

Minda Lab Manual

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April 9, 2026

Contents

1	Introduction	2
1.1	About this Lab	2
1.2	Core Values	2
2	Expectations and Roles	3
2.1	Supervisor Role	3
2.2	MSc Students	4
2.3	PhD Students	6
2.4	Post Docs	8
2.5	Honours Students	8
2.6	Research Assistants and Volunteers	9
3	Lab and Office Space	9
3.1	TA Office	9
3.2	Research Space	10
4	Lab Communication	10
4.1	Slack Channels	10
4.2	Email	10
4.3	Calendar	10
4.4	SharePoint	11
5	Lab Meetings	11
5.1	Discussion of Current Projects	11
5.2	Discussion of Current Literature	11
5.3	Professional Development	11
5.4	Methods	12
6	General Lab Practices	12
6.1	Open Science	12
6.2	Record Keeping	12
6.3	Document Preparation	13
6.4	References and Bibliography	13
6.5	Statistics	13
6.6	Ethics	13
6.7	Google Scholar	13
6.8	Lab Web page	13
6.9	CV	14

6.10 Software and Hardware	14
7 Conferences	14
7.1 Conference Funding	14
7.2 Common Conferences	15
8 Authorship	15
8.1 What counts as a contribution?	15
8.2 Author Order	16
9 On Writing	16

1 Introduction

I created this document to summarize my expectations for students and trainees, outline my role as a supervisor, describe my research philosophy, and detail aspects of how our lab works. This manual is a combination of a practical guide and an essay on how I think a lab should be run. It is not my intention to be a micromanager. I do not like to micromanage and I do not do it well. Everything in this document is intended to be a guideline and should not be interpreted as policy.

The second section is the most important because it describes our roles and expectations. We are all here to study cognitive psychology — how people think, how they learn, how they behave, and how the brain supports these functions. In order to achieve this goal, it is important to consider our roles in the lab. Doing so will also help you complete your degree or program successfully.

I endeavour to treat all my students, trainees, and volunteers with respect and courtesy, and I assume that all members of our lab share that goal. I value diversity and equity in my lab. If you are aware of or are experiencing harassment of any kind, please either bring this to my attention and/or discuss it with the university [Equity Office](#).

1.1 About this Lab

We used to be called **The Categorization Lab**. I chose that name for the lab in 2003 because I am interested in the process of categorization. I am interested in other things, too, but concepts and categories are at the core. How and why do humans (and non-human animals) categorize and classify things? Since 2018, I have referred to our lab as **The Minda Lab** because that is what everyone calls us and because we study more than just categorization.

We are part of the [Department of Psychology](#) and the [Western Centre for Brain and Mind](#) at Western. All lab members except external collaborators will be members of the Brain and Mind research groups as well.

Our research is oriented toward understanding the basic cognitive mechanisms involved in categorization, learning, generalization, and how concepts influence thinking and behaviour. This sometimes leads us to areas that are related to categorization, such as working memory, implicit learning, and visual attention. This research will also occasionally use what we know and discover about category learning to investigate other things, like cognitive aging, cognitive development, and the computational modelling of cognition.

1.2 Core Values

These are my core values about mentoring and science. I hope to keep these front and center, and I hope to be a good guide and helpful mentor.

- I value equity, diversity, and inclusion in my lab and in what we do. *Everyone* should feel welcome. *Everyone* should feel comfortable to engage in learning and discovery.
- I value the opinions and insights of trainees and collaborators.
- I value your decisions about your career, and your eventual success in your chosen field, whether it is in cognitive science, academia, industry, clinical, or elsewhere.
- I value interesting, creative, and informative research.
- I value careful analysis, thorough and detailed record-keeping, and good writing.
- I value open and reproducible science. We should strive to make our work accessible, clear, and documented.

2 Expectations and Roles

I supervise undergraduate volunteers, undergraduate honours thesis projects, master's students, doctoral students, and postdocs. My role as supervisor varies according to the specific role of the trainee. Below are some details regarding my role and the expectations and roles for each trainee category. Many of these things overlap (e.g., attendance at lab meetings is expected for many trainees), but in other cases, the expectations are specific (e.g., senior PhD students are often expected to play a supervisory role with respect to honours students).

2.1 Supervisor Role

My role is to supervise, to guide, and to advise. I have my own research interests, but my primary role is to be the lab's director. I am not a boss, but I set the research agenda and strive to create a culture where all of our ideas and suggestions are valued. I expect that we are all here to engage in fundamental scientific research and are motivated to discover how people think and behave, how they learn about categories, and how conceptual structure influences thinking and behaviour.

