

How and why to read, write, and publish academic research

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Abstract: This article is designed to concisely teach undergraduate and new graduate students lessons in reading and writing I have learned in my past two decades as a university student, teacher, and researcher (including through publishing, retracting, correcting, and republishing articles in outlets with varying levels of “impact” and publication fees). Don’t just start at the beginning of an academic article/book and try to read straight to the end! Instead, I recommend starting by reading the title(s)/author(s) and abstract(s), then the figures, reading the Discussion section, and skimming/spot-checking the references, peer reviews, and data (e.g., spreadsheets, audiovisual stimuli, surveys), if available. Only once you have done this and evaluated whether it seems worth your time do I recommend deciding whether to read every word of some/all sections/chapters (and any accompanying supplementary material) or digging deeper into reanalysing/ replicating the data. I recommend writing accordingly so that most of your key information will be conveyed even if your reader only gets through your title, abstract, and figures. I discuss various strategies to improve your own academic reading/writing and the broader culture of academia, from practical (e.g., formatting and tracking references and citations using Zotero and Google Scholar, asking constructive questions rather than self-promoting comments, publishing using *Peer Community In Registered Reports*) to philosophical (e.g., ethical issues in authorship, citation, AI, publishing, and funding). I explain the intended goals of academic research (to create and distribute valuable new knowledge) and perverse incentives that lead us astray from these goals (e.g., chasing prestige and funding). I conclude by posing the open question of if and how we should dismantle the current extortionary academic-industrial complex and re-design it to align with its intended goals.

Please note: This is a preprint (public working draft not officially published in its final Version of Record in a journal, book, etc.). I welcome questions, comments, citation, and constructive criticism, bearing in mind that this is a draft subject to revision. Please direct correspondence to patrick.savage@auckland.ac.nz

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NB: Appendix includes a condensed list with links to relevant resources.

Introduction

In 2004, as a 2nd year undergraduate student majoring in music composition at a liberal arts college, I read a book called “*How To Read A Book*” (Adler & van Doren, 1972) during a course on “Introduction to Black Studies” that completely changed the way I read and think. Until then, I would read the books and articles assigned for my courses by starting at the

beginning and reading until the end, or until I ran out of time before class. Along the way, I would highlight key phrases and write notes as I went. This felt like a normal way to read, and seemed to have served me well throughout high school and my first year of undergrad, although I was increasingly finding it harder to finish all my assigned reading.

When we discussed *How To Read A Book*, I realised I had been reading wrong the whole time! Reading from beginning to end is fine if you are reading a novel for enjoyment, especially if you don't want to spoil the ending. But if you want to do analytical reading and critical thinking of the kind needed for academic research, it is very inefficient – especially if you run out of time before you get to the main conclusion of the book/article!

Fast-forward to 2018, when I became a tenure-track faculty member and started teaching my own classes. I began assigning *How To Read A Book* to my own students at the beginning of every semester, but ironically found it was too long for most of my students to read. It is also more aimed at reading humanities books, and less the scientific articles that I mostly assign to my students now. And its emphasis on “Great Books of the Western World” has definitely not aged well.

When I searched for something more relevant and concise, I found “How to (seriously) read a scientific article” (Pain, 2016), which interviewed a diverse array of scientists and shared some of their tips. But it had the opposite problem of feeling too short and targeted at scientists who already knew key information about how to read scientific articles, without providing a coherent method that an undergraduate or new graduate student who hadn't previously done much science could use. So I decided I would write my own “how to” guide to explain my method I had developed over my career as an ethnomusicologist and scientist experimenting with these and other ways of reading and writing scientific and humanistic journal articles and books.

How to read academic research

The further I got in academia, the more I realised that it's often not worth your time to read every word of every book or article. Life is full of opportunity costs. Every hour you spend reading one article/book is an hour you don't spend reading another – not to mention performing/writing your own research, spending time with loved ones, etc. Often, you can learn more by spending the same amount of time partially reading 10 different articles/books than you can by spending that time closely reading a single article/book.

This does not mean you should never read an entire article/book! Often it is essential to fully read and understand all the details of a work, especially if it is closely connected to new research you are working on. I hope that you find this article and some of my academic research interesting and important enough that you choose to ultimately read every word. But typically, such complete and meticulous reading ends up being the exception rather than the rule (Bloom, 2023).

Instead of reading from beginning to end, *How To Read A Book* taught me to jump forward and backward using “systematic skimming” and “pre-reading” to identify key information (e.g., main conclusion, main evidence supporting that conclusion, why this conclusion matters) before I started to closely read the main text in detail. It also taught me that sometimes reading beyond the book/article itself (e.g., online searches about the book/article, its author(s), and its impact in news media/policy) helped to understand the context before close reading. For

example, you probably don't want to spend a lot of time trying to read the Methods and Results section of an article if it turns out it was retracted because the data were fabricated!

If you haven't already, stop reading now and skim through the rest of the article to check out the figures and the "Why read or write academic research at all?" section. You might want to Google one of the topics that catches your interest or quickly check out my lab homepage (<http://compmusic.info>) or Google Scholar profile (<https://scholar.google.com/citations?user=UCIt79UAAAAJ>). Still want to know more? Then come back here and continue reading.

As I started graduate school in psychology in 2009, I learned that scientific journal articles had developed a somewhat standardised structure that made the reading process easier, particularly by an "Abstract" that briefly summarised key elements of an article¹ (typically in under 300 words) and the use of a small number (typically 3-6) of main figures/tables that visualised key methods, data, and analyses (Fig. 1). Increasingly, journals are also encouraging or requiring authors to make their titles, abstracts, and figures as specific as possible to ensure that key information (e.g., main conclusion, sample size/location, strength of effects, distribution of individual data points) can be easily evaluated ("Show the Dots in Plots," 2017; "Writing More Informative Titles and Abstracts," 2023).

I also pay attention to the authors and their institutional affiliations². Are the authors known for a particular hypothesis? Are they from the countries and communities where the data was collected ("Nature Addresses Helicopter Research and Ethics Dumping", 2022)? Are any affiliations or funding from organisations with vested interests in the results? The answers to these questions are not necessarily disqualifying, but may provide additional angles to consider as you read. For example, data from a study about smoking funded by a tobacco company or about religion funded by a religious charity are not necessarily wrong, but the authors may or may not be under (conscious or unconscious) pressure to interpret them in certain ways.

