

Open Corpus Linguistics – or How to overcome common problems in dealing with corpus data by adopting open research practices

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In recent years, many researchers have called attention to the fact that many research results cannot be replicated – a phenomenon that has been called *replication crisis*. The replication crisis in linguistics is highly relevant to corpus-based research: Many corpus studies are not directly replicable as the data on which they are based are not readily available. Especially in English linguistics, the full versions of many widely used corpora are still behind paywalls, which means that they are not accessible to parts of the global research community, and even when parts of the data are freely accessible, this presents problems for state-of-the-art methods of data analysis. In this paper, I discuss the challenges that have led to this situation, and I address some possible solutions. In particular, I argue for using smaller but openly available corpora whenever possible, and for adopting open research practices as far as possible even when using commercial corpora.

1. Introduction

In a seminal paper, which also served as an important inspiration for the workshop on which the present volume is based, Rissanen (1989) mentioned three pertinent problems of (diachronic) corpus linguistics, which he termed “the philologist’s dilemma”, “God’s truth fallacy”, and “the mystery of vanishing reliability”. The “philologist’s dilemma” refers to the – potentially overly pessimistic – idea that the availability of quantitative methods might distract from a detailed qualitative analysis of texts, which can be considered particularly important when dealing with earlier stages of a language. A similar case is made by Egbert et al. (2020), who remind readers that “[l]inguistics is done by linguists, not by computers.” (Egbert et al. 2020: 69) “God’s truth fallacy” refers to the assumption that a corpus “gives an accurate reflection of the entire reality of the language it is intended to represent” (Rissanen 1989: 10). As will be discussed in more detail in Section 2, this is closely connected to the issue of representativeness (see e.g. Biber 1993) – even a large and carefully balanced corpus can hardly represent all facets of a language, and may contribute to perpetuating the potentially problematic construct of an idealized standard language. Finally, the “mystery of

vanishing reliability” refers to the phenomenon that adding more parameter values, or annotation categories, to a database can make each individual data point less reliable. This means that the more annotation categories we add, the more likely it is for each individual datapoint to contain errors or uncertainties in its annotations. As Kytö & Rissanen (1988: 172) put it, “the higher the number of parameter categories, the fewer and, consequently, the less representative the items included in each category will be.”

More than thirty years later, corpus linguists still struggle with some of the issues that Rissanen has identified. But in recent years, additional issues have emerged. Perhaps most importantly for the purposes of the present paper, the “replication crisis” that has permeated various quantitatively oriented disciplines in recent years and decades has also had a significant impact on methodological discussions in (corpus) linguistics (Sönning & Werner 2021; also see the blog post by Larsson 2021). In this paper, I will argue that Rissanen’s problems and the issues identified in the discourse on replicability are more closely connected than one might think, and I will argue that adopting open research practices can provide a partial solution to some of the most important among the issues raised.

The term “replication crisis” refers to the observation that many scientific findings have been found to be much less replicable than many believe they should be (Zwaan et al. 2018). The terms “replication” and “replicability/reproducibility” can mean different things, though; a relatively common stance is that the *reproducibility* refers to being able to duplicate the results of a previous study using the same data, while *replicability* refers to being able to duplicate the results of a previous study using new data (see e.g. Goodman et al. 2016). In other typologies, *replication* is used as a cover term for a variety of approaches from exact replication (i.e., “reproduction” in the sense of *reproducibility*) to conceptual replication, which only aspires to be comparable to the original study regarding the theoretically relevant processes (Hüffmeyer et al. 2016; also see Schmidt 2009, Machery 2020).

