Smith Lab Manual

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June 20, 2019

Contents

1 Introduction

My overarching goal is to foster an environment of scientific excellence and personal development for all lab members. We should continually strive to learn and improve—and we should also try to have fun doing great science. This Lab Manual[1] is meant to be the first resource for the lab as we seek to achieve these goals. You can also find the lab elsewhere:

- Website: https://sites.temple.edu/neuroeconlab/
- GitHub: https://github.com/DVS-Lab
- Twitter: https://twitter.com/DVSneuro
- Mendeley: https://www.mendeley.com/community/smith-lab-meetings/
- OSF: https://osf.io/5zq6h/

There are also a couple of sites accessible only by lab members:

- Asana: https://app.asana.com
- Slack: https://neuroeconomicslab.slack.com
- Wiki: https://smithlabwiki.cla.temple.edu [under construction]
- Wiki: https://smithlabinternal.cla.temple.edu [phasing out]

In general, firm policies are in the lab manual, whereas ways of implementing those policies (i.e., getting stuff done) should be on the Wiki so that they can be updated by anyone in the lab. Asana organizes tasks that need to be done (and relevant discussions, with the help of Slack) for specific projects, rather than general principles. Any information that is potentially private or sensitive should go in a protected location. (You can read more about various lab resources in §4.1 on page 14.)

I assume the Lab Manual and Wiki are accurate and clear. This means that you should follow all of the policies and protocols contained in the manual and Wiki. If you notice something that seems to be wrong (or missing), please let me know (for the lab manual) or change it yourself (for the wiki). If there is something in the lab manual or wiki that you notice people aren't doing, please bring this up at lab meeting, or to me, privately—don't assume this is okay (it's not).

[1] Much of this document is derived from Dr. Jonathan Peelle's excellent Lab Manual.

2 About the lab

You should think of the lab as a small business, complete with operating costs and the demands to allocate resources (i.e., time and funding) carefully in order to maximize returns. Our principal products include rigorous scientific publications and highly-skilled trainees. Of course, these products are deeply intertwined in the sense that publications don't happen without skilled trainees and some skills are difficult to showcase without a corresponding publication.

2.1 Our Funding

Grant funding supplies the much of resources needed to conduct our research, including salary for personnel, RA-ships for PhD students, equipment, subject payments, and so on. It is important that we run the lab in a way that shows we use our research funding carefully.

Our recent and current grant funding includes:

- Targeted Small Grant Award from OVPR at Temple University titled "Modulating Individual Differences in Reward Sensitivity with Transcranial Current Stimulation" (active: 2018-01-01 to 2019-12-31). This project examines how transcranial current stimulation impacts reward processing and decision making.
- R21-MH113917 from NIMH titled "Remote Modulation of Reward Circuits with Noninvasive Brain Stimulation" (active: 2017-07-05 to 2020-04-30). This project is focused on how transcranial alternating current stimulation modulates neural and behavioral responses to reward.
- Pilot Grant from SRNDNA titled "Social Reward and Aging: Identifying the Neural Underpinnings of Peer Influences" (active: 2017-10-01 to 2018-12-31). This project is focused on how the relationship between trust and social closeness changes across the lifespan.
- R03-DA046733 from NIDA titled "Aberrant Reward Sensitivity: Mechanisms Underlying Substance Use" (active: 2019-05-01 to 2020-04-30). This project examines the relationship between aberrant reward sensitivity, substance use, and neural responses to social and nonsocial reward.

Funding from NIH means that work in the lab is supported by the tax-paying public—and we should strive to produce products that show we are using the money wisely. Startup funds should be viewed similarly.

2.2 Our Collaborators

Much of the work in the lab is done in collaboration with other faculty members at Temple and other universities. These individuals can play a large or small part in our projects, and many of them are excellent candidates for secondary mentors.

Internal

Our local collaborators (i.e., those at Temple) are in involved in active or pending grants. Although the work on some of these projects has not yet begun, I include pending projects that are likely to materialize in some form or another soon (e.g., funded grant or additional pilot data collection).

- Lauren Alloy
- Jason Chein
- Eunice Chen
- Tania Giovannetti
- Johanna Jarcho
- Vishnu (Deepu) Murty
- Michael McCloskey
- Ingrid Olson
- Crystal Reeck
- Jamie Reilly
- Vinod Venkatraman

External

We also have a number of collaborators who have a home outside of Temple. These individuals are also involved in active/pending grants or manuscripts that are in preparation.

- Pamela Butler (Nathan Kline Institute and New York University)
- John Clithero (University of Oregon)
- Mauricio Delgado (Rutgers University — Newark)
- Dominic Fareri (Adelphi University)
- Bart Krekelberg (Rutgers University — Newark)
- Chris Rorden (University of South Carolina)

2.3 Our approach

We use neuroimaging and noninvasive brain stimulation to understand the neural mechanisms that support how humans make social and economic decisions. Our work is inherently interdisciplinary, incorporating perspectives from psychology, neuroscience, and economics. This is challenging (but rewarding!) work; and to do it well, I believe it is essential to use Individual Development Plans (IDPs) and have open lines of communication for bidirectional feedback (i.e., me to you, and you to me).

Training Model

Like many organizations, training in the Smith Lab relies heavily on an apprenticeship model, where skills are learned from others who have more experience. Although this can be a little tricky with a young lab, we still try to structure projects where people who are further along in their training share their knowledge (see §4.3 on (page 24) with those who are more junior. We also have basic lab training to get everyone up to speed on what could be consider the prerequisites for the lab, particularly for graduate students (e.g., basic computer skills, basic statistics, and basic neuroimaging skills). Since there are a plethora of resources out there, I strongly encourage you to stick to the specific examples we have on the wiki and organize workshops for content areas that you feel need more attention as a group. I am more than happy to present material in such workshops, as I have done before (e.g., FSL Course Material), and I only ask that others help present some material as well. Of course, you are not expected to be an expert when first presenting new material to the group, but you will learn the most from teaching others.

Individual Development Plans

Everyone in lab should continuously work with an Individual Development Plan (IDP). I have created a lab-specific IDP that everyone should use and discuss with me on a regular basis. The IDP template for the lab is modeled after the Student Activities Report that was used in my graduate program at Duke, the American Association for the Advancement of Science (AAAS), and also the National Institutes of Health (NIH).

The core goals of the IDP are to set out long-term and short-goals and provide clear metrics of success and progress. Other key components of an IDP include self-reflection and self-evaluation. Just from reading papers, you should develop a sense of where your peers outside of Temple are in terms of their skills and publication records. Although I think this type of social comparison can be good, I recommend that you primarily take note of where you are today and strive to be better than that tomorrow. If you do that for while, you will be amazed by the progress you've made.

Bidirectional Feedback

To improve and meet the goals set out in your IDPs, you should expect to receive feedback from me, other faculty, and other trainees/peers (e.g., reviewers, visitors at a poster, etc.). Some of this feedback will be positive and some of this feedback will be negative. Whether you think you are being showered with too much positive or too much negative feedback, please recognize that the goal of the feedback is ultimately the same: that is, help you improve and meet the goals set out in your IDP.

