Conry-Murray Child Development Lab Manual

Now that you've joined the lab, this document will help you get orientated.

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Ch. 5 [Manuscripts and Publications.](#) This section is useful for graduate students working their theses, and anyone who is preparing a manuscript for publication.

Ch. 6 [Careers in psychology.](#) For advice about how to prepare for a career in psychology read this section. Includes information on letters of recommendation.

Add anything from here?
https://docs.google.com/document/d/1LqGdtHg0dMbj9lsCnC1QOoWzIsnSNRTSek6i3Kls2Ik/edit

All Lab Members

Becoming a Lab Member
The lab is made up of graduate students and undergraduate research assistants. We also work with graduate students, post-docs and professors in and outside of SJU who are collaborators but may not be formally part of the lab. If you know someone who wants to join the lab, please ask Dr. CM to send them information.

Diversity Statement
This lab values diversity. We recognize as an important moral value that all people should be treated with dignity and we are committed to inclusive practices. We also recognize that science is improved by having many different perspectives. Please share your pronouns if you wish, and let me know if you have any concerns that I can help address.

Lab responsibilities
All lab members will contribute to all research going in the lab. It is essential that everyone is invested in the research and does their part to ensure all research is high quality. That often means being critical of proposed research—all research needs to go through many rounds of revision, and we count on the lab members to all provide feedback. In addition, all lab members will be expected to engage in interviews (some on vacation days since those are the only ones when schools and in session but SJU is not), transcription, coding and other research tasks.

Working in the lab is a little like a class—since you should be learning new things, and a little like a job—since you should take responsibility for making the research go smoothly with high quality research and be proactive about being helpful. When you have criticism (please do

critique studies and methods!), please do your best to also present suggestion to address the issue. For example, if you see any errors in this document, please fix them if they're obvious or if you're unsure, let Dr. CM know.

Meetings
The lab as a whole will meet about every other week. Please consider lab meetings as just as important as a class. Let Dr. CM know if you have to miss a meeting and then contact a lab member to find out what you missed.

Lab Space
The lab is located at Post Hall 123. You can get a key from the secretary in office Post Hall 130. Be sure to return the key when you leave at the end of your last semester in the lab.
The lab is used first for research activities (mostly interviewing participants), but it can also be used to store your stuff, work on the computers or hang out if it isn't needed for anything else.

Work Log
Please keep track of all work you do for the lab in a work log. This will help you ensure that you get everything done, but it will also help you provide Dr. CM with accurate and complete information when you ask for a letter of recommendation later. The Head Grad Student will make sure your work log is up-to-date. Please make sure they know what work you have been assigned and when it is complete. If work is late, just let us know. We will work with you on the due date for most work.

Gather skills
There are a lot of opportunities to develop skills in the lab. These are just a few that you may want to mention when you apply for jobs, grad school etc. I suggest that you try to get as many of these experiences as possible but also consider specializing in a few.
- Interview children
- Interview adults
- Design a study
- Contribute to writing a literature review
- Create study materials
- Preregister a study
- Contribute to an IRB application
- Supervise other RAs
- Enter data
- Code data for reliability
- Create a coding scheme
- Analyze data
- Write or contribute to a methods section
- Write or contribute to a result section
- Write or contribute to a discussion section
- Contribute to a registered report
- Submit our work to a conference
- Publish a paper
- Reliability coding
- Create a coding scheme
- Do the final reliability coding
- Put a study on Qualtrics

- Put a study on Google Forms
- Schedule interviews
- Put a study on SONA
- Recruit participants
- Lead other RAs
- Transcribe interviews
- Organize files

Work flow

We use drobox and google drive. The "Conry-Murray Lab" dropbox folder has many useful materials—take a look. Dr. CM will also create a dropbox folder for you. If you use google drive and you want Dr. CM to see a document, it is helpful to send an email to remind her where it is (in addition to the automatic email sent by google).

Time management

Undergraduates are expected to work about 3 hours per week for volunteers, about 6-8 hours per week for work-study students, and grad students should expect to do about 5 hours per week of work for the lab, in addition to thesis work. All lab members are expected to help with data collection during school breaks (usually 2-3 days each per fall and winter break) and over the summer (less than one week).

I consider weekends to be time off, but everyone keeps different schedules. Please keep your colleagues informed about any schedule issues or if you get behind on a project.

Individual meetings

All grad students should plan to schedule a meeting with Dr. CM about every other week to discuss progress on their thesis, career plans, etc. More information is below in the graduate student section. Undergraduate RAs are also welcome to schedule individual meetings. Meetings can be in-person or via Zoom.

Communication

Email is the best way to get in touch with Dr. CM. The lab group email is conry-murray-lab@sju.edu. Anyone in the lab can use the group email to get in touch with everyone—for lab work or socializing or research discussion and questions.

When I email with a question, please respond within about 24 hours (weekends and days off excluded), even if it is to say you need more time to think about the issue. Unlike a class, we get a lot done over email, and so having everyone reply is useful.

We also have a lab Slack channel. So far, Slack has not been popular, but let me know if you'd prefer that we move lab communication there.

Clearances

In order to work on research and to interview children, you need to complete several clearances. Please upload copies of these as two documents (CITI and School) in a "clearances" folder in the Conry-Murray Lab drobox folder. Label them with your last name and "CITI" or "school" (e.g.

