PSYC 51.09: Problem Set 4

Introduction

This problem set is intended to solidify the concepts you learned about in this week's lectures and readings. *After attempting each question on your own*, you are encouraged to work together with your classmates in small groups, consult with ChatGPT or other tools, and/or to post and answer questions on the course's Canvas site.

Please upload your problem set to Canvas (as a Word or PDF file) before the due date. No late submissions will be accepted.

Readings

1. Read Chapter 4 of *Foundations of Human Memory*. What were your thoughts on the reading? For example, did you learn something interesting? Were you surprised by something? Do you disagree with the author? Did you think some concept was described especially well (or confusingly)? **(Ungraded)**

2. Optional: submit a multiple-choice question based on the materials covered in this week's lectures, readings, and this problem set. You should calibrate the difficulty so that 60–70% of your classmates answer it correctly on an exam. If your question is chosen and you hit your target, you will receive and extra credit point on that exam. **(Ungraded)**

Graded questions

1. Your friend is studying for their Organic Chemistry midterm, and they need to memorize the structures of the 20 amino acids. They've decided to use flashcards to help them learn the structures. Sadly, after a long night of thinking about optimal flashcard studying strategies, they've come down with a bad case of the dreaded "the exam is in just a few hours and I haven't actually started studying yet!" syndrome. When they learn you're taking PSYC 51.09, they beg you for some tips to help them quickly learn the structures. What can you tell your friend to help them learn their amino acids quickly in time for their exam? Should your friend study the flashcards in the same order each time, or shuffle the flashcards with each repetition? Should they "peek" at the answers they're unsure about? Should they shuffle only the "tricky" structures (e.g., the ones they got wrong) back into the deck with each round of repetitions, or should they go through the full set of flashcards each time? When should they stop studying? Should they just take a nap and forget about studying altogether? Provide four recommendations, along with clear explanations for why you are making those particular recommendations. **(4–8(ish) paragraphs; 1–2 per recomendation. Each recommendation must include a clear explanation of the recommended studying technique and the reason you are recommending it, and you should use 1–2 paragraphs to describe and explain each recommendation.)**

2. The recently developed synthetic lifeform *Roboticus Metallicus* has a perfect memory for everything it experiences. It also has no way of prioritizing one memory over another, or of strengthening one association versus another. Suppose a member of the species signs up to do the free association experiment you're running for your senior project.

   (a) Would you expect the *Roboticus Metallicus*'s free association responses to differ from those of a typical *Homo Sapiens*? If so, how? If not, why not? **(2 paragraphs)**

   (b) Suppose you run many *Roboticus Metallici* in your experiment– enough to build up a large and reliable database of free associate responses. Next you decide to construct a "thought space" based on their responses (analogous to the "Word Association Space" idea we discussed in class). Describe some features of the *Roboticus Metallicus*-based thought space (e.g. as compared with Word Association Spaces constructed using human data). What would the thought space "look" like? How would words be arranged? **(1-2 paragraphs.)**