In general, you will receive the most feedback from me on items that reflect your scholarly output, including fellowship applications, abstracts, posters, talks, and manuscripts. When these things involve other faculty (and they often do), I ask that you wait till you have fully incorporated at least one round of feedback from me before circulating your work with other faculty. Please note that, in general, my feedback will be most helpful if we are not pressed against a deadline (e.g., distributing an abstract to coauthors). And for manuscripts, you should first work with me on a paragraph-level outline (see §4.2 on page 21) and reserve a time to discuss feedback in person, especially if it is your first time writing a paper with me.

Importantly, feedback isn't a one-way street, and I welcome your feedback on how I can be a better mentor. Of course, I recognize that giving me feedback may not always be the easiest thing to do. Thus, one simple workaround is anonymous feedback, which is something I first mentioned during a lab meeting back in Summer 2018. Since that time, I've learned that other labs already utilize anonymous feedback[1], and it is now something that I feel more strongly about. Our initial experimentation with anonymous feedback has been extremely helpful for me.

[1] https://www.sciencemag.org/careers/2019/04/want-become-better-mentor-ask-anonymous-feedback

3 Being in the Lab

The lab functions as a team. Like any team, we have different types of roles and responsibilities, all of which are essential for our success. Here, I describe my expectations and what you can expect from me.

3.1 Everyone

Big picture

We expect each other to:

- Push the envelope of scientific discovery and personal excellence.
- Do work we are proud of individually and as a group.
- Double-check our work, and be at least a little obsessive.
- Be supportive—we're all in this together.
- Be independent when possible, ask for help when necessary.
- Communicate honestly, even when it's difficult.
- **Share your knowledge**. Mentorship takes many forms, but frequently involves looking out for those more junior.
- Be engaged in the community. Everyone should be able to *get* help and *give* help on mailing lists and discussion boards, such as NeuroStars.
- Work towards proficiency in Unix, BASH, Matlab, R, and Python (bonus points for Javascript and LaTeX).
- Be patient with everyone, including with your PI (he will forget things you just talked about and be busier than he would like).
- Advocate for our own needs, including personal and career goals.
- Respect each other's strengths, weaknesses, differences, and beliefs.

- Adhere to ethical principles described by American Psychological Association (APA) and Society for Neuroscience (SFN) and follow the Responsible Conduct of Research (RCR) more generally.

We should also expect everyone to have a professional and accurate online presence. If you have an online profile somewhere (e.g., LinkedIn, NeuroStars, ResearchGate, Twitter, Google Scholar, etc.), keep it up to date and professional. Remember, we all represent the lab and the lab represents us. Let's make sure we have an excellent online presence.

Small picture

We're sharing a relatively small space, so please be thoughtful of others, including (but not limited to):

- With few exceptions, **do not come to the lab if you are sick**. It's better to keep everyone healthy. If you are sick, email the lab manager or me to let me know you won't be coming in, and update the lab calendar to reflect the change.
- Do not leave food, drinks, or crumbs out in the lab. Please put food trash in another trash can (not in the lab), especially late in the day or on Friday (so that food doesn't stay in the lab overnight).
- Avoid wearing strong perfumes/colognes/etc. in the lab (for the sake of your coworkers and our participants).
- Keep the lab neat—especially in the entryway area. Items left unattended may be cleaned, reclaimed, or recycled.
- Turn off or minimize notifications on your devices. Although it is important to be available for emergencies, you might find yourself sifting through countless notifications and attending to nonstop alerts if the notification settings on your devices aren't constrained.

3.2 The Boss

You can expect me to:

- Have a vision of where the lab is going over the next several years.
- Care about your happiness.
- Obtain the funding to support the science, and the people, in the lab.
- Support you in your career development, including writing letters of recommendation, introductions to other scientists, conference travel, and promoting your work as often as possible.
- Support you in your personal growth by giving you flexibility in working hours and environment, and encouraging you to do things other than science.
- Make the time to meet with you regularly, read through your manuscripts, and talk about science.
- Obsess over running the right analyses, writing clearly, and making beautiful figures.

Pet Peeves: I'm also human, and I have a couple of pet peeves that are worth incorporating into your expectations. First, sloppiness and careless errors will likely make me grumpy. This is not to say that you should be fearful of mistakes. On the contrary, mistakes are great and you will learn the most from your mistakes. But, a mistake need not be a reflection of sloppiness or carelessness. Second, if someone sits down with you to show you a procedure and you don't review/improve/create the Wiki documentation that describes that procedure, then I will probably get annoyed because poor documentation undermines the training model in the lab (see §2.3 on (page 4)).

3.3 Postdocs

I expect postdocs to move towards being more PI-like, including giving talks, writing grants, and cultivating an independent research program (while still supporting the lab's research). And, to have (or acquire) the technical and open science skills listed for PhD students, below.

Postdoc salaries generally follow NIH guidelines (regardless of the source of funding).

3.4 PhD students

Whether you're a full-time PhD student in my lab or collaborating on a single project as a minor author, I expect PhD students to:

- Attend classes, colloquium talks, and area meetings.
- Know the literature related to their topic like the back of their hand. For more information about staying on top of the literature, see §6.2 on page 33.
- Be **excited** about the research questions they are asking and **eager** to find the answers. (If I am more eager to know the answer(s) to your research questions, we need to rethink your research questions.)
- Seek out and apply for fellowships and awards, including external and internal travel awards and training workshops.
- Realize there are times for pulling all nighters, and times for leaving early to go to the park and enjoy the sunshine.

By the time you're done, you will have developed a full spectrum of skills needed to become a great scientist—from hard skills (e.g., technical and analytical) to soft skills (e.g., communication and teamwork)[1]. For example, you will develop a program of research that speaks to a significant problem or open question in the field. In service of this, you will conduct carefully-executed experiments and communicate your results clearly, both in written and verbal formats.

In addition, you will also know how to do statistics and plots in R, Matlab, and/or Python, share your work with me using GitHub/OSF, Rmarkdown, and/or Jupyter Notebooks, write Matlab and BASH scripts for data analyses, know enough Python to navigate presentation in PsychoPy and do simple scripting, and make figures and posters using Adobe Illustrator or a similar vector-based graphics program (e.g., Inkscape). You will also preregister your experiments when appropriate (which it almost certainly will be) and share your data and analysis scripts publicly. These skills are essential ingredients for success in cognitive neuroscience and industry (for more information, see §6.3 on page 35).

[1] https://loop.nigms.nih.gov/2015/11/catalyzing-the-modernization-of-graduate-education/

The learning curve can be a little steep on all of these learning objectives—but it's well worth it. If these objectives aren't compatible with your goals or interests, then my lab is probably not a good fit for you!

Note that if you're a PhD student in the Department of Psychology, then you should also be familiar with the policies in the Department of Psychology Graduate Handbook, particularly program requirements and ethics. Much like this Lab Manual will help you succeed in lab, the Graduate Handbook will help you succeed in the PhD program.

3.5 Masters students

In general, Master's students should strive to function as if they were a PhD student. But, at a minimum, I expect masters students will be organized and independent, and manage their research time and classroom responsibilities so that they complete a project by the end of their second year, which requires being somewhat strategic in the topic we pick. The written report and/or poster is typically due by the middle of April. Your time as a Masters student in my lab should outlined in your Individual Development Plan.