CITI_Conry-Murray and School_Conry-Murray).   Please complete these by <u>week 2 of the</u> <u>semester</u>. Clearances that cost money can be done using the Psych department credit card. Most need to be done each year. CITI training needs to be done every three years.

1. **CITI training __DUE week one**
   a. Follow the link to : https://www.citiprogram.org/
   b. Register with CITI, click "Register Here" beside New Users
   c. Add "Saint Joseph's University" as an affiliation. (*Saint* must be spelled out).
   d. Choose Social and Behavioral Science Research Course
   e. Print and scan a copy of the "Completion Report." Keep this in your dropbox folder in a file called "Clearances" and "CITI completion reports" and email Dr. CM when it is done.

2. **School Clearances—DUE week 2**
   Schools requires three clearances. The psychology dept usually pays for these. When you complete these print results and scan into ONE DOCOMENT. Scanning can be done in the psych office.
   a. <u>PA Criminal Record Check ($10):</u>
      i. Registration Site: https://epatch.state.pa.us/Home.jsp
      ii. Click on "Submit a new record check"
      iii. Click the Invoice Number (in blue) to print a receipt
      iv. Click "Certification Form" to print results (immediately if no record reported, within 21 days if record reported)
      v. Scan the certificate and place a copy in your "Clearances" and "School Clearances" folder on dropbox.
   b. <u>PA Child Abuse Check ($10):</u>
      i. Registration Site: https://www.compass.state.pa.us/cwis/public/home
      ii. Select "Create New Account" (if first time doing clearances online) or Login
      iii. You will select your own personal Keystone ID (e.g. kheasley01)
      iv. Once you submit your information, you wil receive a temporary password via email
      v. Select "Log-in" and use your Keystone ID and temporary password
      vi. Create your permanent password
      vii. nce you are logged in with your permanent password, review the disclosures (follow prompts) and select "Create Clearance Application"
      viii. Follow the prompts to complete the application
      ix. ***Once you enter your payment information, the very next screen is your receipt (says "Payment Completed" at the top). You MUST print this now (there is no way to retrieve a receipt later).***
      x. Click on "Finalize and Submit Application"
      xi. Print results online (you will receive an email notice when the background check is finished process, it can take up to ~14 business days)
      xii. Scan the certificate and place a copy in your "Clearances" folder on dropbox.
   c. <u>FBI Fingerprint Check ($22.60</u>)
      i. Registration Site: https://uenroll.identogo.com
      ii. Enter Service Code "1KG756"
      iii. Click on "Schedule or Manage Appointment"
      iv. Complete the remaining information
      v. Select which document you will bring to the fingerprinting appointment
      vi. Select the fingerprinting location that is closest to you (You can either schedule an appointment or choose a walk-in)
      vii. Print out the final page with your pre-registration information
      viii. Get your fingerprints taken at the location you chose (you will need your selected document and printed registration information)
      ix. Pay at the location (keep your receipt), and place a copy of your results in your folder on dropbox when they are ready.

<u>**Psychology Research**</u>

Get to know the research in moral development

You can watch videos about the major theories of moral development
Social Domain Theory: 2 Lecture on Social Domain Theory copy.mp4
Cooperation (evolutionary) theory: 3 Cooperation Theory video.mp4

Recruiting Participants
Before you decide on a research topic, you should plan for recruiting participants so that you know you will be able to complete the project in the time you have available.
No subjects--text. Analyzing text (like children's books, textbooks, newspaper articles etc.) requires no IRB (see below) and no recruitment, but unless the data your plan to collect is very easy to code (gender of author is pretty easy, moral violations are harder to code), establishing reliability can take as long as recruitment. Consider this option if you have an easy-to-code idea.
College students. The SJU psychology department has a subject pool. There are usually participants from across the university in the pool, which includes 200-300 undergraduates. About 40% are men. You need to request credits for the pool (sometimes called CEP or SONA) before the semester starts by letting Dr. CM know.
Preschoolers. Our youngest age group tends to be children in preschool, and these are the easiest children to recruit since preschools are usually happy to let us send home consent forms and conduct interviews at the schools. Saint John's School and Overbrook Preschool are affiliated with SJU and are usually very helpful.
Middle childhood. Recruiting in public schools has gotten harder since school have more material to cover and they are less likely to let us take children away from their lessons. However, some schools (especially private and Catholic schools) may be willing to help us. At this level children still bring their parent handouts, and so getting parent consent is easier than with older children.
Middle and High School. This group is the most difficult to recruit because parent consent is hard to get before conducting the research since students to not typically bring home notes from school and parent to do not read online newsletters. For MS, consider a Catholic school that goes from K-8. For older adolescents, consider an inducement like a lottery for a pair of earphones, or plan to recruit in a class (see next paragraph). Consider asking the IRB to waive parent consent. This has not been approved yet at SJU but some universities do not require parent consent for all students with adolescents.
All age groups.
- It can help to connect the study to State learning objects for social skills and promise to provide feedback to the school (where relevant) or to do a survey and follow-it up with a lesson and discussion of the issue for Health class/ AP psychology/Social Studies etc.
- Post your study on https://childrenhelpingscience.com/
- Post in local social media groups like Lower Merion Community Network on Facebook or parent groups for schools. Ask Dr. CM to post a link on twitter.
- We also have a lab participant-pool list with people who are willing to receive information about our studies. Ask Dr. CM to give you contact info for your age group.

