Publication & Reporting

From Avoidance to Transparency in Research

GCC Rigor & Reproducibility Workshop
January 18, 2017

S.L. Gorniak, Ph.D.
University of Houston
Why do we loathe Publication & Reporting?

- List 2-3 examples in which you personally have exhibited avoidance behaviors (e.g., procrastination) with respect to publication &/or reporting in any of your current or past research projects
  - Why?
What is Avoidance-Motivated Behavior/Coping?

- Our behavior when we distract ourselves from doing a task that is associated with an unpleasant emotion, typically fear
  - Worry, Anxiety, Panic
- We do something else instead to bring momentary relief
  - Procrastination
Why do we exhibit avoidance behaviors in P&R?

• **Time Management**
  - Administration & writing can take a significant amount of time away from productivity
  - P&R deadlines can create time conflicts with other commitments (family, teaching, service, travel, ...)

• **“Lack of Progress”**
  - Often, we feel like we have not been productive enough... which can be paralyzing
  - Progress can feel like a moving target
Avoidance Impacts P&R

- Missed Deadlines
- Delayed Publications
- Late Reports to Regulatory & Funding Entities
- May Impact Promotion & Tenure, Career Advancement
Publication & Products of Research

- Most commonly sought products of research
  - Peer-review publications in top-tier journals
    - May require open access agreements for data produced
  - Conference papers / podium presentations
  - Abstracts / conference posters
  - Technology Development &/or Techniques
  - Inventions: Patents, patent applications (NPA, PPA), licensing agreements
  - “Other”
    - Databases, physical collections, A/V products, software, instrumentation, interventions, educational aids
Publication & Products of Research

• **Who does the work?**
  - PI / Co-Is are typically senior authors
  - Post-docs, Research Assistants
  - Graduate Students, possibly Undergrad students
  - Lab Techs

• **Typically, these are team efforts which the PI supervises**
  - PI can ideally spend time to other projects and commitments
  - Majority of work likely done by junior scientists / trainees***
Research Reporting

- **Common types of reporting in research**
  - Department/Center/University Annual Reports
  - IRB / Human Subjects Protection
  - IACUC / Animal Research Oversight
  - Federal Regulatory Bodies (e.g. FDA)
- **Funding / Grants**
  - Federal (NIH, NSF, etc)
  - State (CPRIT)
  - Local (Dunn Foundation)
  - Private Foundations (AHA, ADA, etc)
Research Performance Progress Reports (RPPRs)

- Federally mandated format required by NIH
  - Similar formats & information required by other funding bodies
  - Typically done on an annual basis

- Only the PI or a noted delegate can initiate
  - This can require a major time & resource commitment by the PI
  - Majority of work likely done by PI
    - May have to formally submit the document to the funding body & institution
RPPR Required Components

• **Accomplishments**
  • What were the major goals and objectives of the project?
  • What was accomplished under these goals?
  • What opportunities for training and professional development did the project provide?
  • How were the results disseminated to communities of interest?
  • What do you plan to do during the next reporting period to accomplish the goals and objectives?
RPPR Required Components

• Publications & Products

• Patient (or Animal) Recruitment and Safety Reports

• Collaborative Efforts
  • Collaborating Institution Reports
  • Multi-site projects?

• Impact
  • Are you producing a sustained powerful influence in your research area with your progress?
RPPR Required Components

- **Project Changes, Challengers, & Problems**
  - Changes in approach and reasons for change
  - Actual or anticipated problems or delays and actions or plans to resolve them
  - Changes that have a significant impact on expenditures
  - Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents

- **Financial / Budgetary Reports**

- **Future Plans?**
Hurtles to P&R?

• **Project Changes, Challengers, & Problems**
  • Difficulties in starting &/or running a project
    • *Instrumentation, Participants, Lab Staff, Time, Funding, ...*
    • Lack of progress due to such difficulties

• **Difficulty organizing required information by stated deadlines**
  • Time conflicts, communication challenges, ...

