# LENA data and other languages

LENA was developed using data collected from American English speakers. It can be used with other spoken languages, with some considerations. More detail:

Language independent measures

- The language used in the child's environment does not affect **segmentation**, **speaker identification**, or **identification of adult speech** vs. adult non-speech (laugh, sneeze, etc.). **Audio Environment** is not affected by the language being spoken.
- Our detection of **child vocalizations** is close to language-independent, as a vocalization is not a word. The younger the child, the less likely the vocalization detection is to be affected by use of a different language, but even for children on the older end of the LENA range we do not expect the language used to matter.
- **Conversational turns** are based on the timing of detected child vocalizations and adult words, and so they are not affected by different languages.

Somewhat language dependent measures

- The absolute values for **adult word count** in a non-English language may not be as accurate as for English due to differences in the phone set, syllables per word, and other factors, but the counts should be "off" by the same amount for a family from one recording to the next, allowing you to track change over time. You might not want to include non-English AWC data in an otherwise English dataset for research, but for the purpose of working with parents or doing case studies, it is still useful.
- The **Vocal Productivity** measure was developed and tested with children living in English-speaking households, but it relies not on language-specific characteristics, but rather on the detection of well-formed syllables. It estimates the length of a child's vocal output in syllables, so there is reason to believe that it could be used with children acquiring other languages. Even if it did not accurately identify the syllables, or if the average growth trajectory in that language were different than for English, the error should be consistent in the same way the adult word count would be, making it a useful measure of growth over time for a specific child.

Language dependent measures - use with caution

- The **AVA** score is not considered valid in other languages because AVA compares the phonemic complexity of the child's output against an adult American English model, specifically. A 3-year old speaker of Mandarin is going to be using phonemes that aren't part of the English set. That said, we have heard anecdotally from users that consistently low AVA scores in non-English speaking children do tend to flag other issues.