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## Mood Disorders Lab Manual

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## ACKNOWLEDGMENTS

This document was inspired by discussions with numerous people in the Mood Disorders Lab, including Michael Mullarkey, Molly McNamara, Kean Hsu, and Jason Shumake. It was developed not in response to a specific problem or issue in the lab, but because we felt like there should be a place that anyone could go to get a sense of how the lab operates and to read some general policies and guidelines. In the past, most of what is written in this document was passed on informally among members of the laboratory, so it made sense to write this down in a more formal format. I suspect what is written here will only be a starting point for the lab manual. I hope that it will evolve and improve over time. If you can think of ways in which it can be improved, do not hesitate to reach out to me at [beevers@utexas.edu](mailto:beevers@utexas.edu).

When writing this document, I searched for examples of other lab manuals. I was a little surprised at how few I was able to find from a google search of psychology laboratories. I did find a couple of manuals that I thought were excellent:

<https://github.com/alylab/labmanual>

<https://github.com/memobc/memolab-manual>

I borrowed heavily from these manuals and in a couple of places I have reproduced content from these manuals. Thanks so much to the [Aly Lab](#) and the [Mem Lab](#) for making these lab manuals open and available.

This lab manual is licensed under a Creative Commons Attribution - NonCommercial 4.0 International License ([CC BY 4.0](#)). If you are writing your own lab manual, feel free to use this manual for inspiration (and don't forget to cite us!). If you do use your lab manual as the basis for your own, I would be curious to see how you improve upon our manual. So feel free to reach out.

-Chris Beevers, PI, Mood Disorders Laboratory, University of Texas at Austin, June 26, 2019

## MISSION STATEMENT

The mission of the mood disorders laboratory is to improve understanding and treatment of mood disorders, particularly unipolar depression. Our translational research examines the etiology, maintenance, and treatment of depression using a variety of interdisciplinary approaches. We are very interested in using experimental psychopathology methods to understand the etiology and maintenance of depression and translating these same methods into effective interventions. We are also particularly interested in using data science methods to refine our treatments and understand who is most likely to benefit from them. Projects utilize behavioral, eye tracking, and cognitive neuroscience methods to measure negative cognitive biases and ecological momentary assessments to measure affect and behavior in its natural environment. We also conduct clinical trials designed to examine novel cognitive bias manipulations and more traditional forms of treatment. The laboratory was established by Christopher Beevers at the University of Texas at Austin in 2005.

## MOOD DISORDERS LABORATORY VS. IMHR

Some people wonder what the relationship is between the Mood Disorders Laboratory (MDL) and the Institute for Mental Health Research (IMHR). The IMHR is a research institute supported by the College of Liberal Arts (CoLA) at the University of Texas. The College of Liberal Arts offers more than 50 majors located in 22 academic departments with over 500 faculty and more than 30 centers, institutes and programs. The IMHR is one of [11 institutes](#) with the CoLA.

Within the IMHR, there are several laboratories and a treatment clinic. All staff are affiliated with at least one research lab. Most research activities occur within the IMHR, but faculty also need to be appointed within a department for their teaching, promotion, and service. Most faculty are appointed within the Department of Psychology, but that does not have to be the case. When we were hiring individuals to join the IMHR, it was easier to hire people that would be a good fit for the Department of Psychology because that is where Chris Beevers (director of the IMHR) was already appointed. This avoided the issues of splitting positions across departments, dealing with different standards for promotion across departments, and potentially different teaching requirements. Thus, most [core IMHR faculty](#) are psychologists, but we do have faculty from other departments who are affiliated with the IMHR (e.g., social work, psychiatry, communications, educational psychology). However, the lab space and offices for people from these other departments are not housed at the IMHR; that work occurs in their home departments.

## ROLES & EXPECTATIONS

Everyone

Science can be challenging, frustrating, rewarding, exciting, and everything in between. It is important that we have a laboratory environment that is supportive, positive, and rewarding as

possible. We all want our time here to be productive and, maybe, even a little enjoyable. To that end, we all have to do a few things:

- Work on topics that you find interesting. If you are working on a topic that you are not excited about, chances are others will not find the topic of interest.
- Make sure your work is as high quality as you can make it. Do not cut corners. Do not make mistakes because you are in a rush. Be careful. Incorporate checks. Have other people check your work. Mistakes will happen, but they should not happen because you were careless or rushed. This is especially important with data collection and data analysis.
- If you make a mistake, please tell your collaborators. Mistakes are much easier to deal with immediately than many months or years later or, even worse, when they go undetected/unreported until much later. Mistakes occasionally happen, but it is very important that we own up to them when they do occur.
- As [outlined](#) by the Dean of Students, you are expected to maintain absolute integrity and a high standard of individual honor in scholastic work undertaken at the University. It is never OK to plagiarize other work, makeup or otherwise falsify data, omit data or fudge results in any other way. This is really important and, as a consequence, there are severe penalties to anyone involved in academic misconduct, including (but not limited to) dismissal from the University.
- Share your knowledge with your colleagues. Science should be collaborative, not competitive, particularly within the lab.
- Respect everyone you encounter in the lab. Respect their strengths, weaknesses, culture, religion, beliefs, gender identity or expression, and sexual orientation.
- Please try to address hostility or tension in the lab as soon as possible. If there is a problem with a colleague, please talk with them about it. If you do not feel comfortable talking with them directly, talk to Chris. He may be able to intervene on your behalf. Even if you are comfortable talking with the other person directly, it is still a good idea to let Chris know.
- If you have an issue with Chris, please talk with him. He wants to know if something he is doing is causing you difficulty. If you are not comfortable talking with Chris, tell a graduate student (for minor issues) or talk with another faculty member (e.g., other IMHR faculty members or the chair of the Department of Psychology for more serious issues). They can provide you with some guidance and/or perhaps intervene on your behalf.
- Take care of yourself. Academia is a marathon, not a sprint. Although you will work really hard, find some time to develop a life outside of work as well. Spend time with friends. Try not to think about work 24/7.

