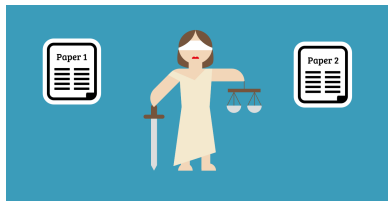


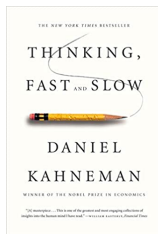
Anonymity in Peer Review



Anna Rogers, University of Copenhagen

The heuristic mechanism

"This is the essence of intuitive heuristics: when faced with a difficult question, we often answer an easier one instead, usually without noticing the substitution."



Social bias in peer review

Difficult question:
Is this paper good?



Easy question:

Is the paper by people
who are likely to do good
research?

Thought experiment: imagine a “professor”

Forbes

Mar 27, 2019, 07:34am EDT | 2,372 views

The 3 'Godfathers' Of AI Have Won The Prestigious \$1M Turing Prize



Sam Shoad Former Staff

AI & Big Data

I cover tech in Europe.

 This article is more than 2 years old.



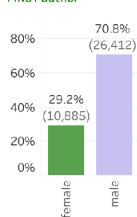
Computer scientist Yoshua Bengio. YOUTUBE/LUCIDWORKS

Gender in authorship (ACL anthology)

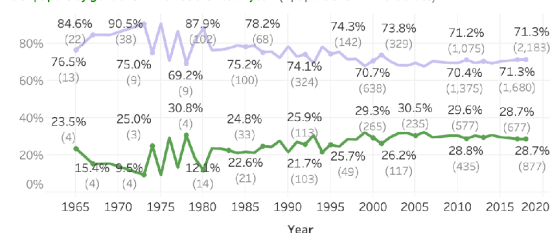
Kevin B.
Cohen, Karèn
Fort, Margot
Mieskes,
Aurèlie
Névéol, Anna
Rogers

Anonymity

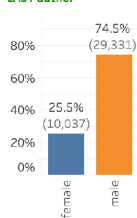
% papers by gender of
FIRST author



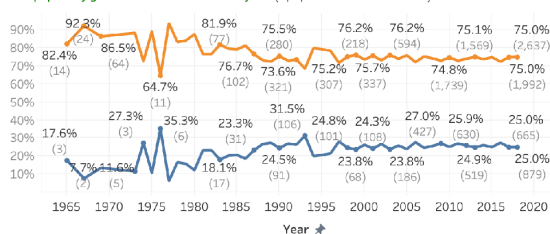
% of papers by gender of FIRST author each year (#papers shown in brackets)



% papers by gender of
LAST author



% of papers by gender of LAST author each year (#papers shown in brackets)



*

*Mohammad, S. M. 2020. Gender Gap in Natural Language Processing Research: Disparities in Authorship and Citations. <https://www.aclweb.org/anthology/2020.acl-main.702>.

The effects of social bias

Reviewers may fall prey to biases:

- in favor of established researchers
- in favor of established labs/institutions
- in favor of the wealthy nations (where the established labs/institutions/researchers are concentrated)
- against marginalized communities (gender, race, LGBTQ...)

Evidence: reputation bias

12 papers were re-submitted* to the same prestigious psychology journals that *already published* those papers.

- the names and institutions of the authors were changed from well-known to unknown;
- only three journals detected the resubmission;
- 16/18 reviewers recommended rejection, often for “serious methodological flaws”!

*Peters, D. P. & Ceci, S. J. 1982. The Fate of Published Articles, Submitted Again. *Behavioral and Brain Sciences*.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/fate-of-published-articles-submitted-again/17914E617A57CDF8ABF3D95F9F28E7FE>.

Evidence: institution and national bias

- bias against smaller institutions*;
- bias in favor of authors from the US and English-speaking countries;†;
- “national publication bias”: European medical journals favoring the authors from their home countries‡;

*Murray, D. L., Morris, D., Lavoie, C., Leavitt, P. R., MacIsaac, H., Masson, M. E. J. & Villard, M.-A. 2016. Bias in Research Grant Evaluation Has Dire Consequences for Small Universities. *PLOS ONE*. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0155876>.

†Ross, J. S., Gross, C. P., Desai, M. M., Hong, Y., Grant, A. O., Daniels, S. R., Hachinski, V. C., Gibbons, R. J., Gardner, T. J. & Krumholz, H. M. 2006. Effect of Blinded Peer Review on Abstract Acceptance. <https://doi.org/10.1001/jama.295.14.1675>.

