

Language Learning Lab Manual

Joshua Hartshorne
Department of Psychology
Boston College

<http://l3atbc.org/L3Manual.pdf>

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1 Acknowledgements

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2 Introduction

My goal is to foster an environment of consistent scientific excellence and personal development that supports every lab member in reaching their full potential, and helps us have fun while doing great science. I want you to be happy and productive while you are here. This manual is a first point of reference for current lab members as we strive to achieve these goals, and serves as a general introduction for prospective members. You can also find the lab elsewhere:

- Lab website: <http://l3atbc.org>
- Web Laboratory: <http://gameswithwords.org>
- Facebook¹: <http://www.facebook.com/BCLanguageLearningLab/>
- Twitter: <http://twitter.com/gameswithwords>

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

- Lab wiki: <https://sites.google.com/bc.edu/l3bc-lab-wiki/home>
- Basecamp: <https://3.basecamp.com/3340659>
- Trello: various trello workspaces

(For people with lab admin access, there is also the lab admin wiki: <https://sites.google.com/bc.edu/l3bc-labwiki-2/home>)

In general, firm policies are in the lab manual, whereas ways of implementing these policies (i.e., getting stuff done) are on the wiki so that they can be updated by anyone in the lab. Basecamp organizes tasks that need to be done (and relevant discussions) for specific projects, rather than general principles – which are in the lab manual – or instructions on how to do repeated tasks – which should go in the wiki. Any information that is potentially private should go in a protected location. (You can read more about various lab resources in §8.1 on page 23.)

The L^AT_EX source for the lab manual is available on Bitbucket: <https://bitbucket.org/l3atbc/l3labmanual>.

¹What, you haven't "liked" our page yet?

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

3 Lab Motto: Rigor. Community. Diversity of Thought.

It's better to work smarter than harder (or, better yet, work smart *and* hard). Which raises a question: What makes for a good scientist? I've been asking myself (and others!) this question for over a decade, and I've distilled what I've learned into our lab words:

Rigor. Community. Diversity of Thought.

These phrases, which I explain below, are strictly ordered, with *rigor* trumping *community* which trumps *diversity of thought*.

I find these words extremely useful when making decisions and trading off alternatives. I hope you find it as useful and compelling as I do (if you want to suggest an alternative, let's discuss!). But at the very least, they should help you understand my priorities (pro tip: I use these principles when budgeting my time and lab funds!). I hope you will see these principles and priorities reflected throughout this manual.

Please discuss with me if you feel that any policies are inconsistent with these priorities, or if there are additional policies we should consider.

3.1 Rigor

A restaurant that does not serve food is not a restaurant. A school without students is not a school. And a lab that doesn't produce science is not a lab. We are in this for the science, and all other considerations secondary. As people, we may have other interests and agendas that are more important, but the *lab* does not. If we don't have the resources or the expertise to do a study right, we should either find those resources and expertise or find something else to study. Note that this includes not just methodological rigor but conceptual rigor: We aren't in this to produce methodologically impeccable investigations of uninteresting questions.

Notice that among the things this principle does not include are publication, awards, prestige, or even credit. Obviously, it's satisfying (and useful!) to get credit for our contributions, but it is the contribution that is primary.

3.2 Community

Science is a community endeavor. We all depend on each other: for ideas, for data, for support. This is obviously true within a lab, but it extends to our department, our university, and the scientific community at large. Be generous in our contributions to that community. Pay back other's help. If you can't pay it back, pay it forward. It is very possible to make your greatest contribution to science through your students and colleagues rather than directly through your own work.

Supporting the academic community is not a purely altruistic endeavor. Every department talk you attend is not just an opportunity to support the community but to learn something unexpected. Any time you discuss research with a colleague or labmate is a chance they will provide you with some crucial missing insight. There are a lot of smart people out there. Not only do we not need to do everything ourselves, but trying to is inconsistent with doing the best science we can do.

3.3 Diversity of Thought

You cannot know everything. You cannot be good at everything. I'm sorry to be the bearer of bad news. The good news is that the world is full of people who have knowledge and abilities that are complementary to yours. I have done all my best work by collaborating with people who have differing views and different backgrounds. This includes working with people who were trained in different traditions or even different fields, working with people who have technical skills that I lack, and people who have different life experiences. This is hardly surprising. But working with people different from ourselves is difficult, not just because it requires patience (nobody likes someone disagreeing with them) but also because it may require building a shared vocabulary. It is my belief – and therefore the policy of this lab – that this effort is worthwhile.

4 Code of Conduct

I am dedicated to making our lab a safe, inclusive, and welcoming environment for all. Below you can find a specific code of conduct for behavior in the lab, as well as a broader discussion of what constitutes an inclusive environment.

Harassment

Every member of the lab is entitled to a safe, harassment-free experience, regardless of gender, gender identity and expression, age, sexual orientation, disability, socioeconomic status, physical appearance, body size, race, national origin, or religion (or lack thereof). Harassment includes offensive verbal comments related to gender, gender identity and expression, age, sexual orientation, disability, socioeconomic status, physical appearance, body size, race, national origin, or religion, sexual images in public spaces, deliberate intimidation, stalking, following, harassing photography or recording, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome sexual attention. More generally, if it's making you unhappy or uncomfortable being in the lab, then it is a problem! We take the second of our lab words seriously.

