Naturalistic Cognition Lab Handbook, Cookbook, and All-Around Good Book
updated July 2024

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1. Welcome

Welcome to the Naturalistic Cognition Lab (NatCogLab) in the Brain and Cognitive Sciences Department (BCS) at the University of Rochester (UR)! We're really glad to have you join our community and we will do what we can to make your time in the lab amazing. We hope that you'll learn a lot about cognition, neuroscience, and computational

analysis, develop new skills and improve existing ones (e.g., coding, neuroimaging, data analysis, giving talks and posters, scientific writing), make new friends, and have a great deal of fun in the whole process.

This lab handbook was inspired by the excellent lab manuals of Dr. Elise A. Piazza and Dr. Mariam Aly and borrows heavily from them. It also takes additional inspiration from other open source and/or freely available lab manuals and/or handbooks, including those put forward by Dr. Michelle R. Greene and Dr. Wei Ji Ma. Our handbook is licensed under a CC BY-NC 4.0 license, and you are welcome to copy, adapt, and/or remix the material however you'd like, provided you cite us. If you have ideas on things to add, or what to clarify, talk to Cora (the PI) or the lab manager.

2. Expectations and Responsibilities

2.1 Everyone

Lab Prime Directive

- We strive for a <u>welcoming space</u> where people can bring their whole selves to work. Everyone in the lab should be kind, respectful, and supportive of each other. Be aware of how much space you're taking up in the room, pause to listen to others' opinions, and be open to feedback. <u>Respect</u> 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 (or lack thereof), their beliefs, their gender identity, their sexual orientation, any anything else that makes them the amazing unique humans you have the privilege of interacting with every day.

Lab Culture

- <u>Our research lab is a team</u>: when one of us succeeds, all of us succeed. In the lab, we never compete with each other, but we try to lift each other up. (This is also a good attitude to keep in the broader scientific community, but it is sometimes hard to not get carried away by the many competitive elements of scientific careers.) First and foremost, be the colleague you would most like to have around you!
- <u>We value open, honest, and direct communication</u>. Be honest! Be honest about what you need to succeed in the lab, both professionally and personally. Be honest if you've made a mistake in your science. Mistakes are never the end of the world if you are open and upfront about them! If you're struggling, tell someone (feel free to tell Cora!). Your health and happiness come first. The lab looks out for the well-being of all its members. We are here to help. It's ok to go through hard patches (we all do), but you shouldn't feel shy about asking for help or just venting. If there is any tension or hostility in the lab, something has to be done about it immediately. We can't thrive in an environment we aren't comfortable in, and disrespect or rudeness will not be tolerated in the lab. If you don't feel comfortable confronting the person in question, tell Cora. <u>In any case, talk to Cora</u>. If you have a problem with Cora and are comfortable telling her about it, do; you are always welcome to disagree with Cora and to approach her if you think that she has done something harmful or problematic! If you aren't comfortable, then tell the lab manager (for smaller issues) or another member of the department (for more serious issues).
- <u>We strive for a *no guilt policy*</u>. When you feel you don't meet expectations (someone else's or your own), it is easy to feel guilty. Sometimes, people fall into a vicious cycle of feeling guilty, avoiding the work that makes them feel guilty, getting less done, and feeling more guilty. Cora is personally very familiar with this, and she still experiences such feelings all the time. Guilt can make any suboptimal situation worse. We will do everything we can to reduce the chances of you feeling guilty, and if you do, we will talk about the underlying causes. Why didn't you manage to do everything that you wanted to do: Were Cora's or your own expectations too high/unrealistic? Did you have personal circumstances? Did you simply need a break? Are you struggling with procrastination, and if so, what can we potentially do together to help with that?

