

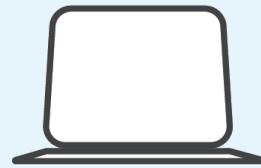
Improving the Openness, Integrity, and Reproducibility of Scientific Research

Sara Bowman
Center for Open Science
<http://cos.io/>

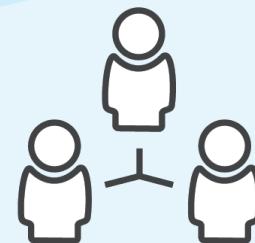
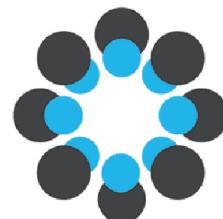
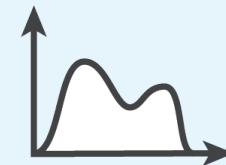


Mission: Improve
openness, integrity, and
reproducibility of
scientific research

Infrastructure



Metascience



Community

Editorial Reproducibility of Results

There have recently been several meetings to discuss the reproducibility and accuracy of scientific results, particularly clinical trials and toxicology data, but this subject is a matter of concern for all published science. When scientists and engineers publish their work, it is expected that those who try to repeat that work will get broadly similar results if they follow the same procedures. This is why ACS journals insist on detailed experimental procedures being provided and OPR&D expects these procedures to be part of the full paper, not just the Supporting Information.

I can remember from my work as a student and postdoctoral fellow (OK, it was over 40 years ago!) sometimes being unable to repeat my own results and then, on further investigation, realizing that I had changed a vital part of the experiment; a different source of reagent, slight change in conditions, or changed timings of key steps such rate of addition had been used. So the critical parameters, as a development chemist would say, need to be controlled and reported in any experimental write-up. The temptation when writing up synthetic chemistry is to report the best yield ever obtained rather than an average of the probably few experiments on the same reaction. So it is hardly surprising that other experimenters fail to match the yield.

Most development chemists will have experienced difficulty repeating a procedure from a patent, from a scientific paper, or even from a write-up provided by a colleague in the same organization and then having to work out, assuming the original procedure was written up in good faith, what was so different as to make the process nonreproducible. It would be interesting to do a survey and find out from a percentage of literature reactions reproduce and how many yield overstated.

NATURE NEWS BLOG

Reliability of 'new drug target' claims called into question

05 Sep 2011 | 14:59 BST | Posted by Brian Owens | Category: Biology & Biotechnology

Cross posted from [Nature Reviews Drug Discovery](#) on behalf of Asher Mullard.

Bayer halts nearly two-thirds of its target-validation projects because in-house experimental findings fail to match up with published literature claims, finds a first-of-a-kind analysis on data irreproducibility.

An unspoken industry rule alleges that at least 50% of published studies from academic laboratories cannot be repeated in an industrial setting, wrote venture capitalist Bruce Booth in a recent [blog post](#). A first-of-its-kind analysis of Bayer's internal efforts to validate 'new drug target' claims now not only supports this view but suggests that 50% may be an underestimate; the company's in-house experimental data do not match literature claims in 65% of target-validation projects, leading to project discontinuation.

VERSATION

Q. Search analysis, research, academics...

+ Economy Education Environment + Energy Health + Medicine Politics + Society Science + Technology

Ibola Flight MH17 World War II Iraq Hard Evidence Scotland Digital economy Privacy Israel-Palestine

4 August 2014, 6:21am BST

When 'exciting' trumps 'honest', traditional academic journals encourage bad science



One more corner, then I'll answer your questions. campuspartytmexico, CC BY

Imagine you're a scientist. You're interested in testing the hypothesis that playing violent video games makes people more likely to be violent in real life. This is a straightforward theory, but there are still many, many different ways you could test it. First you have to decide which games count as "violent". Does Super Mario Brothers count because you kill Goombas? Or do you only count "realistic" games like Call of Duty? You have to decide how to measure violent violence is rare and difficult to measure, so you need to look at lower-level "aggressive" acts



CORRESPONDENCE

Believe it or not: how much can we rely on published data on potential drug targets?