Most scientific articles also tend to use a standardised structure, with an "Introduction" summarising why the study was done, "Methods" explaining how it was done, "Results" describing what was found, and "Discussion" section connecting the Results to the Introduction to interpret how the new findings added to our previous knowledge ("so what?") and clarify any limitations and future directions. These sections are all typically summarised in condensed form in the abstract (Fig. 1).

¹ Humanities journals are also increasingly adopting abstracts, and book publishers are increasingly adopting individual abstracts for each chapter. However, older articles/books often don't include these, which unfortunately makes it more work for the reader to have to figure out the key information from the full article/chapter itself without the aid of an abstract conveniently summarising everything.

² Author number and order can matter but also vary a lot by field and over time. Best practice is to use "Author Contribution" statements to specify who did what, rather than relying on inferring contributions based on author order/number (NISO CRediT Working Group, 2022). Just within the fields I work in, ethnomusicologists typically publish sole-authored research and often determine author order alphabetically in the rare but increasing instances of coauthorship. Meanwhile, most psychology articles these days have multiple coauthors, sometimes numbering into the dozens or even hundreds. Often a graduate student or postdoctoral researcher (recent PhD graduate) who does most of the laborious work (e.g., running experiments, analysing the data, drafting the paper) will be listed as 1st author, their supervisor and/or "Principal Investigator" (PI) who conceives and manages the project, writes the grant applications that fund the research, and mentors the 1st author, will be last author, with other authors falling in between, sometimes in idiosyncratic orders. This was the model we used in Fig. 1, where my PhD student Yuto Ozaki was first author, I was last author, and the other 73 middle authors were listed in the order they joined the project.

ANTHROPOLOGY

Globally, songs and instrumental melodies are slower and higher and use more stable pitches than speech: A Registered Report

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Both music and language are found in all known human societies, yet no studies have compared similarities and differences between song, speech, and instrumental music on a global scale. In this Registered Report, we analyzed two global datasets: (i) 300 annotated audio recordings representing matched sets of traditional songs, recited lyrics, conversational speech, and instrumental melodies from our 75 coauthors speaking 55 languages; and (ii) 418 previously published adult-directed song and speech recordings from 209 individuals speaking 16 languages. Of our six preregistered predictions, five were strongly supported: Relative to speech, songs use (i) higher pitch, (ii) slower temporal rate, and (iii) more stable pitches, while both songs and speech used similar (iv) pitch interval size and (v) timbral brightness. Exploratory analyses suggest that features vary along a “musi-linguistic” continuum when including instrumental melodies and recited lyrics. Our study provides strong empirical evidence of cross-cultural regularities in music and speech.

Title

Authors

Abstract

Introduction (why?)
Methods (how?)
Results (what?)
Discussion (so what?)

(excerpts of)
Figures

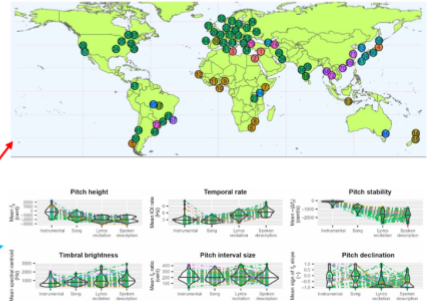


Figure 1. Example of some key parts of one example article from my lab (Ozaki et al., 2024): title, authors, abstract, and excerpts of key figures.

Increasingly, articles will also provide standardised statements (typically just before or after the References section) regarding “Data/code availability”, “Author contributions”, “Acknowledgments”, “Funding”, “Conflicts of Interest”, “Ethics and Inclusion”, “Peer Review”, etc. that are often worth briefly checking before delving into the main text³. In particular, it is increasingly expected or required for articles to publicly share raw data and analysis code. I find that doing brief “spot checks” of such data/code (e.g., skimming through the main spreadsheet of raw data; listening to a few randomly selected audio/visual recordings used as experimental stimuli; or testing out the online survey interface used to collect data) sometimes helps to get a better sense of the value and limitations of the data than comes across in the processed figures in the article.

I also often skim the Reference section to check which key works (from my and other labs) are cited or excluded. As I wrote in one of my own peer reviews: “the basic requirement of original academic research, whether qualitative or quantitative, is to engage with and cite previous relevant work and demonstrate how you add knowledge to it.” (Savage, 2024a). This is important not only to understand how new research builds on previous work to create new knowledge, but also because – for better and for worse – citations are one of the key proxies used to evaluate the impact and value of academic research, with websites such as Google Scholar⁴ automatically tallying how often different articles and researchers are cited (Fig. 2)⁵.

³ I have included all of these sections for this article, though some apply more than others. I may have gone a bit overboard in them – you don’t always necessarily need to provide as much detail as I have here!

⁴ Once you have at least one Google Scholar-indexed publication, I recommend creating your own profile (<https://scholar.google.com/intl/en/scholar/citations.html>) as a free and easy standardised way for others to find and evaluate your research and its impact. Google Scholar can automatically notify you when others cite your research and offer suggestions of relevant new articles for you to read based on your pattern of past citations. It also allows you to set up manual alerts for when new research appears by certain authors or on certain topics.

⁵ Unfortunately, as such citation metrics become targets, they become abused (following “Goodhart’s Law”) by some who use unethical practices such as over-citing their own research and under-citing rival researchers. Just the other week, a Harvard professor was accused of plagiarism for such citation practices (specifically, downplaying the importance of a rival’s competing work by relegating it to a footnote in one article and then intentionally not citing it at all in the next article; Cammarata, 2024). I’ve read research where 1/3 or more of the reference list consisted of self-citations of previous work by the authors - in one memorable case it was 100%! (Self-citation rates vary a lot by field, career stage, etc., but typically range between 0-20% [Szomszor et al.,

Considering ethical aspects of citation practices is thus a crucial, though underappreciated, part of academic reading and writing. This includes “citational justice”, ensuring proper credit to researchers from under-represented demographics (Smith, 1999; “Nature Addresses Helicopter Research and Ethics Dumping”, 2022).

