

Achieving Open Science

Brian Nosek

University of Virginia -- Center for Open Science

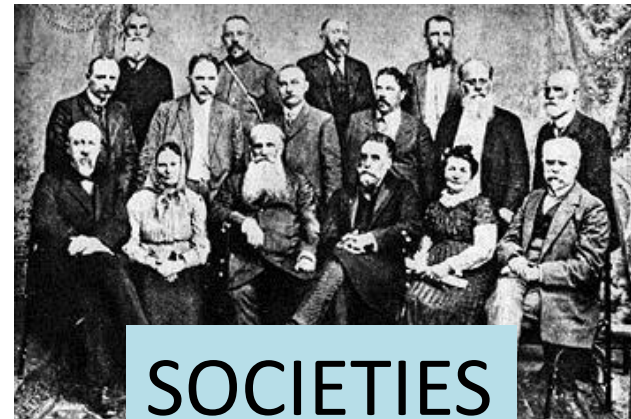
<http://briannosek.com/> -- <http://cos.io/>



JOHN TEMPLETON
FOUNDATION



Changing scientific culture is a coordination problem

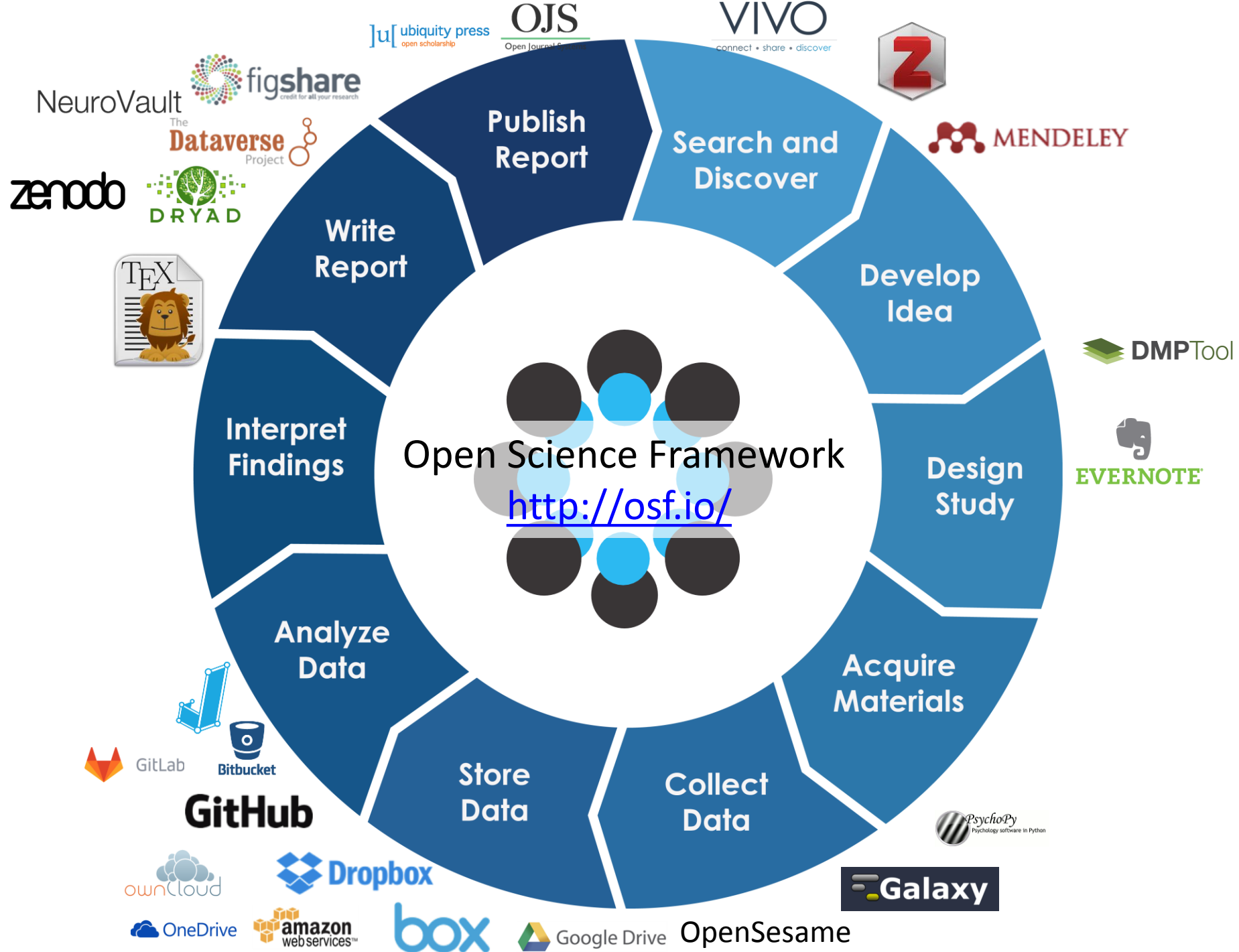


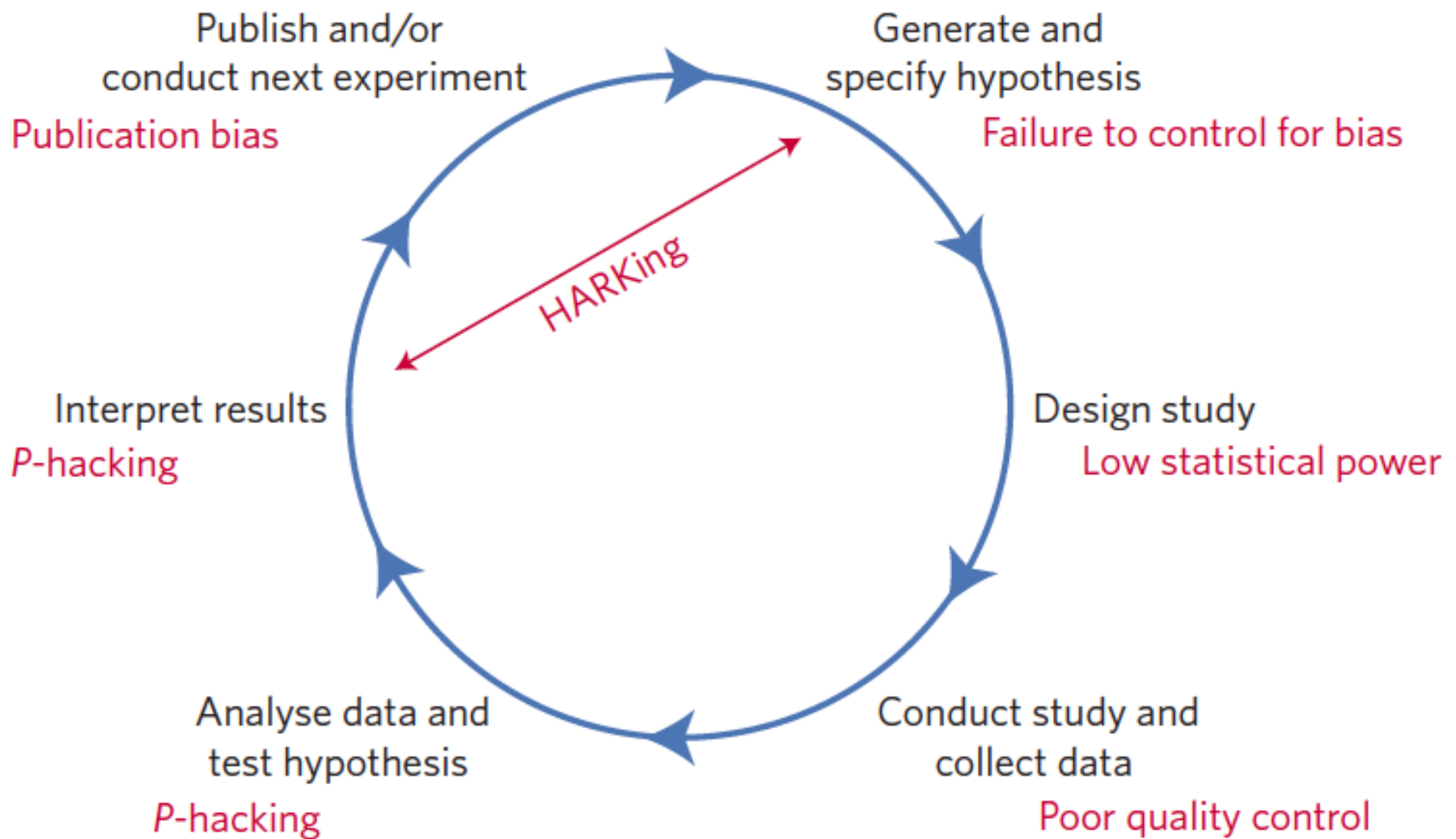
ecosystem

Technology to *enable* open

Training to *enact* open

Incentives to *embrace* open





Training

Example: Preregistration Challenge

<http://cos.io/prereg>



Scholarly Paper

<https://osf.io/2dxu5>

A screenshot of the OSFHOME preregistration form. The form is titled 'Study Information' and includes sections for 'Title (required)', 'Authors (required)', and 'Scripts'. The 'Title' section has a text input field and a 'Show Example' link. The 