

Using audio cue events as EEG markers or response targets

Iris van der Wulp, 27-02-2023

If you want to use continuous .wav audio files (e.g. concatenated speech or music) during EEG or reaction time (RT) experiments, you can add cue points (as text markers) directly to your .wav audio files to ensure timing precision. Presentation can read these cue points as the sound attribute “cue events”. The label of the cue is used by Presentation as the event code for the event. The cue events can also be sent to an output port, where they are used as EEG triggers. Again, the label of the cue is used as the trigger code. Cue events can furthermore be used as targets based on which the RT of a button press can be calculated. For more information and code examples from Presentation on cue events, see [this link](#).

In order to create cue events and to save them as part of an audio file, follow these steps:

1. You need to determine where the cue events should be placed. If you present concatenated speech while recording EEG, you might want to have a cue point for each syllable or word. If you perform a RT experiment, you can place the cue points at target onsets. Determining the place of the cue points can be easily done in [Audacity](#). You can use [labels](#) or [regular interval labels](#) to determine where you want your cue points to be. **Important note: labels in Audacity are not the same as cue points.** You will need to extract the label file as a .txt file when you are done placing all the labels in your audio, using File > Export > Export Labels.
2. After exporting the labels you now have a *label file* (in tab separated .txt format). You can edit the label file in Excel (per column) or in a text editor, to give each label the appropriate name. This name will become the event code for your EEG trigger or target event.
3. If the label file is finished, it needs to be converted into a *cue file*. In order to do this, you need to [download the programming language Ruby](#). Then, [download this Ruby script](#) and run it in Ruby (command line programme) with the following syntax:
`ruby example\directory\label2cue.rb example\directory\Audacity_label_file.txt target_filename.wav > example\directory\output_file.cue`
Congratulations, you now have a .cue file!
4. Finally, using [GoldWave](#) you can import the cues to your audio file, by first opening the audio file in GoldWave. Then, click on Cues > Import > *choose your .cue file* > Import > Close. You now see the cues in the audio as in the picture below. Click Save and the cue points are now saved together with the audio file.

