

Spring 2018 Research Plan - Ziwei

- Goal: Take charge of a control-learning project
 - You have SCP_Cat.
- Goal: Because you'd be taking charge of a project, you should perform a literature review on the topic of that project.
 - So, you have in your Zotero, under "Writing Resources," a number of articles on writing introductions as well as literature reviews and research proposals. These should help guide you in what to do. And if you have questions, we can discuss this some more.
 - By mid March/April, I think it'd be a good idea for you to have a draft of a General Introduction section for this control-learning project. This will build on the literature review that you've performed, for research relevant to your project.
 - I left you some relevant research articles for your project so that you could flesh out more articles and think about how you would open a paper on this work.
- Goal: Possibly present work at NC Cognition or another conference, which would use travel grants (<http://undergraduateresearch.duke.edu/urs-programs/urs-travel-grants>) that would pay for registration and the likes. Presentations also look great when applying to grad school, and it'll give you experience with conferences more broadly.
 - Because NC Cognition only cost \$10 to register, Tobias didn't think it was enough for you to apply for a travel award (plus it's local). However, a date to keep in your books is: <http://www.psychonomic.org/page/2018annualmeeting>. The abstract submission deadline for this conference is likely late April/early May. Last year, it was May 15. I think it'd be great to set this as the deadline to get as much possible done in your control-learning project so that we can submit this as a poster for you to present.
 - If we have a poster at NC Cognition, you'll be able to hone your presentation skills then; if not, you'll still have a lab meeting presentation that will help get you used to discussing control-learning work. Either way, we'll work on getting you some experience presenting your own research before the Psychonomics conference, anyway.
- Goal: Be involved in a manuscript revision
 - The next manuscript, I'm running the second experiment for right now through SONA, so the write-up and revision won't likely happen until March/April.
 - The idea here is that you take note of each individual revision and ask why we are doing that. Does it improve the manuscript? Do it make things more readable? Is it catering to a more general audience? What is the purpose of the edit?
- Goal: take statistics as a course, so that you feel more comfortable with our analysis techniques and the stats that we report
 - Did you still want to have more focused readings on The Statistical Sleuth textbook? We never discussed those chapters either; please let me know what would be useful to you in this regard.

- Goal: With the project that you're taking on, you should be involved in the data analysis
 - I will provide you with scripts to analyze the data--you should know how to apply these, and I will also ask you to recreate the scripts on your own so that you can remember what you learned in Python
 - In the email with this Word doc, I've attached some analysis scripts. "SSPhaseMturkData.ipynb" is the Jupyter notebook that converts the raw data that gets sent to our server into csv files. This doesn't actually involve any analysis, but I think it's important for you to understand what the data looks like (i.e., consider for the future what you'd structure your data to look like in an experiment) and what tools you can use to make analysis easier
 - I've also attached the actual Jupyter analysis notebooks that we've used to analyze the data in the past. It'd be useful to go through these and figure out exactly what each step does. What is Python doing? Why do I have that step at that point in time? How can you manipulate this for your project? Is there a line that you think is irrelevant and could be deleted? Is there a better way to analyze the data?

- Goal: Present at least once in lab meeting
 - This is still useful. If we're presenting a poster at NC Cognition, you'd probably be presenting soon in lab. If we're not, maybe we could get you a slot towards the end of the semester, so you can present on the study's findings so far.

- Goal: Look over the JavaScript files for your control-learning project and research to yourself what segment of code is doing. You can think about how you would translate this back into PsychoPy since you will one day code your own experiment
 - I've attached version 1 of your SCP_Cat experiment. To look over the JavaScript, you should get a text editor like Notepad++ or Atom. Open the individual HTML files and look through them. Try to see what each part of the experiment does. Google parts of code you don't get. You can also set this up on your own personal home drive: <https://oit.duke.edu/what-we-do/applications/cifs>. If you do that, you'll be able to make the code "public" for yourself, so that you can load it in a webpage and edit parts of the code and then see what your edited version does.
 - If you want an example, I can show you my personal drive and how I typically edit my JavaScript files.

- Goal: Think about your own possible project
 - So, in the Writing Resources Zotero folder, a couple of the PDFs discuss creating research proposals. In thinking about your own possible project, I'd like you to identify what the question is that you want to answer. When you have a question, we can talk about the papers that inspired that question and delve deeper into how you would actually test the question.
 - There are different ways of coming up with research questions; see Figure 3.3 and generally the entire Evans_2007_Research Proposal PDF. There is no right way; just go with what you're interested in, because your passion will show.
 - For a broad beginning, you can look at the Jonathan Cohen chapter: which section on the broad constructs of cognitive control research interested you most? What

about it interested you? Did Jonathan Cohen list some sample papers from that research topic? If so, read those and see whether you have unanswered questions and delve deeper into the literature.

- PS: I followed-up with Tobias about your idea on generalization with the Stroop and a similar linguistic task because task-switching etc. are too dissimilar for generalization purposes. He said that the more similar the task, the less interesting people would likely find the idea. So, if you generalized from Stroop to a similar process, that'd be expected, which makes the result feel less novel and thus harder to publish. I think it's good to keep thinking about this idea, though!