Vertical Integration Program – Vin Somasundaram

Meeting ID: XXX XXX XXXX
https://duke.zoom.us/j/XXXXXXXXXX

Angie and Megan typically recommend that students spend 20-30 hours per week on VIP work, which can include the stats workshops, since they're optional. They also think that this may not be as realistic an estimate for this summer, given the pandemic. Since you asked to meet with me weekly so that you'd have some structure for the summer research, I prepared a tentative schedule. None of this is set in stone, and if there is anything that is actually not helpful, then we shouldn't do it.

Week I – May 11-15

Goal: onboard you to the behavioral project, get you set up for running JavaScript with Duke resources, and introduce you to the structure of JavaScript tasks.

- Christina Meeting (1 hour)
    - Discuss any questions about the contingency learning project
    - Discuss CIFS (https://oit.duke.edu/what-we-do/applications/cifs) + VPN
    - Download sample task (consolidation JS? Or this task?)
    - Walk through the basic components of JavaScript
- Analytical Skills:
    - Stats Workshop #1 (1.5 hours)
- VIP seminars (2.5 hours)
- Work for the week (15+ hours):
    - Download a program that allows you to read and write text files (e.g., Atom, Notepad++, Brackets). This is where you'll edit your JavaScript.
    - Play around with the JavaScript script to figure out what different components do. This includes the HTML and CSS. I don't use much CSS, but it will be useful for you to have a basic understanding of what it is so that you know what to Google, and the HTML used is fairly basic in my tasks, too.
        - Also, I use "jQuery" which is a kind of library (think like R packages or Python methods like scipy). There are other libraries, though, like jsPsych that might be more useful.
            - Here are some suggested tools & tutorials (choose what's most helpful to you if you like going through tutorials):
                - https://www.w3schools.com/html/default.asp
                - https://www.w3schools.com/jquery/
                - https://www.w3schools.com/css/default.asp
                - https://www.w3schools.com/js/default.asp
                - https://jquery.com/
                - https://www.jspsych.org/
                - Chapter 9 from Matthew Crumps "Programming for Psychologists" textbook: https://crumplab.github.io/programmingforpsych/web-

experiments.html#getting-started-html-javascript-jquery
        - Codeacademy has a site for JavaScript: https://www.codecademy.com/learn/introduction-to-javascript
        - Another JavaScript tutorial: https://javascript.info/
    - Review Ziwei's PsychoPy script to determine the task parameters and what other things you might need from her.
        - E.g., you can write up all the details as you see them from the PsychoPy script and confirm with her that this is what she coded.
    - Set up your Github to work in with your JavaScript

Week 2 – May 18-22

Goal: Develop professional development skills related to writing and critiquing academic research papers, prepare the analysis script for the study, and continue developing JavaScript coding skills

- Christina meeting (1 hour):
    - Go over Ziwei's R analysis script and analyze the four participants she collected together to determine if we need to make any experimental changes
    - Go over any questions you have about JavaScript
- VIP seminar (1.5 hrs), DuWell Presentation (1.5 hrs), breakout groups (1 hr)
- Work for the week (15+ hours):
    - Research professional development related reading on our shared Zotero library – note that some of this is going to be repetitive, so don't spend too long. Feel free to skim, especially because a lot of them will overlap:
        - "Open Science":
            - Under "Resources" -> "General Issues…"
                - Spellman 2015
                - Vazire (2018) "Implications of the Credibility…"
                - Nosek et al. (2019) "Preregistration Is Hard…"
                - Open Science Collaboration 2015
                - Simmons et al. 2011
        - "Best Writing Practices":
            - Under "Resources" -> "Writing Resources"
                - Harvard Brief Guide to Writing Psychology Paper
                - Gopen science-of-writing
                - Kording _ Mensh 2016
                - Notes on Writing Science Journalism Joshua Schimel
        - "Best Practices for Critiquing Papers":
            - Under "Resources" -> "Critiquing Articles Resources"
                - Using a Scientific Journal Article to Write a Critical Review _ Library
                - Reading Papers
                - Howtocritiqueajournalarticle
                - Howtocritiqueajournalarticle_2

    - Work on coding the task
    - Read chpts 1 & 2 in Crump stats book (https://crumplab.github.io/statistics/)

Week 3 – May 25-29

Goal: apply what you've read about science writing to writing about this project in a preregistration, learn more about the scientific background of the project that you'll be writing about, and continue developing your JavaScript skills.

