (M)ETC Approval

deduction

- Much of the previous three steps
- Data management plan (e.g., data storage)
- Informed consent forms
- Privacy regulations (e.g., GDPR)

Step 5: Pre-registration or Registered Report

deduction

This is the
pre-data-*collection*
(or pre-data-*access*)
account
of all that has been covered
in the previous four steps.

Step 6: Execution of Data Collection and Analysis

testing

Execute steps in pre-registration
after data *collection* (or *access*).

Keep note of
any necessary deviations
from the pre-registration.

Step 7: Write Report

Write a reproducible report.

Include a link to your
pre-registration (Step 5).

Include a link to your
data-analyses repository (Step 8).

Publish pre-print.

evaluation



Step 8: Publish Data and Analyses

Data and analyses should be accessible to all interested parties, or **FAIR**:

Findable,
Accessible,
Interoperable,
Reusable.

evaluation



Step 8: Publish Data and Analyses

- **Findable:** Place your data and analyses in a public repository
- **Accessible:** Make certain your data come with a codebook, and your analyses with annotations
- **Interoperable:** Ensure that data and analyses can be opened on different types of computers
- **Reusable:** Include a license, that is, make clear what others are (not) allowed to do with your data

evaluation

Step 8: Publish Data and Analyses

With open data & analyses, others can:

- Inspect your data
- Reproduce your analyses
- Read your interpretation of the analyses
- Data are available for meta-analyses and “null-findings” become accessible

Being open will add to the trust in your research, that of the group to which you belong, and science in general

evaluation

Step 9: Having your Report Reviewed

May lead to
changes in your report
and possibly
deviations from your pre-registration.

These deviations can be highlighted
in your report using footnotes.

evaluation

Step 10: Publish Open Access

Publishing open access is an important feature of open science.

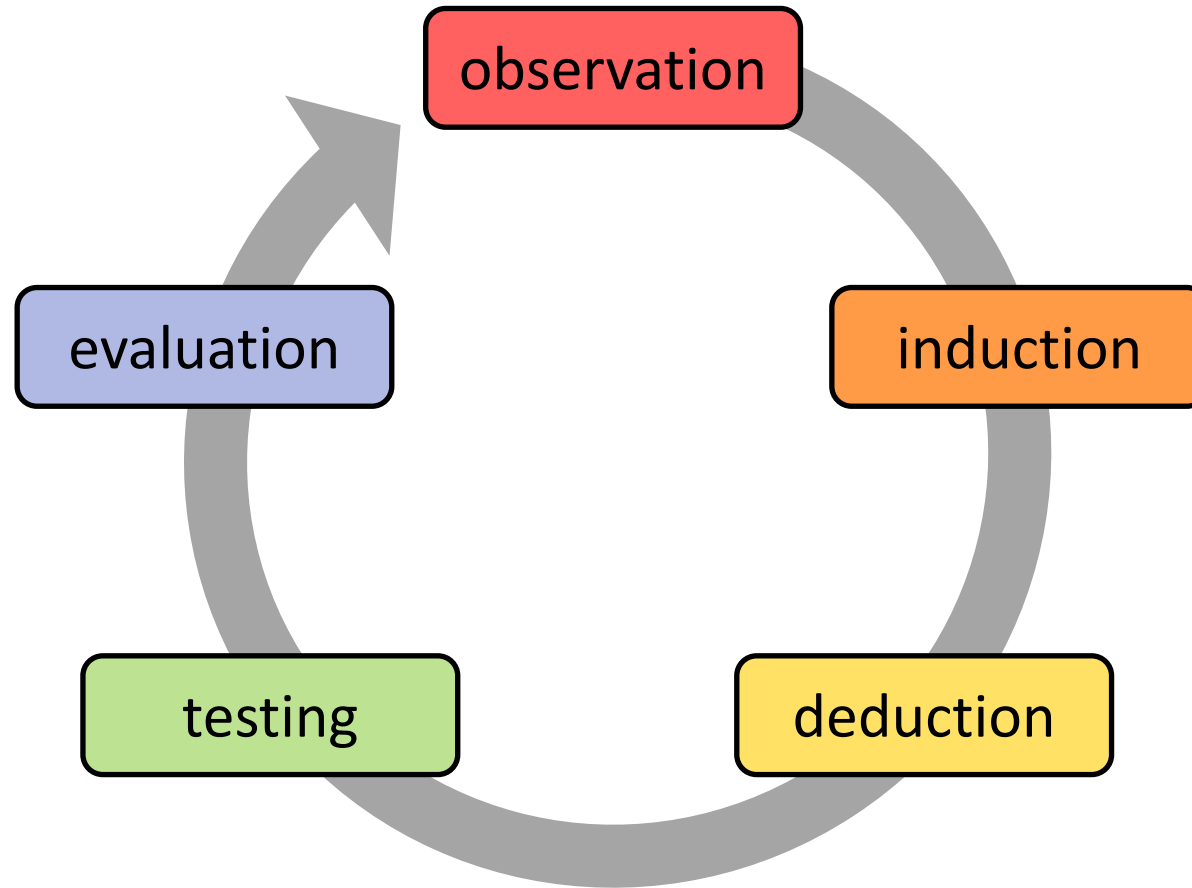
Being able to unobstructedly obtain everything (also the report) related to a research project will enable anyone to:

- benefit from your research
- reuse (parts) of your research
- engage in a fully informed discussion about your research.

This should both increase the impact of your research and increase the trust in your research and the trust in science in general.

evaluation

The Open Empirical Cycle



Links to ...

JASP

[A Crash Course into JASP](#)

[How to use JASP](#)

REPOSITORIES

[Open Science Foundation](#)

[Yoda \(Utrecht University\)](#)

LICENCES

[Creative Commons](#)

[OpenAIRE](#)

ANONIMIZED AND FAIR DATA

[How to Make you Data FAIR](#)

[Handling Personal Data](#)

[FAIR Cheatsheets](#)

[General Data Protection Regulation](#)

OPEN SCIENCE

[Open Science Community Utrecht](#)

[Summer school 'Open Science Bootcamp'](#)



Utrecht University

Links to ...

THE WORKSHOP MATERIALS

Open your Course/Bachelor Thesis



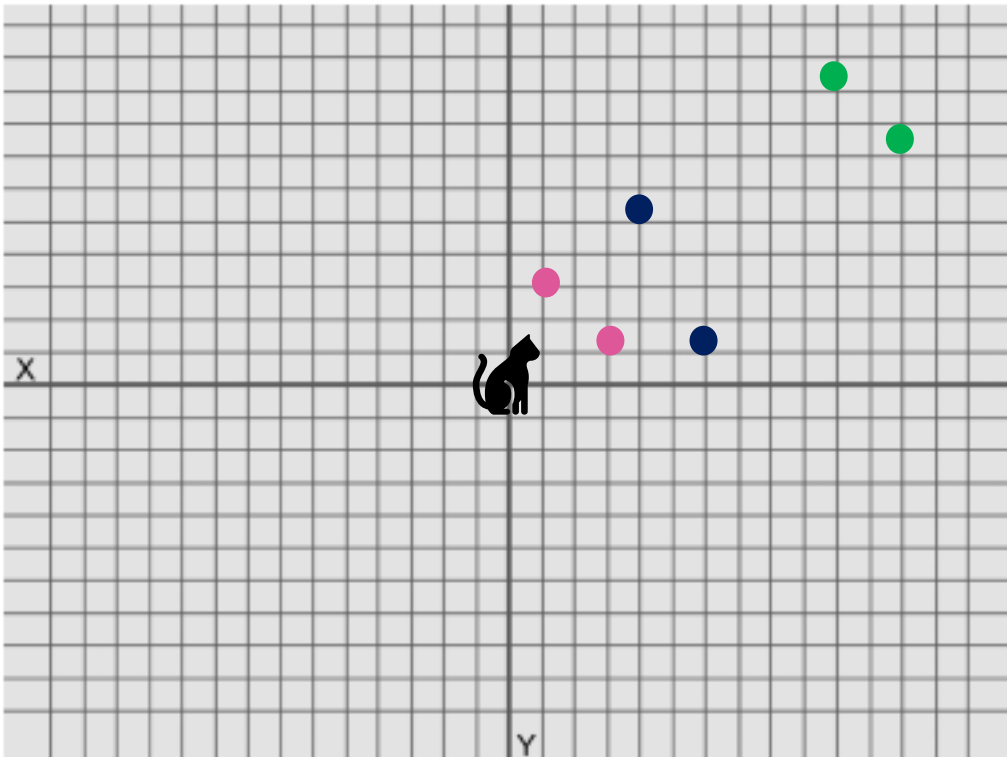
Utrecht University

How to Open your Data & Analyses

An Experiment and its Replication

An experiment with three conditions:

- The “close” condition
- The “intermediate” condition
- The “distant” condition



Participants Rated:

Attachment to

- Siblings
- Parents
- Home-town

on a

1 (not at all strong) – 7 (extremely strong)

Likert scale

which are averaged to obtain
the dependent variable
attachment

The description given here is a modification of and inspired by the actual experiment executed by Williams, L.E. and Bargh, J.A. (2008). Keeping One's Distance. The Influence of Spatial Distance Cues on Affect and Evaluation. *Psychological Science*, 19, 302-308.

Williams and Bargh (2008) tested:

$H_0: \mu_{\text{close}} = \mu_{\text{intermediate}} = \mu_{\text{distant}}$,
that is, the three means are equal

rendering

p-value = .01, that is, smaller than .05,
that is, the means are significantly different

with

$m_{\text{close}} = 5.61$, $m_{\text{intermediate}} =$ , $m_{\text{distant}} = 4.86$

and

$\eta^2 = .11$,

that is, the three conditions explain
11% of the variation in attachment,
which is a medium to strong effect of condition

The replication by Joy-Gaba, Clay, and Cleary
(2016) rendered

p-value = .79

$\eta^2 = .00$

Joy-Gaba, J., Clay, R., and Cleary, H. (2016). Replication of keeping one's distance: The influence of spatial distance cues on affect and evaluation by Williams L.E. and Bargh J.A. (2008) *Psychological Science*, 19, 302-308). Retrieved from <https://osf.io/a78bm/>

The Replication Crisis

This is only one of 100 psychological experiments of which only about 33% were successfully replicated (OSC, 2015).

This resulted in a reduced trust in science by scientists and society:
The replication crisis was born.

Scientists are alerted:

- Estimating the reproducibility of psychological science (OSC, 2015)
- An open investigation of the reproducibility of cancer biology research (Errington et al., 2014)

“Society” is alerted:

- Is psychology a real science? (Is psychologie wel een echte wetenschap, Volkskrant, 12-8-2016)
- Public Trust in Science (Rathenau Instituut, August 28, 2018)

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, 349, 6251. <https://osf.io/ezcui/>

Errington, T.M., Iorns, E., Gunn, W., Tan, F.E., Lomax, J., and Nosek, B.A. (2014). An open investigation of the reproducibility of cancer biology research. *eLIFE*, 3, e04333.

<https://elifesciences.org/collections/9b1e83d1/reproducibility-project-cancer-biology>

Volkskrant (2016). <https://www.volkskrant.nl/columns-opinie/is-psychologie-wel-een-echte-wetenschap~b9978e6c>

Rathenau Instituut (2018). Public Trust in Science. <https://www.rathenau.nl/en/science-figures/impact/trust-science/public-trust-science>

FAIR Data Analyses of your Thesis

... can easily be done using:



A Fresh Way to Do Statistics

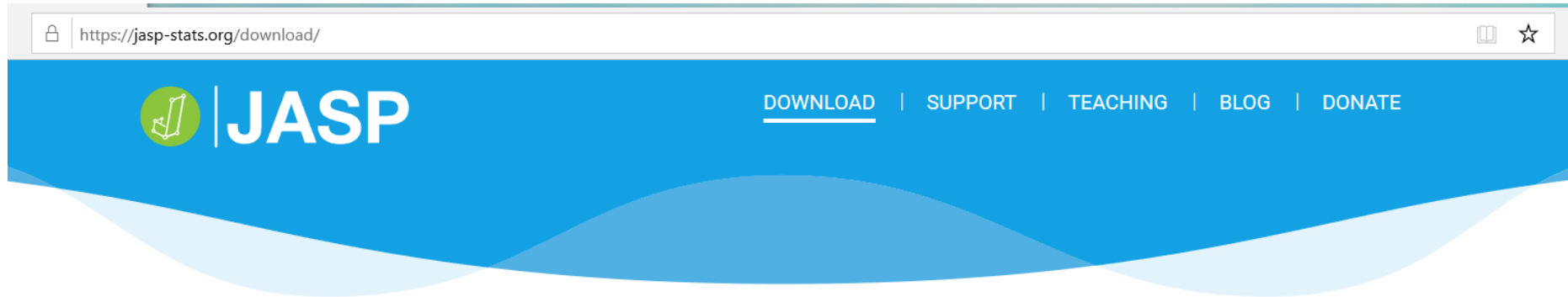


... applies to:

All research based on
quantitative data

Any file type related to your
research (e.g., dataset, pre-
registration, tutorial, video,
etc.)

Interoperable



JASP 0.13.1

Released July 16th, 2020.

This version adds mixed models, the reliability module, and the R console. For a complete list of all improvements and bug fixes per release, see the [release notes](#).

Having trouble installing JASP under Mac OS X?

Take a look at our [installation guide](#).

Want to go back?

You can download many of JASP's [previous versions](#).

Download JASP

Entirely for free, no strings attached.

Windows

Windows 64bit

Windows 32bit

The pre-installed 64-bit or 32-bit version can be used if the msi fails.)

MacOS

Catalina

Mojave & High Sierra

For older versions of MacOS (Sierra and before), download [JASP 0.9.2](#). We recommend upgrading your system though.

Linux

Flatpak Installation Guide

A Crash Course into JASP
How to use JASP



Reusable

Fully Open Data Analyses: Include the CC0 1.0 Universal License With Your Data

The license can be included in your mydata.jasp file.

The CC0 1.0 Universal Public Domain Dedication:

- Is truly open, that is, anybody can use your data for whatever purpose
- If you include a reference to a paper or your contact information in the mydata.jasp file, anybody using your data can refer to you