Data collection online
You have two main options for collecting data online: Google Forms and Qualtrics. Google forms is easy to use, but it has fewer functions. Qualtrics—available on the nest—has more functions. If you use Qualtrics, a few hints:

- Make sure to label questions with the variable names you will use in data analysis (e.g. short names with no spaces, using patterns (described in the Variable Names section below).
- Be careful when you copy question on Qualtrics. Check the "Recode" section. Sometimes Qualtrics adds numbers to Likert scales that don't make sense (1,7,8,9 instead of 1,2,3,4). Put the correct number into "recode" so that you can download the data as numeric and get started sooner with data analysis.

IRB—Human Subjects Ethics

All institutions with research funded by the federal government must have a committee to oversee the ethics of research with humans. These committees are most often called IRBs (Institutional Review Boards). Each time we start a new study, we have to submit it for review to the IRB before data collection can begin. RAs and grad students often help with this process by getting the materials together, filling out forms etc. Grad students may complete this process themselves for their thesis. Samples and forms and be found in the folders: Conry-Murray lab→ Research procedures DIRECTIONS→ IRB materials.

- Remember to add a line in consent forms to indicate that you will want to share de-identified data, as a part of open science.
- Don't forget to close your study when you are done by submitting a final report.

Summer Scholars

Undergraduates-- if we have started a big project during the year that will be finished in the summer, ask Dr. CM about Summer Scholars.

4+1 students—Summer Scholars is a great way to start your graduate career in the summer after Junior year because you can get paid the summer before you start the graduate program to get a jump start on your thesis.

Overview--Applications due Jan/Feb for the following summer. Start your application in Dec by talking to Dr. CM. Summer Scholars pays around $2,000 for the summer.

Presenting Research at Conferences

There are several conferences each year that focus on research related to the lab. If you are contributing substantially to a project, you should consider presenting the research at a conference. SJU will usually pay conference fees. For an application for funding, see Conry-Murray lab→ Research procedures DIRECTIONS→ Deans Research Travel Award. You can present a poster or a talk. Grad students—I recommend presenting at 2-3 conferences before you graduate. See Dr. Mindell about grad student funding for conferences. Here are some of the best conferences:

- **Society for Research in Child Development (SRCD)**—held every other year in March or April. This is the biggest developmental psychology conference in the world. It is competitive to get a project accepted, especially for talks. Applications are due in August. https://www.srcd.org/
- **Cognitive Development Society (CDS).** Less competitive but very popular with developmental psychology. Meets every other year. 2022 in April is the next meeting. This society also has a popular listserv where lots of jobs get posted. https://cogdevsoc.org/
- **Jean Piaget Society (JPS).** Meets in early June every year. Applications due in December. A small friendly conference with lots of social domain theory researchers. https://piaget.org/
- **Society for the Improvement of Psychological Science (SIPS).** Meets every summer around the world. They are trying to be more inclusive so they may offer an online (and cheaper) version regularly. This is a very hand-on conference, where researchers of all levels discuss ways to improve psychology and then implement the strategies they develop. https://improvingpsych.org/
- **Gender Development Conference.** No website, but email here to get on their mailing list: Gender Conference <gender.development@gmail.com>

- **Society for Personality and Social Psychology (SPSP).** The biggest psychology conference for Social Psychology. Meets in January every year. https://www.spsp.org/
- **Preconferences.** Be sure to look out for preconferences which focus on a narrower subject. These preconferences tend to be attached to a bigger conference. They can be a great way to get up-to-date on new research and meet like-minded researchers because they small and focused.
- **Social Domain Theory International Colloquium.** This is an online meeting that seems to be meeting about 4 time a year for a few hours. Sign up for the listserv at https://www.socialdomaintheory.com/ for more information.

Open science

Open Science is a movement to make sure research in psychology (and other fields) is high quality, replicable and accessible to people who want to read and review research. "Open" means that as many research materials as possible are available for people to examine—the survey, the data, the data analysis code, and the manuscript. The goal is to be transparent about how the research was done so that it can be checked and replicated. Posting manuscripts also means that people in the developing world can access research without paying high fees to journals (researchers do not get paid for research).

Problems with research in the past included p-hacking. P-hacking is the idea that researchers took steps to get p-values under .05 in a way that undermines the quality of research. To avoid p-hacking, we preregister our studies on OSF.io. a website run by the Open Science Framework.

Preregistrations

Preregistration includes writing out all hypotheses before data is collected on a time-stamped public site. It also includes justifying sample sizes, and other procedures, before data is collected. This way, procedures are determined because they make the most sense for the science and not just to move the p-value to under .05.

Study notebook and codebook

Document everything. All studies should have a study notebook that includes notes about all procedures planned and followed. Your registration should be here along with notes about any deviations and new rules followed about when data will be included, who was recruited and from where, any unusual event or changes to the survey, new IRB amendment etc.   It should also include a codebook that explain how each question was asked, how it is labeled in the dataset and how it is coded. An example of a codebook is here: https://osf.io/cdu2j/

Data management

Data entry. Data that is collected on paper or audio files needs to be entered into a spread sheet (csv file). In order to make sure there are no mistakes in data entry, you should create a google forms or Qualtrics survey for data entry. The more it looks like the paper version, the better. Do not ask people to enter data in spreadsheets; this will mean too many errors. In addition, you should have two people independently enter the data and compare their data to find discrepancies, which you can then correct by going back to the original data. Scan paper copies so there is a backed-up version as soon as possible.