Florian Prinz, Thomas Schlange and Khusru Asadullah

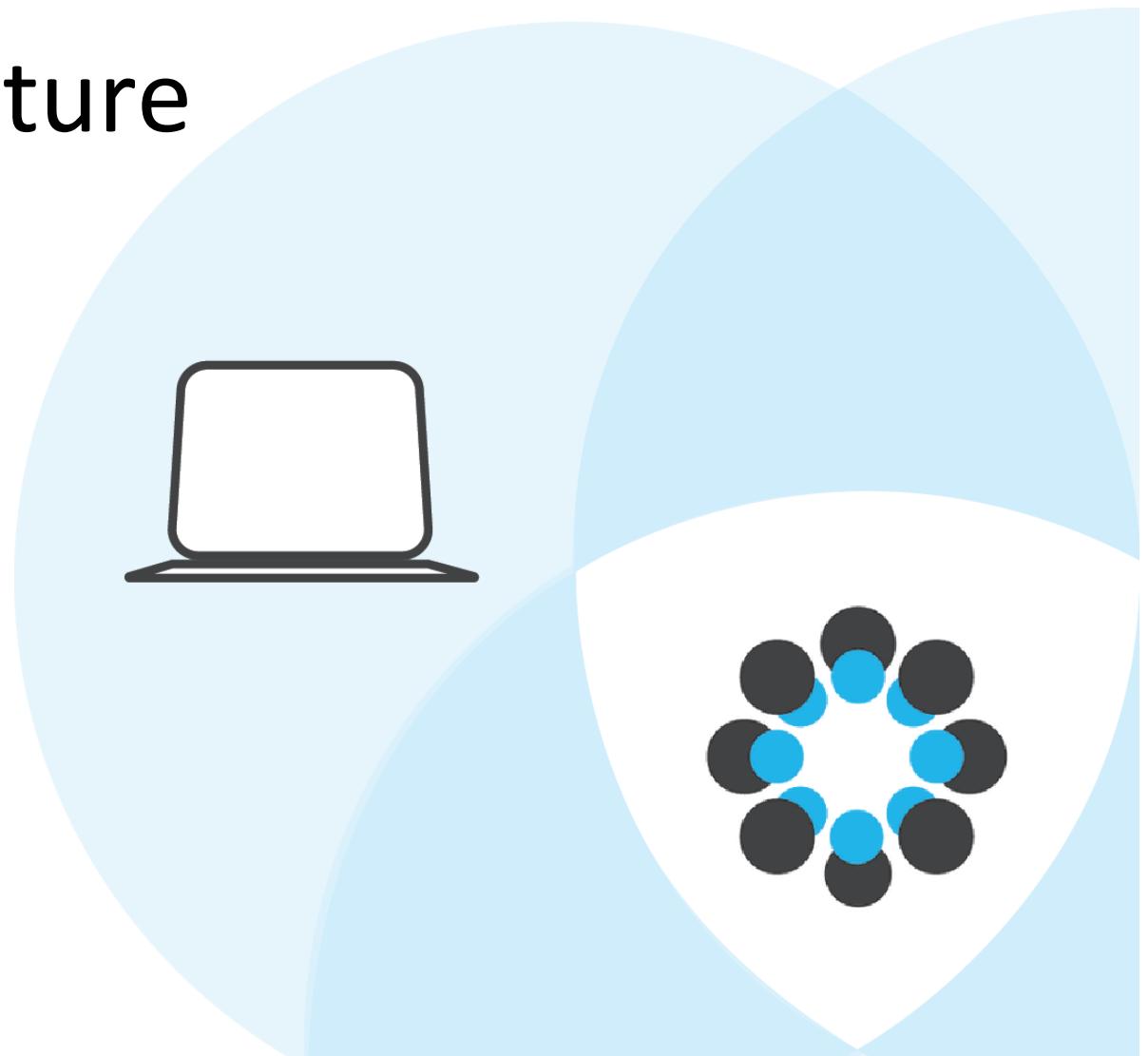


Many landmark findings in preclinical oncology research are not reproducible, in part because of inadequate cell lines and animal models.

Raise standards for preclinical cancer research

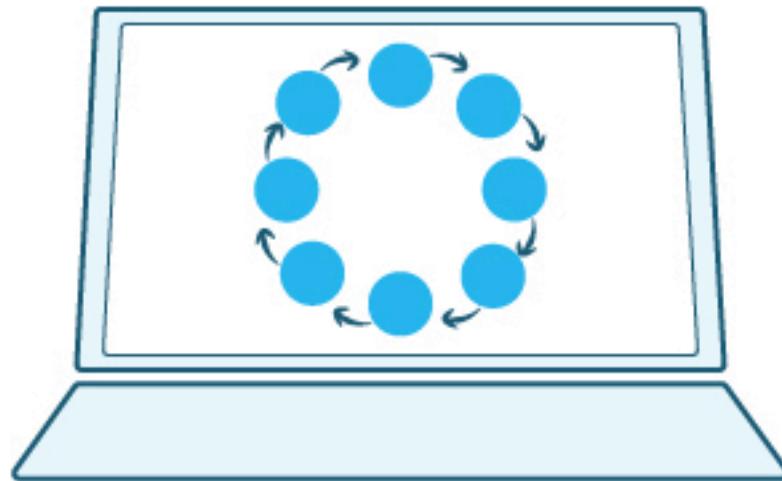
C. Glenn Begley and Lee M. Ellis propose how methods, publications and incentives must change if patients are to benefit.

Infrastructure



Open Science Framework

<http://osf.io>



The OSF supports the entire research lifecycle: planning, execution, reporting, archiving, and discovery.

Open Science Framework



Project management with
collaborators,
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A registration form for creating a new account on the Open Science Framework. It consists of four input fields: "Full Name", "Contact Email", "Confirm Email", and "Password (Must be 6 to 35 characters)". A red "Sign Up" button is located at the bottom right of the form.

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Study 3: Gupta et al. 2010, Nature Files Wiki Statistics Registrations Forks

Replication Studies ↴

Study 3: Gupta et al. 2010, Nature

Contributors: Tim Errington, Elizabeth Iorns, William Gunn, Fraser Elisabeth Tan, Sarah Statt, Joelle Lomax, Nicole Perfito

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Category: Project

Wiki

Citation

osf.io/4bokd

This project contains all information pertaining to the replication of key experiments from this paper. It includes the detailed protocols, including reagents and author clarifications. We also include from the Science Exchange authors that we have learned studies begin all data collection analysis...

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Perfito as contributor(s) to

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Investigating Variation in Replicability: A "Many Labs" Replication Project

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4 contributions

Merges Public-Private Workflows

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Incentives for Openness

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[Copy Project Structure](#)

you plan to build upon it in your own work. The new project will be an exact duplicate of this project's current state, with you as the only contributor.