#### Day-to-day expectations

- Please respect other people's right to work in a quiet environment. If you are going to have an extended discussion with someone near the cubicles where other people are working, please take it to a meeting room or the staff kitchen/cafe. If you are meeting with someone who has an office, feel free to offer to close the door so as to mitigate sound. If you are uncomfortable closing the door, it is OK not to.

- If Chris is being loud in his office (or he forgot to close his door during a meeting), it is completely OK to interrupt and ask him to close the door. Sometimes impromptu meetings become more serious and turn into longer discussions.
- If you are sick, it is best not to come to the lab. You should reschedule your meetings and, if you are up against a deadline, work from home. But it is important to take care of yourself when you are not feeling well and time away from work can often help.
- You can set whatever work schedule works best for you and your projects. Chris tends to work from 9-5, but you are free to set your own schedule. Just be sure to be available for meetings, show up to your commitments, and figure out a work schedule that helps you get your work done.
- The expectation is that you will work full time (for students this includes classes, seeing patients, being a TA, GRA, engagement in own research, etc.), but how you carve out that time is generally up to you.
- You are not expected to work weekends or late into the night. If there is some feature of a project that requires this (e.g., sleep studies or occasionally adolescent studies require running subjects on weekends), you should be informed about this upfront.
- Try and keep shared work spaces tidy and clean. If you use a dish or glass from our kitchenette, please wash it right away. Don't leave it in the sink for later. Makes it easier for others to use the space.
- Dress code is fairly casual depending on your role and with whom you interact. If you are interacting with patients or study participants, it is a good idea to dress professionally (e.g., not in work out clothes).
- The MDL loves pets (e.g., Chris has two dogs), but it is generally not a good idea to regularly bring your pet to work. There may be people with animal allergies or phobias. And we share a lot of space with other labs. Our lab location (4th floor in a busy building) is also not conducive to taking a pet outside for exercise and potty breaks. Please chat with Chris if you have any concerns or questions about this.
- Please be on time for meetings. We will do our best to make sure that meetings run on time as well. We are all very busy, so it is important to respect everyone's time.
- When you are scheduled to run participants, please arrive early (15 minutes) to make sure everything is set up and ready to go when the participant arrives.

#### Principal Investigator

All of the expectations listed [above](#), and Chris will try to:

- Provide thoughtful and supportive scientific and professional guidance.
- Chris' mentorship style is to lay out opportunities for trainees and help inspire new ideas, but then the onus is on trainees to develop those ideas and take ownership of them. Chris will not micromanage your work, but he will try his best to be as supportive as possible so that trainees can be successful. This formula seems to work well, but does require that trainees work well independently.
- Provide you with feedback on scientific products in a timely manner. For most items, this means feedback within one to two weeks unless Chris is particularly slammed with work. He'll let you know when that is the case.

- Chris will give his perspective on research questions that the lab is well suited to answer, where the field is headed, which ideas might be particularly exciting to pursue. Note: Chris might not be right.
- Be available via email and in person meetings on a regular basis (typically dictated by what you need) to discuss research (or any other topics that you think Chris' feedback might be helpful).
- Support your career development, either directly (e.g., training experiences, letters of reference, support for conference travel) or indirectly (e.g., by connecting you with people that might help facilitate a career goal).
- Chris will do his best to help you prepare for whatever is next.
- Provide graduate students and full-time research staff with written feedback about their performance on an annual basis. If there is an issue that needs attention, Chris will try to provide that feedback as soon as possible.

#### Research Faculty/Postdoctoral fellows

All of the expectations listed [above](#) for everyone, and:

- If you are grant supported, you are expected to spend most of your time on the work that is supporting you. That is, your primary focus should be related to the projects that provide your support at approximately the [effort level](#) specified in the grant.
- Support other research efforts in the lab, but likely on a consulting basis. This may include some mentoring of graduate students, research staff or undergraduate students.
- Develop your own line of research or area of expertise.
- Present your work at conferences and other public venues.
- Submit your research for publication.
- Apply for grants. This is a good experience for trainees, even if the grants are not funded. There are many options (e.g., NRSA, K-awards) depending on how long it has been since your PhD.
- Most postdocs will stay in the lab for 2-3 years and then move to a different institution. Occasionally, a post-doc might transition to a research faculty position (so called "soft money" faculty positions) within the lab, but this would have to be a grant funded position (e.g., K-award). It is highly unlikely that a postdoc would transition to a tenure line faculty position within the Department of Psychology at the University of Texas at Austin. It is generally viewed as better for the trainee to start your career at an institution that did not train you.
- You provide an important perspective for the lab, so please share your perspectives on where you think the field is headed, important research questions, etc., even when (or especially when) they do not align with Chris' perspective. This is especially true as the time since Chris received his PhD increases (he received his PhD in 2002) and practices and issues may have evolved/changed quite a bit since then.

#### Graduate Students

All of the expectations listed [above](#) for everyone, and:

- Develop your research ideas, culminating in a dissertation. Dissertations often consist of three studies that can be bundled into a single document and answer a big picture question. It is also possible for dissertations to be a single, focused study that delves into a specific question in high detail.
- Your research will be done independently but with substantial feedback from laboratory members. Lab members are there to help you when you need it.
- You will likely be involved in other studies that are not part of your dissertation. These will likely be collaborative efforts with other colleagues in the lab or the IMHR. These sorts of collaborations are generally a good idea and can help expose you to other ideas and help you build your CV.
- Spend some time thinking about what type of career you want to pursue (e.g., academic jobs that are research-focused or teaching-focused, non-academic jobs like data science or science writing, or more clinically focused careers). We can brainstorm ways of making sure you are getting the training that you need.
- Learn how to balance your classes, research, and clinical work. Make sure not to overemphasize your classwork at the expense of these other areas. If you are interested in a career in academia (and it is OK if you are not), your research will be most important for the next stage of your career.
- Make sure you are aware of the clinical area requirements for maintaining good standing in the area ([see clinical area handbook](#)).
- Make sure you meet all departmental deadlines (e.g., for your thesis). Keep Chris in the loop about these important deadlines (he will likely have trouble tracking these deadlines on his own).
- Consider proposing your dissertation early (e.g., sometime in your 3rd year). This will allow you to get substantive feedback from your committee.
- Help mentor undergraduates who are working or volunteering in the laboratory. Undergraduates provide important help in the lab but they need to be monitored closely.
- Apply for grants. Assist Chris with his grants. This is a good learning experience even if the grants are not funded.
- For those interested in academia, it is most likely that your next phase will involve a postdoctoral fellowship, very likely somewhere that is not the University of Texas at Austin. Some graduate students go straight into faculty positions, but that is increasingly rare. A good postdoc can open doors to faculty positions that might not have otherwise been attainable (Chris is a good case in point).

#### Laboratory Staff

All of the expectations listed [above](#) for everyone, and:

- Most laboratory staff are hired to work on specific projects. As part of these roles, they may also help maintain aspects of day-to-day functions that help the laboratory operate, so that these projects can be successful.
- Do your absolute best to collect as high quality data as you can, every day, with every participant. It is really difficult, if not impossible, to overcome bad data. This is really, really important.

- Assist with the recruitment and scheduling of participants, including patients.
- Assist with data collection and analysis.
- Maintain IRB protocols for the lab (writing them, renewing them), archive old consent forms, keep any required paperwork up to date and organized.
- Oversee the hiring, scheduling, and training of undergraduate research assistants and volunteers.
- Maintain the lab website, update the lab manual, manage lab calendars, manage the lab UT Box, check the lab e-mail address ([mdl@utexas.edu](mailto:mdl@utexas.edu)). Staff may share these roles so that no one person is saddled with all of these duties.
- Maintain the lab email listserv, making sure it is up to date and current with all lab members included.
- Be in the lab on a regular basis -- more than other lab members, your presence in the lab when others are around is essential. This means you probably should work a more typical schedule (e.g., 9am to 5pm or 10am to 6pm) with flexibility depending on your out-of-work schedule (e.g., doctor appointments).

#### Undergraduates / Volunteer Staff

All of the expectations listed [above](#) for everyone, and:

- Assist with data collection. Do your absolute best to collect as high quality data as you can, every day, with every participant. It is really difficult, if not impossible, to overcome bad data. This is really, really important.
- You will most likely be advised by a graduate student and/or a postdoctoral fellow. Make sure you meet with this person regularly and that you develop a work schedule with this person.
- If you are earning course credit for research, you may need to submit a write-up of your research by the end of the semester. Be sure to ask your supervisor about this requirement.

#### CODE OF CONDUCT

The Mood Disorders Laboratory is committed to creating and maintaining an educational and work environment free from all forms of sexual harassment, sex discrimination, exploitation, and intimidation where all students, faculty, and staff can learn, work and thrive. We do not tolerate discrimination or harassment of or from lab members in any form.

Harassment includes offensive verbal comments related to gender, gender identity and expression, age, sexual orientation, disability, physical appearance, body size, race, 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.

Members asked to stop any harassing behavior are expected to comply immediately.



If you are experiencing any form of sexual harassment, sex discrimination, or gender-based violence, you can file a report with the [Title IX office](https://titleix.utexas.edu/file-a-report) at the University of Texas at Austin: <https://titleix.utexas.edu/file-a-report>. For more information, UT has developed a [guide](#) that lays out university policies, procedures, expectations, and resources for everyone who may become involved in a Title IX process. Here is a list of other campus resources:

<https://titleix.utexas.edu/campus-resources>

When any form of sexual discrimination, sexual harassment, sexual assault, sexual misconduct, interpersonal violence, and stalking occurs in our community, the university can:

1. Intervene to prevent harmful behavior from continuing or escalating.
2. Provide support and remedies to students and employees who have experienced harm or have become involved in a Title IX investigation.
3. Investigate and discipline violations of the university's relevant policies.

**Important:** Faculty members are considered "Responsible Employees" or "Mandatory Reporters," which means that they are *required* to report violations of Title IX to the Title IX Coordinator. The PI is a Responsible Employee and *must report any Title IX related incidents that are disclosed* in writing, discussion, or one-on-one. Before talking with the PI, or with any faculty or staff member about a Title IX related incident, be sure to ask whether they are a responsible employee. If you want to speak with someone for support or remedies without making an official report to the university, email [advocate@Austin.utexas.edu](mailto:advocate@Austin.utexas.edu). For more information about reporting options and resources, visit <http://titleix.utexas.edu> or contact the Title IX Office at [titleix@Austin.utexas.edu](mailto:titleix@Austin.utexas.edu).

## IMPORTANT SAFETY INFORMATION

If you have concerns about the safety or behavior of fellow students, lab staff, faculty, or individuals not affiliated with UT (basically anyone), call BCAL (the Behavior Concerns Advice Line): 512-232-5050 or visit <http://www.utexas.edu/safety/bcal>. Your call can be anonymous.

The following recommendations regarding emergency evacuation are from the Office of Campus Safety and Security, 512-471-5767, <http://www.utexas.edu/safety/>.

- Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.

- Link to information regarding emergency evacuation routes and emergency procedures can be found at: <http://www.utexas.edu/emergency>

## ACADEMIC INTEGRITY

The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community. Each laboratory member is expected to abide by the University of Texas [Honor Code](#) reproduced in the above paragraph.