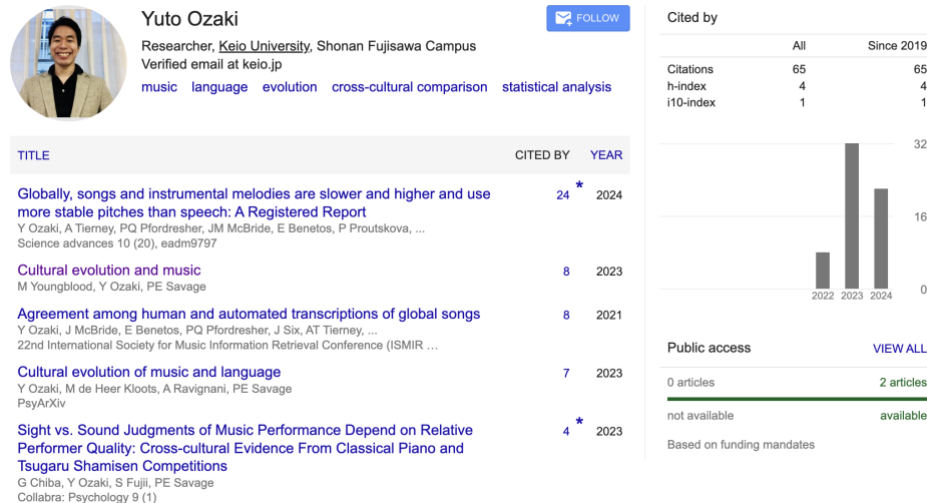


Figure 2. The top part of the Google Scholar profile of Yuto Ozaki (1st author of the article in Figure 1). Individual articles he publishes are automatically tracked and sorted by number of citations, with various metrics aggregating overall citations over time displayed on the right-hand corner. (“*” indicates articles that were manually merged from different versions that were erroneously indexed as separate articles by Google Scholar). For the dangers of relying on citation metrics, see DORA (2013) and “PCI and Impact Factors” (2018). Source: <https://scholar.google.com/citations?user=qtxOpmMAAAAJ> (accessed 12 September 2024).

Peer review, or critical evaluation by other experts to determine whether something is “valuable new knowledge”, is often considered the defining feature that separates “academic” articles/books from “non-academic” publications like newspaper articles, blogs, and popular books. Historically, the actual written peer reviews themselves were not published, only read by editors to decide whether to publish the reviewed research. Now that we are no longer constrained by printed page space, this knowledge no longer needs to be hidden, so some have begun publishing the full peer review history of articles online (including expert reviews, editorial summaries, and author responses, often extending through multiple rounds). These can sometimes be longer than the actual articles themselves, but often get at the heart of what is really important or challenging about the research, so are often worth at least skimming if they are available. You can read most of the multi-stage peer review process behind the article shown in Fig. 1 at (Chambers, 2023a&b)⁶.

2020]. For comparison, the reference list for this article is currently around 17% (8/47) self-citations, which is on the high side but I think reasonable given that this article focuses on lessons I’ve learned through my own career reading and writing.)

Some might even argue that my choices to post my peer review as a public preprint and to cite it in this article are actually examples of me trying to inflate my citation metrics. I disagree, but the line between under- and over-citing research can be fine and blurry – doing ethical research is hard! On the other hand, I still prefer individual article-level metrics of impact such as Google Scholar citations or “altmetrics” to the main alternative method of evaluating research based on the prestige/impact of the journal it was published in (e.g., based on metrics such as Journal Impact Factor; DORA, 2013). The best way to evaluate someone’s research is to actually read it carefully, but here we return to the problem of limited time.

⁶ When it comes time to write your own response letter to peer reviews, this can serve as a template: https://rr.peercommunityin.org/stream_pdf/t_recommendations.reply_pdf.8fe19f2cc28ca793.4f7a616b69206574

There is no single “correct” way to read academic research, but others have offered helpful tips that work best for them (Adler & van Doren, 1972; Pain, 2016). Personally, I have found that by carefully reading just the title, abstract, figures/tables, and Discussion section and spending a few minutes spot-checking any companion data, I typically feel I have learned most of the knowledge that is contained in the full article (Fig. 3). If the authors have done a good job with their title, abstract, and figures, I should by now already know key information about the data and methods (e.g., where/how were participants recruited? how many?), but often this information is sadly buried in the Methods section, so I will often skim that next if needed. Only if I have the time and interest do I go on to read the rest of the text in the article and any supplementary material. If I am really interested, I might even go on to replicate the original analysis using the original data/code, and perhaps even try reanalysing it using alternative methods. This can be quite time-consuming and so I do it rarely⁷.

After you’ve finished reading, I recommend making a note of your main impressions and key figures/quotes. I write these into the “Notes” tab in Zotero (a free reference management desktop app) so that I can easily search back over all the research I read to remind myself what I thought about them when it comes time to cite them in my own research. Zotero largely automates the laborious process of formatting references, which can be especially helpful when you need to reformat/reorder your references to fit the style used by a certain professor or publisher. However, it’s important to manually check and correct your reference list before submitting, as automated methods are rarely perfect.

[20616c20526576696577657220526573706f6e73652e646f63782e706466.pdf](https://doi.org/10.20616c20526576696577657220526573706f6e73652e646f63782e706466.pdf). The important thing to emphasise is to try to focus on quoting how you have specifically *changed the revised manuscript* to address the reviews. Explanatory text in the response letter not found in the revised manuscript should be as minimal as possible..

⁷ I have, however, been on the receiving end of such reanalysis. The first analysis code I ever published to a GitHub repository contained a serious error in the way I treated missing data. In a nutshell, I converted “NA” values indicating an absence of evidence (of beliefs in moralising gods) into “0” values, indicating evidence of absence. Other researchers (including some rivals and some collaborators) identified this error and reanalysed the data and code we published to show how our results could change if other ways of dealing with missing data were used (Beheim et al., 2021). This led us to retract and republish our article after correcting the data and code (Whitehouse et al., 2021, 2023). Such issues with missing data turn out to be extremely common, and the saga became a literal textbook example of how not to deal with missing data, in a statistics textbook section entitled “Where is your god now?” (McElreath, 2020).

