Aging Well Lab Manual

Kendra Seaman

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Chapter 1

Introduction

Welcome to the Aging Well Lab manual! This manual was created by the Lab Director, Kendra Seaman, to convey my vision for our lab and to communicate community expectations. This manual will be updated regularly as our lab grows and develops. If you have any comments or suggestions regarding the content of this manual, please share these with me. This is a living document and will change as needed.

Since we are a relatively new lab, this manual was inspired by (and in some places directly copied from) other lab manuals, including MemoLab Manual, Peele Lab Manual, and Smith Lab Manual. Thanks to everyone who has shared their resources!

This lab manual was created in R Studio using the bookdown package.

1.1 About the Lab

Our research is dedicated to using basic and translational scientific research to promote health and wellbeing across adulthood. We use a variety of behavioral, modeling and neuroimaging techniques to better understand how the mind and the brain change as people get older.

Address:

Aging Well Laboratory
Center for Vital Longevity
1600 Viceroy Drive, Suite 800
Dallas, TX 75235
(972) 883-3730

CENTER FOR
VITAL LONGEVITY

1.2   Lab Info

The lab has several public-facing accounts that anyone can access:

- Website: https://agingwell.utdallas.edu/
- GitHub: https://github.com/agingwelllab
- OSF: https://osf.io/26jqs/

The lab also has sites that are only accessible to lab members:

- CVL Lab Wiki: https://confluence.utdallas.edu
- Asana: https://app.asana.com
- Slack: https://agingwelllab.slack.com

Chapter 2

Approach

We use cognitive modeling and neuroimaging to understand how people learn and make decisions. We are interested how these processes *do, or do not,* change as people get older. The ultimate goal of this research is to promote health and wellbeing across adulthood.

Recognize that this work is inherently interdisciplinary, meaning we will use tools and knowledge from traditional fields like psychology, neuroscience, and economics. Because it requires competency in so many different domains, the learning curve can be steep and can feel overwhelming - but this is also what makes it interesting and rewarding work. Hang in there. It will get easier.

2.1   Mentorship

"When you get to the top of the mountain / Pull the next one up." - Marc Kelly Smith

This quote, from a poem by Marc Kelly Smith, illustrates my mentorship philosophy. As a mentor, I am here to help you grow as a scientist. Depending on where you are in your career, this can mean different things. For instance,

- For undergraduate students/post-bacc RAs: This often means helping you decide if science in general, or the cognitive neuroscience of aging and decision making, is the right fit for you. It also means developing skills, like writing, data analysis, and coding, that can be used in many domains. It also means helping you develop foundational knowledge in our research area and whenever possible, helping to connect you to others with shared interests.

- For graduate students: This can mean helping you navigate graduate school, develop a deeper understanding of our research area, grow your advanced research and project management skills, and improve your writing and oral commiunication. It also means helping you develop a professional network, and create long-term career plan.

- For postdoc trainees: It can mean helping you navigate grantwriting landscape and the academic job search process. It also means helping you broaden your professional network and refine your long-term career plans.

You will be assigned a mentor within the lab. If you are a lab manager, graduate student, or postdoc, the Lab Director will likely be your mentor. If you are an

undergraduate, you will likely be reporting to the lab manager, a graduate student, or a postdoc. If you are not sure who your mentor is, ask! It is likely to the person leading the project you are working on.

Postdocs/PhD Students/Lab Managers and others leading a project (for instance, a undergraduate working on an honor's thesis) can expect to meet with me regularly (i.e. weekly). The purpose of these meetings is to give you a chance to directly ask me for assistance on the project (or projects) you are working on. *You should come prepared to each meeting with an agenda - you are expected to lead the meeting.* Topics for meetings can include progress reports, questions, new ideas, etc.

Others in the lab will have regular meetings with their assigned mentors.

2.2 Independent Development Plans (IDPs)

To facilitate your grown as a scientist, we will use individual development plans (IDPs). The structure of IDPs will vary depending on your role in the lab, but generally they will set and track short-term and long-term goals. These will be created when you join the lab, shared with your mentor, and be revisited at the beginning of each semester (i.e. Fall, Spring, and Summer).

Postdoc/Graduate Students/Post-bacc RAs

- Long-Term Plan

- Term Plan

Undergraduate Students

- You will complete the Expectations document when you first join the lab and a copy will be saved by your mentor in the AWL Box folder.

- You will complete the Letter of Rec document at the beginning of each subsequent semester you work in the laboratory. Copies of these documents will be saved by your mentor in the AWL Box folder.

2.3 Feedback

You should expect to regularly receive feedback from your mentor and your peers. Feedback, especially negative feedback, can be discouraging and overwhelming. Please recognize that the purpose of feedback is to improve your work and help you meet your goals. Also know that giving critical and constructive feedback is an time-consuming effort and **try** to accept feedback in the spirit in which it is offered. As a group, we will discuss how to give and receive feedback.

Chapter 3

Code of Conduct

3.1 AWL Code of Conduct

All lab members are expected to agree with the following code of conduct. We will enforce this code as needed. We expect cooperation with all members to help ensure a safe environment for everyone. Please also see the UT Dallas Nondiscrimination policy.

The Aging Well Lab is committed to providing a harrassment-free environment, regardless of gender, gender identity and expression, age, sexual orientation, disability, physical appearance, body size, race, or religion (or lack thereof). We do not tolerate harrassment of lab members in any form. Sexual language and imagery is generally not appropriate for any lab venue, including lab meetings, presentations, or discussions.

Harassment includes offensive verbal comments related to gender, gender identity and expression, age, sexual orientation, disability, physical appearance, body size, race, religion, sexual images in public spaces, deliberate intimidation, stalking, following, harassing photography or recording, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome sexual attention.

Members asked to stop any harassing behavior are expected to comply immediately.

If you are being harassed, notice that someone else is being harassed, or have any other concerns, please contact the lab director, Kendra Seaman immediately. If Dr. Seaman is the cause of your concern, then please reach out to one of the center director or another trusted center member who can assist.

We expect members to follow these guidelines at any lab-related event.

This section was adapted from the MemoLab.

3.2   Anonymous Lab Survey

Twice a year, we will conduct an anonymous lab culture survey. Because this survey is anonymous, you will be able to give honest feedback to the lab director about the culture of the lab. These surveys will be deployed near the end of the fall semester (first week of December) and spring semester (first week of May).

3.3   Contact Information

Dr. Kendra Seaman AWL Director kendra.seaman@utdallas.edu

Dr. Mick Rugg CVL Director mrugg@utdallas.edu

Chapter 4

# Expectations and Responsibilities

4.1 Everyone

4.1.1 Big Picture

We expect everyone to:

- **Be supportive** - We're all in this together!

- **Share your knowledge.** Mentorship takes many forms, but frequently involves looking out for those who are more junior to us. If you've done something before, share your experience. We are a team and we should work together.
- **Be engaged in the community.**
    - Attend and actively engage in lab and one-on-one meetings. Ask questions, make suggestions, etc. If you are easily distracted by technology, disconnect during meetings.

    - Attend talks in the CVL, BBS, and greater UTD community.

    - Be an positive representative and advocate for our lab and our lab's work in our larger research communities.