2.1.1 Meetings

Individual advising meetings should be every other week, one-on-one. We will pick a time that works for each of us and keep it as a set meeting time for the term. I use Outlook as my primary calendar and will organize meetings with calendar invites so that they show up on both of our calendars. *Please use the calendar invite system on Outlook or Google.* We can meet in person in my office or on Zoom, whichever works best for you, and this can vary by week. I am also available for drop-in advising and consultation at other times, and you can also usually stop by my office most weekdays for quick discussions.

2.1.2 Research Guidance

As a supervisor, I help junior students and undergraduate students decide on, design, and implement research projects. I expect to guide senior students in scientific discovery and professional development. In this role, I will read your work. I will edit your documents. I will offer critiques and suggestions and may suggest analyses. My suggestions are intended to be helpful and critical, and you should consider them, but you are not obligated to implement them. I might challenge your conclusions from time to time, and may disagree with how you interpret your work or design a study. And I can be challenged, argued with, and convinced by evidence that I'm wrong (which is not infrequent).

2.1.3 Academic Advising

If you are a graduate student in my lab, I will serve as your academic supervisor and advisor. That means that I will help you decide on course selection, serve as a *de facto* member of your advisory committee, sign off on official documents, and work with you to ensure you are aware of and meet your program requirements. I can also help as a resource when making career decisions.

2.1.4 Letters of Reference

For all trainees: I will act as a professional / academic reference for you. This could be in the form of letters of reference for employment, for training opportunities, graduate school, grants, and awards. If you are seeking a letter of reference, please notify me as soon as possible and as far in advance as possible (several weeks or months). Please provide me with as much information as possible, including your CV, reference forms, reminders, etc. It can help to provide me with a list of things you would like me to mention in the letter. The more information I have, the better letter I can write for you. Please bear in mind that I may have several (many) other letters to write, including those for students outside the lab. As a rule, *I will write your letter personally* and ensure it arrives when and where it needs to.

2.1.5 Funding

Although my ability to fund students depends on my own success with external grants, I am committed to funding you as I am able. As a graduate student, you will probably receive a tuition scholarship and a GTA for fall and winter. You may also receive funding through an external award (NSERC, SSHRC, CIHR, or OGS). The details of departmental funding can be found on the [department website](#). My grant-funded support may cover some of the following:

- I can provide summer funding for graduate students at a rate that is similar to the GTA. If you are receiving a scholarship (Federal, Provincial, or University), I will not usually provide additional summer funding or salary beyond that.
- I subsidize at least one conference trip per year for graduate students.
- I will cover *all the costs* associated with research projects for all trainees.
- I provide all the computing and equipment resources necessary for your research.
- I will cover the costs associated with publication, copying, and printing posters.

2.2 MSc Students

Master's students are bound by the department's [general guidelines](#). Most students in my lab are enrolled in the Cognitive Developmental and Brain Sciences (CDBS) program and should follow the specific guidelines for the [CDBS graduate program](#). My general expectation for MSc students is that they will be active participants in the lab. That means that you are spending time in the lab, you are attending lab meetings, CDBS area seminars, and departmental talks.

Most MSc students are planning to apply to the PhD program, and that is my expectation as well. This is not a requirement, though, and acceptance into the PhD program is not guaranteed. There are many good reasons to stay and pursue a PhD, and many good reasons not to pursue a PhD. We will discuss these things during the course of your study, and there is a section below on making this decision.

2.2.1 Milestones and Duties

Choosing an Advisory Committee - During your first year you should choose an advisory committee. The advisory committee consists of me (the supervisor) and at least two other faculty members, at least one of whom is a member of the Psychology department. Details are found in the [CDBS](#) program requirements.

Individual Meetings - I meet with Master's students individually at least once every other week. These meetings can be 30 min to an hour, and we will discuss your projects, program, coursework, and plans. We'll decide on a meeting time that works for us, and we should both protect the time from encroachment by other duties.

Initial Project - You will be assigned an initial project in your first year. This project will be related to one of our primary research themes, and we will work together to develop the idea into an empirical research project. Your responsibility is to read and master the relevant background literature, to help design the empirical protocol, to apply for or amend ethics protocols (see the section on [Ethics](#)), to collect the data and to run the primary analyses. I will assist with any of these aspects, as will senior students.

Lab Meeting Attendance - I expect Master's students to attend lab meetings as often as possible and to present research several times each term. See the section on [Lab Meetings](#) for more information.

Seminar Talks - It is your responsibility to attend the weekly seminar meetings held by the [CDBS](#) area. These talks are always held on Friday afternoons at 12:00pm during the fall and winter terms. You should plan to present your research (proposed, in progress, and/or completed) once a year at these seminars. Plan to give a practice talk at a lab meeting prior to presenting in the CDBS seminar.

Conference Attendance - Conference attendance is encouraged for all graduate students. This is a chance to present your work to the scientific community and network with other cognitive scientists. See the section on [Conferences](#) for more information.