The University of Texas at Austin also provides a number of websites that outline researcher responsibilities, conduct of responsible research, and how to deal with concerns about scientific misconduct. Those resources are available here:

- <https://research.utexas.edu/researcher-responsibilities/>
- <https://research.utexas.edu/osp/prepare-submit-proposal/responsible-conduct-of-research/>
- <https://research.utexas.edu/resources/scientific-misconduct/>

Anyone with concerns about any aspect of how science is being conducted in the laboratory should not hesitate to discuss these concerns with Chris.

## RESEARCH PRACTICES

### Open Science

The Mood Disorders Laboratory is highly committed to open science practices. Although this approach is relatively new, we think it is a very important development for the field and we wholeheartedly embrace it. As such, moving forward, we will practice open science whenever possible. This includes:

- Pre-registering studies whenever possible. If a study is hypothesis driven, it will be important to pre-register the hypotheses and the data analysis plan. If the study is more exploratory and/or data driven, it is still good practice to pre-register the analytic plan. Doing so helps limit our researcher degrees of freedom and demonstrates that we did not keep reanalyzing our data until a result was found. For more detail, see [this](#), [this](#), and [this](#). Clinical psychology is a [little behind](#) our colleagues in other areas of psychology, so it is extra important for us to try and get better in this regard.
- As a lab, we will use R for our analyses, as this format is in our experience the most easily reproducible approach to data analysis. It facilitates collaboration within the lab if all members use the same software for statistical analysis. Members in the lab receive quite a bit of training in R even though many come to the lab without a strong coding background.

- Each manuscript submission will include an RMarkdown file that, at a minimum, reproduces the results reported in the manuscript and the code used to generate the results.
- This supplemental file may also contain additional analyses not presented in the main document (e.g., sensitivity analyses, distributional properties of the variables, etc.).
- The supplemental file should stand on its own (i.e., can be interpreted without needing to refer back to the manuscript).
- If the supplemental file contains more than one section, a table of contents should be created to ease the burden of readers.
- Ideally, the code and data used to generate the results reported in a manuscript will be uploaded to our [data repository](#) and made available to the scientific community.
- Uploaded data are generally the final, processed data (e.g., processed task data) used in analyses.
- If another researcher requests data from a past study, we will do our best to provide that in a timely fashion. Once we have done this, we should make the data available via our data repository, so that other people can access it later. It will also prevent you from having to repeat additional analyses in the future, should additional requests be made.
- Although not typical, members are also encouraged to share the raw, pre-processed data (e.g., trial level data) when possible. When doing so, make sure that these data are well documented so that someone naive to the task would be able to process the data themselves without too much trouble. Including code used to process the task data is typically very helpful in this regard.
- When submitting a manuscript, we will also submit a preprint of the manuscript to a preprint server, so that we can get our science in the hands of interested readers faster. In some cases, this allows us to obtain additional feedback prior to final publication. The preferred pre-print server is [PsyArXiv](#).
- When selecting journals, we prioritize journals that allow for posting pre-prints and author's copies of manuscripts post journal acceptance. Note that post-prints are not the copy edited journal version, but the manuscript (e.g., Google doc) version that was submitted by us. We should not post the copy edited version from the journal to repositories, unless the journal explicitly allows for this (not many do).
- We will actively avoid publishing in predatory journals. For a current list of potentially predatory journals, please see: <https://beallslist.weebly.com/>
- Chris is a big fan of collaboratively using Google Docs with [PaperPile](#) for manuscript and grant writing. If you write a paper with Chris, be prepared to use these apps. Not everyone realizes that you can easily track changes and do version control in Google Docs, just like you can in Word. But it makes working on manuscripts more efficient because you do not have to wait for colleagues to email you their edits to the document before you can continue on your own.

## Authorship

We use guidance from the [International Committee of Medical Journal Editors](#) about how to determine authorship. The ICJME suggests that authorship should be based on the following four criteria:

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or revising it critically for important intellectual content; AND
- Final approval of the version to be published; AND
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

This advice is also in line with [APA guidelines](#) with respect to authorship:

"Authorship credit should reflect the individual's contribution to the study. An author is considered anyone involved with initial research design, data collection and analysis, manuscript drafting, and final approval. However, the following do not necessarily qualify for authorship: providing funding or resources, mentorship, or contributing research but not helping with the publication itself. The primary author assumes responsibility for the publication, making sure that the data are accurate, that all deserving authors have been credited, that all authors have given their approval to the final draft; and handles responses to inquiries after the manuscript is published."

We also aim to include in the manuscripts a brief description of the contributions for each author so that authors are given appropriate credit for the work that is done. Here is an example:

"DP conceived of the study and discussed it with DS and CB. DS and CB obtained funding and supervised the data collection for the discovery sample. DP obtained the replication sample from the Nathaniel Kline Institute Rockland data repository. DP processed the neuroimaging data and conducted all the analyses. JS assisted with the statistical analyses, particularly the implementation of the cross-validation methods. DP wrote the manuscript and CB, DS, and JS provided critical feedback throughout the writing process. All authors approved the final manuscript."

All authors should also have confidence in the work and integrity of the contributions of their co-authors. Please see the [ICMJE](#) guidelines for more detail.

Ideally, authorship order is generally determined prior to starting the work. The first author, typically (but not always) the corresponding author, is primarily responsible for the project (e.g., dissertation study). This person typically had a central role in the conceptualization, execution, and analysis of the study and moving the manuscript through the submission and review process at a journal. People that played a less central role (but still qualify for authorship based

on the above criteria) are typically included as middle authors. Chris is typically included as senior author (last author), although there may be some circumstances when Chris is not included as an author (e.g., collaboration between students and faculty in another lab that did not involve Chris) or is not listed as senior author (e.g., collaborations with other labs).

At the start of a project, it is typically assumed that the student or postdoc heading up the project will have the first author role. Please note that as roles on a project change, so too can authorship roles. While it is a good idea to talk about authorship from the beginning, sometimes even the best laid plans do not materialize and roles may change. It is important to be flexible and understand that even if you initially thought you were going to be the first author, if your role substantially changes, your authorship may also change. If this is the case, it should be part of an ongoing conversation as the project unfolds. If you have concerns about authorship, do not hesitate to talk to Chris or your colleagues about it. Note that the COPE group provides some [guidance](#) about how to handle authorship disputes.

