**Contents**

* Separate Psychopy experiments for each of two experiments
  + Auditory oddball paradigm
  + Multitone masker paradigm
* Stimuli folder containing:
  + MATLAB stimulus generation scripts
    - stim\_gen\_oddball.m
    - stim\_gen\_multitone\_masker.m
  + .mat files containing metadata for stimuli for each block
  + .txt files containing trigger codes and filenames for each block
  + block-specific folders containing the actual .wav files

**Instructions for Experimenter**

* Order:
  + Oddball blocks 1 and 2
  + Multitone masker blocks 1 and 2
* Oddball task:
  + 72 trials per block
    - Trial length = 5 s
    - Tone length = 0.1 s
    - Number of tones per trial = 9
    - Stimulus-onset asynchrony of tones = 0.5 s
    - Standard (Deviant) tone frequencies: 489 (489\*1.05), 699 (699\*1.05), or 1000 (1000\*1.05) Hz. On half the trials, this is flipped for some basic measure of stimulus control. That is: 489\*1.05 (489), 699\*1.05 (699), or 1000\*1.05 (1000) Hz
  + They’ll have to initiate each trial with a button press. This ideally keeps them awake and gives opportunities for brief rest (and also yields lots of motor responses).
  + Listeners should remain still with their eyes open, fixate on a center cross, and pay attention to the sounds but ignore the deviants.
* Multitone masker task (requires more subject training):
  + 96 trials per block
    - Trial length = 5 s
    - Tone length = 0.1 s
    - 24 masker-only trials (no target-tone stream)
    - 24 trials with masker + 489 Hz target-tone stream (no deviants)
    - 24 trials with masker + 699 Hz target-tone stream (no deviants)
    - 24 trials with masker + 1000 Hz target-tone stream (no deviants)
    - Stimulus-onset asynchrony of tones within target-tone stream = 0.5 s
    - Within each 0.5-s window, there are either 5 masker tones (random in time and frequency) or 4 masker tones plus a target tone.
  + They’ll have to initiate each trial with a button press. This ideally keeps them awake and gives opportunities for brief rest (and also yields lots of motor responses).
  + Listeners should remain still with their eyes open, fixate on a center cross, and pay attention to the sounds.
  + ***DURING*** the sound stimulation, listeners should press a button the moment at which they begin to hear the repeating target-tone stream from the random background.
    - This requires some training. I like to first show them an example of a trial that contains both a target-tone stream and masker, then the target-tone stream alone (the oddball stimuli are useful here), then the mixture again. You may have to spend 10-15 minutes with subjects to make sure they understand the task and can hear at least some of the targets. In Heidelberg, I often ran a behavioral pilot session before going to the MEG to rule out those folks who couldn’t do the task or, conversely, were too GOOD at it, which was rare but meant no responses to unheard target tones, a problem when trying to compare heard vs unheard.
    - Examples of pairs of masker trials and oddball trials where the oddball trials contain the same standard frequency:
      * 489 Hz: Masker Block 1 Trial 7 and Oddball Block 1 Trial 4
      * 699 Hz: Masker Block 1 Trial 4 and Oddball Block 1 Trial 1
      * 1000 Hz: Masker Block 1 Trial 2 and Oddball Block 1 Trial 24