

# Publication & Reporting

*From Avoidance to  
Transparency & Mental Health  
Considerations in Research*

GCC Rigor & Reproducibility  
Workshop

5/21/2025

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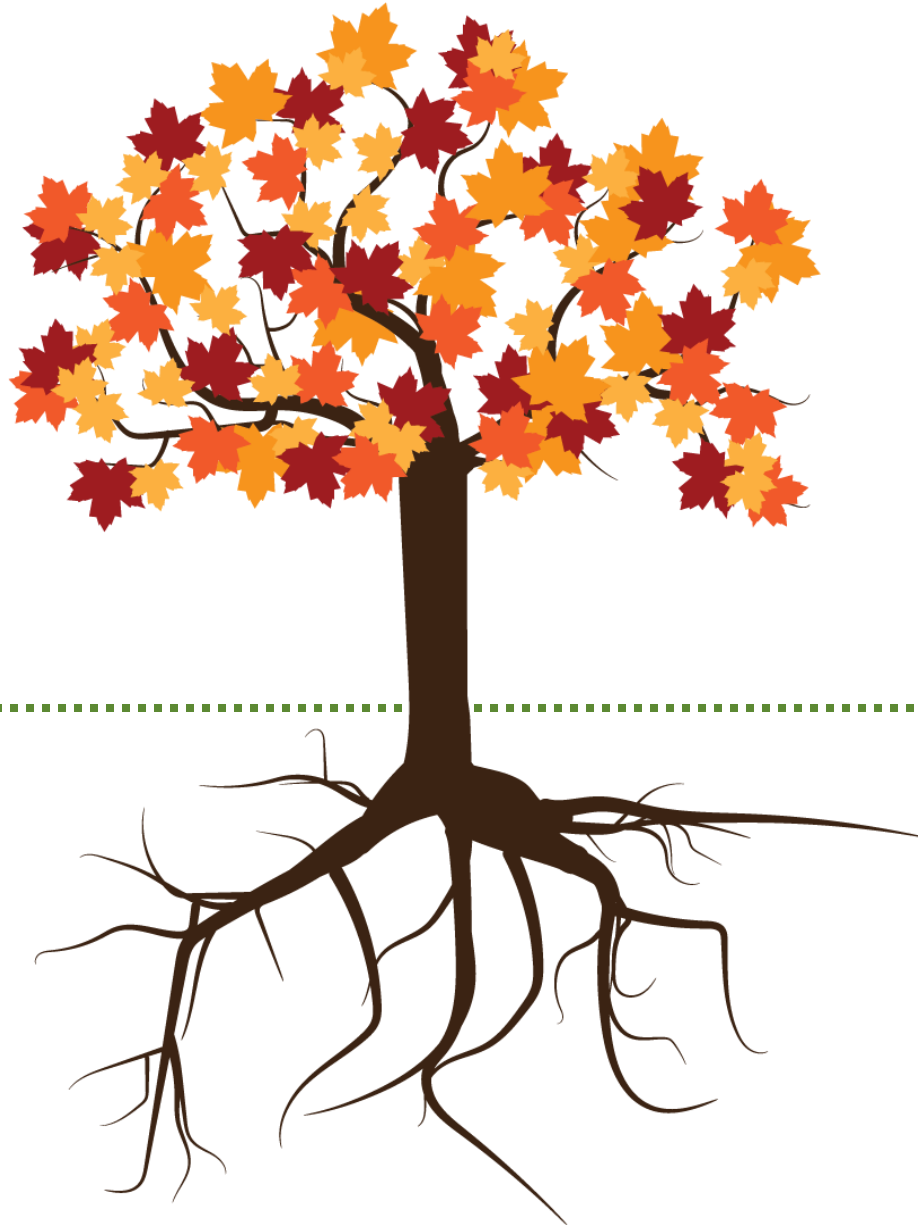
# Why do we loathe Publication & Reporting?