<u>Justifications or other open-ended questions.</u> These need to be transcribed for coding. See the section of Inter-rater-reliability.

<u>Rules</u>—As you make decisions about data, write them in your study notebook down as stay consistent. That includes rules about when to eliminate participants (if they finished 75% or 95%, if they fail one or two manipulation checks), recruitment decisions, (all throughs social media or some through friend groups, how many times will you remind someone to finish a survey, etc.), how will groups be divided/assigned, what order will assessments be given, what dates, and many more (some others discussed below). Decide and then write it down with a rationale.

<u>ID conventions</u>—IDs should be short but unique to each participant. I use initials to identify the study and then count up from 100 for each participant (e.g. MD101, MD102 etc.). Once you decide, write down the rule and don't change it. Each ID must be unique and it must never change. A participant should have the same ID for wave 1 and 2 or condition 1 and 2 etc. (so don't use dates or ages or conditions in the ID)—you may want to connect data for participants at two time points someday.   Label all files with the ID, and remind RAs to be VERY CAREFUL when documenting IDs, since mistakes mean lost data. We usually assign IDs when we have consent forms. There is a master file with names and IDs which will later be destroyed (for confidentiality).

<u>Variable names.</u> These must also be unique. They are better when they are shorter and systemic. Many programs require them to have no spaces and they cannot start with number. We tend to use a formula like FP_eval (evaluation of a female protagonist) MP_eval (evaluation of a male protagonist) or MP_punish and MP_punish (for "Should they be punished?") so that in complex analyses the code can be copied and updated with find-replace for a new DV (e.g. from eval to punish). For dichotomous variables, many people use a clear label like "girl" where 0 = no and 1= yes. That means it's easy to remember what the variable means.   Document your variable names and rules about variable names.

Here is another example"
M = moral
C= conventional
S= science
N= no violation

true= how much does this affect the truth?
publ= how much this affects publishing?
cntl= control eval from part 1

eval= OK or not OK (part 2 eval for control condition)
just = why?
rule = rule contingency

eval= OK or not OK (part 2 eval for control condition)
just = why?

rule = rule contingency

Items within each domain can be 1,2,3,4

M_eval1 would be the question: "is this OK or not OK" for the first moral practice. The order you choose has to be the same for all variables (e.g. domain_DVitem#). Also note that all section contain the same number of characters (e.g. all DVs are 4 characters).

Variable values. Note that odd Likert scale items allow people to not take a stand on the issue because there is a middle number. Decide if that is what you want. Make values consistent (more = a high number), and easy for participants and future researchers (including future YOU) to remember as they go through your interview/survey. As I mentioned above 0 = often means absent and 1= present. Missing data should be N/A (as in R) or system missing (NOT numbers). Be careful about using 0 or 99, since those can be overlooked and they can be entered as real data, messing up your means and other analyses.
Put answer choices in order. Collect as precise of data as possible and don't put them into bins if you don't have a good reason to. (Bins means things like GPA= 2-3, 3.1-4 etc., when people may know their exact GPA and you wouldn't have to lose that variability).

Tracking participants. Create a master list. Tell who is eligible and if you have contacted them. If they get excluded because they don't meet eligibility or don't reply, tell why and what assessment are still needed. Assign to condition. Never use colors to identify any quality in any dataset—instead always use a new column with the needed info (school, progress etc.).

Data files. Back up your data (google docs or dropbox or other). Save the RAW data file and never touch it. Save using comma delimited format (csv) for use in R, Jamovi or SPSS. It should have everything exactly as when you first downloaded the complete (all participants finished) data. If more participants are added, save it with the version (e.g. call the file MD_rawdata_v2). Share these with collaborators. Now clean the data. Cleaning the data means making sure variable names are useful, make sure there are no impossible variables (e.g. a 99 from missing data or test of the survey)—do this by getting means, SD and ranges (and/or histograms, spot check from paper forms with data entered, change words to values (e.g. 0 strongly disagree should be just 0). Make sure your codebook is complete and up-to-date. Save as CLEAN or FINAL in a different folder from the RAW data. Save using comma delimited format for use in R, Jamovi or SPSS. Save this data in multiple places and share with collaborators.

Data analysis. Once you have cleaned data, you can do data analysis. All data that is averaged, un-reversed coded, split into groups or otherwise manipulated should be done to the CLEAN file WITH A NEW FILE NAME. (e.g. MD_data_analysis) and the syntax or code should show each step. Put this new file in a different folder so that the CLEAN file isn't ever changed.
It is useful to learn a few data analysis programs: R, Jamovi, JASP, SPSS or SAS. Most people use R and SPSS.

Codebook/Data dictionary

Make a codebook that shows what all values mean. Don't let someone else (or future you) have figure out if M= male or mother and F- female or father! Also include the original full question and the scale (what does 0 mean vs what does 7 mean. Which values were labeled? Which items were reverse coded, missing values codes, who got each question (was their branching ro skip logic?) Calculations is this part of a scale that will be summer or have math done to it?)., question number on Qualtrics, and notes.

Data sharing
Make sure to include in your consent form that you plan to share de-identified data and that it will be kept indefinitely.