Doing Science in the Lab

- Work on what you're passionate about, work hard at it, and be proud of it. Be so proud of it that you have to suppress bragging (but it's ok to brag sometimes).
- The most important rule of working in the lab is to *ask questions!* Don't understand a paper Cora or someone else in the lab sent you? Ask them about the concepts you don't yet understand. Were someone's directions unclear? Ask them to explain another way. Don't remember how to do something? Ask! I know that it's not always comfortable, but we make a promise to each other to never make each other feel bad for asking. And please remember: You can always ask Cora to clarify anything you're not sure about that impacts your work with no judgment whatsoever!
- Everyone should participate in the lab's academic events (lab meeting, interest group meetings, external presentations by lab members, helping members pilot studies) to the best of their ability. Participation is not just attending but also paying attention and, in internal events, asking questions and commenting.
- Scientists have to be careful. Don't rush your work. Think about it. Implement it. Comment your code. Double and triple check it. Incorporate sanity checks. Ask others to look at your code or data if you need help or something looks off. It's ok to makes mistakes, but mistakes shouldn't be because of carelessness or rushed work.
- If you do make a mistake, you should definitely tell your collaborators (if they have already seen the results, and *especially* if the paper is being written up, is already submitted, or already accepted). We admit our mistakes, and then we correct them and move on.
- We all want to get papers published and do great things. But we 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 results and unexpected results are still important. This can't be emphasized enough: *no academic misconduct!*
- Support your fellow lab-mates and share your skills with them. Help them out if they need help (even if you aren't on the project). Science is collaborative, not competitive. Help others, and you can expect others to help you when you need it. This includes giving someone a fresh look at their draft, helping them check for bugs in their code, or just listening if they're going through a rough time or need to vent.
- 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 social media, e.g., Twitter (if you can stomach the platform), BlueSky.
- Work-life balance is key to a rewarding experience in the lab and to a successful career going forward. 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.
- Communicating our science with the public and our community is important, and everyone in the lab is encouraged to contribute to this effort, including through outreach activities in the Rochester area and online.

Day-To-Day

- 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. If you're sick, reschedule your meetings and participants for the day (or the next couple of days) as soon as you can.
- You aren't expected to come into lab on weekends and holidays, and you aren't expected to stay late at night. You *are* expected to get your work done during whatever time of day you like to do it.
- Please communicate updates and respond to your emails in a timely manner (the rule of thumb is one business day after receiving the message). If you can't address all the issues in an email or request in a reasonable timeframe (because you're traveling, etc.), that's ok, but please communicate this to whomever is waiting for your response (especially if that's Cora). Sometimes you may receive communications from lab members at odd times and/or during weekends/holidays (Cora is very often guilty of doing this). You should never feel obligated to respond outside of your own working hours (to Cora or to anyone else in the lab).
- Show up to your meetings, show up to run your participants, show up to your classes, and show up to lab meetings. You do not have to be in at 9am every day – just show up for your commitments and work the

hours you need to work to get stuff done. (Note: the lab manager is expected to keep more regular hours than other lab members)

- Be on time. Especially when you are running participants – in fact, show up 15-20 minutes early to set everything up. And be on time for your meetings: respect that others have packed days and everyone's time is valuable. (Cora knows she's not always great at this; please forgive her, she's trying her best.)
- Make sure to keep the doors to the lab locked if no one is inside. Turn off the lights if you're the last one leaving for the day.
- Keep the lab tidy. Eating in lab is fine, but clean up food waste, crumbs, spills. Put lab equipment back where you found it. Keep common areas uncluttered.
- Dress code is casual (and you can dress up if you want!) but not *too* casual when interacting with participants or presenting your work (e.g., in those situations, don't wear pajamas or sweatpants – but jeans are totally fine). You are encouraged to wear the NatCogLab lab coat (or your own) when running participants.
- Party hat policy: Cora will wear a party hat to lab the day that anyone in the lab celebrates a major success (e.g., preprint, paper acceptance, grant or fellowship, award, etc.). You are also welcome to wear a party/fun hat, but you are by no means required to.