Master's Thesis - The capstone to your master's program is the master's thesis. The master's thesis should be an experimental and/or computational project that is designed by you, with my input. In our lab, the most common format is an experimental paper on some aspect of categorization or higher-order cognition. Other topics are possible, but the central work should still be within the range of topics that are being investigated in our lab. An experimental thesis will typically contain a literature review introduction, a full write-up of 2 or more experiments that you designed, conducted, and analyzed, and your interpretation of those results. The work you undertake in the Initial Project (described above) may or may not evolve into a Master's Thesis. Though it is not a requirement of the Master's program, you should consider preregistering your master's thesis work with the Open Science Foundation (see the section on [General Lab Practices](#) for more information on OSF).

Other Research - Although it is not a formal requirement of the MSc program, students can and should be involved in other research as well. You can assist in my research by learning to program behavioural studies in PsychoPy, scheduling research participants, running experiments, conducting basic analyses, etc. You can do the same on projects being led by senior PhD students or projects with honours students. *The best way to improve on your research ability and skill is to keep doing it.* The best way to understand more about the brain and mind is to work on research projects and to think about research projects that test the predominate theories in our field.

Publication of Thesis - You should publish and/or present your thesis if possible. The outlet will depend on the topic and also on the outcome of the experiments. Preregistration will facilitate the process by having some initial peer review of the project. You should discuss this with me as you are designing the study.

Decisions About Doctoral Work - During the summer between your first and second year, we will discuss doctoral work. The PhD program at Western requires a master's degree, and transitioning from a master's to a PhD is a natural progression. But the PhD is not for everyone. You should be prepared to work on

Cognitive Psychology, Cognitive Science, and Cognitive Neuroscience for the next 4 to 5 years (and well beyond). You should think about these questions as you contemplate your decision:

- Do you want to commit the next 4 to 5 years to being in my lab?
- Do you want to work on the same projects for months or years?
- Are you passionate about Cognitive Psychology, Cognitive Science, and Cognitive Neuroscience?

You want to be able to answer “Yes” to these questions. If not, you may want to consider graduating with a master’s degree. We should discuss these things, and you should know that I do not wish to pressure anyone into a PhD program. I can assist and advise you as you make the best decision for yourself. I want to say clearly that if you are considering the option of completing your MSc and not pursuing a PhD, I will be supportive and will help. Please do not feel like you are letting me or the program down.

Other options might include applying to PhD programs at other institutions or other doctoral or professional programs. These are also important decisions and I can assist, advise, and help you make the best decision for you.

2.3 PhD Students

Doctoral students are bound by the department’s [general guidelines](#). Most students in my lab are enrolled in the Cognitive Developmental and Brain Sciences (CDBS) program and should follow the specific guidelines for the [CDBS graduate program](#). Other students in my lab may be enrolled in the Clinical Psychology program or the Neuroscience program. I expect PhD students to be active participants in my lab and to be working toward independence as well. That means that you are spending time in the lab, you are attending and leading lab meetings, attending CDBS area seminars, and attending departmental talks. As a PhD student, you should also take the opportunity to help mentor and supervise undergraduate students in the lab as they work on their honours theses, supervise undergraduate research volunteers, and help mentor more junior graduate students.

2.3.1 Milestones and Duties

Choosing an Advisory Committee - During your first term, you should choose an advisory committee. The advisory committee consists of me (the supervisor) and at least two other faculty members, at least one of whom is a member of the psychology department. Details are found in the [Thesis Committees](#) section of the program requirements.

Individual Meetings - I meet with PhD students individually every other week. These meetings can be 30 min to an hour (or more), and we will discuss your projects, program, coursework, and plans. We’ll decide on a meeting time that works for us, and we should both protect that time from encroachment by other duties. I use Outlook as my primary calendar, and will organize meetings with calendar invites so that they show up on both of our calendars. We can meet in person in my office or on Zoom, whichever works best for you and this can vary by week.

Lab Meeting Attendance - I expect PhD students to attend lab meetings as often as possible. See the section on [Lab Meetings](#) for more information.

Seminar Talks - It is your responsibility to present your research (proposed, in progress, and/or completed) at the weekly seminar meetings held by the [CDBS](#) area. These talks are always held on Friday afternoons at 12:00pm during the fall and winter terms. Your talk can be based on research in progress, research completed, or research that you are proposing. Please plan to give a practice talk in a lab meeting prior to presenting in the CDBS seminar.

Dissertation Proposal - Students in the CDBS program should plan to present a dissertation proposal in their first year (see the [CDBS](#) requirements). The reason for making the proposal early is to allow the advisory committee to be well-informed and involved in the scope of the project.

Comprehensive Exams - Comprehensive or qualifying exams are written in the second year of the PhD program. You must pass your qualifying exams to continue in the program. As with many of the programmatic aspects of the PhD, the details are found in the [CDBS](#) documents.

