

Child Vocalizations

What are Child Vocalizations?

A Child Vocalization is vocal output that is:

- attributed to the key child
- identified as speech or as a sound related to the development of speech
 - Examples: a phrase, word, babble, syllable, coo, or even a protophone - all of which are related to the development of the capacity for speech
- at least 0.6 seconds long
- preceded and followed by at least 0.3 seconds of silence or other sound that is *not* child speech

Non-speech sounds from the child's vocal tract do not count as child vocalizations. For example, burping, sneezing, breathing, crying, and laughing do not contribute to the vocalization count.

Following these rules, any of the following examples could be **one** vocalization:

- aaa
- mamamama
- milk
- want milk
- Mom can I please have some milk?



Fun fact!

LENA's vocalization counting rules are based in part on what speech science says about syllables and breaths. The minimum vocalization duration is very short (0.6 seconds) so that we can capture a single syllable, or a coo from an infant. There is no maximum vocalization duration, but the beginning and end of a vocalization are marked by the presence of something else with a duration of at least 0.3 seconds - the typical duration of a breath.

What about singing?

Singing is handled the same way as talking in a regular tone.

If the key child is singing alone with no background music, then the vocalizations count and are eligible to be part of a conversational turn.

Choral singing or singing with background music would most likely be designated as overlap rather than attributed to the key child. Vocalizations are not counted in overlap, and so no turns can be counted.

What is the Child Vocalization Count?

The Child Vocalization Count (CVC) is the estimated total number of discrete vocalizations the child produced. It is *not* a word count.

Why is the sum of the hourly counts sometime different than the daily count?

The hourly counts represent the exact number of vocalizations counted in that hour. The daily counts are statistical projections that allow LENA to compare any LENA Day that is at least 9.5 hours in duration against our normative set, in which all recordings were 12 hours long. For more information, see the Information for Researchers chapter.

What is Child Vocalization Percentile?

The Child Vocalization Percentile (PCTL) shows how the child's vocalization count on that day compares with an age-matched normative sample. Average CVC is represented by the 50th percentile.

Percentiles are available at the daily level for recordings of at least 9.5 hours in duration. (Percentiles are not available for LENA Grow recordings, as the environment is too different from the mostly home-based recordings collected for norms development.)

For details on the development of LENA norms, see:

Gilkerson, J., Richards, J. A., Warren, S. F., Montgomery, J. K., Greenwood, C. R., Oller, D. K., & Hansen, J. H. (2017). Mapping the early language environment using all-day recordings and automated analysis. *American Journal of Speech-Language Pathology*, 26(2), 248-265. doi: 10.1044/2016_AJSLP-15-0169

Where to find Child Vocalization data

In select LENA Programs, the individual LENA report shows the total CVC for each LENA Day on the corresponding daily bar. The hourly bars show the CVC from each hour within the recording.

Child Vocalization information appears in reports for only some LENA programs, but can be accessed in the Recordings data export for all LENA programs at the full recording, hourly, and 5-minute level.

Is the Child Vocalization Count accurate for languages other than English?

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.