To be honest, the whole 3-year process between identifying the error, retracting, and republishing the corrected article was incredibly stressful and I could barely sleep for weeks during some parts of it. In retrospect, however, it may have been one of the best things that happened to me as it taught me some invaluable lessons not just about dealing with missing data, but about how and why we do research, why anyone cares whether complex societies precede or follow moralising gods, or why anyone cares whether the results are published in *Nature* or in *Religion, Brain & Behaviour*. I could have reacted by deciding to never again share data or code that might again leave me vulnerable to criticism. Instead, I decided to embrace maximal transparency via formats like Registered Reports designed to reduce biases in the publication process and to identify and correct critical errors *before* collecting and analysing data (Henderson & Chambers, 2022).

I also have a nice example of when sharing data/code had a more unambiguously positive payoff. I was recently contacted by a prominent news outlet wanting to feature our study from Fig. 1. Thanks to our open data/code, they were able to reanalyse and re-visualise our data in a way that was more striking and intuitive for a broad audience than the way we visualised it in the original scientific article ([REFERENCE TO BE ADDED ONCE PUBLISHED]).

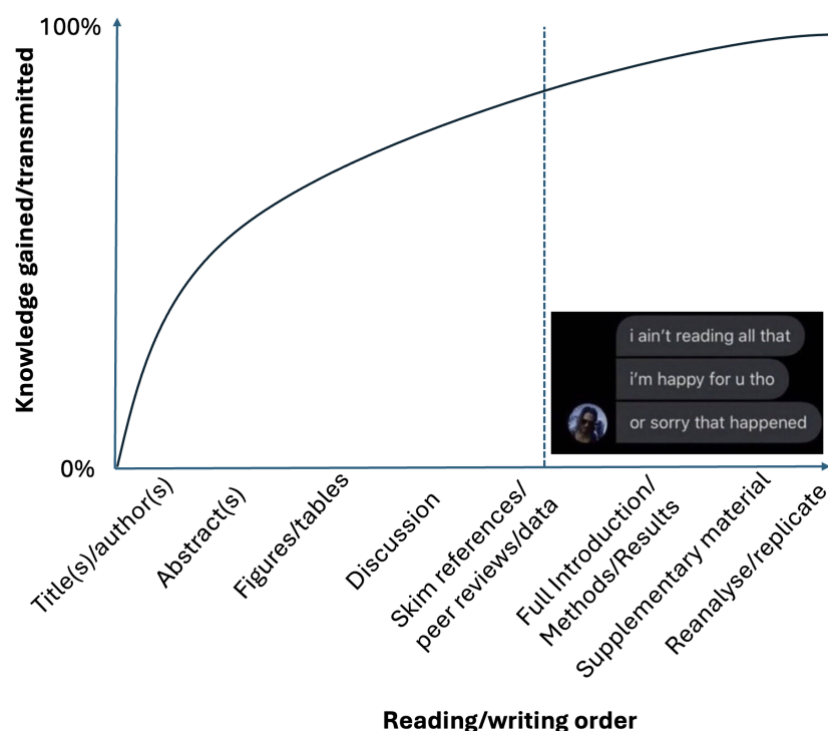


Figure 3. Stylised figure showing my proposed reading/writing order to maximise efficiency given diminishing marginal returns as you read academic research in greater detail. While analogous approaches can be applied to many books⁸, review articles, and humanities articles (e.g., Adler & van Doren, 1972), this approach is particularly suitable for empirical scientific journal articles. Meme from Adam & Walker (2019).

Try not to focus only on negatives or only positives but offer constructive criticism. The questions I ask my students to keep in mind are:

- 1) **How convincing is it?** (e.g., how strongly do the data shown in the figures support the main claims in the title and abstract?)
- 2) **What did you like?**
- 3) **How could it have been improved?**
- 4) **What questions would you like to ask the author?**

Practise framing questions to be short and open-ended, so if you were to ask them after a presentation, it would lead to useful discussion. Try to be ready to ask a single, short question after a presentation or in a class/journal club. Try not to worry about feeling like it is a stupid question. There are few stupid questions. What is stupid is “questions” that are actually self-promoting comments. Please don’t be that guy (and it’s almost always a guy) who hogs most of the Question and Answer time after a conference presentation rambling on about their own research, ending with “so what do you think about that?”. If you are asked such a stupid “question” as a presenter and want to diplomatically avoid wasting any more time, try saying something like “Thank you for your comment. Next question, please.”

⁸ For some books/articles “Title(s)” includes reading chapter and section headings in the Table of Contents, and “Abstract(s)” includes individual chapter abstracts in addition to any general abstract for the whole book. Many journals do not clearly separate the “Results” and “Discussion” section of articles – in these cases I recommend reading the final few paragraphs of the combined Results/Discussion section first instead. In contrast, the part closest to the “Discussion” section of a book is typically the first chapter, which tends to summarise the key argument and contribution of the book.

I encourage you to experiment with reading articles/books using my proposed method and methods proposed by others (e.g., Adler & van Doren, 1972; Pain, 2016). See what works best for you, and feel free to pick and choose from our suggestions and your own preferred methods.

How to write academic research

There are many published guides to writing - much more than for reading - so I will not try to provide a detailed guide here. When I was a new grad student I found the short “Publish like a pro” (Powell, 2010) particularly useful when drafting my first research articles, and now recommend it to my own students. I particularly emphasise the following points:

- 1) **Good writing starts with good thinking** (“*the writing process starts at the earliest stages of designing a research project. ‘Nothing beats a comprehensive, thought-out experiment. Do that up front and your writing will come so much more easily...’*”)
- 2) **Less is more** (“*a lot of weak data does not make up for having less, but more powerful, data*”; “*the discussion is not a treatise on the paper’s subject*”⁹)
- 3) **Imitate research that inspires you** (“*Aspiring writers should have a template to hand — a previous paper published by the lab or a ‘near-neighbour’ article from the same journal. Nazaroff advises paralysed would-be writers to take the template concept one step further by counting the number of paragraphs in each section, the number of figures and the number of references.*”)
- 4) **Get feedback** (“*Writers should ask not only the principal investigator to view drafts, but also every co-author, as well as fellow students or postdocs, and colleagues outside the immediate field of research. Lead authors should give co-authors set deadlines of 10 days to two weeks to suggest changes.*”)

I would just add to this that I believe the key to good writing is thinking about your reading audience. So, the easiest way to improve your writing is to reverse my reading tips above. Imagine that, realistically, most of your audience “ain’t reading all that” (Fig. 3; Adam & Walker, 2019) and may only read your title, abstract, and figures (and if you’re lucky, read your Discussion section). Try to craft those so that those readers will still get most of the important points from your own research. In fact, I recommend writing in the same order as reading: start by drafting your title/authors, then abstract, then figures. Only once you (and any collaborators/supervisors) are happy with their basic content do I recommend moving on to drafting detailed text¹⁰.