2.2 Principal Investigator (Cora)

The PI's main responsibility is to guide trainees through their individual scientific journeys. I pledge to:
- Support you as a whole person (scientifically, emotionally, financially).
- Care for your emotional and physical wellbeing and prioritize that above all else.
- Provide timely feedback and guidance on everything from experimental design to conference presentations to posters to manuscript revisions to grants to professional development.
- Be available in person and via email on a regular basis, including regular meetings to discuss your research and any other topic you'd like my advice on.
- Help you set deadlines and establish timelines for completing different aspects of projects.
- Support your career development by introducing you to other researchers in the field, promoting your work during my interactions with others in the field, giving you full credit for your work and accomplishments, writing letters of recommendation for you, and funding your travel to scientific meetings at least once per academic year (and as often as lab finances allow).
- Help you prepare for the next step in your career, whether within or outside of academia.
- Share my perspective on where the lab is going, where the field is going, and tips about surviving and thriving in academia.
- Continue to develop my mentorship skills by seeking guidance from my own mentors, reading relevant literature on mentorship, attending workshops, etc.

2.3 Postdocs and Ph.D. Students

- Develop your own independent line of research which comprises several studies.
- Help train and mentor more junior trainees in the lab (both undergraduate and graduate).
- Present your work at departmental events, at other labs (if invited), and at conferences.
- Actively contribute your voice and expertise to lab discussions, including when you disagree with Cora or the group.
- Meet with Cora on a weekly basis.
- Apply for grants (e.g., GRFP, F32, NRSA, K99). 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).
- Discuss your career goals with Cora (whether in or outside of academia), so she can help you plan ahead for those
- Plan ahead for applying for jobs (academic or otherwise) when you're ready, but no later than the beginning of your 4th 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 Cora about how to best train for a job outside academia (Cora can also help put you in touch with some of her industry contacts who may be able to provide first-hand advice and/or referrals).

- **Ph.D. Students:** You should <u>always prioritize research</u> above coursework and TA responsibilities (which can often be difficult). Keep track of departmental deadlines / requirements and communicate them to Cora early on. Form connections to other faculty (in the department or outside of it) by taking an active role in building your committees and, if applicable, collaborations.

2.4 Lab Manager

- Work on <u>your own research project</u> (developed with Cora's help).
- <u>Help new lab members adjust to the lab</u> by answering whatever questions they have that you can answer. If you can't answer, direct their questions to Cora.
- <u>Maintain IRB protocols</u> for the lab (writing them, renewing them), archive old consent forms, keep any required paperwork up to date and organized.
- <u>Oversee</u> the scheduling and <u>training of undergraduate research assistants</u>.
- <u>Maintain the lab</u> website and lab notion, update the lab handbook, manage the lab Box and GitHub, ensure data curation and integrity on the lab server.
- <u>Give new lab members access</u> to the lab notion, lab GitHub, and add their experiments to the lab Box.
- <u>Assist with the recruitment</u> and scheduling of participants.
- <u>Assist lab members with data collection</u> and analysis (behavior, fMRI, in-person or online).
- <u>Be in the lab on a regular basis</u> -- more than other lab members, your presence in lab when others are around is essential. This means you probably shouldn't work 7pm to 3am –- try 9am to 5pm or 10am to 6pm, with flexibility depending on your out-of-work schedule (e.g., doctor appointments).

2.5 Undergraduate Students

- <u>Contribute to lab research projects</u> by helping more senior lab members with subject recruitment, data collection, coding (e.g., annotating videos), or analysis. If you are interested, Cora can also help you develop an independent project (e.g., senior honors thesis) which you would lead with Cora's or other lab members' help.
- <u>Meet weekly with your primary lab member mentor</u> at pre-established times. In general, you should be coming in to lab every week and schedule enough time to make progress on research.
- <u>Meet bi-weekly with Cora</u> to discuss general progress on your project / in the lab
- <u>If you are earning course credit</u> for research (e.g., enrolled in BCSC 395), you will be expected to attend as many lab meetings as your schedule allows, present at one of these meetings each semester (it doesn't have to be a polished talk--could be on an analysis you've been working on, a study design idea, or a relevant paper), and submit a 10-page write-up of your research by the end of the semester.
- <u>If you're not earning course credit</u> for research, you are still encouraged to attend most lab meetings, which will provide some important aspects of your training (e.g., reading and analyzing literature, brainstorming study ideas, etc.).