More resources
Within and Between podcast, Season 2 episodes 13 & 14 on Data management
http://www.withinandbetweenpod.com/
https://cghlewis.github.io/mpsi-data-training/training_00.html

Inter-rater Reliability
Any open-ended responses have to be coded in a way that is replicable. That means showing that your codes could be found in the same dataset again by someone outside the lab. We do this by showing inter-rater reliability. This involves several steps:
1. Determine what is considered a unit. This could be a sentence or an event.
2. Establish IRR for units with a gold standard. That means that a coder finds the same units at least 90% of the time as the gold standard (expert).
3. Next determine what types of codes the units can be categorized as. Usually this is done by looking at the units and considering your research questions. Create a coding manual with these coding categories. The best categories are clear and non-overlapping.
4. Train coders. Keep track of which interview/data was used for training so it is not repeated.
5. Use the two best coders (ideally one gold standard) for testing IRR. Use Cohen's kappa which must be above .70.

Making Mistakes
Everyone makes mistakes and no research project is perfect. It is important to let others know if you make a mistake so we can do our best to fix it and we can all learn from it. Just about every study has some mistakes and if the researchers care about science, they report them in the manuscript and tell how they were dealt with. Please feel free to let me or other PIs know if any issues come up.

Graduate Students

Developing research studies
See this document to get you started thinking about a thesis or other research ideas:
https://docs.google.com/document/d/14QRuVx1UBfDcTHrzYc5rjb4RMjgryNp1vewswExdSOc/edit?usp=sharing

Individual Meetings
In addition to lab meetings, you can meet with Dr. Conry-Murray about once a week or every other week, as you need. As a graduate student, I expect you to take much more initiative than undergraduates. That means scheduling appointments as you need them, and coming to the

individual meetings with an agenda so that we use the time wisely. You will also likely need to update me on what we have done so far. Finally, you should do you best to try to find answers to your question yourself when it can be looked up easily. You should also ask other grad students and others so that when we talk about the issue, we can both contribute ideas.

Feedback on Drafts
You will be responsible for setting up a schedule for getting all your work done, but you will need serval rounds of feedback from me on drafts. Please only send me a draft once you believe the section is in good shape. If you know there is still work to be done, then it is a waste of my time to have me tell you what you already know. However, I am happy to look at smaller section rather than an entire paper if you would like feedback along the way.
I usually need about 1-2 weeks to get feedback back to you, so plan ahead. Shorter sections require less time.

Funding
GA positions in psychology are competitive, based on grades and available only to second year students. These positions usually include tuition grants and a grant for some living expenses. Other GA positions, open to both first- and second-year grad students, are available on campus, for example in the Adult Student Life office.

Head Graduate Student
The Head Graduate student will coordinate lab meetings, including setting and agenda, reserving space, planning for speakers etc. and will make sure all work logs are up-to-date. Although RAs should keep work logs up-to-date, the Head Grad students will need to ensure that they are accurate and that work is completely in a timely manner and logged as finished when appropriate. The HGS will also be in charge of data collection at sites when Dr. CM is not there—including making sure all necessary materials at the site and everyone has children to interview with their appropriate ID codes. The Head Grad Student be exempt from some lab work (e.g. coding and transcription duties). Dr. CM will assign a Head RA each year (or occasionally, each semester).

Preparing for a Doctoral Program
Publications. Graduate students who are considering applying to doctoral programs—I suggest you aim to contribute substantially to at least one project in addition to your thesis so that you potentially have at least two publications.
Presentations at Conferences. You should also present at conferences at least 2-3 time over the two years.
Collaboration. Seek out mentors both inside and outside of SJU. Many times, post-docs are happy to work with someone who will help them get work done—even from another university. If you have a PhD program you are interested, contact the Post-docs at that school to start making connections. Having worked with a lab already is a great way to make your application stand out.
Develop skills. Take the opportunity to learn new research skills. Coding and statistics is especially valuable (e.g. in R), but so is experience with recruitment at all ages, interviewing at all ages, developing study materials, collaboration, establishing reliability and validity, guest

lectures or other teaching experiences (and you do not have to be a TA to guest lecture or tutor or set up a study session), developing useful materials that are publicly available, etc.

For first year grad students

Your major goals this year are to develop a plan for your thesis, write it up and present it at the department Brown Bag. There are resources for each step in the folder Grad Directed Studies— 1st year.

Study Ideas

To get starting thinking about ideas for your thesis or a secondary project, look at the document showing study ideas from Dr. CM. When you develop your idea, send Dr. CM a paragraph on the past literature related to the idea, the proposed DVs and IV and a few sentences about the method. Plan a meeting to discuss your ideas—the first of many meetings!

IRB applications

Make sure to include in your consent form that you plan to share de-identified data and that it will be kept indefinitely.

Power Analysis

A power analysis is used to figure how large your sample size should be in order to detect the effect you expect. Note that you do a power analysis for a hypothesis—not for a study. Choose the most complicated hypothesis (with the most factors—especially between-subject factors). That way, you will have more than enough power for less complicated hypotheses too.

To do a power analysis, you need to set a power level (usually .8, but .90 is better), you need to know the effect size you expect ($f = .25$ is reasonable, but it's better to use an effect size based on pilot data or published research). P is usually set at .05, and you leave the sample size blank in both g*power and https://webpower.psychstat.org/wiki/models/index . For repeated measures ANOVAs, tell the calculator how many groups (between subject groups) you have and how many measurements (within-subject) you have in your hypothesized effect.

