My experience with Registered Reports

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Michael J Mahoney  
Scientist as Subject: The Psychological Imperative  
Ballinger Publishing Company, Cambridge MA  
1976

• “… manuscripts should be evaluated solely on the basis of their relevance and their methodology. Given that they ask an important question in an experimentally meaningful way, they should be published - regardless of their results.

• In the peer review system, papers sent to referees would contain only an introduction and a procedure section (perhaps supplemented with a brief description of how the data would be presented or analysed).

• After the reviewers had rendered their opinions, the results would be appended.

• An even better option would be to have contracted publication. In this system, the researcher submits his idea and experimental procedures to the editor prior to their execution. If the editor approves, the researcher is guaranteed subsequent publication of the work. “
Psychology's ‘registration revolution’

Moves to uphold transparency are not only making psychology more scientific - they are harnessing our knowledge of the mind to strengthen science.
Plan study → Do study → Submit to journal → Respond to reviewers → Publish paper

Acceptance!
Classic publishing:
1. Plan study
2. Do study
3. Submit to journal
4. Respond to reviewers
5. Publish paper

Registered reports:
1. Plan study
2. Submit to journal
3. Respond to reviewers
4. Do study
5. Publish paper

Acceptance! (in principle)
Registered report is **not** the same as Pre-registration

- Similar to regular publication route
- No guarantee of publication
- But reviewers generally positive about preregistered papers
- And benefits of having well-worked out plan – less stress when it comes to making sense of data
Registered reports

Plan study → Submit to journal → Respond to reviewers → Do study → Publish paper

Acceptance! (in principle)

What are the benefits?
Four key factors leading to poor reproducibility

- Low power
- Publication bias
- P-hacking
- HARKing

Registered reports – solve issues of:

• **Publication bias**: publication decision made on the basis of quality of introduction/methods, before results are known

• **P-hacking**: analysis plan specified up-front

• **HARKing**: hypotheses specified up-front

• **Low power**: studies required to have high power

Unanticipated findings can be reported but clearly demarcated as ‘exploratory’
Unexpected benefit #1
Reviewer feedback at a point when it is useful

Reviewers suggested:
- Control for motor movement
- Control for attention
- Positive control (check we get mu when actual movement)
- Alternative method of analysis
Unexpected benefit #2
Taking control of the publication time-line

http://deevybee.blogspot.com/2016/03/better-control-of-publication-time-line.html
Unexpected benefit #3
No shifting of goalposts

• That thing when you address all the reviewer comments, but they then come back with something new.....
Unexpected benefit #4

• Piloting and simulation reveal numerous points that can be addressed before you start the study

• In our Registered Reports, we use simulated data for power calculations – often leading us to dramatically reconsider what we plan!
Reviewer feedback useful even if Registered Report abandoned

Stage 1 RR rejected by Cortex, 2018

Investigation into inconsistent lateralisation of language functions as a potential risk factor for language impairment

Abigail R. Bradshaw, Zoe V. J. Woodhead, Paul A. Thompson, Dorothy V. M. Bishop,

First published: 18 November 2019 | https://doi.org/10.1111/ejn.14623 | Citations: 2
To sum up

• Registered Reports are good for science!
  
  • Get a far more credible picture of state of evidence once you remove opportunities for publication bias and p-hacking, and omit uninformative underpowered studies
  
  • Also good for scientists
    
    • Better able to treat peer review as a positive source of advice
    
    • More piloting/simulation improves study design
    
    • Control of the publication timeline
My experience with Registered Reports

2016

Registered report
Mu suppression – A good measure of the human mirror neuron system?
Hannah M. Holson and Dorothy V.M. Bishop
Published: 15 June 2016
https://doi.org/10.1016/j.neuroimage.2016.06.007

2018

Registered report
Online incidental statistical learning of audiovisual word sequences in adults: a registered report
Sengottuvel Kuppuraj, Mihaela Dutu, Paul Thompson and Dorothy Bishop
Published: 21 February 2018
https://doi.org/10.1098/rsos.171678

2018

Registered report
The influence of evaluative right/wrong feedback on phonological and semantic processes in word learning
Saloni Krishnan, Elise Sellar, Helena Wood, Dorothy V. M. Bishop and Kate E. Watkins
Published: 26 September 2018
https://doi.org/10.1098/rsos.180498

2018

Rejected, 2018

Investigation into inconsistent lateralisation of language functions as a potential risk factor for language impairment
Abigail R. Brachshaw, Zoe V. J. Woodhead, Paul A. Thompson, Dorothy V. M. Bishop
First published: 18 November 2019
https://doi.org/10.1111/ejn.14623

2019

Registered report
Functional organisation for verb generation in children with developmental language disorder
Saloni Krishnan, A. M. S. Sebina, Selina S. Anubha, Gabriela J. Cai, Harriet J. Smith, Hannah E. Wilks, D. S. Hantel, F. Holly, Paul A. Thompson, Dorothy V. M. Bishop, Kate E. Watkins
Published: 28 February 2019
https://doi.org/10.1002/ene.2623

2021

Stage 2 Registered Report: Variation in neurodevelopmental outcomes in children with sex chromosome trisomies: testing the double hit hypothesis
[version 4; peer review: 2 approved]
Dianne F. Newbury, Nuala H. Simpson, Paul A. Thompson, Dorothy V. M. Bishop
Published: 25 August 2021
https://doi.org/10.1002/ene.2633

2018-2021