3. Code of Conduct

3.1 Statement of Principles

The NatCogLab strives to be a welcoming and inclusive space for all of its members, collaborators, participants, and guests. We are all passionate about doing creative, rigorous, groundbreaking science, and fulfilling our scientific potential involves respecting and supporting each other's diverse interests, backgrounds, strengths, and limitations. We commit to giving each other constructive feedback that targets the work rather than the person, to giving our time to help others improve, to respecting each other through our words, tone, and actions, to communicating when

we're struggling, to anticipating challenges throughout the scientific process and being open to learning from them. We also commit to working to make the lab more inclusive by participating in diverse conferences and talk series and enacting more equitable citation practices.

3.2 Essential Policies

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, religion (or lack thereof), cultural identity, or any other basis. 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.

Lab members and visitors should familiarize themselves with and abide by the University of Rochester's code of values and related policies regarding equity, diversity, and inclusion, including a new whistleblower policy.

If you notice someone being harassed, or are harassed yourself, tell Cora immediately. If Cora is the cause of your concern, then reach out to the department chair or another trusted faculty member in the department.

3.3 Scientific Integrity

Research (Mis)conduct

The lab, and the University of Rochester, is committed to ensuring research integrity, and we take a hard line on research misconduct. We will not tolerate fabrication, falsification, or plagiarism.

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 Cora and talk to her 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. 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/NatCogLab.

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.

3.4 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, as well as forward it to both Cora and the lab manager. To be added to an existing IRB, talk to the lab manager, and ensure that they have a copy of your CITI certificate. If your project does not fall under the scope of a current IRB protocol, talk to Cora 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 Cora and the lab manager as soon as possible. We may need to report this information to the IRB and/or funding agencies. Additionally, our protocols require subjects' consent to take audio and/or audio recordings. After an experiment is complete, if you want to share these images online (social media, websites, press releases), it's critical to reach back out to the subject to get their consent a second time. It's also very important not to share or discuss participants' identifying info with others (and in most cases, our IRBs state that this info should be destroyed and replaced with de-identified subject IDs early on in the study anyway). Do not leave consent forms or subject logs lying around where personal info might be visible to others.

4. General Policies

4.1 Hours

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 as often as possible (i.e., treat the lab as your default workplace throughout the workweek). That said, the lab's primary concern is that you get your work done, not where and when you do it, 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 everyone should come to lab on a regular basis.

The only exception to this is lab managers and full-time research assistants, who must keep more regular hours and be in lab 5 days a week (excluding vacations, doctor appointments, family issues, etc). Lab managers and full time-research assistants are expected to be in about 8 hours a day, starting around 9am or 10am and ending around 5pm or 6pm.

4.2 PI Office Hours

In addition to weekly meetings (see below), and occasionally dropping by the lab, you can find Cora in her office. Her door is almost always open; if it is, feel free to ask for a chat. She will always say yes, though sometimes she can only spare a couple of minutes. If her door is closed, assume that Cora is either gone, in a meeting in her office, or does not want to be disturbed – so please send her a message instead (e-mail is best).

4.3 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 (RAs, 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.

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 at the minimum a one-hour slot set aside to meet with Cora. If scheduling conflicts arise (e.g., because of travel), we can try to reschedule for another day that week. Exception: during their first year in the lab, graduate students will have at the minimum two 45 min. slots per week to meet with Cora instead.

The weekly individual meetings are *your* time. Their primary goal is to help you make the best progress you can towards your research and career objectives. You will use most of this time to talk with Cora about research, career planning, and other academic-related topics, but you are welcome to ask for advice on any topic that you would like to chat about. Even if there is nothing to discuss regarding concrete progress (e.g., "I ran participants all week", "I debugged these 200 lines of code all week"), you should still have a brief check-in with Cora during your weekly meeting, and you're welcome to use your meeting for general advice on other topics and/or end it early.

Cora will meet with part-time undergraduate students in the lab every other week (or according to need); post-docs and graduate students should meet with their undergraduate mentees on a regular (weekly) basis.