Conference Attendance - Conference attendance is encouraged for all graduate students. This is a chance to present your work to the scientific community and to network with other cognitive scientists. See the section on [Conferences](#) for more information. You should try to present your work at least once a year.

Dissertation - The capstone to your PhD is the dissertation. This is to be an original research project that should be an experimental and/or computation project that is primarily designed and carried out by you, with input and supervision from me. In our lab, the most common format is an experimental paper on some aspect of categorization, higher-order cognition, or mindfulness meditation. Other topics are possible, but the central work should still be within the range of topics that are being investigated in our lab. An experimental thesis will typically contain a literature review introduction, a full write-up of several experiments that you designed, conducted, and analyzed, and your interpretation of those results.

Though it is not a requirement of the PhD program, you should consider preregistering your thesis work with the Open Science Foundation (see the section on [General Lab Practices](#) for more information on OSF).

Other Research - Although it is not a formal requirement of the PhD program, students can and should be involved in other research as well. This can take many forms. You can assist in my research by learning to program behavioural studies in PsychoPy, scheduling research participants, running experiments, conducting basic analyses, etc. You can do the same on projects being led by other PhD students, MSc students, or projects with honours students. You can also seek out collaboration with other PIs. The best way to improve on your research ability and skill is to keep doing it. The best way to understand more about the brain and mind is to work on and think about research projects that test the predominant theories in our field.

Publication of Thesis - You should publish and/or present your thesis if possible. The outlet will depend on the topic and also on the outcome of the experiments. Preregistration will facilitate the process by having some initial peer review of the project.

Supervision of Undergraduates - PhD students are encouraged to supervise honours students as well as undergraduate RAs. I can provide insight and guidance if needed.

Leadership Opportunities - There are many opportunities to be involved in leadership, such as helping to coordinate the BMI coffee breaks, helping to coordinate the speaker series, conference organization, and student groups. Ask your peers, other faculty, and me about these if you are not sure.

Planning for the Future - The professional landscape for PhDs in psychology or neuroscience is complex and can be daunting. We should be discussing your plans at our meetings and you should also be discussing these things with your peer group both within the university and the program, but also with the cohort of other students in other programs.

One thing to consider is that the majority of PhD students (most of your grad school peers here and elsewhere) do not end up in tenure-track faculty positions. Many work in other research industries. There are opportunities with high-tech companies, consulting firms, government groups, and university research. If you are considering an academic career, your focus needs to be on developing a line of research that you are passionate about, actively publishing about and presenting to attract funding in that area, and seeking out additional training as a postdoc. If you are considering a career in scientific research outside the academic world, the planning is similar, but you should also be looking at developing transferable skills (data science skills, programming, analysis, etc.) that you can highlight on your CV. You should also look at postdoc fellowships that offer internship opportunities, like the [Mitacs](#) program. In either case, *talk to other graduate*

students and postdocs about their experiences. Do not be afraid to ask for help and guidance from me, your advisory committee, the graduate provost's office, [SGPS](#), and other organizations.

One thing that I do want to be clear about is that I will be supportive of your decisions. This is your career. You should not feel that your decision to choose a certain career path will run counter to my role as your supervisor. And if you feel I am not providing the answers or guidance you seek, we will look for other solutions.

2.4 Post Docs

2.4.1 Milestones and Duties

Lab Meeting Attendance - Postdocs are to attend lab meetings as often as possible. See the section on [Lab Meetings](#) for more information.

Individual Meetings - I meet with postdocs individually once a month to discuss your projects and professional plans. We'll decide on a meeting time that works for us, and we should both protect that time from encroachment by other duties. I use Outlook as my primary calendar, and will organize meetings with calendar invites so that they show up on both of our calendars. We can meet in person in my office or on Zoom, whichever works best for you, and this can vary by week.

Conference Attendance - I encourage conference attendance for all trainees and especially for postdocs. See the section on [Conferences](#) for more information. You should try to present your work at least twice a year.

Supervision of Undergraduates - Postdocs are encouraged to supervise honours students and undergraduate RAs. I can provide insight and guidance if needed.

Leadership Opportunities - There are many opportunities to be involved in leadership, such as helping to coordinate coffee breaks, helping to coordinate the speaker series, conference organization, and student groups. Ask your peers, other faculty, and me about these if you are unsure.

Planning for the Future - The professional landscape for PhDs in psychology or neuroscience is complex and can be daunting. We should be discussing your plans at our meetings and you should also be discussing these things with your peer group both within the university and the program, but also with the cohort of other students in other programs.

The most important thing is developing your own program of research. It can take years to land a tenure-stream job. I will help you prepare by giving you feedback on your job talk, your CV, and your research statement.