3.6 Employees

I expect paid employees to use their time efficiently to support the projects to which they are assigned. Paid employees will typically have the most interaction with other staff, and with research participants, and in these contexts especially should be a model of professionalism.

Hours

Work hours in the lab are 8:00–5:00 (or 9:00–6:00), with 60 minutes for lunch by default. If you are testing participants outside of this time, we will adjust accordingly for those weeks. You are responsible for keeping your hours at the agreed amount (8 hours per day, 40 hours per week for full-time employees). To maintain full-time benefits eligibility your hours cannot drop (much) below 35; if on a given week you work substantially less than 30 hours, vacation time may be used to make up the difference (per HR policy).

The workweek at Temple is from Saturday to Friday. So, if you don't log your full 40 hours between Monday and Friday, the extra (make-up) hours you might log over the weekend would apply to your next timesheet.

Time off should be requested at least 2 weeks in advance, via email. Once approved (via email) please add to the lab calendar. You are responsible for making sure you have sufficient vacation hours to cover any time off; otherwise, you will not be paid.

Sick time should also be requested over email. Per HR policy, full-time employees are earned sick days at the rate of 1 day/month up to 10 days up (these sick days carry over to the next fiscal year).

(Note that graduate students, postdocs, and staff scientists are generally given more flexibility in their hours, provided they make sufficient progress on their projects. This flexibility does not generally extend to other paid positions because we need to maintain a consistent lab presence for scheduling, supporting undergrads, interacting with other staff, and so on. Nevertheless, individuals with paid full-time or part-time positions can, on occasion, log up to a half day, or 4 hours, remotely each week, provided this is cleared with me first and does not result in overtime.)

Even if you speak with me in person, it is important to document these requests (and my approval) over email so that we have a record. It is your responsibility to make sure this happens.

Timesheets

- Hours entered on your timesheet should reflect hours actually at work.
- Monitor your time carefully and do not forgot to clock in/out in the lobby. If you forget to clock out or your hours appear anomalous, it creates extra work for someone else to fix.
- Clock out for breaks 60 minutes or longer (this is your default lunch, unless we've changed it in Kronos to 30 minutes).
- If you're not using the clock-in/clock-out system in the lobby (e.g., testing off campus), submit your timesheet before the due date.

Employee resources

There are many resources and benefits available through human resources. These policies are spelled out to some degree on the HR website and in the Employee Manual, and I can also put you in touch with people in the department or HR who can offer guidance.

3.7 Undergraduate students

Undergraduate students play a vital role in the lab. In return, the lab can also play a vital role in professional development and career opportunities by providing measurable research experience, authorship on posters (and potentially papers), and letters of recommendation. Of course, what you get out of the lab depends on what you put into the lab, and most successful undergraduates work in the lab for at least two semesters. **Whether you stay in the lab for two or eight semesters, I encourage you to leave your mark and try to walk away with more than a line on your resume.**

An undergraduate student can be involved in the lab in a number of ways, including independent study projects (e.g., course credit), student worker, and internships. But, given that we have limited time and resources, we unfortunately cannot accept or keep all undergraduates. We therefore consider new undergraduates at the beginning of each term. Importantly, each new undergraduate must attend a mandatory orientation session and serve a probationary term (6 weeks) before advancing further in the lab.[2]

I expect undergraduates to be utterly reliable and willing to help with whatever projects need it. At a bare minimum, reliability includes showing up on time, maintaining your hours on the lab calendar, and making sure that all of your work is accurate (double-check everything). In most cases, undergraduates will be directly mentored by a graduate student and/or research assistant. Importantly, your mentor should work with you to create an Individual Development Plan and this plan should be reviewed with me at least once a year.

[2] Many thanks to Victoria Kelly for honing these procedures and developing the orientation materials in Spring 2019.

3.8 University policies

Employee guidelines

Important guidance on benefits and policies (including time off policies and the Employee Handbook) are available on the human resources website. It is important that these policies are followed at all times. You are responsible for reviewing the policies and benefits; human resources is a good resource and they can help you if you have any questions.

Sexual harassment

University policy requires that if any faculty member (such as me) becomes aware of sexual harassment or abuse involving students or employees we must report it to the Title IX Sexual Harassment Response Coordinator. Counselors and other medical professionals on campus who discuss these issues in their professional capacity can keep patient confidentiality.

4 Communication

Whether you pursue academia or industry, communication both within and outside your organization is critical. In this chapter, I describe how we communicate with those inside of our lab (e.g., fellow trainees) and those outside of our lab (e.g., readers of our papers). Of course, some modes of communication are for everyone,

4.1 Communication within the lab

I am usually busier than I'd like to be, and as a result have less time for talking to folks than I'd like. However, you (lab members) are one of the most important parts of my job, and I need your help to stay organized and involved in the things I need to be involved in. Some general guidance:

1. Be proactive—tell me what you need. This includes coming to knock on my door even if it seems like you are interrupting, revising your IDP whenever necessary, emailing me to set up a time to meet, or catching me before or after lab meeting. In all likelihood I will not check in with you as often as I'd like, so it is up to you to make sure nothing falls through the cracks.

2. Write things down and remind me what we've talked about. I would love to remember everything we decided when we met last, but this doesn't always happen. Don't hesitate to bring me up to speed when we meet. Even if I already remember what we are talking about, a couple of introductory topic sentences will help get me in the right frame of mind.

3. Read all of the lab documentation: this lab manual, the lab wiki, and search through Asana if you have a question or issue. You are responsible for knowing what is in each of these places, following the rules and guidelines we have set up, and notifying someone if you find incorrect or unclear information (or if you have questions).

4. I can be the most helpful to everyone if you are a little bit strategic in what you ask me. Please check the lab wiki, other people in the lab, and a Google search before shooting me off a question (see Figure 4.1).