4.4 Authorship Guidelines

In general, the student/postdoc who takes the lead role on a project and who is primarily responsible for writing the manuscript will be first author and Cora will be last author (unless the project is in collaboration with another PI and Cora is a secondary advisor). Others who contribute to the project at various points (including people who contribute design/analysis ideas, code/algorithms, data, editing, and who may or may not be involved in regular project

meetings) can be added to the author list, and their authorship role will be discussed with all parties involved in the paper. If someone is involved in subject recruitment, data collection, data organization, and/or coding (e.g., annotating text, labeling videos) *only*, but not data analysis or writing of the paper, this is likely not enough to merit authorship. If someone hands over their project to someone else, they will most likely lose first-authorship, unless co-first-authorship is appropriate. All of these issues should be openly discussed early on in a project and re-visited as questions arise. Undergraduate students involved mainly in infrastructural aspects of the lab (e.g., recruitment, communication with participants, data collection) will not be considered for authorship roles unless they have explicitly joined a specific project that will lead to a paper (and if they have, then the above guidelines apply).

Following the APA's guidelines below will ensure fair distribution of credit and help prevent conflicts:

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, or 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.

4.5 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 possible when 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 (especially Cora!).

As a general rule, give Cora 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 Cora *at least* two weeks' notice to do something with a hard deadline that requires a lot of time (e.g., a letter of recommendation). For manuscript revisions and invited paper submissions (which have hard-ish deadlines), give her as much time as you can, because these will require multiple back-and-forths.

For manuscript submissions (i.e., no hard deadline), you can still bug Cora to give you feedback if she hasn't responded in a week or two – papers are important!

4.6 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 postdoc position, and getting a faculty position both significantly depend on your ability to present your data clearly and effectively. Similarly, outside 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 BCS/UR), 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 more 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.

When putting together a poster, some general rules 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, and make sure different colors are easily discriminable. Other than that, go with your own style.

Cora is always happy to share slides from her talks and examples of her old posters 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.

4.7 Recommendation Letters

Letters of recommendation are extremely important for getting new positions and grants. You can count on Cora 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 postdocs are applying for fellowships shortly after starting in the lab.

If you need a letter, notify Cora 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. 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 Cora's experience with you and anything else that has to be added. This will ensure that the letter contains all the information you need, and that it is submitted on time.

4.8 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 Cora 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.

4.9 Funding and Reimbursements

Funding for the lab currently comes from Cora's start-up package from UR.

Conference Travel

The lab will pay for each graduate student and postdoc to travel to at least one conference per academic year, whether they are presenting or not. The lab will also pay for travel to up to one conference per academic year for first-author RAs who are presenting work from the lab. This includes registration (early rate only!), airfare, lodgings, transportation, and meals (within reason). Specific budgets will be set for each conference by Cora based on location. As a rule of thumb, you are strongly encouraged try to start your travel planning early (i.e., as soon as your abstract is accepted or as soon as you submit it if the acceptance is almost assured). As a general policy, the lab will reimburse a reasonable direct flight rate (if it exists) and the equivalent of the conference trainee lodging rate per night (you are welcome to book other lodgings, but you might be responsible for the difference if it's much more expensive).

Exceptions to these rules can be negotiated with Cora on a case-by-case basis. If you want to spend more time in the conference location before/after the event, you are welcome to do so, but please reach out to Cora and to Jennifer Gillis in advance to ensure that your travel is correctly reimbursed (e.g., you may need to provide proof that your flight is not prohibitively more expensive than it would have been had you traveled only for the days of the conference).

Participant Payment

To pay participants, you can obtain cash from Jennifer Gillis or Kathy Corser in the admin office. You will need to sign for it and to provide a receipt once the participant(s) have been paid. You are also welcome to use your own cash and get reimbursed by the lab afterwards, but you will never be required to do so, and you are encouraged to use the BCS department cash payment system if you can.

Other Research Expenses

If you need to buy something for your work (e.g., software, research supplies, the *Gladiator* movie on DVD, etc.), or have to charge the lab for something, let Cora know and she will oversee the process. All research-related expenses are reimbursable by the lab with Cora's prior approval. If you're not sure if an expense counts as research-related, feel free to reach out to Cora.

