Investigating Data-Related Practices in Neuroscience, Psychology, and Beyond

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Background

Though research data management (RDM) has increasingly become a focus of academic libraries, the extent to which researchers have adopted best practices related to data storage, organization, and documentation, and preservation remains unclear. Since proper data management is integral to ensuring research transparency and reproducibility, we are gathering information about the data-related practices and outstanding needs of researchers in different disciplines.

Data Management in Neuroscience

Neuroscience research presented an ideal test case for studying discipline-specific data management practices. The data involved is often large and complex, small changes in analytical pipelines have significant downstream effects, and there are ongoing efforts to facilitate data sharing and other open science practices.

Survey Results

To understand the data management practices of active researchers in the field of neuroimaging, we surveyed researchers whose work involves magnetic resonance imaging (MRI) about how they store, organize, document, and preserve their data.

- To ensure that our questions would be meaningful to active researchers, we consulted with the neuroimaging community throughout the survey design process.
- A total of 144 researchers from 11 countries, 69 institutions, and a range of research areas participated in our study.
- Our results indicate that neuroimaging researchers collect data in a variety of forms and that data-related practices differ between and within research groups.
- Lack of time, professional incentives, and community-supported best practices commonly limiting their current data related practices.
- Though current levels of adoption were low, a substantial number of participants indicated they would publish preprints, preregister studies, and publish in OA journals in the future.

Data Management in Psychology

Following up on our survey of MRI researchers, we are currently preparing to investigate data-related practices in the field of psychology.

- Our survey instrument is being designed in consultation with psychology researchers as well as individuals who work on data-related issues in academic libraries.
- In addition to advertising through social media and discipline-specific listservs, we will also e-mail corresponding authors of recent articles in psychology journals.
- We are revising the form and content of our survey to reflect the terminology and tools of psychology research and also to provide us with more information related to limits, motivations, and outstanding needs.

Research Questions

1. How are researchers in different scientific disciplines actually managing and sharing their research data?
2. What are the current levels of adoption for emerging open science practices including publishing preprints, sharing research materials, and publishing in open access journals?
3. How do we, as librarians, best engage with researchers on issues related to data management and open science?

## Data Management Maturity Ratings

We asked researchers to rate the maturity (i.e. codification) of their data management practices during different phases of a research project.
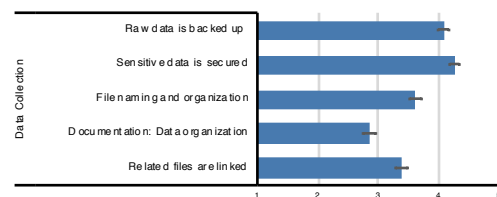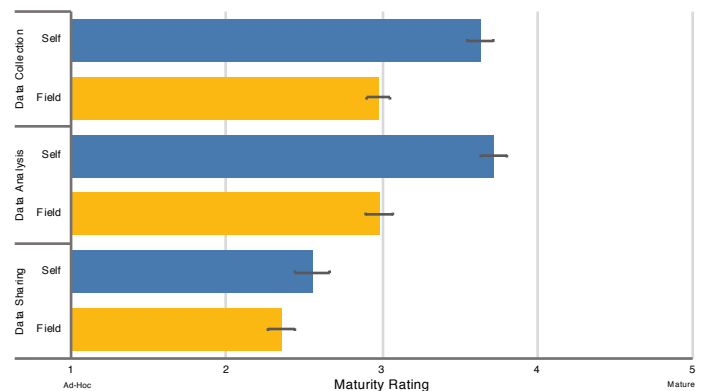
Participants often stated that their RDM practices are more mature than the field as a whole (and they may be right).
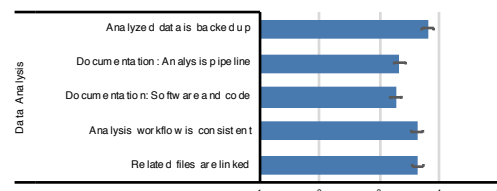
Participants rated practices related to data collection and analysis as more mature than those related to sharing (and they may be wrong).
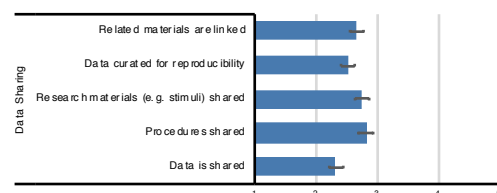
Next Steps

We hope to increase our engagement with the neuroscience and psychology communities and develop follow-up studies and researcher-focused educational materials related to data management and open science. We're also exploring how to investigate data-related practices in other research areas.

Our Paper: https://doi.org/10.1371/journal.pone.0200562
Open Data: https://doi.org/10.1184/R1/5845656.v1