Dictionary of Questionable Research Practices

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Each bolded entry corresponds to a Questionable Research Practice (QRP) found in the taxonomy of QRPs. A definition of each QRP is found underneath the bolded text, followed by a case of the QRP found in the existing research landscape. Indented entries are used to represent the hierarchy of QRPs found in the taxonomy.

Citations

Coercive Citations
Practices involving coercive behavior to receive or give citations.

> **Peer reviewer seeking citations of self**
> A peer reviewer suggests revisions that include references to their own papers, usually to boost the reviewer's metrics.
> **Case:** https://pmc.ncbi.nlm.nih.gov/articles/PMC6748764/
> - Case of reviewer that requested an average of 35 citations to be added to each paper, with 90% of those citations being to papers either authored or co-authored by the reviewer.
>
> **Authority figure seeking citations of self**
> A figure with authority above the author pressures the author to cite more of their papers with the goal of increasing their publication metrics.
> **Case:**https://retractionwatch.com/2024/10/30/highly-cited-engineer-offers-guaranteed-publication-citations-in-return-for-coauthorship/
> - Highly cited researcher accused of leveraging his academic authority to offer guaranteed publication and citations in exchange for co-authorship.

Padded references
Citations included in a paper that are not actually used in the analysis. Researchers can add citations from a journal not used in research to increase the probability of being published in said journal.
Case: https://www.nature.com/articles/d41586-023-01532-w

- One in five researchers asked to pad their papers with superfluous citations

Case: https://academia.stackexchange.com/questions/122790/how-common-is-reference-citation-padding

- Discourse of an academic researcher noticing their paper is cited within a paper on a completely different topic outside the scope of the original paper. The in-text citation refers to a statement never made by the academic.

Questionable citations

Unreliable citations that have been used knowingly or unknowingly as reliable sources.

Citing Retracted Papers

Referencing invalidated academic works, often unintentionally, which perpetuates misinformation and exacerbates academic fraud.

Case: https://www.tandfonline.com/doi/full/10.1080/08989621.2021.1886933

- Publication studying impact of retracted citations pre-retraction and discusses post-retraction citation studies.

Citation Hallucination

Fabricated bibliographic citations that do not represent actual scholarly works, particularly within LLMs like Chat GPT-4.

Case: https://www.nature.com/articles/s41598-023-41032-5

- A study compared GPT-3.5 and GPT-4 in generating literature reviews across 42 topics, revealing that 55% of GPT-3.5 citations were fabricated versus 18% for GPT-4, with GPT-4 also showing fewer errors in real citations (24% vs. 43%), highlighting significant but not complete improvement.

Citation Gaming

A practice where researchers manipulate citations to achieve performance metrics that are not based on actual performance. This is also known as citation laundering, a blanket term for questionable practices to manipulate one's own citation metrics.

Excessive Self-Citations / Citation Stuffing

The act of aggressively citing your own work to then boost certain metrics like h-index and citation counts.

Case: https://retractionwatch.com/2020/07/31/cite-yourself-excessively-apologize-then-republish-the-papers-with-fewer-self-citations-journal-says-fine/

- A journal required an author to republish papers with reduced self-citations after finding excessive self-referencing, prompting an apology and raising concerns about citation ethics in academic publishing.

Citation Cartels

A group of academic authors who collude to increase their citation counts by citing each other's work more than other groups of authors.

Case: https://www.nature.com/articles/s41598-021-93572-3

- A group of researchers created a tool, CIDRE, to detect anomalous groups of journals that exchange citations at excessively high rates when compared against a null model that accounts for scientific communities and journal size.

Sneaked Citations/Metadata
Citations hidden in the metadata of a research article by the researcher, upping the citation count of other papers without showing additional citations in the pdf format of the paper. Researchers can accomplish this by using Crossref, and these citations are picked up by third parties like Google Scholar. Crossref currently does not have a mechanism to prevent this, even though it markets its metadata as a source for other parties to verify references.
Case: https://asistdl.onlinelibrary.wiley.com/doi/10.1002/asi.24896

- A study on three journals from one publisher found that 9% of the references were sneaked. Also, studies "lost" references, references not properly documented and thus lost citations. Researchers found sneaked references by comparing references in Crossref with those in Dimensions and on the publisher's website. In this study, one researcher benefitted from 3103 sneaked citations, and a journal gained 826 citations.

Lack of Transparency

Lack of IRB Approval when required
Conducting research involving human subjects without first obtaining the necessary ethical clearance from an Institutional Review Board (IRB).
Case:https://retractionwatch.com/2016/09/30/does-your-work-need-irb-approval-better-check-says-author-of-retracted-paper/

- Authors of a paper in a data science journal retroactively admitting to not receiving the proper IRB approval before research and publication, resulting in a retraction.

Case: https://www.theguardian.com/technology/2014/jun/29/facebook-users-emotions-news-feeds

- Facebook changed the feeds of 700,000 users more positively or negatively and then analyzed how their posts changed emotionally after being exposed to more positive or negative content on their feed. This research was done in collaboration with researchers from Cornell University, but the IRB from Cornell was never notified of this work.

Disclosure
Omitting critical information in publication or to participants.

