

# Research Workflow Management

Hans IJzerman

LIP/PC2S

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2018/12/11 (updated: 2018-12-11)

# We have a problem

To briefly sum up:

# We have a problem

To briefly sum up:

- Questionable Research Practices

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- Questionable Research Practices
- Publication Bias

# We have a problem

To briefly sum up:

- Questionable Research Practices
- Publication Bias
- Reproducibility Problems

# Only Psychology?

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These problems are not unique to psychology,

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These problems are not unique to psychology, in fact, problems seem to be ubiquitous.



# Only Psychology?

These problems are not unique to psychology, in fact, problems seem to be ubiquitous. But psychology has been dealing with the problems.

# Solutions

How have we been resolving this?

# Solutions

How have we been resolving this?

- Sharing code, data, and materials

# Solutions

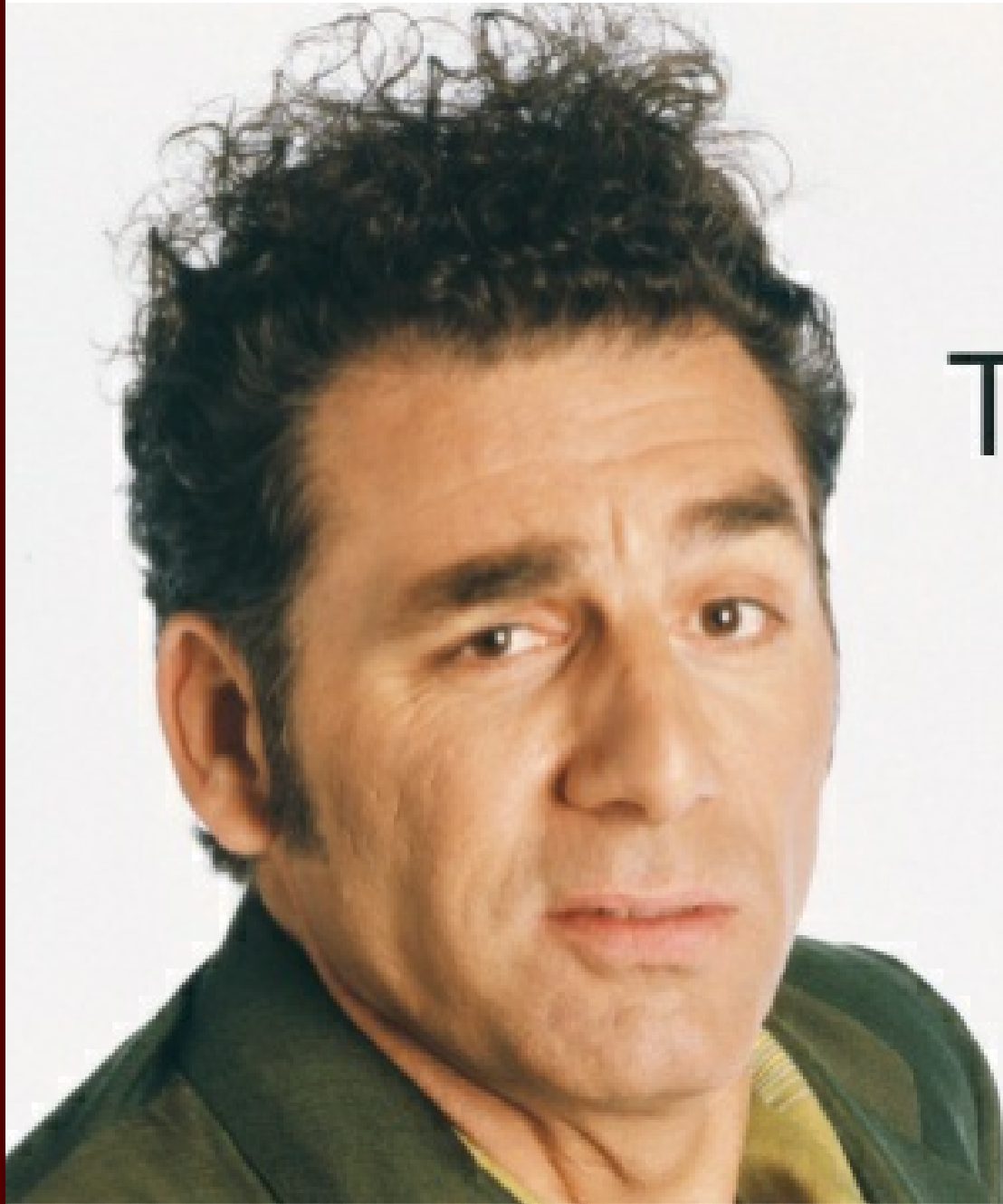
How have we been resolving this?