I urge anyone who witnesses or is affected by behavior not meeting these norms – including but not restricted to sexual harassment – to inform me so that I can take appropriate action to rectify the situation. The only possible exception is that you should be aware that university policy requires that if I become aware of sexual harassment or abuse involving students or employees, I am obligated to report it to the Title IX Sexual Harassment Response Coordinator. I would *want* to know about the situational and seek support from the proper authorities, but if you want to discuss these issues in confidence, please see a counselor or other medical professional on campus who can discuss these issues in their professional capacity while maintaining confidentiality.

See also the Boston College [Discriminatory Harrassment Policy](#).

Not Harassment

There are plenty of ways of making someone feel unwelcome or excluded without harassing them, bullying them, or even interacting with them. We

aim to be a diverse community, that will sometimes require explicit effort by each of us to make others feel they belong in this space. If you see things that would make you (or others) feel more at home, please raise them with each other or with me. If somebody raises an issue with you, please listen. Our default should be to enthusiastically comply. That doesn't mean you have to support their request, but you should have a clear, well-articulated reason not to. And keep in mind that I may overrule you.

5 General

5.1 Funding

Most of our current funding comes from the National Science Foundation. These funds pay salary for personnel, equipment, subject payment, and so on.

All this means two things. First, our work is paid for by alumni donations, student tuition, nonprofit charitable organizations, and the taxpayers. It is important that we respect these investments and that we run the lab in a way that shows we use our research funding wisely.

Second, most of our funding is currently tied to specific projects. That means that the reason I agreed to someone else's request for money but not yours isn't necessarily because their project is better or I like them more; it may come down to what I'm allowed to spend money on and what I'm not.

All research funded by external grants **must** acknowledge the funding agency and grant number upon publication. This is essential for documenting that we are turning their money into research findings. We must also submit a yearly progress report describing what we have accomplished. Lab members involved in the research will be asked to contribute to the progress report.

5.2 Local Collaborators

- [Stefano Anzellotti](#) (Psychology) develops advanced neuroimaging techniques to better understand how information is processed in the brain. We are collaborating with him on a couple neuroimaging projects.
- [Emily Prud'hommeaux](#) (Computer Science) works on natural language processing and speech signal processing for health and accessibility. Fun fact: she grew up two doors down from my grandmother. We are working on a number of projects related to bilingualism.

5.3 (Some) Other Collaborators

- [James Pustejovsky](#) (Brandeis) is a computer scientist and linguist. We are working with him on our “virtual toddler” project.
- [Laura Germine](#) (MGH) is the founder of [testmybrain.org](#) and the director of the Many Brains Project, and is one of the real pioneers of Internet-based research. We don’t have any joint projects at the moment, but I expect that is only a matter of time.
- [Josh de Leeuw](#) (Vassar) is a cognitive psychologist and the developer of [jsPsych](#). Pretty much anything we do with regards to developing code for online experiments involves him.
- [Christopher Erb](#) (Auckland) works on cognitive control and executive function. I am collaborating with him on a massive online study of age-related changes in ... cognitive control and executive function.
- [Timothy O’Donnell](#) (McGill) studies [productivity and reuse](#) in language. Tim was my labmate in both graduate school and during my post-doc. He is a key contributor to most of the computational modeling in the lab.
- [Steven Pinker](#) (Harvard) studies the role of evolution in constraining thought, language, and other aspects of cognition. He is a collaborator on work on the relationship between social cognition and pragmatics, as well as critical periods in language.
- [Jesse Snedeker](#) (Harvard University) was my PhD advisor and remains a source of inspiration and guidance. We are writing up several old projects and continuing to collaborate on theoretical work. Jesse’s lab organizes the Boston-area Language and Cognition seminar series, which you can read about in [page 21](#).

6 Being in the lab

6.1 The Nuts and Bolts: Salaries and Hours

Because we only accept responsible, reliable individuals into the lab, I will assume that if you do not show up for a meeting or for your scheduled hours, it is because you have fallen into an unmarked well or have been paralyzed by a freak eel attack, and a rescue party will be sent forth.¹ So that you better understand what will prompt search parties, I have laid out expectations about hours below.

Vacations

The lab is closed:

- BC Staff holidays (list [here](#)).
- The week following the last day of exams in the Spring
- Dec. 24 - Jan. 2

By “closed” I mean that I will not be responding to email and do not expect you to do so, either. Full-time lab members can (and probably should) request additional vacation.

Student holidays

The lab is still open during non-staff student holidays, including spring break, the summer, etc. Students are assumed to be on vacation during student holidays unless otherwise arranged (for instance, if you are doing a summer internship). If classes are out for the day, I don't expect you to show up to meetings.

¹In case you think I'm joking, we have had undergraduates disappear before, and in each case, they were having a personal emergency. So I take disappearances seriously. We are a community.

Paid vacations

If you are an hourly employee, you only get paid for the hours you report. On staff holidays, go ahead and report your hours as normal. I will treat you as having worked and just not expect you to actually accomplish anything. This rule does **not** apply to the two week-long lab vacations listed above. It also does not apply to any additional vacations you may take (this rule applies mostly to coop students).

Salaried employees and graduate students don't report hours, so all vacations are paid.

Meetings and Hours

If you have a meeting, you should be at it no less than one minute early. This includes Zoom meetings. Feel free to call me on this if you catch me showing up late. Time is precious.

Scheduling and Time Keeping

My goal is for a relaxed environment where people have the flexibility they need to do their best work. At the same time, too much flexibility leads to chaos: nobody knows what's going on, who needs help and who to get help from, or who is even in the lab these days or where and when to find them. The rules below are my current best attempt at striking the right balance between order and chaos.