Regardless of the exact approach to replication, it has become clear that the lack of replicability is also a topic in linguistics. To mention only one prominent example from experimental linguistics, a recent multi-lab effort to replicate the seminal study by Glenberg & Kaschak (2002), which suggested that the comprehension of motor terms involves fairly concrete sensorimotor simulation, proved unsuccessful in all 18 cases (Morey et al. 2021). There are good reasons to assume that the issue of non-replicability may extend to many corpus-linguistic studies (see e.g. Winter & Grice 2021: 1264–1268), especially given that many corpus-linguistic studies include a wide array of different variables that are often

closely intertwined. Consider, for example, a variable like animacy, which has been found to influence the grammars of the world's languages in intricate ways (see e.g. Yamamoto 1999) and which is frequently operationalized for corpus-linguistic studies (e.g. when investigating the variation between *of*-genitive and *'s*-genitive, see Egbert et al. 2020). But it can be operationalized in many different ways, from fine-grained coding schemes like the one proposed by Zaenen et al. (2004) to simple binary or ternary schemes such as “human/animal/inanimate”. Such differences in the way the same variable can be operationalized makes conceptual replication particularly valuable for corpus linguistics. Apart from offering the possibility to compare different results, replication studies can also enable us to compare different operationalizations of the same variable(s) (see e.g. Omidian et al. 2021; Vandeweerd et al. 2021).

Sönning & Werner (2021: 1182) mention the following list of problems that have been identified as potential causes of non-replicability:

- a lack of transparency in methodology and data analysis,
- the non-reproducibility of scholarly work, as, for example, original data and analysis procedures are not accessible,
- reluctance to undertake replication studies as purportedly “unoriginal” (and unprestigious) despite their potential to put previous findings in perspective, and
- concerns about high rates of false-positive findings in the published scientific literature.

At first glance, it might seem quite far-fetched to link Rissanen's problems to the issues related to the “replication crisis”. In this paper, however, I will argue that there are important connections between the different issues mentioned above. And more importantly, I will argue that the measures that have been proposed to help overcome the replication crisis can also solve Rissanen's problems – at least partly. Specifically, I will make a case for what I call Open Corpus Linguistics. This entails putting into practice principles of open research at various levels and at various (ideally, all) stages of the research process. In a best-case scenario, it involves the open availability of the entire corpus the researcher draws on, as well as sharing of concordances, annotations, and analysis scripts (if applicable). This also helps other researchers to put one's findings into perspective, which may be seen as the main overarching issue underlying Rissanen's problems.

The remainder of this contribution is structured as follows: In Section 2, I explicate Rissanen's problems in more detail, relating each of them to specific issues raised in the replication debate. In Section 3, I discuss the main principles of Open Corpus Linguistics, taking potential challenges and pitfalls into account. Section 4 concludes the paper by bringing the two strands of the discussion together by showing how Open Corpus Linguistics can contribute to overcome several widely discussed problems in corpus linguistics. While my focus in this paper is on English corpora, many considerations brought forward here of course apply to corpora of all languages.

2. Revisiting Rissanen's problems

Rissanen (1989) discusses a number of challenges that every corpus linguist faces at one point or another. His problems relate to the opportunities and limitations of quantitative and qualitative approaches, the notorious question of representativeness and to basic challenges of statistical sampling in general. Not all of the problems are specific to corpus linguistics to the same degree, and not all of the problems are necessarily problematic for all corpus-linguistic approaches. For example, whether or not the full text should be taken into account depends on the research question. While it is true that ignoring the broader context can be dangerous in some cases, many research questions do not require us to take the full text into account. For example, when investigating alternation phenomena such as the dative alternation (*I gave the book to her* vs. *I gave her the book*; see e.g. Goldberg 1995), it is definitely advisable to take the (narrower or wider) context of the attestation into account, but reading each text in which the construction occurs in full would entail a huge amount of additional effort that would hardly be justifiable in light of the research question. For other research questions, it is of course indispensable to take the full text into account. For example, a qualitative analysis of a text's structure obviously only makes sense if the analyst has access to the full text. Consider, for instance, van Dijk's (2005: 90–95) analysis of one *New York Times* article, in which he investigates which previous knowledge is assumed on the reader's part, and which information is explicitly given: Such an analysis only really makes sense if the entire text can be taken into account. But apart from such qualitative analyses, some quantitative methods, such as collocation analysis (Stefanowitsch & Gries 2003) also require the availability of full texts, or at least word list data derived from them. As such, it is definitely a desideratum that full corpus texts should be available, if at all possible. Thus, the actual problem captured by "the philologist's dilemma" is that full texts are often not readily available, e.g. for

