

Semantic Prediction in Sentence Processing by Children with Cochlear Implants

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Children with cochlear implants (CIs) are more likely to struggle with spoken language than normal-hearing (NH) age peers, and new language processing literature suggest that these challenges may be linked to delays in spoken-word recognition. The purpose of this study was to investigate whether children with CIs use language knowledge via semantic prediction to facilitate recognition of upcoming words and help compensate for uncertainties in the acoustic signal. Five- to 10-year-old children with CIs heard sentences with an informative verb (draws) or a neutral verb (gets) preceding a target word (picture). The target referent was presented on a screen along with a phonologically similar competitor (pickle). Children's eye gaze was recorded to quantify efficiency of access of the target word and suppression of phonological competition. Performance was compared to both an age-matched group and vocabulary-matched group of children with NH. Children with CIs demonstrated use of informative verbs to look more quickly to the target word and look less to the phonological competitor. However, children with CIs still demonstrated delays in word recognition relative to their peers with NH, even when matched for vocabulary size. Similar to peers with NH, children with CIs use semantic prediction to facilitate spoken word recognition. However, delays in lexical processing remain even in comparison to NH peers with similar vocabulary knowledge. Children with CIs experience challenges in spoken word recognition above and beyond limitations from delayed vocabulary development.