Making research open in psychology

Ben Jones is a Professor of Psychology in the Institute of Neuroscience and Psychology at the University of Glasgow. Together with Lisa DeBruine, he runs the Face Research Lab, investigating how people respond to social cues, particularly information that is visible in faces.

Ben admits that his first foray into open research was motivated by self-interest, in the hope that making his data open would improve his research, increase his citations and benefit his career. This early attempt at open research was very productive and Ben now attempts to work as openly as possible, as he believes that it benefits both his research, and the wider research community.

Research Funding

The Face Research Lab's work is primarily funded by the European Research Council [grants OCMATE and KINSHIP], with additional funding from ESRC, Wellcome, Nuffield Foundation, NSF (USA) and NSERC (Canada).

Open Research Workflow

Once their data has been analysed and the manuscript prepared, the Face Research Lab posts their manuscripts to BioRxiv or PsyArXiv for comment and feedback. At the same time, the data files are made available on the Open Science Framework (OSF). The analysis of the data files is done in the open source statistical software R, and this code is also deposited in OSF.

Datasets in OSF are not routinely licensed (as is common in institutional data repositories and some subject repositories). This is not perceived as a problem, as citation of re-used data sets is normal in the field, and psychology has quite a mature culture of data re-use, with community standards to match.

While the Face Research Lab publishes only a fraction of the analyses they do, they share all their available analyses. They also make the stimuli and data files available. This raw data is important for the purposes of reuse.

The Face Research Lab also makes their face morphing and transforming software WebMorph available online, with the open source code in GitHub.

The benefits of being open…

Null Results

One example of the benefits of working openly is Ben's experience when publishing null results. A project from the Face Research Lab produced a null result, in opposition to the prevailing orthodoxy in the field. Ben anticipated that it might take a very long time to get the paper published by the traditional route, preventing the authors from moving on with more research. The group posted the paper [1] to the preprint server bioRxiv, in order to get the work into the public domain. While still a preprint, this paper generated lots of attention and comment from the research community and Science ran a news piece [2] on it. The paper already had an Altmetrics rating of 388 by the time it was published [3] in Psychological Science, putting it in the top 5% of research outputs scored by Altmetrics. Ben believes that the interest generated by the paper as a preprint smoothed the publication process and, by the time the paper was accepted for publication, it had already been cited by most of the leading groups in their field.

Altmetrics are a measure of the attention a research output is receiving over a range of online platforms (Twitter, news outlets, social media, blogs etc). The output is tracked by its DOI.

Catching and Correcting Errors

Researchers often worry that if they share their data, errors may be spotted in the data or analysis, which could reflect negatively on their work. Ben has experienced this situation and has a more nuanced take on it:

> *'…when the data is open, people are more supportive about helping to spot errors and correct them. If the data are closed, people are more critical when errors come to light…'*

An early dataset shared by Ben's group had a sub-optimal analysis, which was detected when the data was shared. Thanks to the comments of other researchers, Ben's group was able to improve the analysis, which subsequently strengthened the paper. Ben feels that they came out of the situation well, with their research reputation enhanced. This is one of the reasons they now routinely post their papers to preprint servers and share data so early in the process – it gives them the opportunity to catch and correct errors.

Collaboration

Ben has also found that by sharing preprints and data prior to publication, his group has attracted new collaborations. Often, this comes about by researchers suggesting alternative analyses that could be run on the shared data. Where the suggested analyses appear useful and the Face Research Lab do not have the expertise to run them themselves, Ben asks if

the researcher suggesting the analysis would like to help with it in return for authorship or future collaboration. This has produced some fruitful additions to the Face Research Lab's work.

Quality of Workflows

Researchers also worry that sharing their data will mean spending a lot of time getting the data into a format suitable for sharing and third-party consumption.

In the Face Research Lab, the experimental protocols, stimuli and response data are underpinned by code. This was already the case before they regularly made their research data open, so there have been no significant changes to their workflow. However, Ben notes that making the data open has improved the quality of the annotation and the reproducibility of their work. While some lab members already had excellent standards for recording details and annotating the code, now all members of the lab work to these high standards.

Triangulation Issues

Triangulation of the identities of human participants in research projects is a concern common to many disciplines across the sciences, social sciences and humanities. Triangulation is the process by which an anonymised or pseudo-anonymised participant can be identified by combining the data made available by a research project with other information about the individual which may already be in the public domain (and in the era of social media, there's a lot of information about most of us out there).

The Face Research Lab have had an overwhelmingly positive experience of sharing their research openly, including their research data. This is in part due to the specific choices they have made with regards to both input stimuli and research data in order to protect the identities of the people participating in their research.

To mitigate the risk of triangulation, the research data shared by the Face Research Lab are fully anonymised, and the stimuli photographs used in the research are from commercially available photo sets with full consent given by the models.

Useful Links

[1] Jones, B.C. et al (2017) **No Compelling Evidence that Preferences for Facial Masculinity Track Changes in Women's Hormonal Status**. *bioRxiv* 136549; https://doi.org/10.1101/136549

[2] Guglielmi G. (2017) **Hormones don't sway women's sexual preferences, study suggests**. *Science*. https://doi.org/10.1126/science .aar3903

[3] Jones, B.C. et al (2018) **No Compelling Evidence that Preferences for Facial Masculinity Track Changes in Women's Hormonal Status.** *Psychological Science* 29(6) 996 – 1005 https://doi.org/10.1177/09567976187601977

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https://www.gla.ac.uk/researchinstitutes/neurosciencepsychology/staff/benjones/

The Face Research Lab http://facelab.org/

bioRxiv https://www.biorxiv.org/

PsyArXiv https://psyarxiv.com/

Open Science Framework https://osf.io/

Webmorph (software) https://webmorph.org/

Webmorph (code) https://github.com/debruine/webmorph

Altmetrics https://www.altmetric.com/

The R project for statistical computing https://www.r-project.org/

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