Lab Purchase Emergency Rule

If you're ever in a financial bind about buying something for the lab (including conference travel-related), the admin office can help pay for it directly from lab funds (i.e., without using your own money). If the purchase is too time-sensitive to ask for the approval of the admin office, ask Cora and she will very likely be able to pay for it in your stead and get reimbursed herself later.

5. Resources

5.1 Tips for Finding and Citing Articles

One of the easiest ways to keep up to date with scientific literature is to set up RSS feeds for your favorite journals and/or through Google Scholar. For the latter, while logged into your Google Scholar account, go to the menu at the top left and click "Alerts", then enter a search term (e.g., "event perception") and you'll start receiving a daily digest of relevant papers (including un-reviewed preprints). You can also use a feed organizer such as Feedly to help manage multiple RSS streams.

When finding relevant articles and deciding what references to include in your own papers, you should always be mindful about not perpetuating existing biases in citation practices. For example, Dani Bassett's lab at Penn has been doing some important work uncovering systematic biases in citation practices (e.g., here). The gist is that papers by women* (for now, some of the existing work and tools are limited in their inclusion of transgender and non-binary authors) and URM authors are relatively under-cited (after considering several variables relating to impact), papers by white male authors are relatively over-cited, white male authors tend to drive this bias, and the gap is widening over time. Dr. Bassett's lab has several new tools for helping us all be more equitable, transparent, and conscious in our practices of finding and citing papers, and I encourage you to check these out in the corresponding section below: 5.7 Living List of Resources to Combat Biases in Citation Practices.

5.2 Guidelines for Reproducible Science

This is a very exciting time to be a neuroscientist! The community of people advocating and building tools for open neuroscience has exploded in the past few years, and it's becoming easier and easier to design and analyze

experiments that are reproducible. That said, the number of tools can be overwhelming, here are a few that the lab highly recommends to get you started:

Registered Reports

To prevent letting bias affect your results, it's good practice to decide which analyses you plan to run, which exclusion criteria you'll use, and which hypotheses are important to explore *before* you've collected and peeked at your data. To this end, many people are now submitting registered reports, which allow you to get feedback on your study plans early on and reduce bias in the scientific method that can lead to Type I errors and reduce reproducibility. While lab members are not required to submit registered reports for their projects, they are still highly encouraged to develop a thorough analysis plan (with contingencies) as they design their experiments.

Preprints

The peer review process (from submission to publication) can take months to years, and it's a shame not to be able to share our (mostly completed) work with the scientific community before an article finally appears in a journal. To create a time-stamped record of your paper while it's under review, you can publish a preprint in a repository of un-peer-reviewed manuscripts (psyArXiv, bioRxiv) at the same time when you submit your paper to a journal for the first time. Most journals allow you to do this, but it's good to double-check.

Storage and Version Control

- Git/GitHub allows you to save past versions of your code (or other files) and collaboratively contribute to projects. Tutorials here and here (start at 1:46:00).
- OpenNeuro is a great repository of neuroimaging data. You can add your own data here for the community to use and also explore other people's data!
- OSF is another great place to store data and code.

Tools for Standardizing fMRI Datasets, Preprocessing, and Analysis

- Many of these tools (Git, BIDS, ReproIn, DataLad, fMRIprep) are explained very clearly in the awesome Princeton Handbook for Reproducible Neuroscience, which also includes a workshop series with video tutorials (see section 5.3 below).
- BIDS is a neuroimaging (fMRI) data format that allows for standardization of preprocessing. Basically, when you first design an fMRI experiment, you should set up your program card (at the scanner) according to this naming system and it will make your data compatible with reproducible pipelines. Tutorials here (start at 2:40:45) and here.
- ReproNim is an initiative to improve the reproducibility of neuroimaging studies.
- DataLad is a system for "content tracking" (keeps track of versions of code AND data). Tutorial here (start at 4:30:50). See also: "YODA" principles for reproducible data analysis.