For mixed Effects Model, calculating the sample size you need is harder. You will probably need pilot data, and you use it to simulate the expected data with the pilot tests' parameters (Mean, SD etc.) and then run your test 1000 times. This is done in R. You want to see how many times the effect is found if it were there in data with the parameters you expect. Ideally it is found in the simulated data at least 70% of the time, but the cut-off can vary. Here is a tutorial: https://link.springer.com/article/10.3758/s13428-021-01546-0

You can also try GLIMMPSE, an online sample size estimator for Linear Mixed Effects models. I have not seen it used in published papers yet, but it may be an option, and it is very user-friendly. It is here: https://glimmpse.samplesizeshop.org/

For second year grad students

Your major goals for your second year are to pass comps, collect data for your thesis, analyze it, and write it up in a format that can be published, and defend it before you graduate. Here are resources for each step in the folder Grad Directed Studies—2nd year.

Comps
Comprehensive exams take place in October most years. The exam involves reading and assessing a psychology paper, so knowledge of statistics and research methods is key. Many student forms study groups to practice and study to together. Students who fail Comps are given a second chance to take a different exam.

Data collection and data analysis and writing up your manuscript
Please see the sections about on these topics. I expect your final thesis to be written in a format that could be submitted for publication. That means a maximum of 40 pages, a concise but comprehensive description of the justifications for your study and your methods a results and discussion.

Data Analysis
 Most studies we do use a factorial design, which we often use with a within subject design. In the past, this meant that we used repeated measures ANOVAs. However, more modern statistics has recognized that repeated measures ANOVAs do not account for the fact that each participant may have a tendency to use the scale differently and the items we choose may also not be a perfect representation of all possible items. In order to account for those issues, we use a Mixed Effect Model. We are still interested in typical IVs (e.g. condition, group etc.) relationship with the DV. But now the IVs are called fixed effects. Random effects are the effect of participants and (when we used multiple examples for each category, we also have random effects of items. This is easiest to do in R, but SPSS and Jamovi also have programs.
   1.   First check to see that adding in random effects for participants and item improves the model.
   2.   If so, run the mode with those effects (as intercepts and/or slopes)
   3.   Next ask for output. This tend to look like regression or ANOVA output so it is easy to interpret.
For more information on Mixed Effect Models, watch these short videos:
Part 1 (20 min)-- https://www.youtube.com/watch?v=3OFXxh4yORU&t=410s
Part 2 (25 min)-- https://www.youtube.com/watch?v=_UmY-3brJJ0
The videos are based on this article, which could also be helpful:
https://journals.sagepub.com/doi/full/10.1177/2515245920960351

Publishing your Thesis
Your goal should be to publish your thesis. This ensures that your time and your participants' time is not wasted, and the research you do contributes to the advancement of knowledge in psychology. It can also help you in your career.   In order to publish you need to have your thesis in publication format before you leave, and you need to discuss with Dr. CM an appropriate outlet. I suggest you submit after the final feedback from your second reader at the thesis defense.

Publication is a long process. You will need to be available after graduation to do revisions and to resubmit to new journals if necessary. If you have moved on, and publication is no longer

your goal, Dr. CM will handle one set of revisions. In rare cases, Dr CM may offer to do more, but the primary responsibility for publishing your research is with you.

Try to publish in open access journals. Here's an article explain why: http://shankarraman.in/2021/03/31/why-i-will-not-review-or-write-for-elsevier-wiley-and-other-commercial-scientific-journals/

If you do not want to publish, your thesis should still be made available on OSF.io and https://psyarxiv.com/ so that future metanalyses can find your research.

Checklist before you graduate

- Print copies of your thesis to be bound for the department and for Dr. Conry-Murray
- IRB. Close all completed IRB studies. If a study is continuing because (e.g. because it is under review for publication), then please renew it before you leave to give us the most time to complete it. Please also fill out the completion form and save in your IRB folder in dropbox so that I can close it for you.
- Close all completed SONA studies (make them inactive).
- Post your data, code and metadata on OSF.io
- Post your full thesis on OSF.io and https://psyarxiv.com/
- If possible, submit your thesis for publication.
- Make sure Dr. CM has your permanent email address.
- Add your information to the document "Past grad students."
- Be sure to keep in touch!

Manuscripts and Publications
Every manuscript (including Master's Theses) in the lab should aim to be in the format of a publishable paper. While not everyone will publish, everyone should use published papers as a model.

Authorship. In order to get authorship on a published paper, you have to contribute substantially to a project. Substantial contributions include substantial input into the design of a study, writing part of the manuscript, taking charge of data collection, data analysis, preregistration or other substantial contributions. Here is a guide to authorship from APA. In general, when I have the idea for the study and develop it substantially, I will be first author. If you develop an idea substantially, and do most of the writing and coordinate the data collection etc. (as in a thesis), you will be the first author and I will be second (or later if there are other co-authors). It is a very good idea to discuss authorship and roles and responsibilities early and put it in writing.

Note that publications take a long time. Here are the steps:
1. Design the study and write introduction
2. Preregister and get IRB approval
3. Collect data
4. Analyze data
5. Write up the full manuscript
6. Submit for publication
7. Get reviews for 2-4 peer reviewers, If Revise and Resubmit, then respond to feedback. This step can take 2-4 rounds of reviews.