copyright reasons. This *can* lead to a lack of transparency in methodology and data analysis, which in turn can entail non-reproducibility.

“God’s truth fallacy” refers to the problem of representativeness. The notion of representativeness refers to the goal that a corpus should be a representative sample of a particular language variety (Baker et al. 2006: 139). This makes it necessary to determine the limits of the population that is being studied as clearly as possible (Biber 1993). As Hunston (2008: 161) points out, however, a corpus can only ever be representative in relation to a limited number of previously selected categories. This is particularly true for reference corpora, which aim to be representative of the language spoken at a particular point in time, as “it is not possible to identify a complete list of ‘categories’ that would exhaustively account for all the texts produced in a given language. No list of domains, or genres, or social groupings can ever be complete” (Hunston 2008: 161). The problem of representativeness can, to a certain extent, be resolved by tailoring one’s corpus to the specific research question at hand. When compiling reference corpora or other corpora that are not being compiled for answering one particular research question, a feasible strategy can be to “do the best that is possible in the circumstances and to be transparent about how the corpus has been designed and what is in it. This allows the degree of representativeness to be assessed by the corpus user” (Hunston 2008: 162). The German Reference Corpus, for instance, can be considered an almost prototypical example for such an approach: It is organized into “archives”, and from these archives, users can compile corpora on their own (Kupietz et al. 2010). This of course only works if sufficient amounts of data are available. More importantly, a good corpus documentation is a prerequisite for such an approach. The more metadata the users have available, the more flexible they are in compiling corpora that are balanced for specific categories that are relevant to their research questions. Thus, the actual problem is not so much that researchers tend to overestimate the representativeness of their corpus data – quite to the contrary, (most) corpus linguists tend to reflect the limits of the representativeness of their data quite thoroughly. Instead, the more relevant problem seems to be that most corpora do not offer the possibility of re-sampling/re-compilation. This may be due to several reasons. On the conceptual level, a corpus may have been compiled with a particular research question in mind, balanced for a number of categories. In this case, the corpora in question are often relatively small, and as such, it would not necessarily make sense to make even smaller samples, even if it were technically possible. On the more technical side, which is more relevant for the purposes of the present paper, even very large corpora often do not

offer the possibility of creating custom subcorpora. In many cases, this is directly connected to the issues discussed above in connection to the “philologist’s dilemma”. A number of corpora can only be accessed via online interfaces that allow for working with key-word-in-context (KWIC) concordances but do not allow for accessing or exporting larger contexts, let alone full texts. Again, this can be an obstacle to research transparency and reproducibility. As an example, consider the “English Corpora” suite compiled by Mark Davies. Comprising such widely used corpora as the Corpus of Contemporary American English (COCA) and the Corpus of Historical American English (COHA), these resources have played and continue to play an important role in English linguistics. But the default interface only allows for retrieving a limited number of results in the form of KWIC concordances or frequency lists. For all other uses, one has to purchase a commercial license. While this is understandable from an economic point of view, as developing and maintaining corpora in a sustainable way requires considerable financial resources, it is highly problematic from the perspective of research ethics. Among other things, it creates barriers to scholars in less affluent parts of the world (even if partial waivers are granted), but also to independent scholars without the financial backing of a university or another research institution.

