

# eVoweluate

Thank you for agreeing to participate in eVoweluate. §1 discusses consent, §2 provides instructions for running the experiment, and §3 covers more of the goals and motivations for the experiment.

## 1 Consent

Upon running the eVoweluate Praat script, you will be presented with a form with buttons that read “Stop”, “Cancel” and “Begin Experiment.” By clicking on “Begin Experiment” you are consenting to participate in the eVoweluate study; however, none of your data can be recorded or included in the study until you e-mail them to [eVoweluate@gmail.com](mailto:eVoweluate@gmail.com).

Upon completing all measurements, you will be presented with the option of participating in an exit survey. If you opt out of the exit survey, your data may not be utilized for some analyses.

You will also be presented with the option of informing us how you would like to be thanked and acknowledged in any public presentations or publications based on the study. The default acknowledgement for all participants will be “Anonymous participant.”

The data you provide will be associated with an anonymous participant ID number. No personally identifying information will ever be associated with the raw data, even if you indicate that you want to be thanked and acknowledged by name. The raw data from this study will eventually be made publicly available.

## 2 Running the experiment

Here is an outline which you should see in the unzipped eVoweluate folder.

```
eVoweluate
├── eVoweluate.Praat ...This is the Praat
│                               script which runs the
│                               experiment.
└── items.txt ...This is a tab delimited
    file listing the
    items to be presented,
    which the Praat script
    accesses.
```

- README.pdf ...This is the very document you are reading.
- Results
  - ...This directory holds the results files.
- TextGrids
  - ...This directory holds the .TextGrid files.
- WavFiles
  - ...This directory holds the .wav files.

To start the experiment, simply open the Praat script, `eVoweluate.Praat`. You can do this by launching Praat, selecting the menu item `Praat>Open Praat script...` then selecting `eVoweluate.Praat`. The script window should look like Figure 1. To run the script, select the menu item `Run>Run`.

