

# Lab Manual

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## Welcome!

Welcome to the **Complex Memory Lab (CML) manual**. We are a research group at Washington University in St. Louis, in the Department of Psychological & Brain Sciences. If you are reading this because you have just joined the lab, we are thrilled to have you on the team! Our aim is to provide a great environment for learning about cognitive neuroscience, developing a multitude of skills, conducting novel research, establishing connections in and outside the lab, and importantly, having fun doing science.

The purpose of this manual is to lay out my (PI: **Zach Reagh**) vision for the lab's structure, to make clear my commitments to you as a trainee, and to set some guidelines for mutual expectations and how the lab operates. This manual was inspired by several others, and borrows heavily from them (especially [this one](#)). It's also a 'living document', and is thus a work in progress. If you have ideas about things to add or suggestions, talk to me (Zach) or the lab manager (**Sarah Morse**).

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## Expectations and Responsibilities

### Everyone

#### *Big Picture*

Science is hard. But it's also fun, and often deeply rewarding. We need to make sure that everyone experiences a positive, engaging, hostility-free, challenging, and rewarding lab environment. To maintain that environment, we all have to do a few things.

- Do work that you're proud of, and passionate about. Science can be a grind, and for it to be worth it, you've got to care. If you feel burnt-out, *please* reach out to me.
- Scientists have to be careful. Don't rush your work. Think about it. Incorporate sanity checks. Ask others to check for mistakes.
- If you do make a mistake, you should definitely tell anyone affected (e.g., collaborators) immediately. This is especially critical when it comes to published work. We admit our mistakes, and then we correct them and move on. If you do this in an honest and dignified way, it's actually very good for our field.
- Yes, there is pressure to produce results and publish them. But we must do this *honestly*. It is never ok to plagiarize, tamper with data, make up data, omit data, or 'fudge' results in any way. Science is about finding out the truth, and 'null' or unexpected results are still important. This can't be emphasized enough: *academic misconduct will not be tolerated!*

- Support your fellow lab-mates. Help them out if they need help (even if you aren't on the project), and let them vent when they need to. By that same token, ask for help when you need it. At its best, science is collaborative, not competitive. We are a team.
- Respect your fellow lab-mates. Respect their strengths and weaknesses, respect their desire for quiet if they need it, and for support and a kind ear when they need that. Respect their culture, their religion, their beliefs, their sexual orientation. Disagreements, misunderstandings, and minor issues may arise. However, discriminatory behaviors and sexual harassment of any kind will not be tolerated. These instances will be reported, and will possibly result in individuals being asked to leave the lab.
- If there is any friction or hostility in the lab, no matter how subtle, something should be done about it immediately. The CML will be a safe and comfortable environment, and disrespect or rudeness has no place in our group. If you don't feel comfortable confronting the person in question, tell Zach or the lab manager.
- Stay up to date on the latest research, by using RSS feeds and/or getting journal table of contents. Also consider following scientists in the field on Twitter. Part of being a scientist is keeping your finger on the pulse!
- Have a life outside of the lab, take care of your mental and physical health, and don't ever feel bad for taking time off work to recover.
- If you're struggling, please talk to someone (always feel free to tell Zach!). Your health and happiness come first. It's ok to go through hard patches – we all do.
- It is extremely important to Zach that you feel supported and satisfied with your mentorship. If you are unhappy, *please* tell him! You are always welcome and encouraged to provide him with feedback. If you have a problem with Zach and are comfortable telling him about it, do! If you aren't comfortable with that, please tell the lab manager. For serious issues, feel free to speak with another member of the Department.
- As your PI, Zach is committed to helping you thrive. Most directly, this means your career, but he is also here to care about and support you as a person. There has been some debate in academia about the extent to which your PI should also be a friend. Appropriate boundaries are important, and must be respected by all parties. However, you are in no way prohibited from reaching out to Zach for help, advice, or support.
- Academia can feel different from a regular day-job, but it's still a job. This is discussed in more detail below, but in general, you should treat doing lab work with the same respect that you would treat any other position.

### *Small Picture*

There are a few day-to-day things to keep in mind to keep the lab running smoothly.

- Show up to your meetings, show up to run your participants, show up to your classes, and show up to lab meetings on time. If you need to be late, or to cancel a meeting or scheduled appearance, do it respectfully and as soon as possible.
- If you're sick, stay home and take care of yourself. Because you need it, and also because others don't need to get sick. Just make sure you reschedule your meetings and

participants for the day (or the next couple of days) as soon as you can. This also goes for sick family members (including pets) who need your care.

