

Name: _____ Team: _____

Lab Ch 5: EGG/Lx Wave

CDIS 4313 – Freeman

Prep

- a. Open the file EGG-Lx-audio.wav in Praat; click View & Edit. This file has two channels, which appear one on top of the other in the Editor window. If you play the audio with headphones, you will hear **Channel 1 (the EGG signal) in your right ear** and **Channel 2 (normal audio) in your left**.
 - If you want to hear the audio on its own, highlight the file in the Objects window and click Convert > Extract all channels. Now each channel is its own object in the Objects window. Highlight each one and click Play to hear it.
 - If you open two objects and check the Group box in the lower right corner of their Editor windows, whatever you select in one open Editor window will also select in the other. So, you can make a selection on the EGG wave and listen to just the audio for that selection.
- b. Highlight the original file in the Objects window and click View & Edit. In the Editor window, uncheck Spectrum > Show spectrogram, Pitch > Show pitch, Intensity > Show intensity, Formant > Show formants, and Pulses > Show pulses. Now you just see the waveforms.
- c. In the stereo Editor window, highlight and select the word “god” in the first utterance. Use the waveform (channel 2, bottom) to find the vowel (approximate is okay). Highlight and select (select button) the vowel. Use Select > Move cursor to... to find the midpoint: _____ sec
- d. Zoom in to 3-5 cycles around the midpoint, and inspect the wave forms. Notice the shapes of the two wave forms and which parts of the acoustic wave (bottom, channel 2) align with the open and closed phases of the Lx wave (top, channel 1). (Review p. 165 for the location of duty cycle phases on an Lx wave.) Repeat for the second and third utterances. Sketch or jot notes about the Lx wave shapes (for your reference):
 - First (modal)
 - Second (breathy)
 - Third (creaky)

First utterance (modal)

1. Open the original file in an Editor window. Zoom in to 3-5 cycles around the **midpoint of the vowel in “god”** in the first utterance (same as c above):
2. Highlight one closed phase of the EGG wave (top, channel 1; see p. 168). Type Ctrl/Cmd +(comma) and Ctrl/Cmd +(period) to move the edges of your selection to the nearest zero-crossings for an accurate reading. Record the duration (sec) that appears in the gray bar below your selection: closed phase (CP, sec):
3. Do the same for the next open phase (OP, sec):
4. Calculate the total period (P, sec):
5. Calculate the closed quotient (CQ, %):
6. Calculate the open quotient (OQ, %):
7. Calculate the closed-to-open (C/O) ratio:

Second utterance (breathy)

8. Repeat Steps 1-6 for the second utterance of “god.” **Vowel midpoint:**
9. CP:
10. OP:
11. P:
12. CQ:
13. OQ:
14. C/O:

Third utterance (creaky)

- For the third utterance, first find the **midpoint of the vowel in “god”**:
- Tips: listen to help find the consonants. Note that the waveform at the beginning of the vowel looks very different from the waveform at the end, and the beginning may not start at a zero-crossing. To find the end of the vowel, open _ch2 and turn the Spectrogram on, so you can see the stop closure for /d/. Record the **end point**:

15. Select from the vowel midpoint to end point, and find the midpoint of that:

Highlight one cycle of the complex audio wave form (bottom, channel 2), and type Ctrl/Cmd +(comma) and Ctrl/Cmd +(period) to move the selection of the EGG wav (top, channel 1) to the nearest zero-crossings. You should see two peaks and two troughs highlighted. This indicates **multiphasic closure** (the vocal folds come together more than once per duty cycle). **Use only the first peak and trough** to measure CP & OP.

16. CP:
17. OP:
18. P:
19. CQ:
20. OQ:
21. C/O:

Comparisons

The speaker attempted to produce modal, breathy, and creaky utterances. Refer to the textbook to consider which quotients/ratios (CQ, OQ, C/O) are consistent vs. unexpected.

22. Your measurement for Modal CQ is:

- a. In the expected range
- b. Unexpectedly high
- c. Unexpectedly low

23. Circle all of the following that are both **true of your measurements** and **expected**.

- a. Creaky CQ > Modal CQ
- b. Breathy: CQ > OQ
- c. Breathy OQ > Modal OQ
- d. Creaky C/O > 1
- e. Breathy C/O > 1
- f. Breathy OQ > 50%
- g. Breathy: multiphasic closure present
- h. Creaky: multiphasic closure present

24. Which one of the following relationships is **true** of your measurements **but unexpected**?

- a. Breathy OQ < Modal OQ
- b. Breathy OQ > Modal OQ
- c. Breathy OQ < Creaky OQ
- d. Breathy OQ > Creaky OQ