Non-disclosure of Conflict of Interests
Withholding or being unknowledgeable about conflicts of interest (CoIs). While almost all journals require their authors to disclose any individual conflicts of interest, most do not require individual editors to disclose their conflicts of interest.
Case: https://doi.org/10.1136/bmjopen-2019-029796

- High impact medical journal cross-sectional study reveals editorial boards did not disclose individual potential CoIs.

Non-disclosure of Research Material (Data, Code, Limitations etc.)
Researchers and authors not sharing publicly the code or data they used to obtain a result within a paper. Limits ability to replicate a paper.
Case: https://doi.org/10.1001/jama.287.4.473

- Data withholding was indicated to be a prevalent issue for academic geneticists in a national survey.

Inadequate privacy protection
Case: https://doi.org/10.1016/j.chb.2022.107537

- Open disclosure reveals privacy concerns and may lead to questionable research from experimental design onwards. Suggests gatekeeping data to the research community only.

Peer Review

Insufficient Peer Review
Peer review that does not meet adequate expectations for general review standards.

Biased peer review due to aspect of author identity
When a reviewer's judgment is influenced by an author's characteristics, such as gender, ethnicity, institution, or reputation, rather than the content of the research itself.
Case: https://scholarlykitchen.sspnet.org/2021/09/16/ask-the-chefs-peer-review-identity/

- Several academics' personal take on peer review when the author's identity is known. Multiple academics remark that unconscious bias can impact the reviews they give papers, either positively or negatively.

Case: https://doi.org/10.1038/s41559-023-01999-w

- Michigan State study finding bias in peer reviews. Researchers began this study after observing biased comments in peer reviews received on papers of historically excluded groups.

Lack of effort during peer review
Reviewers failing to thoroughly evaluate submissions, providing minimal feedback, or overlooking critical flaws due to time constraints, disinterest, or negligence. This is often due to a shortage of reviewers and an excessive amount of submissions to journals, and peer reviewers are widely not paid for their work.
Case: https://doi.org/10.4103/0019-5545.82529

- Andrew Wakefield's work on the MMR vaccine causing autism was published in The Lancet, a renowned medical journal, despite glaring flaws. The study had a sample size of only 12 children and an uncontrolled design, and the Lancet

retracted the paper once these issues publicly came to light. This points to insufficient peer review, as an experiment with these foundational issues should have been rejected during the process.

Case: https://www.reddit.com/r/AskAcademia/comments/177qz4h/worst_peer_review_experience/

- Reddit thread sharing experiences with poor peer reviews on submitted papers. Examples include feedback not relevant to the paper, poorly written feedback, and reviews with very little constructive feedback.

Case: https://doi.org/10.1007/s11192-024-05125-w

- Use of review "templates" rather than quality review based on content, suspected from review mill.

Reviewing papers outside area of expertise

The assignment of peer reviewers lacking sufficient knowledge in the subject matter leading to inadequate evaluation of the work's quality and accuracy. Academics review papers outside of their field of expertise, commenting on science that they are not qualified to judge. Large numbers of submissions lead to a shortage of qualified peer reviewers.

Case: https://retractionwatch.com/2025/02/04/undisclosed-conflicts-lightning-fast-peer-review-one-alzheimers-journals-role-in-a-failed-drug/

- Investigation reveals journal has potentially compromised peer review due to influence from editors and authors with financial ties to pharmaceutical companies, fast-tracking studies supporting Alzheimer's drugs without sufficient knowledge on the subject

Falsified Peer Review

Peer review that is invalid or suspected as fraudulent.

Ghost-written Peer Reviews

Peer reviews written by someone other than the qualified expert originally requested.

Case: https://doi.org/10.7554/eLife.48425

- A study on the prevalence of ghostwritten peer reviews found that 73% of the study's respondents had participated in a ghostwritten peer review at some point in their career.

Fake reviewer profile

The creation of fraudulent reviewer identities, often by authors or third parties with falsified academic email addresses, to pose as legitimate academics and manipulate the peer review process for personal or organizational gain. This practice is usually the work of paper mills to get illegitimate work with paid authorship spots published.

Case: https://www.sciencedirect.com/science/article/pii/S1871187121001607

- The article was retracted after the journal found that article's acceptance was based on the author's recommendation of false peer reviewers, likely the work of a paper mill

Case: https://www.nature.com/articles/515480a

- Unusual pattern of peer reviews traced back to one user under multiple accounts

Questionable Gen-AI Usage

The use of artificial intelligence to create questionable peer reviews can lead to superficial or inaccurate assessments when not disclosed or supervised properly.

Undisclosed Gen-AI Usage

Employing AI tools to draft or assist in reviews without informing the journal, authors, or other stakeholders raises concerns about transparency and accountability.

Case: https://www.academ-ai.info/

- Website that tracks journal articles and conference papers that have suspected AI usage in them. Many of these papers (according to the creator) are within journals that require AI acknowledgement, yet they don't note their usage. As of April 2025, there were 705 examples.

Case:https://www.chronicle.com/article/scholars-are-supposed-to-say-when-they-Use-ai-do-they

- Discussion of a study revealing undisclosed AI usage and the journals involved in the production and acceptance of this research.

Overuse of Gen-AI

Reviewers overly depend on artificial intelligence to write their peer reviews, resulting in reviews that are superficial and lack real expert insight.