- You are expected to put in an appropriate amount of work for the lab per week. For grad students, postdocs, and staff, this means around 40 hours per week. For undergraduates, this will likely be laid out based on course credit. You may work 'overtime' if you choose to, but it is *not* expected of you. Weekends are yours to enjoy, unless you have an unavoidable deadline approaching or badly need to catch up due to extended absence. You will *never* be expected to come into lab on holidays. Zach may rarely ask something from you outside of your normal work times (e.g., during crunch time for a grant proposal), but *you are not obligated to comply with such a request, nor will it be held against you if you cannot or would prefer not to do so.*
- Not everyone works optimally on a 9-5 schedule, and you may figure out an alternative schedule you feel works best for you (within reason – discuss with Zach if you would prefer something particularly atypical). Furthermore, it is okay to take a 'writing day' at home or at a coffee shop here and there. However, being physically present is important, and you are expected to be in the lab regularly throughout the week. Zach is not the type to 'hawk' over work hours, but please respect your position and do not abuse the PI's trust. (Note: the lab manager may need to keep more regular hours than trainees. Also note: this situation is different when we are, for example, in the middle of a global pandemic.)
- Make sure the door to the lab is locked if no one is inside. No exceptions. Our lab has expensive things sitting around, and it would be very bad if they were stolen. Turn off the lights if you're the last one leaving for the day.
- Keep the lab clean. Eating in lab is fine, but clean up food waste, crumbs, spills. Put lab equipment back where you found it. Keep common areas uncluttered. Take pride in and ownership of your lab space.
- The dress code is casual. You can dress more formally if that's your style, but it is not expected of you. When representing the lab – interacting with participants or presenting your work – do not dress too casually (jeans are fine; pajamas are not).
- When running participants, show up 15-20 minutes early for setup, greeting the participants, and any possible damage control with unexpected issues. You might be surprised by how often you end up needing this 'buffer' time.
- Problems with lab resources or administrative issues (e.g., computers, experimental materials, furniture, protocol approvals) need to be brought to the lab manager as soon as possible. It is not the lab manager's job to look over everyone's shoulder, so communication is key.

### Principal Investigator

All of the [above](#), and you can also expect me to...

- Support you (scientifically, emotionally, financially)
- Give you feedback on a timely basis, including feedback on project ideas, conference posters, talks, manuscripts, figures, grants

- Be available in person and via e-mail on a regular basis, including regular meetings to discuss your research (and anything else you'd like to discuss)
- Give my perspective on where the lab is going, where the field is going, and tips about surviving and thriving in academia
- Support your career development by introducing you to other researchers in the field, promoting your work at talks, writing recommendation letters for you, and letting you attend conferences as often as finances permit
- Help you prepare for the next step of your career, whether it's a post-doc, a faculty job, or a job outside of academia (the nature of this help may vary from person to person, and we can figure out what you specifically want or need)
- Care for your emotional and physical well-being, and prioritize that above all else

### Post-Docs

All of the [above](#), and you will also be expected to...

- Develop your own independent line of research
- Help train and mentor students in the lab (both undergraduate and graduate) when they need it – either because they ask, or because I ask you to
- Present your work at departmental events, at other labs (if invited), and at conferences
- Learn about and apply for grants and fellowships (e.g., NRSA, K99). Though I will only hire you if I can support you for at least one year, it's in your best interest to get experience writing grants – and if you get them, you'll be helping out the entire lab as well as yourself (because you'll free up funds previously allocated to you)
- Apply for jobs (academic or otherwise) when you're ready, but no later than the beginning of your 4<sup>th</sup> year of post-doc. If you think you'd like to leave academia, that's completely ok – but you should still treat your post-doc seriously, and talk to me about how to best train for a job outside academia
- Challenge me (Zach) when I'm wrong or when your opinion is different, and treat the rest of the lab to your unique expertise

### Graduate Students

All of the [above](#), and you will also be expected to...

- Develop your dissertation research. Ideally, your dissertation should have at least 3 substantial experiments that answer a big-picture question that you have. Much of your work needs to be done independently, but remember that others in lab (especially Zach!) are there to help you when you need it
- Help mentor undergraduate students in the lab when they need it – either because they ask, or because I ask you to. Undergrads can also help you collect data. Treat this mentorship seriously, and make sure you are helping undergrads develop skills and knowledge just as they are helping you progress in your research.

