

Scientific Authorship : Norms, Practices and Ethics

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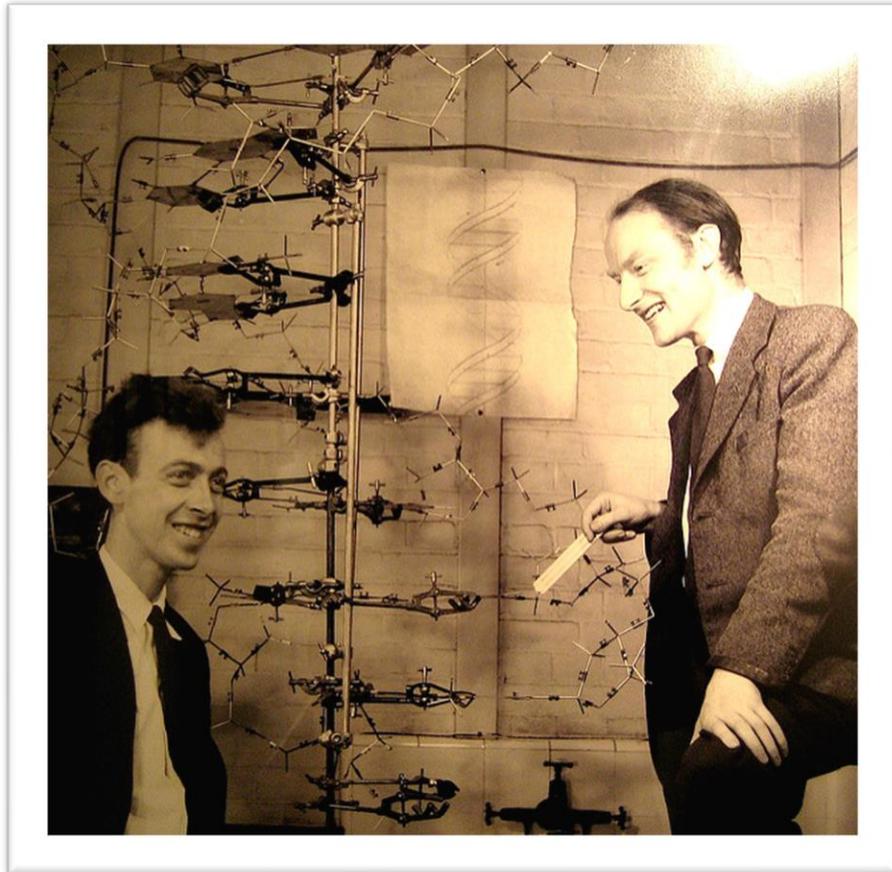
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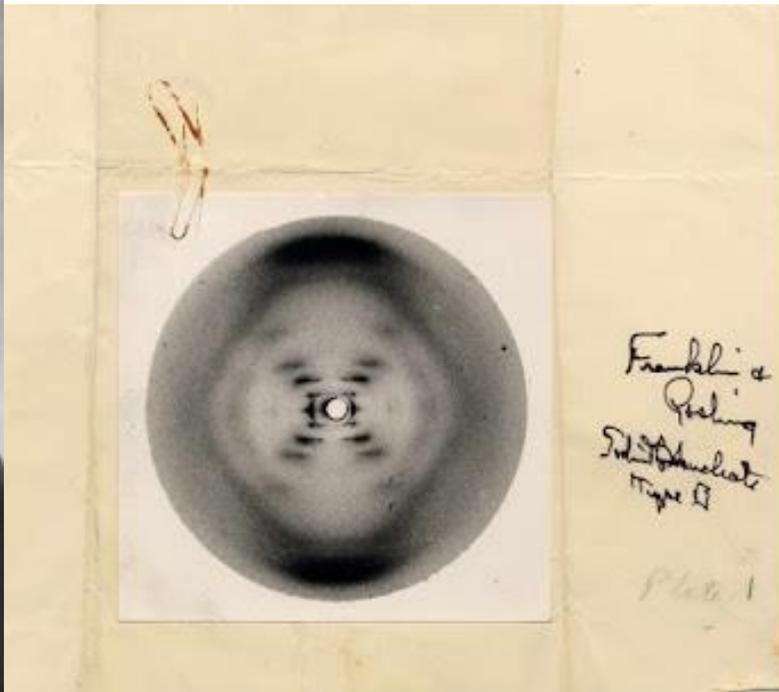
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Discovery of DNA



- In 1953, James Watson and Francis Crick published “Molecular Structure of Nucleic Acids; a Structure for Deoxyribose Nucleic Acid” in the journal *Nature*.
- Watson and Crick are awarded Nobel Prize in 1962.