Distractions
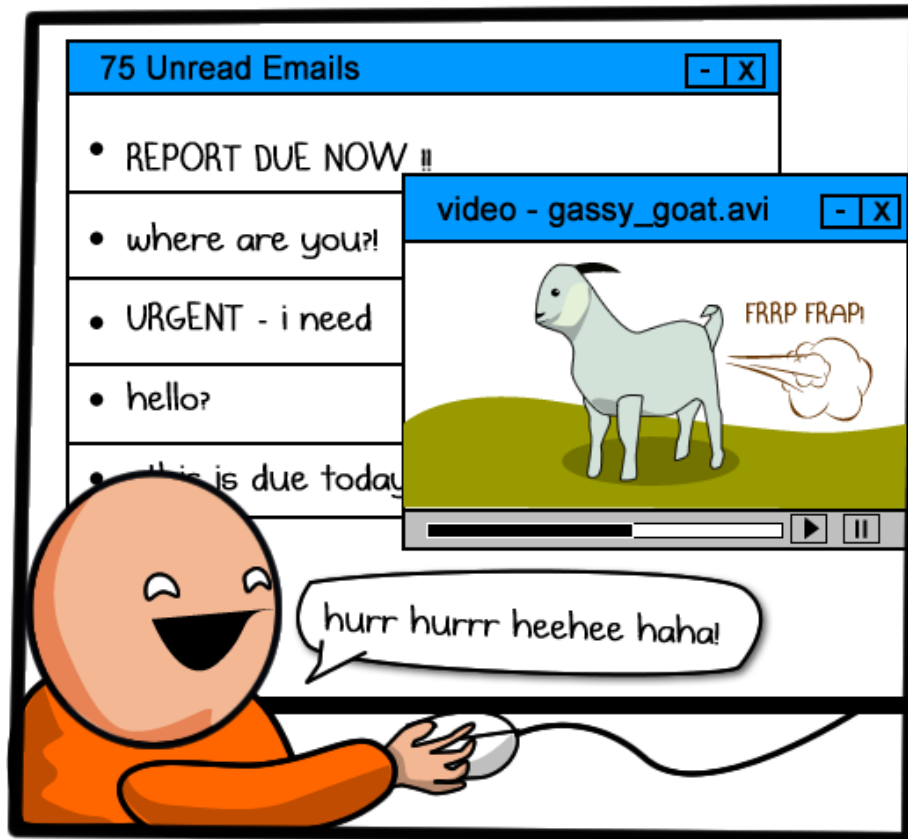
- Be independent when possible, ask for help when necessary. Specifically, ask three, then me!
  - There are lots of web resources you should consult - StackOverflow, NeuroStars, etc

  - Use others in the lab (and in the CVL, BBS) and external collaborators.

- **Communicate honestly**, even when it's difficult.

- Do work we are proud of individually and as a group.
  - Double check your work.

  - Our lab has a commitment to open science. Be ready to share your work both within the lab and with outsides at the conclusion of a

project.
- Work towards proficiency in Unix, BASH, R, and Python.
- Respect each other's strengths, weaknesses, differences, and beliefs.
  - Be patient with everyone (including the Lab Director). Most of us are learning new skills and are busier than we would like.
- Adhere to the ethical principles as described by the Association for Psychological Science, Society for Neuroscience, and UT Dallas Responsible Conduct of Research.
- Maintain a professional and accurate online presence. Make sure you keep your online profiles up to date. Remember, we all represent the lab and the lab represents us.

4.1.2 Small Picture

We're sharing a relatively small space, so please be thoughtful of others. Specifically:

- **Do not come into the lab if you are sick!** It's better to keep everyone healthy. If you are sick, email your mentor and the lab manager.


- Keep the lab neat.
  - Do not leave food, drinks, or crumbs in the lab.

  - Items left unattended may be cleaned, reclaimed or recycled.

4.2   Lab Director

As the lab director, you can expect me to:

- Have a vision for where the lab is going, both in the short-term (next few weeks) and in the long-term (next few years).

- Obtain funding to support our laboratory.

- Care about your happiness.

- Support your career development, including:
    - writing recommendation letters,

    - introducing you to other scientists (potential future mentors and colleagues),

    - promoting your work as often as possible (at conferences),

    - facilitating conference travel (see position-dependent specifics below), and

    - working with mentees (Postdocs, Mentees) to create an Individual Development Plan (IDP).

- Support your personal development, including:
    - flexible working hours and environment (when feasible), and

    - encouraging activities outside of school/work.

- Make the time to meet with you regularly, read and provide feedback on code, posters, manuscripts, and other data products.
- Obsess over chosing the correct analyses, clear phrasing, and awesome data visualizations.

"I'm Not Bossy, I'm The Boss." - Beyonce
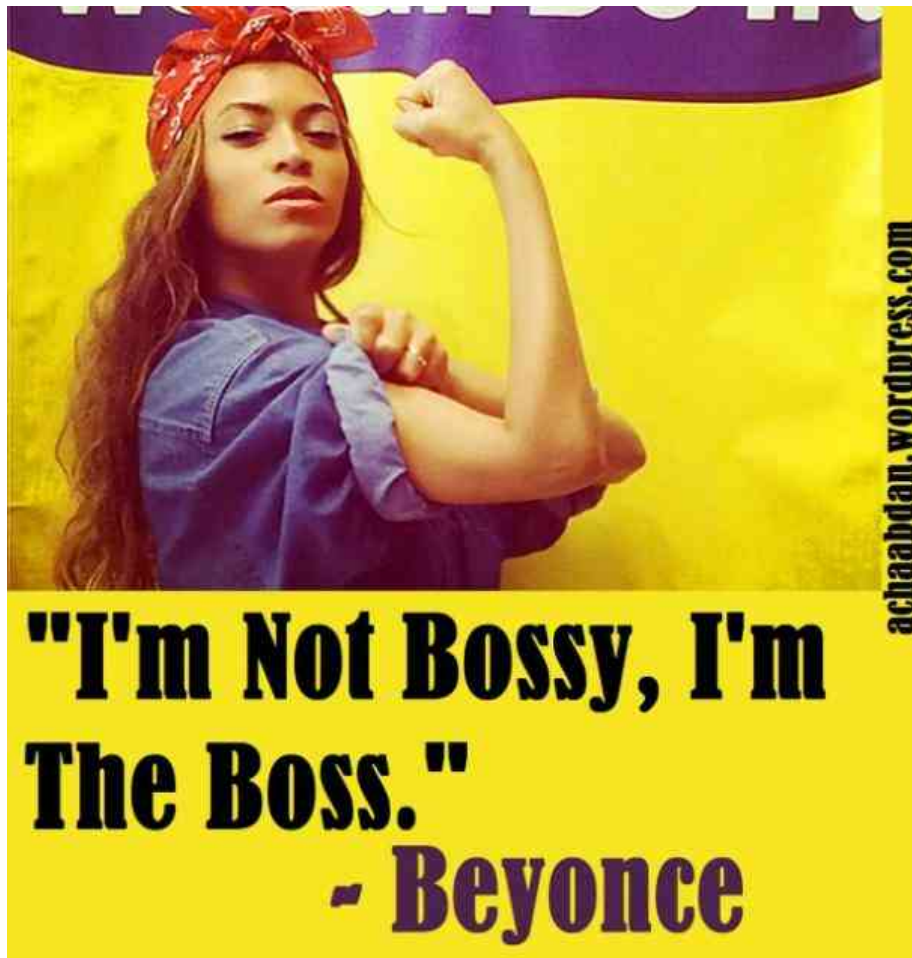
Please understand that as a faculty member, I have **numerous** jobs that you may or may not see me perform. These include *teaching*, *research*, and *service*.

