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The Ripple Effect of Retraction on an Author's Collaboration Network



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Building and maintaining trust in science is a collective responsibility shared by researchers, institutions, peer reviewers, and the wider scientific community.



This study examines how the retraction of a scientific paper or research work impacts the network of collaborations of the author(s) involved.



This study aims to understand how such retractions can affect the professional relationships and collaborations of the authors within the scientific community. It may investigate whether retraction leads to a loss of trust, or opportunities for future collaborations among the authors and their peers.

MOTIVATION



RESEARCH QUESTION

To investigate whether scientific misconduct reduces collaborative ties of misconducting authors as opposed to those who never faced allegations of academic misconduct.



METHODOLOGY

To obtain our sample of retracted papers, we explored the entire research career of an individual.

- **Step I:** From the Web of Science (WoS) database, we extracted 5972 papers through 2020 with the document type “Retracted Publication”.
- **Step II:** Mapping of all 5972 WoS papers with the Scopus database to locate unique authors from all retracted publications. Scopus filtered 24209 authors with unique identifiers out of 5972 retracted papers. These authors are marked as “Retracted authors”, i.e., authors who received at least one retraction in their career.



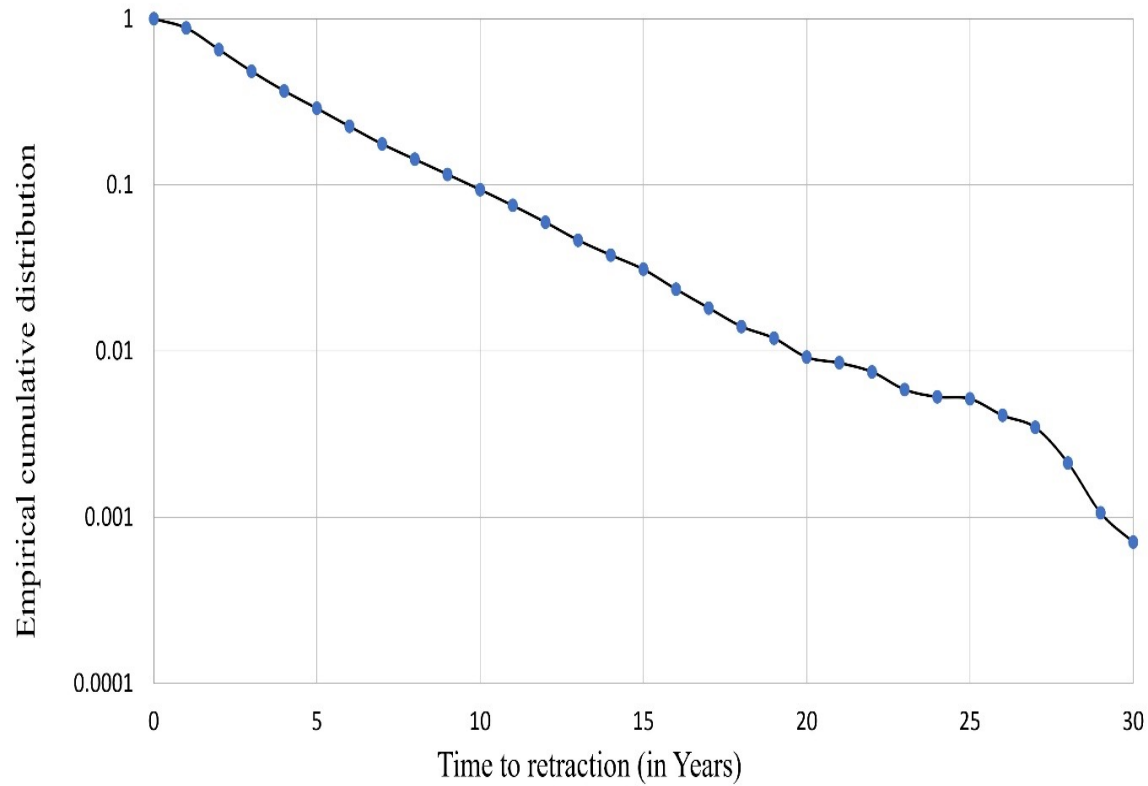
METHODOLOGY

Contd.