2.5 Honours Students

My lab supervises up to four undergraduate honours students each year. As an honours student, you are expected to carry out an original research project that is related to one of the main themes in the lab. Typically, I will have several projects in development that you can work on. Senior graduate students or postdocs often supervise honours students in the lab. I will provide final oversight, and subsidize the cost of printing your poster. If you submit the resulting research project to a journal for publication, a graduate student and/or I will act as senior (final author) on any journal submissions or conference proceedings.

2.5.1 Milestones and Duties

In addition to the general requirements of the [honours thesis course](#), there are several general milestones and duties that I ask honours students to carry out. We will discuss these details at our initial meeting.

Lab Meeting Attendance - I expect honours thesis students to attend the weekly lab meetings if possible, though I recognize that these meetings may conflict with your classes. See the section on [Lab Meetings](#) for more information on lab meetings.

Project Selection - Students should select a specific project in the first two weeks of the term. Most projects will be part of the overall focus of the lab, and may be related to a project that is being conducted by a graduate student. In this case, you will work with the graduate student on the project.

Annotated Bibliography - Students should complete an annotated bibliography for their project that includes 10-15 papers that make up the core literature on the topic. The format is variable, but it is typically a list of each reference followed by a 1-2 paragraph summary of the research and why it is important to the current study.

Practice Talk - Students should give a practice version of their thesis talk in one of our lab meetings.

Practice Poster - Students should give a practice version of their poster in one of our lab meetings.

2.6 Research Assistants and Volunteers

Volunteer and work study research assistants work in the lab doing primary data collection, scheduling research participants, doing literature searches, scoring questionnaires, and engaging in other similar tasks. Research volunteers usually work under the supervision of graduate students. Time commitment is typically 5-10 hours per week, and I encourage you to see if you qualify for work study. If you qualify, I will create a position for you and hire you for that position. See Western's [Work Study Office](#) for more details. As a research assistant and/or volunteer, you will have key card access to the office space in the WIRB building.

3 Lab and Office Space

I provide room for all research activities (data collection, analysis, writing, etc.) as well as room for a personal workspace. The lab is located in the [Western Interdisciplinary Research Building](#). Offices are located on the fifth floor. My office is in room 5158. Graduate students have a cubicle in the open office area (5115), postdocs have a semi-enclosed, shared office, and there is temporary space for undergraduate students and volunteers on the fifth floor as well. The fifth floor also houses several meeting areas and collaborative spaces. I expect grad students and postdocs to use this space daily for research work, writing, and data analysis.

We hold lab meetings in room 5107. Trainees can book meeting rooms for work sessions, working together on projects, or other meetings on the [BMI Booking Calendar](#).

Given the hybrid nature of research work. I encourage you to work where and when you are most comfortable: in WIRB, at home, both, etc. That said, you will get the most out of your program if you strive to work on campus, in the lab, and in WIRB, where you can network and interact with other students and researchers.

3.1 TA Office

The 5th floor open office in WIRB should *not* be used to hold TA office hours because it is an open office. Graduate students who are working as TAs may wish to reserve one of the small rooms on the 4th or 5th floor for this purpose. You may be able to access space in the Social Science Centre to hold office hours.

You may also wish to arrange to hold office hours in a set location at Weldon Library. You can book small study rooms for this. You can also hold TA office hours on Zoom

3.2 Research Space

Our research testing areas are located on the second and third floors of WIRB. Room 3138 is the **Mindfulness Meditation Lab**, which can be used for studies involving meditation or other similar interventions where a quiet group setting is needed. We also use the general testing rooms on the second and third floors for behavioural testing. These are rooms 2106, 2107, 2112, 2113, 2114, 2115, 2116, 2119, 3106, 3108, 3110, 3114, 3158, 3160. These can be booked on the [BMI Booking Calendar](#). The other rooms in the WIRB, such as those housing fNIRS/EEG/ERP equipment, psychophysics equipment, eye tracking, and TMS machines, can be used for our research, though in those cases, contact the lead researcher who runs that lab, or ask the BMI equipment manager, Derek Quinlan, on the third floor.

4 Lab Communication

4.1 Slack Channels

All lab members should have a Slack account. This will be the primary means of communication. Install Slack on your work desktop, laptop, and/or mobile and make sure to set your time zone correctly and customize the notification preferences so that you see what you need to see, but are not overwhelmed. For example, I only receive a notification if you send me a DM or if you use the “@” feature to tag me, and I suggest you do the same. Similarly, I do not receive notifications in off hours (evening and weekend). If you are having a conversation in a topic channel, use the “@” feature to get my attention. Make sure you are subscribed to the right channels. The [catlabgroup.slack.com](#) account is a paid, premium account, so all messages and files are archived.