Teaching can include:
* creating lecture slides, assignments and assessments,
* managing teaching assistant/s,
* delivering lectures,
* grading, and
* holding office hours.

Research can include:
* writing grant proposals and progress reports,
* designing experiments,
* setting up research protocols,
* cleaning and analyzing data,

* writing and revising manuscripts,
* manging communication and participant recruitment (website, twitter, etc)
and
* managing/mentoring research staff and volunteers.

Service can include:
* reviewing grant proposals and journal manuscripts,
* reviewing dissertation and other project proposals,
* reviewing dissertations, Master's and Honor's theses,
* reviewing program or award applications,
* planning brown bag lunches, workshops, or conferences, and
* serving on CVL, Psychology/BBS, or UTD committees.

Because I am juggling all these tasks, I am going to ask **you** to do some things
to help keep things organized. These details are included in the *"Managing Up"*
section of the Communication chapter.

4.3   Employees

Employee salaries follow the UTD paygrade.

4.3.1   Lab Manager

The lab manager is the heart and soul of the lab. While other lab members
(including the Lab Director) may have flexible or irregular schedules, the lab
manager will be a constant presence for the lab in the Center for Vital Longevity
(CVL).

In order to provide constency for the lab, I expect the lab manager to:

- maintain regularly scheduled hours on weekdays (e.g. 9am-5pm, except
  for UTD holidays),
- serve as a liason between the the CVL administrative staff and our lab,

- check the lab email and personal work email accounts daily and respond
  to all emails within two business days, and

- check the voicemail daily and arrange for return calls to be made within
  one business day.

The Lab Manager's primary responsibilities include:

- facilitation access to the physical lab space for lab members,
- facilitating the purchase and setup of any new equipment for the lab,

- coordinating and training all lab research assistants,

- assisting with the design and implementation of behavioral, eye-tracking, and fMRI experiments,

- overseeing the recruitment and testing of study participants, and

- helping with preprocessing and analysis of experimental data.

4.3.2   Paid post-bacc Research Assistants

TBD

4.3.3   Postdocs and Staff Scientists

I will expect postdocs and staff scientists to move towards being more PI-like, including:

- giving conference talks,

- writing grant proposals, and

- cultivating an independent research program (up to 10% of time).

I also expect postdocs and staff scienstists to be active, engaged lab members. This includes:

- maintaining a regular physical presence in the lab (specific days/times can be discussed with Dr. Seaman), and
- attend lab, small-group, and one-on-one meetings as needed.

Also, to have (or acquire) the technical and open science skills listed for PhD students below.

Postdoc salaries generally follow NIH guidelines.

4.4   Students

4.4.1   PhD Students

I will expect graduate students to:

- attend classes, colloquium, and relevant talks around campus,
- maintain a physical presence in the lab (e.g. keep regular hours in the lab MWF during academic year),
- be **excited** about the research questions they are asking, be **eager** to find the answers, and **anxious** to share their results with others,
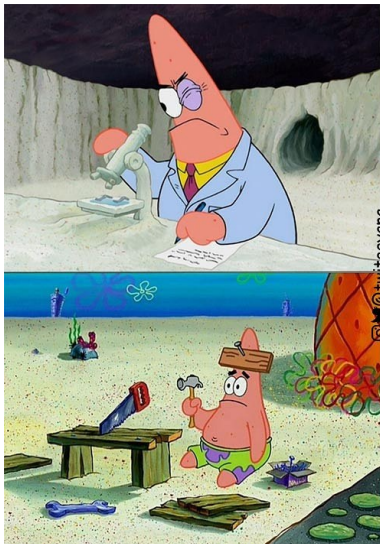
- seek out and apply for fellowships and awards (including travel awards), and

- realize there are times for pulling all-nighters and times for smelling the roses.

I will expect graduate students to move towards:

- expertise in their chosen field(s) by knowing the literature like the back of their hand (see below for suggestions on how to do this),
- proficiency in using R and/or Python for data analysis and model fitting,
- writing BASH shell scripts for imaging analysis in FSL,
- sharing your work with me (and others) using R Markdown and/or Jupyter notebooks,
- preregistering their experiments publicly on OSF,
- sharing their data and scripts publicly on OSF and/or GitHub,
- making figures and posters using R or Python along with Adobe Illustrator,
- clearly communicating your results in written and verbal formats, and
- actively mentoring those working for them (undergraduate RAs), including completing an Individual Development Plan (IDP).
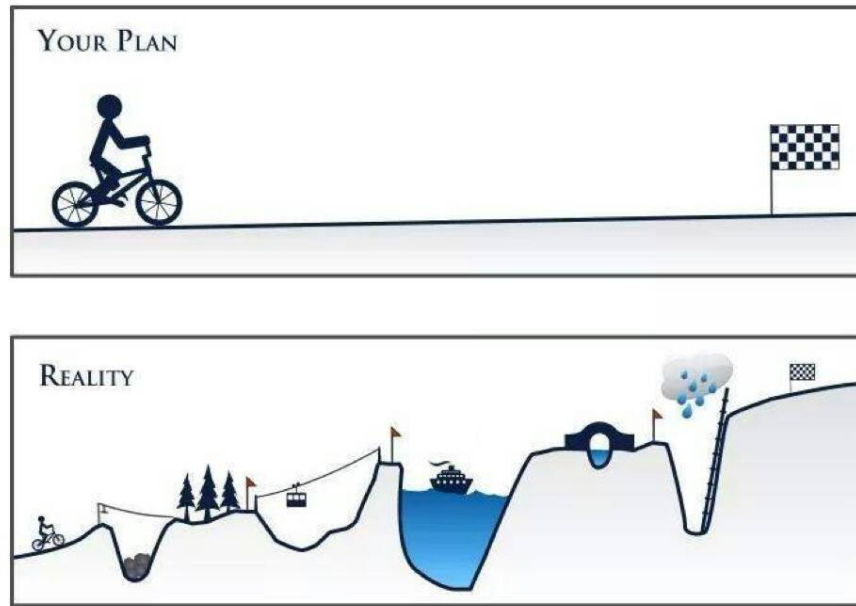
The learning curve for these skills can be steep, but developing these skills is necessary for success in both cognitive neuroscience and data science. If these goals do not align with your own interests and goals, then my lab is probably not a good fit for you.

4.4.2 Master's Students

I will expect Master's students to move towards being more PhD student-like. In particular, by the end of their time in the lab, I expect master's students to:
* complete an empirical study in the lab, and
* complete a poster and/or written manuscript of that study.