#### Data archiving

Upon completion of a study, please archive your study in UT Box. Your code, data, and manuscript should be already available via the mechanisms described above. However, should we need to go back into this study for any reason, it will be really useful if you can archive your study in a consistent manner. Indeed, we often have to go back into a study years after it has been completed. The person who ran the study often has left many years prior as well.

Jason Shumake has written a very good script that will create a suggested folder structure for each project:

```
make_dir.R
make_dir
Help search

1 # Make directory structure for new data analysis project
2 library(tidyverse)
3 make_dir <- function(path){
4   folders <- list(
5     "cache", # store for any temporary objects that are time-consuming to
6             # generate; use this to load output of code chunk instead of
7             # wasting time re-evaluating the same thing over and over
8     "data/raw", # your original, virgin data; treat this as READ-ONLY
9     "data/external", # any data from third party sources; treat this as READ-ONLY
10    "data/interim", # intermediate data that has been transformed
11    "data/processed", # final data sets for modeling
12    "docs", # files related to manuscript submissions
13    "graphs", # any graphs that you produce
14    "models", # trained models, model predictions, or model summaries
15    "notebooks/munge", # R Notebooks documenting any preprocessing or data
16                     # munging code for your project
17    "notebooks/analysis", # R Notebooks documenting code used to analyze your
18                          # data or build predictive models
19    "references", # data dictionaries, manuals, and other explanatory stuff
20    "reports", # generated analysis as HTML, PDF, etc.
21    "src" # source code for use in this project, e.g., functions you write
22          # that help with your work, but do not constitute an analysis
23  )
24
25  walk(folders, ~ dir.create(paste(path, .x, sep = "/"), recursive = TRUE))
26 }
27
28
```

This R script is also available here, in the R\_tutorials folder on UT Box:

<https://utexas.box.com/shared/static/dheo8y12ivj0juzl29kmbuacv9jlkun.r>

If you did not use this structure initially, please use this format when archiving your project.

Please archive your final materials in UT Box > MDL Lab > Projects > Archive. It is important to do this as soon as possible after the project is completed and before moving on to your next project.

When you archive data, please include a data dictionary for your variables. Ideally this would be in a .csv file, but this could also be in an RMarkdown. It is extra work but it is essential. It will help people in the future (possibly including yourself!) and minimizes the chance that the data is used inappropriately. See this data\_dict.csv in this dataverse for an excellent example:

<https://doi.org/10.18738/T8/QWXVM2>

### Old projects

Sometimes data is collected in the laboratory but for some reason or another it is not fully analyzed or written up. If a graduate student or postdoc has not finished analyzing or writing up these data within three years of the end of data collection, another person in the laboratory may take the lead on this project to move it towards publication (of course there could be mitigating circumstances that can be evaluated on a case-by-case basis). A project could also be voluntarily relinquished and reassigned as well. This policy is to prevent data (especially expensive data) from remaining unpublished, but the intention is to give priority to the person who initially spearheaded the data collection and/or the study.

## Human Subjects Research

All research must be IRB approved. Research must adhere to what is proposed and approved by the IRB. There are severe consequences (e.g., the entire lab could be shut down for a period of time) if we violate an approved protocol.

The University of Texas at Austin (University) requires faculty, staff, and students who are or will be involved in the conduct of human subjects research to complete human subjects research training, financial conflicts of interest training, and to submit a financial interest disclosure form. IRB approval will not be provided if these requirements are not met. Everyone involved in data collection must complete ethics training (typically [CITI training](#)) prior to collecting data. Please save your training certificate in case we need to document your training (the IRB generally keeps a training database but it is wise to have a backup). This needs to be renewed every three years.

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

## LAB RESOURCES

There are a number of resources that we use to share documents, communicate, schedule and share resources.

### [UT BOX](#)

This is a cloud server where we store most of our important documents. There is a lab Box folder and each member has a private folder. Important folders in the lab folder include: MDL Projects, R\_Tutorials, MDL Projects/Archive, among others. Typically we keep active projects in the Projects folder and move them to Archive once they are completed (see [data archiving](#) above for more details). Please note that [Box Drive](#) allows you to mount our cloud UT Box folders to your computer and run your scripts without having to sync your files. Although this is easier (and doesn't require you to download all the Box files to your computer), please be very careful not to overwrite files that reside on Box, such as raw data files. Ideally, folders that contain raw original data are set to read only, so that this can not happen accidentally.

### Google Calendar

This is used to schedule testing rooms, shared interview rooms, IMHR parking spots, IMHR conference rooms, and other shared resources. Please sign out resources that you plan to use. Please cancel your reservations if your plans change so that other people can use these shared resources. See the lab manager for more detail on Google Calendar.

## [MDL Dataverse](#)

This is a data repository for making our data available to the broader community. We also sometimes upload data to NIMH's [Data Archive](#), usually when our grant contracts require it.

## [Texas ScholarWorks](#)

This is a repository for scholarly activity that we would like to share with the community at large. Generally, this is where we place poster presentations from conferences or talks we have given that we would like to share with the broader community. These repository provides DOIs that are indexed by Google Scholar, allowing others to cite this work if they would like to.

## [Slack](#)

Slack is used to communicate within the lab and for specific projects. To be honest, Chris is somewhat inconsistent in how he uses Slack, so if you need his input it is often best to ask him via a different method if he doesn't respond via Slack in a timely fashion. At some point this may change and Chris might get more savvy about how he uses Slack.