8. If the manuscript is rejected, submit it to another journal.
9. Acceptance at a journal for publication

I typically submit 2-5 manuscripts to journals each year, but they often take 2-5 years from inception to publication.

Preparing a manuscript
Here is an outline of typical academic paper (including the final thesis). It is adapted from http://www.jessicacalarco.com/teaching-resources-1/2019/8/30/article-writing-101
Article Writing 101
Jessica Calarco
August 30, 2019

Abstract (250 words or less)—*not required for Literature review in semester 1*

- State your research question
- Explain how this research question speaks to a larger theoretical puzzle or gap in the literature
- Describe the data that you use to answer your research question
- State what you find
- Describe what these findings suggest about the answer to your research question
- Explain why these findings are important

Introduction (3 paragraphs)

- Describe the *puzzle or gap* in the literature that you will address with your data *(1-2 sentences each) first paragraph or two*
  - What do we know about the problem?
  - What do we not know (or not know well enough)?
  - Why is this important?
  - What does the existing research suggest might be the answer to that unanswered question?
- How does the theory help us understand this issue?
  - Explain the theory in general
  - Explain how the theory relates to your issues
  - Explain how the theory would predict the answer to your research question?
  - How does this answer broaden, clarify, or challenge existing knowledge/theories?
- Give the theory what variables need to be studied? Start broad and get more specific.
- DV
  - What do we know about the problem?
  - What do we not know (or not know well enough)?
  - Why is this important?
  - What does the existing research suggest might be the answer to that unanswered question?

- - Consider adding: Methods. How has this been studied in the past?
  - IV-- planned
    - What do we know about the relationship of this variable to the DV?
    - What do we not know (or not know well enough)?
    - Why is this important?
    - What does the existing research suggest might be the answer to that unanswered question?
    - Consider adding: Methods. How has this been studied in the past?
  - IV—planned
    - What do we know about the relationship of this variable to the DV?
    - What do we not know (or not know well enough)?
    - Why is this important?
    - What does the existing research suggest might be the answer to that unanswered question?
    - Consider adding: Methods. How has this been studied in the past?
  - IV—exploratory
    - What do we know about the relationship of this variable to the DV?
    - What do we not know (or not know well enough)?
    - Why is this important?
    - What does the existing research suggest might be the answer to that unanswered question?
    - Consider adding: Methods. How has this been studied in the past?

Justification for the study

- Restate the puzzle or gap in the literature that you will address
- Explain why this puzzle or gap is important to address
- Describe (in more detail than in the intro) what we know about this topic/issue
- Describe (in more detail than in the intro) what we do not know about this topic/issue
- State your research question
  (i.e., "In light of these lingering questions, I seek to examine…")
- Explain how your research question solves the puzzle or fills the gap in the literature
  (i.e., "Answering this question allows me to…")

Hypotheses. These should match your registration or they should be identified as "Exploratory." Provide 1-2 sentences justification for each (can combine with the justification section above). Only include formal hypotheses for things you are pretty sure about—and keep them simple (main effect or 2-way interactions).

*Note: The point of a manuscript *introduction* is not actually to review all of the relevant literature. The point is to make the case for why your study is important. In the fall of year 1 you will write a full *literature review*, that does cover all the most important literature and which can be longer (12-20 pages). This will later be adapted it to be an introduction (Spring year 1).

Methods (4-6 paragraphs, 3-5 pages with lots of variation)

- Describe your research participants (the people you interview/survey etc.)
  - What do you plan to compare to test each hypothesis?
  - Do you have any inclusion or exclusion criteria?
  - Give age, ethnicity SES etc.
  - Give n of each major groups.
  - Describe recruitment. How will you get consent?
  - Provide a power analysis to justify your sample size. Here: https://webpower.psychstat.org/wiki/models/index
- Describe your research site, why you chose it, and how you gained access
- Describe your assessments.
  - Provide an overview: Make it clear what your design is. For example: "A 2(gender of character) x 3(consent condition) interview was designed to assess judgments in a within subject design. In addition, we tested 3 age groups and 2 genders."
  - Describe your assessments. Give samples of at least one story. Give examples of each DV question. Describe how all conditions will differ. Provide coding (e.g. on a scale from 0, strongly agree to 5, strongly disagree." Use labels for variables that are consistent across the whole paper so it is clear what variable is being tested. Make sure all variables in hypotheses are included here. Do not include other variables except to say so if your study is part of a larger study.
  - Describe procedures. What will they do first second third etc.? For children, is there a warm up? What does it consist of? How will you recode their responses?
- Reliability and validity.
  - If you made assumptions about the measure (boys like trucks and girls like doll), check that with the participants. For example, add a measure of the gendered nature of items. Check that participants understand your stimuli the way you think they do.
  - Memory checks
  - Established measures that are scales should have reliability and validity already established. Report it and cite the appropriate papers.
  - Justification needs inter-rater reliability. Describe how this was done and provide the Cronbach's alpha. A table of justification codes is appropriate if it does fit in the text.
- Describe how you plan to analyze the data you collected.
  - Do you plan to add together any items?
  - How will you test each hypothesis?

* Note. Some things in the methods will change to past tense after methods are approved and conducted

Results

Organization

- Start with an overview of your statistical plan. Try to conserve space by noting your plan overall in places where it will be similar (e.g. the same analysis but with different DVs).