Case:https://academia.stackexchange.com/questions/204370/what-should-i-do-if-i-suspect-one-of-the-journal-reviews-i-got-is-ai-generated

- Academic discourse around a peer review received that was suspected to be fully generated by artificial intelligence. The review was very poor quality with obvious

Sabotage Using Peer Review

The deliberate manipulation of the peer review process by reviewers or stakeholders to undermine a manuscript's acceptance, often for competitive or personal reasons. This often involves providing excessively critical or false feedback during the peer review process to delay or block publication.

Case:https://www.science.org/content/article/it-felt-very-icky-scientist-s-name-was-used-write-fake-peer-reviews

- Scientist discovered that his identity had been misused to fabricate numerous fake peer reviews, suspecting sabotage from hackers accessing personal data.

Bribery for Paper Acceptance
Paper mills or other editors using financial resources to coerce editorial boards to accept a specific research paper.
Case:https://www.science.org/content/article/paper-mills-bribing-editors-scholarly-journals-science-investigation-finds

- Cash-rich paper mills bribing editors and planting their own agents on editorial boards to ensure the publication of their manuscripts.

Theft of Reviewed Work
Peer reviewer steals the work of the researcher they are reviewing and publish it as their own. The reviewer can delay the acceptance process or outright reject the original work in order to plagiarise it. This can happen with grant applications, conferences, and journals.
Case:https://retractionwatch.com/2016/12/12/dear-peer-reviewer-stole-paper-authors-worst-nig htmare/

- Case of researcher's paper being rejected by peer review and then published by the reviewers with slight changes. The researcher details the emotional experience of years of work being taken advantage of.

Authorship

Honorary Authorship
Awarding authorship to an individual without significant contribution to the paper or research. This could be due to norms within a discipline (mentor, head of lab, etc) and usually benefitting a superior. Also referred to as "gift authorship".
Case:https://www.nature.com/articles/439768b

- Researcher named himself as a senior author in a paper for which he had only written the editorial for. When the paper was then found to contain fraudulent research, he was acquitted of knowing beforehand of issues with the paper.

Falsified Authorship
Unapproved or illegitimate authorship.

Ghost Writing
Ghostwriting is a source of misappropriated authorship. Someone who has made substantial contributions to the writing of a book, paper, report, speech or other materials, but for various reasons, never appears as an author of the publication is called a ghost author. It often occurs simultaneously with its opposite, honorary author (sometimes called guest author or gift author), where the author's contribution is so small, nonexistent, or has not met authorship criteria. This also encompasses authors with little contribution listed first while authors with the highest level of contribution are "hidden" at the end of the authorship list.
Case: https://www.nature.com/articles/4551019a

- The author accused of plagiarism within her sole-authored manuscript claimed that a ghost-author student was to blame for the issues. This points to the problems in accountability and credibility created by ghost authorship.

Case: http://123mi.ru/1/

- Website (unverified) where you can buy publication (not just authorship).

Forged Authors

Claiming real academic professionals were authors on a paper when they were not. Fraudsters can use this to increase the credibility of fake papers by using the names of acclaimed researchers.

Case:https://www.anesthesiologynews.com/Policy-Management/Article/03-09/Fraud-Case-Rocks-Anesthesiology-Community/12634?ses=ogst

- Author was accused to have faked 21 papers on anesthesiology, putting researchers as authors on his paper without their knowledge or contribution.

Exclusion of Deserving Authors

Publication of paper with authors contributing significantly to the paper left out of authorship credit.

Case:https://academia.stackexchange.com/questions/975/my-research-work-stolen-and-published-as-his-own-by-the-co-author-without-my-con

- A student researcher's paper was published by a coauthor without including her as a contributing author.

Intellectual Theft

Plagiarism

The act of using someone else's work, ideas, or intellectual property without proper attribution, violating ethical standards.

Plagiarism of Other Authors

Publishing others' work under one's own name

Republishing full work or parts of work already published by another academic and presenting it as unique, original research.

Case:https://pubpeer.com/publications/30CC8CEEFEAC16A523FFEE34ED3D62

- Duplicated work found published in a separate medium.

Graphic Plagiarism

The unauthorized use or replication of visual elements, such as charts, graphs, or images, from another author without proper citation or permission

Case:https://retractionwatch.com/2024/08/23/journal-retracts-article-for-plagiarized-images-after-trying-to-gag-researcher-who-complained/

- Graphics from a researcher's lecture were used without permission in a published open-access journal.

Patch Writing
The act of copying from a source text and making changes to words or grammatical structures, without successfully synthesizing or interpreting the original material.
Case: https://www.poynter.org/ethics-trust/2012/patchwriting-is-more-common-than-plagiarism-just-as-dishonest/
- Article that talks about the definition of patch writing, then goes into how it was used in the New York Times.

Plagiarism of Unpublished Work (Theses/Dissertations)
Stealing or reproducing unpublished academic work, such as theses or dissertations, without consent or acknowledgment, often from students or colleagues
Case: https://retractionwatch.com/2024/06/03/a-disturbing-experience-postdoc-fights-to-have-work-that-plagiarized-her-thesis-retracted/
- Researcher found a journal article plagiarized her thesis, copying some passages word-for-word without citation.

Compression Plagiarism
Taking a longer text and paraphrasing it into a shorter paper, publishing the paper without proper credit awarded to the original author.
Case: https://doi.org/10.1007/s10503-019-09481-3
- Discussion around compression plagiarism patterns and a suspected case in philosophy.