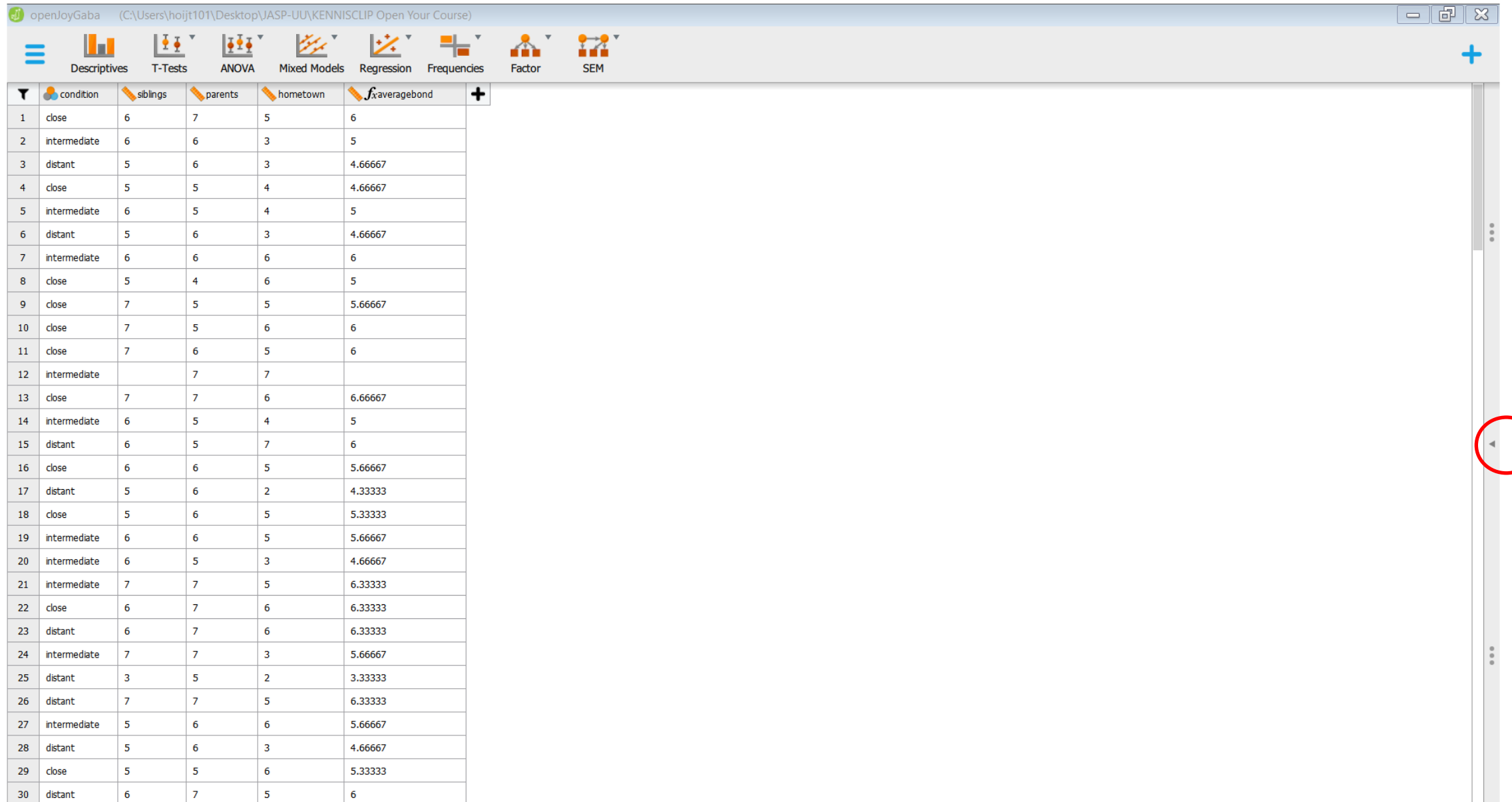
The CC0 1.0 Universal Public Domain Dedication: <https://creativecommons.org/publicdomain/zero/1.0/>

Accessible

Joy-Gaba, Clay, and Cleary (2016) replicated
Willams and Bargh (2008)

The replication data and analyses are contained in `openJoyGaba.jasp`

The Data Collected by Joy-Gaba, Clay, and Cleary (2016)



	condition	siblings	parents	hometown	averagebond
1	close	6	7	5	6
2	intermediate	6	6	3	5
3	distant	5	6	3	4.66667
4	close	5	5	4	4.66667
5	intermediate	6	5	4	5
6	distant	5	6	3	4.66667
7	intermediate	6	6	6	6
8	close	5	4	6	5
9	close	7	5	5	5.66667
10	close	7	5	6	6
11	close	7	6	5	6
12	intermediate		7	7	
13	close	7	7	6	6.66667
14	intermediate	6	5	4	5
15	distant	6	5	7	6
16	close	6	6	5	5.66667
17	distant	5	6	2	4.33333
18	close	5	6	5	5.33333
19	intermediate	6	6	5	5.66667
20	intermediate	6	5	3	4.66667
21	intermediate	7	7	5	6.33333
22	close	6	7	6	6.33333
23	distant	6	7	6	6.33333
24	intermediate	7	7	3	5.66667
25	distant	3	5	2	3.33333
26	distant	7	7	5	6.33333
27	intermediate	5	6	6	5.66667
28	distant	5	6	3	4.66667
29	close	5	5	6	5.33333
30	distant	6	7	5	6



Include a Codebook & Annotations of your Analyses

Explain using annotations which analyses were executed and what your interpretation of the outcomes was

Data collected by, License, Data analyzed by, Code book, and Descriptive Statistics

The screenshot shows the SPSS software interface. The top menu bar includes Descriptives, T-Tests, ANOVA, Mixed Models, Regression, Frequencies, Factor, and SEM. The left sidebar has a 'Descriptive Statistics' section. The main window is divided into two panes: 'Variables' and 'Split'. The 'Variables' pane lists 'condition', 'siblings', 'parents', 'hometown', and 'averagebond'. The 'Split' pane is empty. The right pane is titled 'Results' and contains the following text:

Data collected by: Joy-Gaba, J., Clay, R., and Cleary, H. (2016). Replication of keeping one's distance: The influence of spatial distance cues on affect and evaluation by Williams L.E. and Bargh J.A. (2008) *Psychological Science*, 19, 302-308). Retrieved from <https://osf.io/a78bm/>

Licence: CC0 1.0 Universal, that is, data can be re-used by anybody. It is good practice to refer to Joy-Gaba, Clay, and Cleary (2016). See <https://creativecommons.org/publicdomain/zero/1.0/> for elaboration of this and other licences.

Data analysed by: Herbert Hoijtink, h.hoijtink@uu.nl

Code book:

- condition: "experimental condition" 1 = close, 2 = intermediate, 3 = distant
- siblings: "attachement to siblings" measured on a 1 (not at all strong) to 7 (extremely strong) Likert scale
- parents: "attachement to parents" measured on a 1 (not at all strong) to 7 (extremely strong) Likert scale
- hometown: "attachement to hometown" measured on a 1 (not at all strong) to 7 (extremely strong) Likert scale
- averagebond: "averaged attachements", that is, (siblings + parents + hometown)/3

Descriptive Statistics

	condition	siblings	parents	hometown	averagebond
Valid	133	125	133	133	125
Missing	0	8	0	0	8
Minimum	1.000	1.000	1.000	1.000	2.333
Maximum	3.000	7.000	7.000	7.000	7.000



Annotated Analyses

The screenshot shows the SPSS ANOVA dialog box on the left and the output window on the right. Red circles and ovals highlight specific elements: the ANOVA icon in the top toolbar, the ANOVA section in the left sidebar, the 'averagebond' dependent variable and 'condition' fixed factor in the dialog box, the 'Display' section with checkboxes for descriptive statistics, effect size estimates, and partial eta squared, and the ANOVA table in the output window. Red ovals also highlight explanatory text blocks in the output window.

ANOVA Dialog Box:

- ANOVA** (selected in sidebar)
- Dependent Variable:** averagebond
- Fixed Factors:** condition
- Display:**
 - ☒ Descriptive statistics
 - ☒ Estimates of effect size
 - ☒ η^2 ☐ partial η^2 ☐ ω^2
 - ☐ Vovk-Sellke maximum ratio

Descriptive Statistics (Output):

	condition	siblings	parents	hometown	averagebond
Valid	133	125	133	133	125
Missing	0	8	0	0	8
Minimum	1.000	1.000	1.000	1.000	2.333
Maximum	3.000	7.000	7.000	7.000	7.000

ANOVA (Output):

The nul-hypothesis $H_0: \mu_{\text{close}} = \mu_{\text{intermediate}} = \mu_{\text{distant}}$ is evaluated.

	Cases	Sum of Squares	df	Mean Square	F	p	η^2
condition		0.488	2	0.244	0.236	0.790	0.004
Residuals		125.900	122	1.032			

Note. Type III Sum of Squares

The p-value of .79 is larger than .05 therefore the null-hypothesis is not rejected.

The proportion of variance explained equals .004, that is, virtually no variance of averagebond is explained by condition.

Descriptives (Output):

	condition	Mean	SD	N
close		5.439	0.831	44
distant		5.307	1.145	38
intermediate		5.310	1.065	43

As can be seen the means are virtually the same.



Findable

The screenshot shows the OSFHOME web interface. A red circle highlights the URL `https://osf.io/z7tbg/` in the browser's address bar. Another red circle highlights the **Open Your Course** button in the top navigation bar. A third red circle highlights the **Public** button in the project settings area. A fourth red circle highlights the **codebook.JoyGaba.pdf** file in the 'Files' section. A fifth red circle highlights the **Open Science** and **Teaching** tags in the 'Tags' section.