Discovery of DNA

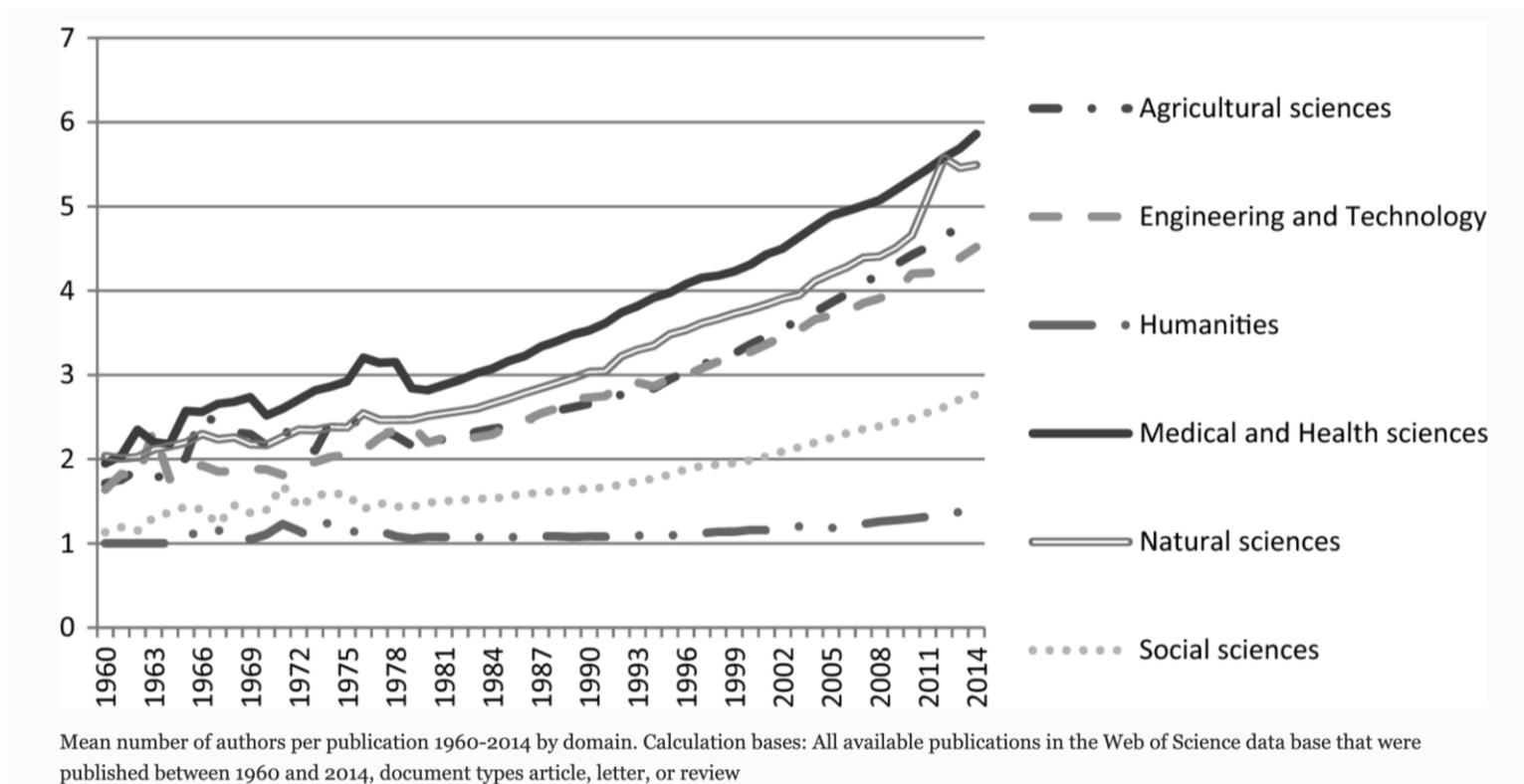


- Rosalind Franklin's unpublished experimental work was used without her knowledge.
- This work includes measurements of the repeating DNA unit and X-ray diffraction data showing the helical structure.