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Visits



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ANNOTATIONS

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0



<https://osf.io/wx7ck/>

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Citation: osf.io/wx7ck/

APA

Klein, R. A., Ratliff, K., et al. "Investigating Variation in Replicability: A "Many Labs" Replication Project." Open Science Framework (2014). osf.io/wx7ck/

MLA

Klein, R. A., Ratliff, K., et al. "Investigating Variation in Replicability: A "Many Labs" Replication Project." Open Science Framework (2014). osf.io/wx7ck/

Chicago

Klein, R. A., Ratliff, K. A., Vianello, M., Adams, R. B., Bahník, , Bernstein, M. J., Bocian, K., et al. "Investigating Variation in Replicability: A "Many Labs" Replication Project." Open Science Framework (2014). osf.io/wx7ck/



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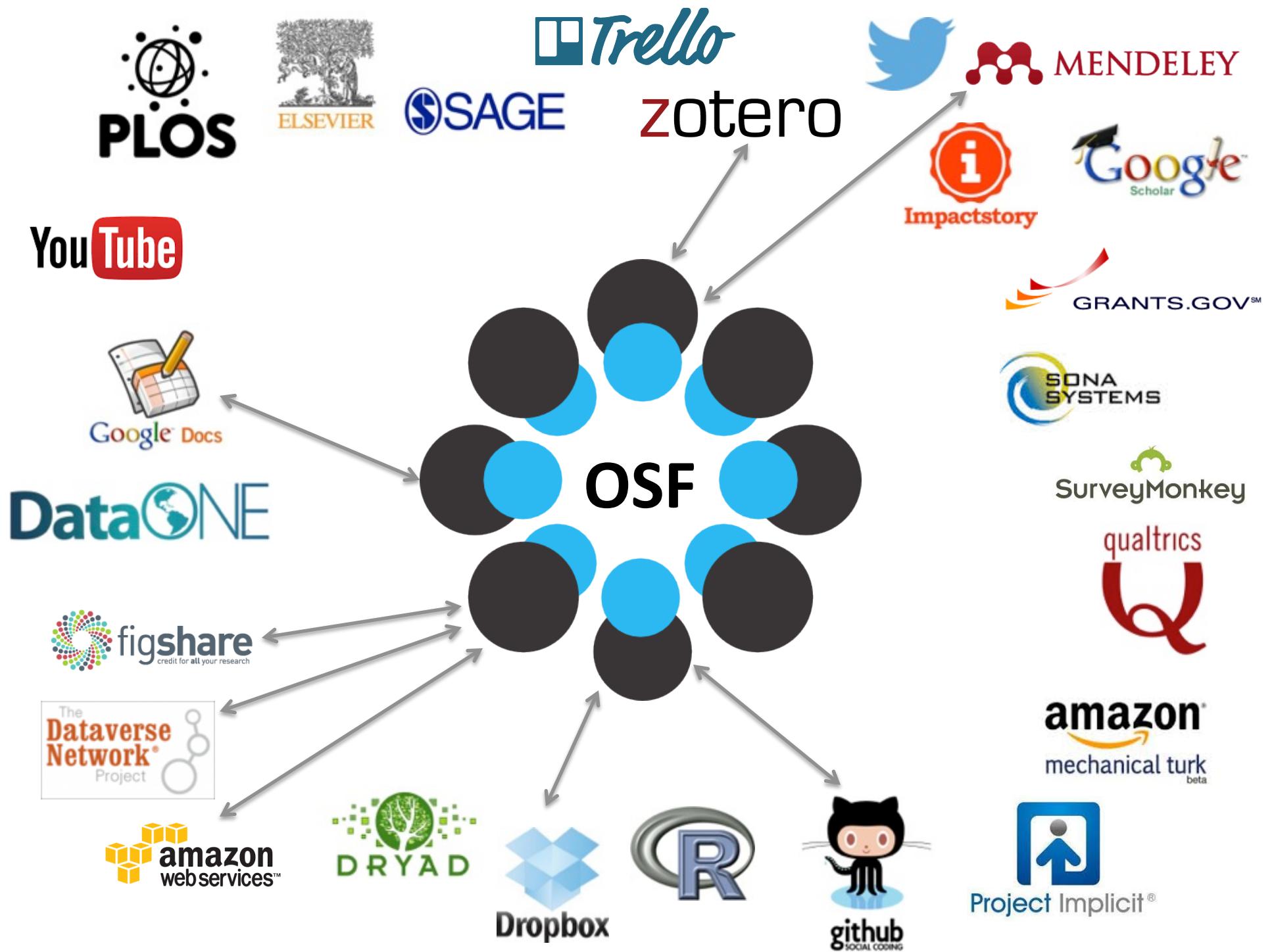
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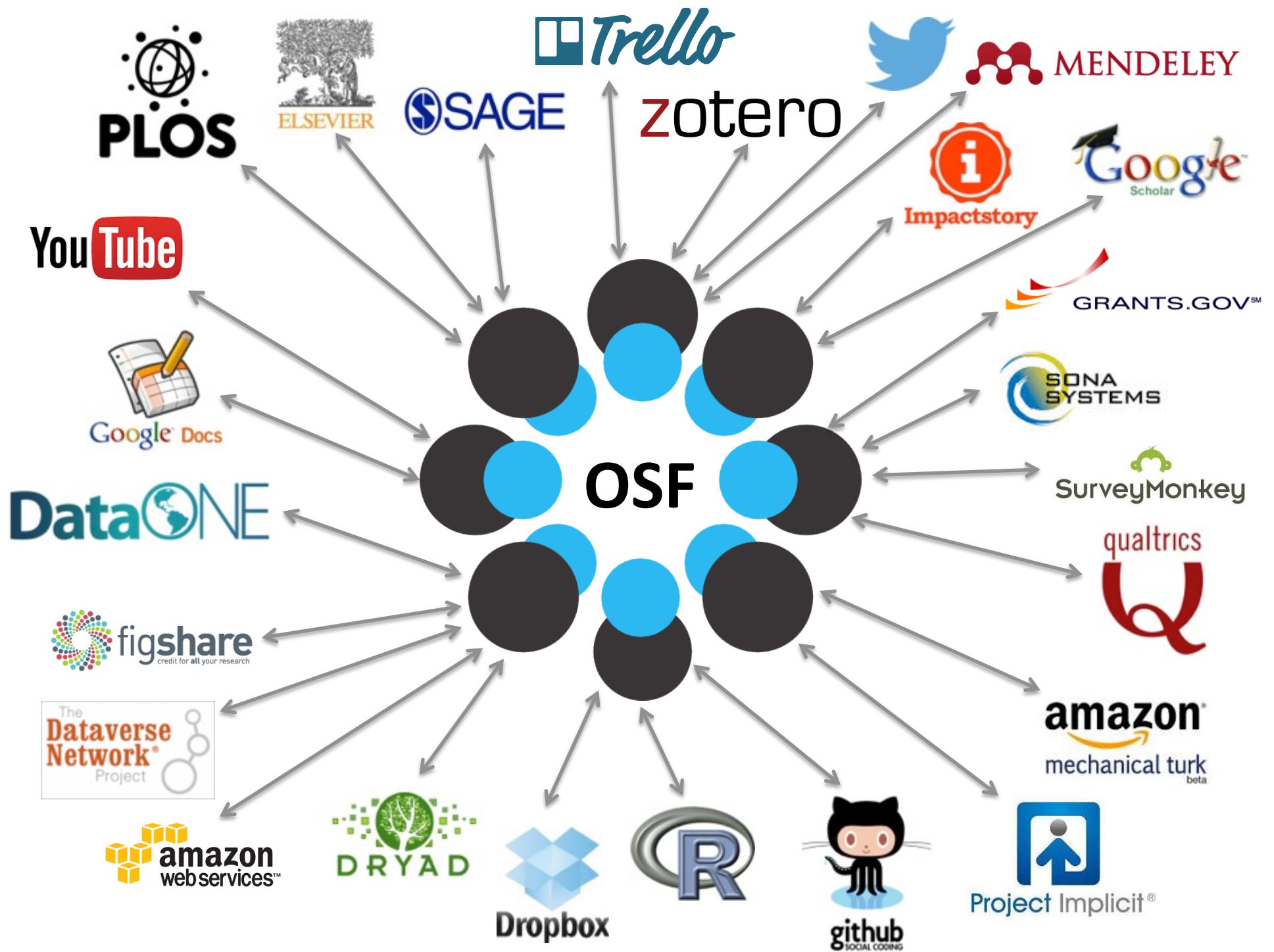
Name