In many cases, it can therefore make sense to look for alternative corpora that can be considered equally representative for the language the researcher wants to investigate, or even to compile one’s own corpus – possibly by drawing on existing (open) corpora and using relevant subcorpora of each corpus. This can also be advantageous with regard to the “mystery of vanishing reliability”, i.e. the phenomenon that each datapoint tends to become less reliable the more parameters (in corpus-linguistic terms, annotations) one adds. We can think about this in terms of a simple spreadsheet: The number of data points (rows) remains the same, the number of columns, however, increases. The problem now is of course not that more parameters are added but rather that the number of “cells” (in relation to the number of datapoints) increases and, as such, the potential for error. The obvious solution, then, is not to reduce the number of columns¹ but, ideally, to increase the number of datapoints so that the individual errors weigh in less. As such, the “mystery of vanishing reliability” can be reframed in terms of a lack of extensibility: Being in control over the compilation of a corpus allows us to easily extend the database if necessary. The problem, after all, is not so much

¹ Unless, of course, there is no sufficient conceptual motivation for including a specific parameter in the analysis.

that each data point becomes less reliable if we add more annotation categories, but rather that we often do not have enough data points to obtain a truly informative picture when addressing research questions that require us to take many categories into account simultaneously. But there is another dimension to extensibility: The reliability of a particular annotation can also “vanish” because it turns out to be misguided, for whatever reason. For example, it could turn out that an annotation set used for a corpus is based on false assumptions. Thus, it is tremendously helpful if a corpus is extensible, that is, existing annotations can be amended or improved and new ones can be added, both by the original creators and by people who re-use the data. As Garellek et al. (2020: 6) put it (albeit in a different context, discussing phonetic datasets), “access to data allows for cumulative progress”. This is why, ideally, corpus-linguistic resources should be available openly as FAIR data – a concept to which we will return in the next section, in which some obstacles on the way to this goal will also be addressed.

3. Open Corpus Linguistics: Perspectives and challenges

In the previous section, I argued that open research practices can provide (partial) solutions to common corpus-linguistic problems. This raises the question of how exactly these open research principles can and should be put into practice, and which challenges this entails.

There exist several standards and guidelines that can provide orientation. After all, the problems discussed here are not specifically corpus-linguistic ones. In terms of open data, the FAIR guiding principles (Wilkinson et al. 2016) can be considered the de-facto standard that is also required by a number of funding agencies. FAIR stands for “Findable, Accessible, Inter-operable, Reusable”. Findability means that it should be easily possible to retrieve the dataset(s). To this end, data should be described extensively with the help of rich metadata, and (meta)data should be assigned a persistent identifier, such as a Digital Object Identifier (DOI) (Wilkinson et al. 2016). Accessibility means that data should be retrievable using an open, free, and universally implementable communications protocol, protected by an authentication and authorization procedure where necessary (Wilkinson et al. 2016). File formats like the Extensible Markup Format (XML), spreadsheets in the form of comma- or tab-separated values (CSV, TSV), or many pertinent file formats of widely-used annotation tools (e.g. CoNLL-U) fulfil this criterion, as they can be opened with any text editor and do

not require any specific software, and especially no commercial tools. Other file formats, e.g. the native file format of the annotation software MAXQDA, are more problematic as working with them requires commercial software. The Microsoft Office file formats are somewhere in-between: they are open file formats that can also be used with other, non-commercial software. As such, there are no strong arguments against using e.g. Excel spreadsheets, but also no strong arguments against using CSV files instead. This issue is closely connected to the “I” in FAIR, which stands for “Interoperability”: “(meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation” (Wilkinson et al. 2016). This allows for integrating data and tools with minimal effort (Wilkinson et al. 2016). For example, consider a situation in which data are drawn from multiple different corpora and the researcher wants to make use of part-of-speech tags: If all corpora have been tagged using the same tag set, the researcher will have a much easier time working with the full dataset. Finally, Reusability means that other researchers should be able to draw on and build upon the existing work. An important prerequisite for this is that “(meta)data are released with a clear and accessible data usage license” (Wilkinson et al. 2016). An explicit license, such as one of the widely used Creative Commons licenses (see <https://creativecommons.org>, last checked 29/10/2022), allows the researcher to clearly state what others are and are not allowed to do with the published data. The current gold standard is the CC-BY 4.0 license, which allows for virtually unlimited re-use of the data, as long as the creator is credited appropriately. However, there are also more restrictive licenses. If, for example, a researcher wants to make a dataset available for free to the scientific community but retain the possibility to receive some financial compensation if the data are used commercially, a CC-BY-NC-SA license can be used, which allows the re-use of the data only for non-commercial purposes (NC), and only if the resulting dataset is shared under the same or a comparable license (Share Alike, SA).