Outline

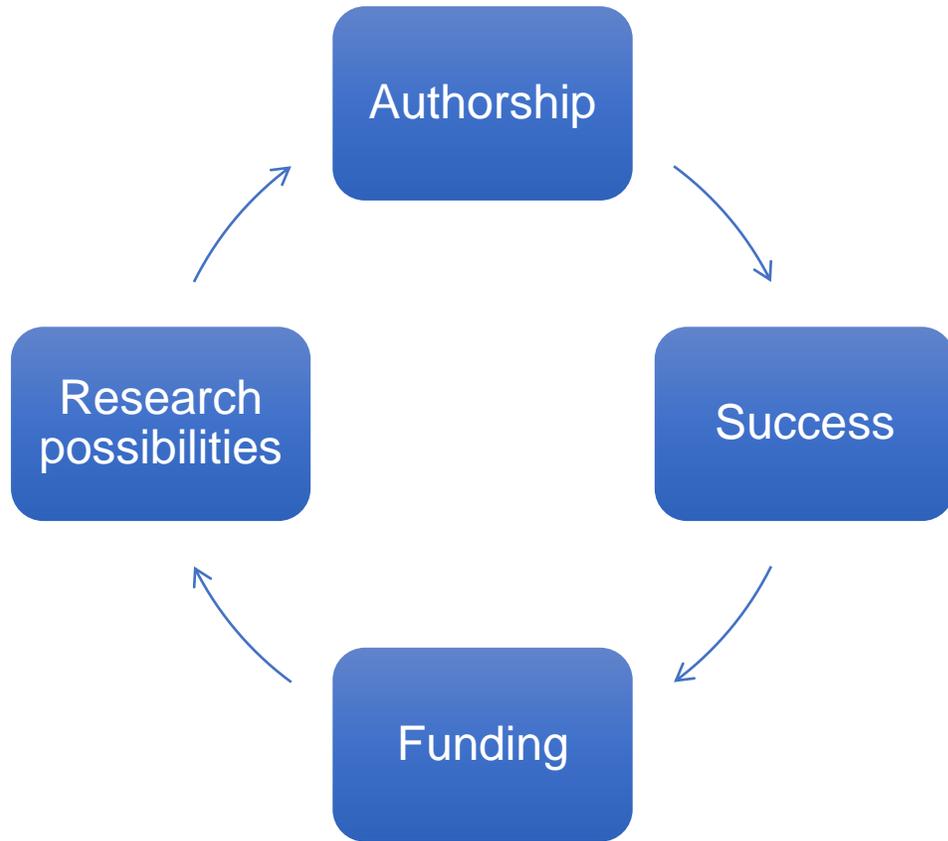
1. Context of Academic Publishing
2. Definitions, Policies and Norms
3. Authorship in Practice (Surveys)
 - Journals vs Practices
 - Disagreements and Unethical Behavior
 - Authorship Climate
4. Developing Best Practices

Rise in Collaboration 1960-2014



Johann, David, and Sabrina Jasmin Mayer. "The Perception of Scientific Authorship Across Domains." *Minerva* 57, no. 2 (June 1, 2019): 175–96. <https://doi.org/10.1007/s11024-018-9363-3>.

Why is authorship important to researchers?



- Matthew effect
- Competition and tension
- Systemic justice issues

Authorship in *Health Sciences*

- Health Science journals define authorship using the International Committee of Medical Journal Editors (ICMJE) criteria:
 1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
 2. Drafting the work or revising it critically for important intellectual content; AND
 3. Final approval of the version to be published; AND
 4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.



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Authorship in Social Sciences

- Approximately half of social science journals do not have definitions (Chang, 2019).
- Mentors should communicate normative authorship practices (Bebeau and Monson, 2011).
- Many social science journals(32.9%) have integrated the ICMJE authorship criteria.



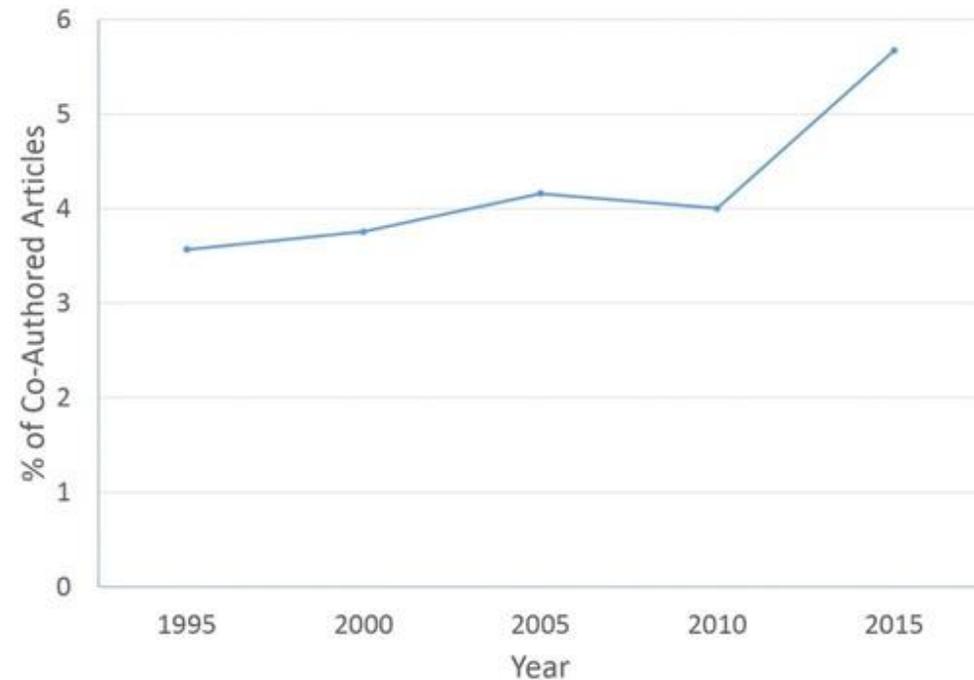
Chang, Yu-Wei. "Definition of Authorship in Social Science Journals." *Scientometrics* 118, no. 2 (February 1, 2019): 563–85.