'Authors' section has a text input field with 'Brian A. Nosek' entered and an 'Add' button. The form also includes a 'Significance Statement' section.

Guided Workflow

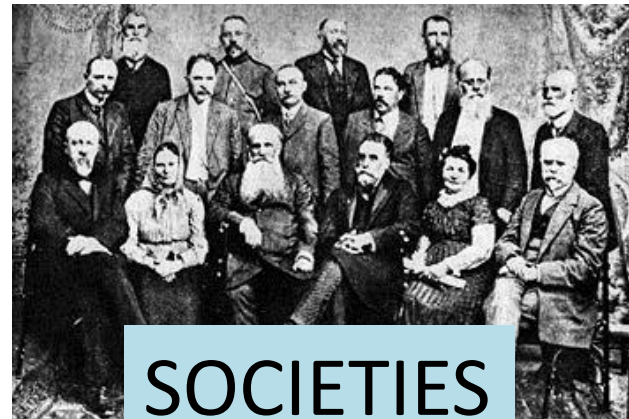
<http://osf.io/prereg>



Available Support

Help guides, consulting

Incentives



Incentives for
individual success are
focused on getting it
published, not
getting it right

Norms

Communality

Open sharing

Universalism

Evaluate research on own merit

Disinterestedness

Motivated by knowledge and discovery

Organized skepticism

Consider all new evidence, even against one's prior work

Quality

Counternorms

Secrecy

Closed

Particularism

Evaluate research by reputation

Self-interestedness

Treat science as a competition

Organized dogmatism

Invest career promoting one's own theories, findings

Quantity

University Incentives

Hiring, promotion, tenure



Liberals and Conservatives Rely on Different Sets of Moral Foundations

Jesse Graham, Jonathan Haidt, and Brian A. Nosek
University of Virginia

National differences in gender–science stereotypes predict national sex differences in science and math achievement

Brian A. Nosek^{a,1}, Frederick L. Smyth^a, N. Sriram^a, Nicole M. Lindner^a, Thierry Devos^b, Alfonso Ayala^c, Yoav Bar-Anan^{a,2}, Robin Bergh^d, Huajian Cai^a, Karen Gonsalkorale^e, Selin Kesebir^a, Norbert Maliszewski^g, Félix Neto^h, Eero Olliⁱ, Jaihyun Park^j, Konrad Schnabel^k, Kimihiro Shiomura^l, Bogdan Tudor Tulbure^m, Reinout W. Wiersⁿ, Mònika Somogyi^o, Nazar Akrami^d, Bo Ekehammar^d, Michelangelo Vianello^p, Mahzarin R. Banaji^q, and Anthony G. Greenwald^r