*Think about 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.*



# The landscape: The Research Process

What's visible



# The landscape: The Research Process

Self-initiating

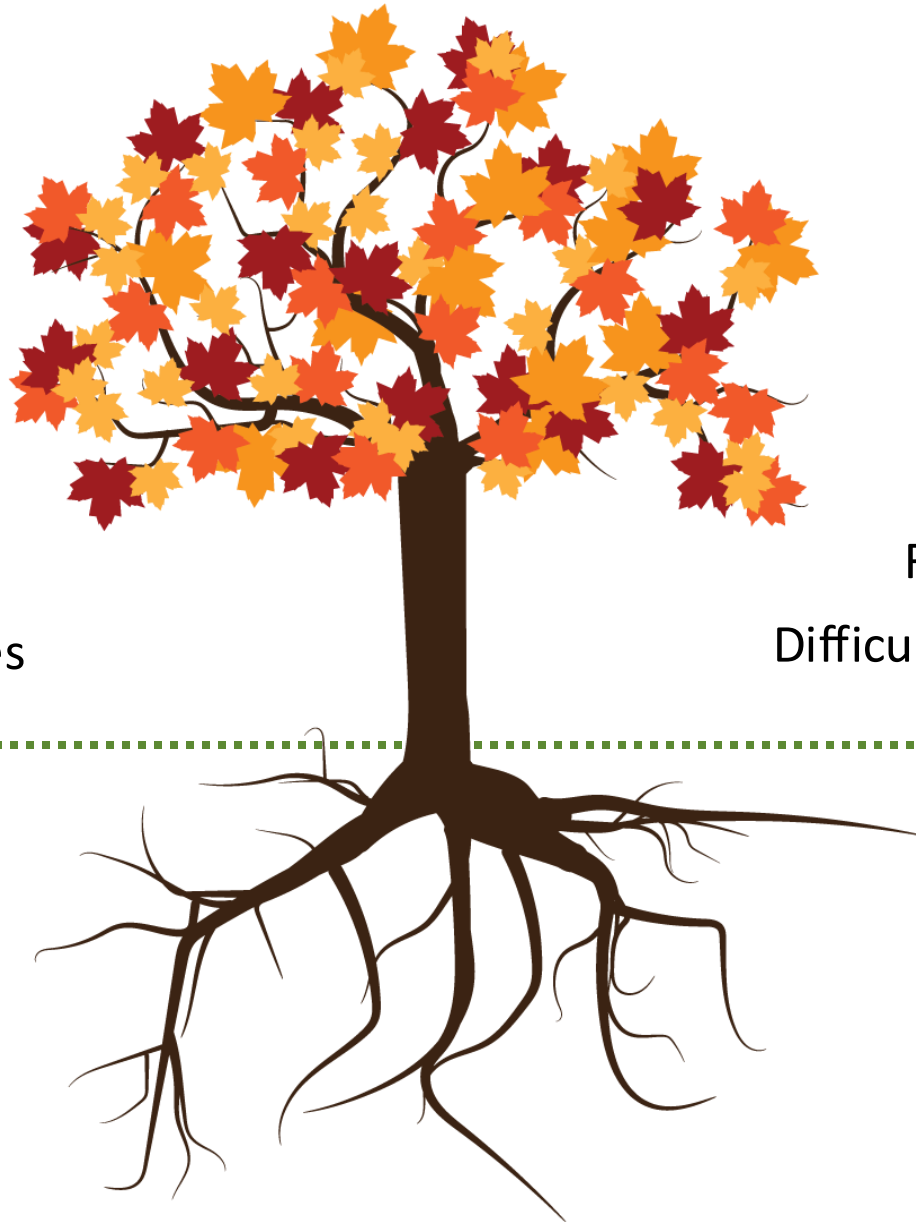
Procrastinating

Flexible/Adaptable

Rigid/Fixed

Focused

Off-topic/rabbit holes



Organized

Disorganized

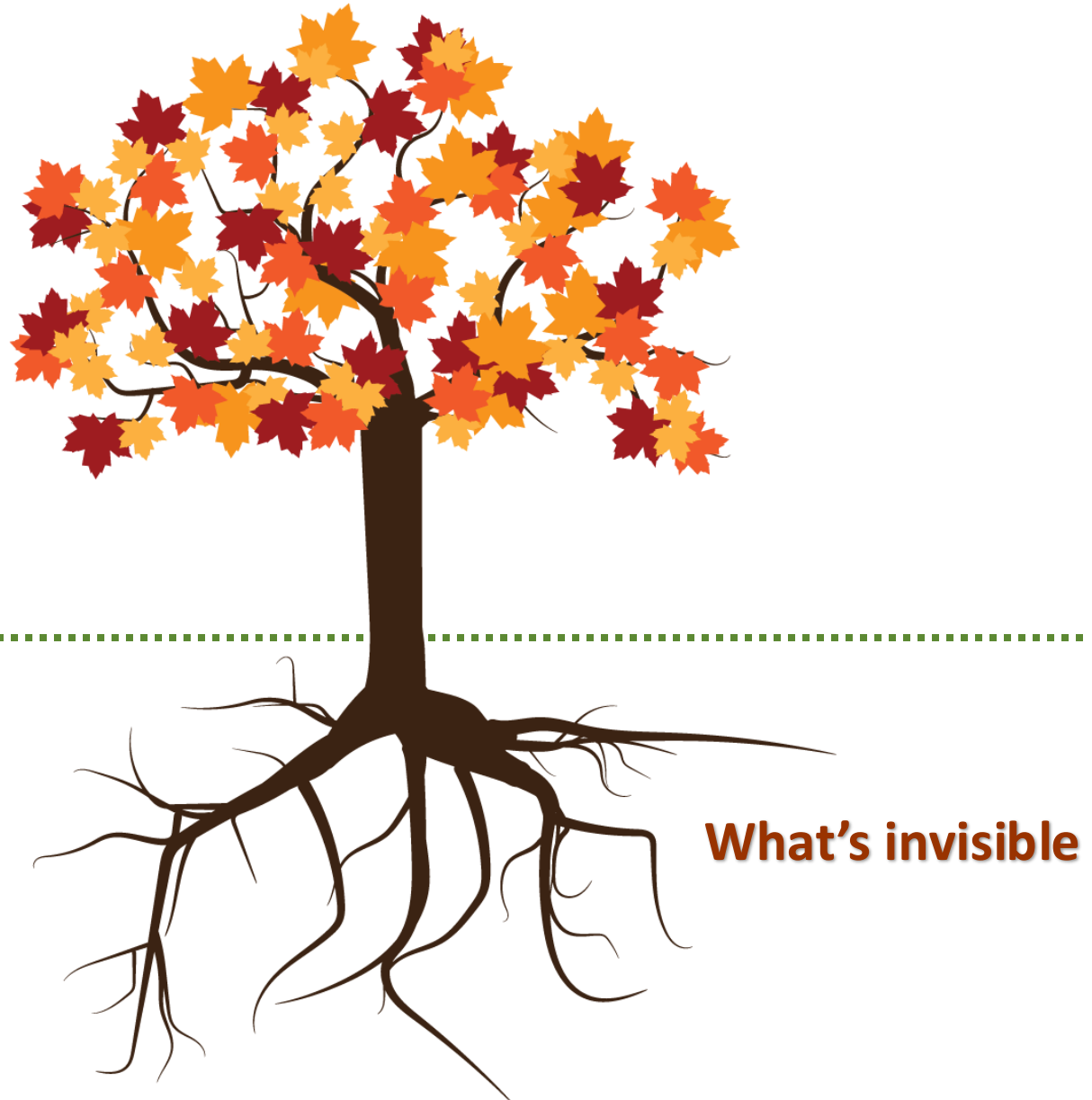
Unimaginative

Creative

Follows guidance

Difficulty with feedback

# The landscape: The Research Process



# The landscape: The Research Process

Self-initiating

Procrastinating

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Off-topic/rabbit holes

Organized

Disorganized

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Creative

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*Cognitive Flexibility/Shifting*