<https://doi.org/10.1007/s11192-018-2986-1>.

Bebeau, Muriel J., and Verna Monson. "Authorship and Publication Practices in the Social Sciences: Historical Reflections on Current Practices." *Science and Engineering Ethics* 17, no. 2 (June 1, 2011): 365–88. <https://doi.org/10.1007/s11948-011-9280-4>.

Authorship in Humanities

- Most publications include a single author.
 - Leane (2017) :co-authorship in literary studies *in atypical* (about 4%).
- Including a supervisor as co-author is often perceived as unethical.



Leane, Elizabeth, Lisa Fletcher, and Saurabh Garg. "Co-Authorship Trends in English Literary Studies, 1995–2015." *Studies in Higher Education* 44, no. 4 (April 3, 2019): 786–98.

<https://doi.org/10.1080/03075079.2017.1405256>.

Proliferation of Definitions



Authorship Definitions

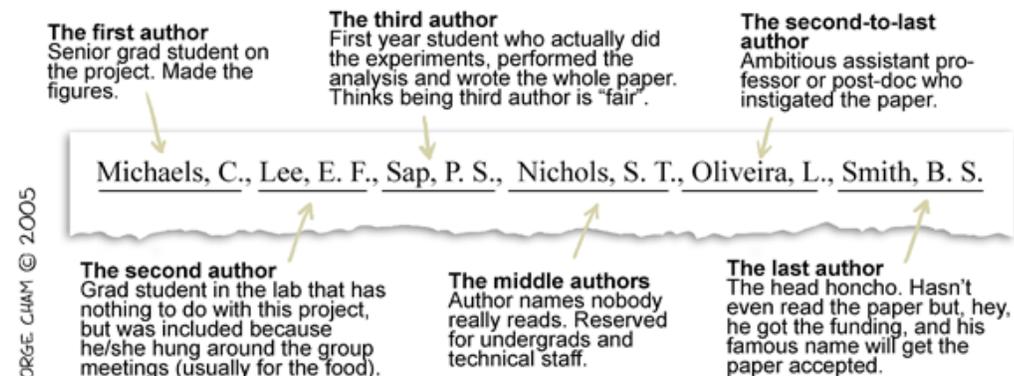
- Authorship definitions include **substantial contributions** to the reported work and agreement to be **accountable for these contributions**.



Unethical Authorship Practices

- Unethical authorship generally includes authorship practices that do not respect authorship criteria.
 - Gift authorship
 - an author who has not contributed significantly
 - Wislar (2011) 17.6% of articles in N=630
 - Ghost authorship
 - an author who has contributed but is not names on the paper
 - Wislar (2011) 7.9% of articles in N=630
- Unfair authorship distribution/order
 - Distribution process that is *unfair*
 - Order that doesn't represent importance of contribution

THE AUTHOR LIST: GIVING CREDIT WHERE CREDIT IS DUE



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Wislar JS, Flanagan A, Fontanarosa PB, DeAngelis CD. 2011. Honorary and ghost authorship in high impact biomedical journals: a cross sectional survey. *BMJ* 343:d6128.

Authorship Ordering Norms

- Biomedical :
 - Decreasing order of contribution with senior author last
 - Partial alphabetical order
- Social Sciences
 - Decreasing order of contribution
 - Equal contribution
 - Alphabetical order
- Mathematics:
 - Alphabetical order

Survey Hesselman et al (2021)

- Goal: Empirically examine the relationship between authorship regulations in journal policies, the disciplinary variance in authorship practice.
- Method
 - Analyzed data from the Scientist Survey of the German Center for Higher Education collected in 2019 (more than 130 institutions)
 - Sample included all disciplines

