# *We’re interested in which model fits best for which encoding condition (simultaneous and sequential). Adam says encoding condition perhaps best done as a between subjects variable rather than within subjects (by alternating blocks)?*

# Method

## Stimuli and apparatus

Stimuli were presented on local computer [some info about back end?]. Software written in Javascript using jsPsych (deLeeuw, 2015) controlled stimulus presentation and recorded responses. Stimuli consisted of words generated from the SUBTLEXus database, filtered for words with a length of four letters, and with frequency ratings between one and five. Words were displayed in size 24 point “Courier New” white font positioned in the center of a uniform mean luminance field.

## Participants

XX participants were recruited online through the University of Melbourne undergraduate research experience program and XX participants were recruited via Prolific[or mTurk?]. Each participant was expected to complete XX 60-minute sessions. At the end of the session, undergraduate students were granted credit towards course requirements, and paid participants were paid $12 AUD. All participants were provided with plain language statements and consent forms, and gave informed consent prior to data collection.

## Procedure

Participants completed the experimental tasks over XX sessions, Each of the XX sessions consisted of XX trials, which was broken up into XX blocks of XX items each. Blocks were comprised of a study phase, a math distractor phase, a recognition phase, and finally a source recall phase. There were two conditions in this experiment, a simultaneous encoding condition and a sequential encoding condition, with all other phases being identical between the conditions.

In the sequential encoding condition, participants were presented with a black marker positioned on a randomly generated angle on the outline of a circle at the start of each trial for 600 ms. The presentation of the marker was followed by the display of a word in the center of the screen for 1500 ms. To ensure that participants attended to the source information, they were instructed to indicate the previous location of the cross on the blank target circle using a computer mouse. Responses made within XX radians of the true target location were classified as attended and advanced participants to the next item. Responses further away were deemed unattended and the words “TOO DISTANT” was displayed for 1000 ms, then the location was then re-presented and the verification task was repeated.

In the simultaneous encoding condition, participants were presented with the marker and the word simultaneously for 1000 ms. Instead of being positioning the word in the centre of the screen, in the simultaneous encoding condition, the word was positioned at the same angle as the marker, offset by a longer radius. The location of the word relative to the marker was determined by the sector the angle was in, with the word being offset to one of eight points on the bounds of the text box, corresponding to the middle of each of the four sides, and the four corners (i.e. in the North sector, the anchor was the bottom middle of the text box, while in the Northeast sector the anchor was the bottom left of the text box). As with the sequential condition, a verification task followed each presentation, which was repeated until participants reproduced the location to within XX radians of the presented angle.

After studying each of the items for that block, participants were then instructed to complete a distractor task, which involved 30 seconds of arithmetic problems. These problems were presented as three single digit integers, which summed to a fourth number which would either be the correct sum, or a number that was one higher or lower than the actual sum. Participants would indicate if the sum was correct by pressing the keys 0 (false) or 1 (true).

In the recognition phase, participants were shown a shuffled list of 10 previously studied items and 10 foils and asked to rate each item on a six-point Old/New confidence scale. Participants responded by pressing a number from 1 to 6 on their keyboard, with 1 representing “Sure New” and 6 representing “Sure Old”.

Finally, in the source memory retrieval task, participants were cued with the words for 1500 ms, and then indicated the recalled location by a moving the mouse from the starting point in the centre of the circle to a point on the circumference of the response circle. There was no time limit on the decision task. A schematic for one trial in each of the phases is shown in Figure 1.

A picture containing clock

Description automatically generated

Figure 1. Schematic of display presented to the participant in one trial in each phase of the experiment.