‡Ernst, E. & Kienbacher, T. 1991. Chauvinism. <https://www.nature.com/articles/352560b0>.

Evidence: social biases

- Even women rate articles higher with a “male” author name on them*!
- in the US context, evidence for racial bias in peer review for grant applications†;
- strong self-reported preference for anonymous review by Chinese early-career researchers‡.

The presence and effect of biases is debated§, but there's also evidence of bias in citations.

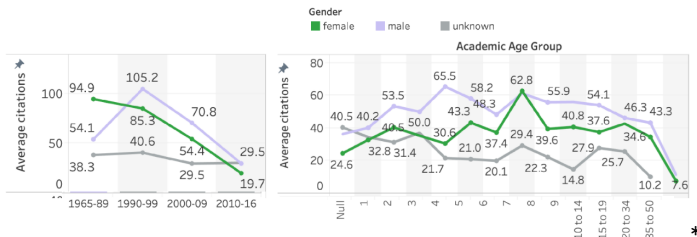
*Goldberg, P. 1968. Are Women Prejudiced against Women?

†Ginther, D. K., Schaffer, W. T., Schnell, J., Masimore, B., Liu, F., Haak, L. L. & Kington, R. 2011. Race, Ethnicity, and NIH Research Awards. <https://science.sciencemag.org/content/333/6045/1015>.

‡Xu, J., Chen, D., He, C., Zeng, Y., Nicholas, D. & Wang, Z. 2020. How Are the New Wave of Chinese Researchers Shaping up in Scholarly Communication Terms? *Malaysian Journal of Library & Information Science*. <https://mjlis.um.edu.my/article/view/27823>.

§Squazzoni, F., Bravo, G., Farjam, M., Marusic, A., Mehmani, B., Willis, M., Birukou, A., Dondio, P. & Grimaldo, F. 2021. Peer Review and Gender Bias: A Study on 145 Scholarly Journals. *Science Advances*. <https://advances.sciencemag.org/content/7/2/eabd0299>; Yang, J., Vannier, M. W., Wang, F., Deng, Y., Ou, F., Bennett, J., Liu, Y. & Wang, G. 2013. A Bibliometric Analysis of Academic Publication and NIH Funding. *Journal of Informetrics*. <https://www.sciencedirect.com/science/article/pii/S175115771200096X>.

Gender gap in citations (ACL anthology)



*Mohammad, S. M. 2020. Gender Gap in Natural Language Processing Research: Disparities in Authorship and Citations. <https://www.aclweb.org/anthology/2020.acl-main.702>.

Slideslive views of ACL 2020 papers



(((yoav' ()J()J)))
@yoavgo

...

I was told that people are too lazy to read code, so here's English: papers whose author names have the bigrams qi, zh, ao, yi, xi, xu and a bunch of others account for half of the papers at the conference but only 42% of paper views, and the median views in this group is lower.



(((yoav' ()J()J))) @yoavgo · Jul 13, 2020

I initially thought I shouldn't go there but then I decided heck, why not. This is a 5 minutes hack and in no means rigorous in any way, but I think it does provide a signal. [twitter.com/yoavgo/status/...](https://twitter.com/yoavgo/status/1281111111111111111)

```

er().strip().split("\t")
|liu |lin ", authors):

(all)*100} % of all papers)")
(all)*100} % of all views)")
), "median of all:", numpy.median

275633958103
049488757994
.0 median of

command to

```

Bottom line

Reputation bias is undisputed, and there is enough evidence of social biases to warrant concerns. Training helps to some extent*, but generally humans struggle to consciously control their biases. So anonymous reviews are the best tool we have.

*Régner, I. *et al.* Committees with Implicit Biases Promote Fewer Women When They Do Not Believe Gender Bias Exists. *Nature human behaviour* 3, 1171–1179. <http://affectfinance.org/wp-content/uploads/2019/09/s41562-019-0686-3.pdf> (2019)

Reviewing models





Open Review Papers, Reviews and Identities are visible to all parties

Single-Blind Author is known to Reviewer – Reviewer remains unknown to Author

Double-Blind Author is unknown to Reviewer and Reviewer is unknown to Author




Pros and cons

fully open:

-  Reviewer is accountable
-  Authors do not need to withhold scientific content to preserve anonymity
-  Reviewer may withhold criticism or face retaliation
-  Vulnerable to all biases