*Initiation*

*Working memory*

*Self-monitoring*

*Inhibition*

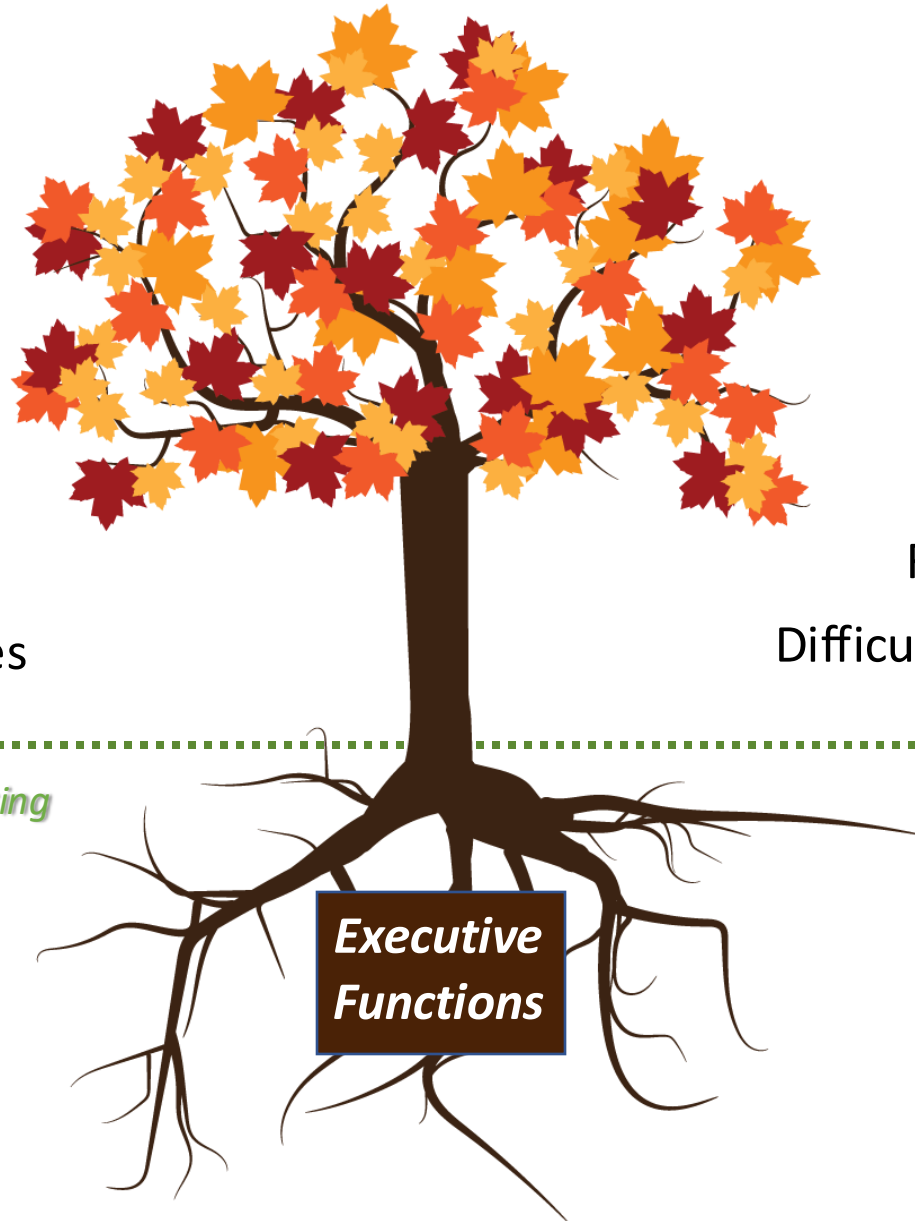
*Organization*

*Planning*

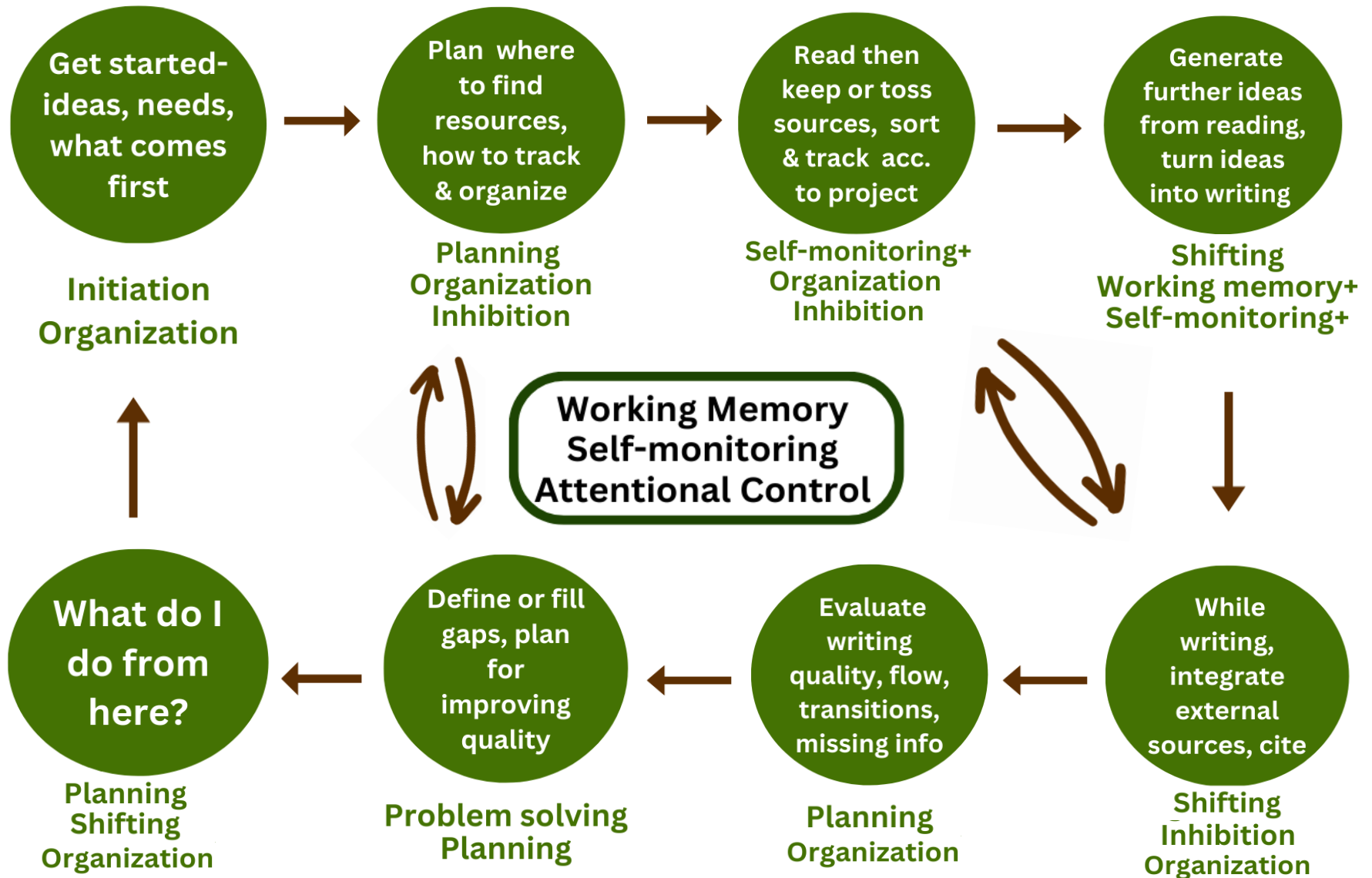
*Attentional Control*

*Problem Solving*

**Executive  
Functions**







# Inhibition / Inhibitory Control

## **What is it?**

- Stopping an action or behavior (before starting, or discontinuing)
- Difficulty in determining and ignoring irrelevant info

## **What does it look like:**

- Research off-topic &/or off-task
- Research tasks behind schedule
- Scientific communication quality suffers



# Initiation

## **What is it?**

- Getting started on a task
- Increased focus necessary to increase momentum on a task

## **What does it look like:**

- Research tasks behind schedule
- Visible lack of productivity
- Little to show / putting it off tasks / no timetable for progress
- Doing other productive but off-task things instead
- Easily distracted

# Organization

## What is it?

- Sorting and ordering tasks, things, people, or time
- Either lack of or exhibiting a dysfunctional excess of organization

## What does it look like:

- Difficulty locating resources/files
- Mixing up tasks, steps, citations, etc.
- Difficulty estimating time needed for life and work tasks
  - *Chronic lateness / inability to meet deadlines*
- Unable to articulate the plan or where they are in a project

# Attentional Control (Focus)

## What is it?

- Having to initiate a task/topic & then maintain attention