- Sharing code, data, and materials
- Separating Exploratory and Confirmatory Research

# Solutions

How have we been resolving this?

- Sharing code, data, and materials
- Separating Exploratory and Confirmatory Research
- Building in accuracy checks



That seems like a  
lot of work.  
**Why Bother?**

# Challenges

The challenges are often about:

# Challenges

The challenges are often about:

- Technology



# Challenges

The challenges are often about:

- Technology
- Habits

# Challenges

The challenges are often about:

- Technology
- Habits
- Continuous Development

# Our Approaches

How have we been resolving this?

# Our Approaches

How have we been resolving this?

- Local level (Lab): Workflow/Lab Philosophy

# Our Approaches

How have we been resolving this?

- Local level (Lab): Workflow/Lab Philosophy
- Teaching open practices

# Our Approaches

How have we been resolving this?

- Local level (Lab): Workflow/Lab Philosophy
- Teaching open practices
- Yearly workflow updates

# Workflow/Lab Philosophy

## Co-Regulation (CORE) Lab.

We study co-regulation in romantic relationships. We study social thermoregulation. We rely on open science ideals. We collaborate with researchers around the world, but are located at the Université Grenoble Alpes.

# Lab Philosophy at [www.corelab.io](http://www.corelab.io)



### Papers

Check out publications and/or preprints from the lab. We try to ensure all our work is available to the public, so if you can't find a paper let us know!

[ACCESS PAPERS](#)



### Open Data/Materials

To the extent possible we make materials, data, and analysis scripts publicly available on the Open Science Framework. These may be used for re-analysis or for novel hypotheses.

[FIND OUR DATASETS](#)



### Lab Philosophy

Doing science is really hard. Here, we document the workflow of the lab and expectations for lab members. Includes templates for OSF projects to make open science easier.

[DOWNLOAD](#)



# Research Workflow

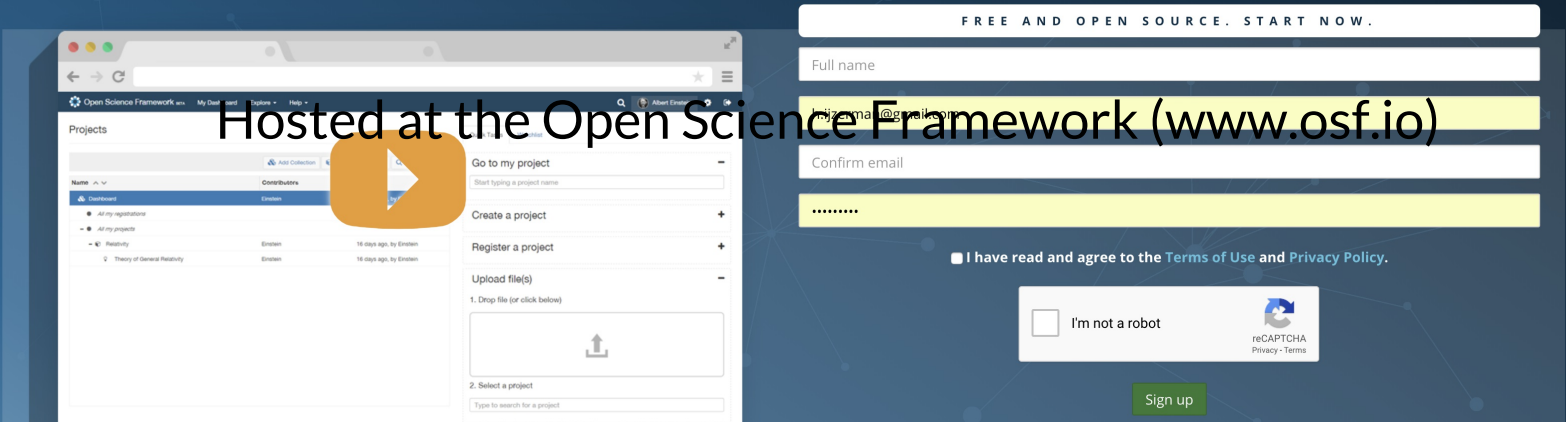
Hosted at the Open Science Framework ([www.osf.io](http://www.osf.io))

