Audiovisual speech perception in school-aged children with developmental language disorder and in their peers with typical development

Natalya Kaganovich, Purdue University

To benefit from visual speech cues, listeners must develop mappings between mouth movements and individual phonemes. Earlier, we showed that children with developmental language disorder (DLD) are less aware of such audiovisual mappings compared to their peers with typical development (TD). We hypothesized that reduced sensitivity to audiovisual speech correspondences resulted from a weakened connection between sensorimotor representations of children's own articulatory movements and the observed speech. We collected brain responses from children with DLD and TD while they watched silent videos of a speaker producing words that either matched or did not match the words children heard earlier. Prior to watching each video, children either pressed a button or said the word that later appeared in the video. In both cases, mismatched videos elicited the N400 ERP component. In children with TD, N400 was larger when they said a word compared to when they pressed a button, suggesting that their own articulation enhanced perception of the observed mouth movements. Based on preliminary data, this effect was reduced in children with DLD. This research was supported by the NIDCD grants R03DC013151 and R01DC017017.