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 - ExamplePythonNotebook.ipynb
 - ExampleImage.jpg
- ExampleCSV.csv

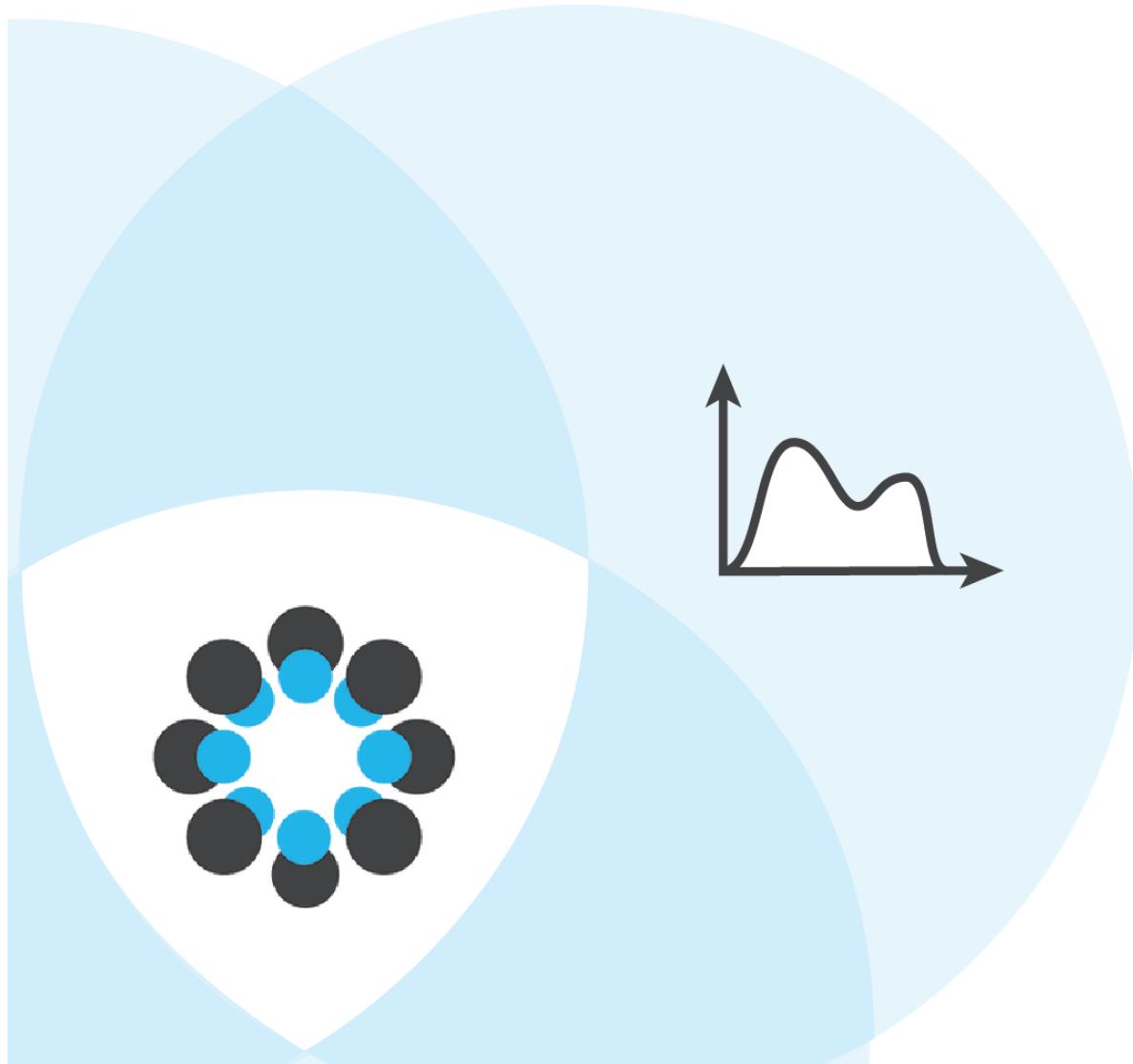
Connects Services Researchers Use

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- ExampleImage.png
- ExamplePDF.pdf
- ExamplePython.py
- ExampleSPSS.sav





Metascience



Reproducibility Project: Psychology

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Public

Reproducibility Project: Psychology

59

15

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Description: The RP:P is a large-scale collaborative research project investigating replicability in the psychological sciences. The Center for Open Science oversees its progress. The OSF is used as the project coordination site.

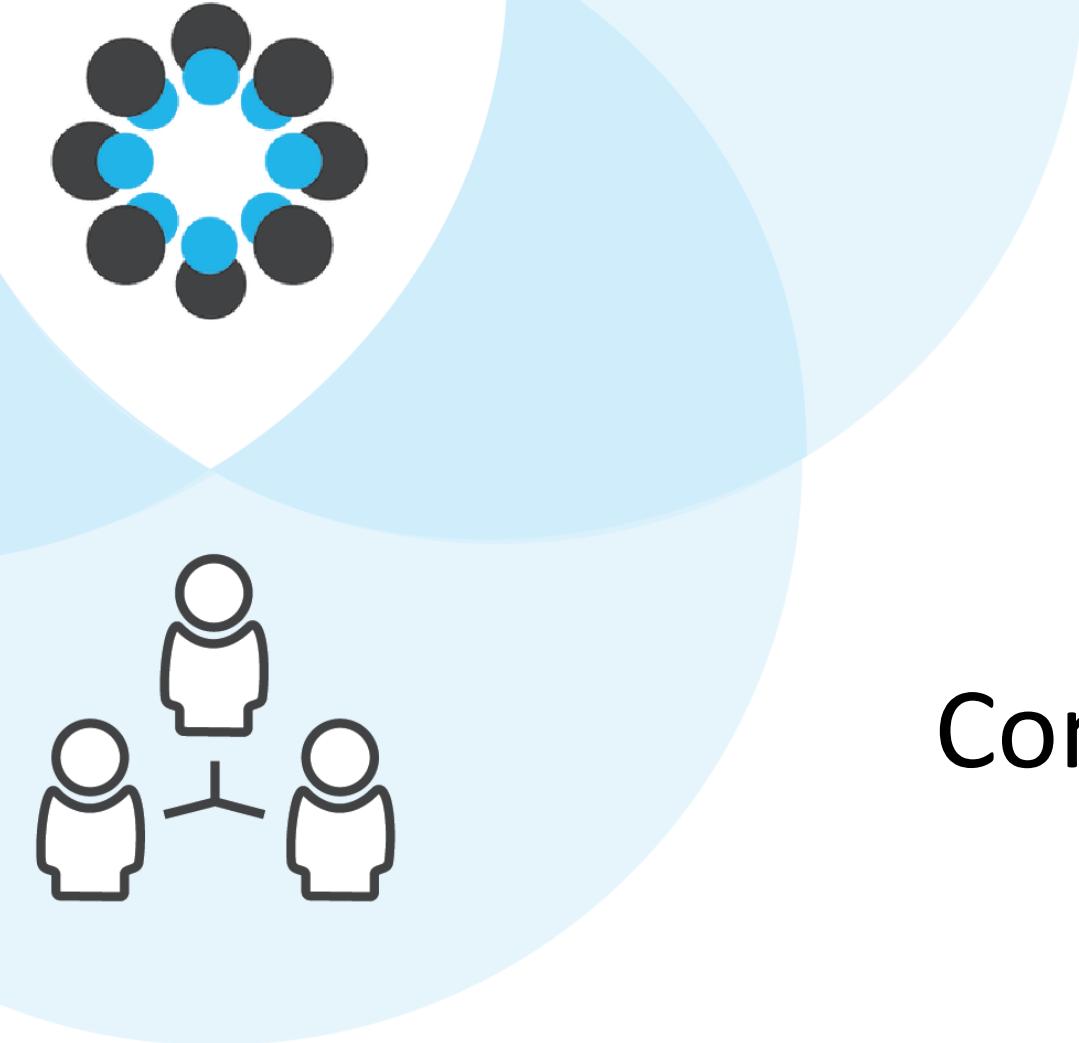
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REPRODUCIBILITY PROJECT Cancer Biology

The Reproducibility Project: Cancer Biology is a collaboration between the [Center for Open Science](#) and [Science Exchange](#) to independently replicate selected results from [50 papers in cancer biology](#). For each paper a Registered Report detailing the proposed experimental designs and protocols for the replications is peer reviewed and published prior to data