In an ideal world, then, all linguistic corpora would be available for free in re-usable and interoperable formats under a Creative Commons license. In practice, however, there are some obstacles. One obvious problem is that corpora are usually themselves derivative works in the broadest sense, that is, they draw on existing material. And in the default case, the existing material is subject to copyright. In the case of, say, newspaper texts, the copyright holders are usually easy to find but hard to convince to make their content available for free; in the case of web data, by contrast, the copyright situation is often unclear, which can make the redistribution of data crawled from the web problematic (Schäfer & Bildhauer 2013: 4).

To be on the safe side, institutions that compile reference corpora often purchase licenses from publishers. In many cases, this makes open distribution of the data impossible. Many corpora can therefore only be queried via web interfaces, often with relatively severe restrictions regarding export options, or even with a limited number of results. Examples include the above-mentioned “English corpora” suite and most corpora available via SketchEngine (see <https://www.sketchengine.eu/fair-use-policy/>). While this is not necessarily a problem for more qualitatively oriented approaches that do not require full texts, it severely limits the number of potential quantitative approaches that can be used to work with the data. Some query systems, such as Sketch Engine, come with a variety of inbuilt analysis methods, which is generally a good thing but entails the disadvantages that if a corpus is only available via this system, the user’s choice of quantitative methods is largely limited to those offered by the software in question.

This is why some corpora aim at obtaining the copyright holders’ permission to distribute full texts, which can sometimes be successful, as in the case of Schneider’s (e.g. 2020) German song text corpus, where the annotated full texts are accessible for registered users for research purposes. Other compilers try to circumvent copyright problems by exploiting legal grey zones. For instance, Schäfer & Bildhauer’s (2012) “Corpora from the Web” (COW) only distribute sentence shuffles from the websites that have been crawled. The data made available via COW can therefore be regarded as quotes from the texts. As a further legal safeguard, COW has a rather restrictive access policy to make sure that they are only used for academic purposes. Mark Davies’ “English corpora” suite pursues a very different approach: As mentioned above, the full data have to be purchased; but the full data are not entirely complete, as every twentieth word is omitted for copyright reasons. This is of course quite problematic, especially as the redacted words can differ for different users of the corpus, which limits the comparability of different studies. An even more radical solution that can still prove viable for many computational-linguistic approaches is corpus masking: Here, each word type is replaced by a specific random string (Rehm et al. 2007).

Apart from copyright, personality rights can of course also be an issue. In the case of spoken corpora or child language corpora, for example, we are usually dealing with elicited data, requiring the participants’ (or their parents’) informed consent. Especially in the case of child language data, the recordings can contain sensitive information such as the child’s or the parents’ name or the place where they live. Thus, it is important to anonymize or pseudonymize the data. But data crawled from the web can also contain sensitive information. Given that the information was public at the time of crawling, one could make a

case that including it in the corpus is unproblematic, but it is quite easy to imagine scenarios in which the publication of data crawled from the web can lead to legally or ethically challenging situations. In some cases, it can therefore be useful to publish a corpus in password-protected form, even though generally, the ideal should of course be maximal accessibility.

