Background

Children who are hard of hearing are often delayed in their consonant and syllable structure development.

These delays may lead to delays in first word learning, expressive language, and speech production abilities.

The LENA Automatic Vocal Assessment (AVA) is a practical means for examining broad developmental changes in vocalizations through reference to a large sample of young children.

Aims

1. To determine how well aligned AVA developmental age scores are with the chronological ages of children who are hard of hearing (HH) as compared to children with normal hearing (NH).
2. To determine if AVA standard scores differentiate children who are HH from children with NH.
3. To examine the correlations between AVA standard scores and children’s scores on traditional speech and language measures.

Methods

Three LENA recordings were collected for children with mild to severe hearing loss (HH group, BEPTA: M=49.0 dB HL, SD=12.5) and children with normal hearing (NH group) at consecutive one-month intervals. Data were averaged across recordings for each child to control for variability.

The speech and language skills of children with LENA recordings were assessed for a subgroup of children with LENA recordings as part of the Outcomes of Children with Hearing Loss study.

Results: Aim 1

HH group

NH group

Phoneme Accuracy (Percent Correct)

Expressive Language T-Score

Receptive Language T-Score

Expressive Language T-Score

Phoneme Accuracy

Word Acceptability

Measure

AVA

Receptive Language

Expressive Language

Phoneme Accuracy

Word Acceptability

Area Assessed

LENA

Scales of Early Learning

Mullen

Expressive Language

Phoneme Accuracy

Word Acceptability

HH group

(n=15)

M=27.5

SD=7.6

n=11

M=27.1

SD=3.2

NH group

(n=12)

M=24.8

SD=5.5

M=53.1

SD=7.3

M=82.8

SD=9.4

M=90.9

SD=6.3

Conclusions

The developmental ages provided by the AVA are strongly correlated with chronological ages for children who are HH and NH.

AVA standard scores are sensitive to differences in the prelexical vocal and early verbal development of children who are HH and NH.

AVA scores are associated with clinician elicited measures of speech and language for children who are HH.

This also appears to be the case with the language measures for children with NH, but a larger sample size is needed to confirm this impression.

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