- Present your work at departmental events, at other labs (if invited), and at conferences
- Learn about and apply for grants (e.g., NRSA or NSF grants). It's a valuable experience, and best to get it early.
- Think about what you want for your career (academia – research or teaching, industry, science writing, something else), and talk to Zach about it to make sure you're getting the training you need for that career
- Make sure you meet all departmental deadlines (e.g., for your exams and thesis) – and make sure Zach is aware of them!
- Prioritize time for research. Coursework and TAing are important, but ultimately your research gets you your PhD, helps you build a network with other scientists, and prepares you for the next stage of your career.

### Lab Managers

All of the [above](#), and you will also be expected to...

- Work on your own research projects (developed with Zach's and others' help)
- Help new lab members adjust to the lab by answering whatever questions they have that you can answer. If you can't answer, direct their questions to Zach
- Maintain IRB protocols for the lab (writing them, renewing them), archive old consent forms, keep any required paperwork up to date and organized
- Assist the PI with grant application materials, when asked (note: unless a truly exceptional circumstance arises, you *will not be expected to do this during 'off' hours*)
- Oversee the hiring, scheduling, and training of undergraduate research assistants
- Maintain the lab Slack, the lab website, and the lab wiki. Update, the lab manual, add lab events to the lab calendars, manage the lab Dropbox, check the official lab e-mail address ([complexmemlab@gmail.com](mailto:complexmemlab@gmail.com); take care of any e-mails that you can, forward the rest to Zach)
- Give new lab members access to the lab wiki, lab GitHub, lab calendars, and add their experiments to the lab Box
- Assist with the recruitment and scheduling of participants, including patients
- Assist lab members with data collection and analysis as needed (behavior, fMRI, and/or patient studies)
- Keep lab meetings running smoothly – 5-10min lab business updates at the beginning of every meeting, and making sure we stay on track with timing
- Be in the lab on a regular basis – your presence in lab is essential in a fairly unique way, and you are likely to be needed by another lab member at some point during the day. Some flexibility in work hours is fine, but in general, you should plan to be present when the 'critical mass' of lab members are around.

### Undergraduate Students

All of the [above](#), and you will also be expected to...

- Assist other lab members with data collection and analysis (unless you are working on your own independent project under the mentorship of another lab member, in which case you should work on that)
- Develop your weekly schedule by talking to your graduate student mentor or your post-doc mentor. You should be coming in every week, and scheduling enough time to get your work done. If you feel that your time is not being used in the lab effectively, tell your mentor. If you have done so and any issues persist, tell Zach or the lab manager.
- If you are earning course credit for research, you should also attend lab meetings when your schedule permits, present at one of these lab meetings, and submit a write-up of your research by the end of the semester
- Complete feedback forms at the end of each semester letting the PI and lab manager know how felt about your research experience, laying out your goals, and suggesting areas for improvement

## Code of Conduct<sup>1</sup>

### Essential Policies

The lab, and the university, is an environment that must be free of harassment and discrimination. All lab members are expected to abide by the Washington University in St. Louis policies on discrimination and harassment, which you can (and must) read about [here](#). Essential policies of Washington University in St. Louis can be accessed [here](#).

The lab is committed to ensuring a safe, friendly, and accepting environment for everyone. We will not tolerate any verbal or physical harassment or discrimination on the basis of gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, race, or religion. We will not tolerate intimidation, stalking, following, unwanted photography or video recording, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome sexual attention. Finally, it should go without saying that lewd language and behavior have no place in the lab, including any lab outings.

If you notice someone being harassed, or are harassed yourself, tell Zach immediately. If Zach is the cause of your concern, then reach out to the department chair (**Dr. Deanna Barch**) or another trusted faculty member in the department.

### Taking Photos & Videos

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<sup>1</sup> This was adapted from the code of conduct found [here](#) and [here](#).



We respect the privacy and comfort of lab members by only taking photos or video recordings of them with their explicit knowledge and consent. To avoid ambiguity about when a lab member is or is not aware of photos being taken, we ask that everyone obtain consent from lab members before taking photos or videos, and obtain consent again before posting any images on social media. This is done to respect others' privacy and acknowledge that people have varying degrees of comfort related to being photographed and especially with having those photographs shared on social media.

The goal of this is to foster an environment where everyone feels safe to be who they are, take risks, and have fun, without worry or self-consciousness. If someone wants to be photographed doing something fun or silly in lab events, and consents to be photographed, by all means go ahead! Just please respect the privacy of those who do not want that.