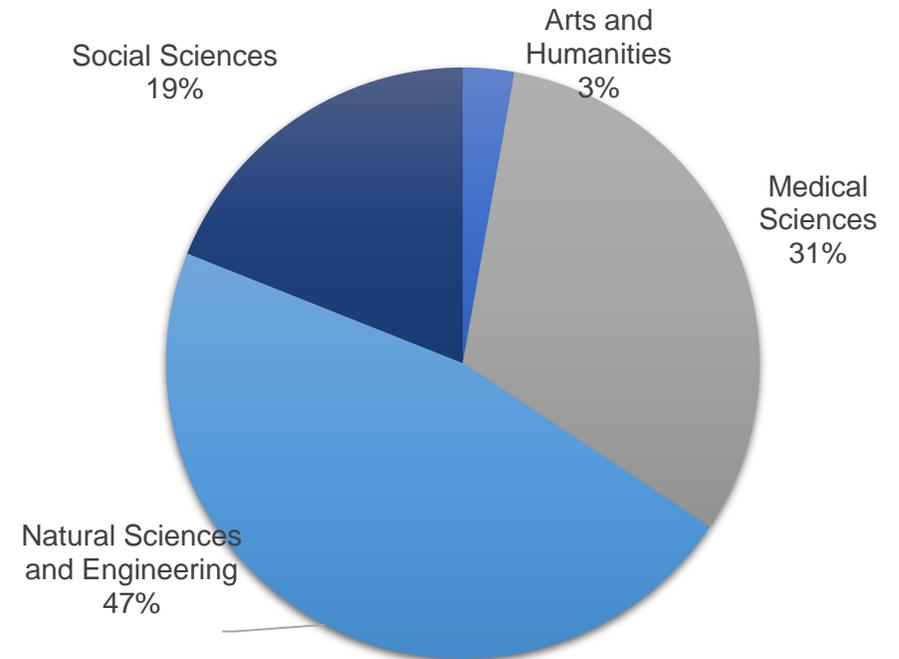


Survey Hesselman et al (2021)

- Results
 - 56.6% of journals address authorship.
 - Only 33% of participants indicated that journal policies are relevant for negotiating authorship.
 - Significant disciplinary differences are related to
 - Relevance of assigned activities.
 - Empirically oriented research is related to more expansive authorship definitions compared to theoretical research.
 - Life sciences, natural sciences and engineering all have more expansive definitions of authorship than the social sciences and humanities.

Survey Smith et al (2020)

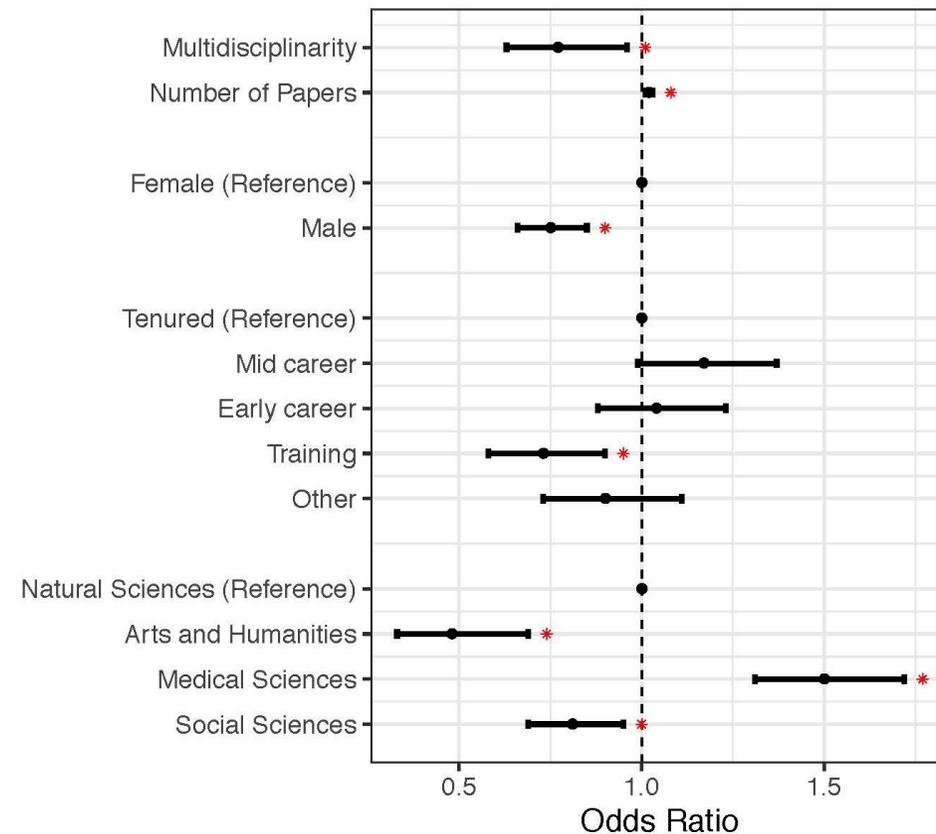
- Goals
 - Analyze context related to authorship disagreements
 - Evaluate the relationship between authorship disagreements and misbehavior
- Methods
 - Sample (N=6,697) researchers who published in English articles collaborative teams



