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CHAPTER 14

# Afterword: Going Forward with Open Science for Applied Linguistics

Emma Marsden

## What has this Edited Volume Offered us?

The collection starts with Plonsky's enthusiastic introduction, rallying the community and also reinforcing arguments that open science can enhance the quality of research (Marsden, 2019, 2020). Next, Al-Hoorie and Hiver provide an informative and wide-ranging overview of what open science can mean and the kinds of endeavors the term can touch upon: our methods, reporting, checking and evaluating, and incentivizing. The authors paint a self-acknowledged bleak picture of what is broken—or, at least, *might be* broken (see the 'Need for Metascience' section below). They propose numerous types of open science behaviors as ways forward. Sterling's chapter provides balanced consideration of how open science practices (should) engage with ethical questions. He offers wise words about proceeding with caution so as to keep in mind *all* stakeholders – producers, participants, and consumers of research - in terms of them both accessing and participating in the process and products of research. One important practical

recommendation he makes is to store metadata about ethics and consent alongside open datasets. Liu and De Cat describe the findings from their empirical study into applied linguists' open research practices and views. Of course, these authors have made their data and analysis code openly available, and I hope that others will build on their survey in later years. As with my own survey (Marsden, 2019), it remains difficult to know whether respondents share the same understanding as each other and as the researchers themselves of certain terms such as 'reproducibility'. A particularly intriguing finding for me was that only about one third of those with 10 or more years since their PhD strongly agreed that data should be shared alongside the publication - a finding that requires qualitative research to explore further. However, more encouragingly, barely any respondents actually *disagreed* with the statement. To me, this suggests that journal and book editors might in fact be pushing at an open door if they *were* to ask their authors for their data. Editorial boards can be reticent to support such a move, and so Liu and DeCat's data could inform and offer reassurance for such decision-making.

The volume also contains several useful chapters on 'applications' (or open science practices). The first of these, by Mackey, Cook, and Fell, foregrounds the value of sharing materials used to collect data. They focus on the benefits of the field-specific, metadata-rich, IRIS database ([iris-database.org](http://iris-database.org); Marsden, Mackey, & Plonsky, 2016). I would add to their useful review that IRIS now holds **datasets** (over 300 to date) and also **postprints**, and now assigns a DOI to all objects uploaded. The authors propose that more proactivity is needed by making open materials 'default', an *opt-out*, when articles are submitted to journals (as is currently the case at *Applied Psycholinguistics*, *Language Development Research*, *Journal of Memory and Language*, and, though for review purposes only, at *Language Learning*). They also suggest that users should be able to publicly comment on materials. In my view, such a move, if un-edited, could be controversial and off-putting to some (see, in this volume: Sterling's cautions; Al-Hoorie & Hiver's comments about potential perceived bullying and risks of retaliation; Liu & DeCat's findings about the fragility of some researchers' commitment). However, reflecting a move in a related direction, IRIS does ask uploaders of instruments to provide information about their instrument's reliability. This means that other researchers can ascertain its likely usefulness prior to using it. Moreover, subsequent users of that instrument can add their own information about reliability once they have used it with their own sample/population, producing *cumulative metadata about reliability*.

Other practices discussed include a first-hand and frank account by Huensch of the purposes and benefits of Registered Reports, partly based on her experience of co-authoring the second ever Registered Report in the field (Huensch & Nagle, 2021). McManus's chapter describes how open science can support replicability (the repeatability of a study) and improve the field's data on reproducibility (whether a study's findings can be reproduced). Showstack focuses on one strong rationale that can drive open science: engaging those outside academia with and in research. She provides insight into the challenges and rewards of doing so, drawing on her own engagement with healthcare professionals in communicating findings from research about improving access to healthcare opportunities. My own experiences of working at interfaces between research, practice, and policy chime with many of Showstack's points. It is clear to me that any *single* resource or approach (such as using OASIS summaries, Marsden et al., 2019) will always need to be complemented with a range of other supports and interactions.

The volume then focuses on infrastructural issues, foregrounding the roles of training and the need to nurture graduate students at the vanguard of engagement with open research practices (Hui & Huntley). One of the most obvious kinds of support for early career researchers is, of course, funding, and indeed, some funding agencies have tied in funding to the Registered Report publication route (see also the *Language Learning Registered Reports by Early Career Researchers Grant Program*). Brysbaert's chapter provides a very enlightening historical account of how editorial boards, learned societies, and funders have grappled getting articles to reach as many readers as possible, on the one hand, whilst maintaining a sustainable and high-quality editorial system, on the other. Silver and Lin present the findings of their thorough metascientific study examining how journals in applied linguistics are responding to open science principles and what actions are being taken by them. Their findings provide just the kind of objective data that we need, offering several excellent suggestions that allude to the powerful position of editors in shaping the direction and speed of our move towards open science.