On a related note, you cannot ever photograph your participants during an experiment. We do not have IRB approval to do this. If you would like a photograph of someone demonstrating your experiment, ask a lab member if they would feel comfortable being photographed while demonstrating what a participant does in an experiment.

## Scientific Integrity

### *Research (Mis)conduct*

The lab, and Washington University in St. Louis, is committed to ensuring research integrity, and we take a hard line on research misconduct. We will not tolerate fabrication, falsification, or plagiarism. Read Washington University's policies on the conduct of research carefully [here](#).

A big problem is why people feel the need to engage in misconduct in the first place, and that's a discussion that we can have. If you are feeling pressured to succeed (publish a lot, publish in high impact journals), you should reach out to Zach and we can talk about it – but this pressure is something we all face and is **never** an excuse to fabricate, falsify, or plagiarize. Also, think about the goal of science and why you are here: you're here to arrive at the truth, to get as close as we can to facts about the brain and behavior. Not only is research misconduct doing you a disservice, it's also a disservice to the field. And it risks your entire career, and the careers of those you work with. It is never right and never worth it. Don't do it.

### *Reproducible Research*

If you gave someone else your raw data, they should be able to reproduce your results exactly. This is critical, because if they can't reproduce your results, it suggests that one (or both) of you has made errors in the analysis, and the results can't be trusted. Reproducible research is an essential part of science, and an expectation for all projects in the lab.

For results to be reproducible, the analysis pipeline must be organized and well documented. To meet these goals, you should take extensive notes on *each step* of your analysis pipeline. This means writing down how you did things every step of the way (and the *order* that you did things), from any pre-processing of the data, to running models, to statistical tests. It's also worth mentioning that you should take detailed notes on your experimental design as well. Additionally, your code should also be commented, and commented clearly. We all know what it's like to sit down, quickly write a bunch of code to run an analysis without taking time to comment it, and then having no idea what we did a few months down the road. Comment your code so that every step is understandable by an outsider. Finally, it is highly encouraged that you use some form of version control (e.g., Git in combination with GitHub) to keep track of what code changes you made and when you made them, as well as sharing code with others. The lab's GitHub is <https://github.com/complexmemlab>.

Reproducibility is related to replicability, which refers to whether your results can be obtained again with a *different* data set. That is, if someone ran your study again (with a different group of participants), do they get the same results? If someone ran a conceptually similar study, do they get the same results? Science grows and builds on replicable results – one-off findings don't mean anything. Our goal is to produce research that is both reproducible and replicable.

### *Authorship*

Like other labs, we will follow the 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."*

At the start of a new project, the student or post-doc taking on the lead role can expect to be first author (talk to Zach about it if you aren't sure). Zach will typically be the last author, unless the project is primarily under the guidance of another PI and Zach is involved as a secondary PI – then Zach will be second to last and the main PI will be last. Students and post-docs who help over the course of the project may be added to the author list depending on their contribution, and their placement will be discussed with all parties involved in the paper. If a student or post-doc takes on a project but subsequently hands it off to another student or post-doc, they will most likely lose first-authorship to that student or post-doc, unless co-first-authorship is appropriate. Generally, authorship implies a significant contribution. Zach has a fairly inclusive view of what this means, and is fine with undergraduate authors, provided they collected a

significant amount of data or were involved in designing the experiment or contributing key analyses. All of these issues can and should be discussed openly, and you should feel free to bring them up if you are not sure of your authorship status or want to challenge it. There is a logical, mutually satisfactory solution to authorship issues the vast majority of the time, but communication is key.

### *Old projects*

If a student or post-doc collects a dataset but does not completely analyze it or write it up within 3 years after the end of data collection, Zach will re-assign the project (if appropriate) to another person to expedite publication. If a student or post-doc voluntarily relinquishes their rights to the project prior to the 3-year window, Zach will also re-assign the project to another individual. This policy is here to prevent data (especially expensive data, e.g., fMRI) from remaining unpublished, but is meant to give priority to the person who collected the data initially. In general, the original lead experimenter can expect to be an author on any resulting papers, and the 'positioning' of authorship will be a matter of open discussion among contributors.

### Human Subjects Research

Adherence to approved IRB protocols is *essential*, and non-adherence can lead to severe consequences for the entire lab (i.e., we may lose permission to run any research on human participants). All lab members must read and comply with the IRB consent form and research summary for any project that they are working on. If you are not on the IRB, you cannot run participants, look at the data, analyze the data, or be in any way involved with the project.