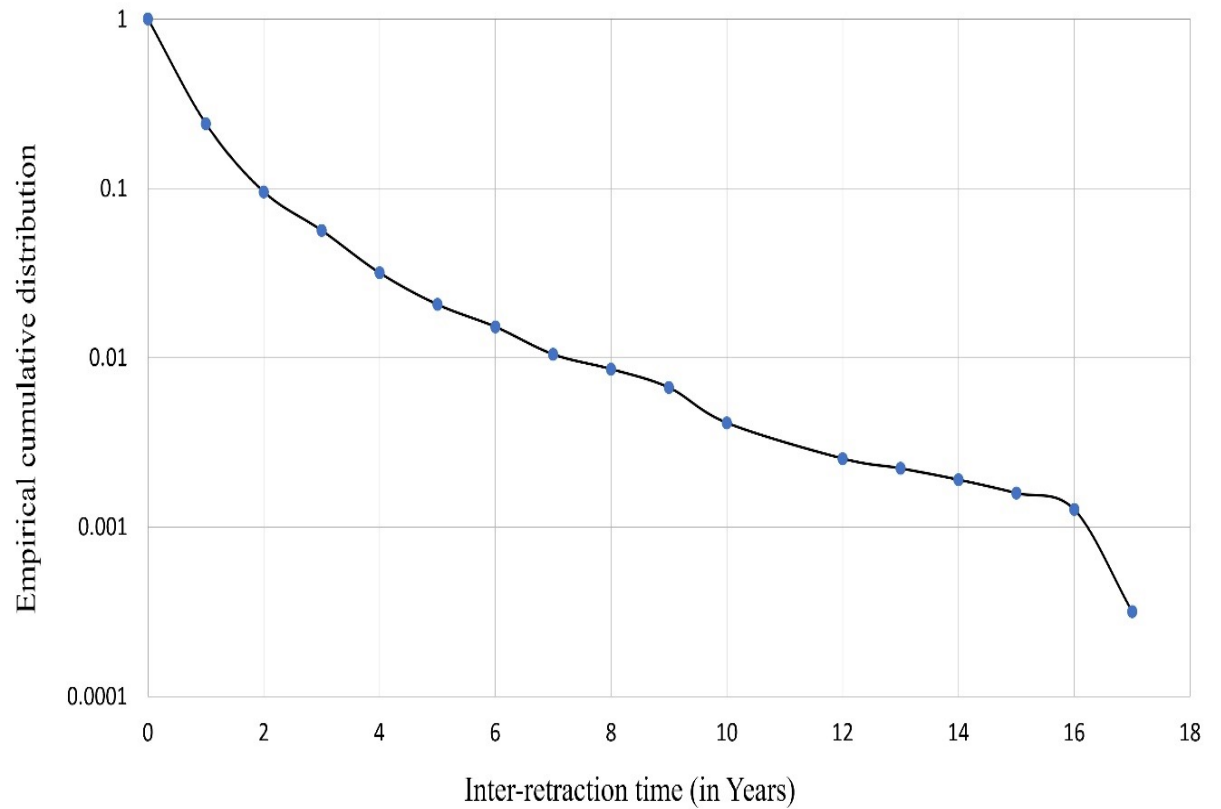
- **Step III:** For each of those 24209 authors, their entire research career and collaboration were explored in terms of publication year, co-authors ID, and paper DOI. For all 24209 authors, we got a total of 822762 publications till 2020.
- **Step IV:** Finally, we extracted the information of the co-authors of retracted authors, which yielded 2144425 such authors who collaborated with retracted authors at some point in their careers and never faced retraction.



Distribution of difference in retraction year and publication year of a retracted paper