# Open Science Framework

A scholarly commons to connect the entire research cycle

# Research Workflow

Hosted at the Open Science Framework (www.osf.io)



The image shows a composite of two screenshots from the Open Science Framework website. On the left is a 'Projects' page with a sidebar and a main content area. On the right is a registration form with fields for 'Full name', 'Email', and 'Confirm email', along with a reCAPTCHA widget and a 'Sign up' button. A large orange play button icon is overlaid on the left screenshot.

FREE AND OPEN SOURCE. START NOW.

Full name

Email

Confirm email

.....

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

I'm not a robot

reCAPTCHA  
Privacy - Terms

Sign up

# Research Workflow

Hosted at the Open Science Framework ([www.osf.io](http://www.osf.io))

# Research Workflow

Hosted at the Open Science Framework ([www.osf.io](http://www.osf.io))

- Allows (local) data-sharing

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- Allows (local) data-sharing
- Allows separation exploratory and confirmatory research

# Research Workflow

Hosted at the Open Science Framework ([www.osf.io](http://www.osf.io))


- Allows (local) data-sharing
- Allows separation exploratory and confirmatory research
- Allows easy collaboration (e.g., ManyLabs 1, 2)

# CO-RE Lab Workspace















Contributors: [Hans Jzerman](#), [Richard A. Klein](#), [Lison Neyroud](#)  
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[Create DOI](#)  
 Category:  Project  
 Description: Add a brief description to your project  
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Name ^ v	Modified ^ v
 CO-RE Lab Workspace	
-  OSF Storage (United States)	
-  Research Template to Start New Project (Exploratory)	
-  OSF Storage (United States)	
+  Theoretical Background (Before data collection)	
+  Methods, Procedures, Scales (Before data collection)	
+  Data (After data collection)	
+  Analytic Code (After data collection)	
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**Components**

 [Research Template to Start New Project \(Exploratory\)](#)  

[Jzerman, Klein & Neyroud](#)  
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 [Research Template to Start New Project \(Confirmatory\)](#)  

[Jzerman, Klein, Neyroud & 3 more](#)  
 This template is intended to guide researchers in the CO-RE lab to run confirmatory studies. Please use this template alongside the Research Miles she...

**Tags**

[corelabdat](#) [workflow](#)

**Recent Activity**

-  [Richard A. Klein](#) added tag [corelabdat](#) to CO-RE Lab Workspace 2018-10-02 01:53 PM
-  [Richard A. Klein](#) removed tag [corelab](#) from CO-RE Lab Workspace 2018-10-02 01:53 PM
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**Components** Add Component Link Projects

- Research Template to Start New Project (Exploratory)  
Ijzerman, Klein & Neyroud  
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# Workspace at <https://osf.io/q29nf/>



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# Feel free to fork and use our work.

# CO-RE Lab Workspace















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**Components** Add Component Link Projects

# Exploratory/Confirmatory

[Research Template to Start New Project \(Exploratory\)](#)
x

[Research Template to Start New Project \(Confirmatory\)](#)
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









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[corelabdat](#)  [workflow](#)  Add a tag

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# Research Template to Start New Project (Confirmatory)

Contributors: [Hans IJzerman](#), [Richard A. Klein](#), [Lison Neyroud](#), [Subatli Tiffany](#), [Zoé Lackner](#), [Barbosa Vivian](#)

Date created: 2014-07-28 04:33 PM | Last Updated: 2018-10-09 02:41 PM

Category: Project

Description: This template is intended to guide researchers in the CO-RE lab to run confirmatory studies. Please use this template alongside the Research Miles sheet.

Please DON'T change this page, but copy the page into a new project.

