PRE-REGISTRATION: WHERE DO I START?

Dr Xenia Schmalz
Post-doctoral researcher, ambassador at COS
25/06/2019
## REGISTERED REPORTS VERSUS PRE-REGISTRATION

<table>
<thead>
<tr>
<th>Feature</th>
<th>RR</th>
<th>Pre-reg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defence against <em>p</em>-hacking</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Defence against publication bias</td>
<td>✔️</td>
<td>❓</td>
</tr>
<tr>
<td>Defence against HARKing</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Guarantee of publication</td>
<td>✔️</td>
<td>❌</td>
</tr>
<tr>
<td>Quality check before data collection</td>
<td>✔️</td>
<td>❓</td>
</tr>
<tr>
<td>Badge</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Flexible timing</td>
<td>❌</td>
<td>✔️</td>
</tr>
</tbody>
</table>
WHAT IS A PRE-REGISTRATION?

• Time-stamped, non-modifiable document outlining the hypotheses, methods, and analysis plan
• Flexible format: full report, bullet points...
• Not peer reviewed
• Platforms: Open Science Framework, aspredicted.org, Registered Reports in Psychology (in development) ...
• Must be uploaded before data collection has started
• Insert link to the pre-registration in final manuscript
WHERE DO I START?

• In theory: Very easy

Upload preprint!
Disclaimer: I have not published a pre-registered study (yet)!
Disclaimer: I have not published a pre-registered study (yet)!
IN PRACTICE

Disclaimer: I have not published a pre-registered study (yet)!

Published as preprint only (rejected by journal)

Uninterpretable null results

In progress
ROOKIE MISTAKE 1: FLAWED DESIGN

• Pilot testing
• Build as closely as possible on prior work
• Do-it-yourself peer review: Ask some colleagues to have a read through the report
• For the brave: Upload the report before time-stamping it, advertise through social media
ROOKIE MISTAKE 2: UNINTERPRETABLE NULL HYPOTHESIS

- Experiment idea “Wouldn’t it be cool if...?”
  - With such experiments: if yes → “Wow!”, if no → “Duh!”
- Instead:
  - Theoretical considerations: What would a null result tell us?
  - Maximise the strength of the manipulation
  - Include manipulation checks
  - Adequate sample size
ROOKIE MISTAKE 3: PROMISING THINGS YOU CAN’T KEEP

• Pilot materials

• Sample size: What is realistic?
  • Power analysis: often gives practically unrealistic required sample sizes, if we’re honest
  • Sequential testing: frequentist ([Lakens 2014](#)) or Bayesian ([Schönbrodt & Wagenmakers, 2018](#))
  • Practical considerations: valid argument, if N > in most previous studies

• Fancy data processing or analysis techniques
  • Practice on pilot data or simulated data
SO, WHERE DO I START?

• Start with small steps
• Write Preregistration reports for all experiments as an exercise
• Does a formal preregistration make sense for this study?
  • E.g., new paradigm, exploratory studies
• Will the design allow us to draw conclusions regardless of what happens?
• Collect pilot data
• Get as much feedback as possible
• The more detail, the better!
• Make changes as necessary, but clearly describe & justify in manuscript