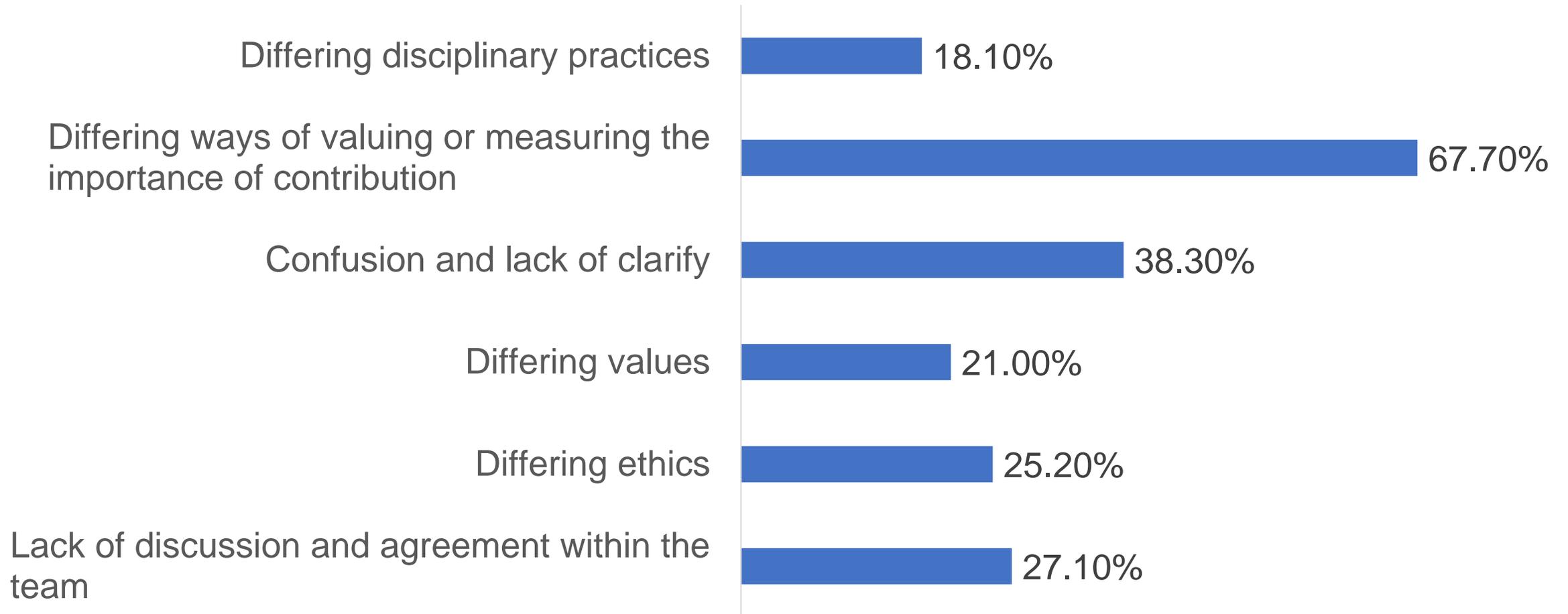
Smith, E., Williams-Jones, B., Master, Z., Larivière, V., Sugimoto, C. R., Paul-Hus, A., Shi, M., & Resnik, D. B. (2020). Misconduct and Misbehavior Related to Authorship Disagreements in Collaborative Science. *Science and Engineering Ethics*, 26(4), Article 4. Scopus. <https://doi.org/10.1007/s11948-019-00112-4>