All Master's students will be required to enroll in directed research and/or independent study. The expectation is that you will work 3 hours/week in the lab for each credit hours (1 credit = 3hrs/week, 2 credits = 6hrs/week, 3 credits = 9 hrs/week). Students can enroll in the appropriate section of HCS 8V89 with Dr. Seaman.
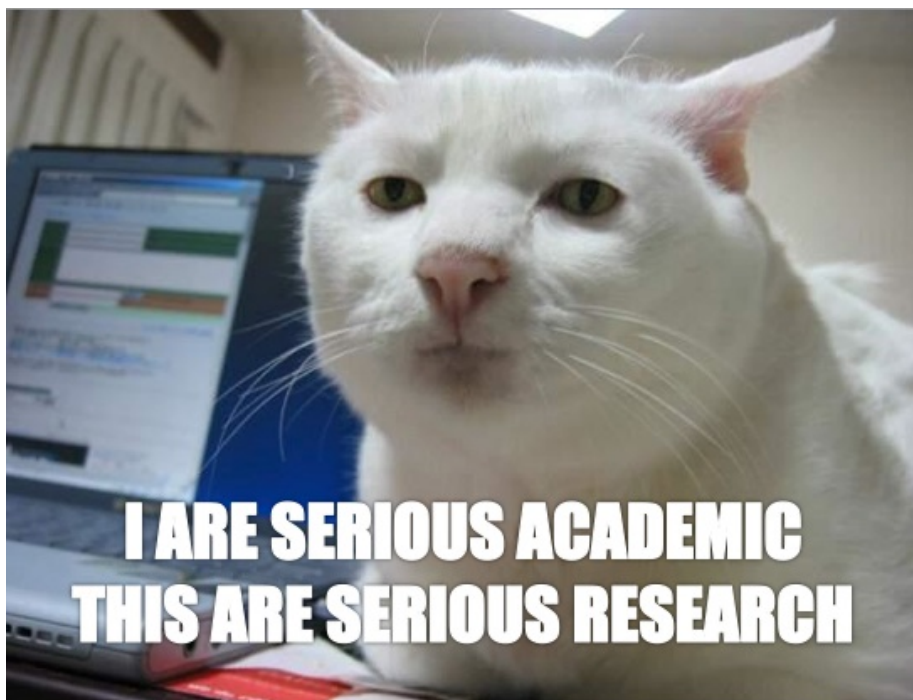
4.4.3 Undergraduate Students

Undergraduate students will play a vital role in our lab. Students can be involved in the lab in a number of ways, including independent study projects, student work, and internships. Given that we have limited time and resources, unfortunately we cannot accept or keep all undergraduates who are interested in our lab. Based on the lab's needs, we will consider new undergraduates at the beginning of each term. Each new undergraduate must attend a mandatory orientation session, journal club, and serve a probationary term (one semester) before advancing further in the lab.

I expect undergraduates to:

- commit to work *at least* 5 hours per week in the lab and maintaining those hours on the lab calendar,
- show up on time for meetings, lab hours, and testing,

- make sure all of your work is accurate (double-check everything), and
- be willing to help with whatever projects need it.

In most cases, undergraduates will be directly mentored by the lab manager, postdoc, or graduate student. Occasionally, a Master's student or a senior undergraduate research assistant will mentor research assistants.

All undergraduate students will be required to enroll in directed research and/or

independent study. The expectation is that you will work 3 hours/week in the lab for each credit hour (1 credit = 3hrs/week, 2 credits = 6hrs/week, 3 credits = 9 hrs/week). BBS students can find the appropriate form at https://bbs.utdallas.edu/files/independent-study-courses.pdf.

4.5 Project Leads

More experienced lab members (postdocs, graduate students, advanced undergraduate students) may be asked to lead a project in the lab, making them a project lead. In addition to coordinating research efforts, it is important to acknowledge that this is a leadership position. This means that you will most likely be repsonsible for supervising/mentoring some of your peers in the lab.

As a project lead, you will have additional responsibilities. These include:
* coordinating with Dr. Seaman on all aspects of the project,
* training your project team on data collection protocol and standard operating procedures for the lab,
* meeting regularly (e.g. every two weeks) with your project team to discuss the project's process, and
* mentoring those on your team (though the review of expectations and rec letter forms at beginning of each semester).

4.6   Exit Procedures

When it's time to leave the lab, there a few things you need to do get ready to leave.

(1) Schedule an exit interview with your mentor to wrap up your time in the lab.

(2) Return your CVL access card/Lab keys to appropriate CVL administrative staff.

(3) Get organized! Clean up your folders on the lab Box account and any physical computers. This means:

- Deleting any personal files.
- Making sure that everything you were working on is clearly documented. Create and/or update the README file for any project folders.
- Make sure all computer files have descriptive names.

You may be wondering what you can take with you when you leave. You are welcome to take copies of any posters, manuscripts, or scripts that you created during your time in the lab. However, **do not remove any AWL data from AWL/CVL/UTD storage devices.** During your exit interview, we can make arrangements to share the appropriate data with you if it is not already publicly available.

Chapter 5

Communication

Communication is critical. Whether you pursue academia or industry, you will need to be able to communicate with others about your work. We will likely have to go beyond memes in order to do this.

5.1   Lab Meetings

Regular lab meetings are essential for making sure that we move both current and future projects forward. They also help us function as a team. We will use lab meetings to discuss administrative and practical issues, solicit feedback on current analyses and code, discuss current literature, and practice conference and job talks. Our weekly lab meetings will run approximately 1-1.5 hours long. **All full-time staff, graduate students and anyone leading a project** will be expected to attend weekly lab meetings (unless cleared with Dr. Seaman in advance). ***For other lab members (e.g. some undergraduate RAs), attendance at lab meetings will be required at full, bi-weekly lab meetings***.

During lab meetings, one or two presenters will be responsible for setting the agenda that day. The presenter/s will also be responsible for sharing any relevant materials (e.g. journal article) a couple of days in advance. If you're scheduled to present and need to cancel or postpone, please give the group 72 hours notice. **Everyone is expected to participate in lab meetings.** That means reading relevant material beforehand and if you are easily distracted by your computer or phone, put it away.

Generally, attendance at lab meetings in person is expected, unless cleared with Dr. Seaman in advance. There may be times when lab meetings will not occur in person. In these instances, we will have lab meetings online via Zoom. Please consult the lab calendar (see below for link) or lab manager for the Zoom link.

5.2 Individual and Small Group Meetings

All mentors should have weekly meetings with their mentees, lasting between 15 minutes to an hour. For instance, as lab director, I will have weekly meetings with the lab manager, postdocs, staff scientists, and any students leading projects. **Ideally, the agenda for these meetings should be set by the mentee; you should provide a quick overview of the progress you've made on your project and let your mentor know where you're stuck and/or need help.** You can also use individual meetings to seek feedback about new project development or professional development.

5.3   Asana

Asana is a project-management platform that we will use to track progress on various projects in the lab.

- Asana is basically an orgnaized to-do list. When adding a task, make sure to put a useful description, assign it to someone and set a tentative due date.

- Be realistic and flexible with due dates. Of course you should try to get things done in a timely manner, but sometimes, life happens and you have to adjust.