Undergraduates

At the beginning of each semester, you should arrange your schedule with the lab manager. During your work hours, clock in and out using Team-Time. This lets us know that no search parties are needed.

Unless your supervisor has agreed to an adjustment in your schedule, you should stick to your schedule. And you shouldn't be asking for adjustments on a regular basis: down that path, madness reigns.

Senior Lab Members

You do not need my permission to be on vacation, but if you have not declared yourself on vacation, I assume you are working. If you never seem

to go on vacation, I may “order” you to go on vacation. Don’t try to impress me by always working. Impress me with your control, balance, and discipline. Which includes R&R.

If you are mentoring students, they should also expect you to be in unless you have declared to them in advance that you won’t be in. Don’t leave your students stranded, wandering alone in the dark. If you are going to be gone while they are still working, tell them when you will be gone, when you will be back, and make sure they have things to do in the meantime and know who to turn to if they need help.

I do not keep track of how often you are on vacation. I do keep track of whether you are making progress towards your career goals. Trust me to tell you if I think you are falling behind (though you can ask me at any time). But even if you are falling behind, unless you are going on beach vacations twice a month, my advice will very rarely involve “take less vacation.” We should discuss a plan that does *not* involve working 24/7 to catch up.

Unless we discuss otherwise, you are not **required** to use TeamTime for time tracking, but I highly recommend it. I think you will find time tracking to be very useful for your own understanding of your work habits. I think it is also useful for you to share that information with me, as it helps me understand better what kind of support you need. I’ll support someone who is struggling with productivity differently if they are logging 60 hrs/wk than if they are logging 25.

6.2 Performance Reviews

Everyone (including me) is here to learn and improve. That requires feedback. You should expect to get performance reviews at the end of each term you are in the lab (including the summer), or perhaps more often. These reviews will focus on what you are doing well, and where you would get the most bang for your buck in terms of improvement. Remember that everyone (including me) could stand to improve at some things, so treat this as an opportunity for collaborating on producing your best self.

These reviews will generally be conducted by your immediate supervisor. If that’s not me, they will probably still discuss the review with me in advance. They involve written feedback and a meeting to discuss that written feedback. (The written feedback is also very useful later when it comes time for me to write letters of recommendadtion.)

6.3 Responsibilities and Expectations

6.4 Everyone

Big picture

We are a team, and each of us depends on others for our success. As such, we expect each other to:

- Push the envelope of scientific discovery and personal excellence.
- Double-check our work, and be at least a little obsessive.
- Be supportive—we're all in this together.
- Be independent when possible, ask for help when necessary.
- Communicate honestly, even when it's difficult.
- Mentor those more junior.
- Work towards proficiency in Unix, \LaTeX or RMarkdown, Python, and R.
- Be patient, including with your PI. He will forget things you just talked about, and repeat some stories over and over. That's the breaks.
- Advocate for our own needs, including personal and career goals.
- Respect each other's strengths, weaknesses, differences, and beliefs.
- **Keep everything awesome.**

Small picture

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

- With few exceptions, **do not come to the lab if you are sick**. It's better to keep everyone healthy. If you are sick, work from home. Or, alternatively, take the day off, get better, and adjust the hours in your calendar. Either way, email a lab manager and whoever you would be meeting with to let them know. If you are supposed to be testing a subject, make sure someone will be able to take your place.
- Do not leave food, drinks, or crumbs out in the lab.
- Wash dishes immediately. Do not leave them in the sink.
- Lock the door if there is no one in the lab, even if you will only be gone "a minute".
- Keep the lab neat. Items left unattended may be cleaned, reclaimed, or recycled.

All the above goes doubly since we share our space with Katie McAuliffe's lab. We want to be the Fantastic Roommate of Perpetual Awesomeness, not the Slob of Nightmares.

6.5 The Boss

In addition to the responsibilities laid out for everyone, you can expect me to:

- Have a vision of where the lab is going.
- Care about your happiness.
- Obtain the funding to support the science and the people in the lab. I may ask for your help in obtaining funding, but you are not responsible for your own funding. I am.
- Support you in your career development – **regardless of whether you plan to stay in research** – including writing letters of recommendation, introductions to other scientists, subsidizing conference travel, and promoting your work as often as possible.
- Support you in your personal growth and encourage you to do things other than science.

- Treat you to coffee.
- Make the time to meet with you regularly, read through your manuscripts, and talk about science.

Postdocs

In addition to the responsibilities laid out for everyone, postdocs should expect to:

- Take responsibility for your own career development. I'm here for training, coaching, mentorship, and support, but it's *your* career. You are the authority.
- If you are planning to pursue a non-academic career, treat your post-doctoral research as seriously as you might if you were pursuing an academic career. We can discuss ways of making sure that you are getting the training you need, while still doing excellent research.
- Carry out assigned lab chores (these should usually not require more than an hour or two per week on average).
- Apply for jobs (academic or industry) as soon as you are "ready" (usually not earlier than your second year) and certainly by the beginning of your fourth year.
- Mentor undergraduate and graduate students on their research projects, when asked or when appropriate
- Assist with applying for external funding to support your research, whether a fellowship (e.g., NRSA, K99) or a traditional grant. I will hire postdocs only when there is funding available for at least a year; however, applying for external funding is a valuable experience and, if awarded, it will release those dedicated funds for other purposes.
- For postdocs on the academic track:
 - Cultivate an independent research program (while still supporting the lab's research).
 - Give at least one task per year (including talks in the L3 lab meeting).

- Submit multiple conference abstracts/papers per year.
- Submit at least one paper per year.