I recommend starting with a written outline before drafting the main text, but I particularly recommend treating your figures as a kind of visual outline. Imagine that the job of your written text is to create a narrative interpreting the context and meaning of those figures. Giving oral

⁹ Confession: we did not do this well in our sprawling 3,300-word Discussion section in Ozaki et al. (2024).

¹⁰ You do not necessarily have to have collected all or even any of your data or made your conclusions to create figures/abstracts/titles! In fact, I am a strong advocate for using Registered Reports, where the Introduction and Methods sections are peer-reviewed and accepted in principle before collecting and analysing data (Henderson & Chambers, 2022). Importantly, however, you are required to include an abstract and table specifying how your proposed design would add to existing knowledge, and encouraged to provide figures with simulated and/or pilot data to show how your proposed analysis methods would look once you have collected real data. In my experience, the process of creating such tables and figures often brings to light crucial weaknesses in the design that are not obvious when the design is simply described using text, allowing these to be improved prior to collecting real data. Of course, you will ultimately want to revisit and revise your abstract/title, especially once you have collected data to enable you to make firm conclusions. For example, the original title of the article shown in Fig. 1 before collecting data was “Similarities and differences in a global sample of song and speech recordings” (Chambers, 2023a).

presentations¹¹ using slides in classes and conferences is a good way to develop this kind of visual narrative structure before committing it to text.

On coexisting with AI in academic research

I have never used ChatGPT or any other generative artificial intelligence (AI), but most of my students find AI useful. The ways they use it sound reasonable to me and basically similar to the ways I've grown up using automated tools such as spelling/grammar checking and online translation services. I was particularly struck that many of my non-native English speaking students find AI useful for translation, which they then check and edit as needed. This makes sense to me as someone who wrote my PhD dissertation in a non-native language (Savage, 2017). In my case, I first wrote a full draft of my dissertation in English, then manually translated it into Japanese and asked native Japanese speakers (fellow student Ki'ichi Suganuma and my professional translator wife, Sawa Matsueda Savage) to help check and edit my grammar. If I could have saved the three of us months of work using AI translation, it would have been tempting. On the other hand, having a professional translator as a wife also means I am aware of the many limitations and dangers of AI translation (e.g., altering intended meanings and contexts; Patel, 2023).

From an academic perspective, the crucial issue with any AI use is that it is transparently disclosed. Many journals and universities now have AI policies (e.g., Thorp, 2023; Keio University, 2023; University of Auckland, 2024). I think Keio's policy is quite reasonable:

*Technological innovations such as ChatGPT and other AI content generators, when used responsibly, can improve and strengthen these studies, ideas, and actions. However, using these tools with a shallow understanding of their underlying technologies only inhibits a person's agency as a human being. For each class you take, should your undergraduate faculty, graduate school, or professors encourage or permit AI-generated content, make sure that you follow the guidelines and instructions given by the relevant faculty members at that time. **If any reports or essays are created using AI, you must indicate so clearly on the assignment.** In other words, using AI is essentially the same as relying on another person for that generated content. (Keio University, 2023, emphasis added)*

A simple rule of thumb is: **if you are comfortable admitting how you used AI, you are probably OK using it**, so be sure to **declare if and how you use AI in your Author Contributions statement**. As always, what is "OK" might depend on the context. For example, some AI translation (with human correction) is probably OK when writing an academic article, but not when taking a language test. At the end of the day, you are the one responsible for any issues introduced by your AI tools, whether they are translation errors, coding errors, factual errors, or just the shallow analysis that is typical of AI generated text.

The guidance above only refers to the ethics of using AI from the perspective of academic honesty. The broader implications of AI on domains such as sustainability (training AI uses massive energy), copyright (AI is often trained on copyrighted writing/art without permission or compensation), racism (AI amplifies pre-existing biases in the training data), etc. are only beginning to emerge, but already look quite depressing (Noble, 2018; Birhane & Guest, 2021; Plunkett, 2022). If you do choose to use AI, I encourage you to do so sparingly and carefully monitor the broader ethical implications.

¹¹ Remember one golden rule for presentations: DO NOT GO OVER TIME! We know, you care deeply about your research. Everyone else cares deeply about theirs too, and the amount of extra time you take is effectively stealing time from others. Plan for 1 minute per slide, and always practise and time yourself beforehand. Also, try to make it fun for your audience. If you are in a music lab like mine, it is easy to liven presentations up by including music examples in your slides. Just be sure to test beforehand to ensure the sound works.

Why read, write, or publish academic research at all?

In theory, you (or your parents/scholarship sponsors/etc.) are paying tuition to enable you to learn valuable new knowledge that will help you to succeed in a job and make the world a better place. And in theory, we academics are being paid by those tuition fees and by grants funded from government taxes and private donors/organisations to create and transmit this knowledge to you and the rest of the world (Rosovsky, 1990).

In practice, some of you students are just trying to have a good time while doing what it takes to get a university degree (preferably one with prestigious brand recognition like “Oxford” or “Harvard”) that will unlock job opportunities. Meanwhile, some of us academics are just trying to have a good time and do what it takes to publish peer-reviewed articles/books (preferably with publishers with prestigious brands like “Nature” or “Science”), which also unlock job opportunities for us.

I know, because I’ve played the prestige game myself, although I’m not proud of it. Unfortunately, such “prestige biases” are very difficult to overcome, as they do serve some crucial positive functions in human cultural and biological evolution (Henrich, 2016). The negative results for research can range from the relatively benign (e.g., hype, sloppiness, and “p-hacking” to find publishable but meaningless patterns in noise) to extreme cases where researchers will fabricate data or perform outrageous ethical violations like unauthorized human gene editing (Fig. 4) just in the hopes of publishing in these prestigious outlets (Smaldino & McElreath, 2016; Ritchie, 2020).



Figure 4. Even after spending 3 years in prison for performing unethical editing of baby genes, He can’t let go of his obsession with publishing in a prestigious journal.