- fMRIprep is a state-of-the art pipeline that combines the best of well-known preprocessing pipelines and provides highly reproducible, easy-to-interpret output.
- BrainIAK is an open-source Python-based package of analysis tools, designed with naturalistic neuroimaging studies in mind. These include RSA, MVPA, ISC/ISFC, SRM, HMM, and other machine learning approaches to analyzing fMRI data.

Other Open-Source Tools

- Neuroscout is a platform for flexible analysis of naturalistic studies. Has lots of fun machine learning tools (see pliers) for extracting (for example) musical features from videos.
- Neuropipe is a framework for reproducible fMRI analysis with FSL, including recommended directory structures.

- NeuroLibre is a series of analysis tools and free server space for anyone to use.
- This is another new set of tutorials and tools for working with naturalistic data (more info).
- The Turing Way is a handbook for reproducible data science.

5.3 Bootcamps and Training Courses

General Neuroscience

- Kavli Summer Institute ("Brain Camp")
- Neuromatch Academy

fMRI

- Princeton Handbook for Reproducible Neuroimaging Workshop (has tutorials on BIDS, setting up directories, fMRIprep, and more)
- Neurohackademy (U Washington)
- MIND (Dartmouth; includes slides, code, tutorials)
- Workshop on neuro analysis on open datasets (specifically, the longitudinal developmental ABCD project)
- University of Michigan course
- Yale course

Coding, Statistics, Machine Learning, Data Science

- MATLAB course
- PsychToolbox courses here and here
- R course
- Python for Data Science course
- Intro to ML course
- Summer Institutes in Computational Social Science (data science training for all career levels)

5.4 Living List of University of Rochester Offices, Resources, and Policies

- Office of Equity and Inclusion
- Code of Values
- Policies Regarding Equity, Diversity, and Inclusion
- New Whistleblower Policy

5.5 Living List of LGBTQIA2S+ Resources

- For Colleagues Who Identify as LGBTQIA2S+
- For Allies

5.6 Living List of Anti-Racism Resources for Academics

- Anti-Racism Working Document for Academics
- Recruiting, Supporting, and Advancing Underrepresented Minority Scientists
- Ten Simple Rules for Building an Anti-Racist Lab

5.7 Living List of Resources to Combat Biases in Citation Practices

- Ethical Considerations Regarding Gender Bias in Citation Practices
- Chrome Extension that Adds Probabilistic Gender Info to Google Scholar and PubMed
- Probabilistic Estimator of Gender Bias in Citation List
- How to Write a Citation Diversity Statement

5.8 Living List of Organizations that Amplify the Voices of Underrepresented Scientists

- SPARK Society
- Black in Neuro
- Anne's List
- Women in Neuro
- Graduate Women in Science
- BiasWatchNeuro
- Society for Neuroscience Scholars Program (NSP)

6. Favorite Recipes from Lab Members, Past and Present

Ciorbă de Perișoare, a.k.a. Romanian Meatball Sour Soup
Contributed by Cora

This recipe yields ~10 qt of ciorbă (sour soup) and takes about 3 hours end-to-end. I recommend a 12-qt pot with a lid. A food processor (FP) will make your life much easier here and save you 30-45 min in prep time. If unsure, using a bigger legume / vegetable / fruit is always better.

Ingredients for Broth

3/4 cup olive oil (extra virgin if you have it)
1 big yellow onion (at least the size of your fist)
1 leek (as big as you can find)
1/2 lbs. carrots (about 5-6 big ones)
2 large parsnips / 3-4 medium sized parsley roots
3 medium peppers (I usually use 1 red, 1 orange, and 1 yellow)
1 very large potato
2-3 medium tomatoes
2 28-oz cans of Cento tomato puree
3/4 cups parsley
2 tablespoons salt
1 tablespoon fresh ground black pepper
(optional) 3/4 cups of lovage ("leuștean" -- if you have any)

Ingredients for Meatballs

2 lbs. ground beef (preferably organic, min. 20% fat content)
1 medium yellow onion (about half the size of your fist)
1/2 cup white rice
2 eggs
1/2 cup dill
1 handful of bread core (2-3 slices' worth of white French/Italian bread, no crust)
1 tablespoon salt

1 tablespoon pepper

Algorithm

First, take a second pot (not the one you're going to cook in) and fill it with 4 qt of water. Set it on the stove to heat up; in about 45 min, you'll want it to be almost boiling, but not fiercely so.