- Christina meeting (1 hour):
    - Show you how to use Zotero in a Word document for citing papers
    - Pick a paper from the list that we'll go over in the next meeting more closely for our science writing application
    - Go over the ins and outs of an "OSF project"
- Professional Development:
    - Resume/CV building workshop (1.5 hours)
- Analytical Skills:
    - Stats Workshop #2 (1.5 hours)
- VIP seminar (1.5 hours)
- Work for the week (14.5+ hours):
    - Continue working on coding the task.
    - Practicing what you've learned about good science writing and what you've learned (below) about the research you're doing, write up a preregistration document for this experiment.
        - You can access the preregistration for the memory consolidation study as an example here: https://osf.io/d7vg4/.
        - You can access the preregistration for the study we discussed in fall 2019 here as another example: https://osf.io/zunq6
        - You can see another example preregistration here: https://osf.io/c78sj. You ran participants on the behavioral version of the task described here with Benny in fall 2019.
        - Feel free to use some of what you've already written for the VIP.
    - Read chpt 3 in Crump stats book (https://crumplab.github.io/statistics/)
    - Read articles related to the contingency learning work (add these to your Zotero so that you can cite them):
        - Braem, S., Bugg, J. M., Schmidt, J. R., Crump, M. J. C., Weissman, D. H., Notebaert, W., & Egner, T. (2019). Measuring Adaptive Control in Conflict Tasks. *Trends in Cognitive Sciences*, *23*(9), 769–783. https://doi.org/10.1016/j.tics.2019.07.002
        - Bugg, J. M., Jacoby, L. L., & Chanani, S. (2011). Why it is too early to lose control in accounts of item-specific proportion congruency effects. *Journal of Experimental Psychology: Human Perception and Performance*, *37*(3), 844.
        - Schmidt, J. R. (2013). Questioning conflict adaptation: Proportion congruent and Gratton effects reconsidered. *Psychonomic Bulletin & Review*, *20*(4), 615–630. https://doi.org/10.3758/s13423-012-0373-0

        - Whitehead, P. S., Brewer, G. A., & Blais, C. (2017). ERP evidence for conflict in contingency learning. *Psychophysiology*, *54*(7), 1031–1039.
        - Whitehead, P. S., Brewer, G. A., Patwary, N., & Blais, C. (2018). Contingency learning is reduced for high conflict stimuli. *Acta Psychologica*, *189*, 12–18. https://doi.org/10.1016/j.actpsy.2016.09.002
        - Botvinick, M. M., Braver, T. S., Barch, D. M., Carter, C. S., & Cohen, J. D. (2001). Conflict monitoring and cognitive control. *Psychological Review*, *108*(3), 624–652. https://doi.org/10.1037/0033-295X.108.3.624
        - Bugg, J. M. (2017). Context, Conflict, and Control. In T. Egner (Ed.), *The Wiley Handbook of Cognitive Control* (pp. 79–96). Wiley-Blackwell.
        - Note that these papers may have relevant citations as well that you might want to look up along the way.