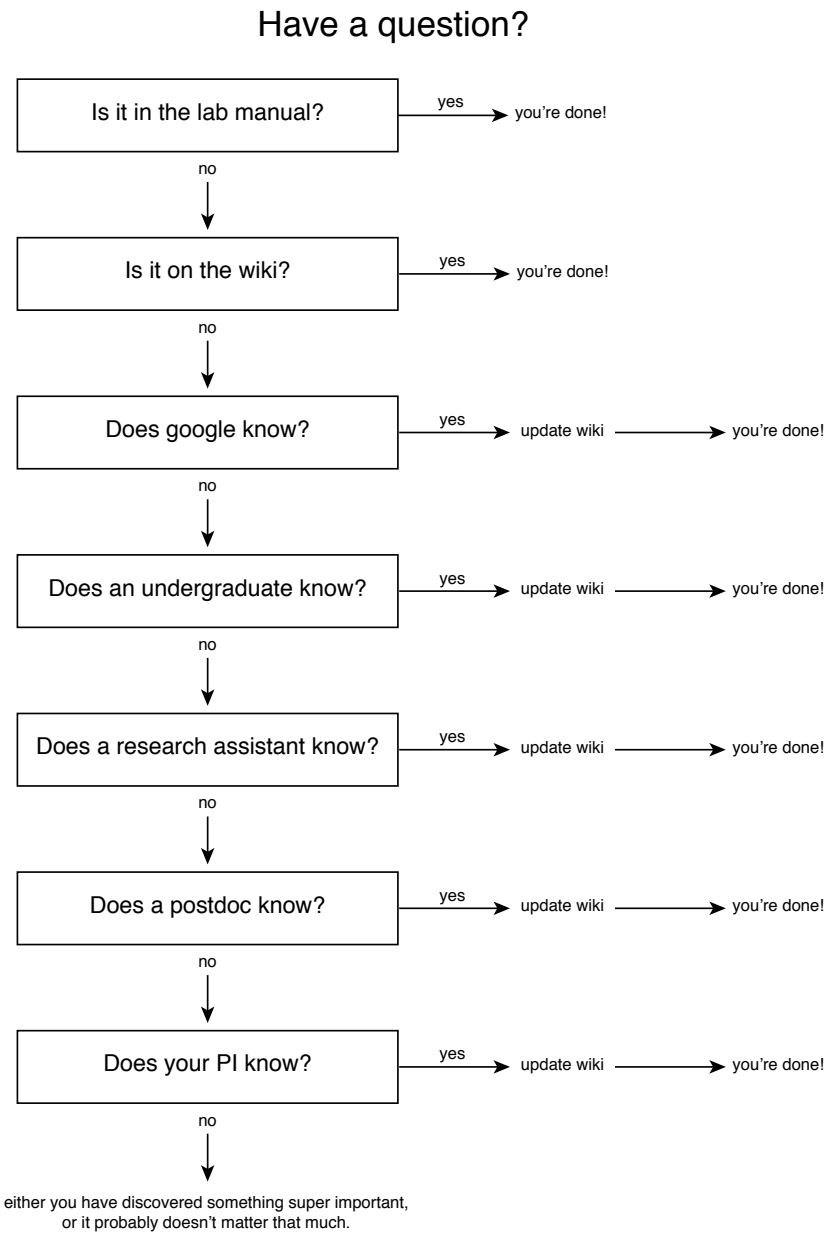

Figure 4.1: Lab decision tree. Answers to all your questions should be in the lab wiki!

My door

Metaphorically my door is always open, but sometimes my door is, physically, closed (or perhaps slightly cracked open). If this is the case:

- If we have a meeting scheduled, then please knock. Hopefully I am around.
- If we don't have a meeting scheduled, a closed door generally means I am trying to do some writing and should not be interrupted. Of course, if it's an emergency, please knock anyway. Otherwise, please send me a direct message on Slack or try another time.

Lab meeting

Regular lab meetings are essential for ensuring that current projects are moving forward and that future projects are being planned carefully. Remember, the lab is basically a small business that seeks to produce high-quality publications and highly-skilled trainees—i.e., you! We also use lab meetings to discuss administrative issues (e.g., IRB modifications) and practical issues (e.g., responsible conduct of research). In some case, we may also use lab meetings for workshops that introduce or reinforce skills (e.g., a NiPype tutorial), though I recommend allocating more time for workshops.

Our lab meetings are generally 1-1.5 hours. During that time, **we have one or two presenters who are responsible for setting the agenda and sharing materials well in advance of the meeting**: 1) at a minimum, one person leads a journal club on a recent empirical paper that is relevant to the lab; and 2) another person presents their work, a practice talk, a project proposal, a tutorial, or a general-interest topic that is worth a group discussion. Example general-interest topics might include a recent influential review paper, responsible conduct of research, professional development, or innovative research practices. Unless you have clinical duties or class conflicts, regular attendance and participation is expected of everyone, especially those of you working to make a sustained intellectual contribution to a project (see §5.8 on page 31).

Since scheduling lab meetings can be tough and everyone might not be able to make it, we generally try to keep some time open on Friday afternoons for joint lab meetings with other faculty (e.g., Penn-Temple meetings).

These meetings serve as a great opportunity to share your work and hear outsider perspectives on your work.

You should treat the lab meeting (and other research meetings) like a class: **be prepared, be present, and be engaged with the discussion**. This means you should read the material beforehand and put away your laptop during the meeting. If you're scheduled to present and you need to cancel or postpone, please give the group at least 72 hours notice.

Individual Meetings

Although you will regularly give updates on your project (and particularly preliminary results) in lab meetings, it can also be very helpful for me to have semi-regular individual meetings with you about your project. During my PhD, my advisor had regular weekly meetings to discuss the data we were collecting/analyzing, projects we were planning, and the papers we were writing—but I am not my advisor! For me, it is better to set up times where you know you can find me in lab and/or schedule individual meetings on an *ad hoc* basis. At the end of the day, I'd like to make sure I'm seeing progress with your project (e.g., new results, new ways to contextualize the results, new directions for the research program, etc.) at least every two weeks. Although I will usually find you and get updates because I'm very curious to see your results and discuss your ideas, it is generally up to you to make sure these individual meetings happen on a semi-regular basis. These individual meetings are an ideal time to get feedback on your work.

In general, please do not use individual meetings to discuss technical issues that would be better for a workshop. If there's a concept or technical procedure that you're struggling with (e.g., scripting first-level analyses in FSL), chances are that you are not alone and others would benefit from a workshop (or even a refresher). Discussing these types of things as a group helps us build expertise, improve our documentation, and develop mentors for the next generation of trainees who will have the same questions (see §2.3 on page 4). That said, we are still a young lab, so please don't hesitate to come grab me for analysis help, post to the 'help-with-analyses' channel on Slack, or post to the TUBRIC Support Forums. I want to help your work move forward while also preparing you to help the next person.

Asana and Slack

Asana and Slack are the main tools for lab communication and are preferred to email in almost every situation. Please help me by keeping these up to date! A few thoughts and tips:

- Asana is basically a to-do list, which makes it easy to use. My advice is to keep it simple: add a task, description, due date, and tag whoever needs to know about its status. Then work toward completing that task.
- Be realistic and flexible with due dates in task in Asana. Of course, you should try to get things done in a timely manner—while recognizing that some tasks necessarily have to be completed before other tasks—but sometimes life happens and you have to adjust.
- If you're leading a project in the lab, please make sure your project is listed under one of our teams on Asana. Since we're cheap, we have a few different teams (each team is capped at 15 people), so add your project under the appropriate team and make sure anyone involved in your project is also on that team.
- With Asana, all project tasks and to-do items should be under your project. Tasks that aren't linked to your project (e.g., administrative items) should be find a home under a pre-existing project.
- In Slack, try to avoid direct messages for project-related discussions or questions. Instead, use (or create) a Slack channel for your general topic, which will naturally overlap with other aims/directions of the lab. Creating (or using) a general channel that includes others allows you to get feedback and perspectives other folks in lab, potentially forming new collaborations. In addition, using the threads feature on Slack can also help keep conversations organized.
- Use the default settings for notifications in Slack and Asana. They are defaults for a reason. But, if the extra emails clutter your Inbox, take a few minutes to set up a filter (very easy to do in Gmail).

- Use Asana and Slack together. You can integrate them with a few simple clicks. I will often create and assign tasks directly from Slack[1].

Email

When contacting me, please use Asana/Slack whenever possible. I will try to reply to emails when I can but please don't use it for anything urgent if you can avoid it. If you need to reach me urgently you can call/text my cell phone, or call the lab (where someone can get in touch with me).