OSFHOME ▾ My Quick Files My Projects Search Support Donate Herbert Hoijsink ▾

Open Your Course Files Wiki Analytics Registrations Contributors Add-ons Settings

112.5KB Make Private **Public** 0 ...

Open Your Course

Contributors: [Herbert Hoijsink](#)
Date created: 2020-10-05 02:49 PM | Last Updated: 2020-10-21 09:44 AM
[Create DOI](#)
Category: Project
Description: Add a brief description to your project
License: CC0 1.0 Universal

Wiki

Add important information, links, or images here to describe your project.

Files

Click on a storage provider or drag and drop to upload

Filter

Name ^ ▾	Modified ^ ▾
Open Your Course	
OSF Storage (Germany - Frankfurt)	
codebook.JoyGaba.pdf	2020-10-05 04:46 PM
openJoyGaba.jsp	2020-10-19 01:11 PM

Citation ▾

Components

Add components to organize your project.

Tags

Open Science x **Teaching** x

Recent Activity

How To ...

Use one of the example data sets that downloaded with this presentation: data.sav, data.txt, or data.csv.

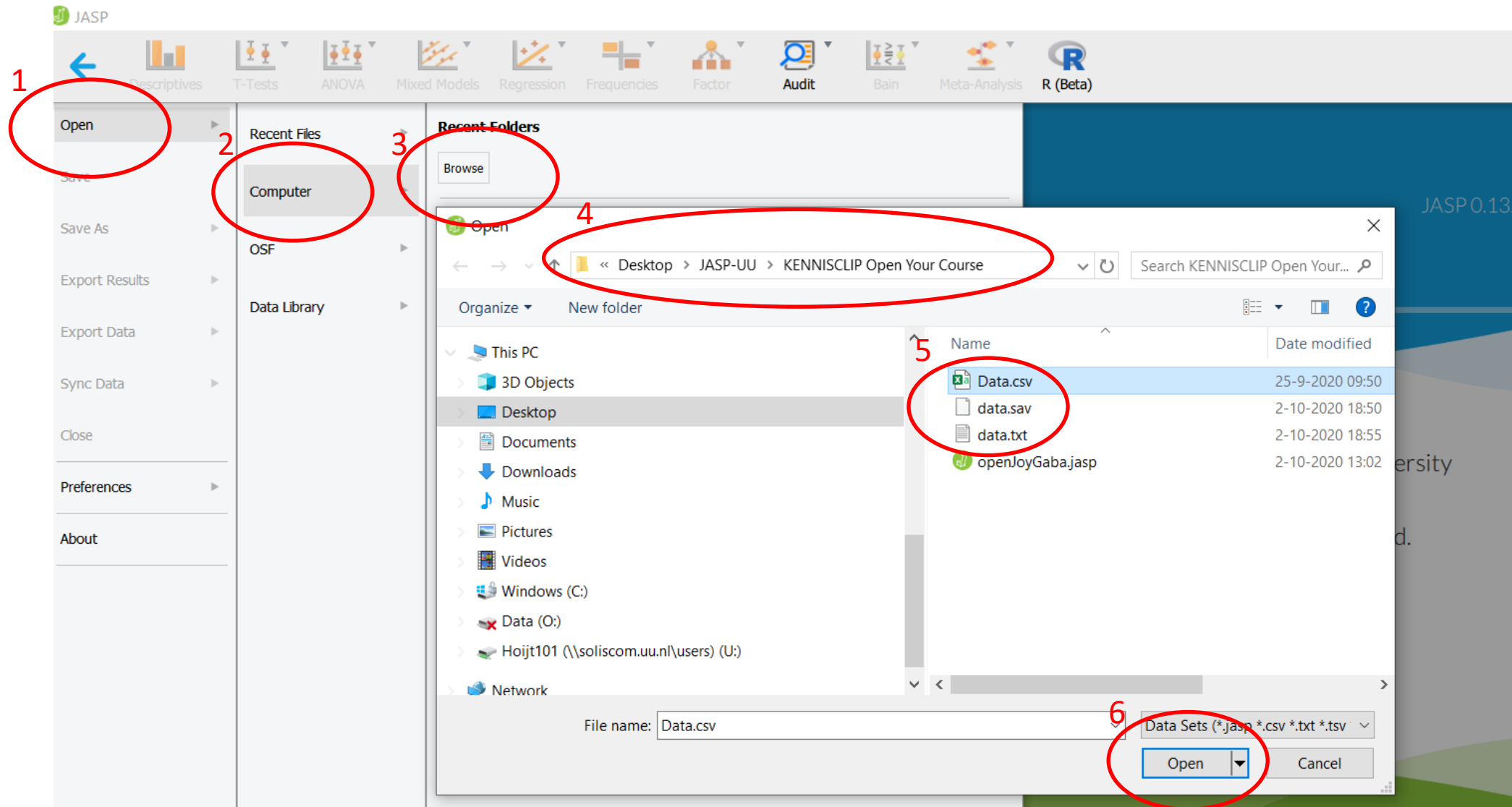
Execute each of the steps in the following slides.

How to Create a mydata.jsp File

Make certain that JASP is installed on your computer. If not, install it from <https://jasp-stats.org/download/>

If JASP is installed, start the program.

Open a .csv, .sav, or .txt file containing your data



openJoyGaba (C:\Users\hoijt101\Desktop\JASP-UU\KENNISCLIP Open Your Course)

Descriptives T-Tests ANOVA Mixed Models Regression Frequencies Factor SEM

	condition	siblings	parents	hometown	\bar{x} averagebond
1	close	6	7	5	6
2	intermediate	6	6	3	5
3	distant	5	6	3	4.66667
4	close	5	5	4	4.66667
5	intermediate	6	5	4	5
6	distant	5	6	3	4.66667
7	intermediate	6	6	6	6
8	close	5	4	6	5
9	close	7	5	5	5.66667
10	close	7	5	6	6
11	close	7	6	5	6
12	intermediate		7	7	
13	close	7	7	6	6.66667
14	intermediate	6	5	4	5
15	distant	6	5	7	6
16	close	6	6	5	5.66667
17	distant	5	6	2	4.33333
18	close	5	6	5	5.33333
19	intermediate	6	6	5	5.66667
20	intermediate	6	5	3	4.66667
21	intermediate	7	7	5	6.33333
22	close	6	7	6	6.33333
23	distant	6	7	6	6.33333
24	intermediate	7	7	3	5.66667
25	distant	3	5	2	3.33333
26	distant	7	7	5	6.33333
27	intermediate	5	6	6	5.66667
28	distant	5	6	3	4.66667
29	close	5	5	6	5.33333
30	distant	6	7	5	6

1. After the data spreadsheet opens
2. Click on Descriptives to open the analysis screen



Execute your Analyses – Start with Simple Descriptives – and Add Notes to your Results

1. Click the **Descriptives** menu.

2. Select the variables to analyze: condition, siblings, parents, hometown, and averagebond.

3. View the results table.

4. Click the black triangle and choose **annotate**.

5. Use the lay-out options such as **bold face**, **font size**, etc.

	condition	siblings	parents	hometown	averagebond
Valid	133	125	133	133	133
Missing	0	8	0	0	0
Minimum	1.000	1.000	1.000	1.000	2.333
Maximum	3.000	7.000	7.000	7.000	7.000

Continue your Analyses with an ANOVA and Add Notes to your Results

1

2

ANOVA

Dependent Variable
averagebond

Fixed Factors
condition

4: click the black triangle and choose annotate

5

3

ANOVA - averagebond

Cases	Sum of Squares	df	Mean Square	F	p	η^2
condition	0.199	2	0.099	0.092	0.912	0.001
Residuals	140.232	130	1.079			