How should we ideally approach the copyright problem now if we want to follow the principles of Open Corpus Linguistics? If we do not need full texts to address our research questions, the problem is quite negligible. In that case, we can work with concordances, and to the best of my knowledge, nothing usually speaks against sharing concordances via dedicated repositories like OSF (<https://osf.io>, last checked 28/10/2022), as concordances can be considered collections of quotes.² In the US, this is probably covered by the Fair Use Doctrine, which allows for using a limited amount of copyright-protected material without permission for purposes such as comment, criticism, and research, although there is also some uncertainty as to which usage situations fall under “fair use” (see Lehmberg et al. 2008: 65f.).³ Other legislations, e.g. the German one, collections of quotes can be expected to be covered by laws on citation.

If we need full texts, my suggestion is that we should always consider using an openly available corpus like the BNC or the Open American National Corpus first. (In a broader sense, the aforementioned COW can be considered open corpora, too – for legal reasons, they are released under a relatively restrictive license, but they are freely available for academic purposes.) Naturally, there will be situations in which we cannot use them because we need more or different data. In such cases, we might have to either fall back to commercial corpora, or compile our own corpus. Thanks to the availability of powerful programming languages such as R or Python, this is easier than ever before; even novice users can quite easily get familiar with a tool like Barbaresi’s (2021) *trafilatura*, which takes as its input a list of URLs that are then crawled. What is more, the tool can also automatically clean the data and add metadata.

² It should be added, however, that this is a layperson’s perspective (hopefully an informed one, though). The legal perspective is certainly much more complex (see Collister 2022 for an insightful treatment focusing on the situation in the US), and of course the legal situation will differ between different legislations. My argument is of course less convincing if we talk about very large concordances that, theoretically, would allow for reconstructing the original texts. Some corpus providers therefore limit the number of concordance lines that can be shared in their terms of use (e.g., 10,000 lines in the case of COW).

³ On Fair Use and the copyright situation in the US, also see Wilkinson et al. (2005) and Lewis et al. (2006). Thanks to a reviewer for pointing out these papers to me.

And thanks to relatively permissive new legislation at least in (parts of) the European Union,⁴ many data mining activities that used to take place in a legal grey zone are explicitly legal now (see e.g. Gärtner et al. 2021, who also offer a discussion of remaining open questions). While this does not include free sharing of the data, it does allow for data to be permanently stored on servers of university libraries. At least in theory, this allows for reconciling best-practice strategies of reproducible research with copyright and other legal restrictions. In practice, however, it is still an open question how the long-term storage of mined datasets and especially the process of granting access to peers can be organized.

4. Conclusion: Open Corpus Linguistics in practice

In the preceding sections, I argued for adopting open research practices in corpus linguistics, and examined a number of potential problems that such an endeavor entails. In this section, I discuss how open corpus linguistics can work in practice, and how it contributes to overcoming the pertinent problems addressed in Section 2.

In Section 1, I argued that adopting open research practices – and in the ideal case, using openly available corpora – helps us to overcome “Rissanen’s problems”: In the best-case scenario, we can use corpora whose full texts are readily available, which can contribute to overcoming “the philologist’s dilemma”. Such a scenario also provides some flexibility in working with pre-compiled corpora, as we are not at the mercy of the corpus creators with regard to the composition of the corpus. Instead, we can work with custom subcorpora or work with custom compilations of subcorpora from different corpora, which can help to solve the problem of “God’s truth fallacy”. And finally, such an approach ensures replicability and reproducibility, which partly solves the “mystery of vanishing reliability”.

The latter is even true if we work with commercial corpora but make our concordances and analysis scripts available, as is increasingly common in corpus linguistics. For this purpose, platforms like the Open Science Framework (OSF) or the Tromsø Repository of Language and Linguistics (TroLLing) can be used (see the FAQ in Table 1 for more information).