I would like to use Asana/Slack as much as possible for lab communication, but 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're not going to be checking email for more than a few days (for whatever reason), please consider using a vacation message so that others know you're not on email (this suggestion also applies to holidays). The same guidelines apply to me: if I don't respond to one of your messages within one business day, please feel free to follow up; and if I'm not checking email at all, I will put up a vacation message.

Calendars

Accurate calendars are extremely important in managing lab space and resources. We have a Lab Attendance calendar (for noting when you're away) and a Lab Resources calendar (for resources like laptops and testing rooms). It is crucial that everyone use the calendars regularly and ensure they are accurate. Use the lab calendars and follow the instructions described on the wiki.

If you think it will be helpful, you are also welcome to share your personal calendar with me, and I will try to attend to it. However, it is generally best to use the Lab Attendance calendar to indicate when you're away or otherwise unavailable. (You may also consider using away messages on Slack.)

[1] If you wind up with multiple Asana accounts tied to different emails, you integrate them pretty easily.

4.2 Communication outside the lab

Communicating to people outside the lab is extremely important: your actions reflect not only on yourself, but on the lab, the lab director, the department, and the university. This is true both for participants (who volunteer for our studies) and scientific colleagues (whose opinions have a direct impact on our success and opportunity—they are the ones reviewing our grants and papers!). It is important that every time one of us represents the lab to a high level of quality. The less experience you have, the more preparation is required. Don't skimp!

Phone

- If the phone rings in the lab, answer it: identify the lab and your name. Most calls will be from potential (or current) research participants, so it's important they view us as professional and competent. "Smith Lab. This is [your name here]. How may I help you?" is a great start.
- Check voicemail messages daily to make sure nothing important slips through.
- If someone calls the lab and leaves a message, call them back within one business day to confirm that we received the call. If they would like to participate in a study but we can't schedule them, thank them for their interest and ask if we can contact them in the future should one come up (if you actually will). If you are not going to contact them (or they do not qualify), tell them that we are done recruiting for that study and do not have anything else available, but thank them for their interest. Refer to §5.3 (page 28) and the lab wiki for detailed instructions on scheduling participants and general phone etiquette.

Manuscripts

Scientific papers are one of the principal product of the lab. Both the quantity and quality of our papers have a direct impact on the success of the lab and serve as critical way for you to showcase your talents to those outside the lab. Together, we should strive to publish and prosper.

General

We have an obligation to communicate our findings clearly and unambiguously. However, clear and unambiguous communication can be challenging, especially when writing a manuscript. Before you sit down to write a manuscript, I expect you to be familiar with what George Gopen calls "Reader Expectations". I also expect you to be familiar with what Steven Pinker calls the "Curse of Knowledge". You have to put yourself in the reader's shoes and imagine that s/he does *not* know what you know. In my view, understanding how to work with "Reader Expectations" and avoid the "Curse of Knowledge" will help you communicate your findings clearly and unambiguously[2]

With these principles in mind, here are some additional guidelines for drafting a manuscript in the Smith Lab:

- Always start with paragraph-level outlines of each section that include the key citations and points you intend to make.
- Make sure all authors are on board with your paragraph-level outline before developing the content further.
- Obsess over flow, context, and structure.
- Remember that the reader does not know what you know.
- Always show a manuscript (or revision) to all authors before submitting it, giving them the opportunity to comment.
- Go over page proofs carefully, including the references. There is almost always a mistake (ours, or introduced by the publisher).
- Always give the senior author the opportunity to look at page proofs.

Formatting

When you are out in the big world on your own, you are free to format your manuscripts however you like. While you're in the Smith Lab, when sending me a draft of a manuscript, please do the following:

- Include a title, or multiple options for a title, if you are unsure.
- Include page numbers.
- Include the full author list starting from the first draft, which helps clarify any authorship issues or concerns early on.
- Include placeholders for all sections (e.g., introduction, methods, results, discussion.) even if they are empty, so that we can fill them in

[2] Both Pinker and Gopen have books that are in lab, so take a look at them if you want more information.

as we go. Having placeholders also helps clarify the organization from the beginning.

- Use styles, especially for headings. This will help organization of the manuscript and make it easy to change font and formatting if need be. (To make a heading, don't simply select the text and make it bold; select the text and then a heading style, such as "Heading 1".)
- While we are sending drafts back and forth, keep the text single-spaced. If the journal requires double spacing, we can add this at the end.
- Embed figures and tables in the body of the manuscript rather than putting at the end, or in separate files. Again, we can change this to match journal guidelines before submitting if need be.

Some of these are good practice; others are simply my own preferences. However, if you humor me in these, it will decrease my distraction when reading your writing, and ultimately enable me to be more useful.

Your papers should be free of spelling and grammatical errors. There is no shame in asking for help with this; your fellow labmates, classmates, or the writing center (http://www.temple.edu/writingctr/) are available to help. The best proofreaders will explain to you *why* things need to be changed so that you learn how to be a better writer, rather than simply correcting your writing.

When naming files, please include your name and a version number. If you send me a file called "Research_Statement.docx", it is likely to get lost—try "Baldrick_research_statement_v01.docx" (assuming your name is Baldrick and this is the first version you are sending me). Renaming files with initials when making comments is generally helpful; I would send this file back to you named "..._dvs.docx". After you incorporate any changes, you can then create a new document named "Baldrick_research_statement_v02". For more on good practices in naming files, please see this page.

Figures

If we are still trying to work out what a good figure looks like, I'm happy to talk this through with you and look at rough drafts. However, if we have a good idea of what we want in the figure, please send me something as finished and polished as you can make it—this makes it easy for me to give the

most helpful feedback. If you give me something that isn't your best work, I will probably just tell you things you already know.

Most figures should be vector art (saved as PDF or EPS files). Vector-based files don't suffer the artifacts and poor quality that raster-based images show when magnified. Use a graphing program (such as R, Matlab, or JASP) to export to an EPS file, and then modify that file in Adobe Illustrator or other vector-based image-editing program (e.g., Inkscape).

Don't use Microsoft Excel or Microsoft Powerpoint for your figures! They are never the best option. If you must organize your data in Excel, that's fine, but then do plotting in a better plotting program (e.g., R, Matlab, or Python).

Corresponding authorship

On average, I am around the longest and have the best chance of having access to data, etc. To keep the rules the same for everyone I am always corresponding author for research conducted in the lab.

Conference Presentations

I encourage everyone in lab to seek out conferences and meetings that would be a good venue for your work (a list of possibilities can be found on the wiki). Anyone submitting an abstract for a conference, symposium, etc. should clear this with me first, and circulate to all authors at least one week before the submission deadline.

Talks

Anyone giving a talk to a non-lab audience is required to give a practice talk to the lab at least one week before the real talk. If this is your first public talk on a lab project, plan on at least two practice talks (starting at least 2 weeks before the real talk). Practice talks should be mostly finished (final slides, practiced, and the right length) so that our comments will be as helpful as possible. Schedule one or more meetings with me ahead of time to plan or go over your slides, especially if you haven't given many talks before. You should *never* have to stay up late finishing a talk.