Scientific Utopia: I. Opening Scientific Communication

Brian A. Nosek

Department of Psychology, University of Virginia, Charlottesville, Virginia

Yoav Bar-Anan

Department of Psychology, Ben-Gurion University, Beer Sheva, Israel

Journals and Funders Incentives

Badges

Standards

Innovation in Publishing

Signals: Making Behaviors Visible Promotes Adoption



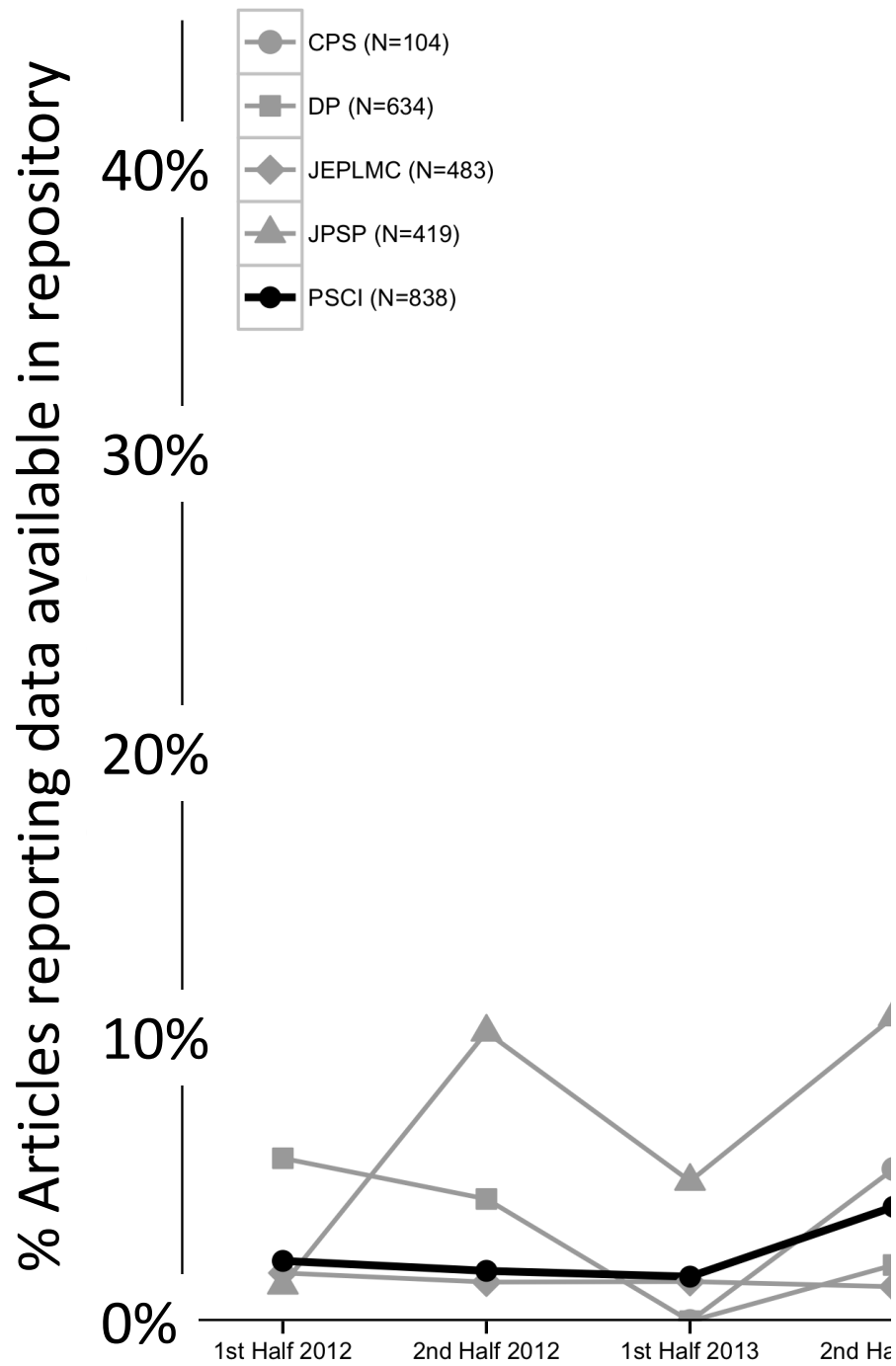
OPEN DATA



OPEN MATERIALS



PREREGISTERED



Promoting an open research culture

Author guidelines for journals could help to promote transparency, openness, and reproducibility

By **B. A. Nosek,* G. Alter, G. C. Banks, D. Borsboom, S. D. Bowman, S. J. Breckler, S. Buck, C. D. Chambers, G. Chin, G. Christensen, M. Contestabile, A. Dafoe, E. Eich, J. Freese, R. Glennerster, D. Goroff, D. P. Green, B. Hesse, M. Humphreys, J. Ishiyama, D. Karlan, A. Kraut, A. Lupia, P. Mabry, T. A. Madon, N. Malhotra, E. Mayo-Wilson, M. McNutt, E. Miguel, E. Levy Paluck, U. Simonsohn, C. Soderberg, B. A. Spellman, J. Turitto, G. VandenBos, S. Vazire, E. J. Wagenmakers, R. Wilson, T. Yarkoni**

