Musical rhythmic training and conversational temporal skills in children with deafness.

Children with deafness do not display normal language acquisition trajectories. Speech rehabilitation via music training has proved successful to improve speech perception abilities in this population. However, whether music training may also benefit more integrated levels of language processing such as conversational skills, has not yet been addressed.

We present a new paradigm wherein a virtual partner names pictures in alternation with a child. This allowed to test the anticipatory conversational skills in normal and children with deafness. In a first study we show that, compared to speech therapy, a rhythmic training session helps children with deafness to improve speech temporal prediction and turn-taking accuracy. In a second study, we measured children's abilities to converge toward the virtual partner's speech rate. A MMN paradigm measured the sensitivity to temporal deviation and allowed to correlate electrophysiological measures to behavioural measures of temporal speech accuracy. Finally, we tested the effect of a rhythmic stimulation on both speech convergence and temporal prediction abilities in children with deafness.

Overall our results show a link between temporal predictive skills and conversational skills and most importantly a positive effect of rhythmic training on speech perception and production as well as conversational abilities in children with deafness.