AI Plagiarism
The use of AI-generated content or ideas without acknowledgment, falsely presenting it as original work
Case: https://www.wired.com/story/use-of-ai-is-seeping-into-academic-journals-and-its-proving-difficult-to-detect/
- Phrase alluding to AI model work found in a published, peer-reviewed academic paper that did not disclose an AI usage.

Data Plagiarism
The unauthorized use or replication of datasets, results, or analyses from another source without proper citation.
Case: https://retractionwatch.com/2024/07/04/elsevier-withdraws-plagiarized-paper-after-original-author-calls-journal-out-on-linkedin/
- Researcher at Swedish University discovered an article published containing the exact same data that was generated in their own study.

Self-Plagiarism
The practice of reusing one's own previously published work or data in a new publication without proper acknowledgment or disclosure.
Case:https://retractionwatch.com/2023/07/31/president-of-japanese-university-resigns-after-findings-of-self-plagiarism/
- President of Japanese University forced to resign after self plagiarism found in at least a "dozen" papers.

Low-value add contributions
Research acts that contribute minimally to the advancement, rigor, or originality of the research.

Salami slicing/publication (segmented publication)
Redundant publications that add no value to the knowledge base by iterating on previous work done without adding any new information. This can be done by publishing multiple redundant articles from the same study or by publishing about work already done without adding meaningful insights.
Case: https://doi.org/10.1159/000270917
- Overlapping clinical trials identified as salami slicing with no independent research questions on duloxetine as treatment for depression.

Case:https://www.pubpeer.com/publications/D47357D409AE273F9E03C7CBE30EB7
- A researcher has published hundreds of articles on various nature-inspired algorithms that follow a similar structure, use unrealistic parameters, and don't add any new findings.

Research Manipulation

Results Manipulation
Knowingly changing and manipulating results to fit a certain hypothesis or claim.

Selective Reporting
The practice of only reporting certain results while omitting others, often to present a biased or incomplete view of findings.
Case: https://doi.org/10.1080/17437199.2024.2367613
- A study investigating selective reporting in studies found that discrepancies in outcome reporting were widely observed.

Lack of Reporting Null Results
Researcher reluctance to publish insignificant/null results and journal bias against publishing studies that don't produce positive results. This prevents the spread of knowledge and informs future researchers of hypotheses that fail testing.
Case:https://grad.uic.edu/news-stories/illuminating-the-ugly-side-of-science-fresh-incentives-for-reporting-negative-results/

- *Journal of Trial and Error* was created to bring null results to light and publish sound, methodical studies that don't produce positive results.

Ignoring Contradictory Literature
Publishing findings without considering contradictory literature. A form of confirmation bias where researchers overvalue literature supporting their findings. This is also known as polarized research, where researchers identify strongly with a viewpoint and ignore any data or research contradictory to this viewpoint.
Case: https://doi.org/10.1080/08989621.2024.2440096
- Study on polarized research; what it is and an investigation into an example of polarized research and the problems it induces.

Collecting More Data After Results
Continuing to collect data after seeing initial results, often to achieve desired statistical significance, potentially leads to biased conclusions. Also known as "N-Hacking."
Case: https://doi.org/10.1371/journal.pbio.3002345
- Study of the prevalence of N-Hacking and its existence within academia, especially in the field of biology.

Hypothesizing After Results Are Known (HARKing)
Creating or modifying hypotheses based on already observed results, rather than forming them before data collection, undermines scientific rigor.
Case: https://doi.org/10.1098/rsos.231744
- Study into behavioral tests involving mice found evidence of HARKing within studies.

Overselling Results
Exaggerating the importance, impact, or applicability of findings to make them appear more significant than they are.

Claiming Non-Significant Findings as Evidence for No Effect
False interpretation of null results as evidence for no effect, when in reality null results point to a lack of evidence of positive effect. This leads other researchers and the general public to misunderstand the implications of the study.
Case: https://doi.org/10.7717/peerj.14963
- Study on the reporting of results within the animal cognition field found that referring to null results as having "no effect" is much more common than the correct interpretation of "non-significant effect."

Lack of distinction between significance and practicality
Findings with a significant p-value are presented as significant within the real world when magnitude may render findings practically meaningless. Most commonly found in clinical research.

Case: https://healthjournalism.org/blog/2024/02/adieu-aduhelm-biogen-pulls-plug-on-controversial-alzheimers-drug/

- Aduhelm (aducanumab), an Alzheimer's drug, was discontinued for showing significant results in clinical tests but reducing the effect of the disease by a negligible amount in application. The drug was priced at $56,000 a year.

Image Manipulation

Altering images or visual data (e.g., charts, figures, or experimental results) to misrepresent or exaggerate research findings could also be similar to graphic plagiarism.

Case: https://www.nytimes.com/2025/01/24/opinion/alzheimers-fraud-cure.html?unlocked_article_code=1.t04.o7Hq.Fn9qX81VJ9G7&smid=url-share

- Neuroscientist accused of manipulated images associated with his research into Alzheimer's and Parkinson's, showing falsified "western blots" in many of his publications.

Data Manipulation

Manipulation of qualitative or quantitative data to fit a claim or hypothesis.

Selective Analysis

Data collection stopped once the desired results were achieved. The unethical practice of halting data collection prematurely when initial results align with a desired outcome leads to biased and unreliable findings.