## Email

We have a lab email listserv for announcements that go to everyone in the lab: [mdl@utlists.utexas.edu](mailto:mdl@utlists.utexas.edu). Please talk to the lab manager to get added to or removed from this list. We use this listserv for lab meeting announcements, to announce other talks of interest, circulate interesting research articles, etc. There is also a lab email address that is managed by the lab manager: [mdl@utexas.edu](mailto:mdl@utexas.edu). This email address is primarily used in study advertisements and our lab website.

There are also two other listservs you should be on if you are a member of the MDL: [imhr@utlists.utexas.edu](mailto:imhr@utlists.utexas.edu) is a listserv for announcing IMHR related activities. [imhr\\_rlp@utlists.utexas.edu](mailto:imhr_rlp@utlists.utexas.edu) is a listserv for the IMHR community that is housed at Patton Hall. This listserv is used for announcements intended just for people that reside at Patton Hall (e.g., warnings about construction noise) and would not be relevant to the broader IMHR community.

## GENERAL POLICIES

### Hours

Being present in the lab is a good way to feel like you are part of a community, learn from others, teach others, develop research ideas (often from impromptu meetings), build camaraderie, and be free from distractions at home. Thus, Chris recommends that you spend the bulk of your work hours at work--treat it like a job where you work at work and do non-work at home. However, the work week in academia is flexible and you should figure out how you work best. We all want to be productive. That said, over the years, I've noticed that the most successful students tend to be the ones who routinely come in to work and have a strong presence in the lab. One exception to this advice is project coordinators/lab managers who are



expected to keep more regular hours. Graduate students are also pulled in a number of different directions (classes, patients, clinical externships) so their presence may be more variable.

### PI Office Hours

During the academic year, Chris does most of his work in the office. He tends not to work very efficiently from home. This changes a bit during the summer, when he works a little more from home while also juggling chauffeuring children to camps and other child care duties. He also takes some time off from work during the summer, usually the middle of July to the middle of August. Nevertheless, when Chris is in his office, his door is usually open. If it is, feel free to check in and chat. If it turns into a more extensive chat and he is pressed for time, he may ask you to schedule a meeting to make sure there is enough time to explore the topic in depth. However, many informal chats can be had without scheduling a meeting. If Chris's office door is closed, this generally means he's on a phone/video call, in a meeting, or working under a looming deadline (e.g., grant due the following week). In those circumstances, it is best not to interrupt unless it is an emergency. In those cases, it is usually best to schedule an appointment or send an email if the query is straightforward.

You can easily book a meeting with Chris via: <https://chrisbeevers.youcanbook.me>

This service is connected to Chris' calendar, so it should identify times when he is available to meet. If you book a time and it turns out he is not available, he will send you an email to reschedule, but most of the time this system works well. And it saves us both from having to send a bunch of emails back and forth to nail down a meeting time.

### Meetings

*Weekly lab meetings:* We have a weekly lab meeting (usually Fridays from 1-2pm) that are designed for trainees to present ideas and get feedback from the group. This could be a study idea, a manuscript being prepared for submission, a conference poster or talk, or discussing a provocative journal article. Occasionally, we also use the lab meeting for a training session, such as data munging in R. However, nobody wants to meet just for the sake of meeting. In past years we have skipped lab meetings when there wasn't an obvious topic to discuss.

The lab meetings are generally organized by a graduate student or research staff. Ideally these meetings are valuable and a good use of our time. They are intended to be informal, but sometimes they do require preparation in order to make the best use of your and everyone else's time. Graduate students, postdocs, faculty are all expected to attend these meetings when they are in town (and not ill or have other emergencies).

*Individual meetings:* Anyone who works within the MDL is welcome to schedule a meeting with Chris. Some students prefer to have regular meetings; some prefer to schedule meetings as needed. Chris is happy to accommodate whatever schedule each student prefers. Just let Chris know. If scheduling conflicts arise (e.g., because of travel), we can try to reschedule for another day that week. If there is nothing to discuss, feel free to cancel the meeting or just drop by for a

brief chat. Postdocs and graduate students should meet with their undergraduate mentees on a regular basis.

*IMHR meetings:* We try to have a monthly IMHR meeting (usually the first Friday of each month). Feel free to present at these meetings. These meetings are intended to help build a community and encourage interaction across the labs at the IMHR. However, we have often canceled these meetings in the past due to a lack of presenters. If you would like to present your work to a slightly broader audience, this is a good place to do it. Plus, there is a free lunch!

*Departmental colloquia:* The Department of Psychology often holds important talks (e.g., invited speakers) on sporadic Wednesdays from noon to 1. Chris tries to protect this time slot so that he is available to attend these talks when they occur (occasional faculty meetings also occur at noon on Wednesdays). Chris encourages everyone to attend these department-wide talks when you can, as these are good opportunities to learn about areas of research outside of your own and to see some good (and occasionally not so good) research talks.

#### Deadlines

If you need something completed by Chris by a specific deadline, please give him as much notice as possible. Academia is filled with deadlines and he is typically juggling a number of them simultaneously. He tries to be as efficient as possible and effective to-do list management is one of the keys for being successful. Poor planning on your part does not necessitate an emergency on his part.

In general, Chris asks that you give him at least one week's notice for most deadlines, but he greatly prefers two weeks' notice. Chris will require at least two weeks' notice for letters of recommendation. If you do not adhere to these guidelines, Chris may not be able to meet your deadline. Please note that this applies to reading/commenting on abstracts, papers, and manuscripts, in addition to filling out paperwork, etc.

If you are expecting Chris to submit something for you by a hard deadline (e.g., letter of reference for a grant or graduate school), please do not hesitate to send an email reminder as the deadline approaches. Chris does not mind reminders at all!

#### Presentations

You are encouraged to seek out opportunities to present your research to the department, research community, or general public. If you are going to give a presentation (including posters and talks), please be prepared to give a practice presentation to the lab at least one week ahead of time. Not only will this help you feel comfortable with the presentation, it will give you time to implement any feedback. Chris cares about practice presentations because: a) presenting your work is a huge part of being successful in science and it's important that you practice those skills as often as possible, and b) you are going to be representing not only yourself but also the rest of the lab.