Screenshot: He (2024). Context: “the babies’ parents may have been under pressure to agree to join the experiment; the supposed medical benefits are dubious at best; and the researchers moved forward with creating living human beings before they fully understood the effects of the edits they had made” (Regalado, 2019).

The leaders of universities and publishing companies know and exploit the fact that we need their prestige (Morgan & Smaldino, 2024). Do you know how much money publishers pay us academics to publish our research? It’s actually negative: we increasingly *pay* for-profit companies to publish our research – to the tune of as much as US\$12,290 for a 4-page “gold open access” article in *Nature* (Fig. 5; “Publishing options”, 2024)! We also do the actual high-value work of the process – expert peer review – for these publishers for free while they make

profit margins of the kind found in few other professions outside of drug dealers (for more disturbing parallels between academia and drug dealers, see Afonso, 2014). This makes little sense until you understand that we are being extorted for their prestige, impact, and the jobs and funding that come with it. And we are mostly not paying with our own money but with the money from your tuition and taxes. I'm sorry to have to tell you this, but it's something you should know.

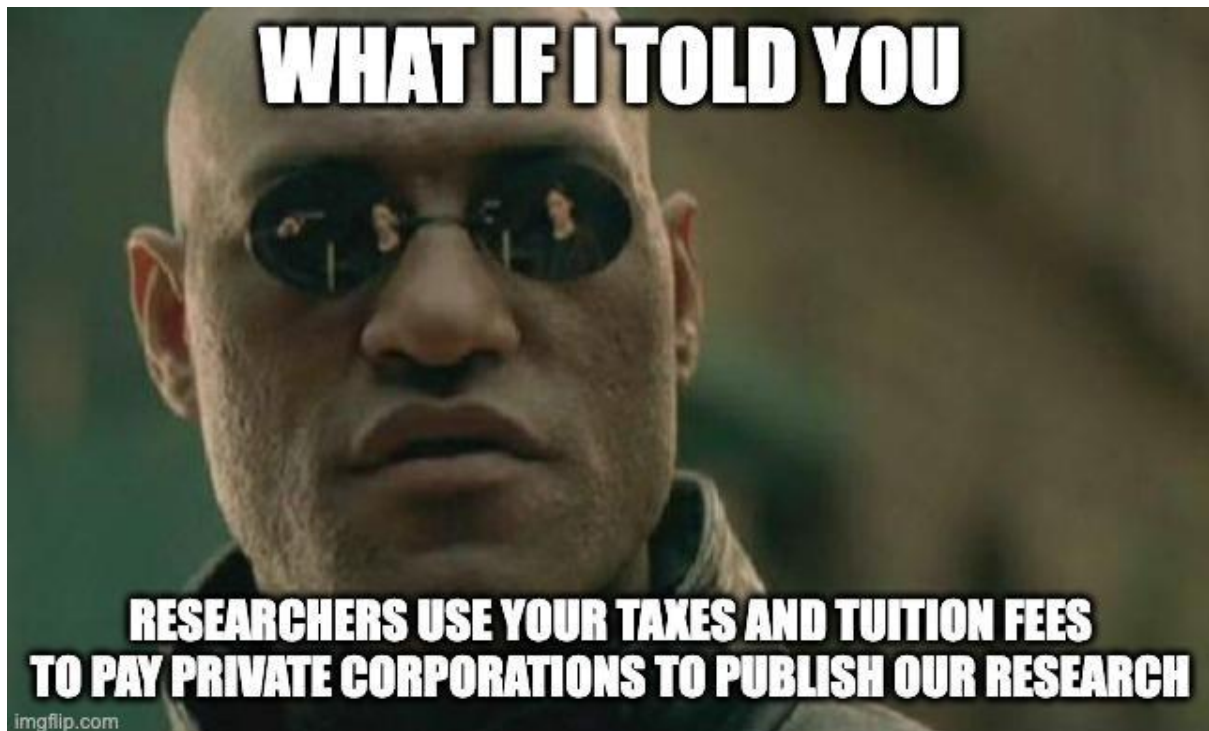


Figure 5. The academic publication funding model seems to make no sense. <https://imgflip.com/i/93ciid>; adapted by me from the Matrix Morpheus meme (Valadar917, & ohmyjosh, 2012).

How can we realign this broken system with its original noble goals of creating and transmitting valuable knowledge that benefits society? Many of us are exploring alternatives. I don't have scope here to describe them all, but will note that you are currently reading this preprint for free via the *PsyArXiv* preprint server without you or I having paid a publishing corporation for the privilege. I will also note that our article shown in Fig. 1 took advantage of the fantastic new *Peer Community In* (PCI) initiative that seeks to break the stranglehold publishing corporations have on us by liberating the peer review process from the publishing process and transferring power from publishers to researchers. So far, I have been involved in *Peer Community In Registered Reports* (PCI-RR) as author, reviewer, or "Recommender" (analogous to journal editor) on 6 different articles¹², and my experiences with them have all been dramatically better than any experience I've ever had publishing with traditional publishers, including *Nature* (actually, especially *Nature*; Whitehouse et al., 2021). It is conceivable, however, that PCI's system could break down and become a victim of its own success as it scales up and becomes more vulnerable to bad actors.

¹² Author: Chiba, Ozaki, Fujii & Savage (2023); Ozaki et al. (2024); Hadavi et al., (2024); Savage et al. (2024). Reviewer: Chambers (2024). Recommender: Savage (2024b).

We could have – and perhaps should have (Morgan & Smaldino, 2024) – chosen to publish the PCI-RR-reviewed preprint version of our article from Fig. 1 for free (“diamond open access”) without further peer review in *Peer Community Journal*, which does not currently have a “Journal Impact Factor” (JIF)¹³. We could have chosen to publish without further peer review in several other reputable journals¹⁴ with relatively modest impact factors if we paid them relatively modest Article Processing Charges (APCs; e.g., *Royal Society Open Science*: JIF: ~3 average citations per year; APC: US\$1,960). We could also have chosen not to publish in a journal at all, leaving it as a peer-reviewed preprint. Instead, we chose to go through an extra series of peer review and pay a US\$4,500 APC to the non-profit American Association for the Advancement of Science for the privilege of publishing in *Science Advances* (JIF: ~12)¹⁵. *Science Advances* did, however, also provide additional concrete value for us in the form of commissioning a striking illustration on their cover (<https://www.science.org/toc/sciadv/10/20>), an expert companion commentary (Sammler, 2024), and producing and distributing press releases that helped us get media coverage in prestigious outlets with large readerships such as the *New York Times* (Zimmer, 2024) and *Scientific American* (Parshall, 2024).