PhD students

In addition to the responsibilities laid out for everyone, graduate students should expect to:

- Develop a line of dissertation research. Ideally, your dissertation research will consist of at least 3 studies that can be packaged into one thesis document.
- Be submitting papers for publication no later than your third year. Note that you may only publish one or two before graduation, but that process takes a long time, so you need to start early.
- Know the literature related to your research topic like the back of your hand.
- Develop a strong grasp of statistics, be able to use R and/or Python for data analysis and plotting, and write papers in \LaTeX or RMarkdown. The learning curve can be a little steep on these, but it's well worth it.
- Seek out and apply for fellowships and awards (including travel awards, etc.).
- Stay up-to-date (and keep me up-to-date) on any deadlines that you need to meet to fulfill departmental requirements. In general, this includes your external funding applications, your master's proposal and defense in your second year, your lit review proposal and defense in your third year (can be replaced with an NRSA application), and your dissertation proposal and defense in your fifth year.
- Take advantage of opportunities to learn and grow, including auditing courses at other universities, attending conferences and workshops, or organizing reading groups.
- Mentor undergraduate and graduate students on their research projects, when asked or when appropriate

- Carry out assigned lab chores (these should usually not require more than an hour or two per week on average).
- Realize there are times for pulling all nighters, and times for leaving early to go to the park and enjoy the sunshine.

Coordinators and Managers

In addition to the responsibilities laid out for everyone, lab coordinators and managers should expect to:

- Use their time efficiently to support the projects to which they are assigned. Paid employees will typically have the most interaction with other staff and with research participants, and in these contexts especially should be a model of professionalism.
- Make sure the lab runs smoothly. I both hope and expect that you will get a lot of research done, but progress in research should not come at the expense of a mismanaged lab.
- Ensure that the lab is open and staffed between 9:00 am and 5:00 pm, except during university holidays, conferences, and lab vacations. More senior members of the lab (including me) will often have other places they need to be. Part of your job is to be the point person for subjects and undergraduates.
- Be actively thinking about the next step. If you are applying to graduate school, discuss your plans with me early and often. If you decide to go another direction, discuss with me what skills it would be useful to learn or opportunities it would be helpful to have in order to prepare for that path.
- (If considering graduate school) Be presenting work at conferences and potentially (co-)authoring a manuscript

Undergraduate students

In addition to the responsibilities laid out for everyone, undergraduates should to expect:

- Work closely with a more senior lab member on one or more research projects.
- Meet with your direct supervisor regularly, likely at least once a week, and perhaps more often during the summer.
- Present your work at the end-of-term lab presentations meeting

In most cases, undergraduates are considered to be doing “work for hire” and are not authors on publications. The main exceptions are thesis projects, which students often do present at conferences and may even help write up for publication. If you are uncertain about whether your contributions to a project merit authorship, please discuss with me.

If you find yourself in the lab without a specific project:

- Ask around to see if you can help with anything.
- Look on the wiki under and spend some time learning something new.
- Look on Basecamp for either a wiki page that needs creating/updating, or other miscellaneous lab tasks that need to be done.

There is enough to do that you should not be bored!

Except for unusual circumstances, undergraduates should schedule a minimum number of hours in the lab, following this rubric:

- Standard: 12 hrs/wk
- Independent study: 15 hrs/wk
- Thesis: 20 hrs/wk
- Summer Interns: 40 hrs/wk
- Coop: 40 hrs/wk

Your first semester in the lab is an opportunity to see whether continuing in the lab is a good fit; towards the end of your first semester, you and your direct supervisor will meet to discuss whether you will continue.

Compensation and Course Credit

Most undergraduates working in the laboratory are either drawing a salary or receiving credit for an independent study course. Sometimes, we do not have sufficient funding to pay undergraduates who are in their first semester in the laboratory. Otherwise, we only very rarely take volunteers.

Coop students

We often host one or two coop students (usually from Northeastern, but not always). In addition to what is described above, coop students are deputy lab managers and will have a number of lab chores.

Thesis students

Your thesis proposal is due in the spring of your junior year (see the department website), but thesis students typically start in the lab no later than the fall of their junior year. In most cases, they participate in the summer internship between their junior and senior years. This ensures that they have enough time to take ownership over a project and really get something done.

Most theses are components or extensions of an ongoing project in the lab. This ensures we have the resources and expertise to mentor you. This also means that typically the project “stays” in the lab when you leave; you do not take it with you even if you go on to graduate school. There are exceptions to this, but they are worked out on a case-by-case basis, and it is something you need to request rather than assume.

Thesis students are generally expected to enroll in the undergraduate thesis courses during their senior year. It may be possible to get hired instead, but that depends on availability of funding. If this is something you want, please talk to me earlier rather than later.

Senior Research Assistants

During terms when we are testing subjects on-site in the lab, several RAs will be designated *senior research assistant*. These will typically be RAs who have spent at least a semester in the lab already and have excelled at their work.

Senior research assistants are charged with ensuring that testing runs smoothly. Our work depends on the enthusiastic cooperation of our subjects, whether undergraduates, families, or older adults. **Every member of the lab should do their utmost to ensure that subjects find their experience enjoyable and rewarding and feel that their time and effort is being respected.** Thus, it should *never* be the case that

- Subjects show up but not experimenter is waiting for them.
- Subjects show up but the experimenters are not ready.
- The waiting room is in disarray.
- The toys are filthy.
- There are no toys/crayons/paper/etc. for children.
- Sib-sitters are needed but none are available.
- Etc.

