Improving Openness and Reproducibility of Research

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Infrastructure
Community
Metascience

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

From the researcher’s perspective
<table>
<thead>
<tr>
<th>Norms</th>
<th>Counternorms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communality</strong></td>
<td><strong>Secrecy</strong></td>
</tr>
<tr>
<td>Open sharing</td>
<td>Closed</td>
</tr>
<tr>
<td><strong>Universalism</strong></td>
<td><strong>Particularism</strong></td>
</tr>
<tr>
<td>Evaluate research on own merit</td>
<td>Evaluate research by reputation</td>
</tr>
<tr>
<td><strong>Disinterestedness</strong></td>
<td><strong>Self-interestedness</strong></td>
</tr>
<tr>
<td>Motivated by knowledge and discovery</td>
<td>Treat science as a competition</td>
</tr>
<tr>
<td><strong>Organized skepticism</strong></td>
<td><strong>Organized dogmatism</strong></td>
</tr>
<tr>
<td>Consider all new evidence, even against one’s prior work</td>
<td>Invest career promoting one’s own theories, findings</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td><strong>Quantity</strong></td>
</tr>
</tbody>
</table>
FIG. 3. Norm versus Counternorm Scores: Percent with Norm > Counternorm (dotted), Norm = Counternorm (striped), Norm < Counternorm (solid).

Anderson, Martinson, & DeVries, 2007
Problems

Low power
Ignoring null results
Questionable research practices
Lack of replication

Disorganization
Loss of Materials and Data
Infrequent Sharing
Documentation
Curation
Preservation
Accessibility
Openness

From the institution’s perspective
Openness for Institutions

• Mission

Cornell is a private, Ivy League university and the land-grant university for New York State. Cornell’s mission is to discover, preserve, and disseminate knowledge; produce creative work; and promote a culture of broad inquiry throughout and beyond the Cornell community. Cornell also aims, through public service, to enhance the lives and livelihoods of our students, the people of New York, and others around the world.
Openness for Institutions

- Mission
- Discovery of own faculty activities
- Under-used repositories
- Evolving role for university library and librarians
- Subscription costs to buy back access to knowledge
- Evolving role for university presses
Openness

From the federal/funder perspective
Technology to *enable* change

Training to *enact* change

Incentives to *embrace* change
Open Science Framework

Project management with collaborators, project sharing with the public

http://osf.io/

The Open Science Framework (OSF) supports the entire research lifecycle: planning, execution, reporting, archiving, and discovery.
Analyze data
Collect data
Store data
Acquire materials
Design study
Develop idea
Write report
Publish report
Search and discover
Interpret findings
Reducing Implicit Racial Preferences: I. A Comparative Investigation of 17 Interventions

Contributors: Calvin Lai, Maddalena Marini, Steven A. Lehr, Carlo Cerruti, Jiyun Elizabeth L. Shin, Jennifer Joy-Gaba, Arnold K. Ho, Bethany Teachman, Sean Wojcik, Sena Koleva, Rebecca Christofides, Date Created: 17 Apr 2015

Collaboration
Documentation
Archiving
Investigating Variation in Replicability: A “Many Labs” Replication Project

ManyLabsManuscript.pdf

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Replication Details

Version | Date | User | Downloads
---------|------|------|---------
616      |      |      | 172579  
3907     |      |      | 388574  

Merges Public-Private Workflows
Incentives for Openness
Registration cannot be undone, and the archived content and files cannot be deleted after registration. Please be sure the project is complete and comprehensive for what you wish to register.

Type "register" if you are sure you want to continue
Persistent Citable Identifiers

Citation: osf.io/wx7ck

APA

MLA

Chicago
Connects Services Researchers Use
Project management with collaborators, project sharing with the public

The Open Science Framework (OSF) supports the entire research lifecycle: planning, execution, reporting, archiving, and discovery.

http://osf.io/

9,485 users + ~25/day

11,636 projects (2,572 public)

1,933 registrations
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1. Integrate library expertise across workflow
2. Remake academic publishing as an academic enterprise
ecosystem
http://cos.io/

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