• **Little to no institutional support**
  • Some PIs need to fill out the report and submit it in its entirety
  • A lot of time can be devoted to understanding what info is required, especially without administrative support
If P&R is so tough, why bother?

- **Negative Consequences**
  - Withdrawal of funding
  - Inability to support current & future projects
  - Inability to achieve promotion, tenure, career advancement, ...

- **Lack of P&R means that biases can be introduced into the evidence base**
  - **Reporting Bias**
    - Selective revealing (or suppression) of information/outcome of a study
    - Reporting some results, but not all results
    - “Spinning” of unexpected or undesirable results
      - Attributed to sampling or measurement errors
# Reporting Biases associated with P&R

<table>
<thead>
<tr>
<th>Publication Bias</th>
<th>Time Lag Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Essentially this is non-publication of results</td>
<td>• Rapid publication of exciting, but not full results</td>
</tr>
<tr>
<td>• Typically due to failure of an intervention</td>
<td>• Delay in publication of negative or non-significant findings</td>
</tr>
<tr>
<td>• Lack of “positive” or “significant” results</td>
<td>• Delayed publication an also occur if a PI is trying to boost “productivity” under a specific grant</td>
</tr>
</tbody>
</table>

**Publication Bias**

- Essentially this is non-publication of results
- Typically due to failure of an intervention
  - Lack of “positive” or “significant” results

**Time Lag Bias**

- Rapid publication of exciting, but not full results
- Delay in publication of negative or non-significant findings
- Delayed publication also occur if a PI is trying to boost “productivity” under a specific grant
Reporting Biases associated with P&R

**Duplicate Publication Bias**
- Publication of the same results in multiple journals or journal supplements
- Typically higher incidence for “positive” or “significant” results
- Incidence may be decreasing due to widely searchable electronic databases (eg. Pubmed)

**Location Bias**
- Refers to journal of publication & impact factors
- Studies with “positive” and “significant” results tend to be
  - Published in journals with higher impact factors
  - Published in journals with better access (eg. indexed)
## Reporting Biases associated with P&R

### Citation Bias
- Tendency to cite positive findings more frequently
- May lead to perception that an intervention is more effective than it truly is, due to differential in number of citations
- Over-representation of positive findings

### Language Bias
- Publication of positive findings in a specific language
  - *eg. English*
- Non-significant results may be published in non-English language journals
- May impact meta-reviews and systematic review results
Reporting Biases associated with P&R

Knowledge Reporting Bias

• The frequency with which actions, outcomes, or properties are reported is not necessarily a reflection of actual incidence
  • Location of study, SES, or other factors may significantly impact results

Outcome Reporting Bias

• Selective reporting of results
• Modification of hypotheses to fit findings
• Less likely to report adverse outcomes
  • Suppression
  • Highly problematic for drug & device trials
Reporting Biases associated with P&R

Funding Bias

• Tendency of a scientific study to support the interests of the study's financial sponsor

• Predetermined conclusions may bias researchers into an expectation bias

• Some sponsors require PIs to waive the right to publish findings that do not support the sponsor’s interests
  
  • Associated with publication bias & outcome reporting bias

• Study design may be flawed from the start
Strategies in Addressing Bias in Publishing

• Build a case in which negative results can provide a positive impact on the evidence base

• Don’t suppress results, particularly negative results or “non-significant” results

• Don’t rush or delay publication

• Avoid publishing the same results in more than one manuscript unless there is a very good reason to do so (new analyses, etc)

• Carefully consider the impact factor, scope, and audience of the journals you submit to
  • International? Clinical?

• Try to balance the story you tell with respect to citations
Strategies in Addressing Bias in Reporting

• Know the strengths & weaknesses of your team

• Familiarize yourself with expectations of editors, review boards, funders, & your institution

• Know your deadlines

• Know what components are needed for reporting

• Know your resources
  • Do you have administrative support? How much? What type?
A New Year’s Resolution...

What can you (&/or your lab) do this year to improve your relationship with publication, reporting, & bias?

• Come up with 2 - 3 resolutions with implementation strategies to share & discuss with your breakout group.