Case: https://www.vox.com/2015/12/29/10654056/ben-goldacre-compare-trials

- After introducing additional measures to further test a medical hypothesis about a specific drug, the drug was deemed as effective; however, the pre-specified outcomes did not demonstrate significant benefits.

P-hacking

Strategies to create significant results from experiments yielding insignificant results. Researchers adjust the data and experiment structure to find an artificially low p-value. By replicating an experiment multiple times and only reporting results that were found to be significant, results appear meaningful.

Case: https://www.vox.com/science-and-health/2018/9/19/17879102/brian-wansink-cornell-food-brand-lab-retractions-jama

- A prominent professor at Cornell and acclaimed food researcher, was accused of p-hacking, leading to 15 retractions in 2018. He admitted in a 2016 blog post to repeatedly running tests until he found favorable results for interesting hypotheses. He told his students to find results that would go viral, pointing to his motivation for fame and publication.

Data Fabrication

Making up data or results and recording or reporting them

Case:https://en.wikipedia.org/wiki/Sch%C3%B6n_scandal

- The Schön scandal involved physicist Jan Hendrik Schön, whose groundbreaking semiconductor research at Bell Labs was revealed to be fraudulent, leading to the retraction of multiple papers and the revocation of his awards and doctoral degree.

Data Falsification

Researchers manipulate data in order to support a certain hypothesis or to make findings significant. This includes the falsification of images and tables and omitting portions of findings that contradict desired results.

Case:https://www.science.org/content/article/potential-fabrication-research-images-threatens-key-theory-alzheimers-disease

- A prominent researcher of Alzheimer's was found guilty of cropping and manually putting together images in order to support his research on Simufilam.

Case:https://www.npr.org/2023/06/26/1184289296/harvard-professor-dishonesty-francesca-gino

- A Harvard researcher specializing in behavioral science was accused of faking data in at least four papers.

External research organizations/nonprofits/universities

Improper management of research misconduct allegations

A university or academic institution is made aware of an instance of potential fraud but chooses to investigate the matter to an insufficient degree. This can be to avoid any loss of reputation or ranking placement.

Case: https://undark.org/2018/05/14/scientific-fraud-academic-fraud-universities/

- The article details cases of universities dismissing researchers convicted of fraud without properly notifying authorities, leading researchers engaging in questionable practices to continue conducting research at other institutions.

Inconsistency of IRB standards

IRB approval is decided locally, through universities or independent agencies. Each local party has differing protocols and standards for IRB approval, leading to frustration for researchers or inconsistent standards.

Case: https://doi.org/10.1111/medu.12693

- Study on the process of submitting 84 identical IRB requests to different IRB organizations. Found that five approvals could not be obtained, and personnel costs were $121,344.

Predatory Publishing Practices

Financial Gains
Exploitative practices that seek to prioritize profit over scientific integrity.

Lock-in practices
Journal policies aimed at “locking” a researcher into publishing with a certain company and preventing withdrawn submissions. This includes early copyright transfer and journal cascading. Lock-in practices are used for the financial gain of publishers, preventing researchers from publishing with competitors.

Copyright Transfer at Time of Submission
Copyright is transferred at the time of submission instead of the time of publication.
Case: https://pmc.ncbi.nlm.nih.gov/articles/PMC5673779/

- Study exploring three cases of Springer journals demanding copyright at the time of submission rather than at the time of acceptance. Details the pitfalls and ethical concerns of this practice.

Journal Cascading
Redirecting rejected manuscripts to affiliated or subsidiary journals, often of lower prestige than the journal originally submitted to. This prioritizes profit over quality by pressuring authors to accept publication.
Case:https://www.wiley.com/en-us/network/publishing/research-publishing/editors/cascade-journals-what-and-why

- Publishing company Wiley interviews the editor-in-chief of a cascade journal.

Questionable APC Practices
Unethical practices involving article processing charges (APCs), such as excessive fees or exploitation of authors for financial gain.

Pay-to-publish
A model where authors are required to pay fees to have their work published is often associated with predatory journals that lack proper peer review. These journals are often open-access and have insufficient peer review, with the only barrier to publication being steep APCs.
Case: https://predatoryjournals.org/journals-list-1

- A list of predatory journals that participate in the pay-to-publish structure updated by anonymous, volunteer-based researchers.

Double-dipping
Charging both authors (through APCs) and readers (through subscription fees) for access to the same research, exploiting both ends of the publishing process.
Case: https://link.springer.com/article/10.1007/s11192-023-04800-8

- A study of 1141 of Wiley Publishing's hybrid open access journals found that subscription prices for many journals did not significantly lower, pointing to evidence of double dipping.

Hostage papers

Holding accepted manuscripts without publication until authors pay additional fees or meet unreasonable demands. Papers are not allowed to be withdrawn until the author pays a "withdrawal fee." Authors are stuck with either paying a withdrawal fee or a publication fee, as they cannot publish their work elsewhere until the situation is resolved.

Case: https://www.science.org/content/article/how-i-became-easy-prey-predatory-publisher

- Academic details his experience with a journal holding his paper hostage for $400 after he noticed that the journal's parent publisher was on Beall's list, a list of predatory journals and publishing companies. His work was published online against his wishes, threatening his publication in a legitimate journal.

Quantity over quality

Practices that compromise the quality of research in an effort to gain more submission, publication, or take advantage of unsuspecting stakeholders.