Posters

Anyone presenting a poster should circulate an initial version to all authors at least one week before the printing deadline—which can be up to a week before you plan to leave for the conference (plan accordingly). If it's your first poster, plan to present it to the lab before you print.

Make sure to double check the poster size and orientation for the conference, and the size of the paper or canvas it will be printed on.

For many conferences, you may want to bring a sign-up sheet where people can request an emailed PDF. However, these sign-up sheets can be difficult to read, so you could also print a QR code on your poster that links to your poster and/or include an OSF link to your poster.

Plan ahead and be prepared when it comes to conference presentations. If you're unprepared or if you're unprofessional during a conference, then I will be much less likely to send you to conferences in the future.

4.3 Communication with everyone

Everything we do should be sharable with other researchers and the public. I want everyone to assume that all of their notes, instructions, data, and results will be publicly-accessible in the near future (see §5.2 on page 26).

Lab Wiki

The lab wiki is our shared collection of knowledge about how to get things done in the lab. The lab manual you are reading now is "top down", in that I am writing the whole thing myself. By contrast, the wiki is a shared resource to which everyone can—and should—contribute. A good rule of thumb is that if you need to figure out how to do something, someone else in the lab, department, or community, may someday need to do the same thing. Whenever possible please document what you figure out on the wiki, including updating old sections which may no longer be relevant. Please encourage each other (and those working with you) to do the same!

We currently have two wikis, though we are in the process of simplifying. First, we have an Internal Wiki[3] that everyone in lab can access and edit. However, you can only edit the internal wiki from on campus, which makes it harder to use on a regular basis. In addition, only authorized users can see its contents. So, this internal wiki may not have a good function beyond being a testing ground and we will abandon it soon since it is not practical. Second, we have a Public Wiki[4] that mirrors much of the same content as the Internal Wiki, but it is public facing and can be edited from anywhere. Please remember that it is important to **never put private or sensitive information on the wiki**.

Eventually, all of the information on the Public Wiki will be publicly accessible, which means you can share a link with a colleague that describes how you did a specific thing (e.g., converting your data to BIDS format) rather than having a meeting with them. Of course, meetings are great and helpful, but we tend to have way too many meetings in academia, and often an email or wiki page will suffice for procedural information or step-by-step how-to guides.

Open Science Framework

We also use the Open Science Framework (OSF) for organizing (and sharing) materials and documentation related to our projects. Your OSF project pages can serve as a lab notebook and centralized storage area for sharing things related to your project (e.g., posters and preprints). When making your project page, please follow the guidelines on the main Project page: https://osf.io/myxet/wiki/home/. If someone contacts me for additional information about one of our projects, my hope is that I can easily find the correct OSF page and send them a shareable link.

[3] https://smithlabinternal.cla.temple.edu
[4] https://smithlabwiki.cla.temple.edu

5 Science

5.1 Scientific integrity

You have a responsibility to me, the institutions that support our work, and the broader scientific community to uphold the highest standards of scientific accuracy and integrity. By being in the lab you agree to adhere to professional ethical standards. There is never an excuse for fabricating or misrepresenting data. If you have any questions, or in the unlikely event that you have concerns about a research practice you have seen in the lab, please talk to me immediately.

It is also important that you prioritize the accuracy of your work while in the lab. Unintentional errors due to inattentiveness or rushing can be extremely damaging and produce results that turn out to be incorrect. Although there is always a pressure for a high quantity of research, it is critical that everything we do is of the highest quality. Mistakes will happen, so please double-check your work frequently. In many cases, multiple people will double-check a data set or workflow to ensure no mistakes have crept in along the way.

When collecting data, please use simple checklists to ensure that everything gets done and has someone who is responsible for each specific aspect of your protocol. **You should also analyze data as soon as you collect it to ensure that it was collected properly.**

5.2 Open, accurate, and reproducible science

For lab manuscripts, we go through a paper checklist created by Jonathan Peelle[1] that includes sections on open science and statistics to encourage us to continually keep these issues in mind.

Open science

We are working towards putting all stimuli, data, and analyses online and linked to each research publication. The idea is not to simply tick a box of "open science", but to make these resources readable and useable for reviewers and other researchers. In service of this:

[1] https://github.com/jpeelle/papercheckl ist

- All files should be named and organized according to the Brain Imaging Data Structure (BIDS) standard.
- Items need to be documented and described. At a minimum, each collection should have a README file[2] at the top level that provides details about the item in question (such as a set of stimuli or an analysis).
- GitHub pages should have a README.md file that describes what is in the repository. You can also use the GitHub wiki (and link to your project OSF). In all cases, make sure your documentation provides enough information for an outside reviewer/collaborator to reproduce what you did without consulting you.
- Code should be tested, bug-free, and (helpfully) commented. For tips on documenting code, check out this recent "10 Simple Rules" paper by Benjamin Lee.
- Links should be permanent, ideally a DOI—which we can obtain through the OSF, FigShare, or Zenodo.

In pursuit of this high level of organization and documentation, lab members will frequently be asked to review and error-check lab materials (including text lists of stimuli, code input/output, etc.). Lab members creating stimuli or conducting research projects should organize them from the outset in a way that is conducive to eventual sharing (GitHub, OSF, Jupyter notebooks, etc.).

Accurate science

A key part of accuracy is anticipating and avoiding "adverse events" (including near misses), and creating structures in the lab that facilitate a high level of reliability.

Inspired by a blog post on reliability in the lab[3] we have a page on the lab wiki for documenting adverse events. Such events will first be posted to the 'adverse-events' channel in Slack and then be discussed at lab meeting to make sure none slip through the cracks. Examples of adverse events include:

[2] http://jonathanpeelle.net/making-a-readme-file

[3] http://jeffrouder.blogspot.com/2015/03/is-your-lab-highly-reliable.html

- Any of the lab computers malfunctioning
- Any data analysis/transfer procedure not working correctly (e.g., downloading imaging data from XNAT)
- Not being able to find the installation disc for a software program
- Nearly running out of money to pay participants (this counts as a "near miss" which we also need to discuss)

As a lab member it is your responsibility to be aware of times when things don't go as planned and bring these to the attention of the rest of the group. Even better, let's all work together to find ways of preventing such occurrences in the future.

Checklist for scientific publications

Anyone writing a manuscript (including an honors project) should consult the Peelle Lab Paper Checklist [4] and discuss with me before submitting your manuscript (ideally, early on in your project!).

5.3 Participants

Our research is made possible by the goodwill and generosity of our research participants. We not only need people to participate in our studies, but to try hard to do their best, and potentially return for a future study. Caring for our participants is one of the most important parts of the lab and something in which every member plays a role.

The most important thing is that participants must always be confident that we are professional and treating them with respect. All of the specific advice supports these goals. In general, it is helpful to model our interactions off of other professional situations, such as a doctor's office.

For all participants:

- Dress professionally: No jeans, t-shirts, sweatshirts, sneakers, or sandals. When in doubt, ask! This is true for both young and older adults—dressing professionally will help undergraduate participants to take the experiment seriously.