## **Where to go From Here?**

### ***The Challenges and Limits of Open Research Practices***

The challenges are numerous and multifaceted. One obvious challenge, not directly addressed in this volume, relates to whether and how different epistemologies such as *qualitative* approaches may be supported by open research. Another challenge is the

likely need to *slow down* the research process and concomitantly reflect such a slow-down in our incentivisations and support, particularly for early career researchers. For both of these challenges, there is work afoot (see Marsden & Morgan-Short, 2023a and 2023b for discussion). Here, I focus on four other issues that, for me, rise to the top.

**i) *The troubled road to open access.*** A particularly intractable challenge seems to be making the findings of our research—our own reports—openly available (i.e., ‘open access’). Unlike making materials, data, and analyses open, which can be done with a certain amount of individual freewill, open access is tied up in a web of historical and commercial issues relating to journal impact factors which, in turn, affect funding and promotion, which in turn affect researchers’ personal lives. The tenacious nature of this problem is reflected in the fact that out of the 538 research articles published in 2019, 2020, and 2021 in five major journals in the field (*The Modern Language Journal, Language Learning, Studies in Second Language Acquisition, TESOL Quarterly, Language Teaching Research*), Alferink & Marsden (2023) found only 85 were open access, meaning that 86% were behind paywalls. This means that access to research by those who may find it useful or interesting remains extremely poor (Marsden & Kasprovicz, 2017).

In addition, achieving better global equity in the knowledge economy also depends on us addressing the open access challenge head on; indeed, Article 27 of the United Nation’s Universal Declaration of Human Rights asserts the rights of all “to share in scientific advancement and its benefits”. Initiatives are afoot at governmental and institutional levels to strike up deals with publishers. But one of the thorniest and yet most important challenges is how to avoid harming specific demographics while engaging in open access; a challenge that is not addressed by, and indeed can be exacerbated by, these exclusive publisher deals (Andringa et al., 2024 and its commentaries, including Marsden, 2024; Marsden & Morgan-Short, 2023).

Grass roots developments such as The Postprint Pledge<sup>38</sup>, whereby authors make their accepted articles (before editing and type-setting) freely available, offer a short-term solution perhaps. But this approach must surely be secondary to the ambition of having more platinum (also known as diamond) open access journals, whereby it is free to publish and to read for all, without the need for exclusive publisher deals.

**ii) *Can open research improve the usability and relevance of research?***

Whilst open access is desirable, it does not really address the fact that much research is

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<sup>38</sup> <https://www.ali-alhoorie.com/postprint-pledge>

very often not directly useable or useful to those without research expertise. Arguably, for some disciplines and research questions, not all research needs to be useable by non-experts. Nevertheless, as *applied* linguists, most if not all of us would like the questions we ask to have meaning for the communities who give up their time and experience to provide us with data and who share many of our real-world concerns. But open research practices—*alone*—cannot address these relevance and usability issues. In fact, is open research even essential to ensure relevance and usability? Working directly *with* practitioners and/or policy-makers *is* essential, as described by Showstack for healthcare communication. For examples in language education, see research-informed work with teachers and policy-makers by Marsden and Hawkes (2023) and Finlayson and Marsden (2022) (see <https://resources.ldpedagogy.org/>). Such work can make research findings accessible in the sense of it being ‘interpretable’ (non-technical). And this kind of work helps in another, arguably more fundamental, way, in that the work is co-constructed – a characteristic that is not explicitly related to many traditional definitions of open research *per se*. That is, the questions addressed are driven by challenges on the ground. For example, how can research (theory or data) inform not just an intervention lasting three hours, but one lasting five years? How can research inform not just the testing of one specific linguistic feature among 30 or so fairly homogenous learners after a short intervention, but the assessment of proficiency of half a million 16-year-olds after five years of instruction?

So, can *open research* practices, *per se*, influence such ‘real world problems’ (Brumfit, 1995)? As discussed by Marsden & Morgan-Short (2023a & 2023b), open research may work indirectly here, in several ways. (1) It may help limit questionable research practices (see Isbell et al., 2022) and thereby improve validity, thus improving the quality of inferences from our research. (2) It certainly helps replication research, allowing researchers to check reliability of findings with a wide range of contexts and learners. (3) Engaging in open research practices may exert a washback on researchers themselves. For example, having to write accessible summaries may influence the way that some researchers think, as the very act of having to communicate the ‘why and what’ of their research may washback into the questions we ask and the designs and methods we adopt. (4) Finally, by making findings and—perhaps more importantly—the design and methods of research more widely and easily understood (via open publications, OASIS summaries, or the tools themselves), this will increase the chances that those beyond academia can critique the research and perhaps, in turn, engage in co-production in the future.