Pros and cons

single-blind:

-  Allows the reviewer to be fully honest
-  Authors do not need to withhold scientific content to preserve anonymity
-  Vulnerable to all biases mentioned above

Pros and cons

double-blind:

-  Avoids various biases
-  Allows the reviewer to be fully honest
-  Reviewer is not accountable
-  Authors need to withhold scientific content to preserve anonymity

Characteristics of Various Venues

(with changes over the years)

Venue	Anonymity / level	Area Chair	Response Period
*ACL	Double-blind	identified	sometimes
EMNLP	Double-blind	identified	yes
IJCAI	Double-blind	internal	yes
AAAI	Double-blind	internal	yes
LREC	Single-blind	no	no
Swisstext	Double-blind	internal	no
TALN	Double-blind	internal	no
AMIA	Single-blind	internal	no

And then there's this thing called arXiv...

The logo for arXiv.org, featuring the text "arXiv.org" in a white, sans-serif font centered on a solid red rectangular background.

arXiv.org

The official ACL anonymity policy:

Anonymity period: from 1 month until submission deadline and until notification or withdrawal

- no posting the preprint of the work under review;
- no publicizing of existing preprints on social media;
- no updates to existing preprints, except for the purpose of correcting names.

https://www.aclweb.org/adminwiki/index.php?title=ACL_Policies_for_Submission,_Review_and_Citation

Issues with the anonymity period

- delays circulation of results, but does not fully solve the problem: the reviewers can still look up or accidentally discover the identities of authors of the preprinted papers;
- shifts the deadline: if possible, the authors now publish preprints a month ahead.

Other issues with anonymity

- some papers get so well-known that anonymous reviewing is impossible;
- anonymity breaches through personal communication, talks etc.;
- it is often possible to tell by the paper itself whether the authors are native speakers from a well-resourced lab;
- in a narrow subfield, an expert might still even guess the specific authors by the topic and the focus of the study.

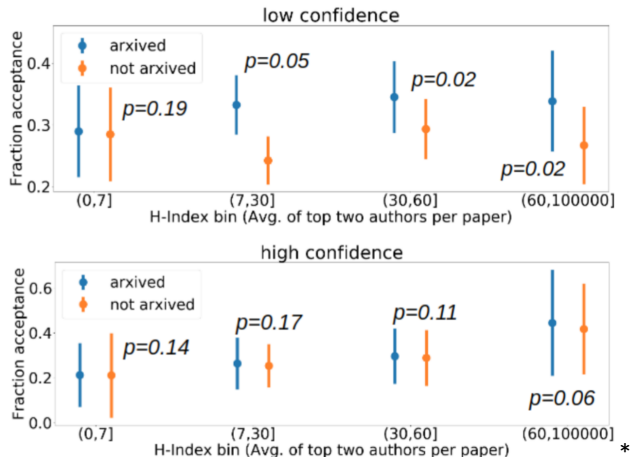
Solutions

- Take/promote training* in biases in peer review;
- Do the best you can to maintain the anonymous process.

- ✓ Do not actively try to discover the authors.
- ✓ If you know the paper, ask to reassign it.
- ✓ Do not search for related work until you have read the paper and formed your opinion.
- ✓ If it is an *ACL conference, report any breaches of anonymity period that you may observe.

*Régner, I. *et al.* Committees with Implicit Biases Promote Fewer Women When They Do Not Believe Gender Bias Exists. *Nature human behaviour* 3, 1171–1179. <http://affectfinance.org/wp-content/uploads/2019/09/s41562-019-0686-3.pdf> (2019)

Especially if your confidence is low!



*Bharadhwaj, H., Turpin, D., Garg, A. & Anderson, A. 2020. De-Anonymization of Authors through arXiv Submissions during Double-Blind Review. *arXiv:2007.00177 [cs]*. <http://arxiv.org/abs/2007.00177>.

Anonymity during rebuttals

- *This is John Smith, I am the reviewer 1...*

! The conference should provide explicit instructions about the expected level of anonymity during rebuttal. If the process is anonymous, do NOT reveal your names to the fellow reviewers and/or area chairs.