If everybody does their job, no such issues will ever arise. The senior RAs serve as the lab's backup. It is his/her job to identify and address any gaps that appear. If you can resolve the situation by yourself, do so. If this problem requires the involvement of a senior lab member, find one. If there are systematic issues that should be addressed, loop me or a lab coordinator in.

The senior RAs also assist the lab coordinators in training new RAs, answering their questions, and helping them get acclimated to the laboratory.

The Deputy Lab Manager should also answer the lab phone, check voice messages, monitor the lab email, handle alumni relations, and manage the lab website.

7 Community of Scholars

We work better when we work together. As members of the lab, you are expected to participate in the community of scholars. This certainly includes supporting other members of the community – attending their talks, discussing their ideas with them, and helping out around the lab (e.g., 9.1). You also owe it to yourself to take advantage of your good fortune to be surrounded by brilliant scholars in the lab, at the university, and in Boston more broadly (uncontroversially the Center of the Academic Universe).

7.1 Lab Meetings

Lab members participate in both regular and ad hoc meetings. These meetings may involve everyone or just subgroups. If you have been asked to participate in a meeting, it is because you are a vital part of that project group. If you cannot attend, you should tell the group leader in advance. Remember, however, that the group may no longer be able to carry out the intended work without your presence, so skip meetings sparingly.

If you do not appear at a meeting as expected and have not informed anyone in advance, it will be assumed that you have been abducted by aliens, and a search-and-rescue mission will be organized.

All meetings begin and end on time, if not earlier. Don't be afraid to remind me of this if I am the offending party. It is important that we all respect each other's time.

7.2 Colloquia

The university hosts a number of colloquia and ad hoc talks. While these are probably too advanced for new members of the lab, thesis students and more senior members of the lab are encouraged to attend talks that are of interest. If a talk conflicts with a meeting, discuss with the meeting organizer the possibility of moving the time of the meeting, particularly if the talk would be of interest to multiple lab members. (If the meeting cannot be moved, you should attend the meeting except under exceptional circumstances.)

All senior members should be sure to attend:

- The Department Colloquium
- The Developmental Workshop
- Language and Cognition (hosted at Harvard)
- The graduate student and undergrad research days

When possible, senior members should try to attend dissertation defenses in our department. This is a good way of learning about work outside of our immediate area. **Everyone** should try to attend when one of our own is defending a thesis.

7.3 Conferences

I believe in conferences – both presenting at conference and attending them even when not presenting. Senior lab members have a conference budget, which they can use to support their own travel to conferences. This money can be used even if you are not presenting work at that conference. Some projects additionally have funds to support presenting at a conference. To use those funds, you will need the permission of whoever manages the budget for that project (possibly you!).

The reason for giving senior lab members a conference budget is so that they can decide for themselves what conferences make the most sense, as well as how much comfort they need when traveling (though keep in mind Federal reimbursement rules). When allowed by the business office, you should feel free to use *per diem*. The purpose is to provide you with maximum flexibility. I will of course advise you on which conferences I think might be appropriate. Most years, I attend the Boston University Conference on Language Development, which takes place around Halloween; the Annual Meeting of the Cognitive Science Society, which takes place in late July or early August, and; either Architectures and Mechanisms in Language Processing (early September somewhere in Europe) or the CUNY Human Sentence Processing Conference (in March, somewhere in the USA).

Depending on funding, the lab may pay for registration at BUCLD for advanced undergraduates, particularly undergraduates who are considering graduate school. In rare circumstances, the lab may support attendance at out-of-town conferences for thesis students.

8 Communication

8.1 Communication within the lab

8.2 Expectations, or Turn your notifications off!

Constant interruptions are [bad for productivity](#). I try to check my email only a couple times per day. The same is true of Basecamp (see below).

If you truly need to reach me right away, you should either come knock on my door (assuming we are both in the lab — which is less common than it was in the Before Times) — or ping me by text telling me that there is some email or Basecamp message (or whatever) that you need me to see. My number is in the lab phone directory.

I highly recommend that you use the same strategy. Turn notifications off, and only check your email and Basecamp as specific times during your day. Give yourself the space to concentrate on your work. So that people can find you if they need to, either do your work in the lab (and people can find you there or call the lab phone) or add your number to the lab directory so you can be texted if needed. If you don't want everyone to have your number, you can share it privately with the lab manager who can then be the go-between.

You are **not** expected to check your email or Basecamp when not working. As a parent of a young child, my schedule can be funny. You may see me posting at night or on the weekends. You are not required to reply before you are back at work, *even* if I write “urgent” or “ASAP” in the headline. Obviously, your response during an emergency is appreciated, but it is not required. It's my job to plan ahead. (Same goes for your labmates.)

8.3 Project Meetings

We have three kinds of project meets: scrums, standing meetings, and *ad hoc* meetings.

- **Scrums** are brief meetings (as little as 15 minutes) where each partic-

ipant briefly reports what they've accomplished since the last scrum, what they plan to do before the next one, and flags any issues that may require a dedicated *ad hoc* meeting. The goal of scrums is to keep the team up-to-date and promote coordination across individuals. They are generally not venues for making decisions or addressing problems.

- **Standing meetings** are regarly scheduled meetings involving two or more people. These can be useful for projects that have fairly predictable meeting needs. For instance, the lab management team meets weekly to address any lab management issues that have come up in the prior week and make sure there are not any outstanding todos. Some project leaders find it useful to have standing meetings for research projects. However, I have scaled back my own commitments to standing meetings in order to have more fleixibility for *ad hoc* meetings.
- **Ad hoc meetings** are one-off meetings scheduled for a specific purpose: for instance, to make a decision about something. These can be scheduled with the PI using youcanbook.me (see the wiki for more details). I have free blocks of time in my calendar specifically for this purpose. Use them.