**iii) The need for metascience.** Throughout this edited volume, it is clear that the open research movement needs more metascience – the study of research itself. The need is two-fold. First, we have to demonstrate the need for open research: what, exactly, are the problems that open research is trying to address? These problems relate to rigor, reliability, validity, replicability, and the scope of our consumers, participants, and producers. Such metascience is underway (e.g., Isbell et al., 2022; Marsden et al., 2018), but we need more. Also, as Marsden and Morgan-Short (2023) observe, there is a circularity to our situation: in order to do *rigorous* metascience, we often need the science that we are examining to be open. For example, to check computational reproducibility, we need the datasets and analyses to be open in the first place.

Second, we need metascientific data to demonstrate whether our open science interventions work as intended. In other fields, this evidence is emerging. For example, there is evidence that Registered Reports decrease bias towards publishing statistically significant over non-significant findings (e.g., Scheel et al. 2021). Such effectiveness-of-intervention research also needs to check the extent of any adverse ‘side effects’ (e.g., open access publisher deals that exclude certain demographics from the knowledge economy). Perhaps one framework for this metascientific endeavor is to use the FAIR (findable, accessible, interoperable, reproducible) principles (Wilkinson, Dumontier, Aalbersberg, et al, 2016), in order to ask: to what extent do specific open practices actively invoke and successfully promote each of these principles?

**iv) Community-wide action in the infrastructure.** Every chapter in this volume has called for change at many levels. One such level is that of our learned societies and professional associations. To date, support for open science practices has been rather piecemeal, but untapped opportunities are available. For example, the scope of IRIS now encapsulates *all* aspects of language studies (without a preference for a particular subdomain, epistemology, or method). With such a broad remit, IRIS is ripe for support from applied linguistics associations (AILA, and its national affiliates), to help sustain a resource that can make many aspects of the research process— methods, data, analyses, and reports (as postprints)—findable, accessible, interoperable, and reproducible. Similarly, professional associations could incentivize and steer us in a supportive and step-by-step manner towards more open collaboration. Our learned societies could also establish a more formal role in open access publishing. An example of such a move can be found in the Dutch Association of Applied Linguistics, which sponsors the diamond open access *Dutch Journal of Applied Linguistics*.

But some signs suggest that commitment even among some of open science's keenest proponents is not always consistent (including myself, see Marsden, 2024). For example, although the recent establishment of the journal *Research Methods in Applied Linguistics* is welcomed by all, a platinum open access model was not deemed possible<sup>39</sup>; on the other hand, the platinum *Language Development Research* set an example a year or two earlier. Similarly, this very volume was originally going to be published behind a paywall—a sad irony that did not escape the contributing authors. Indeed, partly in response to this, almost all of the chapter authors made their postprints openly available on freely accessible sites. Isaacs and Trofimovich (2016) and Blyth and Thoms (2021) had demonstrated that open access edited volumes were feasible. And now, happily, this book joins them, thanks to Plonsky's recent excellent platinum publishing initiative.

### **Concluding Remarks**

We must celebrate our successes. Many hundreds—perhaps a couple of thousand—applied linguists have actively supported open science initiatives in the last decade. Some individuals have been sharing their materials and codes as a matter of course (e.g., Kris Kyle, Paul Meara, Atsushi Mizumoto), but IRIS reflects a *community-wide* spirit towards openness: It now holds over 3,450 materials, datasets, code, and now post prints too; each of these is tagged with rich metadata and a DOI to support their findability. Four journals require authors to write OASIS summaries, another two have pledged to do so, and many more very successfully encourage their authors to write one. This collaborative effort has opened up 1,800 research studies to thousands<sup>40</sup> who hitherto may not have had access to a vast body of publicly funded work.

But it seems we will not affect substantial and sustainable change without more top-down drive, and editors and professional associations are in strong positions to achieve this. *Individual* researchers express concerns that are reasonable, and so *community-wide* action is needed to protect disempowered demographics, such as early career researchers and those in less research-privileged economies. Delivering open research is a difficult shift, and the signs are that we have to be in it together, an outlook conveyed by the authors of this volume.

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<sup>39</sup> This means that while some contributors and readers will be lucky enough to be in a jurisdiction with a 'deal' with the publisher allowing them to publish open access, others won't, reducing the access for certain demographics.

<sup>40</sup> There are currently 1,806 summaries available and each summary is downloaded an average of 39 times.

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