[4] https://github.com/jpeelle/paperchecklist/blob/master/checklist.pdf

Table 5.1: Terms associated with research studies

Instead of saying:	Say this:
experiment	study, research study
subject	volunteer, participant
test	task or screening or game

- Answer the phone, and return all phone calls (and emails) promptly. Tell participants who you are, and where you are calling from: "Hello, this is [name] calling from the Smith Lab at Temple University. I am returning your call from yesterday regarding a research study."
- Task instructions must be extremely clear. Ensure that the participant understands that their choices have real consequences for the money they take home (i.e., their decisions must be incentive compatible).
- Be prepared to answer questions. If you don't know the answer, it is completely fine to ask the participant if someone else can call them back. You are then responsible for making sure this happens quickly.
- Arrive at least 30 minutes prior to testing time to make sure equipment and paperwork are all set, and to be around in the event the participant shows up early. Everything should be set up before the participant arrives. For people coming from off campus, you should be at the designated meeting spot 15 minutes before the agreed upon time.

For non-students, and especially older adults, always use a title (Dr./Ms./Mr.) and a participant's last name when addressing them. If you aren't sure how to pronounce their name, ask them.

We can also help participants feel more at ease by being thoughtful about the language we use. For example, participating in a "research study" is more friendly than being a "subject" in an "experiment" (e.g., see Table 5.1).

Refer to the lab wiki for specific information on recruiting, scheduling, and testing participants.

5.4 Subject payment

We pay our subjects in pre-filled Visa debit cards. One of the lab members checks out the possible cards, and then people testing participants will take out what they need to pay the subjects. Each subject signs a payment sheet and receipt booklet to document that they got paid. Naturally, it is very important that we keep track of this money.

5.5 Testing locations

- Some of our shared testing locations are shared with other researchers, so it is very important that we are good citizens when it comes to using these spaces. Being a good citizen includes scheduling the time as required, not using more than our allotted time, and leaving the room as clean as we found it (or preferably cleaner).
- No Smith Lab equipment should be left in shared testing rooms—this includes laptop, stimulation device, etc. (It all lives in the lab.)
- No one should test a subject without signing out the testing room.

5.6 Lab notebook

Anyone conducting an independent research project should have a lab notebook for keeping track of discussions, experiments, and taking notes. You should use an electronic lab notebook (ELN) as your primary lab notebook. This ELN could be a wiki page under the "Notes and Documentation" component on your OSF Project page (this wiki page can be private and can be set up as diary with date entries[5]).

5.7 Computers and data

General guidelines

- Testing laptops should never leave the lab except for testing. Always sign out the computer and any other equipment on the calendar.

[5] http://help.osf.io/m/collaborating/l/524109-using-the-wiki

- Do not install extraneous software or store personal files on the computers.

Backing up your files and data

Always assume that as soon as you turn your back the computer on which you have been working will explode.Thinking such dire thoughts will make it easier to follow these guidelines:

- If you save files to the shared lab drive (the S drive), backup will automatically happen. You can also use Google Drive and their File Stream program (we have unlimited space on our Team Drive).
- Data from participants is irreplaceable and should be removed from testing computers immediately following testing and onto Google Drive.
- **Be sure to constantly push changes to scripts up to GitHub**. Your scripts and code are almost as valuable as participant data. There is no excuse for losing scripts or code, so please use GitHub for everything.
- When working on manuscripts, be sure to use Dropbox, Google Drive, or Box so that your files are backed up and accessible anywhere.

5.8 Authorship

Many professional associations and journals have published authorship guidelines, which are worth looking at (for example: ICMJE). Many of these guidelines call for a sustained intellectual contribution; and in my view, there are two key requirements to being an author:

1. Contribute to the intellectual scientific content of the manuscript in a meaningful way.
2. Contribute to the writing of the manuscript in a meaningful way.

Note that "collect data", "analyze data", or "fund the study" aren't on the list. Those are very important parts of a paper, but do not (on their own) warrant authorship. Being an author means understanding the content and being willing to take public responsibility for the work: a large part of this

concerns the theoretical motivation and implications of the research. In practice, theoretical contributions are most often made through helping with the study design, data interpretation, and discussion about a topic.

Also note that being an author on a poster (or abstract) at a scientific meeting does not automatically make you an author on the paper. The thresholds for authorship on a poster vs. a paper are very different, and I will often be much more inclusive when it comes to posters coming out of the lab[6].

This doesn't mean that as an undergraduate student or research assistant you can't be an author on a paper. Of course, if the study goes well and you are involved, you might be. However, you will need to know enough (or learn enough) about the subject to understand what we've done, and to significantly contribute to the writing. I won't add you to a paper just because I like you and want to help you out; I *will* consider giving you the opportunity to be involved to a degree that you have earned authorship, if you are willing to take on the challenge.

Typically one person will take on the main responsibility for writing the paper, and this person will be the first author. However, as noted above, I expect all authors to contribute to the writing of the manuscript. This contribution could take the form of helping structuring arguments, identifying key citations, and developing paragraph-level outlines. Once we have clear, paragraph-level outlines, it is easier to split some of the writing responsibility (e.g., a minor author might be more able to write a specific paragraph in the Discussion, if it is more within his/her expertise).

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. In other words, the same approach I take with you.

It is worth pointing out that there are many views regarding authorship, and within any view there are always borderline cases. When collaborating with other people, I tend to defer to their own lab culture. However, it's important that within our own lab, we are clear on the expectations for authorship and transparent about authorship discussions and decisions. If you ever have any questions, please come speak to me.

[6] In general, anyone who has helped with data collection/analysis over the course of at least one semester may be included as authors on posters.

6 Other Important Information

6.1 Recommendation letters

It is part of my job (and, thankfully, quite often a pleasure) to write letters of recommendation for people in the lab. Please give me as much notice as possible, and make sure I know the deadline, format (electronic? printed?), official name of the organization, what you are applying for, and so on. Please also send along a current CV.

If you are an undergraduate, I will write your letters on my own. For more senior lab members, I will also write your letters on my own, but please send me a draft of the letter (which I will extensively modify). The first few times you do this it will probably feel awkward. However, keep in mind that your goal is to make it as easy as possible for a letter writer (in this case, me) to complete the task by the deadline and without error. Even if I re-word a lot of the letter—which I probably will—it will still have the name of what you are applying for and details regarding how long I have known you, the projects you have worked on, and so on. This is extremely helpful in jogging my memory and will give me more time to focus on saying good things about you. Don't worry about being too "braggy"; I have no problem toning things down if need be.

Like everything else, communication is key, and when in doubt, ask!

6.2 Staying on top of the literature

Anyone who is trying to make a sustained intellectual contribution to a project (see §5.8 on page 31) should be spending a good chunk of time each week reading and thinking about the literature tied to that project. Dozens of relevant papers come out each month, so it becomes challenging to read everything. At Temple and in the Smith Lab, we have regular discussions of journal articles. These discussions happen through our weekly lab meeting, the Neuroeconomics Journal Club, the Neuroimaging Methods Journal Club, and the Maladaptive Motivated Behavior Seminar series. Please attend these meetings and contribute to the discussions. When you're reading papers (or even just skimming abstracts), think about the following questions:

- Which papers are "good" and "bad" (and why)? This question will be

hard to answer at first. That's ok. You will get better with practice. In fact, you can now target this critical thinking skill by reading journals that publish the reviewer reports alongside the paper (e.g., *eLife, European Journal of Neuroscience, Nature Communications*).