I review the Slack team each year to remove users who are no longer with the lab. Honours students and RAs will typically be converted to a guest account after leaving the lab and are deactivated one year later. Any trainee who wishes to stay on as a guest for longer is more than welcome; just let me know.

4.2 Email

All students have their own email addresses provided by the university, but we have three addresses associated with the lab in general.

- **catlab@uwo.ca** can be used for participant recruitment and communication for the lab in general
- **mindful@uwo.ca** should only be used for study coordination and participant recruitment for any research that is associated with our mindfulness meditation research.
- **catlabuwo@gmail.com** was used to access the shared calendars and dropbox, and is being deprecated.

4.3 Calendar

There is no central lab calendar. All lab calendaring and scheduling is run through Outlook. I will invite you to individual meetings, lab meetings, and journal club. When you accept an invite, it will add the meeting to your calendar as well. I encourage you to accept invites or decline as needed. Even if you use google for your primary calendar, I encourage you to integrate with Outlook so that we are on the same platform.

4.4 SharePoint

Critical lab documents, project sheets, templates, and other shared resources are located on the MindaLab SharePoint site. All trainees will be added as members. Access to some sections may be restricted to graduate students and postdocs.

5 Lab Meetings

We hold a 1.5 hour lab meeting every week. The weekly meeting consists of core lab members (Me, graduate students, postdocs and honours students, when possible). Occasionally, other members will be invited to attend as well. The purpose of these meetings is to discuss current projects, to engage in debate or discussion about topics in the literature, and to plan future studies. Mostly, the purpose of the lab meeting is to solve problems. We meet in room 5017 WIRB. I usually schedule lab meetings at a time that is convenient for the maximum number of people. This varies by term, and it may vary even by month. We don't usually meet as often in the summer.

Note: lab meetings for 2024–2025 are in WIRB 5107 with a Zoom link to join.

Lab meeting announcements, agendas, and planning will always be in the #lab_meeting channel in Slack. A schedule is posted in the lab SharePoint site.

5.1 Discussion of Current Projects

One major purpose of lab meetings is to discuss ongoing projects by team members. This can be anything related to the research program, such as a practice talk for a conference, ongoing data collection, a proposal for a new study, or an idea for a new study. I expect that the student leading the discussion will prepare an informal presentation of slides, handouts, or notes. This helps the rest of the group to follow and will also be an opportunity for you to practice presenting your work. There is no such thing as too much practice.

5.2 Discussion of Current Literature

It is also important to stay current with literature. Some of our lab meetings will be set aside for journal club, or for the presentation of interesting and relevant literature. If it is your week to present a paper, we can discuss your choice ahead of time, or I can suggest a paper for you. You can choose from papers related to categorization, concepts, learning, cognitive science, methods, computational work, or meditation. There are always good suggestions in the #goodreads channel in Slack. Everyone is encouraged to post papers to #goodreads.

For 2024–2025, we have scheduled a weekly journal club on Thursdays in 5107 and updates are posted in #jrnl.club in Slack. There is also a sign up sheet in the SharePoint site.

5.3 Professional Development

From time to time, we will hold workshops on professional development. We can work on your CVs, and discuss conferences, job opportunities, etc.

5.4 Methods

We will also occasionally use our lab meeting time to run tutorials on statistics software, methodology, programming, writing, how to use OSF, and other related topics. I will usually schedule and run these, but also welcome suggestions from everyone. If you are particularly skilled in a technique or software, I may ask you to run a tutorial as well.

6 General Lab Practices

In this section, I provide an overview of some of the practical aspects of being a student or a volunteer in my lab. This is a long list of general topics. This is probably an incomplete list, and I'll add to it.

6.1 Open Science

An important aspect of conducting scientific research is the practice of *Open Science*. This term might mean different things in different labs, but in my lab, there are several best practices that I would like all lab members to follow.

- Our lab participates in the Open Science Framework ([OSF](#)) and strives to make our work open and accessible to the public. All papers will eventually be available as preprints to ensure public access and will be hosted on [PsyArXiv](#), a preprint server hosted by OSF. Public access to our work is not only an example of good scientific practice, it is also required by most funding agencies (caveat: some of our older papers are hosted in public folders on a server).
- Graduate students should create an OSF profile so that I can link to it for projects and profiles. OSF is where we host preprints, reprints, data sets, and analysis code. Maintain the public profile accordingly: funders, other scientists, possible employers, and postdoc supervisors will see it.
- Data and the corresponding analysis scripts will be available on the OSF archive.
- We will strive to meet a minimum of 50% of publications in open access journals or journals with an open access policy.