Meetings should *always* have an agenda. For scrums, this takes the form of mini-agendas, one for each participant. For *ad hoc* meetings, these will usually take the form of an issue doc. In general, this will be written by the person calling the meeting and circulated *in advance*. There are templates for agendas and issue docs (see the wiki).

With the exception of scrums, all meetings should also have written minutes, documenting the decisions made and any action items. For all standing and *ad hoc* meetings, there should be a participant designated as being in charge of the minutes. If the meeting is between just you and me, you are in charge of the minutes.

The agendas and summaries/minutes should be memorialized somewhere obvious on Basecamp. For instance, if an *ad hoc* meeting was called in response to a todo, the agenda and summary should probably be attached to the todo as comments. If it was prompted by a message thread, it makes sense to add it to the thread. For standing meetings, it probably makes sense to include the agenda and minutes in the project notebook (see

below). Basically, put information where you are likely to think to look for it.

You should document meetings with me on the assumption that I will immediately forget everything that was said the moment the meeting is over. If it isn't memorialized in Basecamp, it never happened. When following up on a prior conversation, you will find it useful to point me to the agenda and minutes from that conversation.

Basecamp

Basecamp is the official record of what we talked about: If it's not in Basecamp it didn't happen. So, please help me by keeping Basecamp up to date. A few thoughts and tips:

- Use pings and campfire messages only for throw-away conversations, like asking someone if they want to go get coffee. Pings aren't searchable and they can't be read by anyone who wasn't part of the conversation, so they are not useful for project planning. Campfire messages are searchable and readable by anyone with access to the specific basecamp, but it's a single endless thread, so it becomes hard to find an old conversation that is still relevant.
- You can comment on todos. If you are having a conversation about a specific thing that needs to be done, have it as a comment thread on the todo itself. That way, the information is in the most obvious place you might look!
- Message threads are useful for archival conversations that aren't directly associated with a particular todo. For instance, these are a great place to discuss overall goals for a project, or raise an issue that you think needs to be discussed but for which there's no specific action item (yet).
- Put information in the right basecamp. We use different basecamps for different projects. Discussing the critical periods project in the lab admin basecamp is a recipe for not being able to find things!

- You all have your own personal basecamp, accessible only by you and your supervisor(s). These don't get used much but are a good place to put requests for letters of recommendation, questions about funding, and other questions that aren't tied to a project and don't involve your labmates.
- You may get regular check-in messages associated with the various basecamps you are part of. Be sure to respond to these, as they are used to determine meeting agendas and make everything run more smoothly.
- If you want to ensure that I read something on Basecamp, be sure to tag me. Do not assume that I am reading everything. There's simply too much.

Trello

We are increasingly using Trello for certain kinds of projects. This is currently on a case-by-case basis. It supplements – rather than eliminates – Basecamp. In general, when there is a Trello workspace associated with a project, it will take the place of basecamp todos, but message threads, documents, and the project notebook will still be stored in the project basecamp.

Project Notebooks

Scientists in wetlabs keep notebooks that are essentially science diaries, recording every major decision, problem, or result. We use Basecamp for the same. Your projects should each have a message thread where major issues are recorded, in chronological order. This includes pasting in photographs, figures, output from R, etc. – anything that we might need later to reconstruct what has happened during the lifetime of the project.

This is not a journal article. You don't have to worry about pretty prose or getting the margins right. Complete sentences are not necessary. And you don't need to report every little thing you've done (“Today, I read an interesting paper about...”) Instead, imagine that one of your collaborators has been on vacation for a month (!) and you want to get them up to speed on what has happened. Put the information they'll need in the notebook.

This certainly includes mentioning important decisions, but you may also paste in graphs and figures.

For some projects, the project team may wish to use RMarkdown or a Python notebook instead of a message thread. This decision should be made on a case-by-case basis.

For more information, see the wiki. Speaking of...

Wiki

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

Email

We use email to communicate with the outside world. I may sometimes forward you emails if I’m on my phone and can’t easily paste them into Basecamp or if I think you need to reply to the original sender. But in general, we should avoid using email for communication. Restricting our communication to Basecamp and (perhaps) Trello helps keep things organized and in one place.

Calendars

Accurate calendars are extremely important in managing lab space and resources. It is crucial that everyone use the calendars regularly and ensure they are accurate. **Use the lab calendars and follow the instructions described on the wiki.**

8.4 Communication outside the lab

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

Manuscripts

When you are out in the big world on your own, you are free to format your manuscripts however you like. While you're in L3, when sending me a draft of a manuscript, please do the following:

- Use \LaTeX or R Markdown if at all possible. Neither are that hard to learn. Many – though not all – of our collaborators are comfortable with \LaTeX . If they are not, please discuss with me.
- Store the manuscript in a repo. Do not email papers around; share the repo instead. (Again, if your co-author refuses to use Git, discuss with me.)
- Include page numbers.
- Include the full author list starting from the first draft. This helps clarify any authorship issues or concerns early on.
- Include placeholders for all sections (i.e., introduction, methods, results, discussion, etc.) even if they are empty, so that we can fill them in as we go. Having placeholders also helps clarify the organization from the beginning.