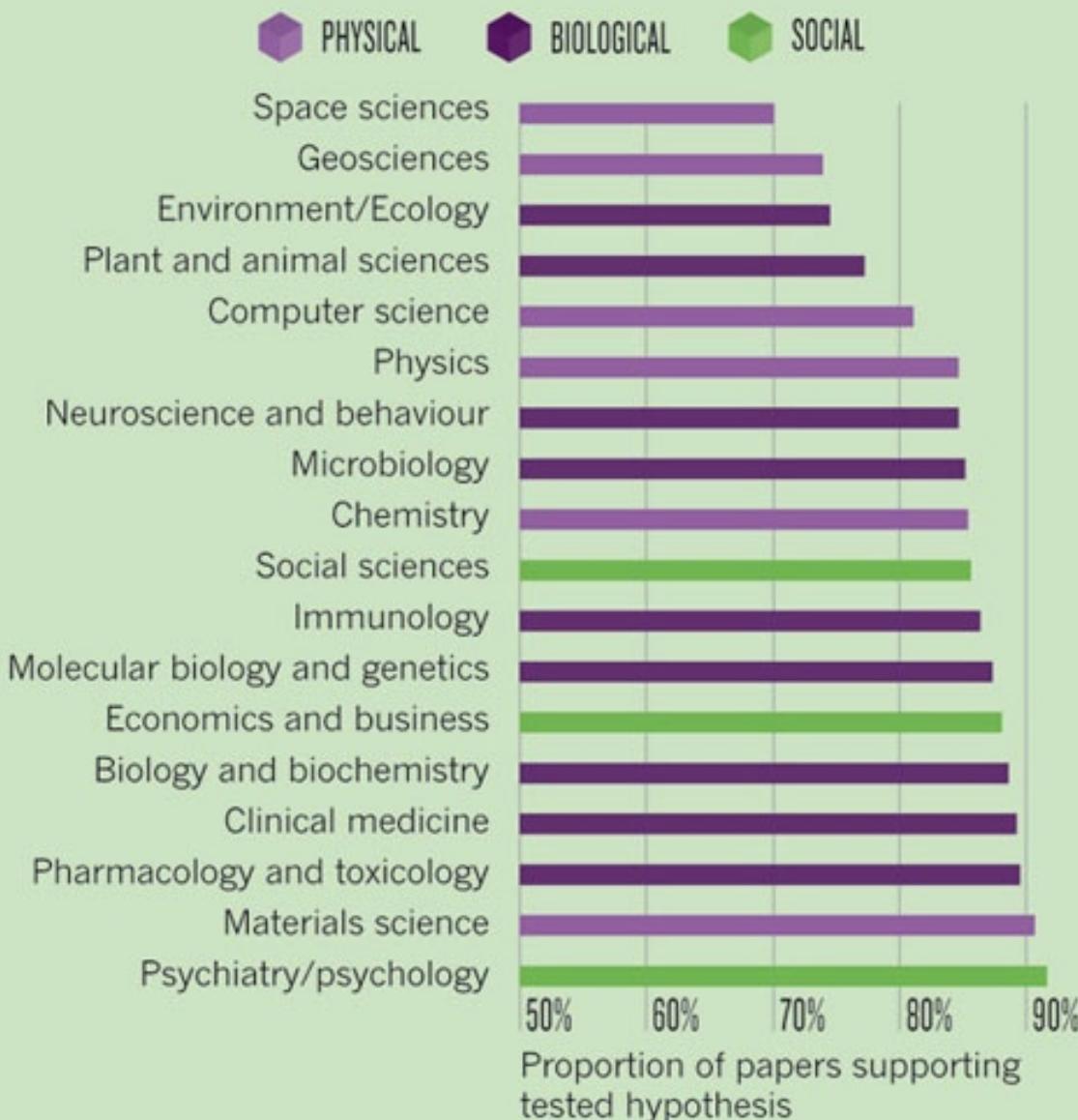




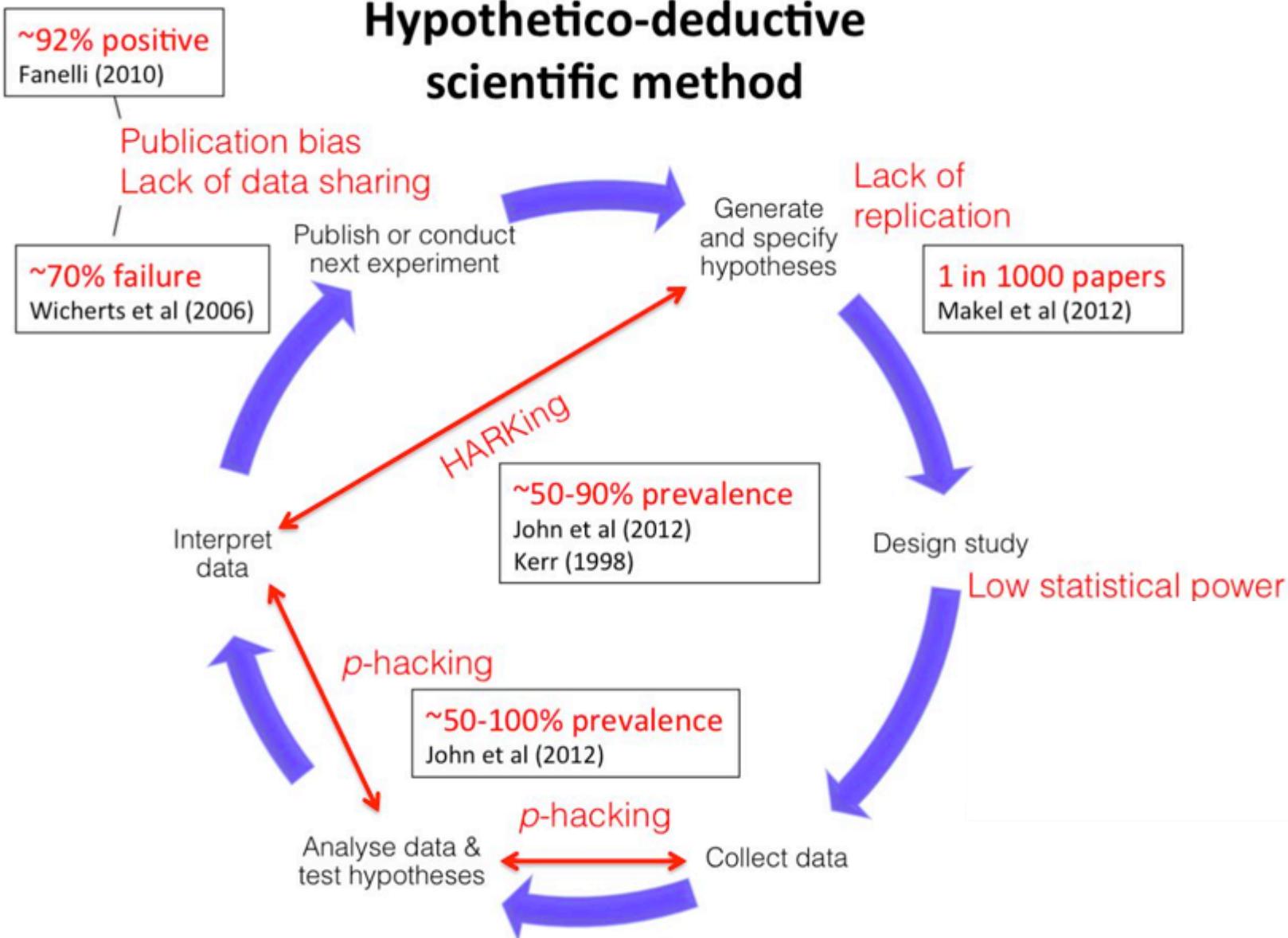
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ACCENTUATE THE POSITIVE