Marketing email solicitations targeting authors

Aggressive and deceptive email campaigns inviting researchers to submit papers to low-quality or predatory journals.

Case: https://www.researchgate.net/publication/329380223_Marketing_via_Email_Solicitation_by_Predatory_and_Legitimate_Journals_An_Evaluation_of_Quality_Frequency_and_Relevance

- Email solicitation study investigating quality and quantity of mass email methodologies. 4% of all emails were considered relevant to the author's area of expertise.

Acceptance of papers beyond the scope of the journal

Publishing articles that fall outside the journal's stated domain, diluting its credibility and misleading readers.

EXAMPLE EMAIL

From: Andrea Flori <andrea@jsciencecenteral.org>
Date: Tuesday, August 27, 2024 at 6:41 AM
To: Scherer, William T (wts) <wts@virginia.edu>
Subject: Articles Related to Journal : Journal of Textile Engineering and Fashion Technology
Dear. William Scherer,

Best wishes of the day.

I came across your article entitled **" CHANCES AND CHALLENGES OF CHATGPT AND SIMILAR MODELS FOR EDUCATION IN M&S".**

Your research is exemplary and I would like to work with you for the improvement of our journal as well as to impart your research work to others.

If you are interested, I would like to invite you to publish a full-length paper for publication in the **Journal of Textile Engineering and Fashion Technology.**

I would appreciate receiving your submission on or before **Sep 17th, 2024.**

Anticipating your valuable response.

Best Regards,
Andrea Flori
Editorial Manager

Case:

Case: https://doi.org/10.1038/d41586-019-02023-7

- Article detailing the prevalence of non-indexed journals verified as predatory, publishing from domains outside of the scope of their marketed subject.

Excessive pressure to accept more papers

Institutional or financial incentives pushing editors to approve a higher volume of manuscripts, often at the expense of quality.

Case:https://www.science.org/content/article/open-access-editors-resign-after-alleged-pressure-publish-mediocre-papers

- 10 journal editors of *Nutrients* resigned after facing intense pressure from parent publisher MDPI to accept more papers despite the lower quality.

Misrepresentation

Falsely presenting research, credentials, or journal scope to mislead authors, reviewers, or readers for personal or financial gain.

Hijacked journal

An illegitimate organization impersonates a legitimate journal, cloning the legitimate website and charging illegal article processing fees to unsuspecting researchers.

Case:https://liverpooluniversitypress.blog/2024/04/17/journals-and-publishers-facing-issues-from-fraudulent-sites/

- Liverpool University Press's experience with the journal International Development Planning Review being hijacked.

Special issues by fraudulent academics
Fraudsters request a special issue from a legitimate journal, posing as a real researcher using a slightly different email address. Once accepted, the fraudsters can charge fees for papers to appear in the special issue with little peer review.
Case:https://retractionwatch.com/2019/12/27/disbelief-researchers-watch-out-for-this-new-scam-involving-journal-special-issues/
- Impersonated researchers reaching out to non-predatory journals to receive special issue publications.

Prestige Seeking
Practices involving growing academic distinction, career growth, or institutional reputation.

Falsified Metrics
Practices involving manipulating authorship, citations, impact factors, or publication records to misrepresent research influence.

Coercive Citation
An author is pressured to include unnecessary references in their paper by a journal editor, co-author, or authority.

Journal seeking citations of journal
A practice where journals pressure authors to cite articles from the same journal to artificially inflate its impact factor. Often, researchers include more citations from journals they are submitting to because of the precedent set by coercive citations.
Case: https://doi.org/10.1038/d41586-023-01532-w
- The study found that researchers who agree to include more citations from the journal are more likely to get published.

Editor seeking citations of self
Editors require or encourage authors to cite the editor's own work, often to boost their academic profile or citation count.
Case:https://academia.stackexchange.com/questions/215334/editor-is-requesting-to-cite-recent-papers-from-the-same-journal
- Case of academic pressure by journal editors to include citations of themselves.

False Impact Factor
Practice involving modifying or misrepresenting a journal's impact factor and/or other impact metrics.
Case:https://web.archive.org/web/20160420233559/https://scholarlyoa.com/2015/09/17/new-fake-metric-company-sells-nine-bogus-metrics-to-publishers/#more-5957
- Instances of selling fake impact metrics to predatory journals.

Case:https://web.archive.org/web/20160503043910/https://scholarlyoa.com/othe

r-pages/misleading-metrics/

- List of suspicious, misleading metrics companies that profit off of quantifying or scoring a journal's quality.

Citation Gaming

A practice where researchers manipulate citations to achieve performance metrics that are not based on actual performance.

Citations hidden in metadata

The inclusion of citations in manuscript metadata (e.g., supplementary files or acknowledgments) to increase citation counts without explicit visibility in the main text. This specifically occurs on a journal level in an attempt to increase citations to the journal. Journals will cite themselves in the metadata to increase metrics.

Case:https://retractionwatch.com/2023/10/09/how-thousands-of-invisible-citations-sneak-into-papers-and-make-for-fake-metrics/

- Case of citations hidden in metadata by journals mainly published by Technoscience Academy. Citations not referenced within the paper were documented by CrossRef and increased Technoscience's metrics.

Citation stacking

A coordinated effort between authors, journals, or publishers to excessively cite each other's work, creating a mutually beneficial increase in citation metrics.