Biases to watch out for during rebuttals:

- *Confirmation bias*: you have already formed an opinion of the paper, and humans don't like to change their mind. Seriously consider that you may be wrong, and give the authors a fair chance to persuade you.
- *Emotional reaction*: neither authors nor reviewers are consistently polite. If the response made you angry, still try to focus on the content and not the tone.
- *Groupthink*: after you know the opinion of other reviewers, you may regress to the mean*.
- In a non-anonymous discussion, you may regress to the opinion of the high-reputation senior reviewers.

*Gao, Y., Eger, S., Kuznetsov, I., Gurevych, I. & Miyao, Y. 2019. Does My Rebuttal Matter? Insights from a Major NLP Conference. <https://www.aclweb.org/anthology/N19-1129>.

Holding the reviewers accountable

- *ACL conferences now ask area chairs to run quality checks before rebuttals. Submit early enough for that to be possible, and make corrections as needed.
- If using secondary reviewers - declare them.
- Accountability mechanisms vary by venue and are changing. Stay up-to-date about the policies of your venues.



Mohammad, S. M. Gender Gap in Natural Language Processing Research: Disparities in Authorship and Citations. in *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics* (Association for Computational Linguistics, Online, July 2020), 7860–7870. <https://www.aclweb.org/anthology/2020.acl-main.702> (2020).



Peters, D. P. & Ceci, S. J. The Fate of Published Articles, Submitted Again. en. *Behavioral and Brain Sciences* **5**, 199–199. ISSN: 1469-1825, 0140-525X. <https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/fate-of-published-articles-submitted-again/17914E617A57CDF8ABF3D95F9F28E7FE> (2020) (June 1982).



Murray, D. L. *et al.* Bias in Research Grant Evaluation Has Dire Consequences for Small Universities. en. *PLOS ONE* **11**, e0155876. ISSN: 1932-6203. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0155876> (2021) (June 2016).



Ross, J. S. *et al.* Effect of Blinded Peer Review on Abstract Acceptance. **295**, 1675–1680. ISSN: 0098-7484. <https://doi.org/10.1001/jama.295.14.1675> (2021) (Apr. 2006).



Ernst, E. & Kienbacher, T. Chauvinism. en. **352**, 560–560. ISSN: 1476-4687. <https://www.nature.com/articles/352560b0> (2021) (Aug. 1991).



Goldberg, P. Are Women Prejudiced against Women? **5**, 28–30 (1968).



Gunther, D. K. *et al.* Race, Ethnicity, and NIH Research Awards. en. **333**, 1015–1019. ISSN: 0036-8075, 1095-9203.
<https://science.sciencemag.org/content/333/6045/1015> (2021)
(Aug. 2011).



Xu, J. *et al.* How Are the New Wave of Chinese Researchers Shaping up in Scholarly Communication Terms? en. *Malaysian Journal of Library & Information Science* **25**, 49–70. ISSN: 1394-6234.
<https://mjlis.um.edu.my/article/view/27823> (2021) (Dec. 2020).



Squazzoni, F. *et al.* Peer Review and Gender Bias: A Study on 145 Scholarly Journals. en. *Science Advances* **7**, eabd0299. ISSN: 2375-2548.
<https://advances.sciencemag.org/content/7/2/eabd0299> (2021) (Jan. 2021).



Yang, J. *et al.* A Bibliometric Analysis of Academic Publication and NIH Funding. en. *Journal of Informetrics* **7**, 318–324. ISSN: 1751-1577. <https://www.sciencedirect.com/science/article/pii/S175115771200096X>
(2021) (Apr. 2013).



Régner, I., Thinus-Blanc, C., Netter, A., Schmader, T. & Huguet, P. Committees with Implicit Biases Promote Fewer Women When They Do Not Believe Gender Bias Exists. *Nature human behaviour* **3**, 1171–1179.
<http://affectfinance.org/wp-content/uploads/2019/09/s41562-019-0686-3.pdf> (2019).



Bharadhwaj, H., Turpin, D., Garg, A. & Anderson, A. De-Anonymization of Authors through arXiv Submissions during Double-Blind Review. *arXiv:2007.00177 [cs]*. arXiv: 2007.00177 [cs].
<http://arxiv.org/abs/2007.00177> (2020) (June 2020).



Gao, Y., Eger, S., Kuznetsov, I., Gurevych, I. & Miyao, Y. Does My Rebuttal Matter? Insights from a Major NLP Conference. in *Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Volume 1 (Long and Short Papers)* (Association for Computational Linguistics, Minneapolis, Minnesota, June 2019), 1274–1290.
<https://www.aclweb.org/anthology/N19-1129> (2020).