Note. Type III Sum of Squares

Descriptives

Descriptives - averagebond

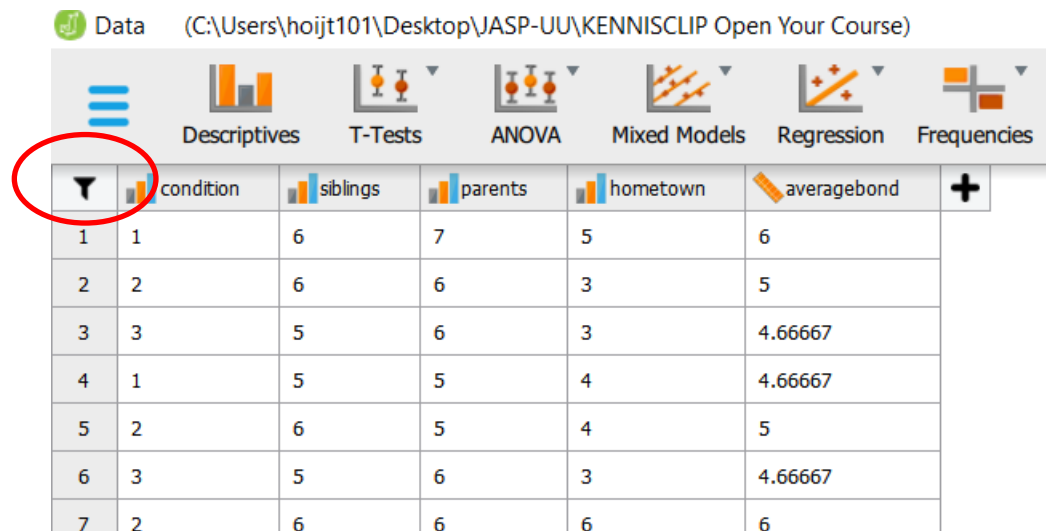
condition	Mean	SD	N
1	5.420	0.877	46

The screenshot displays the SPSS ANOVA dialog box and the resulting output. The ANOVA dialog box on the left shows 'averagebond' as the dependent variable and 'condition' as the fixed factor. The 'Display' section is checked for 'Descriptive statistics', 'Estimates of effect size', and ' η^2 '. The output on the right shows the ANOVA table and the Descriptives table. The ANOVA table indicates a significant effect of condition on averagebond (p = 0.001). The Descriptives table shows the mean and standard deviation for each condition.

Please note that ...

Currently you have to make a different mydata.jasp file for each selection of cases you make, e.g., before filtering (marked by the red ellipse), and before deleting or adding cases. Otherwise, all your analyses will be based on the latest selection of cases created.

This will be remedied in one of the future JASP releases.



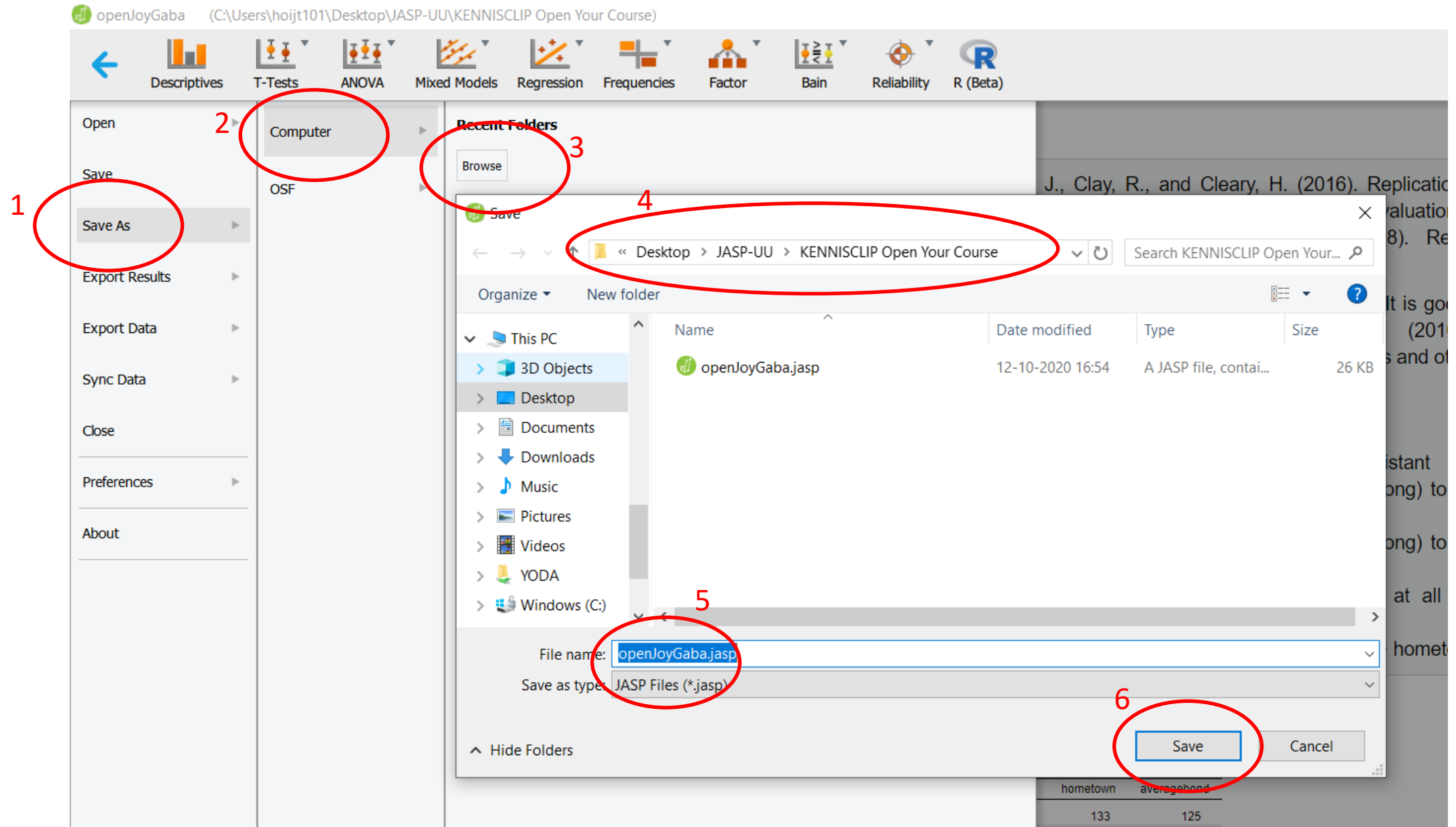
The screenshot shows the JASP software interface. At the top, there is a menu bar with 'Data' selected. Below the menu bar, there is a toolbar with icons for Descriptives, T-Tests, ANOVA, Mixed Models, Regression, and Frequencies. A red ellipse highlights the 'Data' menu icon. Below the toolbar, there is a table with 7 rows and 6 columns. The columns are labeled 'condition', 'siblings', 'parents', 'hometown', and 'averagebond'. The first column contains row numbers 1 through 7. The data values are as follows:

	condition	siblings	parents	hometown	averagebond
1	1	6	7	5	6
2	2	6	6	3	5
3	3	5	6	3	4.66667
4	1	5	5	4	4.66667
5	2	6	5	4	5
6	3	5	6	3	4.66667
7	2	6	6	6	6

A knowledge clip explaining the main features of JASP (selecting cases, computing variables, recoding, opening a data file, saving a mydata.jasp file, executing analyses, getting help, etc.) can be found at <https://osf.io/z7tbg/>

A virtually complete elaboration of all the features of JASP can be found at <https://jasp-stats.org/how-to-use-jasp/>

Save as a mydata.jasp File on your Computer – contains data, analyses input and annotated analyses results



Save a mydata.jasp file as a myresults.html File on your Computer – only contains the annotated results

The screenshot shows the JASP software interface with the 'Export Results' dialog box open. The dialog box is titled 'Export Result as HTML'. The file name is 'openJoyGaba.html' and the save as type is 'HTML Files (*.html)'. The file is being saved to the Desktop. The 'Save' button is highlighted.

