Project 3

KINESIOL 1E03 - Motor control and learning

Submission period opens: Nov 29 2021
Submission period closes: Dec 6 2021 by 23:59 EST

Instructions

Broadly speaking, we can divide the research process into a data collection phase and a dissemination phase. In motor control and learning, the data collection phase often requires creating and programming a task to get some answers to your interesting research question, whereas the dissemination phase involves writing up your findings and submitting a manuscript for peer review. (Watch out for pesky Reviewer 2!) For this project, you will take on the role of *motor behaviour researcher*. Given the *"capstone"*-like nature of this project, the emphasis is multifaceted but a key focus is on self-directed learning and successful collaboration. **This project must be completed in teams of 3 to 4 students**. Choose and complete one of the two options below this project.

Option 1: Program a motor control task

Motor control researchers rely on a variety of different tools for this but a good beginner option is PsychoPy. Select a motor control task from the following list:

- Hick's Law
- Stimulus-response compatibility
- Simon effect
- Psychological refractory period
- Probe reaction time task

Once you have picked a task, you will need to download PsychoPy: https://www.psychopy.org/download.html. You can also check out their Getting Started page: https://psychopy.org/gettingStarted.html and their YouTube channel for tutorials: https://www.youtube.com/user/peircej/videos.

There are four components that your team must complete for this option:

1. Program your selected task in PsychoPy
2. Each team member should complete the task as if they were a participant in an experiment
3. Write a methods section for the task you created (800 to 1200 words)
    - Describe the task and equipment used and the procedure (i.e., steps involved in completing your task)
4. Using the data that is saved by your program for each team member, create a graphical display of the data (similar to what was shown in lecture)

Submission guidelines

Project 3 should be submitted via Avenue. Late submissions will be penalized 20% per day.

Only one member of your team needs to submit all components. A single **PDF** file consisting of a title page (with each team members' first and last name and student ID on it), methods section, and the graphical display of your data. The file you submit must include the last name, first initial, and student ID of the team member in charge of the submission: `p3_last-initial_ID`. For instance, I would submit a file named: `p3_carter-m_3351871.pdf`. All PsychoPy files and each team member's data must be submitted via Avenue as well.

Be sure to submit your file to the correct folder. Files submitted to the wrong folder **will not be marked**. If you need to resubmit your file to the correct folder after the due date, it will be considered late.

Option 2: Write a motor learning journal article

You and your team run an applied motor learning lab. As a team, decide whether you specialize in sport specific skills or in movement/motor disorders. Next, choose a motor skill and a condition of practice. You can choose one discussed in lecture or one that we did not have time to cover (see the supplementary textbook). Now, you and your team must design a motor learning experiment to investigate the effectiveness of your training intervention for your selected motor skill.

Your team will then write a mock motor learning journal article (3500 to 4000 words, not including references) that consists of the following sections:

1. Introduction
    - Identify the area of research and describe the problem investigated, define any key terms or concepts so your reader can understand the experiment
    - Summarize relevant research to provide context/rationale (What conflict or unanswered question, untested population, new method/intervention)
    - State research question(s), your hypothesis(es), and prediction(s)
2. Methods
    - Describe the participants, the task and equipment used, and the procedure (i.e., steps involved in your experiment)
    - It is good to organize this section using subheadings for each of these
3. Results
    - Create hypothetical data for your experiment
    - Create figure(s) as needed for your hypothetical results
    - Describe your hypothetical results
4. Discussion
    - Summarize the most important findings at the beginning
    - Interpret your hypothetical results by explaining how your results relate to your hypothesis(es)
    - Discuss how whether your findings relate to the relevant literature reviewed in your introduction (Do they agree, contradict, etc?)
    - Describe the practical application of your hypothetical results
5. References

Submission guidelines

Project 3 should be submitted via Avenue. Late submissions will be penalized 20% per day.

Only one member of your team needs to submit your team's paper. A single **PDF** file consisting of a title page (with each team members' first and last name and student ID on it) and the above mentioned sections. The file you

submit must include the last name, first initial, and student ID of the team member in charge of the submission: `p3_last-initial_ID`. For instance, I would submit a file named: `p3_carter-m_3351871.pdf`.

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