- If you're leading a project in the lab, please make sure that your project is listed on Asana. All project-related tasks should be under your project.
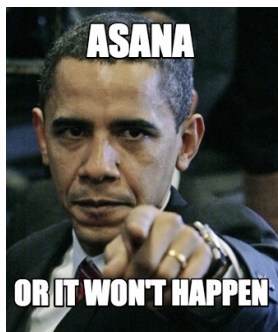
5.4 Slack

Slack is a team-collaboration tool that we will use for communication.

- Try to avoid direct messages in Slack. Instead, find a home for your comment or question in an existing channel. This allows you to get answers and feedback from multiple people in the lab.

- When replying to a question or comment, try to use threads. This keeps the conversation organized and easy to navigate. To reply to a post in a thread, click on the bubble with three horizontal lines in the upper right-hand corner of the message (right next to the reaction button). Checkout this website for more info on threads.
- The lab manager, postdocs, and graduate students with UTD phone numbers will have their numbers in their profile on Slack if they need to be urgently contacted.

5.4.1 For Lab Members Running Sessions

The best way to contact the lab manager regarding your scheduled sessions is through Slack.

- Minor scheduling conflicts need to be brought up at least a week in advance, if possible.
- If you're running late for your session but are on the way, let the lab manager know ASAP!
- Send a message on Slack to the lab manager **and** your project lead if:
    - you have a major change in your weekly schedule.
    - there is an emergency and you're unable to attend your scheduled session on short notice. If neither respond in a timely manner, call the lab manager's number listed in their Slack profile.

5.5   Email

When contacting me, please use Slack (or Asana) whenever possible. I will try to respond to emails, but please don't use it for anything urgent.

Likewise, I will try to use Asana/Slack to communicate with you as much as possible. However, sometimes I will need to email you. **I expect you will read all email sent to you and respond (if a response is needed) within one business day.** If you will not be checking email for more than a couple of days, please consider using a vacation message so that others know you are not available on email (this suggestion also applies to holidays).

The same guideline applies to me: if I don't respond within one business day, please feel free to follow up (but consider using Slack). If I am not available, I will put up a vacation message.

We do have a lab listserve. **Use this sparingly.** To send a message to the listserve, email cvl.seamanlab@lists.utdallas.edu. If approved, the email will go out to the entire lab.

5.5.1   Calendars

Our lab manager will maintain a lab calendar, associated with our lab email account. You can access this calendar here.

5.5.2 Phone

- If the phone rings in the lab, answer it. Most calls will be from potential (or current) research participants, so it is important to be professional - e.g., "Aging Well Lab, this is [your name]."

- Lab policy is to check the voicemail daily and call back within one business day.

- Please see the lab wiki for specific on speaking to potential research participants.

5.6   Managing Up

I (Dr. Seaman) need your help to stay organized. If you need me to do somethng for you (e.g. review a pregistration, review code), please create a task in Asana with following information:

- a meaningful title (e.g. review manuscript for Colleen)

- a brief description of what you need (e.g. review the manipulation check on visDM project)

- a deadline, ideally a week from now (e.g. your next one-on-one meeting with me)

- a location of the file/s you want me to review (or attach document if not saved on Box/GitHub)

I typically focus on non-urgent lab-related materials on MWF during the academic year. Please feel free to follow up on Slack; do not send an email.

Chapter 6

Scientific Integrity and Project Life Cycle

We have a resposibility to uphold the highest standards of scientific integrity. There is never an excuse for fabricating or misrepresenting data. If you have any questions or concerns about a research practice you have seen in the lab, please talk to me **immediately.**

6.1 Open Science

The Aging Well Lab has a commitment to open science. This means that we will share all stimuli, data, and analyses online (via OSF) and link these materials to our research publications. In order to make these materials usable to reviewers and other researchers, we will strive to do the following:

- Document and describe all items. At a minimum, each collection should have a README file at the top level that provides details about the collection.

- Code should be tested, bug-free, and well-commented.

- Links should be permanent.

Lab members creating stimuli or conducting research projects should organize them from the outset in a way that is conducive to eventual sharing (GitHub, ipython notebooks, etc.). More specific guidelines will be posted on the lab wiki (as they will likely change regularly).

6.1.1   Reproducible Research

Reproducible research is research that can be exactly reproduced - meaning that someone else can get the same results given the same set of data. At a minimum, we want our research to be reproducible.

Conducting reproducible research is more difficult than it sounds, because it requires that you are organized and possess sufficient foresight to document each step of your research process. There are two main things we will do to improve the reproducibility of our research: (1) extensive notetaking and (2) using programming workflows with version control for all research products (including data cleaning, analysis, posters, papers, etc).

Programming workflows help with reproducibility because they take some of the human element out, and in an ideal scenario, you are left with a script or series of scripts that takes data from raw form to final product. Programming alone is not enough, though, because people can easily forget which script changes they made and when. Therefore, all projects that involve programming of any kind (so basically, all projects) must use some form of version control.
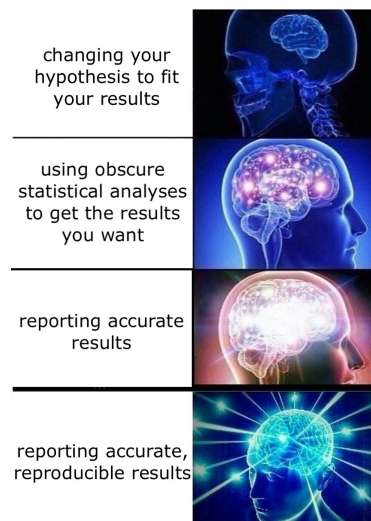
As a lab, we will use git and GitHub for version control. This is a requirement because (a) it is the only way to track the evolution of methods/files over time, (b) it allows for easier detection of bugs, and (c) it facilitates code sharing. All of these things are directly relevant to conducting reproducible research. More information on GitHub can be found in the General Policies section.

6.1.2   Preregistration

Pre-registration is specifying a data collection and analysis plan **before** you gather data. This will allow us to distinguish between what we set out to do, or *confirmatory analyses* and what we discovered in the process of doing research,

or *exploratory* analyses. See Preregistration: A Plan, Not a Prison for more information.

For each study in our lab, we will create a preregistration and repository on OSF (osf.io) using our lab's project template. More information about OSF can be found in the General Policies section.

6.2 Ideal Project Life Cycle
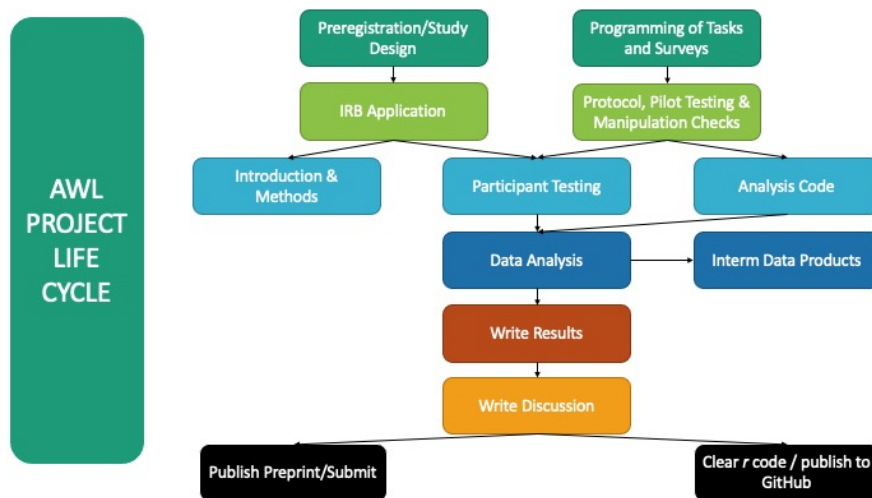
This is an idealized chart showing the stages of a research project in the lab, starting with planning activities in green, research progress in blue/red, and ultimate research outcomes in black. Tasks at the same level of this hierarchy can be performed at the same time (e.g. Participant testing and drafting of Intro/Methods) while activities at different levels in this hierarchy should proceed (and sometimes MUST proceed) in sequential order, from top to bottom (e.g. Data analysis must happen before you can write a results section).