- Working memory underpins this component of EF, so anyone at any time can be affected
  - *Distractors include: environmental, biological, social, emotional stimuli*

## What does it look like:

- After starting, getting lost in the middle
- Getting pulled into related but irrelevant topics or tasks
- Likely to self-identify as not being able to focus

# Problem Solving

## What is it?

- Addressing an issue in completing the task/goal
  - *Factors:*
    - *Urgent vs non-urgent*
    - *Internal (i.e. focus) vs external (i.e. few sources)*
- Cognitive flexibility opens up creativity for PS & organization enables PS

## What does it look like:

- Getting stuck often, may have difficulty determining options
- May rush and choose less-effective solutions
  - *Unaware or hesitant of solutions*



# What Impacts Executive Function?

**All of the EF components on the previous slides can be directly & negatively impacted by:**

- **Mental health**
  - **Most common: Anxiety & Depression**
    - Other diagnoses: Burnout, TBI, ADHD, Autism, Dyslexia
- **High stress &/or chronic stress**
- **Poor sleep**

*(Balogh & Czobor, 2016; Borella, et al., 2010; Fabio & Capri, 2017; Held, et al., 2020; Matsuura, et al., 2014; Slife & Weaver, 1992; Smith, et al., 2015; Torenvliet, et. al, 2022)*

# What is Avoidance - Motivated Behavior?

Our behavior when we distract ourselves from doing a task that is associated with an unpleasant emotion, typically fear