⁴ In particular, articles 3 and 4 of the European Directive on the Digital Single Market (<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32019L0790&from=EN#d1e1321-92-1>, last accessed 28/06/2022) stipulates certain exceptions from copyright for text and data mining purposes. However, as Rosati (2021) points out, by far not all EU member states have transposed the directive into national legislation.

In the previous section, I have addressed some potential problems, many of which are, in my view, not insurmountable. Some of them, though, call for creative solutions such as Schäfer & Bildhauer’s decision to work with sentence shuffles in the case of COW. Needless to say, it would be desirable to have more legal certainty when using copyright-protected content for linguistic purposes – the aforementioned EU directive might be seen as a promising sign that (some) political stakeholders are aware of the need to reconcile research and copyright interests. For the time being, following the ideals of Open Corpus Linguistics might in some cases require entering legal grey zones. The risk of having to tread uncertain legal ground can, however, be minimized by keeping the question of how the data shall be published in mind from the earliest design phase on, and by choosing open corpora wherever possible, as discussed above. In other words, following the principles of Open Corpus Linguistics requires us to invest considerable time in Research Data Management (RDM). While this can be time-consuming, it is very likely that it will save others and ourselves much time later on.

One topic that I have not addressed yet is open-access publication. As one reviewer correctly points out, open research practices and open-access publication ideally go in tandem, even though they can be treated as separate topics. Many of the arguments in favor of open research practices mentioned above also apply to open-access publication, ideally in the form of “gold open access” (i.e., the final publication is available free of charge) or alternatively in the form of “green open access” (i.e., a preprint is published on a pertinent repository; see Eve 2014 for more details and discussion).

While linguistic research questions and the corpus-linguistic scenarios required to address them are too diverse to provide anything like a “cookbook” for Open Corpus Linguistics, this chapter has hopefully provided some helpful guidelines, some of which are summarized in the form of Frequently Asked Questions in Table 1.

Category	Questions and answers
Existing corpora	<i>Which corpora should I use to follow the ideal of Open Corpus Linguistics?</i>

	<p>Needless to say, the choice of corpus has to be guided, first and foremost, by the research question. But in many cases, there are open alternatives to the widely-used default choices. Examples for synchronic English data include the Open American National Corpus for spoken and written American English, as well as the ENCOW corpus for World Englishes as used on the web. The BNC, which is a paradigm example of an open corpus, hardly needs to be mentioned as it is already widely used. There are also a number of multilingual corpora, e.g. the COW family of corpora to which the above-mentioned ENCOW belongs, or the WaCky corpora (Baroni et al. 2009).</p>
Corpus compilation	<p><i>Which principles should I follow when compiling new corpora?</i></p> <p>If possible, try to create a corpus that can be published freely under an open license. To do so, it is very important to address legal questions at the very beginning of a project. If you cannot make the full texts freely available for copyright reasons, try to make the corpus as accessible as possible, e.g. by allowing queries via flexible search engines such as NoSketchEngine or CQPweb and by publishing word and lemma lists (and ideally, n-gram lists), or by publishing it in password-protected form via a repository that allows for closed-access corpora (e.g. CLARIN). Data repositories that fit your needs can be found via https://www.re3data.org/ (last accessed 02/07/2022).</p>
Repositories	<p><i>Where can I publish my research data?</i></p> <p>There are dedicated repositories such as osf.io, zenodo.org, the TroLLing Dataverse (https://dataverse.no/dataverse/trolling) and others. I strongly recommend publishing data there, rather than on one's own website. Even on repositories, research data may not be available forever, but we can at least be confident that they will remain available for a few decades after the researcher has retired.</p> <p><i>Can I publish my paper (draft) along with my data?</i></p>

In most cases, this shouldn't be a problem, even if you submit the paper to a commercial journal. The Sherpa-Romeo database gives a good overview of different journals' and publishers' open-access policies (<https://v2.sherpa.ac.uk/romeo/>, last checked 25/10/2022). As a rule of thumb, you are almost always on the safe side when making your initial, not yet peer-reviewed manuscript available on your website or on a non-commercial repository. One of the go-to non-commercial preprint repositories for linguists is PsyArXiv (<https://psyarxiv.com/>), which also offers the convenient opportunity to link your preprint with an OSF data repository.