### Wiki

This is the workflow for running a **confirmatory study**. Be sure to follow the extra steps in the [Research Milestones Sheet](#) to pre-register your study prior to data collection. Follow these steps, using the existing components for organization:

- Fork the research template into a new project.
- Name your project.
- Add your co-authors on this page (in the order that they will likely appear on the paper)
- ...

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### Files

Name	Modified
Research Template to Start New Project (Confirmatory)	
-  OSF Storage (United States)	
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-  OSF Storage (United States)	
-  Methods, Procedures, Scales (Before registration)	
-  OSF Storage (United States)	
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-  OSF Storage (United States)	
-  Data Analytic Plan (Before registration)	

### Citation

### Components

- Study Rationale + Hypotheses (Before registration)  
[Ijzerman, Klein, Neyroud & 3 more](#)
- Methods, Procedures, Scales (Before registration)  
[Ijzerman, Klein, Neyroud & 3 more](#)
- Power Calculation (Before registration)  
[Ijzerman, Klein, Neyroud & 3 more](#)
- Data Analytic Plan (Before registration)  
[Ijzerman, Klein, Neyroud & 3 more](#)
- Data (After data collection)  
[Ijzerman, Klein, Neyroud & 3 more](#)
- Analytic Code (After data collection)  
[Ijzerman, Klein, Neyroud & 3 more](#)
- Explanation of Auxiliary/Exploratory Analyses (After data collection)  
[Ijzerman, Klein, Neyroud & 3 more](#)

### Recent Activity

# Organisation of Project

# Research Template to Start New Project (Confirmatory)

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  - We want all our data to be stored in the EU. In order to do so, go to the arrow next to your profile name in the upper right corner. Then go to "Settings" there. When you are in "Settings" go to "Account Settings". Put your "Default Storage Location" to "Frankfurt, Germany".
- Fill in the name of the project, the order of authors, and the link to your new OSF project page in the Research Milestones Sheet (RMS).
- Decide whether you will make the OSF page public at this time (the default initially is no, but in certain cases, it can be yes).
- Review the literature and write the review. Develop your hypothesis and post them on the OSF (link to page in RMS).
- Do your power calculation (NB: given the existing publication bias in the literature, you may want to use a smaller effect size for your power calculation. The wisest approach is likely to take the smallest effect size of interest). (Link to completed power calculation in RMS).
- Complete your proposed methods and include all materials needed to reproduce your study. Post them on the OSF page (link to page in RMS).
- Write your syntax (SPSS, R, or other software program) and post on OSF (link to page in RMS). Preferably use simulated data to see if the code works.
- Complete your ethics application if needed (in consultation with the lab's PI).
- **Pre-register your study. By default, keep private unless otherwise decided (link to page in RMS).**
- Before running study, double-check pre-registration. If you made a mistake before data collection, fork project and explain mistake (if so, link to fork in RMS. Pre-register project again).
- After data collection, de-identify data so that participants cannot be recognized. If page/data will be made public, verify deidentification with PI. (link to page in RMS)
- Post analytic code written after data collection (link to page in RMS).
- Describe verbally on OSF which analyses were done separate from pre-registration (auxiliary/exploratory analyses; link to page in RMS).
- Let data, code, and OSF page be checked by an independent researcher. Researcher should be able to use script to go from raw data to final results, and verify numbers in manuscript. Researcher should also verify deidentification. The independent researcher should be added to the OSF page and as second to last co-author on paper. Indicate completion on the RMS.
  - Run your manuscript through a Plagiarism Checker (e.g., <https://plagiarismcheckerx.com/>).
- Post your completed RMS to the OSF page.
- Post paper to a pre-print server after submitting paper to a journal (preferably PsyArxiv, so you can directly link to this project page).