6.2 Record Keeping

Good record-keeping is one of the most important things in science. Although there are a variety of ways to take notes and keep records, it is important to have a centralized and accessible record-keeping system for current projects. Every ongoing research product should have an associated MS Word or Google Doc that is shared with lab members who are involved in that project. At the top of the document, is the internal title for the project, the names of the associated lab members, and links to important documents/folders (Manuscript drafts, data files, R-code). If you make a change in some code, collect data, edit a document, or do anything else related to a project, please record that information in the Google doc with the date and your initials.

How much detail is required in this record? There's no perfect answer to that question, but the document should be clear enough and detailed enough so that if we revisit the project several years later, we should be able to find where the manuscript is, where any relevant code is, and where the data is stored.

6.3 Document Preparation

Use MS Word, LaTeX or Google Docs for writing all papers. We use a standard, APA template to do the writing (available on the SharePoint). There is a copy of this template shared with everyone on Slack. Assume that the shared MS Word/Google Docs version is the core version, but a manuscript version may need to be tweaked for style. Submitted versions may be .docx files or PDF files and saved in the corresponding Google or Dropbox folder. Preprints can be generated as PDFs. Your article preprint can be the same version (APA or similar) that was accepted at the journal, or you can reformat it for a nicer appearance. There is a preprint template in the Slack channel.

6.4 References and Bibliography

As soon as you start working on a research project, you should learn to use a reference management system. We use Paperpile to manage and store references because it integrates very well with Google Docs, Chrome, and Microsoft Word. Each full-time lab member will have access to the paid Paperpile licence. Mendeley is another good (free) option as well that works with Word and can sync with Paperpile.

6.5 Statistics

Install the newest versions of R and R Studio and be familiar with how to run and document basic analyses. In particular, learn to use the markdown services (like R Notebooks) to document your code and explain your analyses. We'll also use JAMOVI for basic analysis. Ensure that you have the newest version installed. JASP is worth considering as well, but I'd rather stick with one. JAMOVI works well with R.

6.6 Ethics

All of our research involving human participants must be approved by the [Western Research Ethics Board](#). We will periodically review all of our open protocols to ensure compliance. These reviews will take place at the start of each academic term (May, Sept, Jan).

6.7 Google Scholar

Once you have something indexed or published, create and maintain a [Google Scholar](#) page. You can link to your co-authors accounts and follow other accounts.

6.8 Lab Web page

I run the lab [website](#) from WordPress. Please create and maintain your own profile on the lab website. Or better yet, just create a personal page that I can link to. You can use WordPress (free), Google Sites (also free) or any other straightforward website development tool. This is important because if a prospective postdoc supervisor or prospective employer searches your name, you want that page to come up near the top. It should be clean, professional, and informative.

Don't bother with Research Gate or Academia.edu. They are not open and accessible. In my view, nothing is to be gained by subscribing to their business models.

6.9 CV

Maintain an up-to-date CV on your primary, personal machine, but ensure that a current copy is also stored on the CV Workshop folder on the lab SharePoint Drive, so that it can be included on our website.

6.10 Software and Hardware

We use many different software packages and the details for the critical ones should be available on #lab_notebook channel in Slack. Below is an incomplete list of important software that full-time lab members should have installed or have online access to:

- MS Office (Word, Excel, PowerPoint)
- Google Docs, Google Slides (for lab meetings)
- Slack (desktop app and mobile)
- Paperpile
- Zotero
- R and RStudio
- JAMOVI
- PsychoPy
- Qualtrics
- Overleaf

In addition to the above software items, there are site licences for Matlab and some shared resources for E-Prime.

7 Conferences

One of the best ways to present your current research, to find out about other cutting-edge research, and to meet other scientists is at scientific conferences and conventions. There are a number of conferences that the lab is involved with, though we may not all attend every conference. I don't usually attend more than 1-2 a year because I don't care for long travel, but I encourage students and trainees to present at conferences. As a rule, you can find up-to-date information on conferences in the #conferences channel on Slack.

7.1 Conference Funding

A local conference might cost several hundred dollars to attend and a national or international conference might cost over one thousand dollars. I can subsidize at least one conference per year, and the Psychology Department also offers \$250 per presenting student, per year. There are also travel scholarships available for many of the conferences. Information about these scholarships is usually available from conference websites.

To maximize the experience and minimize expenses, please share a room with other graduate students.

Please save every receipt: hotel, taxi, flight, meal, etc. These are needed to complete a travel reimbursement. It is your responsibility to complete the reimbursement form. I'll be notified when it's complete and can approve it. Please discuss reimbursement prior to attending in order to ensure that I have budgeted for the trip.

7.2 Common Conferences

This is a list of conferences that we have attended with some regularity. There are others, of course, and these will usually be announced in the #conferences Slack channel.