I'm working with concordances from a commercial corpus. Am I allowed to publish them on a repository?

It depends. In some cases, the terms of use of the corpus will prohibit this. In the case of smaller concordances with small context windows, I would always argue that they are collections of quotes – and quoting should in most cases be unproblematic. In case of doubt, it might be worthwhile to talk to your university's legal department, rather than relying on my layperson's opinion. Also, in some cases, the original data are not strictly necessary to ensure reproducibility and replicability. For example, when working with distributional-semantic methods, we only need to know the degree of co-occurrence of the target with other words, regardless of what those other words are. Instead of the original data, corpus compilers can choose to distribute "masked" data in such cases, where each word type is replaced by a specific random string (Rehm et al. 2007). Perek (2021) makes use of this fact in the published version of his distributional semantic models of English verbs and nouns based on COHA. Another option for web-based corpora is to publish link lists; in the case of Twitter data, a frequently-used possibility is to publish Tweet IDs (McCreadie et al. 2012).

	<p><i>To what should I pay attention when publishing my research data in repositories?</i></p> <p>Make sure that everything is well-documented and self-explanatory. (This is harder than it sounds, which is why I’m not referring to any of my own repositories here as a best-practice example.) Make sure that the repository is actually <i>public</i> when your paper is published (OSF, for instance, offers private and public repositories). Make sure that your analysis scripts are extensively commented (formats like R Markdown or Jupyter Notebooks invite extensive comments, but plain text scripts can also be used, of course). Make use of the possibility to assign a DOI to the dataset(s).</p> <p><i>I would like to share my dataset and analysis scripts with reviewers. How can I do this without compromising the anonymity of peer-review?</i></p> <p>OSF offers “view-only” links that you can share with reviewers. Note that the non-anonymous repository can easily be retrieved from the view-only link as soon as it is public – if you want to make sure that you remain anonymous, keep it private (the view-only link will still work).</p>
Potential objections	<p><i>If I make my data available, won’t I lose control over it, and will I not take the risk that other people will use it to do the research that I was still planning to do?</i></p> <p>This is an objection that I hear very often. And in a way, it is understandable – after all, if you have invested a lot of time and work into a dataset, releasing it might feel a bit like giving away your child. But apart from the fact that you can’t lock up your child at home in a secret chamber forever (or at least, you shouldn’t), the argument is not really convincing: Firstly, if you follow the recommendation of publishing your data with a license, you don’t lose control over it. On the contrary, you can specify quite precisely who can do what with the data.</p>

	<p>Secondly, the likelihood that someone will address <i>exactly</i> the same research question with <i>exactly</i> the same methods on the basis of your data is vanishingly low. The worst thing that can happen is that someone conducts an eerily similar study, which, on second thought, is a good thing, because you could see it as a replication by accident, and replication is good for science.</p> <p><i>I'm thinking about publishing my corpus, but I feel it's not good enough for publication and I don't have the resources to improve it.</i>⁵</p> <p>This is probably quite common – not only in corpus linguistics but also in other</p>
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Tab. 1: Answers to some frequently asked questions about open research practices in corpus linguistics.

To sum up, Open Corpus Linguistics can be a challenging endeavor, but given the “replication crisis”, it is a necessary one. In the long term, adopting open research practices can also help us to focus on actual linguistic research questions, rather than spending hours and hours of work on things that other people have done before, without making the results publicly available. Adopting open research practices is ethically a good choice, and it is in our own best interest, both as individual researchers and as an empirical discipline.

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⁵ Thanks to a reviewer for bringing this up!

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