Some of these are good practice; others are simply my own preferences. However, if you humor me in these, it will decrease my distraction when reading your writing, and ultimately enable me to be more useful. I'm happy to send you a blank draft manuscript to get you started.

8.5 Conference submissions

If it has my name on it, I want to see a draft **at least one week** before the submission deadline. I can't read 15 6-page papers all the night before! Plus, I've found that having the time to do several rounds of revision increases the probability of acceptance.

Talks

An old saying goes: *You only have one chance to make a first impression.* Another, more science-specific one, is: *Every job is a job talk.* This isn't a saying but probably should be: *Fantastic research that nobody understands isn't fantastic.* In short, approach giving talks as a serious endeavor that is at least as important as any other part of the research cycle.

As such, anyone giving a talk to a non-lab audience ought to give practice talk at least one week before the real talk. *This includes me.* If this is your first public talk on a lab project – or an exceptionally important talk – plan on at least two practice talks (starting at least 2 weeks before the real talk). This also means that when planning your time, you should factor in time to attend your labmates' practice talks. You may find you learn more from helping your labmates improve their talks than you learn from practicing your own.

Practice talks should be mostly finished (final slides, practiced, and the right length) so that our comments will be as helpful as possible. Schedule one or more meetings with me ahead of time to plan or go over your slides, especially if you haven't given many talks before.

Posters

Posters are talks, too. People have gotten job offers at posters before. You should circulate an initial version of your poster to all co-authors. Remember that they may be working on their own posters or presentations, so the more time you give them, the more likely you'll get a detailed response. I suggest at least one week of lead time.

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

Posters should be available in PDF version on the lab website *no later* than the day of your talk. This way, you can include the URL on your poster.

For many conferences, you will want to bring a sign-up sheet where people can request an emailed PDF (some people will prefer this to writing down a URL). Pro tip: I only get emails for about one in ten of the posters I sign up for, which suggests that most people lose these lists. Try to be more organized, but assume that you probably won't be, and send the email out the same day.

9 Science

9.1 Open, accurate, and reproducible science

All science builds on prior work. If that prior work turns out to be in error, time and money is wasted and careers are ruined. You have a responsibility to the community – and a responsibility to me and your labmates – to always uphold the highest standards of scientific accuracy and integrity. As such, you should always:

- make all reasonable efforts to avoid errors appearing in our published work, and
- swiftly correct any errors that are detected.

Everything in the rest of this section is elaboration on those overarching ideals.

Fabrication

By being in the lab you agree to adhere to professional ethical standards. There is never an excuse for fabricating or misrepresenting data. If you have any questions, or in the unlikely event that you have concerns about something in the lab, please talk to me immediately.

Adverse Events

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

Inspired by a blog post on reliability in the lab¹, I ask you to report any adverse events through Basecamp so that they can be discussed during the next project meeting. Several projects have message threads specifically for this purpose. If you find you need one that doesn’t exist, please start one.

¹<http://jeffrouder.blogspot.com/2015/03/is-your-lab-highly-reliable.html>

(As of writing, the VocabDev group does a particularly good job of this and should be used as an example.)

- Any of the lab computers malfunctioning (including freezing or crashing)
- Not being able to find the installation disc for a software program
- Nearly running out of money to pay participants (this counts as a “near miss” which we also need to discuss)

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

Documenting Your Work

Every study and paper should be deposited in a git repository on Bitbucket. This repository should have an up-to-date readme.md in order to facilitate searching (we have a lot of repositories). You should commit regularly, with clear, concise commit messages.

Each experiment should have an associated *experiment checklist*, which lists steps that must be taken to ensure quality. We have a few different templates to choose from, based on the kind of study.

The commit messages, readme.md, and associated project notebook should be sufficient such that were you to win the lottery and retire to the Bahamas, whoever took over your work could quickly and easily reconstruct what you have done. (More realistically, don’t underestimate your own ability to forget what you did and how you did it.) For the same reason, the repo should be kept clean and orderly. @

Pilot Experiments

I strongly encourage the use of pilot experiments. Pilot studies are experiments that are used to test out new stimuli or paradigms. Often, a project will begin with several pilot studies, which are used to iteratively refine the methods.

In most cases, pilot studies should be in a folder named *Pilots* in the main folder of the study repo. If there are multiple pilots, each should have its own, self-contained folder. For some projects (e.g., VerbCorner), we file the pilots somewhat differently, but this should be the exception, not the rule, and there should be a good reason for it.

As a general rule, pilot studies are not reported in publications, except perhaps in footnotes or appendices. Think of them as practice for the Main Event.

Main Experiments

Main experiments are experiments that are run with the intention of publishing them in a scientific work, whether or not they are ever actually published. Any experiment that you are considering publishing should meet the guidelines below.

Pre-Review

Nothing is worse than running an experiment – especially an expensive study – only to discover there was a bug in your code or problems with the stimuli. Before running any main experiment, you should write up the methods and planned analyses. This experiment plan – along with all stimuli – should be reviewed by another member of the lab *before you run any subjects*. Your reviewer may request changes, which you should make before running subjects. There are typically several steps in an experiment checklist that involve review. The checklist itself is helpful for documenting review.

Ideally, all researchers working on the project will review this plan, but your official reviewer should be someone not involved in the project (if any are available), so that s/he comes to it with a fresh perspective. This reviewer should be acknowledged in any publication stemming from that experiment.

It is up to you to find a reviewer. Please do not always go to the same person; they have work they need to do, too. Spread the love. If this becomes a problem, we may start a rotation. **Establish ahead of time with your reviewer how much time they need to review.** If you have a deadline for when you need the data, you'll need to take into account your reviewer's turn-around time.