Was this worth \$4,500 and – more importantly – worth being complicit in perpetuating the broken system? I’m honestly not sure. That is one of the questions that you students and we, your teachers and research supervisors, need to work together to answer in the coming years as we head toward what looks to me like an inevitable collapse or radical transformation of the academic publishing system and perhaps the entire higher education system itself. As Finnish physicist Syksy Räsänen wrote: “*We do not need to reform the business model of scientific journal publishing, we have to abandon it.*” (Räsänen, 2019).

On that existential note: good luck, and happy reading/writing/dismantling the academic-industrial complex and designing a better system of knowledge creation and transmission!

Epilogue: BUT WE HAD MUSIC

I want to end with one final thought regarding the biggest “so what” question of all: who cares about academic research anyway? Why should anyone want to read or write about research like ours shown in Figure 1 showing acoustic differences between singing and speaking around the world? Why aren’t we using the funding “wasted” on our music research towards something more urgent like curing cancer or solving climate change?

These are questions that sometimes keep me up at night. But then I remember someone¹⁶ saying that they wouldn’t want that to happen because they wouldn’t want to just extend their life if it

¹³ JIF is a metric widely but controversially (DORA, 2013; “PCI and Impact Factors”, 2018) used that takes the average citations per year acquired by all articles in a journal as a proxy of research impact. For comparison, *Nature*’s JIF of ~50 citations per article per year on average is among the highest in the world.

¹⁴ Chambers (2023b) lists the four “PCI RR-friendly” journals our article was eligible for automatic acceptance in, but the list is continuously expanding. As of 16 Sep 2024, there are 97 “PCI-friendly journals” (<https://peercommunityin.org/pci-friendly-journals/>), and 35 specifically “PCI RR-friendly” journals (https://rr.peercommunityin.org/about/pci_rr_friendly_journals). There are also 17 different PCIs in addition to PCI Registered Reports (e.g., PCI Psychology, PCI Evolutionary Biology, PCI Archaeology; <https://peercommunityin.org/current-pcis/>)

¹⁵ Paid from a competitive open access fund I applied to from Keio University, a private university, not from my grants funded by government taxes.

¹⁶ Unfortunately I can’t remember who

meant living without music. Maybe for Steven Pinker (1997) “music could vanish from our species and the rest of our lifestyle would be virtually unchanged”, but for me and for many others, a life without music would be a life without meaning. I recently came across the beautiful poem “[BUT WE HAD MUSIC](#)” by Bulgarian author Maria Popova (2024) that captured this feeling better than I can put in words. Although the title is specifically about music, it applies to other domains of the arts, humanities, and sciences that Pinker, a neoliberal university vice-chancellor, or Silicon Valley techbro might find “useless”, but to many of us are what give life meaning.

Acknowledgments: I thank Hilary Moss for first teaching me “*How to read a book*” in her “Introduction to Black Studies” course at Amherst College in 2004 (from a syllabus designed by Jeffrey Ferguson [1964-2018]). I thank all my mentors and mentees, past and present, for helping me to develop and refine these ideas, especially my first research supervisor, Steven Brown, and students in my CompMusic Lab and my “(Un)ethical science” classes. In particular, I thank Yuto Ozaki, my first PhD student, for permission to use his Google Scholar profile and our coauthored article as examples in Figs. 1-2, and Gakuto Chiba, Zixuan Jia, Marin Naruse, and Danya Pavlovich for feedback on earlier versions. I also thank the other 100+ collaborators on our “Many Voices” projects (named individually in the reference section below; Ozaki et al., 2024; Savage et al., 2024) for our ongoing discussions about ethical research. I thank PCI-RR founder Chris Chambers and the other PCI-RR Recommenders and reviewers who donated their time to reviewing our research shown in Fig. 1, Fig. 7, and elsewhere in the article. Special thanks to Yuki Yamada who first introduced me to PCI-RR. I also thank my mum, Martha Savage, and late grandfather Evan O’Neill Kane for a lifetime of academic and life mentorship, and acknowledge my privilege to have been the child and grandchild of renowned scientists.

I added the “Why read or write academic research at all?” section after becoming radicalised through many excellent conversations (mostly about how to fix our broken academic system) at the September 9-13 2024 Cultural Evolution Society conference. Despite the very important limitations of in-person conferences (e.g., accessibility, sustainability, equity; Chatterjee, 2022; Fig. 6), there is still no substitute for stimulating discussions. I especially thank Niccole Porras Alvarez, Manuel Anglada-Tort, Stephen Asatsa, Quentin Atkinson, Gustavo Ballen, Bret Beheim, Monique Borgerhoff Mulder, Adam Boyette, Gakuto Chiba, Michael Chimento, Tom Currie, Agustín Fuentes, Jigar Ganatra, Erik Gjesfjeld, Russell Gray, Simon Greenhill, Jan Hajič jr., Alexander Ishungisa, Patricia Izar, Joshua Conrad Jackson, Fiona Jordan, Wiro-Bless Kamboe, Rohan Kapitany, Rachel Kendal, Kevin Lala, David Lawson, Harin Lee, Sheina Lew-Levy, Sarah Mathew, John McBride, Alex Mesoudi, Helena Miton, Thomas Morgan, Michael Muthukrishna, Eita Nakamura, Yo Nakawake, Danya Pavlovich, Ana Shapiro, Jamie Tehrani, Jessica van der Wal, Tim Waring, Joseph Watts, Aiyana Willard, Mason Youngblood, Qiankun Zhong, and all the attendees of the discussion session on if/how to create a new and better society journal [with apologies to others whose names I forgot, mis-spelled, or forgot to mention – please let me know if so and I’ll correct!]. I also thank Thomas Morgan for raising the danger of possible vulnerabilities of *Peer Community* In to bad actors as it scales up.

