

Lesson 1: Exercises

Learning goals

- Opening, browsing and listening to a sound file in Praat
- Editing audio recordings of speech for annotation and further analysis: cutting-copying-pasting sound
- Discovering and locating some existing speech corpora; metadata
- Annotation as a concept. Preliminary understanding the purpose and various uses of speech annotation
- Beginning, saving and continuing annotation work in Praat
- Creating simple annotations (e.g., an orthographic transcript) in Praat

Exercises

1. Open a sound file in Praat. (You can find some example sounds, e.g., within this week's section on Moodle.) Try using the sound editor and take a look at the menus in the editor window. Practise zooming in and out in the sound waveform and scrolling back and forth (i.e., left and right) in the editor. Learn how to play back different portions of the sound.
2. Try cutting and pasting sections from the sound: By dragging with the mouse, select a portion of the sound. In the Edit menu of the sound editor, you can find the familiar Copy and Cut commands, which will transfer the selected area to the clipboard (Cut will also remove the selected piece from the original sound). Then, click on some other point in the sound waveform and select **Edit:Paste**. (Note that you are actually editing the Sound object in the Object list within Praat. The original sound file will not change on disk, unless you explicitly save the edited sound over the old file.)
3. Try to make the speaker "stutter". Try removing, e.g., individual speech sounds from the sample. Or try to swap two speech sounds in order to make the speaker say something totally different.
4. Try saving the sound you have modified in the editor by a different file name. Make sure that you are still able to locate the edited file on your computer and open it again in Praat.
5. What sorts of purposes do you think the sound editor window can be used?

Speech corpus metadata and preparing speech material for research

6. Get familiar with some corpus metadata inventories available online, for instance the Virtual Language Observatory, <http://vlo.clarin.eu>; or META-SHARE, <http://www.meta-share.org>. Can you find an interesting speech corpus that contains speech recordings?

Tip: The FIN-CLARIN consortium in Finland offers a collection of services called [Kielipankki – the Language Bank of Finland](#), which allows you to make your own language research data and corpora available to other researchers. If you have a speech corpus or a data set that contains language, and you wish to make at least the metadata available on the web, you may submit a description of your corpus to FIN-CLARIN. The metadata of your corpus can be published in the metadata inventory

service. FIN-CLARIN can help you in making the corpus available under specific terms.

7. Make a list of the most important metadata, i.e., pieces of information that should be specified whenever you are collecting speech recordings (audio or video) for research purposes. What kind of background information is necessary to collect about the speakers? Note that according to the General Data Protection Regulation (GDPR), personal data must not be processed (i.e., stored, moved around, copied, handled, used) without adequate grounds. How should you describe the recording setup and equipment? Try to imagine different setups where you might be recording speech.
8. **Example study: Imagine that** you want to find out whether level of education can affect the durations of pauses that people tend to have/tolerate during their conversations with others. You have collected an extensive speech corpus by recording speech from one hundred speakers, including three different conversation recordings from each speaker. Each conversation would involve 2–3 speakers. For capturing speech, you have used lapel microphones (attached to each speaker’s shirt) and a digital recorder. The recorder creates WAV sound files that you can easily transfer to your computer for editing and analysis.
 - In what sort of chunks would you store the recorded material? How would you name the files and why?
 - What sort of issues would you need to deal with in case someone else is also using the same material and you need to move files from one place to another?
 - How would you plan your recordings in practice? How can you get speakers involved? Where would you make the recordings and how can you ensure that the participants could talk freely and naturally, although they are being recorded?
 - How would you make sure that you are legally allowed to copy and share the material for research purposes?
 - Speech can be considered as personal data, since a person can at least potentially be identified on the basis of his/her voice. On the other hand, you often cannot anonymise a speech recording if you need to use it for speech research. What sort of other measures could be taken in order to protect the participants’ personal data?
 - You can read more about handling personal data in [Data Management Guidelines](#) published by the Finnish Social Science Data Archive.
9. Learn about different audio file formats by reading the summary *Digital audio* and by searching for more information online. What is the difference between WAV and MP3 formats? What is meant by *lossless* vs. *lossy* compression methods? Why can’t all the people in the world just use some particularly brilliant compressed format for storing all their sound files, since they could save so much disk space...?
10. If possible, try converting a WAV audio file into a MP3 file (you can also try different bitrates and settings in the MP3 conversion). You can try for example [Audacity](#) for editing and converting sound files. (It is possible that you cannot find Audacity on the centrally maintained workstations at the university, but you can at least try it at home.)
11. Inspect the size of the audio files you converted (e.g., on Windows, right-click on the file name and select Properties in the pop-up menu in order to see the exact size of the file). Note the difference in size between the WAV and MP3 files. But can you hear a

- difference when you listen to each of the files? (You need good headphones and a quiet room in order to compare!)
12. Try opening a sound file of your choice in Praat first as a Sound type object (select **Open:Read from file...**). Then, open the same sound file again as a LongSound object (**Open: Open long sound file...**). On the Object list in Praat, you should now see two objects representing the same sound file. Try selecting one or the other (click on the object names) and see the buttons change. Which buttons do the dynamic menus of Sound and LongSound objects have in common? What are the differences? When can the LongSound object type be useful?
 13. If you happen to have a very long sound file on your computer (e.g., one that is several hundreds of megabytes in size), try to open it in Praat as LongSound. What is currently the maximum size for a LongSound object, in gigabytes? Try to figure out the maximum duration of speech that could be opened as a LongSound, given that the sample rate is 44,1 kHz and the file includes only one track/channel (i.e., it is a mono recording).
 14. Open a sound editor window for the regular Sound object and another editor for the LongSound, by clicking on *View & Edit* in the Object window. Can you notice differences in the menus of the two editor windows?

Speech annotation (segmentation and labelling)

15. Try to install the free **SIL Doulos IPA** font on your machine (unless you already did). The link can be found on the [download page for Praat \(select either the Windows or Mac version\)](#). The font includes the IPA phonetic characters that can be used in Praat as well as in other programs. Don't worry if you don't succeed in installing the font – you can annotate speech without it, but the symbols will not look as nice and smooth. Note that you will probably not be able to install the font on university workstations, because you would need installation privileges.
16. Read the instructions in *Annotating speech in Praat*. You can also watch the video [Annotation in Praat \(by Spanish 410 on YouTube\)](#). Try to get a first impression of what speech annotation means and for what purposes it can be used.
17. Open a sound file of your choice in Praat. For this Sound object, try to create a TextGrid object that includes one or two annotation tiers. Practise inserting boundaries, moving them around and deleting them. You do not need to actually annotate an entire sound file yet, it is sufficient that you know how to edit interval boundaries and add labels to the intervals. Finally, save your annotations in a TextGrid file. Close Praat. Make sure that you can continue annotating where you left off (open again the previous sound file and the TextGrid, etc.)

Congratulations, you made it this far!

We will continue practising the annotation and transcription work in the next lesson.