Lab members must complete [CITI Training](#) and save their certificate. To be added to an existing IRB, talk to the lab manager and present them with your CITI certificate. If your project does not fall under the scope of a current IRB protocol, talk to Zach and the lab manager about writing a new one or filing an amendment to an existing one. You *must* ensure that you have IRB approval to run your study before you begin (which means that you either submitted an IRB protocol that got approved, or your name was added to an existing or amended IRB).

If a participant falls ill, becomes upset, has an accident with lab equipment, or experiences any problems while you are conducting your research, you must notify Zach and the lab manager as soon as possible. We may need to report this information to the IRB and/or funding agencies.

### **Lab Resources**

#### Wiki

The lab wiki (<https://github.com/complexmemlab/wiki/wiki>) is, well, a wiki for the lab. It has all of the information you need to get started, including tasks that need to be done upon arrival, day-

to-day housekeeping duties, forms and flyers, programming and stats tips, information about accessing the high-performance computing cluster and lab servers. Additionally, lab members have individual pages, and projects have pages. Edit it when you obtain information that will be useful for others to know! Ask the lab manager to be added as a member.

### Slack

Slack will be used as the primary means of lab communication. The address for the slack is [complexmemorylab.slack.com](https://complexmemorylab.slack.com).

*Notes for the CML Slack.* When posting messages or looking for updates, check the appropriate channel: #general for lab announcements, #lab\_meeting for notes or communication related to lab meetings, #papers for sharing links to lab-relevant papers and discussing them, #programming for sharing wisdom on code writing or asking (and answering) the coding questions of others, #mri for sharing wisdom on fMRI data collection / analysis or asking (and answering) the fMRI questions of others, and #random for non-work-related chatting that is best kept out of the work-related channels. There are other channels as well – explore!

Try to keep each channel on topic, so that people can subscribe only to the channels that concern them. For messages to one person or a small group, use direct messages. If you have to send attachments (e.g., papers) or send messages that include out-of-lab recipients, use e-mail. If it's an emergency and Zach isn't responding on Slack, e-mail him or text/call him.

Full-time lab members should install Slack on their computers and/or phones. Part-time lab members should also check Slack regularly. You should of course feel free to ignore Slack on evenings and weekends – and Zach probably will, too!

### Box

The lab has a shared Box account that is used to store all lab-related documents, data, code, manuscripts, grants... You get the idea. Please respect the general file organization structure and store your personal lab-related documents in your folder in the "Personal Folders" directory. This gives us several advantages over traditional data storage, including version control, continued access to files after an individual leaves the lab, and easy access to experiment code, so that you can run your experiment on any computer that has access to the lab Box folder. The lab Box is also used to store documents and files for general lab use (e.g., IRB documents, stimuli, demographics forms, etc), though the lab wiki will also have that information. If you would like to set up a public Box folder to share information with collaborators, please talk to the lab manager. The structure of our lab Box folder will also evolve as the lab grows and needs change. Please discuss proposed changes to the organization and structure of our Box folder at lab meeting. Note: you also have a personal Box folder to store your non-lab files...it's free and unlimited – but you will only retain access for 90 days after leaving the university.

## GitHub

The lab's GitHub (<https://github.com/complexmemlab>) should be used to share code, stimuli, and data with the world. Only share data after you've spoken to Zach (we don't want to share the data too soon, before you've had a chance to look at it thoroughly yourself). When you share code, make sure it *works*, because we don't want to distribute buggy code to the world! Have other lab members check it if possible. Alternatively, if you want to store code that you are still working some kinks out of, please comment it accordingly (e.g., note at the top of the document or in a README that the code is a work-in-progress). Ask the lab manager to get access to the lab's GitHub.

## Google Calendars

The lab presently has one Google calendar, but we will add more as we grow.

1. ComplexMemLab – used to keep track of lab events, lab meetings, birthdays, university holidays, etc.

We also have a teamup calendar to manage our testing areas within the lab. Administrator access is restricted to full-time lab members. Our free account only provides access to 8 member accounts, but additional individuals may access the calendar via the links below.

Modifier access:      <https://teamup.com/ksaiwqtz8whtomgbcb>

Read-only access:      <https://teamup.com/ksowsnppg5bviti5n1>

## E-mail

There is a lab email account that only the lab manager and Zach can access ([complexmemlab@gmail.com](mailto:complexmemlab@gmail.com)) - people often contact the lab (e.g., if interested in participating in studies) through that email address.

