**Overview**

The purpose of these experiments is to examine the effects of time and method of recruitment on speeded choice using two standard paradigms: a random dot motion discrimination task (Experiment 1) and a brightness discrimination task (Experiment 2). Although, these tasks are commonly used for modelling the process that underlies speeded choice, little is known about how this process differs across populations of participants.

Here, we are interested in two population-level factors. The first is the time of recruitment. The question of interest is: do people who participate near the start of semester differ systematically from those who participate near the end of semester? Anecdotal evidence seems to suggest that the people who participate later in semester may be less motivated or conscientious than people who participate closer to the start of semester. However, to our knowledge differences between these populations in speeded decision making have not been directly examined. There are a number of ways in which these potential differences might affect the evidence accumulation process that occurs during speeded decision making. For example, participants near the end of semester may be less cautious in their responding, or they may accumulate evidence less quickly than participants near the start of semester.

The second population-level factor is method of recruitment. We are interested in whether speeded choice differs depending on whether the participant is an undergraduate student participating in the lab for course credit, a member of the local community who participates in the lab in exchange for financial remuneration, or a person who participates online via mechanical turk.

In each experiment, we also manipulate aspects of the task that are known to affect the decision process. The factors we manipulate within the task are speed vs accuracy emphasis, which is known to affect response caution, and the discriminability of the stimulus, which is known to affect the rate of evidence accumulation. These manipulations allow us to examine whether these benchmark effects differ systematically as a function of the population-level factors described above.

**Participants**

Participants will be drawn from three different sources. The first subset of participants will be sampled from the UQ course credit pool, which consists of undergraduates who participate in exchange for course credit. The second subset of participants will be sampled from the UQ paid pool, which consists of members of the local community who participate in exchange for financial remuneration (in this case, 10AUD). The third subset of participants will be sampled from mechanical turk, and will be paid 4USD. For each experiment, we plan to recruit approximately 60 participants from the first two sources and 120 participants from mechanical turk. Half of these participants will be recruited in the first three weeks of semester; the other half will be recruited in the final three weeks of semester.

**Design**

Each experiment will have a 2 (time of recruitment: start or end of semester) x 3 (method of recruitment: course credit, local paid, or online paid) x 2 (emphasis: speed or accuracy) x 4 (discriminability: very easy, easy, hard, or very hard) mixed design. The time and method of recruitment will be manipulated between participants. Emphasis and discriminability will be manipulated within participants.

**Procedure**

In Experiment 1, participants will perform a random dot motion discrimination task. In each trial, participants will be presented with a cloud of moving dots. Some proportion of the dots move coherently either to the left or the right, whilst the other dots move randomly. The participant's task is to identify whether the dots move mostly left or mostly right. In this task discriminability is manipulated by varying the proportion of dots moving coherently (higher proportion = higher discriminability) across the following levels: 0.1, 0.15, 0.20, and 0.25.

In Experiment 2, participants will perform a brightness discrimination task. In each trial, they will be presented with a small, square patch of black and white pixels. Their task is to identify whether there are more white pixels (a ‘light’ stimulus) or more black pixels (a ‘dark’ stimulus). In this task, the discriminability is manipulated by varying the percentage of white pixels (percentage closer to 0 or 1 = higher discriminability) across the following levels: 45%, 46%, 47%, and 48% (for dark stimuli) and 55%, 54%, 53%, and 52% (for light stimuli).

The experiments are each broken down into 4 blocks of 200 trials each. At the start of each block, participants are told that their aim is either “to respond as quickly as possible” (speed condition) or “to respond as accurately as possible” (accuracy condition). The participant then completes the full 100 trials in the block with no feedback. The levels of the discriminability manipulation are randomized within each block, with each level being presented an equal number of times.

**Analysis Plan**

The principal analysis will focus on examining whether the various components of the decision process vary as a function of the population-level factors. To do this, we will first fit the linear ballistic accumulator model and the diffusion model to the data using hierarchical Bayesian modelling in order to estimate parameters for each discriminability x emphasis condition. Here, we expect that discriminability will affect the rate of evidence accumulation, such that higher discriminability leads to better evidence accumulation. We also expect that speed vs accuracy emphasis should affect response caution, such that people are more cautious when accuracy is emphasised than when speed is emphasised.

The second step will be examining whether these effects differ across the population-level factors. We plan to do this by comparing a series of models that vary in their assumptions about the populations from which participants were sampled. For example, the base model assumes that all participants are drawn from the same population, which would suggest that the components of the decision process do not differ systematically as a function of recruitment time or method. An alternative model assumes that participants recruited at different times of semester are actually from different populations, because their decisions do differ systematically. Another alternative assumes that participants recruited using different methods also come from different populations. The goal is to use this model comparison approach to identify whether the process that underlies speeded decision making varies systematically across these population-level factors.