Results

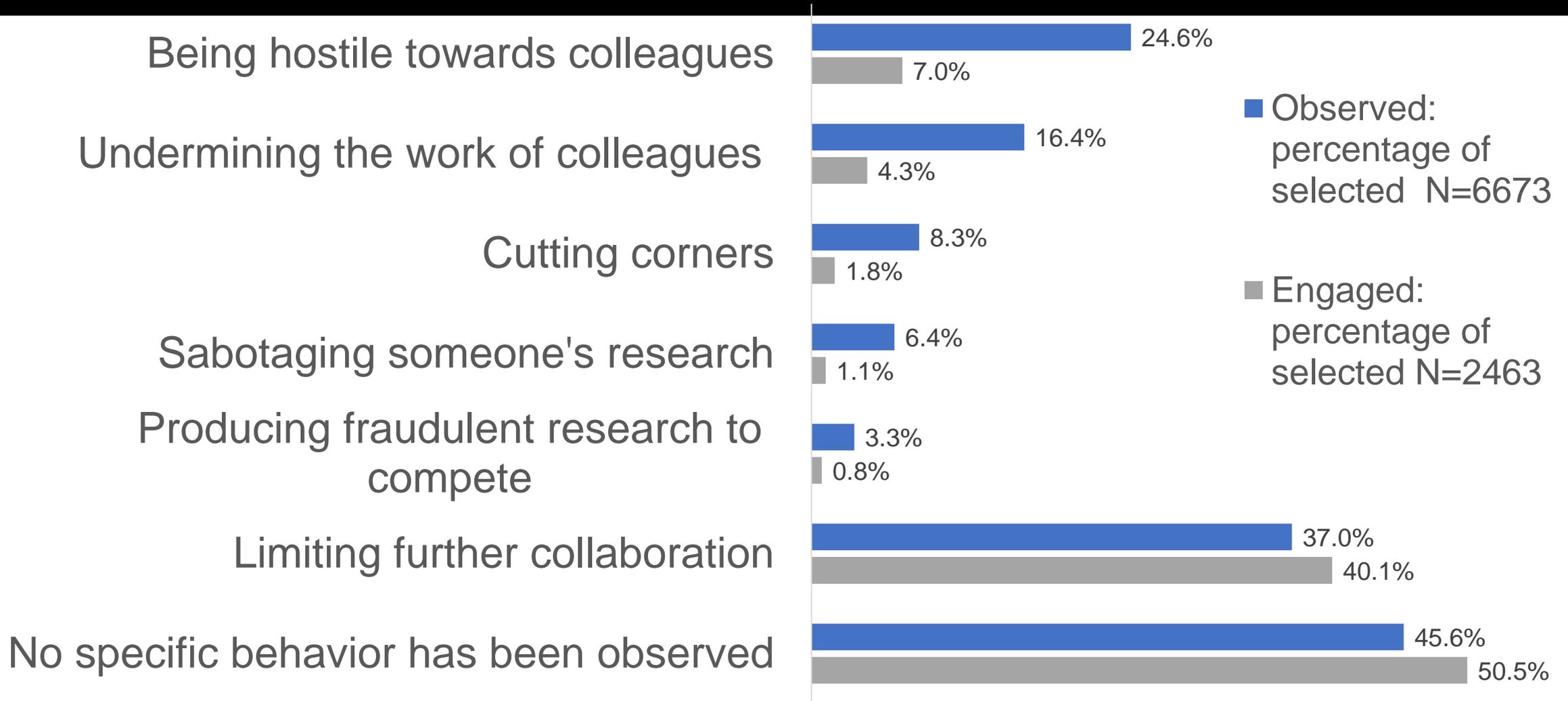
- Disagreements rates
 - 46.6% naming disagreements
 - 37.9% ordering disagreements
- More likely to be in disagreements:
 - Women
 - Medical Fields
- Less likely to be in disagreements:
 - Multidisciplinary teams
 - Training



Factors Contributed to Naming Disagreements (N=3096)



Misbehaviors Resulting from Disagreements



Douglas et al (2022)

- Goal
 - Assess perceptions of the “authorship climate” using three different types of justice related to authorship decisions.
 - procedural
 - informational
 - distributive
- Method
 - Sample includes U.S researchers in biology, economics, physics, or psychology (N=3,531)
 - Includes doctoral students, post-doctoral students and assistant professors



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Douglas, H. M., K. C. Elliott, I. H. Settles, G. M. Montgomery, T. Davis, L. Nadolsky, and K. S. Cheruvilil. 2022. Authorship Climate: A New Tool for Studying Ethical Issues in Authorship. *Accountability in Research*. Taylor & Francis: doi: [10.1080/08989621.2022.2140587](https://doi.org/10.1080/08989621.2022.2140587).

Douglas et al (2022)

Results

- Authorship climate was moderately positive.
- The number of marginalized identities is related to a decrease in perceptions of justices.

Authorship Climate

- Individuals with more power (seniority) will perceive a more positive climate experience regarding authorship (Douglas et al. 2022).
- Junior Scholars who collaborate with high-achieving people will increase their IF and are more likely to be successful (li et al 2019, Zhao 2021).

Looking Beyond Policies

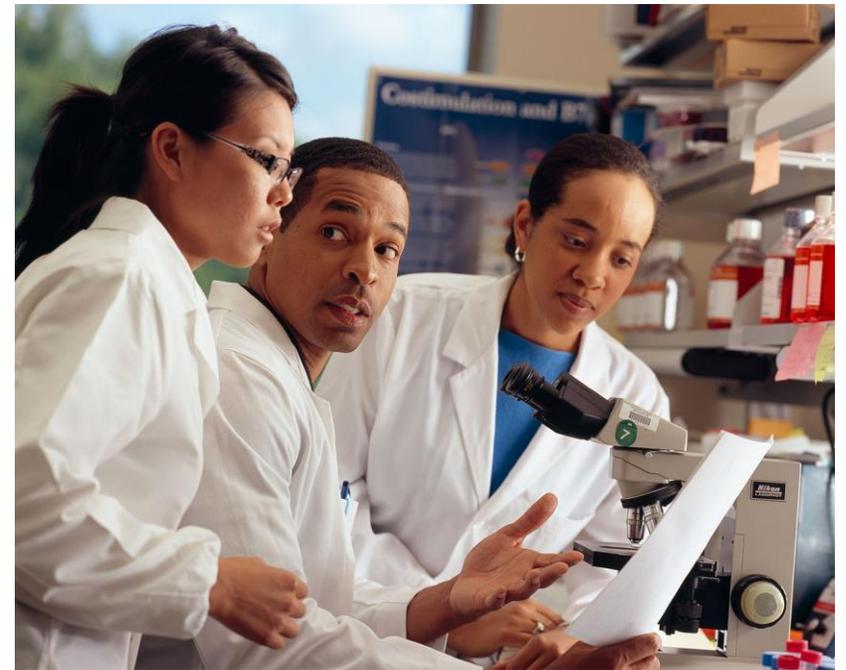
- Policies do not reflect the diversity of practices in research.
- Authorship discussions remain challenging.
- Best practices have been developed to assist researchers.



