

Supplemental Material S1. (A) Instructions provided to the children during recording; (B) word-level task: 21 Korean contrastive monosyllabic real words and corresponding International Phonetic Alphabet (IPA) transcription; (C) sentence-level task: three Korean sentences and corresponding IPA transcription; (D) reliability of acoustic measures: Pearson product–moment correlation between the first and second measurements and mean absolute difference; and (E) reliability of intelligibility-related measures: Intraclass correlation coefficient (ICC) and corresponding 95% confidence interval.

A. Instructions provided to the children during recording.

For the big mouth and the strong voice conditions, the children with dysarthria were instructed in Korean to “speak with a big mouth” [입을 크게 벌려요.] and “speak with a strong voice,” [큰 소리로 말해요.], respectively.

B. 21 monosyllabic Korean words and corresponding International Phonetic Alphabet (IPA) transcription.

| Korean word | IPA transcription | Korean word | IPA transcription | Korean word | IPA transcription |
|-------------|-------------------|-------------|-------------------|-------------|-------------------|
| 달* | [dal]* | 딸 | [ʈal] | 발 | [pal] |
| 방 | [ban] | 굴* | [kul]* | 꿀 | [kʰul] |
| 침 | [tɕʰim] | 잠 | [dʒam] | 쌀 | [sʰal] |
| 탈 | [tʰal] | 땀 | [ʈam] | 팔 | [pʰal] |
| 병 | [pɲʌŋ] | 쿨 | [kʰul] | 공 | [koŋ] |
| 짬 | [tɕim] | 짐* | [dʒim]* | 산 | [san] |
| 빨 | [pal] | 콩 | [kʰoŋ] | 살 | [sal] |

* Words with corner vowels /a, i, u/ selected for word vowel space area (VSA) calculation

C. Four Korean sentences with multisyllabic words and corresponding International Phonetic Alphabet (IPA) transcription.

| Korean sentences | IPA Transcription | Vowel selected for VSA calculation |
|------------------|--------------------------|------------------------------------|
| 바다 보러 가요* | [bada boɾʌ gaʝo] | /a/ in [gaʝo] |
| 짜장면 꼭 시켜* | [tɕʌdʒaŋmjʌn kɔk sikʰjʌ] | /i/ in [sikʰjʌ] |
| 큰 바위가 보여 | [kʰʷʌn bawiga boʝʌ] | -- |
| 쌈장이 너무 짜* | [sʰamdʒaŋʝi nʌmu tɕʌ] | /u/ in [nʌmu] |

* Sentence with corner vowels /a, i, u/ selected for sentence vowel space area (VSA) calculation.

D. Reliability of acoustic measures: Pearson product–moment correlation between the first and second measurements and mean absolute difference.

| | Word | | Sentence | |
|--------------------|---------------------|--|---------------------|--|
| | Pearson correlation | Mean absolute difference (<i>SD</i>) | Pearson correlation | Mean absolute difference (<i>SD</i>) |
| SPL (dB) | 0.98 | 0.21 (0.24) | 0.99 | 0.17 (0.06) |
| Duration (seconds) | 0.96 | 0.09 (0.04) | 0.98 | 0.14 (0.09) |
| VSA formants (Hz) | 0.90 | 122 (59) | 0.89 | 179 (81) |

Note. VSA = Vowel space area.

E. Reliability of intelligibility-related measures: Intraclass correlation coefficient (ICC) and corresponding 95% confidence interval.

| | | Intra-listener reliability | | Inter-listener reliability |
|--------------|-----|-----------------------------------|------------------|------------------------------------|
| | | Single ICC [CI] | Average ICC [CI] | Average ICC range [CI] |
| Word | EoU | 0.80 [.77, .83] | 0.85 [.83, .87] | 0.75 [.73, .77] to 0.82 [.79, .85] |
| | PWC | 0.90 [.87, .93] | 0.93 [.91, .95] | 0.90 [.88, .92] to 0.96 [.93, .99] |
| Sentence EoU | | 0.83 [.80, .87] | 0.85 [.81, .89] | 0.85 [.81, .89] to 0.89 [.86, .92] |

Note. ICC = Intraclass correlation coefficient; EoU = Ease of Understanding; PWC = Percentage of words correctly transcribed; CI = 95% confidence interval.