Failure Five Ways

AmanPreet Badhwar, PhD Co Organizer
University of Montreal
Montreal, Quebec
Canada

Aina Puce, PhD Organizer
Indiana University
Psychological & Brain Sciences
Bloomington, IN
United States

Symposium
Timeliness of the topic:
Given that our neuroimaging field has currently has such a large focus on code and data sharing and data reproducibility, this topic is very relevant. Addressing failures productively and learning from them will improve scientific practice and therefore directly impact the reproducibility question.

Importance of the topic:
Failure is an essential part of being a scientist. Failures occur during all stages of doing science - from conceptualizing ideas and theories, gathering and analyzing data, all the way to writing manuscripts/grants and managing reviewers. Dealing with and learning from these various types of failure is the key to becoming a successful scientist. That said, this is a difficult initial pill to swallow for those who are training as professional scientists or are coming into the field from other areas of life. In this 'Failure' Round Table we plan to address the 5 key areas where failures can occur and will devote discussion to how these can be: (i) successfully mitigated, and (ii) their outcomes used productively to further successful science in the lab. [Our desired learning outcomes/objectives are described in the next section.] The 5 topics to be addressed are:

Failure 1: Thinking and Planning [Cyril Pernet]
Subtopics: Theory building: ignoring existing data that challenge idea being put forward; Not taking into account main confounding variables when designing the study - inadequate number of control conditions or nonexistent ancillary data; Not performing pilot studies before running main experiment; not assessing statistical power/effect size prior to doing study; Not performing a dry run before doing the experiment.

Failure 2: Acquiring and Analyzing [Christophe Philips]
Subtopics: Not standardizing interactions with subjects; Quality control procedures for data acquisition/analysis; Avoiding human errors: role of automation and checking procedures; Ignoring the multiple comparisons problem; Acquisition parameters changing during the course of the study due to manual error and/or equipment update.

Failure 3: Writing and Funding [All 4 presenters]
Subtopics: Authorship issues/defining work roles; Choosing publication outlets/grant funders; Not following instructions for prep of manuscripts/grants; Not acknowledging study limitations; Language issues; Suboptimal display of data; Mis-timing the writing of grant proposals, especially when multiple principle investigators involved; Making lemonade out of lemons: using work from rejected papers and grants productively.

Failure 4: Publishing and Reviewing [Aina Puce]
Subtopics: Not selecting optimal audience and journal; Non-informative manuscript cover letters; Not taking reviewer's concerns/issues seriously; Poorly prepared appeals by authors of rejected manuscripts; Content-free reviews; Mismatches between review content & score/rating; Affective tone.

Failure 5: Mentoring an Managing [Amanpreet Badhwar]
Subtopics: Finding time; Communication styles/method of communication; 180 degree thinking, getting the most out of meetings; Power dynamics; Assessing performance; Navigating cultural differences; Engaging and interacting; Imposter syndrome; Empowering mentees; Dealing with trainees who "do not have it".

Objective

After participating in the 'Failure' Round Table participants would:
- gain a better understanding of the various types of failure routinely experienced by scientists;
- learn about potential resources that they can access and explore further to avoid certain basic failures while practicing science;
- learn and develop

Target Audience

The main target audience is trainees - graduate students and post-doctoral fellows. That said, however, both early career and senior scientists, as well as clinicians will also be able to benefit from this session.

Presentations

Failure 1: Thinking and Planning

Subtopics for Round Table discussion: Theory building: ignoring existing data that challenge idea being put forward; Not taking into account main confounding variables when designing the study - inadequate number of control conditions or nonexistent ancillary data; Not performing pilot studies before running main experiment; not assessing statistical power/effect size prior to doing study; Not performing a dry run before doing the experiment.

Presenter
Cyril Pernet, The University of Edinburgh Ed, Scotland, United Kingdom

---

Failure 2: Acquiring and Analyzing

Subtopics for Round Table discussion: Not standardizing interactions with subjects; quality control procedures for data acquisition/analysis; Avoiding human errors: role of automation & checking procedures; Ignoring the multiple comparisons problem; Acquisition parameters changing during the course of the study due to manual error and/or equipment update.

Presenter
Christophe Phillips, Ir PhD, University of Liège, GIGA Institute, Liège, Belgium

---

Failure 3: Writing and Funding

Authorship issues/defining work roles; choosing publication outlets/grant funders; not following instructions for preparation of manuscripts/grants; Not acknowledging study limitations; Language issues; Suboptimal display of data; Mis-timing the writing of grant proposals, especially when multiple principal investigators are involved; Making lemonade out of lemons: using work from rejected papers and grants productively.

All four Presenters

Failure 4: Publishing and Reviewing

Not selecting optimal audience and journal; Non-informative manuscript cover letters; Not taking reviewer's concerns/issues seriously; Poorly prepared appeals by authors of rejected manuscripts; Content-free reviews; Mismatches between review content & score/rating; Affective tone.

Presenter
Aina Puce, PhD, Indiana University, Psychological & Brain Sciences, Bloomington, IN, United States

Failure 5: Mentoring and Managing

Subtopics for Round Table discussion: Finding time; Communication styles/methods of communication; 180 degree thinking, getting the most out of meetings; Power dynamics; Assessing performance; Navigating cultural differences; Engaging and interacting; Imposter syndrome; Empowering mentees; Dealing with trainees who "do not have it".

Presenter

AmanPreet Badhwar, PhD, University of Montreal Montreal, Quebec, Canada