Global North researchers
after conference acceptance



Global South researchers
after conference acceptance



Figure 6. Many Global North researchers are unaware of the systemic barriers to inclusion in academia by our Global South colleagues, including (but not limited to) discriminatory visa policies by the governments of the host countries (Chatterjee, 2022). [Placeholder meme while I search for a better one I'm having trouble relocating]

Data/code availability: Not applicable (“NA”). I drew Fig. 3 manually in PowerPoint based on vibes. Just in case this is not obvious: you should absolutely not do this with real research data! For real data, I recommend the following free tools: R/R Studio (analysis/visualisation); GitHub (sharing analysis code); Open Science Framework (sharing data/materials).

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Author contributions: I conceived and wrote this myself (without using any generative AI).

Peer Review: This article has not been peer-reviewed (i.e., evaluated by independent experts to determine whether it is “valuable new knowledge”).

Ethics and Inclusion: I tried to properly credit diverse researchers throughout, including in my References and Acknowledgments sections. Please alert me if I have unfairly omitted anyone and I will try to correct this. While most of my research is coauthored, this article is closely based on my own personal academic journey, so it didn't make sense to invite other researchers to coauthor it with me. Institutional ethical approval was not required since I am not reporting any newly collected data.

Conflicts of interest: I share all the perverse incentives described above common to all academic researchers. I also serve as an (unpaid) Recommender (analogous to journal editor) at *Peer Community In Registered Reports*

(*PCI-RR*). Finally, I have had consistently negative experiences with for-profit publishers, even when they have led to publication in their journals. Notable frustrations include the multi-year retraction saga summarised in the article, editorial rejection of a different article despite 4 unanimously positive reviews because our early sharing of data “compromise novelty”, and many months of time wasted waiting for “desk rejection” decisions from paid editors without inviting expert reviewers (several recent desk rejections have taken more than 3 weeks each). For comparison, within 9 days of our latest *PCI-RR* submission, their volunteer Recommender had secured commitments from 3 expert reviewers after inviting 14 total (Fig. 7); and I oversaw my first *PCI-RR* Recommender assignment in less than one month between submission and In Principle Acceptance, thanks to *PCI-RR*’s efficient “Scheduled Review” model (Savage, 2024b).

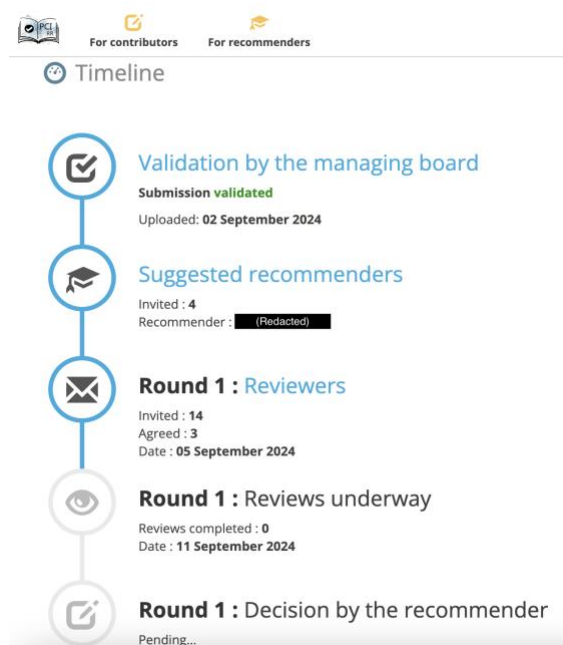


Figure 7. Screenshot of the transparent timeline for the review process of a recent submission to *Peer Community In Registered Reports* as of 14 Sep 2024. I have redacted the Recommender name because that is only made public if an article is successfully recommended.

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636

Appendix: Further recommended resources (**all free** unless indicated with “\$”) **[in-progress rough draft - suggestions welcome!]**

While I want to keep the main article relatively brief, I also want to provide a list of useful resources going beyond the brief mentions in the text, which I plan to continue expanding as needed:

Reading/writing:

How and why to read and write academic research [this article]

[How to \(seriously\) read a scientific paper](#) (Pain, 2016)

[How to read a book](#) (Adler & van Doren, 1972)

[Writing more informative titles and abstract](#) (*Nature Human Behaviour* editors, 2023)

[Publish like a pro](#) (Powell, 2010)

Peer review/publishing:

[Peer Community In](#) (especially [Peer Community In Registered Reports](#))

[Ten simple rules for writing a Registered Report](#) (Henderson & Chambers, 2022)

Preprint servers (exact choice depends on field): [PsyArXiv](#) (my lab’s default preprint server), [arXiv](#), [SocArXiv](#), [bioRxiv](#), [medRxiv](#), etc.

[Author-paid publication fees corrupt science and should be abandoned](#) (Morgan & Smaldino, 2024)

Responding to peer reviews: [template](#) (from Stage 1 review of Ozaki et al. 2024)

Reference/citation management/tracking/recommendation

[Zotero](#)

[Google Scholar](#)

Analysis/visualisation:

[R Studio](#)

[Points of significance](#) [short editorial giving guidance on reporting things like effect sizes and equivalence testing to avoid common statistical errors (e.g., p-value misinterpretation, correcting for multiple comparisons, interpreting non-significant results, etc.)]

[Statistical Rethinking](#) (McElreath, 2020)

[Intro to Statistics in R](#) [free, just need to register]

[Successful qualitative research: A practical guide for beginners](#) (Braun & Clarke, 2013)

[Power analysis](#) / [Bayes Factor Design Analysis](#)

[Effect sizes](#)

[Equivalence testing](#)

Data/code sharing:

[GitHub Desktop](#)

[Open Science Framework](#)

[Zenodo](#)

Preparing materials (presentations, posters, manuscripts, etc.)

Note: I strongly advise always sharing work with supervisors/coauthors using an interactive collaborative online tool such as Google Docs or Google Slides to enable anyone to comment/edit on the latest version.

Ensure you have enabled access and editing/commenting privileges before sharing.

[NB: Microsoft Office products are NOT recommended because they cost money while providing little added value relative to free alternatives]

[15 Best tips for presenting at a conference](#)

[How do you make your first scientific poster?](#)

[Google Docs](#) / [Slides](#) / [Sheets](#)

[R Markdown](#)

[LaTeX](#) / [Overleaf](#) [formerly free, now \$]

Field-specific tools:

(Comparative/ethno/cognitive/systematic/computational) musicology:

[MuseScore](#) (notation)

[Tony](#) / [Sonic Visualiser](#) / [MIR Toolbox](#) / [Praat](#) (acoustic analysis)