## **General Policies**

### Hours

NOTE: this situation is obviously affected by COVID-19 for the time being. Obviously, certain details below will not apply, as we cannot be in lab all-day-every-day. However, you are nonetheless expected to maintain a regular work schedule, even if remote.

Being in lab is a good way of learning from others, helping others, building camaraderie, having fast and easy access to resources (and people) you need, and being relatively free from

distractions at home (e.g., your bed or Netflix). That said, hours in academia are more flexible than other jobs -- but you should still treat it as a real job (40 hours/week) and show up to the lab. My primary concern is that you get your work done, so if you find that you are more productive at home (lab-mates can be chatty sometimes), feel free to work at home occasionally. If you have no meetings, no participants, and no other obligations that day, it might be a good day to work at home – but you can't do this all the time, and I expect to see everyone in the lab on a regular basis (but see [Noise Policy](#)).

The only exception to this is lab managers / research assistants, who must keep more regular hours and be in lab 5 days a week (excluding vacations, doctor appointments, family issues, etc) unless an alternative plan is discussed. I expect lab managers / research assistants to be in (or at least available) about 8 hours a day, starting around 9am-10am and ending around 5pm-6pm.

For graduate students, I understand having to be away for classes and TA-ing, but show up to the lab on a regular basis when you don't have those obligations (but see [Noise Policy](#) for more details).

To encourage lab interaction, try to be in most weekdays during 'peak' hours (assuming no other obligations) – e.g., between 11am and 4pm. This is not a hard rule, you can work at home occasionally (see [Noise Policy](#) for more details), and I understand other obligations. But keep it in mind.

I'm a night owl and sometimes work during the weekends. This means that I will sometimes send emails or Slack messages outside of normal working hours. For the most part, I try not to, but sometimes I do. I do not expect you to respond until you are back at work (ignore me!). I do not expect there to be cases when I suddenly and urgently need something from you over the weekend (e.g., for a grant deadline), but should I anticipate that happening, I will bring it up in advance so we can plan accordingly. All this said, I realize that being told you can ignore my messages might not take away the stress of *seeing* my messages if you check work email or Slack in the evenings or on weekends. If my off-hours messages are unwelcome and cause distress, please talk to me, and I will be better at not bothering you during your time off.

### Noise Policy

I want lab members get along and want to spend time with one another. This is a critical aspect of a productive, friendly, and positive lab environment. But I also realize that you are all very busy and want to have a place to focus and work quietly.

We are going to implement a few basic policies. These policies do not preclude socializing at specific, agreed-upon times (e.g., lunch, happy hours); in fact, we encourage you to! These policies also do not preclude meeting with one another to discuss research, classes, life, etc; again, we encourage you to! But keep these policies in mind:

## **Policies**

1. General quiet time: Quiet time is between 9am and 5pm in the lab. Please respect other people's needs to work quietly in lab during those times by lowering your voice and generally keeping noise to a minimum. If you do need to talk, do it quietly and/or set up a meeting in a room with closed doors. If all else fails, ask others in the area if they mind a brief distraction.

2. Headphone rule: If someone is wearing headphones, respect their need for quiet. Do not tap them on the shoulder to talk. Do not talk loudly next to them. Exception: if there is a fire alarm or other emergency and they are not aware, do alert them for their own safety. In general, if you need to get someone's attention and suspect they might be busy, messaging them on Slack is a good way to check if they have a moment to chat.

3. Flexible work locations: Feel free to work from home, a library, an unused running room, or anywhere else when Policies 1 & 2 aren't enough, or you just need a day of privacy. With respect to testing rooms: if a running room is not in use for an experiment nor will be imminently used for an experiment (check the running room calendars), you can take your laptop in there to use it as a quiet workspace if you would like to. Please book the testing room on the calendar when you do that, so that lab members know not to barge in on you. With respect to working from home: no need to alert Zach. It's nice having people around to help each other and for us to talk in person, so do not work from home *all* the time, but do so when you need to.

## **PI Office Hours**

In addition to weekly meetings (see below), and occasionally dropping by the lab, you can find Zach in his office. His door is almost always open; if it is, feel free to ask for a chat. He will almost always say yes, though sometimes he can only spare a couple of minutes or might ask you to let him finish typing something. If his door is closed, assume that Zach is either gone, in a meeting in his office, or does not want to be disturbed – so please send a message (Slack or e-mail) rather than knocking.