- [Psychonomic Society](#) - The Psychonomic Society conference is held in November and the abstracts are due in June. As a trainee, you can present a poster and author a talk, but you cannot actually give the talk unless you are a full member of the society (I am). Membership in the Psychonomic Society is usually restricted to researchers and faculty. I can author a submission and sponsor a submission, which means that, as a lab, we are typically limited to two submissions. I attend the Psychonomics conference almost every year, and it is the one conference that we do as a lab.
- [Cognitive Science Society](#) - This conference is usually in July and submissions are due in February. Cognitive Science is great for interdisciplinary science and also publishes proceedings for each conference. Trainees are eligible to present papers (spoken presentations) or present posters. I try to attend every few years.
- [Psychological Science \(APS\)](#) - This is a large, international conference that covers experimental psychology in general. It is worth attending at least once or twice, as you will get to see some of the most influential psychologists in the world. Presentation opportunities for trainees are usually limited to posters, but some opportunities for presenting are possible if we're involved in a symposium.
- [CSBBCS](#) - The Canadian Society for Brain, Behaviour, and Cognitive Science is a great, Canadian-focused conference that is held annually at a University in the summer. There are opportunities for trainees to give talks and posters, and there is usually an enjoyable hospitality event.
- [Midwestern Psychological Association](#) - This is a regional conference held every year in Chicago that is affiliated with the APA. There are opportunities for trainees to give talks and posters, and there is usually an enjoyable hospitality event.

8 Authorship

We are working together to carry out scientific investigations. Part of this process is writing up the work for publication, and depending on your role, you may be added as an author on the paper. This is more common for graduate students, but authorship is possible for undergraduate honours students as well.

8.1 What counts as a contribution?

Authors of journal articles and chapters are expected to have made a **concrete contribution** to the project, and/or paper. For example, the following are all justifications for inclusion as an author.

- You designed one or more experiments in the paper.
- You wrote the initial draft for a major section.
- You wrote the entire paper.
- You designed and carried out the analyses.

In many cases, you might help with projects, but the contribution is not quite enough to warrant inclusion as an author. The following are several examples.

- You helped to carry out data collection.
- You created the reference section, table, or figure.

- You scored a test or created a data set.
- You helped to proofread or edit.

In these cases, you will be acknowledged by name in the paper.

8.2 Author Order

The order of authorship matters, but there is no consistent agreement in Psychology as to how authors should be ordered. In Cognitive Science, the convention is that the **first** and **last** positions have special meaning, with the last author usually being the P.I. or senior investigator on multi-author projects, and the first author often being the trainee (PhD or Postdoc) who wrote much of the paper. Regardless of position, there is also the **corresponding author**, which is the person who is the PI and is ultimately responsible for the contents. The corresponding author could be first or last and, as the name suggests, will correspond with the journal, pay any Open Access fees, and correspond with media. Below are some guidelines that I use.

- If I designed the experiment and wrote much of the paper, I will serve as first author and corresponding author.
- If a trainee carried out some of the research under my supervision, but I designed the study and/or wrote most of the paper, I will serve as first and corresponding author.
- If a trainee carried out the research under my supervision, helped to design the study (or designed it entirely), and/or wrote much of the paper, the trainee will serve as first author and I will serve as final, corresponding author. *Note: this is the most common format in my lab.*
- For PhD students, if you are publishing your dissertation research and planning to pursue a scientific career, you should act as first and corresponding author, and I would still appear as final author.
- For PhD students, if you are not interested or able to publish your dissertation research, we can discuss how to proceed. One option is that you will be included as first author, and I will act as final and corresponding author. Another option is that another student may work on the paper, and would take the first author position. This would only happen if you gave approval and agreed that you were not interested in writing up the work for publication.

9 On Writing

Writing is one of the most important parts of being a successful scientist and academic. All well-designed experiments, rigorous analyses, and technical achievements will not be worth very much if you cannot write about them. Writing is not easy. Writing takes practice. There are several ways to gain this practice.

Class Assignments and Course Work - One of the fundamental ways to learn to be a good writer is to engage in written coursework, such as thought papers, research proposals, and research papers. Not all courses have a significant writing component, but many do. We also occasionally offer a course on “Scientific Writing”.

Lab Reports - I encourage you to write up short reports for each study that you run. This is important for several reasons. First, it provides a record of every study we run, regardless of whether we eventually publish it or not. This allows us to track the number of subjects we ran, the specific protocol we ran, and preliminary analyses. Second, a short write-up can be used to drop into manuscripts and expand into a full methods section. Finally, it’s just good practice for the process of scientific writing.

Blog Entries - You should absolutely have a research blog/website. Having a professional web presence is important for many reasons, but one benefit to authoring blog entries is that you gain practice and feedback on describing research for an audience outside the field and outside our department. Consider setting up a WordPress site, which I can link to from the lab website <http://mindalab.com/>. Publicize your writing. Share your blog entries. It is vitally important to cultivate a thoughtful and engaged online presence in the form of a blog/website.