Transparency, openness, and reproducibility are readily recognized as



<http://cos.io/top>

TOP Guidelines

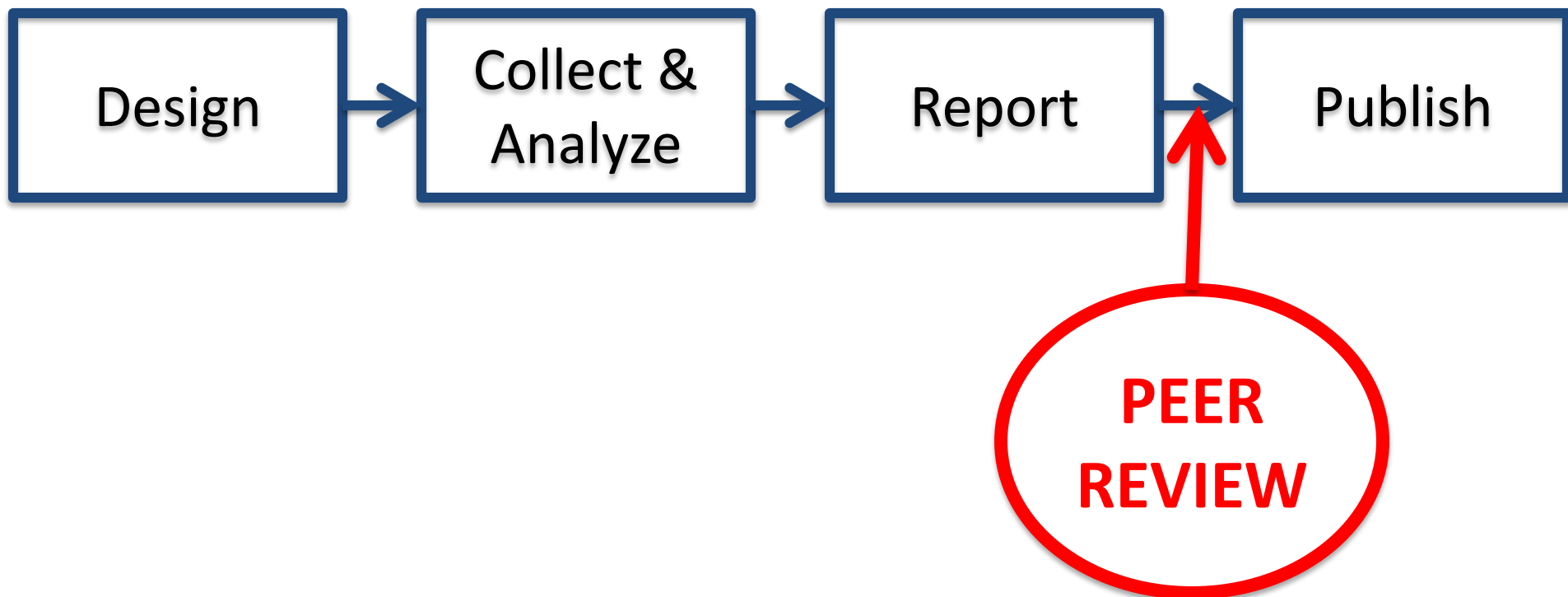
1. Data citation
2. Design transparency
3. Research materials transparency
4. Data transparency
5. Analytic methods (code) transparency
6. Preregistration of studies
7. Preregistration of analysis plans
8. Replication

Some TOP Signatory Organizations

- AAAS/Science
- American Academy of Neurology
- American Geophysical Union
- American Heart Association
- American Meteorological Society
- American Society for Cell Biology
- Association for Psychological Science
- Association for Research in Personality
- Association of Research Libraries
- Behavioral Science and Policy Association
- BioMed Central
- Committee on Publication Ethics
- Electrochemical Society
- Frontiers
- MDPI
- PeerJ
- Pensoft Publishers
- Public Library of Science
- The Royal Society
- Springer Nature
- Society for Personality and Social Psychology
- Society for a Science of Clinical Psychology
- Ubiquity Press
- Wiley

