PSYC 5090: Topics in Mathematical Psychology

Tarleton State University Homework 6

In this set of exercises, you will investigate the role of drift rate and response threshold in accumulator models. Use the lecture6.R script to perform your simulations.

1. Perform five simulations with driftRate set equal to 0 and threshold set equal to 3. Each time, record the mean RT and the error rate. Report the average of these measures.

2. Now you will systematically increase drift rate and consider the effects on mean RT and error rate. To do this, set driftRate equal to 0.01 (keep threshold equal to 3) and perform five simulations, then write down the average of the mean RT and error rates you see in these simulations. Then, repeat with driftRate set equal to 0.03 and 0.05. What happens to mean RT as drift rate increases? What about error rate?

3. Finally, you will systematically increase threshold, while keeping drift rate constant. Set driftRate equal to 0.03 and threshold equal to 3. Perform five simulations and write down the average of the mean RT and error rates you see from these simulations. Then, repeat with threshold set equal to 4 and 5 (do not change the value of driftRate. What happens to mean RT as threshold increases? What about error rate?

4. In your own words, describe the role of drift rate and response threshold on mean RT and error rates in response time distributions.