A literature analysis across disciplines reveals a tendency to publish only ‘positive’ studies — those that support the tested hypothesis. Psychiatry and psychology are the worst offenders.



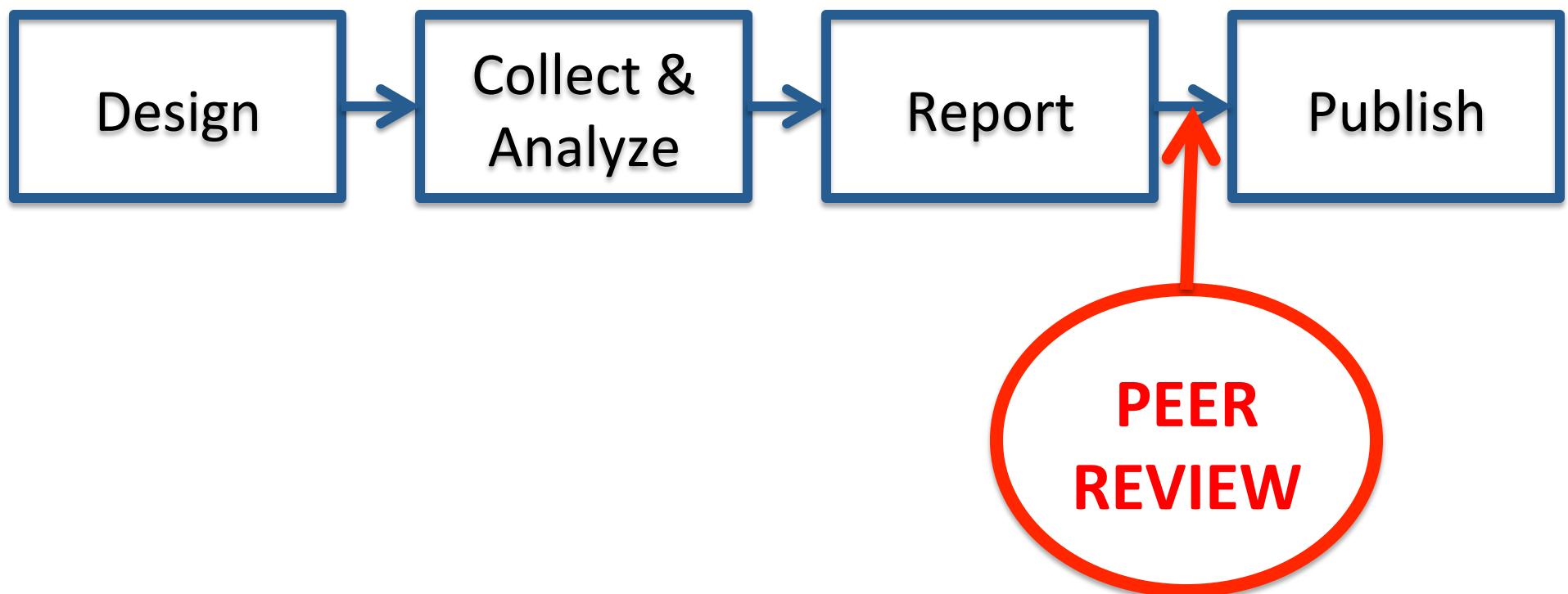
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Kai Jonas, Edward Miguel, Marcus Munafo, Brian A. Nosek, Brendan J. Nyhan, David Rand, Daniel J. Simons, Carien van Reekum, Andrew Sallans, Steven Rogelberg

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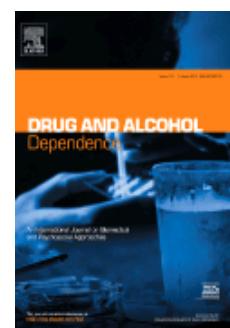
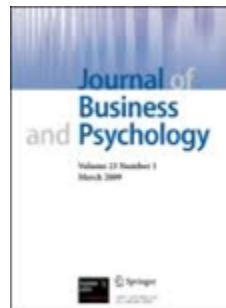
The screenshot shows the Editors' Update website. The header features the logo 'Editors' Update' with the tagline 'Your network for knowledge'. Below the header is a navigation menu with links to Home, About us, Short Communications, Digital Library, Archives, and a dropdown menu. A breadcrumb navigation bar indicates the current page is 'home > Issue 46 - March 2015'. The main content area displays an article by Professor Chris Chambers, dated 11 Mar 2015. The article title is 'How Cortex's Registered Reports initiative is making reform a reality'.