Then, the meatballs. Shred the medium onion (use FP) and put in a large bowl. Wash the rice in a separate bowl until the water is clear, then add on top of onion. Chop dill finely and add that, too. Remove bread crust from slices, wet the bread core, and mince it with your hands on top of the other ingredients (you want small clumps of wet bread, the finer, the better). Add salt and pepper. Add the meat. Beat the two eggs until they are omelet-ready, then pour them on top of the meat. Finally, homogenize everything with your hands and afterwards start making meatballs. They should be the size of a walnut. You should get 50-75 meatballs at the end of this. Put the bowl with the meatballs in the fridge until it's needed.

Now, get to chopping. Shred the large onion and the leek (use FP) and put aside in a small bowl (you could combine this step with the shredding for the meatballs and just divide the total quantity 1/4 meatballs, 3/4 soup). Get a large new bowl. Peel carrots and parsnips / parsley roots, then shred them (use FP) and place them in the new bowl (you can also dice them and/or cut them into chunks, whatever you prefer). Remove cores and veins from peppers, wash them, then slice in 1/4-inch strips. Add to bowl on top of carrots and parsnips. Peel the potato and cut it into small cubes. Set aside in a small bowl. Remove cores from tomatoes and slice them. Set them aside in yet another small bowl.

Take your 10-qt soup pot and put the olive oil in it. Turn the stove on medium. Wait until the oil heats up but be careful it doesn't start to burn (olive oil heats up faster and burns quicker than regular vegetable oil). When it's hot, pour in the shredded onion and leek and spread them evenly at the bottom of the pot. They should be fully submerged in the oil. I suggest using a long-tailed wooden spoon -- it will be useful, especially once the pot gets filled. After a few minutes, the onion should change color slightly. Even if it doesn't, don't let it burn. Add the large bowl of carrots, parsnips, and peppers, then mix with the oily onion. Put the lid on and let everything steam for 5-6 min. (stir after 3 min.). Then, add the potato, stir, and let everything steam again for another 5-6 min. After that, take the 4 qt of water you set to heat a while ago and pour it on top of the vegetables. Immediately add the sliced tomatoes, as well as the salt and pepper. Stir everything with the wooden spoon and make sure nothing is sticking to the bottom of the soup pot. Let it reach boil. Once it does (5 min. or so), add the meatballs in, one at a time (or they will squish / turn into one giant meat sludge). Put lid on, turn the heat down to medium-low, and let boil for about 45-60 min., depending how long it takes for the rice to properly cook inside the meatballs (even if it cooks quickly, I recommend leaving it on for at least 30-45 min. to allow the broth to mix all the flavors together). Here, you should check every 5 min. or so that everything is ok in the pot (don't let it boil violently!) and to remove the meat foam which will accumulate at the top as the meatballs cook. After about 30 min. of boil, pour in the tomato puree and make sure to leave it on the stove for at least another 5 min., but more time is also ok. Together with the tomato puree, you can also add some extra sourness, e.g., pickled cabbage brine or borș.

While the soup is self-socializing on the stove, chop the parsley and lovage and set it aside. Once the soup is finished boiling and the meatballs are cooked, taste to make sure you got the salt / pepper / tomato ratio right, adjust accordingly, and finally add the parsley and lovage on top (it's important to taste before adding the greens because they'll dominate the taste otherwise). Then, immediately turn off the stove and move the pot to a cool burner -- and congratulations, you made ciorbă!

Serve with (fresh) bread, Romanian / Russian (whole fat, plain) yogurt, and/or a side leek. Wine pairing: full-bodied red (e.g., Zinfandel or Cabernet Sauvignon). Poftă bună!