1. Export Results

2. Computer

3. Browse

4. Desktop > JASP-UU > KENNISCLIP Open Your Course

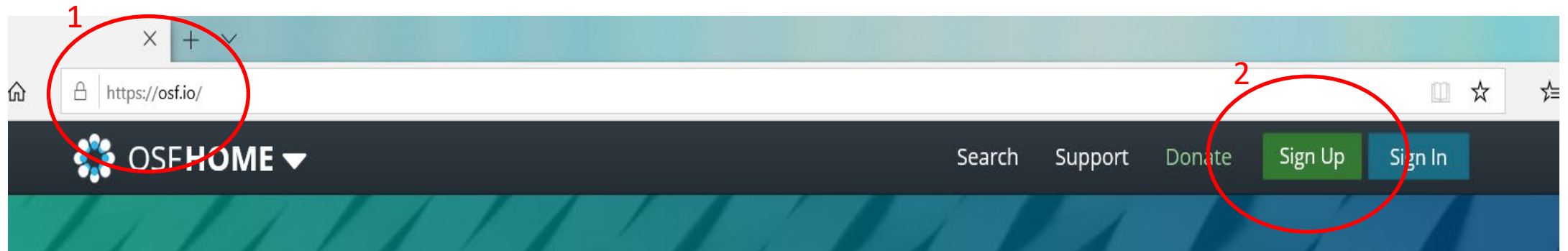
5. File name: openJoyGaba.html
Save as type: HTML Files (*.html)

6. Save

hometown	averagebond
133	125
0	8
1.000	2.333
7.000	7.000

How to Make your Data Analyses Findable Using the Open Science Foundation



Create a Project to Store your Data at the Open Science Foundation in Four Simple Steps



Step 1: Create a Free Account

Create a free account


Sign up using:

 iD ORCID  Institution

OR

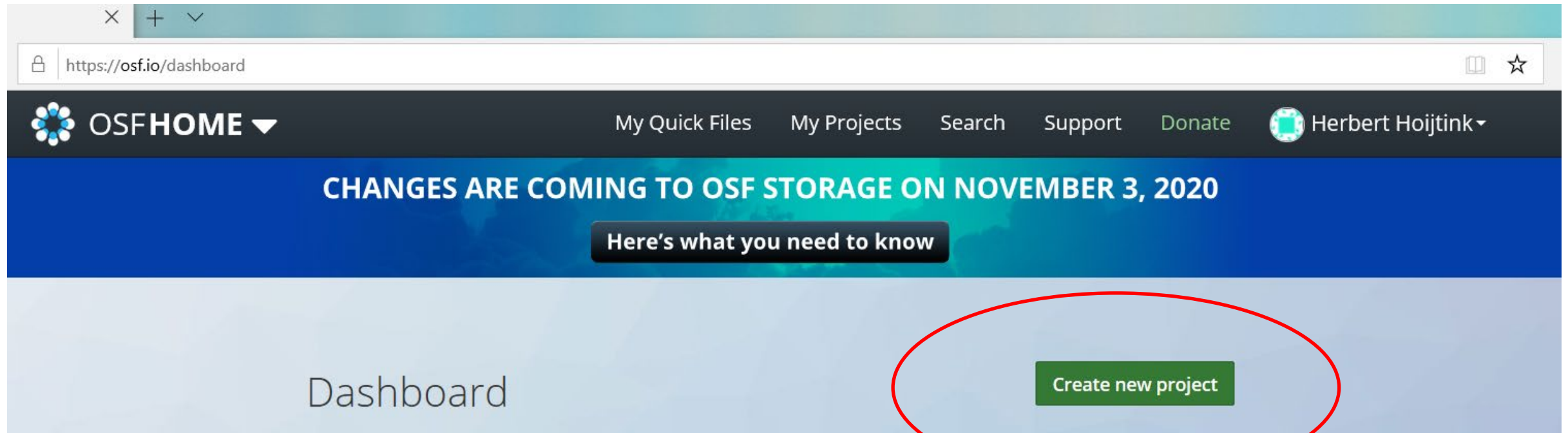
1

2 ☐ I have read and agree to the [Terms of Use](#) and [Privacy Policy](#).

3 ☐ Ik ben geen robot  reCAPTCHA
Privacy - Voorwaarden

4

Step 2: Create a New Project



A screenshot of the OSFHOME dashboard in a web browser. The browser's address bar shows the URL <https://osf.io/dashboard>. The page features a dark navigation bar with the OSFHOME logo and a dropdown menu on the left, and links for 'My Quick Files', 'My Projects', 'Search', 'Support', 'Donate', and a user profile for 'Herbert Hoijtink' on the right. A prominent blue banner across the middle of the page contains the text 'CHANGES ARE COMING TO OSF STORAGE ON NOVEMBER 3, 2020' and a button labeled 'Here's what you need to know'. Below the banner, the word 'Dashboard' is displayed on the left. On the right side of the dashboard, a green button labeled 'Create new project' is circled in red.

OSFHOME ▼

My Quick Files My Projects Search Support Donate Herbert Hoijtink ▼

CHANGES ARE COMING TO OSF STORAGE ON NOVEMBER 3, 2020

Here's what you need to know

Dashboard

Create new project

Step 2: Create a New Project (continued)

https://osf.io/myprojects/

OSFHOM

My Quick Files My Projects Search Support Donate Herbert Hoijtink

Create new project

Title

Open Your Course 1

Storage location

Germany - Frankfurt 2

3

Cancel Create

Filter displayed projects

Name	Modified
Open	23 minutes ago
Prom	10 days ago
A Rev	2 months ago
+ Amer	10 months ago
+ ANOVA	10 months ago


Step 3: Make your Project Publicly Available

1: anybody can surf here to access your data analyses if ...

OSFHOME

My Quick Files My Projects Search Support Donate Herbert Hoijtink

Open Your Course Files Wiki Analytics Registrations Contributors Add-ons Settings

112.5KB Make Private Public  ...


2: ... you make your project publicly available

Open Your Course

Contributors: Herbert Hoijtink

Date created: 2020-10-05 02:49 PM | Last Updated: 2020-10-21 09:44 AM

Create DOI

Category:  Project

Description: Add a brief description to your project

License: CC0 1.0 Universal 3


Wiki

Add important information, links, or images here to describe your project.

Files

Click on a storage provider or drag and drop to upload

Filter

Name ^ v	Modified ^ v
 Open Your Course	

Citation

Components


Add Component Link Projects

Add components to organize your project.

4

Tags

Open Science x Teaching x Add a tag



Drag your Data and other Relevant Files into the Project you Created

The image shows two side-by-side screenshots illustrating how to upload files to an OSF project.

Left Screenshot (OSF Open Your Course):

- URL: <https://osf.io/z7tbq/>
- Page Title: Open Your Course
- Contributors: Herbert Hoijtink
- Date created: 2020-10-05 02:49 PM | Last Updated: 2020-10-08 05:57 PM
- Create DOI
- Category: Project
- Description: Add a brief description to your project
- License: CC0 1.0 Universal
- Wiki section: Add important information, links, or images here to describe your project.
- Files section: Click on a storage provider or drag and drop to upload. The list shows:
 - Open Your Course
 - OSF Storage (Germany - Frankfurt) (highlighted with a red circle)
 - codebookJoyGaba.pdf (2020-10-05 04:46 PM)
 - openJoyGaba.jasp (2020-10-05 02:50 PM)

Right Screenshot (Windows File Explorer):

- Path: JASP-UU > KENNISCLIP Open Your Course
- Files list:

Name	Date modified	Type	Size
codebookJoyGaba.docx	5-10-2020 16:44	Microsoft Word D...	15 KB
codebookJoyGaba.pdf	5-10-2020 16:44	Adobe Acrobat D...	85 KB
Data.csv	5-10-2020 16:12	Microsoft Excel Co...	3 KB
data.sav	5-10-2020 16:16	SAV File	3 KB
data.txt	2-10-2020 18:55	Text Document	2 KB
elife-04333-v1.pdf	23-9-2020 12:47	Adobe Acrobat D...	1.232 KB
JCC.ReplicationProject.docx	23-9-2020 15:06	Microsoft Word D...	31 KB
mydata.jasp	12-10-2020 12:22	A JASP file, contai...	22 KB
Open Your Course.pptx	12-10-2020 13:41	Microsoft PowerPo...	63.558 KB
openJoyGaba.jasp	12-10-2020 12:08	A JASP file, contai...	23 KB
originalJoyGaba.xls	23-9-2020 17:24	Microsoft Excel 97...	32 KB
robust.pdf	10-9-2020 12:27	Adobe Acrobat D...	205 KB
script.R	14-1-2020 12:44	R File	2 KB
williamsbargh.pdf	23-9-2020 16:01	Adobe Acrobat D...	106 KB

A red arrow points from the **openJoyGaba.jasp** file in the File Explorer to the **OSF Storage (Germany - Frankfurt)** folder in the OSF interface. A red circle highlights the **openJoyGaba.jasp** file in the File Explorer.