6.3 Authorship

We will follow APA guidelines with respect to authorship:

"Authorship credit should reflect the individual's contribution to the study. An author is considered anyone involved with initial research design, data collection and analysis, manuscript drafting, and final approval. However, the following do not necessarily qualify for authorship: providing funding or resources, mentorship, or contributing research but not helping with the publication itself. The primary author assumes responsibility for the publication, making sure that the data are accurate, that all deserving authors have been credited, that all authors

have given their approval to the final draft; and handles responses to inquiries after the manuscript is published."

Authorship will be discussed prior to the beginning of a new project, so that expectations are clearly defined. However, changes to authorship may occur over the course of a project if a new person becomes involved or if someone is not fulfilling their planned role. In general, I expect that graduate students and postdocs will be first authors on publications on which they are the primary lead, and I will be the last author.

I assume that, unless we have talked about it, I will be an author on papers coming out of the lab. This does not mean that you should add me on to papers as a courtesy; it means that I expect you to include me in the process of discussion and writing in a way that merits authorship.

There are many views regarding authorship,and within any view there are always borderline cases. If you ever have any questions, please come speak to me.

6.3.1 Old Projects

For projects that required significant lab resources (e.g. fMRI studies, behavioral studies, etc), project "ownership" expires 3 years after data collection has ended (or whenever the oroginal primary lead relinquishes their rights to the study, whatever comes first). At that point, I reserve the right to re-assign the project (or not) as needed to expedite publication. This policy is intended to avoid situations in which a data set languishes for a long period of time while still giving publication priority to the original primary lead.

6.4 Human Subjects Research

Because we are engaged in human subjects research, it is imperative that we adhere to our approved IRB protocols. **All lab members must read and comply with the IRB-approved consent form and research summary for any project that they are working on.** Lab members must also complete UTD Human Subjects Training through eLearning and be added to the research personnel list before they can work with humnan subjects or data. After completing Human Subjects training, the certification of completion must be sent to the lab manager, who is responsible for maintaining these files. If there are any questions about the protocols, or if you're not sure whether we have IRB approval to run your study, please ask the lab manager or me for clarification. If neccessary, the lab manager can file an amendment to an existing protocol or help you create a new protocol.

If you encounter any problems in the course of doing research that results in a negative outcome for the participant (e.g., if a participant becomes ill or upset, if there is an accident with the equipment, if there is a breach of confidentiality, etc), you should **immediately** seek assistance from me or the lab manager. If I am not around, you **MUST** notify me within 24 hours, preferably as soon as possible. In some cases, we may need to report this information to the IRB and/or our funding agencies.

Chapter 7

Data Management

Data are *valuable*, *expensive*, and *crucial* for science. Also, as human subjects researchers, it is critical that we project the privacy of our participants and make sure that we are making the best use of our participants time. Therefore, data management is one of the most important things you will do as a researcher. Further, some of the data our lab works on has been shared with us by collaborators. This data may be protected, have a specific data use agreement, and/or not publicly shared. This means that we have agreed to only use the data for a specific purpose, and using the data beyond the agreed-to purpose is not allowed.

Thus, there is **no universal access** to data in the Aging Well Lab. You will only have access to the data you need to complete the project or projects for which you are working. If, for any reasons, you need access to some of the lab's unpublished data, please contact Dr. Seaman. She will determine whether access is warranted. Do not use lab data for any purpose other than the project (or projects) we have discussed. If you would like to use lab data for another purpose, please contact Dr. Seaman and she will determine if that use is ok.

As a lab, we will use a variety of storage mechanisms for data, code, data products, and other lab documents. These include UT Dallas Box, Github, the AWL Lab server (garfield), the UT Dallas HPC (Europa), our lab wiki, and storage space on local computers. **Please do not store lab data on any non-UT Dallas computer or external storage device.**

me explaining why
coding is important   Undergrad RAs
for research

7.1   Box

The AWL has a Box account that will be used to store *most* of our work. Because
this is a lab account, it is cruical that everyone use the following organizational
scheme in this directory.

7.1.1   Grants

This folder contains general grant resources and *specific* folders for each grant
application. If you are starting a new grant application, create a new folder
here for your documents.

7.1.2   Institutional Review Board (IRB)

This folder contains documents for all IRB-approved protocols in the lab. In
addition to *specific* folders for each project, there is a folder of sample IRBs and
Human Research Certificates).If you are starting a new IRB application, create
a new folder here for your documents. Make sure you include a README
file specifying the following documents: (1) IRB application and (2) approval
letter. If you are using data from another institution, also specify the data use
agreement (DUA).

7.1.3   Lab Management

This folder contains documents related to managing the lab. There are separate
folders for different aspect of the Lab Manager's duties, including onboarding
new members, recruitment for our studies, supply orders, and files relating to
our public facing website.

7.1.4   Measures

This folder contains commonly used measures in the lab. There will be a *specific* folder for each measure that contains the measure (e.g. Qualtrics files) and scripts to clean and compile the data. Make sure you include a README file describing the contents of your folder.

7.1.5   Presentations

This folder contains abstracts and posters/power points for conferences. There is a folder for each conference we regularly attend (e.g. Cognitive Aging Conference, CAC). The contents of each conference folder are organized by year. If you are submitting an abstract to a conference, find (or create) the appropriate conference folder, find (or create) the appropriate year folder, and then create a folder for your own project. If you're creating a new folder, include a README file with general info about the conference and when abstracts are typically due.

7.1.6   Projects

This folder contains some data (not neuroimaging) and code for our lab projects. There will be a folder for each project in the lab and it will be organized as described in a section below (Project organization). If you're creating a new folder, include a README file describing the project and folder contents.

7.1.7   Tasks

This folder contains commonly used tasks in the lab. There will be a *specific* folder for each task that contains the task (e.g. PsychoPy scripts, data folders). Make sure you include a README file describing the contents of your folder. When a task is going to be deployed for data collection, a copy will be created in the corresponding "Project" folder.

7.2   GitHub

We will use git and GitHub for version control and collaboration. Thus, all projects in the lab will have a repository (aka "repo") on GitHub. To get started with Git/GitHub, I encourage you to read the Coding Club's Intro to GitHub.

Using GitHub not only allows us to keep track of and work collaboratively on projects, but it also makes it easy to share projects on OSF when they are complete. Because we will ultimately share our GitHub repos with the world, lab members are expected to submit pull requests instead of pushing their changes directly to GitHub. This will allow me to review code and suggest changes in an easy-to-use format.