## ***(Approach – Avoidance)***

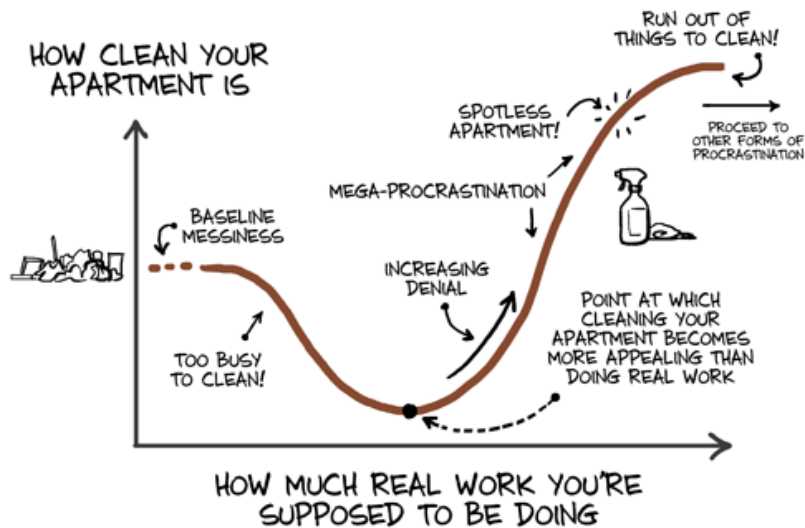
### *3 main types of behaviors:*

- **Complete Avoidance**
  - *No showing at a presentation, Failure to submit documents, Quit a responsibility*
- **Escape**
  - *Leaving early from a commitment, Ending a talk abruptly, Hiding in one's office*
- **Partial Avoidance**
  - *Daydreaming, Avoiding eye contact*
- **Worry, Anxiety, Panic**
- **These behaviors do not reduce anxiety, rather they can fuel it or cause difficult situations to "snowball".**

