Influence of French Cued Speech exposure on speech production in children with cochlear implants

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Although cochlear implant improves deaf children's speech intelligibility (Turgeon et al., 2017) the auditory information it provides remains degraded (Colin et al., 2017). To compensate for the degraded acoustic input some people use Cued French (CF) which supplements the auditory information with a manual cue (Hage & Leybaert, 2006). CF has been shown to improve auditory sentence processing (Leybaert & LaSasso, 2010) and to enhance speech perception (Hage & Leybaert, 2006). Few studies have focused on the contribution of CF to speech production, but CF has been shown to facilitate the implementation of phonological representations (Charlier & Leybaert, 2000). The present study explores the potential transfer of these phonological representations to speech production in CI children, and thus the possible benefit of CF to speech production.

As part of an ongoing project on speech development in French (*EULALIES*, Meloni et al. 2017), we have collected speech data on 84 children with normal hearing (NH) and 17 children with cochlear implants (CI) between 27 and 144 months (Machart et al., 2019). We find a significant effect of the CF decoding level on the production of French phonemes in CI children, independently from the effect of chronological age. These results suggest that exposure to CF significantly improves speech production in CI children.

To further assess this hypothesis, we study the impact of CF on articulatory precision in CI children. We recorded the lingual movements during the production of simple words. We are currently analyzing the production of 10 NH children, 9 CI children with a high CF decoding level and 9 CI children who have never been exposed to CF. We expect that CI children have a better representation of speech sounds when they benefit from CF, which results in more precise articulation and lingual configurations comparable to those of NH children.