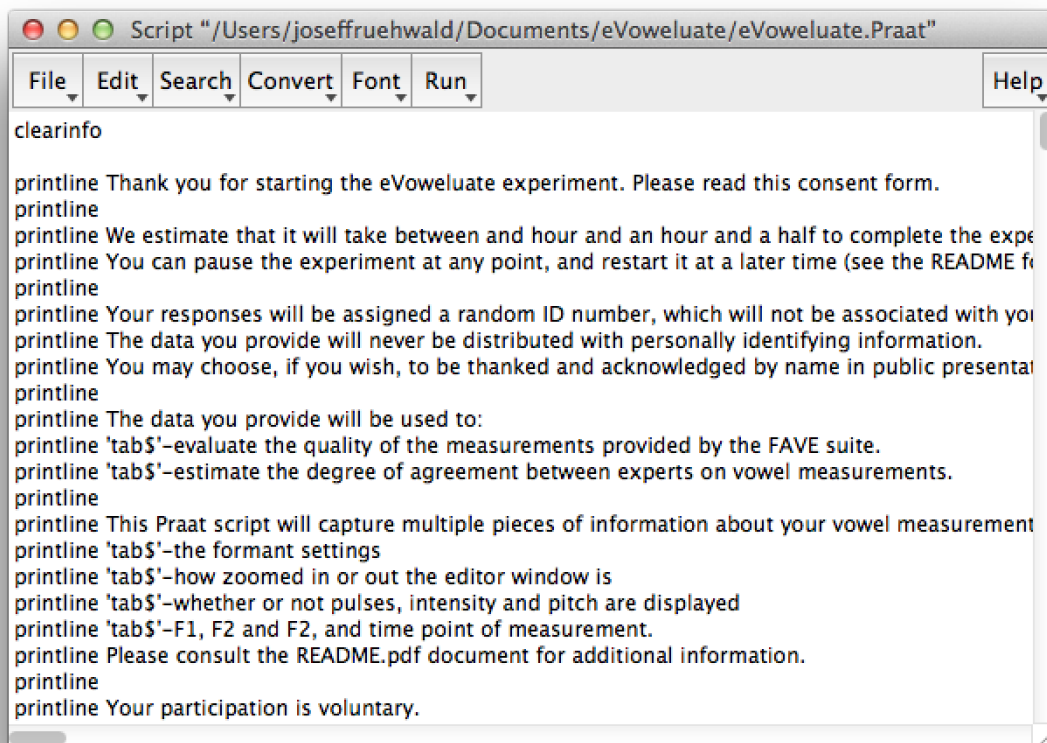
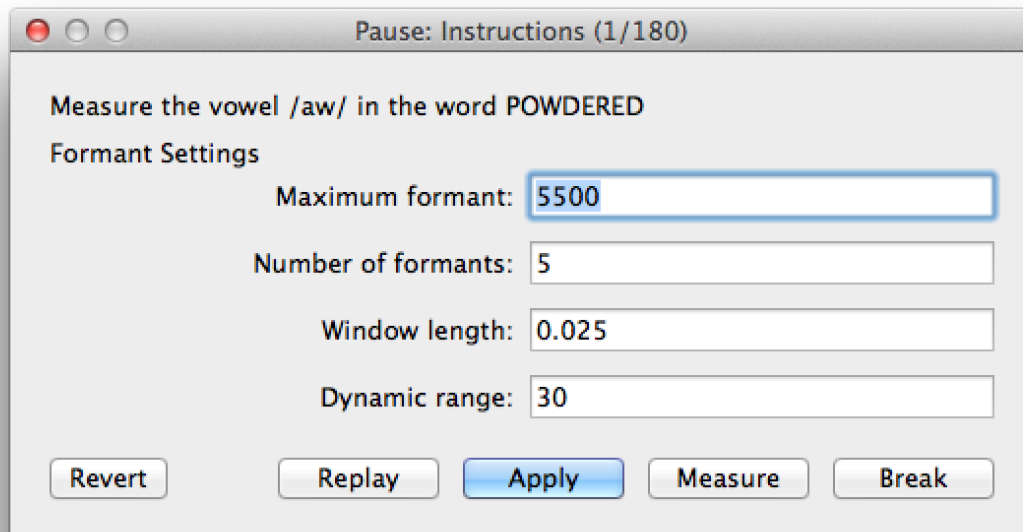


Figure 1: The script window

## 2.1 Making vowel measurements

For every vowel token to be measured, a Praat editor window displaying the waveform, spectrogram, and a two tiered TextGrid will pop open. The entire audio clip will play, and then the following window will appear.



Pause: Instructions (1/180)

Measure the vowel /aw/ in the word POWDERED

Formant Settings

Maximum formant: 5500

Number of formants: 5

Window length: 0.025

Dynamic range: 30

Revert Replay Apply Measure Break

Figure 2: The directions window

You can make the adjustments to the formant tracking parameters you see fit in this window. Hitting Enter or Return on your keyboard will apply the adjustments made in the window.

Please make note of which vowel in which word you are being asked to measure. The vowel class notation is a slightly modified version of the Atlas of North American English notation. Here are the 12 vowels you will be asked to measure, along with their Wells Lexical Set label.

If you are asked to measure a vowel which appears more than once in a target word, measure the most stressed token.

### 2.1.1 What to measure.

The target of the measurement should be the **central tendency** or **nucleus** of the vowel. We are focusing on **one point measurement** for each vowel. Please determine the appropriate measurement point on the basis of your experience, expertise, and training.