Registered Reports

<https://cos.io/rr/>



Society Incentives

Norms

Communality

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Quality

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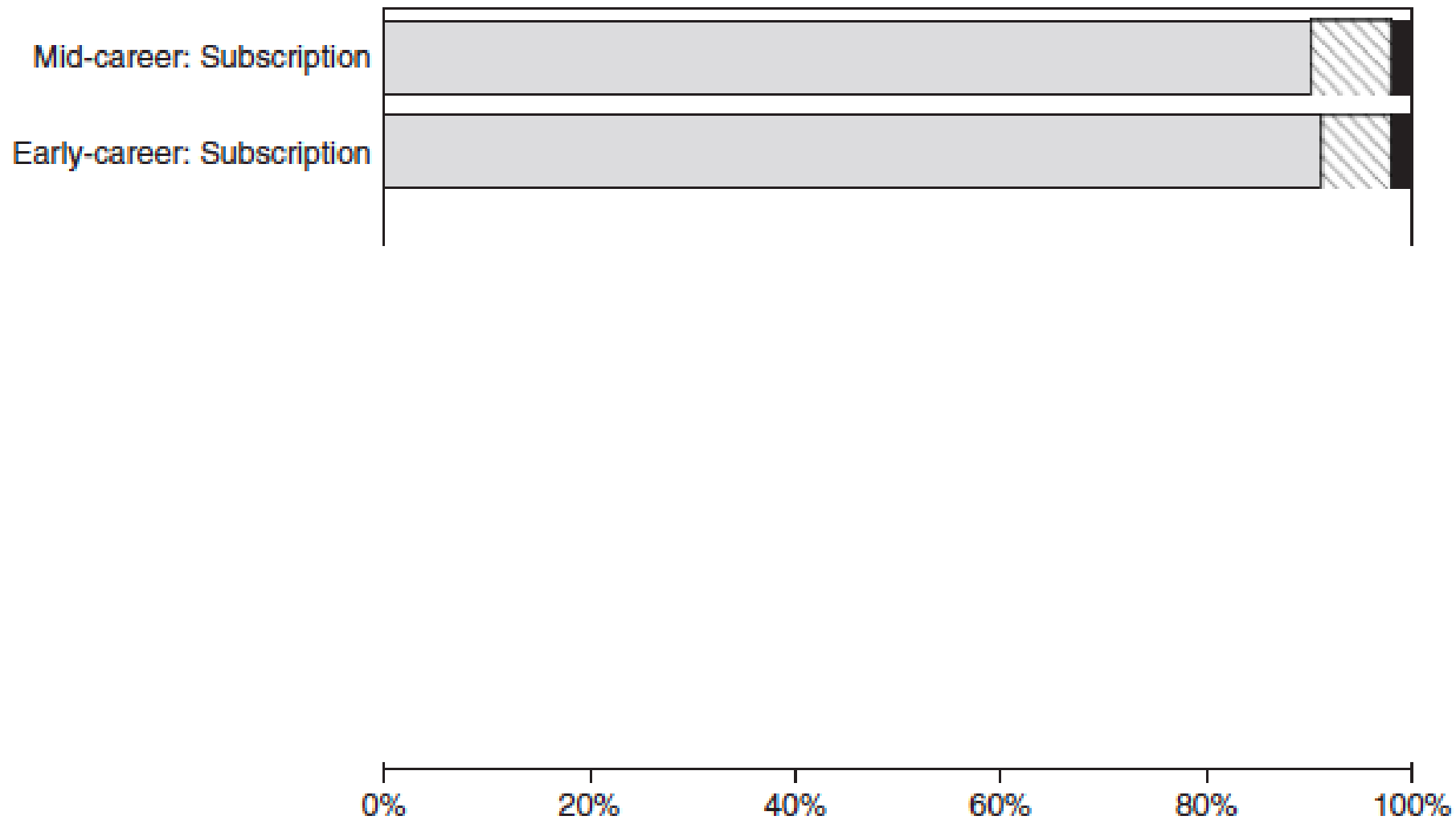


FIG. 3. Norm versus Counternorm Scores: Percent with Norm > Counternorm (dotted), Norm = Counternorm (striped), Norm < Counternorm (solid).