Recent poster and talk presentations from the lab can be found in the [poster repository](#). There are a number of good examples that you can use to develop your poster. I personally like the [streamlined poster](#) approach, where the poster take home message is prominently displayed and supporting evidence is provided as well. For more detail (including poster templates), see: <https://osf.io/ef53g/>

### Honors Theses

Chris gets a lot of requests to supervise honors theses. If you are planning to write an honors thesis, please note that the lab typically supervise honors theses for students that have worked in our lab for at least a year. Further, it generally works best when a graduate student is the primary advisor and Chris is a consultant. This gives the graduate student an opportunity to develop his/her supervision skills and gives the honors thesis student more supervision than would be possible if Chris was the primary advisor. We have developed other policies and expectations for students who would like to complete an honors thesis in the lab. For more detail, please see the MDL honors theses guidelines, posted here:

<https://labs.la.utexas.edu/beevers/open-materials/>

### Recommendation Letters

Letters of recommendation are one of the many benefits of working in a research lab. Chris will write a letter for any lab member who has spent at least one year in the lab. Given that graduate students, postdocs, and research staff often have more day-to-day experience with undergraduate student research assistants, Chris may ask for help from lab staff when asked to write letters for undergraduate students. Letters will be provided for shorter-term lab members in exceptional circumstances (e.g., new graduate students or postdocs applying for fellowships). Chris maintains this policy because he does not think that he can adequately evaluate someone who has been around for less than a year.

Many post-bac students who work in the MDL as project coordinators, lab managers, and volunteer research assistants are often interested in applying to clinical psychology PhD programs. This is a great idea and hopefully training in the MDL provides you with opportunities that will prepare you well for this career path. Indeed, [many students](#) from the MDL have gone on to PhD programs in clinical psychology and other related fields.

Some post-bac students may think that working in the MDL will help them get accepted as a PhD student in UT's clinical psychology program to work with Chris. This isn't true. In fact, Chris believes that it is better for MDL project coordinators to complete their graduate training elsewhere so they get a more diverse set of experiences. Bringing in students from other programs also helps expose the lab to new ideas. Thus, while you can apply to work with Chris in UT's PhD program, it is relatively rare that Chris accepts his former project coordinators or volunteer research assistants.

To request a letter of recommendation, please adhere to the [deadline](#) requirements described above. Send Chris your current CV and any relevant instructions for the contents of the letter. If

you are applying for a grant, send your specific aims or a short summary of the grant. In some but not all cases, Chris may ask you to draft a letter, which he will then revise to be consistent with his evaluation. This will ensure that he does not miss any details about your work that you think are relevant to the position you're applying for and it will also help Chris complete the letter in a timely fashion. When asking Chris to submit letters, please try to make this as easy a process as possible for him. The more organized you are, the more likely no letters will slip through the cracks. There are semesters when he is writing letters for 6-8 students, all of whom are applying to multiple places. This can mean submitting over 100 letters in a semester. Chris will have a lot of trouble tracking that all of these letters have been submitted. Please stay on top of this and feel free to remind Chris about deadlines as they approach. He does not mind reminders at all!

Chris also often writes letters for undergraduate students in his Abnormal Psychology class. Please note that if you have only taken his class (e.g., not also volunteered in his lab), these letters tend to be somewhat brief (less than 1 page in length) and focus on students' performance in the class. Chris has a boilerplate letter that he modifies to match his experiences with the student. In some cases, this sort of letter will be all the student needs. However, in many cases, this may not be perceived as a strong letter and you might want to obtain a letter from someone else that knows you better and has more experiences to draw upon. Chris will leave that decision up to you. He is happy to write a letter for you if you need one.

### Grant Funding

Funding for the lab comes primarily comes from the NIH, an endowment from UT, indirect return from the department (this is usually about 5% of the indirects that his grants generate for the university) and start-up funding he was given in 2012 (hence it is fairly depleted). The majority of laboratory funding is associated with a research project and used to support that project.

The indirect return and endowment support are the most flexible but also the smallest amounts. These are used to purchase computers for graduate students, pay for graduate student tuition during the internship year (do not get me started on why UT does not waive these charges while students complete a year-long, offsite internship that does not involve UT), pay for lunches for IMHR events, pay the lease on copiers used by the IMHR, and other incidental costs. They are sometimes used to supplement graduate student salaries during the summer. Graduate students are expected to apply for departmental support for conference travel. Chris can sometimes supplement this support depending on which project the data being presented were derived from and availability of non-grant related funds. As an aside, UT provides Chris (and every faculty member) \$1200 per year for conference travel--so Chris uses funding from his grants for his own travel as well.

Unfortunately, Chris cannot pay for a GRA (Graduate Research Assistant) unless the GRA was specifically budgeted into the grant. GRAs are expensive (tuition, 12-month part-time salary, fringe benefits = \$45,000 per year), so we must plan for them. Further, most projects require

full-time staff for recruitment, assessment, and data processing. It is difficult for most graduate students in clinical psychology to take on these roles in conjunction with everything else they have to complete as part of their training. Thus, while Chris has supported graduate students as GRAs in the past, this is not standard practice. His main priority is to support graduate students during the summer--a period when they have more time and funding is less secure. Of course, all of this is dependent on the availability of grant funds, which waxes and wanes and unfortunately is not always as consistent as I would like.

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

#### NIH funding notes

All research funded by the NIH must acknowledge the grant number upon publication. This is essential for documenting that we are turning their money into research findings. Here is an example acknowledgement:

"The research reported in this publication was supported by the National Institute of Mental Health of the National Institutes of Health under awards R21MH092430 and R33MH109600. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health."

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.