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- Decide whether you will make the OSF page public at this time (the default initially is no, but in certain cases, it can be yes).
- Review the literature and write the review. Develop your hypothesis and post them on the OSF. (Link to page in RMS).
- Do your power calculation (NB: given the existing publication bias in the literature, we can likely not do a very reliable power calculation. The wisest approach is likely to take the smallest effect size of interest). (Link to completed power calculation in RMS).
- Complete your proposed methods and include all materials needed to run your study. Post on OSF (link to page in RMS).
- Write your syntax (SPSS, R, or other software program) and post on OSF (link to page in RMS). Preferably use simulated data to see if the code works.
- Complete your ethics application if needed (in consultation with the lab's PI).
- **Pre-register your study. By default, keep private unless otherwise decided (link to page in RMS).**
- Before running study, double-check pre-registration. If you made a mistake before data collection, fork project and explain mistake (if so, link to fork in RMS. Pre-register project again).
- After data collection, de-identify data so that participants cannot be recognized. If page/data will be made public, verify deidentification with PI. (link to page in RMS)
- Post analytic code written after data collection (link to page in RMS).
- Describe verbally on OSF which analyses were done separate from pre-registration (auxiliary/exploratory analyses; link to page in RMS).
- Let data, code, and OSF page be checked by an independent researcher. Researcher should be able to use script to go from raw data to final results, and verify numbers in manuscript. Researcher should also verify deidentification. The independent researcher should be added to the OSF page and as second to last co-author on paper. Indicate completion on the RMS.
  - Run your manuscript through a Plagiarism Checker (e.g., <https://plagiarismcheckerx.com/>).
- Post your completed RMS to the OSF page.
- Post paper to a pre-print server after submitting paper to a journal (preferably PsyArxiv, so you can directly link to this project page).



# Teaching open practices

## Research Tools in Social Cognition

Instructor: Dr. Hans IJzerman

E-mail: [hans.ijzerman@univ-grenoble-alpes.fr](mailto:hans.ijzerman@univ-grenoble-alpes.fr)

Office: D202 (BSHM)

### Objectives

This course is designed to provide you with the tools to conduct more precise, accurate, and solid studies in social cognition that matter. You may be well aware that psychology has faced a reproducibility crisis. This course will offer you tools to better cope with this crisis. Because I strongly feel that researchers need to ground their work with theory, the research approaches discussed in this class will be grounded in theory that is well-suited for the methods we discuss. The main purpose of this course is for you to get a better sense of research approaches in social cognition. By nature of the design of this course (and due to time constraints), we will only be able to sample a limited amount of methods, so I will try to give you what I feel are some of the most important tools for you to utilize during your research career.

### Contents

We will start discussing the reproducibility crisis. Following this, will focus on how to increase the level of precision for your research, while at the same time supporting you in drawing better inferences from your data. In so doing, we will discuss why it is important to distinguish exploratory and confirmatory psychological science, discuss how to engage in these different approaches to your data, learn how to pre-register a study, and set up a plan for you to share your materials (including the assessment of different methods to share research data and materials). Finally, we will also take a brief dive into methods that can help you explore your data in systematic ways.

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### Workshop Goal

To provide hands-on training in open science. Topics discussed during the workshop include exploratory social psychological science (e.g., deep learning), confirmatory social psychological science (i.e., pre-registration), and other aspects of establishing a reproducible workflow. The workshop is primarily aimed at providing training to researchers with fewer financial resources.

Conference Hashtag: #SolidBordeaux2018

Conference Videos: [http://www.telettoile.u-bordeaux2.fr/2018\\_2019/EASP/index.html](http://www.telettoile.u-bordeaux2.fr/2018_2019/EASP/index.html)

### Content Specifics

The last few years have seen social psychology in a crisis, ranging from outright fraud (e.g., Stapel) to considerable concerns about reproducibility (e.g., Open Science Collaboration, 2015). Yet, psychologists have also had to grapple with the need to have reproducible, sharable research materials and data, pre-registration, and separating exploratory from confirmatory analyses. Moving from the former to the latter is not easy. This workshop therefore deals with the challenges that will be faced by researchers in the use of a workflow (Frederic Aust), conduct proper power analyses for both simple and complex designs (Marco Perugini), learn to be a good scientist (Ben Jones), integrate these new habits into undergraduate teaching (Fieke Wagemans), and how to conduct analyses that will be considered to be open science (Ben Jones), and initiating or participating in crowd-sourced research (Ben Jones). We will also discuss the changes to the new EU data security laws and how psychologists can prepare for these changes. The workshop will also have a special focus on how to reduce the costs of open science for the researchers, while at the same time gather resources to be able to meet the challenges of the Revolution 2.0 (Spellman, 2015). The workshop is co-organized by the Université de Bordeaux and Université Grenoble Alpes and is supported by EASP.

