

Listening to fast speech in noise: effects on sentence processing in children with hearing loss

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Early device fitting and intervention continue to improve language outcomes of children with hearing loss (HL). However, in everyday life, children need to apply these language abilities in real-time and when the quality of input is far from ideal. Studies that have begun to assess real-time language processing in children with HL have done so mostly in ideal listening contexts, where speech is clear, simple, and presented in quiet. In everyday situations like the classroom, speech can be fast and background noise might be present, potentially reducing the efficiency with which children with HL are able to process language compared to NH peers.

The current work investigates how increased speaking rates and background noise influence speed of sentence processing in children with HL. Our previous work showed that *in quiet*, children with HL were slower to process sentences than NH peers overall, but they were not disproportionately affected by an increased speaking rate. In the current study, we ask whether sentence processing delays due to an increased speaking rate become apparent when children process speech *in noise*, which better reflects classroom listening environments.

Data from 31 8-13-year olds with (uni -and bilateral) HL, wearing hearing aids, cochlear implants or both, and 27 8-13-year olds with NH will be presented. The children all completed an Auditory Word Detection Task online, where they were asked to listen for a target word in a sentence and press the spacebar upon hearing it. Sentences were presented in 16-talker babble noise at a +4 dB SNR. Response time was taken as a measure of processing speed and was compared across sentences presented at Normal (4.4 syllables/second) vs. Fast speaking rates (6.1 s/s).

Implications for everyday classroom listening for children with HL will be discussed.