- Organize your results by hypothesis (usually also by DV).
- Include justifications right after the judgments they justify.
- Discuss exploratory findings last (usually).
- In general, organize it so it is easy for readers to follow.

Notes

- Use APA style for reporting. See one of my paper and copy and paste the statistical notation, and then edit using your results.
- Include means (and *SD*s) in the text if fewer than four. If they can be added to a table, and if you can make one table that includes lots of useful means (those tested and not tested) for many DVs, that's ideal.
- Be as clear as possible to make it easier for readers to see what each effect is without having to reference the method again. For example, instead of saying a justification was used "more for masculine activities" say the justification was used "more when participants justified whether or not to approach peers with a masculine toy."
- For each effect, indicate whether it is consistent or inconsistent with your hypotheses, or whether it was exploratory. You can briefly repeat hypothesis (e.g. As expected, participants differentiated moral and conventional issues, as shown the domain main effect.)
- The results section can be 1-2 pages or many more pages.

Discussion/Conclusion (1,000 words or less)

- Summarize your findings
  - Remind readers of the puzzle/gap in the literature that you are trying to solve
  - Remind readers of the specific research question that you have answered
  - Briefly review what you found
  - Briefly explain what these findings imply about the answer to your research question
- Discuss the implications of your findings—Organize this by variable and/or hypothesis from most important to least important
  - Explain how your findings solve the puzzle or fill the gap in the literature
  - Explain how the resolution of this gap/puzzle helps to clarify, challenge, or expand existing knowledge or theory
  - Using existing literature, explain why your findings are or are not surprising
- Identify possible explanations for your findings
  - Use existing research to discuss the most likely explanation for your findings
  - Consider alternative explanations for your findings and explain (using your data and/or other research) why these alternative explanations do or do not seem plausible
- Include paragraph on Limitations
- Include a section (paragraph or tacked onto Limitation) on future research
- Conclude by reviewing why these findings (and the larger puzzle/gap they address) are important.

- Consider your last sentence carefully. What is the most important take-away of your study?

In general, remember that reading a complicated study is really hard and your job as a writer is make it easier to follow.

- Use consistent variable names that give useful information (e.g. DON"T use "condition" instead use "Public/Private").
- Code all variables so higher = more, based on the name. For example, if you have a variable called "acceptability judgments" then a score of 10 should be it was seen as very acceptable.
- Watch out for shorthand you used for yourself that others won't understand.
- Take arguments step-by-step, making what seem like obvious step explicit.
- The abstract, the figures and the first paragraph of the discission are the most important parts of any paper, because some people will only look at these sections. They should be able to get a clear and accurate idea of the study from these sections.

Undergraduate Research Assistants

Summer Scholars
SJU supports student research during the summer with a program called Summer Scholars that provides money t pay you for doing research over the summer. If you are interested in applying to work with me, please start discussing topics in December or January. The deadline for the application is usually in February. See here for more info: https://sites.sju.edu/ssp/

Working with other Labs--RAs
If you find that you like research, it is a good idea to try out other labs to see how they do things differently and to explore your own interests. On rare occasions, people have worked in multiple labs during the same semester (please le Dr. CM know if you plan to do this). I encourage you to try multiple labs over the course of your academic career.

Work-Study
Don't forget to check that you DO want to be considered for work-study money on your FAFSA. This can allow you to get paid for your work in the lab.

Funding for conferences
SJU will usually pay part of conference fees. For an application for funding, see Conry-Murray lab→ Research procedure DIRECTIONS→ Deans Research Travel Award.

Psychology Career advice
Career paths in psychology
See this PowerPoint presentation for a description of the most common career paths in psychology: Lab meetings--materials/Career paths in psychology .pptx

Listservs
Two listservs may be helpful for keeping up-to-date with news and jobs in developmental psychology. Sign up at these websites:
- https://cogdevsoc.org/
- https://www.socialdomaintheory.com/

Networking in Psychology: Social Media
Twitter. Many academics have joined communities online. I like Academic twitter. There are people who will answer stats and methods questions (https://twitter.com/lakens), people who are changing how we communicate in science (https://twitter.com/mikemorrison), people who tweet regularly about morality research (https://twitter.com/LindaSkitka, https://twitter.com/patilindrajeets, https://twitter.com/nm_yucel, https://twitter.com/JimACEverett), people who are improving psychology for the better (https://twitter.com/siminevazire, https://twitter.com/hardsci). https://twitter.com/SJU_Psychology is also great to follow! To follow more, look at these hashtags: #AcademicTwitter, Academic Chatter, #NewDevPsy
Here is a list of psychology societies and groups on Twitter:
https://psychresearchlist.com/psychology-twitter.html
https://twitter.com/i/lists/1386324721285881856

Facebook. There are also Facebook groups. Sign up for some on this website:
https://cogdevsoc.org/

Letters of recommendation
See the file in the Conry-Murray lab folder→ Requests for Letters of Recommendations. I need at least 3 work-weeks' notice and several documents, so please gather everything and ask schools for links early. Note that keeping track of your experiences (using the list above) will be helpful.

Useful websites
- A list of paid internships is here: https://www.psychresearchlist.com/paid-internships.html
- Grad school information sessions are listed here: https://www.psychresearchlist.com/grad-school-info-sessions.html
- Psych jobs list: https://www.psychresearchlist.com/psychology-jobs.html
- Grad schools accepting students: http://psychgradsearch.wikidot.com/