### Participant Specifics

The workshop is primarily aimed at researchers with fewer financial resources. First preference will be given in access to the workshop to researchers from the European Union whose residence country spends less on research and development per capita. Second preference will be given to EU researchers without any active research grants. At least 50 % (and likely more) of the workshop participants will be EASP members.

### Presenters

- Frederik Aust (University of Cologne): *A practical primer on transparent research workflows*
- Marco Perugini (Università degli Studi di Milano-Bicocca): *A practical primer to power analysis*
- Michèle Nuijten (Tilburg University): *Open source & open science software*
- Fieke Wagemans (Universität Duisburg-Essen): *Teaching open science: The CREP*
- Rick Klein (Université Grenoble Alpes): *Exploratory social science: Getting the most out of your data, and an introduction to concepts in Deep Learning and cross-validation*
- Kai Jonas (Maastricht University): *Pre-registration in psychological science (and how to fund it)*
- Ben Jones (University of Glasgow): *Crowdsourcing psychological science: The Psychological Science Accelerator*

# Workshops

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- Component Wiki Pages

View

Wiki Version: (Current) Hans IJzerman: 2018-09-24 09:11:22+00:00 UTC

Workshop Goal

To provide hands-on training in open science. Topics discussed during the workshop include exploratory social psychological science (e.g., deep learning), confirmatory social psychological science (i.e., pre-registration), and other aspects of establishing a reproducible workflow. The workshop is primarily aimed at providing training to researchers with fewer financial resources.

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Conference Videos: [http://www.teletele.u-bordeaux2.fr/2018\\_2019/EASP/index.html](http://www.teletele.u-bordeaux2.fr/2018_2019/EASP/index.html)

Content Specifics

The last few years have seen social psychology in a crisis, ranging from outright fiasco (e.g., Stapel) to considerable concerns about reproducibility (e.g., Open Science Collaboration, 2015). Your psychologists have all led the way in the quest to improve reproducibility. Shiny new research paradigms, data pre-registration, and transparent reporting of results to confirmatory data analyses are all being implemented. However, the challenges that lie ahead. We will discuss these challenges and how to address them. We will also discuss the challenges that lie ahead. We will discuss these challenges and how to address them. We will also discuss the challenges that lie ahead. We will discuss these challenges and how to address them.

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https://osl.io/gvkn

# Replication Education

## Collaborative Replications and Education Project (CREP)

Public

6



**Contributors:** Jon Grahe, Mark Brandt, Jordan Wagge, Nicole Legate, Bradford J. Wiggins, Cody D. Christopherson, Yanna Weisberg, Katherine S. Corker, Christopher R. Chartier, Marianne Fallon, Lea Hildebrandt, Michelle Hurst, Lili Lazarevic, Carmel Levitan, Joseph McFall, Heidi McLaughlin, Adam Pazda, Crystal Steltenpohl, Hans IJzerman, Brian A. Nosek, Cong Peng, Hale Gervais, Kaylis Hase, Tayler Peck, Megan Raddatz, David Redman, Chad Schaeffer, Tiana Wamba, Cristina Baciu, Sara LePine

Date created: 2013-05-30 04:56 PM | Last Updated: 2018-10-29 04:47 PM

Identifiers: DOI 10.17605/OSF.IO/WFC6U | ARK c7605/osf.io/wfc6u

Category: Project

Description: This is a replication project where students are encouraged to conduct replications as part of their courses.

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Public 6 ...

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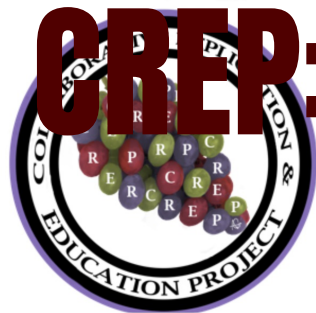
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**CREP: <https://osf.io/wfc6u/>**

# Yearly workflow updates



# Thanks!

Slides created via the R package **xaringan**.

You can reach us at [www.corelab.io](http://www.corelab.io).

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