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Best Practices for Authorship Distribution

- Step 1: Outline Roles
- Step 2: Evaluate Relative Contribution
- Step 3: Determine Authorship Order
- Step 4: Continuous Dialogue
- Step 5 : Final Decision
- Step 6: Draft a Declaration of Contribution and Authorship Order



Smith, E., and Z. Master. 2017. Best Practice to Order Authors in Multi/Interdisciplinary Health Sciences Research Publications. *Accountability in Research* 24(4): 243–267. doi: [10.1080/08989621.2017.1287567](https://doi.org/10.1080/08989621.2017.1287567).

Contributorship Taxonomy	Name or Contributors	Relative importance of a Task
Conception	A,C	***
Methology	A,B	*
Software	A	*
Analysis	A,C	**
Experimentation	NA	NA
Data Collection	A,B,D,E,	*
Ressources	C	**
Data Curation	B	*
Writing - original draft	A	**

Order: A, B, D, E, C

Declaration: The authors are named in decreasing order of contribution. The senior researcher is named last.

What can be done?

Authorship climate is influenced :

Structural components

- specifying roles
- using existing policies

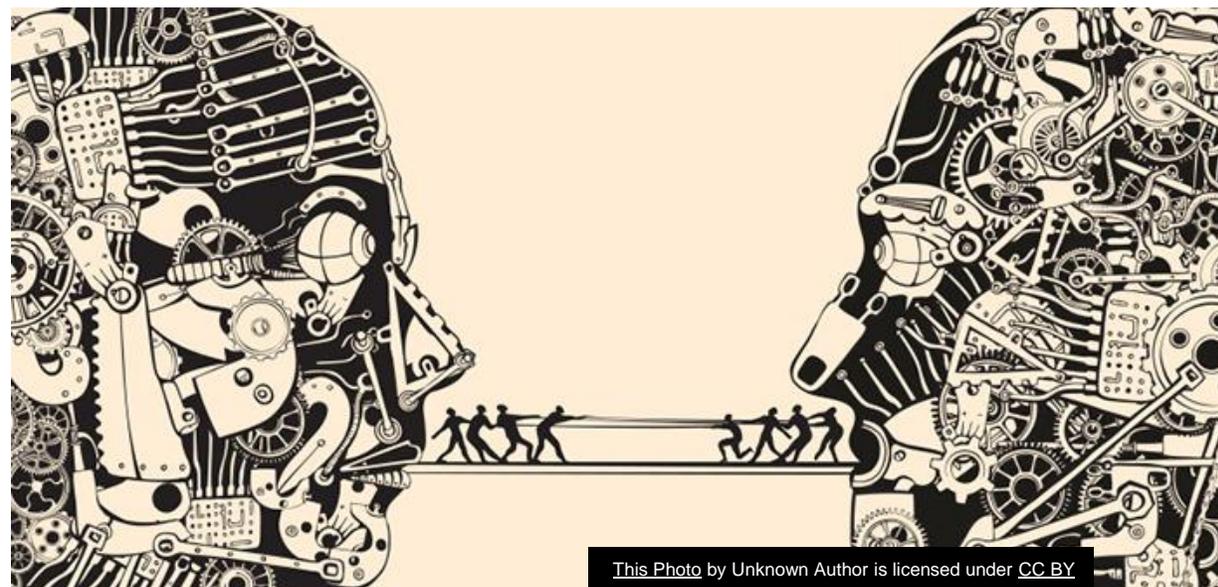
Cultural components

- efforts to increase trust
- reduce power differential
- conflict management (Cheruvilil et al. 2014).



Conclusion

- Authorship distribution guidance was created with the idea of safeguarding the integrity of science.
- Practical realities of science are much more complex and diverse than policies.
- Best practices may help assist researchers but development of intra-team processes are needed to facilitate fair ethical disagreements regarding authorship.



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