

# Documentation: Data Pipeline of the study of Prodsodic Feature Affected by Smartphone Use

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**Presentation:** Learning on Hold: Cell Phones Sidetrack Parent-Child Interactions

**1. Research Question:** Whether 2 year olds are sensitive to disruptions within the dynamic flow of a word learning task.

**2. Background:**

## Step 0: Prerequisites

1. Make sure the Praat that you use to run the script is the latest one. As of Jul 26, 2022, the lab is using one of the 2016 releases. But there are many commands that have been superseded since then.

2. Also make sure the ELAN you are using is at least Version 6.3, where I tested the pipeline.

## Step 1: Annotation Scheme

1. Identify all speakers in each of the recordings:

169, 172, 213, 217, 219, 229, 232, 233, 235, 237, 241, 254, 255, 256, 257, 270, 271, 281, 283, 284, 85.

2. Mark the speaker tier (e.g., FA1) with one of the labels: 0., noisy, faint, overlap

*“0.” for utterances with good quality. “noisy” for utterances against noise that cannot be ignored. “faint” for utterances whose speaker can be identified. “overlap” for utterances that overlap with other speakers’ utterances.*

3. Mark the xds tier (e.g., xds@FA1) with corresponding label for addressee (e.g., C, A, O, etc.)

4. Export the .eaf file to Praat TextGrid. The naming scheme is: audio.file.name + underscore + annotator.initials

## Recommended Workflow:

1. Listen to the recording, and use option+command+N to create a new interval whenever your target speaker says something.

2. If the utterance is good, do not mark the utterance. If it is problematic, mark applicable labels.

3. If the addressee is a baby, do not mark intervals on the xds tier. If the addressee is somebody else, mark that utterance with applicable labels.

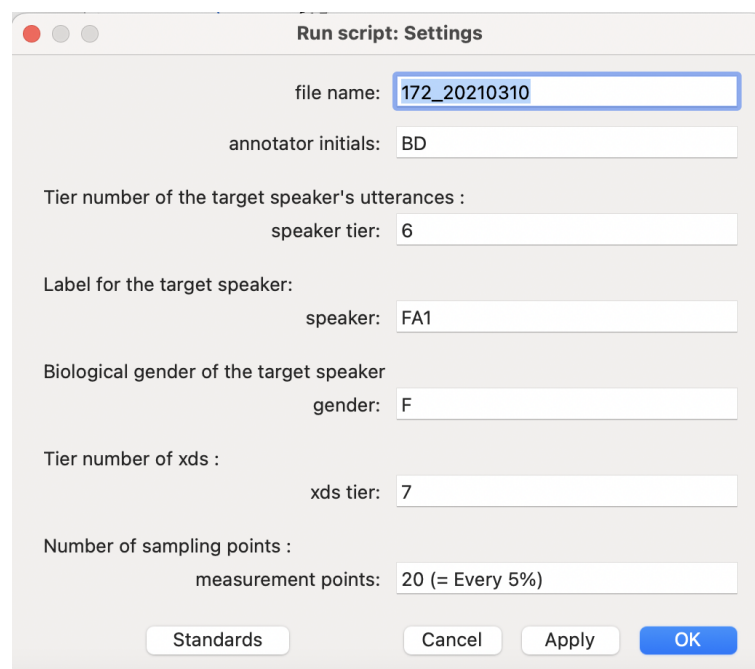
4. After all annotation is done for each file, search ^\$ (regular expression for “nothing”) on speaker tier, and replace all results with 0.

5. Copy annotation from speaker tier to xds tier. Do not check the box that allows existing annotations to be overwritten.

6. Search “noisy”, “faint”, and “overlap” on xds tier, and replace all results with “C”.

### Step 2: *Measurement using Praat Script*; see Figure 1

1. Fill in the target file name and your initials. Remember that the TextGrid file and the audio file should have the same name.
2. Open your TextGrid file, check the tier number for the speaker tier and the xds tier.
3. Fill in your speaker's (biological) gender. The script was set to define a pitch floor of 75 Hertz for male, and 100 Hertz for female.
4. Hit "OK". The script will generate a .csv file where all information about F0 is stored, including audio file name, whether it is good or noisy/faint/overlapping, min, max, mean, sd of F0, and raw F0.
5. Do this for all speakers and files. Store all files in one single folder.



Run script: Settings

file name: 172\_20210310

annotator initials: BD

Tier number of the target speaker's utterances :

speaker tier: 6

Label for the target speaker:

speaker: FA1

Biological gender of the target speaker

gender: F

Tier number of xds :

xds tier: 7

Number of sampling points :

measurement points: 20 (= Every 5%)

Standards Cancel Apply OK

Figure 1: Praat Settings

### Step 3: *Data Exploration and Manipulation in R*

1. Copy all data from "S:/Soderstrom-Lab/CurrentStudies/Lab members studies/Smartphone study (Mercedes-MC)/Master files and raw data/ADEX Data" to a new folder "adex\_data".
2. Copy all data from "S:/Soderstrom-Lab/CurrentStudies/Lab members studies/Smartphone study (Mercedes-MC)/Preparing data for analysis/Smartphone Data/Data" to a new folder "smartphone\_data".
3. In your project folder, place smartphone\_analysis.Rproj and smartphone\_analysis.R in the root directory. Also place "smartphone\_data" and "adex\_data" in the root directory.

4. As a result, your project folder should be like:

*smartphone\_data*  
*adex\_data*  
*smartphone\_analysis.Rproj*  
*smartphone\_analysis.R*

5. Open *smartphone\_analysis.Rproj* first, and then *smartphone\_analysis.R*. Select all codes, and press command+return. It should take care of everything.

3. You are welcome to make any changes to the R script. But remember to backup the original one.