## RECOMMENDED READING

### MDL Background Reading

For individuals who are interested in working in the MDL (or graduate students or postdocs who are considering applying to that lab), it is sometimes helpful to read relevant articles that reflect the type of work that is done in the lab. The articles below provide an excellent representation of the work we conduct in the lab (in no particular order):

- Beevers, C. G. (2005). Cognitive vulnerability to depression: a dual process model. *Clinical Psychology Review, 25*(7), 975–1002. <https://doi.org/10.1016/j.cpr.2005.03.003>
- Beevers, C. G., Clasen, P. C., Enock, P. M., & Schnyer, D. M. (2015). Attention bias modification for major depressive disorder: Effects on attention bias, resting state connectivity, and symptom change. *Journal of Abnormal Psychology, 124*(3), 463–475. <https://doi.org/10.1037/abn0000049>
- Beevers, C. G., Mullarkey, M. C., Dainer-Best, J., Stewart, R. A., Labrada, J., Allen, J. J. B., ... Shumake, J. (2019). Association between negative cognitive bias and depression:

A symptom-level approach. *Journal of Abnormal Psychology*.

<https://doi.org/10.1037/abn0000405>

- Beevers, C. G., Pearson, R., Hoffman, J. S., Foulser, A. A., Shumake, J., & Meyer, B. (2017). Effectiveness of an internet intervention (Deprexis) for depression in a united states adult sample: A parallel-group pragmatic randomized controlled trial. *Journal of Consulting and Clinical Psychology*, 85(4), 367–380. <https://doi.org/10.1037/ccp0000171>
- Dainer-Best, J., Shumake, J. D., & Beevers, C. G. (2018). Positive imagery training increases positive self-referent cognition in depression. *Behaviour Research and Therapy*, 111, 72–83. <https://doi.org/10.1016/j.brat.2018.09.010>
- Disner, S. G., Beevers, C. G., Haigh, E. A. P., & Beck, A. T. (2011). Neural mechanisms of the cognitive model of depression. *Nature Reviews Neuroscience*, 12(8), 467–477. <https://doi.org/10.1038/nrn3027>
- Pearson, R., Pisner, D., Meyer, B., Shumake, J., & Beevers, C. G. (2018). A machine learning ensemble to predict treatment outcomes following an Internet intervention for depression. *Psychological Medicine*, 1–12. <https://doi.org/10.1017/S003329171800315X>

Incoming graduate students: R reading

We generally recommend that incoming graduate students spend some time learning R before starting graduate school. This is not required, of course, but highly recommended if time permits. It will help you hit the ground running. Here is what [Jason Shumake](#) recommends:

RStudio has compiled a great collection of resources to get started with R programming, and I'd recommend following their suggestions, which you can find here:

<https://www.rstudio.com/online-learning/>. See also: <https://rstudio.cloud/learn/primers>.

They mention an R package called `swirl`, which other grad students have found extremely helpful, so I'd definitely recommend you give that a try. It's a great interactive tool for getting acquainted (or reacquainted) with R. Attached are instructions for installing and running the `swirl` package in R. (This of course presumes that you have R and RStudio installed on your computer. If you don't there are links on the above web page to where you can download the software, and to some free courses on Leada that cover how to install them.)

They also have links to a number of MOOCs. Of these, I can vouch for the John's Hopkins Data Science Specialization on Coursera, in particular this one:

<https://www.coursera.org/learn/r-programming>. (I think it also makes use of the `swirl` package.) This is Course 2 of a sequence of several basic data science short courses that are all pretty useful; time permitting, I would continue next with "Getting and Cleaning Data" and "Reproducible Research". And if you're extremely ambitious, I would next move on to the Statistical Learning MOOC from Stanford:

<https://class.stanford.edu/courses/HumanitiesScience/StatLearning/Winter2014/about>.

This provides an introduction to techniques that have become staples of the work we're doing, like cross-validation, bootstrap resampling, elastic net, and random forests.

For reference down the road, I've put a number of resources in our R Tutorials folder in the MDL Box server: <https://utexas.box.com/s/vx4pzj65rycjeei00nyc73cxwtj42abm>. The subfolder named "reference\_materials" has a number of useful references and cheat-sheets related to data wrangling, ggplot2, and R Markdown. The subfolder "Data Wrangling" contains a series of tutorials I've written showing how to use R to perform data cleaning tasks that frequently arise in MDL data sets.

### Open Science reading

Here are some relevant open science readings that have inspired how we go about our research in the MDL. Some of this is covered in the Research Methods class that Chris teaches as part of the doctoral training in clinical psychology.

- Munafò, M. R., Nosek, B. A., Bishop, D. V. M., Button, K. S., Chambers, C. D., Percie du Sert, N., ... Ioannidis, J. P. A. (2017). A manifesto for reproducible science. *Nature Human Behaviour*, 1, 0021. <https://doi.org/10.1038/s41562-016-0021>
- Epskamp, S. (2019). Reproducibility and Replicability in a Fast-Paced Methodological World. *Advances in Methods and Practices in Psychological Science*, 2(2), 145–155. <https://doi.org/10.1177/2515245919847421>
- Gernsbacher, M. A. (2018). Writing Empirical Articles: Transparency, Reproducibility, Clarity, and Memorability. *Advances in Methods and Practices in Psychological Science*, 1(3), 403–414. <https://doi.org/10.1177/2515245918754485>
- McKiernan, E. C., Bourne, P. E., Brown, C. T., Buck, S., & Kenall, A. (2016). Point of view: How open science helps researchers succeed. *eLife*, 5, e16800. Retrieved from <https://cdn.elifesciences.org/articles/16800/elifesciences-16800-v1.pdf>
- Nosek, B. A., Ebersole, C. R., DeHaven, A. C., & Mellor, D. T. (2018). The preregistration revolution. *Proceedings of the National Academy of Sciences of the United States of America*, 115(11), 2600–2606. <https://doi.org/10.1073/pnas.1708274114>

There are many other relevant papers, so feel free to reach out to Chris if you are looking for additional reading material.