Drag files onto the blue bar to add them to your project

The Conflict between Fully Open Data Analyses and Privacy Regulations

Personal data can only be published if privacy is guaranteed. One way to achieve this is, if data are truly anonymized (General Data Protection Regulation: <https://gdpr-info.eu/>).

- Truly anonymized data is no longer personal data and thus no longer subject to the GDPR
- It involves the complete and utter removal of all personal identifiers in a database
- Anonymized data can no longer be attributed to any particular individual by any means

If anonymization cannot be achieved, you can still “Open your Analyses” by publishing only your code book, results, references, license and annotated analyses (these are often called meta data). This can be done using a myresults.html file that can be created based on your mydata.jsp file.

The Conflict between Fully Open Data Analyses and your Future Research Plans

- Therefore, you may want to impose restrictions on the use of your data, e.g., “can only be used to reproduce the analyses you executed”
- However, this cannot be arranged via the application of a license, data are often considered to be facts and facts cannot be copyrighted (OpenAIRE)
- In such cases you can consider publishing only a part of your data, e.g., only the data and analyses that are used in a specific research report (but do provide complete meta data, most importantly, the code book of your complete data set)
- Then the unused data are only available for you and thereby you avoid being scooped out of your next paper

OpenAIRE: <https://www.openaire.eu/how-do-i-license-my-research-data>

Open Science is more than having
publications and data openly available ...

Open Science implies openly creating, sharing
and assessing research, wherever viable

Open Science

Open to participation

- No barriers based on race, gender, income, status, language, ableness, age
- Involvement of societal partners in research priority setting
- Evaluations that include societal relevance
- Citizen science & co-creation
- Broadly considering all knowledge (including local knowledge)
- Error friendly environment

Open to (re)use

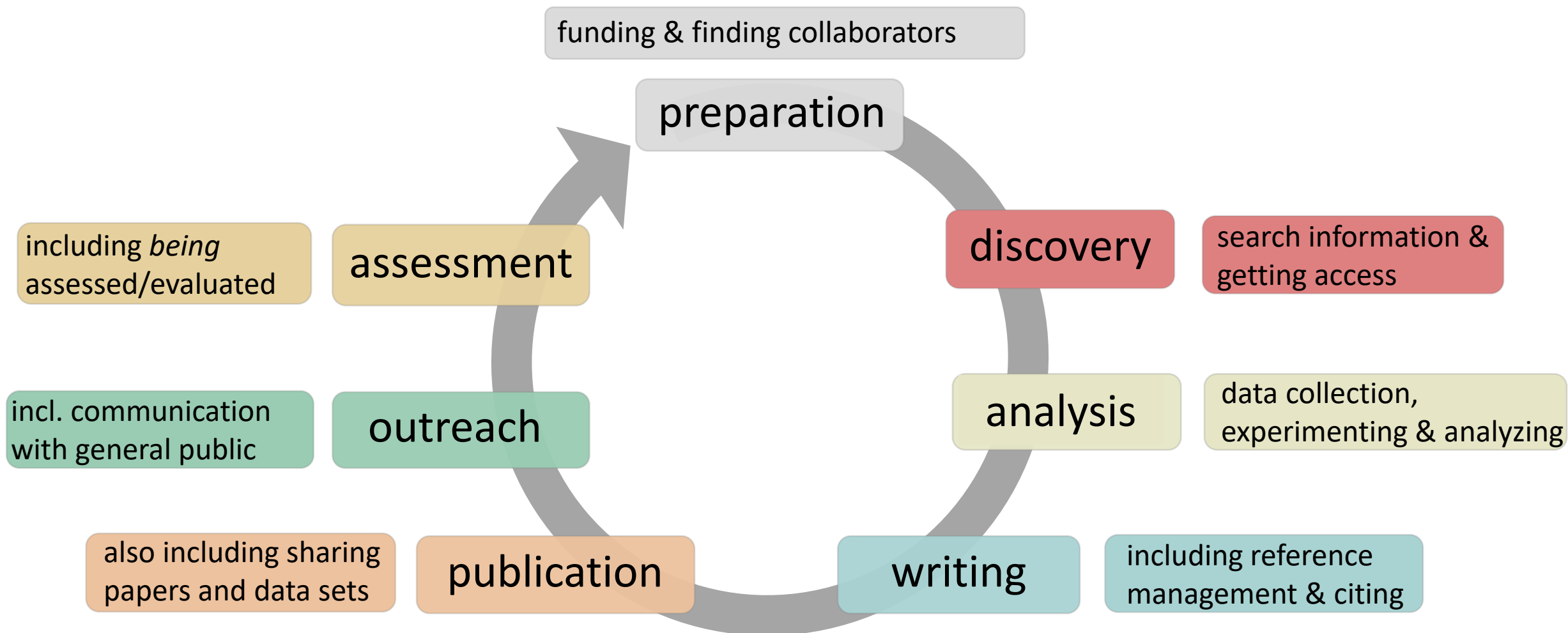
- Open Access, f. people/machines, to:
 - Proposals and applications
 - Preregistrations
 - Data
 - Code
 - Preprints, working papers
 - Papers and books
 - Reviews and comments
 - Posters and presentations
- Open, non-proprietary standards
- Open licences
- Full documentation of process, including negative results

Open to the world

- Translations
- Plain language explanations
- Outreach beyond academia
- Open to questions from outside academia
- Curation and annotation of non-scholarly information
- Participation in public debate



The Open Research Workflow





Assessment:

- Comment/peer review
- Determine impact of research output
- Determine impact of researchers

Preparation:

- Define & crowdsource research priorities
- Organize project, team, collaborations
- Get funding/contract

Discovery:

- Search literature/data/code/...
- Get access
- Get alerts/recommendations
- Read/view
- Annotate

Outreach:

- Archive/share posters
- Archive/share presentations
- Tell about research outside academia
- Researcher profiles/networks

Analysis:

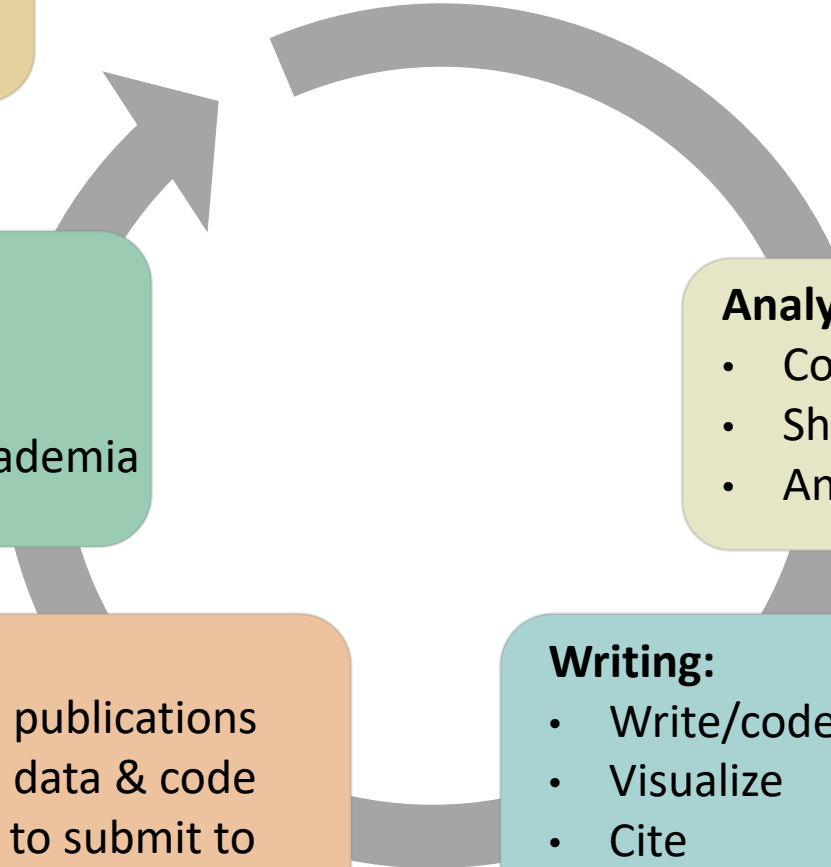
- Collect, mine, extract data/experiment
- Share protocols/notebooks/workflows
- Analyze

Publication:

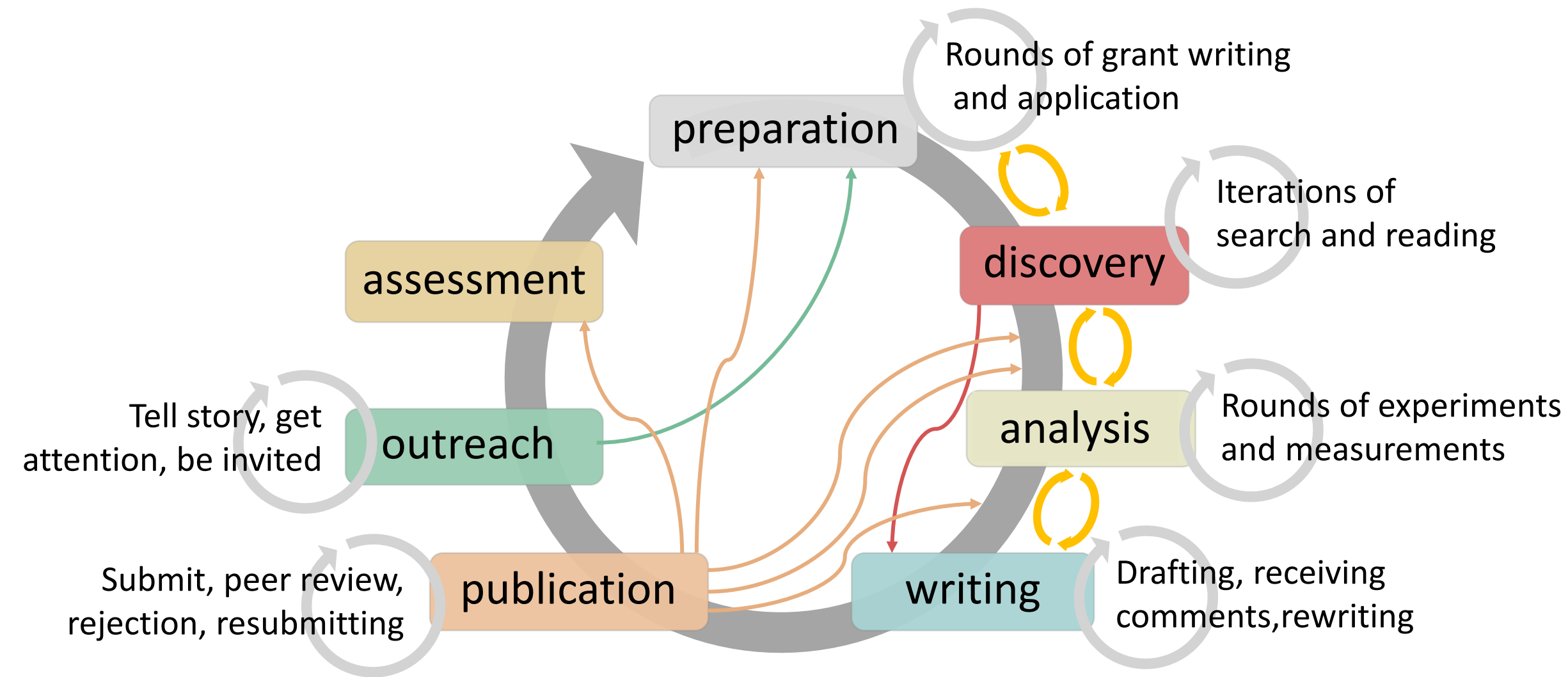
- Archive/share publications
- Archive/share data & code
- Select journal to submit to
- Publish

Writing:

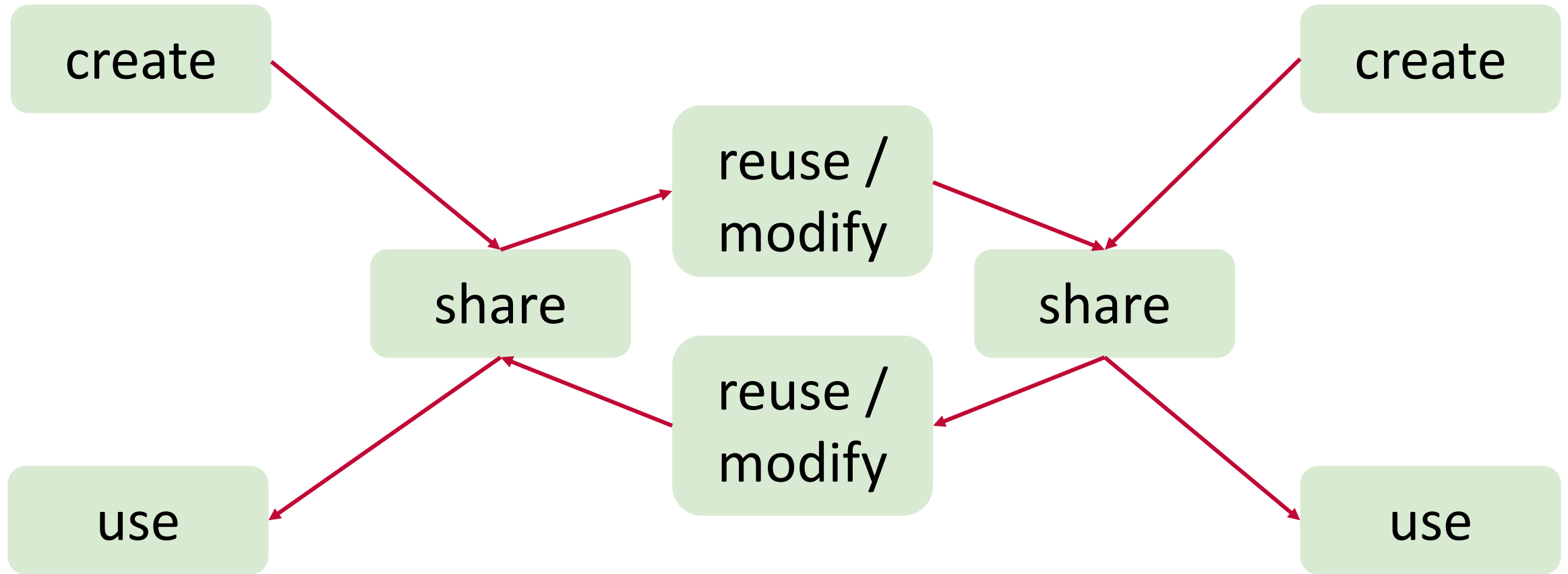
- Write/code
- Visualize
- Cite
- Translate



The Open Research Workflow



Open Science as a mindset





Why Open Science?

- Transparency, accountability
- Efficiency
- Reproducibility & verifiability
- Relevance & stakeholder involvement