# What is Avoidance - Motivated Coping?

*We do something else instead to bring momentary relief*

**#1 way....Procrastination**



WWW.PHDCOMICS.COM

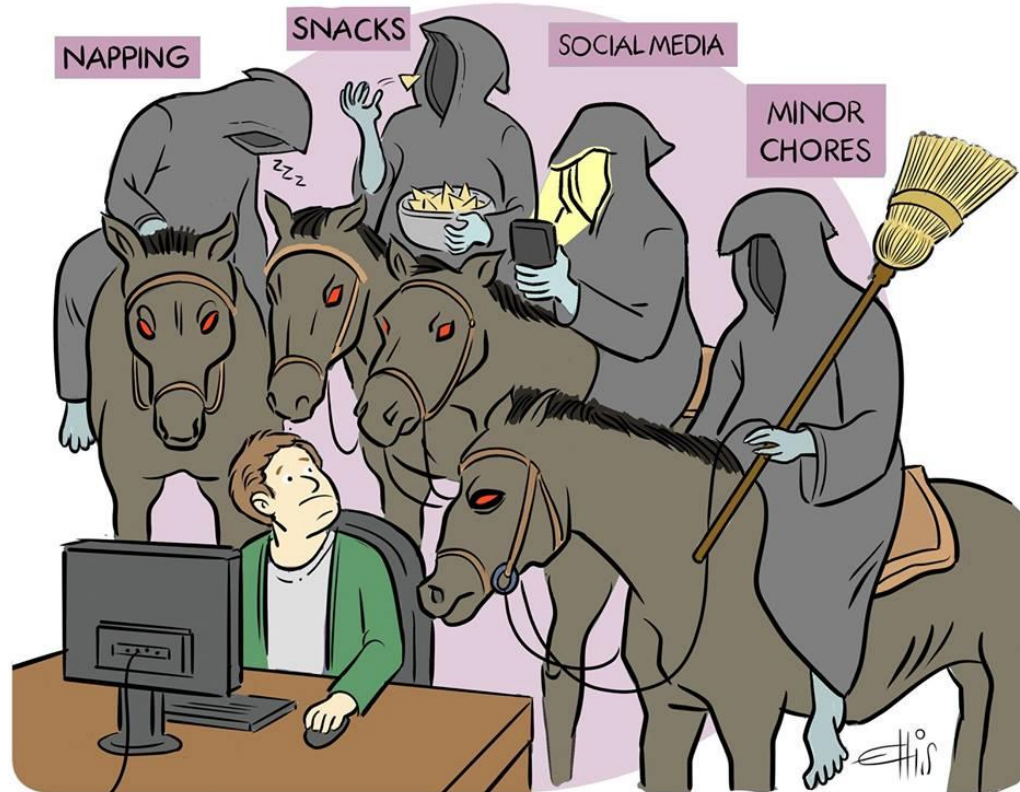
JORGE CHAM © 2013

## — A FIELD GUIDE TO — PROCRASTINATORS



# Modern Procrastination...

## THE FOUR HORSEMEN OF PROCRASTINATION





# What is Avoidance - Motivated Coping?

*Doing something else instead to bring momentary relief*

## **Data Fabrication**

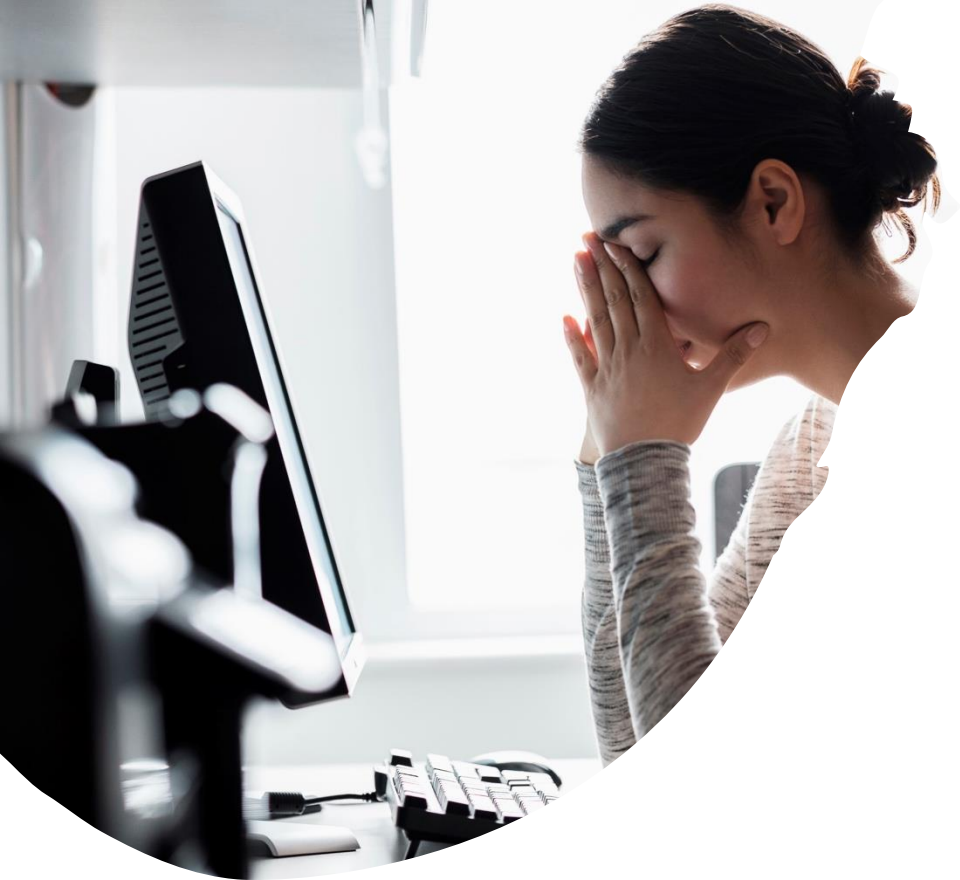
- Data were never collected. Data is then “made up”.

## **Data Falsification**

- Data illegitimately altered

<https://ori.hhs.gov/>

<https://blog.frontiersin.org/2021/07/09/research-integrity-a-closer-look-at-gel-and-western-blot-image-cropping/>



# Why exhibit avoidance behaviors in P&R?

## FEAR

- Fear of Failure

## Pressure

- Pressure to have high impact publication(s)
- Lab/Peer Pressure
- Visa/Employment Pressure

Should I publish negative results or does this ruin my career in science?

[smartsciencecareer.com](http://smartsciencecareer.com)



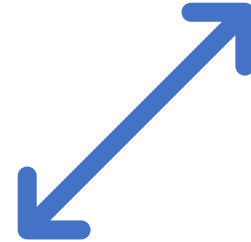
# Why exhibit avoidance behaviors in P&R?



## Difficulty with 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

Difficulty in acquiring needed info (e.g., ambiguous documentation)

*Progress can feel like a moving target*



# Avoidance Impacts our Professional Lives

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







**Avoidance also  
Impacts the  
Evidence Base**

# 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 (federal mandates)*
- Conference papers / podium presentations
- Abstracts / conference posters
- Technology Development &/or Techniques
- Inventions: Patents, patent applications (NPA, PPA), licensing agreements

# 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\*\*\*
- *Avoidance behaviors exist @ all levels of science*



# Research Reporting Types

## Common types of reporting in research

- Department/Center/University Annual Reports
- IRB / Human Subjects Protection
- IACUC / Animal Research Oversight
- Federal Regulatory Bodies (eg. 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*

## Does your institution have administrative resources to help you with this?

- Ask your administrative staff about this!!!