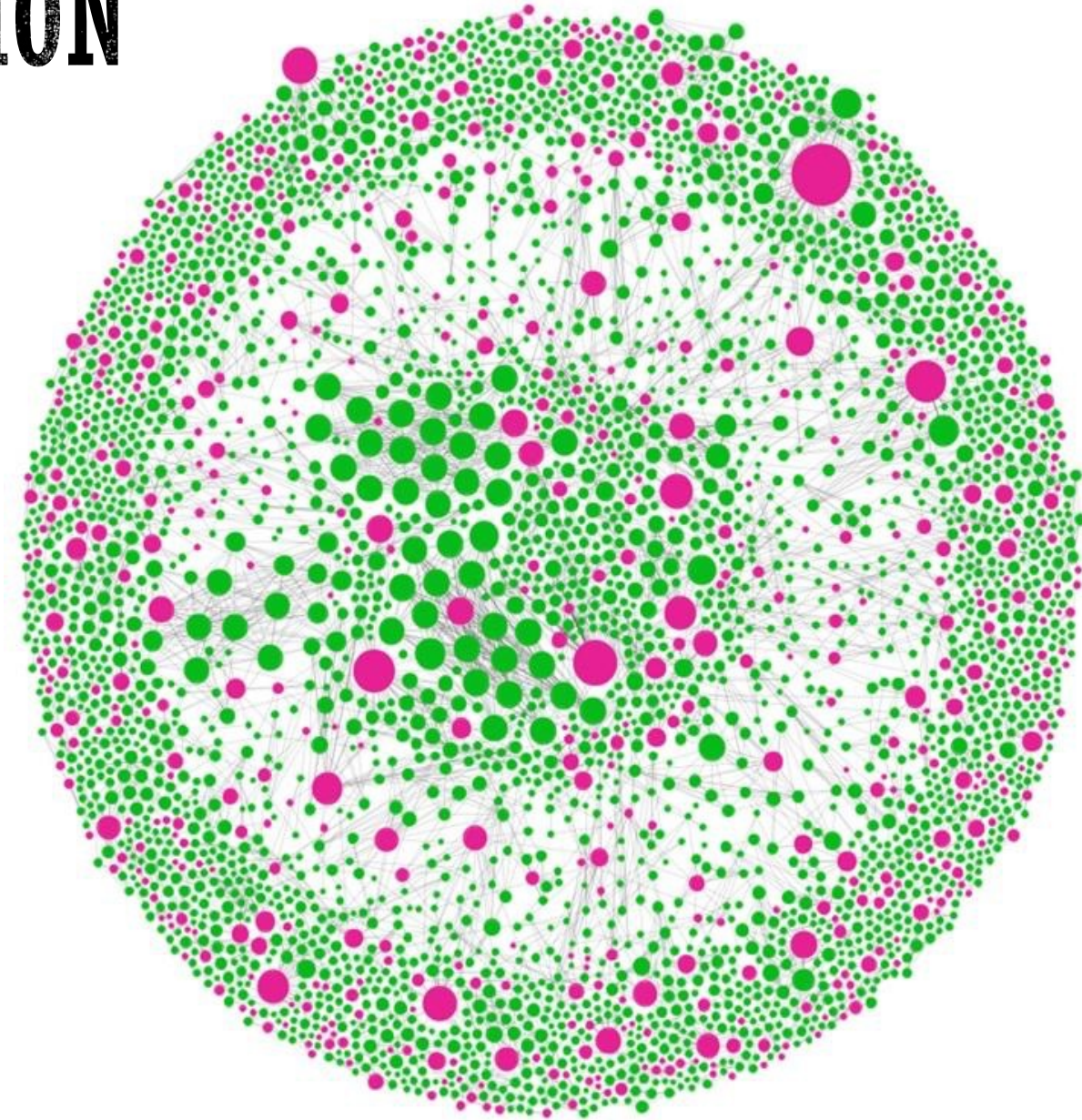


Distribution of inter-retraction times

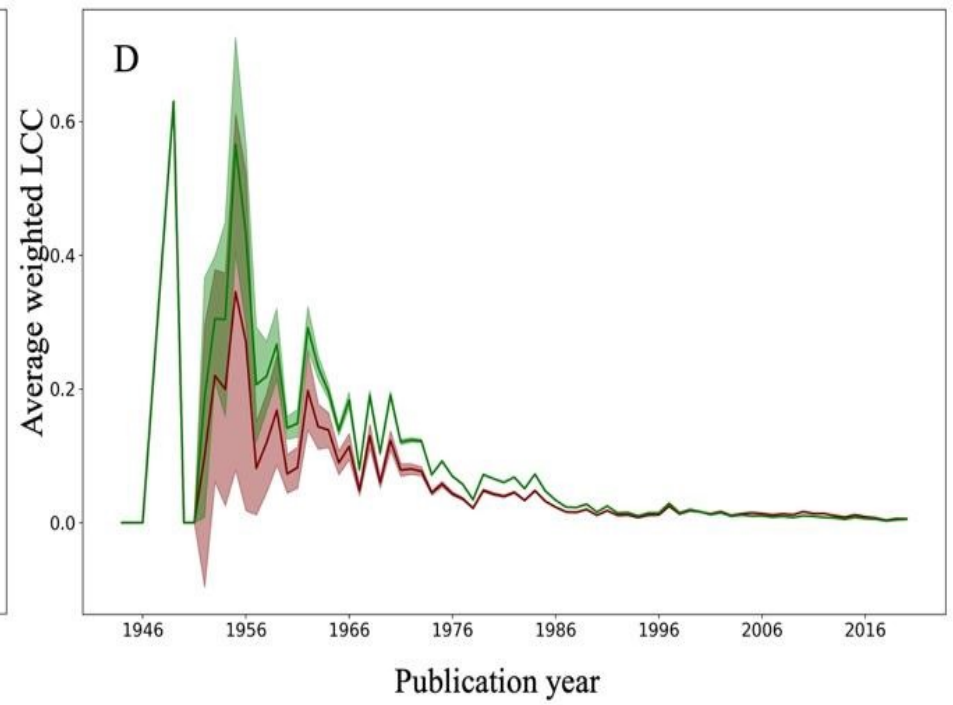