## **Meetings**

### *Weekly Lab Meetings*

Weekly lab meetings (~1.5 hours each) are meant to be a forum for trainees to present project ideas and/or data to get feedback from the rest of the group. Projects at any level of completion (or even not yet started!) can benefit from being presented. These lab meetings can also be used to talk about methods, statistical analyses, new papers, and career development. For paper discussions, everyone must come to lab meeting having read the paper and prepared with comments and questions to contribute. Some weeks we may explore a particular issue and have

people read different papers – in that case, come to lab meeting having read your paper and be prepared to summarize it for the group.

Each trainee (RA, students, post-docs) is expected to present at least once every semester. These meetings are informal, and you can do what you wish with your slot – just be prepared to contribute something substantive. Lab members are also expected to attend every meeting (obviously, illnesses, doctor appointments, family issues, etc. are a valid reason for missing a meeting). Undergraduate students are encouraged to attend as often as possible (assuming it fits in their course schedule).

Occasionally, we may have joint lab meetings with other faculty in the department – these may be combined with our weekly lab meeting or an additional meeting. We will also use lab meetings (or ad-hoc scheduled meetings) to prepare for conference presentations and give people feedback on job talks or other external presentations. Lab meeting agendas and notes will be kept in the #lab-meetings channel on Slack.

### *Individual Meetings*

At the beginning of each semester, we will set a schedule for weekly meetings. Each full-time lab member (RAs, graduate students, post-docs) will have a one-hour slot set aside to meet with Zach. If scheduling conflicts arise (e.g., because of travel), we can try to reschedule for another day that week. If there is nothing to discuss, feel free to cancel the meeting or just drop by for a brief chat about anything you would like.

Zach will meet with undergraduate students according to need, but at least once per month; post-docs and graduate students should meet with their undergraduate mentee on a regular basis.

### Deadlines

One way of maintaining sanity in the academic work is to be as organized as possible. This is essential because disorganization doesn't just hurt you, it hurts your collaborators and people whose help you need. When it comes to deadlines, tell your collaborators as soon as you know when a deadline is, and make sure they are aware of it the closer it gets. Don't be afraid to bug them about it (yes, bug Zach as well).

Give Zach at least one week's notice to do something with a hard deadline that doesn't require a lot of time (e.g., reading/commenting on conference abstracts, filling out paperwork, etc).

Give Zach *at least* two weeks' notice (preferably more) to do something with a hard deadline that requires a moderate amount of time (e.g., a letter of recommendation).



If you want feedback on research and teaching statements, or other work that requires multiple back-and-forth interactions between you and Zach before a hard deadline, give him as much time as you can; at the very least three weeks.

For manuscript submissions and revisions (i.e., which either have no deadline at all or only a weak deadline), send drafts to Zach as soon as you have them, and bug him to give you feedback if she hasn't responded in two weeks – papers are important!

## Presentations

Learning to present your research is important. Very few people will read your papers carefully (sad, but true) but you can reach a lot of people at conference talks and posters. Also, if you plan on staying in academia, getting a post-doc position and getting a faculty position both significantly depend on your ability to present your data. Even if you want to leave academia, presentations are likely to be an important part of your job. Additionally, every time you present your work, you are representing not just yourself but the entire lab.

It is therefore highly encouraged that you seek out opportunities to present your research, whether it is at departmental talk series and events, to other labs (within or outside of WashU), at conferences, or to the general public. If you are going to give a presentation (a poster or a talk), be prepared to give a practice presentation to the lab at least one week ahead of time (two weeks or more are advisable for conference presentations, and *many* weeks ahead of time are advisable for job talks, which require much refining). Practice talks will help you feel comfortable with your presentation, and will also allow you to get feedback from the lab and implement those changes well in advance of your real presentation.

Templates for posters will be available, and you can use those as much or as little as you'd like. Some general rules for posters should be followed: minimize text as much as possible (if you wrote a paragraph, you're doing it wrong), make figures and text large and easy to see at a distance, label your axes clearly, and make sure different colors are easily discriminable. Other than that, go with your own style.

Zach is also happy to share slides from some of his talks if you would like to use a similar style. You'll get a lot of feedback on your talks in any case, but other people's slides might be helpful to you as you are setting up your talk. As with posters, feel free to go with your own style as long as it is polished and clear.

## Recommendation Letters

Letters of recommendation are extremely important for getting new positions and grants. You can count on Zach to write you a letter if you have been in the lab at least one year (it's hard to really know someone if they have only been around for a few months). Exceptions can be made if students or post-docs are applying for fellowships shortly after starting in the lab.