In other words, don't be this cat:

If you don't know what a pull request is, consult the lab wiki and/or ask a fellow lab member for help.

7.3   AWL Local Computers

We will use the local lab computers to store behavioral data current projects. You should create a 'github' directory your computer's desktop or in your home directory. Inside that directory, you should create a folder for each project you are working on in the lab. The folder should be organized as described in the *Data and code organization* section below and it should be version controlled using git. This is where you will work on data analysis. As you are working, you will sync this folder with a corresponding repository on GitHub.

7.4 AWL Lab Server (garfield)

The AWL Lab Server is a shared lab resource. It will be used primarily for computationally-demanding processes - this primarilty means *computational modeling* and *neuroimaging* projects. Only data, code, and software directly related to lab projects is permitted on the server. If you would like to use the server for another purpose, you must gain Dr. Seaman's explicit permission first.

Server access will generally be limited to lab staff and graduate students, with some exceptions as necessary. If you need access to the server, contact Dr. Seaman and she will determine whether access is warranted.

All computational processes must be run as either (1) interactive job on a compute node, or (2) a batch job submitted to the compute node. **DO NOT RUN ANALYSES ON THE LOGIN NODE** because it will limit the ability of others in the lab to run analyses on the server.

Each directory below will contain subdirectories that correspond to projects in the lab. Please make sure you are working in and saving in the appropriate directory.

7.4.1 Raw

This is the data in its native format and is a READ ONLY folder. For questionnaire data, this is straight from Qualtrics or RedCap. For behavioral data, this is the three files generated by PsychoPy for each participant. For neuroimaging data, these are the DICOM files.

7.4.2 Cleaned

This folder contains data in a format that is usable. For questionnaire data, this would be a cleaned data file with corresponding data dictionary. For behavioral and/or neuroimaging data, we will use BIDS format.

7.4.3   Analysis

This folder contains analysis scripts. These may be written in r/python for behavioral analysis or unix/python for neuroimaging analysis. All scripts should start with a number that denotes what order the scripts should be run in. Any auxilary scripts should be kept in a subfolder. Ideally, these scripts will be written in a way that thwy can ultimately be shared on github/OSF.

7.4.4   Jobs

This folder contains the batch job scripts used to submit a script/set of data as a job to the scheduler.

7.4.5   Output

This is where the output of any analysis scripts will be stored.

7.5   UTD HPC (Europa)

To be developed.

7.6   Project organiztion

To facillitate collaborative work and data sharing, all projects will have a similar file structure. This will also make it easier resume work on a project after a break. Generally, we will save all documents in project folders on the Aging Well Lab Box account and code will be saved in separate git/github repositories. Data will be stored in both locations; the psychopy task will generate a data folder inside of the task folder on Box; this is *raw* data. Data cleaning scripts will clean and save cleaned data into the *data* folder in the git/github repository.

```
project
  |--- administration
       |--- preregistration.docx
       |--- project_protocol.docx
       |--- project_IC.docx
  |--- manuscript
    |--- 01_PAG
    |--- 02_JGPS
    |--- 03_ANC
      |--- Original Submission
      |--- Revision 1
    |--- figures
    |--- project.docx
    |--- project_preprint.docx
    |--- project_supplement.docx
```

```
    |--- project_revcoverletter2.docx
    |--- tables
 |--- task
     |--- data
     |--- stims
```

`project` is the top-level folder and contains all the files for a project. This folder should be renamed for each unique project in a way that indicates what the project is about. It should have the same name as the git/github repository (see below for more information).

`administration` is a folder that contains all administrative files for this project, including the preregistration documents, protocols, and consent forms.

`manuscript` is a folder that contains all files related to the the manuscript. Inside of this folder will be a number of subfolders, each described below. It will also contain the most up-to-date main manuscript file (project.docx) as well as any preprints, supplements, or cover letters.

Folders that begin with leading numbers (e.g. `01_PAG`, `02_JGPS`, `03_ANC`) represent submission to journals. The version of the manuscript submitted, along with supporting documents (preprints, supplements, cover letters, etc) are moved into these folders when a new journal is selected. In this example, the manuscript was first submitted to *Psychology and Aging* (PAG), then to *Journals of Gerontology: Psychological Sciences* (JGPS), and finally to *Aging, Neuropsychology and Cognition* (ANC). If there are multiple revisions at a journal, the relevant docs are placed inside of folders delineating the `original submission`, `revision 1`, etc.

`figures` is a subfolder under `manuscript` that contains all figures for the manuscript. The files should be clearly named, including the figure number. This folder should also include a file with figure captions.

`tables` is a subfolder under `manuscript` that contains all tables for the manuscript. The files should be clearly named, including the table number. All tables saved here should be in APA format.

`task` is a folder that contains the psychopy task for the study (if applicable) and all related folder (stimuli, data, etc.)

`data` is a subfolder under `task` that contains the raw data generated by psychopy.

`stims` is a subfolder under `task` that contains any stimuli usind in the psychopy task.

7.7   Data and code organization

To facillitate collaborative work and data sharing, all projects will have a similar file structure for code as well. This will also make it easier resume work on a project after a break and facilitate recycling of code for other projects.

```
project
   |--- 0_get_data.R
   |--- 1_preprocess_data.R
   |--- 2_analyze_data.R
   |--- 3_visualize_data.R
   |--- README.txt
   |--- data
   |--- docs
   |--- figs
   |--- output
   |--- src
```

This structure is directly stolen from my new favorite blog post, r best practices. We will adapt this format as needed for other programming languages.

Code files are stored in the top level of the `project` directory and are named with leading numbers (e.g. `0_get_data.R`) that indicate the order that the scripts should be run in. Also stored in this top-level is a `README.txt` file that contains a description of the project and a brief summary for each folder/file in the project.

`project` is the top-level folder and contains all the files for a project. This folder should be renamed for each unique project in a way that indicates what the project is about.

`data` contains the **cleaned** data files used in the project. These files **should not be altered** and are ideally read-only. Each data file should have a corresponding data dictionary that also lives in this folder.

`doc` contains any manuscripts or interm summaries producted with the project.

`figs` contains any plots, images, tables or figures *created and saved by your code.* It should be possible to delete and regenerate this folder with the scripts in the project folder.

`output` contains non-figure objects created by scripts. For instance, processed data or logs.

`scr` contains scripts for small functions you want to `source()` in your scripts.

7.7.1 Data and code sharing

We will use the Open Science Framework (OSF) for organizing and sharing materials related to our projects. This will include preregistrations, code (sourced from GitHub), posters, and preprints. We will share all data and code using repositories on the Open Science Framework and will share MRI data on Open-Neuro. I have created an AWL project template that you can use when you create a new page for your own project. When you create a new project, just click "More" and search for our template under "Template (optional)".

We will publicly share our data/code at the time that we submit projects for publication. While under development, OSF projects should be set to private and shared with your collaborators.

7.7.2 Code Style

We will use the tidyverse style guide for R and PEP-8 style guide for Python. Since we're all new to coding, this will **hopefully** help us develop good code hygiene (and mitigate the learning of bad habits).