All full-time members of the lab are required to be reviewers if asked. You should complete the review as quickly as you would like others to review for you. If it is going to take more than a week (i.e., you are about to leave on vacation or for a conference), you should decline the review. But don't do this too often. Nobody likes a freeloader.

If the documentation is confusing, messy, or incomplete, the reviewer should request that it be cleaned up prior to full review.

Registration

With few exceptions, study plans should be registered with the Open Science Framework after review and prior to running. More publications are starting to require this, and it takes all of a few minutes.

Pre-Submission Review

Just as we review experiments before they are run, we review them before they are sent out for publication. This should involve reviewing not only the manuscript but also the analysis scripts and the data themselves. Remember that we are not just checking for errors, we are also making sure that our documentation is clear and that other scientists can easily understand what we have done and reproduce it themselves. Again, this reviewer should be someone who was not involved in the project. It can be someone who reviewed (one of) the experiment(s).

9.2 Equipment

Amazon Web Services, the Lab Server, and other shared spaces

We make extensive use of Amazon Web Services. We store a lot of things on the lab server. As with any communal space, there is a risk that these resources get littered with junk: files that nobody recognizes and are afraid to delete in case they are important but actually haven't been used in years.

Consult the wiki and experienced members of the lab for information on appropriate care and feeding of communal computing resources.

9.3 Participants

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

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

For all participants:

- Dress appropriately: The lab environment is fairly relaxed, and dress code is equally relaxed. However, everyone is expected to dress appropriately (i.e. avoiding revealing clothing and workout attire). If you have any questions about what constitutes appropriate clothing, please ask a lab manager.
- Be prepared to answer questions. If you don't know the answer, it is completely fine to ask the participant if someone else can call them back. You are then responsible for making sure this happens quickly.
- Arrive at least 30 minutes prior to testing time to make sure equipment and paperwork are all set, and to be around in the event the participant shows up early. Everything should be set up before the participant arrives. You should be at the designated meeting spot 15 minutes before the agreed upon time.

For non-students and parents:

- Always use a title (Dr./Ms./Mr.) and a participant's last name when addressing them. If you aren't sure how to pronounce their name, ask them.

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

Some participants are involved in multiple studies, and they may lose track of which person is associated with which study. Make sure to remind

Table 9.1: Terms associated with research studies

Instead of saying:	Say this:
experiment	study, research study
subject	volunteer, participant
test (e.g., “hearing test”)	task or screening (“hearing screening”)

participants you are calling or emailing that you are from L3, and clarify the location for testing when the time comes.

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

9.4 Testing locations

- Many of our testing locations are shared with other researchers, so it is very important that we are good citizens when it comes to using these spaces. Being a good citizen includes scheduling the time as required, not using more than our allotted time, and leaving the room as clean as we found it (or preferably cleaner).
- No one should test a subject without signing out the testing room.

See the lab wiki for specific instructions for various locations.

Backing up your files and data

Always assume that as soon as you turn your back the computer on which you have been working will explode. **Make sure your work is always backed up.** Thinking such dire thoughts will make it easier to remember to push all new data, paper drafts, etc., to the appropriate repo.

If you are an RA who has not yet learned how to use Git, use some other system for backing up.

9.5 Authorship

Many professional associations and journals have published authorship guidelines, which are worth looking at (for example: [ICMJE](#)). In my view there

are two key requirements to being an author:

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

Note that “collect data”, “analyze data”, or “fund the study” aren’t on the list. Those are very important parts of a paper, but do not (on their own) warrant authorship. Being an author means understanding the content and being willing to take public responsibility for the work: a large part of this concerns the theoretical motivation and implications of the research. In practice, theoretical contributions are most often made through helping with the study design, data interpretation, and discussion about a topic.

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

I assume that, unless we have talked about it, I will be an author on papers coming out of the lab. This does not mean that you should add me on to papers as a courtesy; it means that I expect you to offer me the opportunity to participate in the research in a way that merits authorship. Just as it may not make sense for you to be an author on certain papers, it may not make sense for me to be an author on some of yours, either because I am not needed or because you and I have decided it would be beneficial for you to take a stab at solo authorship. In other words, take the same approach with me that I take with you.

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

10 Other

10.1 Recommendation letters

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

I will make extensive use of our one-on-one basecamp in order to refresh my memory. Remember, you may have only worked in a few labs, but I've worked with nearly 50 students, and over time, things blur together. This is a reason it's important for you to use basecamp faithfully.

If you are an undergraduate who worked primarily with me, I will write your letters on my own. If you worked primarily with a graduate student or post-doc, you should decide whether you want the letter to come from them or from me. If you want it to come from me, your direct supervisor should write a draft for me to edit.

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

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

11 Frequently asked questions

Where are all the FAQs?

No one has asked any questions yet.

If you are looking at a printed version, please write questions here:

12 Glossary

IRB (Institutional Review Board)

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

PI (principal investigator)

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

CV (curriculum vitae)

Academics use CVs (literally "course of life") instead of resumes. A CV is a complete list of your academic work, including (at least) education, job history, papers published, presentations given, awards won, courses taught, grants received, and students mentored. Unlike a resume, there's no pressure for a CV to be short. There is no standard structure as to the order of information, other than that education and career history come first.

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

Reading test

Lab members: Please print out a copy of this page and write your name below to indicate you have read the current version of the manual and agree to follow these policies.

Date

Printed name

Signature