If you need a letter, notify Zach as soon as possible with the deadline (see [Deadlines](#) for guidance), your CV, and any relevant instructions for the content of the letter. If the letter is for a grant, also include your specific aims. If the letter is for a faculty position, also include your research and teaching statements. In some cases (especially if short notice is given), you may also be asked to submit a draft of a letter, which will be modified based on Zach's experience with you, made more glamorous (people are much too humble about themselves!), and edited to add anything you left out that Zach thinks is important. This will ensure that the letter contains all the information you need, and that it is submitted on time.

## Data Management

### *Storing Active Datasets*

Lab data can be stored in one of the following places:

1. ComplexMemLab Box folder(s): fMRI data, behavioral data, and (separately from data and coded so that data are not identifiable) electronic consent forms, demographics forms, questionnaires
2. Pubic ComplexMemLab Box folder(s) can be used to share datasets and/or code with collaborators
3. The Center for High Performance Computing cluster can be used to store small amounts of data as you are running analyses on it – it is *not* for permanent storage

Although Box is generally trustworthy, it is always recommended to make extra backups! Each lab member should back up raw data on an external hard drive, as well as the code needed to reproduce all analyses. You should not store data locally on your computer (but having data in a Box folder synced to your computer is okay).

### *Data Organization*

The lab will use the Brain Imaging Data Structure (BIDS) format, which you can read about [here](#). There are several reasons for this, such as: (1) it is increasingly seen as a 'standard' neuroimaging dataset format in our field; (2) following from that, it is predictable and easy to understand where things live and why, even if you're not familiar with that particular dataset; (3) it plays nicely with state-of-the-art preprocessing and quality assurance tools, such as [fmriprep](#) and [mriqc](#).

The general structure is as follows:

- project (should be descriptive/informative)
  - subjects (should follow the format sub-000)
    - session (should follow the format ses-00)
      - data type (will be: func, dwi, fmap, anat, meg, eeg, ieeg, or beh)

Regarding naming conventions, I have historically started subject numbering at “sub-101” for younger adults, and “sub-201” for older adults. However, you are welcome to use whatever naming convention you choose, as long as it makes sense to you and to others. Note that the three-digit format is flexible, and allows us to collect more than 99 subjects if we choose. Sessions should start at “ses-01” (two-digit format is probably fine here; I do not foresee ever needing more than 99 sessions).

When you leave the lab, your projects directories should be set up like this, or something similarly transparent, so that other people can look at your data and code. You *must* do this, otherwise your analysis pipeline and data structure will be uninterpretable to others once you leave, and this will slow everyone down (and cause us to bug you repeatedly to clean up your project directory or answer questions about it). I have seen examples of this play out, and it isn’t pretty.

### *Archiving Inactive Datasets*

Before you leave, or upon completion of a project, you must archive old datasets and back them up. We will develop the instructions for this when we reach our first inactive dataset 😊

### Open Science

We’re all for open science, so lab members are encouraged (well, required) to share their code and data with others, whether they are in the lab or outside of it. Within lab, you can share your code and data whenever you like. But do not share your code or data with the outside world until you think (and Zach agrees) that the lab has finished working with it. This gives us an opportunity to work with the data to meet our needs (including grant needs!) before releasing it for other people to use. Generally, we will try to make our data and code publicly available within one year of publishing the results (longer if work on the dataset is ongoing). Currently, the best option for sharing smaller datasets might be the [Open Science Framework](#), and the best option for sharing MRI datasets is [OpenfMRI](#) (let the lab know if you find others).

We will also share our work with the world as soon as we ready, which means preprints! The lab policy is to upload a preprint of a manuscript simultaneously with initial submission to a journal. The preferred preprint servers are [bioRxiv](#) and [PsyArXiv](#). We will also put PDFs of all our papers on the lab website, and you should share PDFs of your paper with whoever asks.

## **Funding**

Funding for the lab currently comes from Zach's start-up package from Washington University. If you need to buy something, or have to charge a grant for something, let the lab manager know.

At some point, you will likely be asked to provide a figure or two for a grant Zach is writing, and/or provide feedback on the grant. Relatedly, you are entitled to read any grant Zach has submitted, whether it is ultimately funded or not. Aside from being a good opportunity to learn how grants are written, this will also allow you to see his vision for the lab in the years ahead. Feel free to ask Zach to see any of his grants.