

Workshop

Reproducible Scientometrics Research:
Open Data, Code, and Education

Wuhan, Oct 17, 2017

ISSI 2017

Welcome

On behalf of the workshop organizers: Sybille Hinze, Jason Rollins, Jesper Schneider, Theresa Velden, Ludo Waltman (in absentia: Katy Börner & Andrea Scharnhorst)

Workshop Goal: Identify challenges to the reproducibility of research in the field of scientometrics and infometrics and key actions to improve reproducibility

Agenda

1:30 - 3:00 PM Presentations & Discussion

3:00 - 3:30 PM Coffee Break (*sponsored by Clarivate Analytics*)

3:30 - 4:30 PM Discussion Groups

4:30 - 5:00 PM Plenary: Discussion & Conclusion

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3:30 - 4:30 PM Discussion Groups

- Data
- Methods (Software, Statistical Analysis)
- Interpretation & Knowledge Claims

4:30 - 5:00 PM Plenary Discussion & Conclusion

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4:30 - 5:00 PM Plenary (chaired by: Sybille Hinze)

- Discussion: Key Challenges to Reproducibility in Scientometrics & Key Actions
- Conclusion

Introduction to Workshop

Terminology & Motivation

Sybille Hinze & Theresa Velden

Terminology & Concepts

- Scope of reproducibility -

A. **Technical reproducibility** → *verification of result*

- *Can the result be repeated with the given procedure?*
- *Level of re-use affects visibility of issues with exact replicability*

B. **Conceptual reproducibility** → *robustness of interpretation*

- *Can the knowledge claim be corroborated by an alternative approach?*
- *Level of re-use & interdependency and intensity of research affect visibility of issues with conceptual replicability*

When is irreproducibility
problematic?

Reproducibility 'Crisis'

= Concern about reliability of published research, in particular in biomedicine and psychology

> 50% of studies published in preclinical research not reproducible (equivalent to \$ 28 billion research investment)

Freedman et al., PLOS Biology, 2015

Replication study of 100 studies found only 36% of significant results, and largely reduced effect sizes.

Open Science Collaboration, Science 349(6251), 2015

Reproducibility 'Crisis'

Practices undermining reproducibility

*robustness of a knowledge claim
(conceptual reproducibility)*

*correctness of a result
(exact reproducibility)*

fraud

error

**questionable
methods**

**overselling
(interpretation)**

publication bias



Reproducibility 'Crisis'

Proposed ***open science*** measures

- Pre-registration of trials (quality control of methods and study design, address publication bias)
- Open code/scripts (quality control of methods & implementation)
- Data sharing (quality control of data analysis & interpretation)
- Open peer-review (quality control of methods & interpretation)
- ...

Workshop Motivation

Issues vary with the specific epistemic practices in a field - how about scientometrics ?

Questions for this Workshop

- What threats to the reliability of scientific knowledge in scientometrics exist & why bother?
- Should we be more concerned about exact or conceptual reproducibility? (Why?)
- Through what measures can these threats be addressed?

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1:30 - 3:00 PM Presentations & Discussion

1. Introduction (Theresa Velden & Sybille Hinze)
2. Reproducibility in Scientometrics - Data Enclaves, Open Code, and Open Education (Katy Börner - video)
3. Reproducibility in Scientometrics Through Quality Assurance (Sybille Hinze)
4. A Vendor's View on Reproducibility - Datasets, Tools, & Partnerships (Jason Rollins)
5. Reproducibility in Scientometrics - A Journal Editor's Perspective (Ludo Waltman)
6. Reproducibility - Principles and Challenges (Jesper Schneider)
7. Reproducibility & the Performativity of Methods (Theresa Velden)