Week 4 – June 1-5

Goal: learn more about Amazon Mechanical Turk and testing out your JavaScript task, continue developing your JavaScript skills

- Christina meeting (1 hour):
    - Go over the reading together, including any feedback on the preregistration draft and also how the paper applies science writing principles, and any questions related to the project and background research
    - Discuss "sandbox" MTurk and testing out your task
    - Go through my slides on MTurk & what it means to be a "good" academic requester
- VIP seminars (3 hours)
- Work for the week (16+ hours):
    - Continue working on coding the task
    - Edit the preregistration; if all looks good, we can probably post it to OSF.
    - Read chpt 4 and 5 in Crump stats book (https://crumplab.github.io/statistics/)
    - Read about Amazon Mechanical Turk
        - Stewart, N., Chandler, J., & Paolacci, G. (2017). Crowdsourcing samples in cognitive science. *Trends in cognitive sciences*, *21*(10), 736-748.
        - Crump, M. J., McDonnell, J. V., & Gureckis, T. M. (2013). Evaluating Amazon's Mechanical Turk as a tool for experimental behavioral research. *PloS one*, *8*(3), e57410.

Week 5 – June 8-12

Goals: (I'm assuming that by around this time, you'll have finished or be close to finishing coding the task only because it took you ~1 month for the PsychoPy task, but if this is not the case, the schedule is tentative and flexible). Apply what you've learned about MTurk to creating and running a study, develop further professional development skills in research presentations

- Christina meeting (1 hour):
    - Walk over running a study on MTurk; show example from my account

    - Discuss effective research presentations
    - Maybe go over how to turn data from the server into .csv files for analysis; depends on how far you are in coding the task
- Professional Development:
    - They're planning for the grad students to have a panel and someone present their poster. Something to that effect. (1.5 hours)
- Analytical Skills:
    - Stats Workshop #3 (1.5 hours)
- VIP seminar (1.5 hours)
- Work for the week (14.5+ hours):
    - Read chpt 6 in Crump stats book (https://crumplab.github.io/statistics/)
    - Run your first study on Amazon Mechanical Turk using the lab MTurk account
    - Prepare a research presentation for lab meeting (slides)

Week 6 – June 15-19

Goal: Further develop your analytic, coding, and presentation skills

- Christina meeting (1 hour)
    - Either feedback on a first draft of a research presentation for lab meeting or work on this together during the meeting (depends on how this schedule is going)
    - Also, go over how to turn data from our server into .csv files for analysis
- Professional Development:
    - Writing an effective personal statement w/ Dr. Elizabeth Marsh (1.5 hours)
- VIP seminar (1.5 hours)
- Work for the week (16+ hours):
    - Read chapts 7 and 8 in Crump stats book (https://crumplab.github.io/statistics/)
    - Analyze the data from the study!
    - Possibly make changes based off analysis!

Week 7 – June 22 – 26

Goal: Learn more about research posters vs. presentations and different presentation skills and styles as well as effective user design, discuss results and possibly run more participants, etc.

- Christina meeting (1 hour):
    - Discuss using InDesign or Powerpoint to make research posters
    - Go over an example poster that I've done in the past
    - Discuss the results from the analysis
- Professional Development:
    - Creating a Research Poster w/ Data Viz expert Dr. Erin Monson (1.5 hours)
    - Present in lab meeting on results of project (1 hour)
- Analytical Skills:
    - Last Stats Workshop (1.5 hours)
- VIP seminar (1.5 hours)
- Work for the week (13.5+ hours):

    - Make changes to the script and rerun the study, or run another experiment, or run more participants – whatever the results suggest …

Week 8 – June 29 – July 3

- Consider this a half week, with a holiday break for *at least* July 2 and 3
- VIP seminar (1.5 hours)
- Work for the week:
    - At this point, we should have the results of the first experiment, so we should know whether we're keeping the same task design, changing things, running more participants, etc. So you'll likely have work related to running more people, analyzing data, etc.
    - You'll also want to make sure you feel comfortable with your presentation. We can practice this together in our meeting this week.

Week 9 – July 6-9

- Presentations are on the 6-8, so this is basically the official end of the program. If you'd like to continue working over the summer after that, that is up to you. We can also wait for you to return in the fall, etc.
- End of program (July 9)