Case:https://retractionwatch.com/2018/04/04/can-soil-science-research-dig-itself-out-from-a-citation-stacking-scandal/

- Researcher Artemi Cerda asked other authors to cite his own papers and journals that he worked with in order to increase his metrics.

Questionable Editorial Board Practices

Unethical or biased actions by journal editors that compromise the integrity of the peer review and publication process.

Falsified Editorial Board

Journal advertises editorial board with prominent researchers that do not have any connection to the journal and do not know their names are being stolen. This is used to give predatory journals the illusion of credibility.

Case:https://www.ftc.gov/news-events/news/press-releases/2017/11/ftc-halts-deceptive-practices-academic-journal-publishers

- FTC shuts down several journal publishers that falsely included prominent academics on their journal's editorial boards and hid deceptive charges to researchers.

Unqualified Academics serving as editors
Predatory journals looking to appear credible offer editor positions to researchers outside the scope of the journal or with minimal credentials. Journals are motivated to look legitimate, and researchers want to appear prestigious.
Case: https://doi.org/10.1038/543481a

- This is a case of a predatory journal offering an editor position to a fake academic profile, illustrating the lack of standards surrounding these seemingly prestigious positions.

Funding

Private Funding
Research sponsored by private companies, often in sectors like pharmaceuticals, technology, or manufacturing.

Conflicts of interest
Situations where financial or personal relationships influence the objectivity and integrity of research, potentially leading to compromised outcomes. Private companies fund research with underlying motives, threatening the objectivity of these studies. The private company may be hoping for a certain outcome, resulting in researchers feeling pressure to create these results. Also includes any corporation that attempts to influence academic work in a conference setting by sponsoring conferences in their discipline.
Case: https://doi.org/10.1016/j.spinee.2013.10.047

- The study concluded that the source of funding is correlated with the outcome and levels of evidence presented in spinal research.

Agenda-driven Funding
Funding used to generate research that supports a certain viewpoint rather than for the discovery of new knowledge. Leads to bias within research or results manipulation.
Case: https://www.niskanencenter.org/how-think-tanks-drive-polarization-and-policy/

- Interview about partisan think tanks and their impact on research. Partisan think tanks use numbers and studies to justify policies, distributing this literature to the public to strengthen their positions.

Federal Funding
Research supported by government agencies or nonprofit organizations typically focused on public interest, education, or scientific advancement.

False expense reporting
The misrepresentation of financial expenditures in grant reporting, such as inflating costs or claiming unapproved expenses, to misuse federal funds.
Case: https://academia.stackexchange.com/questions/51305/grant-fraud-should-i-bust-my-phd-advisor

- PhD student expresses concern over false expense reporting by advising professor. This professor produced fake documents and conferences to justify the high expenses of researchers not physically at the institution.

Overcharging for resources
Billing for resources, equipment, or personnel at rates higher than their actual cost to extract excess funds from grants.
Case: https://www.justice.gov/usao-ma/pr/harvard-university-agrees-pay-over-13-million-resolve-allegations-overcharging-nih-grants

- Harvard University agreed to pay over 1.3 million after researchers overcharged government grants for labor costs not accurately accounted for.

Falsified applications
Submitting grant proposals containing fabricated data, exaggerated qualifications, or false claims to secure funding dishonestly.
Case: https://www.justice.gov/opa/pr/professor-charged-operating-multimillion-dollar-grant-fraud-scheme

- The researcher was found guilty of defrauding the NIH of $16 million in grant funding by falsifying data used in grant applications.

Conflicts of interest in subawards
Situations where relationships or affiliations between primary investigators and subaward recipients compromise the integrity of funding allocations or decisions.
Case: https://www.sts.org/about-sts/policies/conflict-interest-policy-applicable-subaward-issued-under-public-health-services-prime-award

- A society outlines protocol for conflicts of interests in subawards.

Indexes / Databases

Inclusion of Illegitimate Work
Reputable indexes include illegitimate, insufficiently peer-reviewed, or low-quality work along with legitimate work. Predatory journals can find their way into reputable indexes, lending credibility to poor work.
Case: https://doi.org/10.1162/qss_a_00213

- The study found evidence of 324 predatory journals on Beall's list being indexed within Scopus.

Case: https://doi.org/10.1038/d41586-021-00239-0

- Hundreds of predatory journals appear in leading indexes and databases

Insufficient labelling of retractions
A retracted paper is not indicated as retracted within a database, leading researchers to trust unreliable research.
Case:https://retractionwatch.com/2021/07/02/in-this-study-journal-websites-and-bibliographic-databases-did-not-consistently-display-the-retracted-status-of-articles/

- Interview with database expert on indications of retractions within databases. She conducted a study finding that databases displayed a wide amount of variability in how consistently they labelled papers as retracted.

Exclusion of non-English language work and bias
Databases display bias against work in languages other than English, creating more difficulty for researchers from other countries to distribute their work.
Case: https://doi.org/10.1007/s13280-016-0820-7

- Study finding that publications in English have a higher number of citations than those published in different languages.

Questionable / Predatory Conferences

Organization of Conference
Questionable practices in research conferences related to facilitation.

Insufficient Facilitation
Conferences are not well run and are conducted in an unprofessional manner. This is frustrating for researchers and prevents a healthy sharing of knowledge, the primary purpose of conferences.
Case: https://eos.org/opinions/the-alarming-rise-of-predatory-conferences

- The researcher details the experience of attending a “fake” conference.