The Kindergartener's Guide to Improving Research

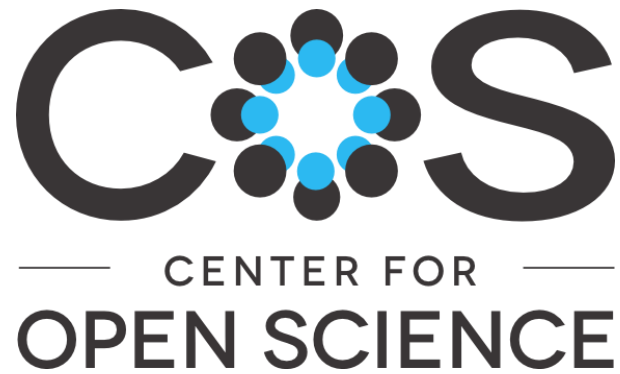


1. Show your work
2. Share

Technology to *enable* open

Training to *enact* open

Incentives to *embrace* open



COS Strategic Plan

<https://osf.io/x2w9h>

These slides

<https://osf.io/yjpv2/>

Take a picture

Barriers to Individual Change

1. Perceived norms (*Anderson, Martinson, & DeVries, 2007*)
2. Construal level (*Lieberman & Trope, 1999*)
3. Motivated reasoning (*Kunda, 1990*)
4. Minimal accountability (*Lerner & Tetlock, 1999*)
5. I am busy (*Me & You, 2017*)

IRATION

Context of Justification

Confirmation

Data independent

Hypothesis testing

p-values interpretable

Context of Discovery

Exploration

Data contingent

Hypothesis generating

p-values NOT interpretable

**Presenting exploratory as confirmatory increases
publishability at the cost of *credibility***

PREREG

Study 1



Study 2



Study 1



Preregistration Challenge

<http://cos.io/prereg>

☐ 01 The Challenge

☐ 02 How to Earn the Prize

☐ 03 Eligibility Requirements

☐ 04 FAQ

☐ 05 Eligible Journals for Publication

☐ 06 Review Process

☐ 07 Publication Help

☐ 08 Preregister without review

☐ 09 Departures from Preregistration

+  **Component Wiki Pages**

(coming soon)

Preregistration Challenge 1



PREREGISTRATION CHALLENGE



OSF = Free, open scholarly commons; <https://github.com/CenterForOpenScience>

Community Interfaces



NYU



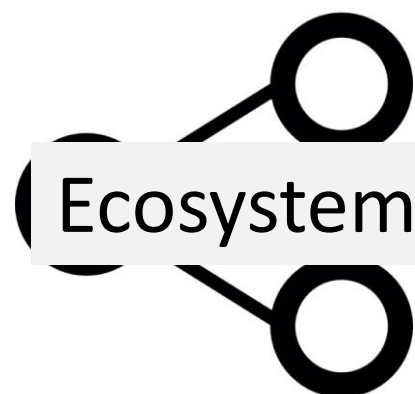
egap EVIDENCE
IN GOVERNANCE
AND POLITICS



RIDIE
Registry for International
Development Impact Evaluations

Interfaces

-  OSF **INSTITUTIONS**
-  OSF **PREPRINTS**
-  OSF **REGISTRIES**
-  OSF **COLLECTIONS**





http://osf.io

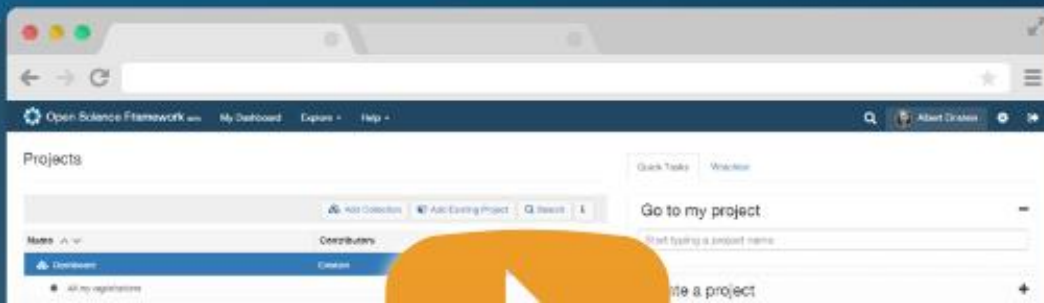


FREE AND OPEN SOURCE.

Full Name

Contact Email

Confirm Email



Open *Access*

Outcomes

Open *Data*

Content

Open *Workflows*

Process