<http://osf.io/8mpji>

Who Publishes Registered Reports?



Neuroscience



eLIFE

(just to name a few)

See the full list and compare features: osf.io/8mpji

Badges to Acknowledge Open Practices

Making Behaviors Visible Promotes Adoption



<http://osf.io/tvyxz>

Badges to Acknowledge Open Practices



- Digitally-shareable data are publicly available on an open-access repository (e.g., university repository or one at www.re3data.org or www.databib.org)
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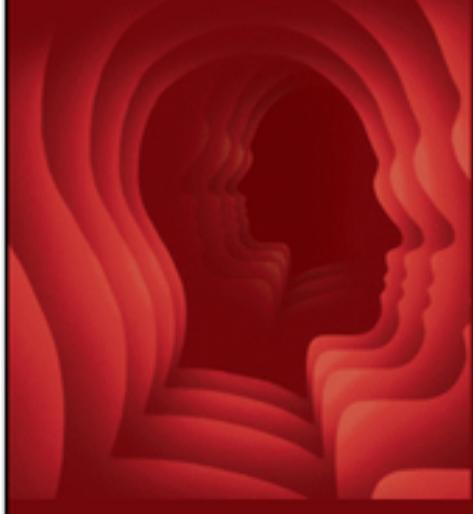


- A public date-time stamped registration is in an institutional registration system (e.g., [ClinicalTrials.gov](#), [Open Science Framework](#))
- Registration pre-dates realization of the outcomes
- Registered design and analysis plan corresponds directly to reported design and analysis
- Full disclosure of results following the registered plan

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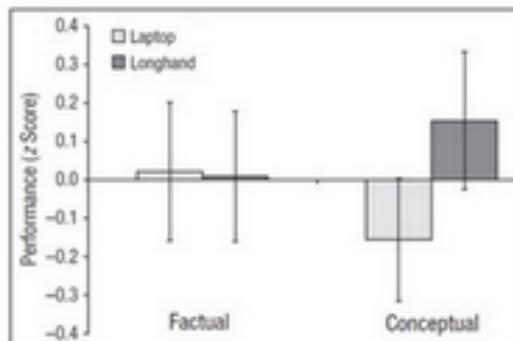
The links below take you to the journal via the APS website. If not already logged in, you will be redirected to log-in using your last name (Nosek) and Member ID (16341).

Call for Editor Nominations *Psychological Science in the Public Interest*



[The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking](#)

Pam A. Mueller and Daniel M. Oppenheimer



It's becoming more and more common for students to type their notes on laptops rather than writing them out in longhand. In the first of several studies, the authors examined the effects of laptop note taking by having participants take notes on a TED talk using a laptop computer or a notepad. Thirty minutes later, the participants answered factual-recall and conceptual-application questions about the lecture. Those who took notes on laptops performed worse on conceptual-application questions – but not on factual-recall questions. Follow-up studies indicated that although people with laptops take more notes, they tend to copy the information verbatim and therefore process the information less than do longhand note takers.

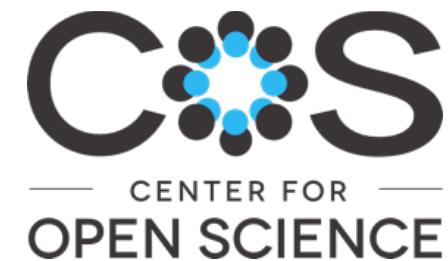
[Gratitude: A Tool for Reducing Economic Impatience](#)

David DeSteno, Ye Li, Leah Dickens, and Jennifer S. Lerner



It is well-known that people are generally impatient and prefer immediate rewards to future rewards. To examine whether certain emotions could reduce people's economic impatience, researchers asked participants to recall events that made them feel

Transparency and Openness Promotion (TOP) Guidelines



Transparency and Openness Promotion (TOP) Guidelines

Contributors: [George Alter](#), [George Banks](#), [Denny Borsboom](#), [Sara Bowman](#), [Steven Breckler](#), [Stuart Buck](#), [Chris Chambers](#), [Gilbert Chin](#), [Garret Christensen](#), [Monica Contestabile](#), [Allan Dafoe](#), [Jeremy Freese](#), [Rachel Glennerster](#), [Daniel Goroff](#), [Brad Hesse](#), [Macartan Humphreys](#), [John Ishiyama](#), [Dean Karlan](#), [Alan Kraut](#), [Arthur Lupia](#), [Patricia \("Patty"\) L. Mabry](#), [Temina Madon](#), [neil malhotra](#), [Evan Mayo-Wilson](#), [Marcia McNutt](#), [Edward Miguel](#), [Brian A. Nosek](#), [Elizabeth Levy Paluck](#), [Uri Simonsohn](#), [Courtney Soderberg](#), [Bobbie Spellman](#), [Joanne Tornow](#), [James Turitto](#), [Gary VandenBos](#), [Simine Vazire](#), [Eric-Jan Wagenmakers](#), [Rick K. Wilson](#), [Tal Yarkoni](#)

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Description: The TOP Guidelines provide templates for journal author guidelines that promote transparency and reproducibility practices.

<http://osf.io/9f6gx>

Questions?

sara@cos.io

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