# RPPR Required (Core) Components

- Accomplishments
- Publication & Products
- Patient &/or Animal Recruitment & Safety Reports
- Collaborative Efforts
  - Details on project personnel
  - Multi-site projects
- Impact (NSF)
- Project Changes, Challenges, & Problems
  - Modifications to Protocols
- Financial Reports & Budget Changes
  - Rationale for alterations



# What about reporting standards for manuscripts?

Are there core reporting standards for manuscripts?

What about grant applications?

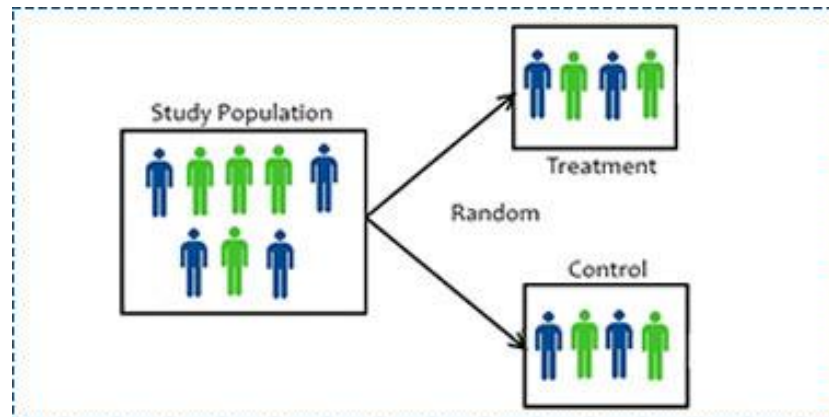
# Manuscript Core Reporting Standards

## 1. Randomization

- Animals &/or human subjects should be assigned randomly to the various experimental groups, and the method of randomization reported.

## 2. Blinding (single, double, etc.)

- Allocation concealment
- Blinded conduct of the experiment
- Blinded assessment of outcome



# Manuscript Core Reporting Standards

## 3. Sample Size & Estimation

	Measure	units	Control	Patient	$\alpha$	Power	n / group
<i>Aim 1</i>	CV Score <sup>12</sup>	--	0.10 $\pm$ 0.09	0.21 $\pm$ 0.09	0.05	80%	14
	DFA Score <sup>19</sup>	--	0.89 $\pm$ 0.04	0.96 $\pm$ 0.04	0.05	80%	7
	Response Time <sup>12</sup>	ms	926.8 $\pm$ 63.7	1021 $\pm$ 72.9	0.05	80%	10
	Accuracy <sup>12</sup>	%	78.1 $\pm$ 14.6	60.3 $\pm$ 10.4	0.05	80%	10
<i>Aim 2</i>	<b>Age at Diagnosis<sup>16</sup></b>	years	<b>51.32 <math>\pm</math> 6.02</b>	<b>43.45 <math>\pm</math> 10.82</b>	<b>0.05</b>	<b>80%</b>	<b>21</b>
<i>Aim 3</i>	BMI <sup>16</sup>	kg/m <sup>2</sup>	26.52 $\pm$ 6.79	33.78 $\pm$ 5.58	0.05	80%	13
	Cholesterol <sup>15</sup>	mg/dL	58.76 $\pm$ 14.25	35.83 $\pm$ 11.16	0.05	80%	17

## 4. Data Handling

- Outliers
- Endpoints (primary, secondary)
- Missing data
- Replicates



# Hurdles 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
- “Spinning” of unexpected or undesirable results

## Citation & Location Biases

## Time Lag Bias

## Language Bias

## 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 / outcome reporting bias

# Strategies in Addressing Bias in P&R



**Don't withhold  
critical  
information**



**Discuss  
authorship &  
team  
expectations  
early on in the  
process**



**Be organized**



*May need to reprioritize*

**Set realistic goals  
for yourself and  
your team**



**COMMUNICATE:**  
If you are a team leader/PI and you detect stress in one of your team members, it is generally better to check in with that team member than try to wait it out.

# Strategies in Addressing Bias in P&R (Considering Federal Mandates)

## Use ALCOA Principles for Managing Data Quality

- Attributable
- Legible
- Contemporaneous
- Original
- Accurate

## Maintain Data Integrity

- Complete
- Consistent
- Enduring
- Readily Available



# Strategies in Addressing Bias in P&R

Have

... a clear achievable goal for yourself and your team

Reflect

... on the strengths & weaknesses of you and your team

Know

... your resources

Be Clear

... on your deadlines & the roles of each team member working towards

Familiarize

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

# Which root is your issue?

*As a group, reflect on which of the following executive functions contribute to your struggles with publication and reporting? What strategies can you develop to overcome these struggles?*