- How exactly do the papers relate to our lab in general and to your project(s) specifically?
- How do different papers agree/disagree with each other?
- How do the papers contribute to big-picture questions in the field?
- What questions do the papers create?

There are many different strategies for staying on top of the literature. For years, I've received Table of Content (TOC) emails from various journals each time there's a new issue of the journal. Although this strategy works well for tracking new content and coming across articles you might not normally read, it is easy to neglect these TOC emails and fall behind, especially if you're overzealous and sign up for too many journals. Recently, I've started getting a lot of information from Twitter, PubCrawler alerts, and from Google Scholar alerts for specific authors—and I share much of what I see directly to the 'cool-new-papers' channel on Slack (you should share what you see, too!).

But, all of these articles can really be overwhelming. So, how can you manage all of this information? Here are my recommendations:

- **Stay calm, and read on!** Budget time for reading papers and synthesizing information, especially when you are in the early days of exploring a new topic or question.
- Set up alerts for *some* journal TOC emails and use PubCrawler and Google Scholar for term- or topic-specific alerts. Also follow folks on Twitter. There are lots of smart people on Twitter who act as filters and disseminate articles (and other information) that you may find useful.
- Use reference managing software, such as Mendeley or Zotero (both are free). These programs will help you collect references, add notes, and organize them however you like. You can (and should) also integrate programs like Mendeley and Zotero with your OSF project page.

- Add papers you want to discuss at lab meeting to our lab Mendeley page.
- Set aside time each week to review what you've added to Mendeley or Zotero and think about how those papers fit together.
- Force yourself to write a cohesive paragraph each month that connects the dots on some of your favorite recent papers. You should be able to use this paragraph in a future class or paper; but even if you can't immediately, you will have at least spent some time practicing your writing and getting your head around multiple papers.

The bottom line is simple: You need to read a lot and be able to synthesize different pieces of information. In science, everything is connected; but in order to see those connections—or design the experiments that will create the connections—you must know the literature like the back of your hand.

6.3 Learning to code

Computer programming (i.e., coding) is an essential skill that all students within psychology and neuroscience should develop[1]. Being comfortable with computer programming—especially Python and Matlab—will enable you to develop your own task scripts and wrangle data.

Yet, learning computer programming can be a challenging task. In most situations, you will not learn how to code from psychology/neuroscience classes at Temple. Instead, you will learn from online training materials, software manuals/tutorials, other trainees, and your own experiences. Having a specific problem or goal in mind (e.g., program a new task or analyze a new dataset) helps considerably.

While you're learning to code, keep the following points in mind:

- Be patient and persistent. No one "gets it" immediately, and you may have to work through several errors before arriving at a solution.

[1] http://www.russpoldrack.org/2016/05/advice-for-learning-to-code-from-scratch.html

- Be careful and obsessive. Most coding mishaps occur because of a tiny typo. If you're careful and thorough, you will catch these mistakes and save yourself time and frustration.
- Understand input and output for all scripts you use.
- Have a basic sense of how each line of code relates to other lines of code in your script. Everything is connected.
- Paths errors are common. Avoid them by shoring up your understanding directory structures. Every input and output file lives in a specific location that you control.
- Avoid staring at the same error for more than 30 minutes. If you haven't solved it in 30 minutes, switch to some other work or take a walk outside.
- **Don't be shy about asking for help.** Other students/trainees and internet forums (e.g., NeuroStars) are great places to find help. You can also post a quick message to the 'help-with-analyses' channel on Slack.

Although learning to code can be a daunting and frustrating task, it is well worth the investment. Coding is a skill that will generalize well beyond the laboratory, particularly industry positions involving data science.

7 Frequently asked questions

Why do we have so many options for communication and documentation?

We use email, Slack, Asana, a lab wiki, and OSF. Each one has a distinct role and function in lab. I also encourage everyone to read (and engage with) multiple neuroimaging analysis forums (e.g., NeuroStars, FSL mailing list, etc.). This may seem like a lot, but I think it's the bare minimum until there's one package/platform that does everything efficiently (suggestions are welcome!). Indeed, I long for the day when there's one lab/project management tool that combines the best of everything into one tidy package, much like *FMRIPREP*[1] when it comes to preprocessing in neuroimaging!

How are PhD students supported in Psychology?

Students in our program have 9-month stipends. These stipends are supported in three different ways: 1) TA-ships (20 hrs/week); 2) RA-ships (20 hrs/week); and 3) fellowships (e.g., NSF, NRSA, University). Similar mechanisms exist to support students for some or all of the summer. In some cases, students in our lab could be assigned to an RA position in a different lab due to funding, need, and/or interest. At the end of the day, all students are expected to be active researchers and meet program requirements for research, even if they have to TA every semester they are in the lab. Of course, my hope is that I can help students win fellowships or support students on grants because having additional time to do research will lead to a more competitive skillset and publication record by the time you leave the lab.

Can I be successful if I don't like to code?

I'd like to think that everyone can be successful in my lab, but I am convinced that learning to code—and being comfortable with troubleshooting technical issues—will create opportunities and help you have more fun than those who do not become comfortable with coding.

What if I want to leave academia?

There's absolutely no shame in leaving academia[2,3]. I am more than

[1] Estaban et al., (2018). FMRIPrep: a robust preprocessing pipeline for functional MRI.
[2] https://www.nature.com/articles/d41586-018-05838-y
[3] https://sasconfidential.com/2016/02/11/its-ok-to-quit-your-phd/

happy to connect you with friends who have left academia for other pursuits (e.g., data science) at various points in their career (e.g., pre-doc and tenure-track job).

If you are looking at a shared version on Google Drive, please write additional questions here:

8 Glossary

IRB (Institutional Review Board)

The IRB oversees human subjects research and makes sure that research is conducted in a way that protects subjects' safety and privacy. Our lab submits protocols to the IRB which describe the research we want to do; the approved protocol is linked to a particular consent form that subjects sign when they participate, informing them about the study.

PI (principal investigator)

In the context of a grant, the PI is the person responsible for making sure the proposed research gets done. More broadly it refers to a researcher who has their own research group or lab (i.e., someone who would be in a position to be a PI on a grant, regardless of whether or not they are currently funded).

study

In our lab, a "study" refers to an experiment (such as "Deception.01') that falls under an umbrella IRB project[1]. This term might be used interchangeably with the term "project".

If you are looking at a shared version on Google Drive, please make a list of terms you'd like defined (feel free to include a suggested definition):

[1] Note that we currently have one umbrella IRB that covers everything the lab could possibly do—and I would like to keep it that way.

Reading test

Lab members: If you are looking at a shared version on Google Drive, please add your name below to indicate you have read the current version of the manual and agree to follow these policies. Note that the Lab Manual is easiest view/read with the electronic version since it contains many hyperlinks. Also note that latest version of the lab manual is always disseminated to the lab whenever there are substantive updates or near the beginning of academic year[2] and summaries of key points can always be added to the lab wiki.

Date	Printed name	Signature

[2] The full version history of the lab manual is viewable on GitHub.