“Lexicality matters, but we can do without: Dual routes to the perceptual learning of distorted speech”

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Perception of spectrally-degraded speech transduced by cochlear implants (CI) quickly improves with exposure, yet the attained level of speech-recognition performance is often insufficient to support the communicative needs of CI users. We modeled post-implantation speech perception using noise-vocoded speech and investigated perceptual outcomes of training with different linguistic materials. Sixty normal-hearing adults, trained with either words, nonwords, sentences, or Jabberwocky sentences, were tested on novel isolated words or sentences. While training had no effect on isolated word recognition, perception of distorted sentences improved in listeners trained with either sentences or nonwords. These findings point to a relative flexibility of perceptual learning processes—although learners rely on lexical knowledge and contextual evidence whenever possible, their listening strategy shifts towards acoustically driven perception if no higher-level information is available. Both listening strategies yield equal perceptual gains, but stronger contextual support or higher spectral resolution is necessary to make these perceptual changes apparent.