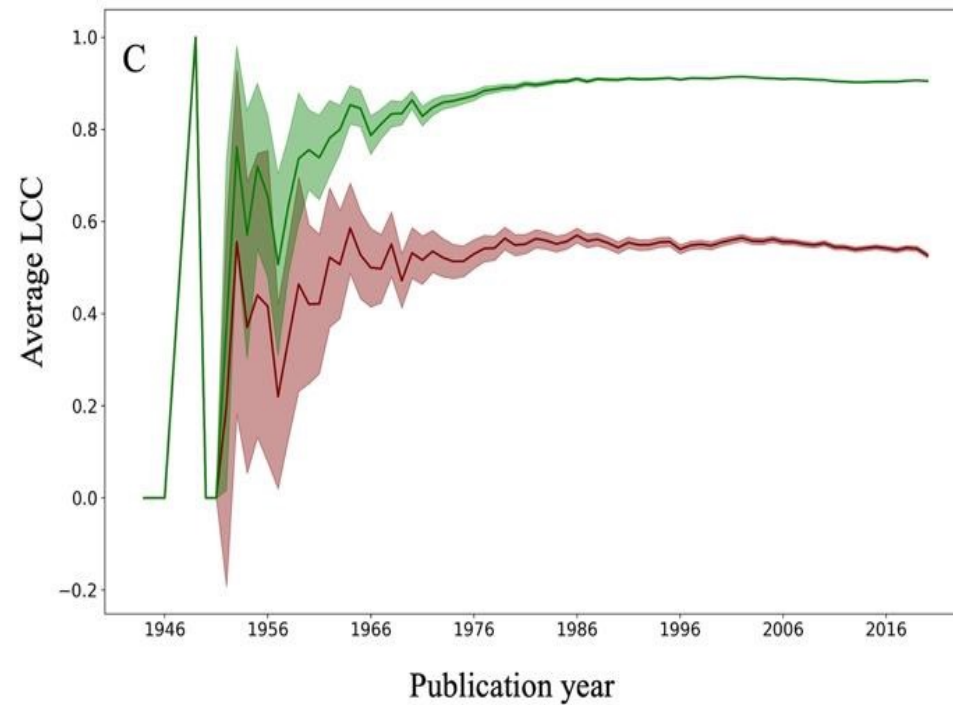
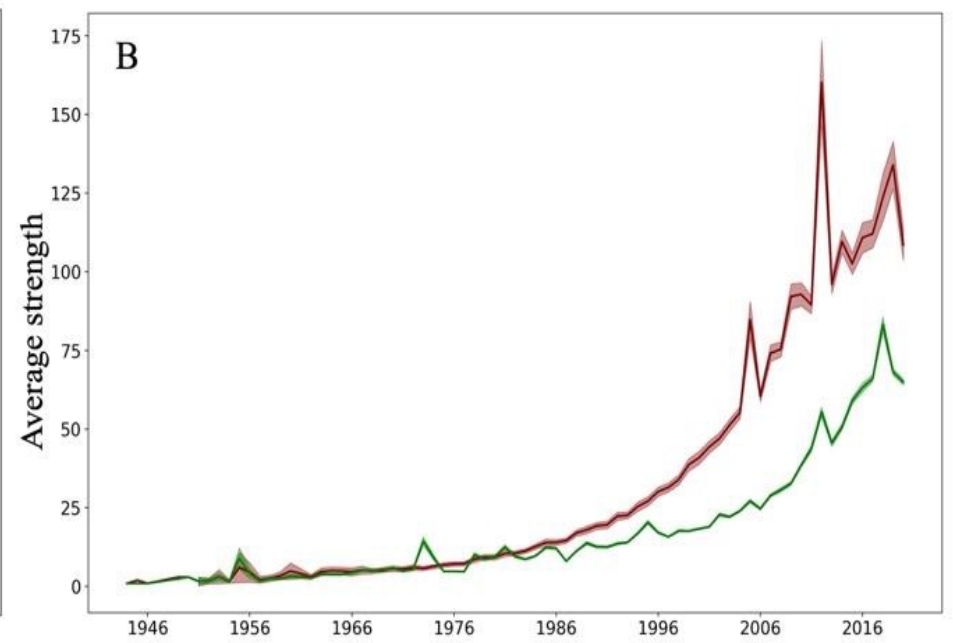
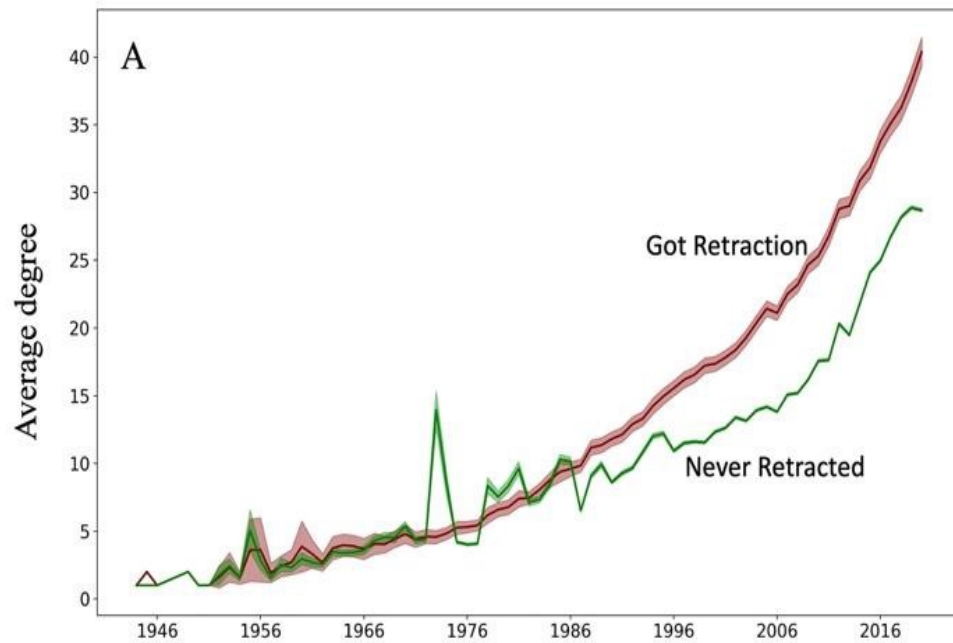