7.7.3 Archiving data

This area is TBD.

Chapter 8

General Policies

8.1   Hours

One of the benefits of a career in academic research is that it is typically more flexible than other kinds of jobs. However, you should still treat it like a job. If you are employed for 40 hours a week, you should be working 40 hours a week. This applies to lab staff members (the lab manager and other research assistants) and postdocs. You are not required to work over-time. For graduate students, I recognize that you have other demands on your time like classes and TA-ing but still expect to see you in lab, doing research, often.

Lab staff members are expected to keep regular office hours (e.g., somewhere in the ballpark of 9-5). Graduate students and postdocs have more flexibility.

The lab will observe the official UTD holidays.

8.1.1   PI Office Hours

In addition to poking my head into the lab regularly, I will be in my office with the door open for at least an hour every day that I'm at CVL (usually Monday, Wednesday, and Friday afternoons). Feel free to interrupt me during that time. If my door is closed, I am likely in a meeting, on the phone, or doing "deep" work. In that case, please send me a message or try me later rather than knock.

8.2   Dress Code

The dress code for lab is relatively casual while working in the lab and having meetings with other members of the lab. However, **while running participants and/or interacting with the public**, please wear business casual attire.

8.3   Deadlines

If you need something from me by a particular deadline, please inform me as soon as you are aware of the deadline so that I can allocate my time as efficiently as possible. **I will expect *at least* one week's notice**, but I greatly prefer two weeks' notice. Please note that this applies to reading/ commenting on abstracts, papers, and manuscripts, in addition to filling out paperwork, etc. **I will require *at least* two weeks' notice for letters of recommendation.** If you do not adhere to these guidelines, I may not be able to meet your deadline.

8.4   Recommendation Letters
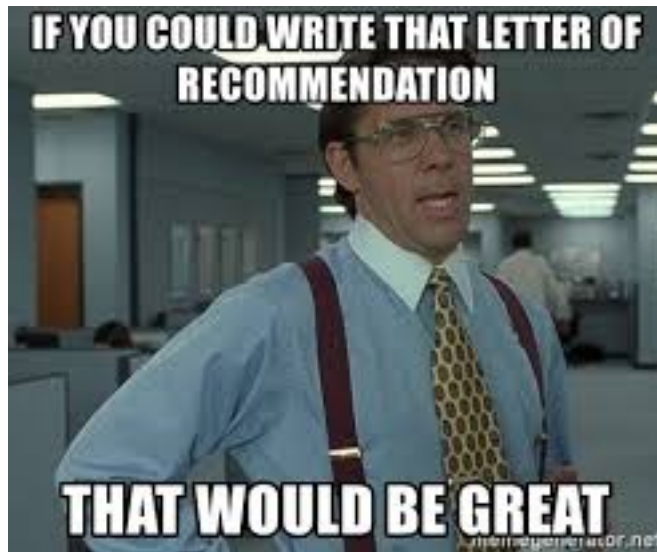
Letters of recommendation are one of the many benefits of working in a research lab. I will write a letter for any student or lab member who has spent at least one year in the lab. Letters will be provided for shorter-term lab members in exceptional circumstances (e.g., new graduate students or postdocs applying for fellowships). I maintain this policy because I do not think that I can adequately evaluate someone who has been around for less than a year.

To request a letter of recommendation, please complete the Reference/Rec Letter Request. Also, please adhere to the deadline requirements described above. In some but not all cases, I may ask you or your lab mentor to draft a letter, which I will then revise to be consistent with my evaluation. This will ensure that I do not miss any details about your work that you think are relevant to the position you're applying for, and it will also help me complete the letter in a timely fashion.

8.5 Data Products (Posters, Presentations, & Papers)

I encourage you to seek out opportunities to present your research to the department, research community, or general public. Any data products for projects from our lab should be discussed with me **before** an abstract or draft is created or circulated. As lab director, I am responsible for the research coming out of the lab and I need to approve any data products before they leave the laboratory. Remember, all data products from our lab will ultimately be shared on OSF.

8.5.1 Manuscripts

If you are drafting a manuscript, congratulations! Scientific writing is different from other types of writing, and so you should be prepared to go through multiple rounds of revision. All drafts should be reviewed *and approved* by your lab mentor before circulating with all co-authors. Once all co-authors have had a chance to read and comment on a draft, we will post a preprint on bioRxiv or PsyArXiv and a link to the preprint will be placed on the project's OSF page. *Only after the preprint has been posted will we submit the manuscript for review.*

As a lab, we will use the Peele lab's checklist to prepare data sets for publication.

8.5.2 Conference Presentations

If you are going to give a presentation (including posters and talks), please be prepared to give a practice presentation to the lab at least one week ahead of time. Not only will this help you feel comfortable with the presentation, it will give you time to implement any feedback. I care about practice presentations because a) presenting your work is a huge part of being successful in science and it's important that you practice those skills as often as possible, and b) you are going to be representing not only yourself but also the rest of the lab.

8.6   Funding
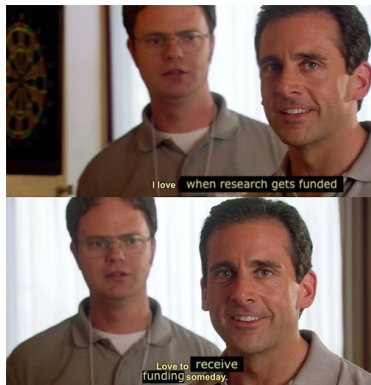
I will oversee all aspects of the financial management of our funding sources. However, it is important to me to be transparent about where research money comes from and how it's spent. Current funding for the lab comes from my startup package from UT Dallas and our new NSF grant, Award Number 2116369 for $560,915.00 over 3 years.

All research funded by the NSF and NIH must acknowledge the grant number upon publication. Grant numbers should also be provided on abstracts and posters of grant-supported research. This is essential for documenting that we are turning their money into research findings. We must also submit a yearly progress report describing what we have accomplished. Lab members involved in the research will be asked to contribute to the progress report.

Hopefully we will have NIH funding in the future.

Chapter 9

Resources

9.1 Glossary

Individual Development Plan (IDP) - a tool to assist mentees in academic and career development.

Institutional Review Board (IRB) - committees at US research institutions that review and approve research proposals to ensure they are ethical.

Version Control - a system that records changes to a file (or set of files) over time so that you can recall specific versions later.

9.2 Links

Open Science Framework (OSF) - a tool developed and maintained by the Center for Open Science for creating, organizing, developing, and sharing research projects - https://osf.io/

OpenNeuro - a repository for sharing neuroimaging data - https://openneuro.org/

StackOverflow - open community for troubleshooting any kind of code - https://stackoverflow.com/

Neurostars - a listserve for neuroimaging questions - https://neurostars.org/

GitHub - a respository for code - https://github.com/

bioRxiv - a preprint server for biological sciences; we will post our more neuroscience-y work here - https://www.biorxiv.org/

PsyArXiv - a preprint server for psychological sciences; we will post our behavioral studies here - https://psyarxiv.com/

Peele Lab's Manuscript Checklist - a checklist of things to do before submitting a manuscript to ensure open access - https://github.com/jpeelle/paperchecklist