Short Vowels		Long Vowels	
Label in Experiment	Wells Lexical Set	Label in Experiment	Wells Lexical Set
/i/	KIT	/iy/	FLEECE
/e/	DRESS	/ey/	FACE
/æ/	TRAP		
/u/	FOOT	/uw/	GOOSE
/uh/	STRUT		
		/ow/	GOAT
/ah/	LOT	/aw/	MOUTH
		/ay/	PRICE

### 2.1.2 Where to measure.

The TextGrids with phone alignments are merely there to provide the most accurate comparison of experts' measurements to the FAVE suite, which makes use of the alignments. You are **not restricted to measure within the provided alignments**. Feel free to pay attention to or ignore the alignments as you see fit.

Some number of tokens will be presented to you with no word or phone alignment at all. This is intentional.

### 2.1.3 Making adjustments to settings.

Please make **any and all adjustments to the settings as you see fit**. This includes, obviously, changes to the formant tracking settings, as well as turning on or off pitch, intensity, etc.

You can also navigate within the editor window by zooming in or out however far you would like.

### 2.1.4 Replaying the audio.

It is not necessary for you to replay the audio by clicking “Replay” in the directions window.

### 2.1.5 How to measure.

The script supports two different ways of making a measurement.

1. Place the cursor at a single time point to get F1 and F2 at that point.
2. Span out a selection to get the mean of F1 and F2 within the selection.

Once you have adjusted the formant settings to your satisfaction and either placed the cursor at a single time point or spanned out a selection, click on the “Measure” button in the directions window.

### 2.1.6 If you feel like you messed up.

If you are dissatisfied with a measurement you made, or clicked “Measure” before you were actually ready to measure, simply pause the experiment, and navigate to the Results directory in the main eVoweluater directory:

```
eVoweluater
├── ...
├── Results
│   └── <token id>.txt
└── ...
```

Simply delete the offending result file, and restart the `eVoweluater.Praat` script. The experiment should restart on the token you want to remeasure.

## 2.2 Pausing the experiment.

You can pause the experiment by interrupting the script in any way. If you click on the “Take a break” button in the directions menu, your Praat objects list will be conveniently cleared, and a nice message will be displayed. However, hitting the `esc` key while in the directions window, hitting the “Stop” button in the directions window, quitting Praat, and hard restarting your computer will all also successfully pause the experiment. To resume the experiment, restart Praat and run the `eVoweluater.Praat` script, and you should be returned to the point where you left off.

Conceivably, if you were to put the main eVoweluater folder in your Dropbox, you could work on the experiment on one computer, pause it, then continue the experiment on a different, synced computer.

## 2.3 Returning the results.

It is only necessary for you to return the contents of the Results directory to me. Compressing the results file and e-mailing it to me at `eVoweluater@gmail.com` would work best.

## 3 Goals and Motivations

The primary goal of this experiment is to evaluate the reliability of measurements provided by the automated FAVE suite, and this can only be done by comparing the measurements provided by FAVE to human experts. I need to recruit as many human experts as possible for this task, because if the FAVE measurements were simply compared to one annotator’s measurements and came up lacking, it would not be clear whether this was because FAVE is inaccurate, or because the vowel token was intrinsically difficult to measure. It is more important that FAVE agree closely to human experts for those tokens which human experts highly agree with each other than on those token where human experts diverge more in their measurements.

Given the way this experiment is structured, there is no gold standard or ground truth against which your measurements will be compared. Rather, your measurements will contribute to an

over-all evaluation of certain vowel tokens as being high agreement or low agreement.

There are, then, two sub-questions which I will hopefully be able to address with this experiment.

1. How much do experts agree with each other in the measurement of vowels?
2. How do different experts approach the task of measuring vowels?

To these ends, the eVoweluate.Praat script captures a number of different data points beyond just F1 and F2 measurements. They are

- the measurement method (point, or mean over a time range)
- all of the formant tracking settings (maximum formant, number of poles, etc.)
- how zoomed in or out on the time range the window was when the measurement was made.
- how zoomed in or out the spectrogram was in the frequency range when the measurement was made
- whether or not pitch tracks, intensity tracks, and pulses were displayed in the editor window