NETWORK OF COLLABORATION

Network of collaboration of authors with at least one retraction in their career (dark-pink) and authors with no retraction (green). The node's size is the strength (weighted degree), and the weight of the links is the number of times two authors collaborated. The network consists of 3363 nodes and 7676 edges. In this figure, we consider papers published in 1976.



NETWORK METRICS



OBSERVATIONS

Our findings indicate that stigmatization has a limited impact on stigmatized authors. Several factors contribute to this outcome.

- First, collaborative relationships are typically built on shared research interests, expertise, and past successful collaborations. A single instance of misconduct or retraction may not significantly disrupt these connections, especially if the wrongdoing is unrelated to the collaborative work.
- Second, the scientific community's response to misconduct and retractions can vary. Some cases might attract considerable attention and scrutiny, damaging the researchers' reputation and collaboration opportunities. This lack of awareness could prevent collaborators from making informed decisions about their continued collaboration.



POLICY IMPLICATIONS

- Institutional policies should encompass periodic mentoring sessions on research ethics, integrity, and their roles in advancing both science and society.
- During doctoral training, mandatory courses in research ethics should be integrated into the curriculum. For instance, India's University Grants Commission (UGC) in its 543rd meeting held on 9th August 2019, approved mandatory courses for awareness about publication ethics and publication misconduct (UGC, 2019).
- Each research lab or mentor ought to engage in open discussions with their teams about the pitfalls of scientific misconduct, fostering ethical research and instilling a sense of social responsibility. Mentors and institutions should educate scholars on how to handle “failure” positively, providing skills that can benefit them throughout their lives.
- Institutions should offer professional counselling services, as supportive mentoring alone might not suffice in achieving this objective.



KEY REFERENCES

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