

Receiving a cochlear implant in adulthood: a longitudinal study of speech production and perception in adults with prelingual deafness

Johanna-Pascale Roy (Université Laval, Canada)

The outcome of cochlear implantation in patients with severe to profound deafness has been well-documented. The device improves not only auditory perception, but also quality of life for wearers and their close relations (Philpott *et al.*, 2025). However, some individuals decide to discontinue its use after a few years, and a good proportion of them are prelingually deaf adults (Boisvert *et al.*, 2020). As part of a larger project aiming to establish links between speech production and speech perception performance in relation to users' satisfaction with their implant and perceived quality of life, data on speech production and perception are presented here. Vowel pronunciation was assessed using a non-word reading task as well as in a picture naming task. Perception of isolated words in visual, auditory and audio-visual modality was also evaluated. Participants were tested at four measurement times: just before implant activation, then 6 months, 1 year and 2 years after surgery. The results show that while auditory and audio-visual perception improves over time, speech production is modified but does not appear to improve according to the metrics usually used in clinical phonetics such as maximum vowel space or formant centralisation ratio (Sapir *et al.*, 2010).

References

- Boisvert, I., Reis, M., Au, A., Cowan, R., & Dowell, R. C. (2020). Cochlear implantation outcomes in adults: A scoping review. *PloS one*, 15(5), e0232421.
- Philpott, N., Nijmeijer, H. G., Philips, B. *et al.* (2025). Beyond hearing: the impact of Cochlear implantation on the quality of life of users and their communication partners after 1 year. *International Journal of Audiology*, 1-7.
- Sapir, S., Ramig, L. O., Spielman, J. L., & Fox, C. (2010). Formant Centralization Ratio: A proposal for a new acoustic measure of dysarthric speech. *Journal of Speech, Language, and Hearing Research*, 53(1), 114–125.