Case:https://www.newstapa.org/article/ZaY90E7FhKPDL0F?lang=eng

- ~1300 professors and other academic entities were found to have attended a bogus conference through allocated R&D funding.

Charging unreasonable fees or using suspicious payment methods
Conferences presenting abnormally high registration fees for participants or unreasonable demand for one method of payment, typically credit card
Case:https://www.voxweb.nl/nieuws/welcome-to-a-fake-scientific-conference-the-best-way-to-extort-money-from-scientists-i-feel-cheated

- Researchers describe non-refundable entry fees and wasted R&D funding on conferences with low-impact contributions and unrelated topics.

Insufficient Acceptance or Peer Review Processes
Conferences do not provide rigorous peer review leading to researchers publishing work without proper expert feedback. This results in a similar model as pay-to-publish journals where researchers pay a fee to attend the conference and get a publication in return.

Case: http://www.bartneck.de/2016/10/20/ios-just-got-a-paper-on-nuclear-physics-accepted-at-a-scientific-conference/

- A New Zealand researcher submitted a paper written entirely by IOS autocorrect, and it was successfully accepted by a fraudulent conference.

Acceptance of work outside conference scope

Work not relevant to the topic of a conference is accepted. This points to the predatory conference's goal to maximize participants to increase profits at the expense of quality.

Case: https://doi.org/10.1007/s11948-017-9906-2

- Article discussing predatory behaviors of bogus conferences, one of them including questionable acceptance processes.

Manipulation of interdisciplinary topics

The unusual assorting of topics listed on conference material artificially broadening the scope of a conference without proper academic oversight

Case: https://doi.org/10.1007/s11948-017-9906-2

- Multidisciplinary conferences listed as an indicator and practice of suspicious conferences.

Misrepresentation

Practices involving conferences misrepresenting research material or entities.

Rebranding/False Advertisement

Replication of existing conferences or taking over questionable publishing groups, creating alternate websites, luring researchers into paying fees and engaging. Use of language such as "renowned" or "international" to create an illusion of prestige around the conference and attract submissions. This includes claiming respected organizations as partners/sponsors.

Case: https://doi.org/10.7759/cureus.40126

- Review examining the practices of hijacked conferences that replicate existing publishing groups.

Falsified board, members committee members, or keynote speakers

Conferences falsely include prominent members of a research field as board members or keynote speakers without their consent. These speakers give credibility to the conference, and many have no knowledge that their likeness is being used.

Case: https://doi.org/10.1038/495421a

- 35 editorial board members suspected to be fictional, with only their name and country listed for Archives des Sciences, a proven sham journal.

Case: https://www.chemistryworld.com/news/predatory-conference-scammers-are-getting-smarter/3009263.article

- Academic Graham Richards impersonated for fake event, 'iPharma.'

General Terms

Paper Mills
Organizations that charge researchers for authorship on articles. These organizations often infiltrate journals at multiple levels, planting fake contacts as peer reviewers to get low quality or fake research into journals. The scale of these organizations can be large, and special editions of journals are especially susceptible.
Case:https://retractionwatch.com/2023/12/19/hindawi-reveals-process-for-retracting-more-than-8000-paper-mill-articles/

- Hindawi retracted over 8,000 paper mill articles from their journals in 2023 - more than ever seen before in one year. This cost Wiley 40 million in lost revenue, and caused Wiley to drop the name “Hindawi” from their title.

Predatory journals
It is a blanket term for journals that accept articles with no peer review, with the only requirement being payment for publication. Targeting young, inexperienced researchers and professors up for tenure.
Case:https://www.theguardian.com/australia-news/2014/nov/25/journal-accepts-paper-requesting-removal-from-mailing-list

- The professor sent in a paper with the same sentence asking for removal from a predatory publisher’s email list. This article was accepted on the condition of payment of a $150 fee
- *Journals that Scherer and Bolton get in their inbox soliciting submissions

Tortured phrase
Re-phrasing of well-established terminology from AI models attempting to disguise plagiarism
Case: https://pubpeer.com/publications/2EAF66D0B6A78905B0911ACF1A2820

- Pubpeer: researcher pointing out tortured phrases in ant-lion optimizer paper (insects = creepy crawlies)

Article Processing Charge (APC)
Cost journals charge researchers to publish their work, often used in the open access publishing space.
Case:https://guides.library.unlv.edu/c.php?g=901395&p=6486147#:~:text=Article%20Processing%20Charges%20(APCs)%20are%20charged%20to,hosting%2C%20archiving%2C%20preservation

Zombie Papers
Papers that are continually circulated within academia and research despite being previously retracted
Case: https://doi.org/10.1038/s41419-019-1450-3

- In 2016, two papers by Professor Federico Infascelli’s group, which claimed health risks of GMO foods, were retracted for image manipulation, yet these retractions went largely

ignored in later studies that continued to cite them. This undermines scientific consensus by presenting settled issues as still debatable, even in reputable journals

Hijacked conferences

Impersonating a legitimate conference and soliciting submissions without the knowledge/permission of the original organization. A type of “rebranding” for predatory conferences.

Case: https://blog.regehr.org/archives/272

- Blog detailing experience with conference “Annual International Conference on Programming Languages and Operating Systems (PLOS).” A scam email was sent out soliciting research, while the legitimate organization had no knowledge of this occurring.