

# RESEARCH DIRECTIONS

## Listening across languages

Professor Anne Cutler from the MARCS Institute, University of Western Sydney, together with Dr Evelina Fedorenko, Massachusetts Institute of Technology, will investigate the native listening advantage: a native speaker's ability to recognise words in new voices and contexts faster than second language speakers.

The Australian Research Council is supporting Anne's research through its Discovery Projects scheme.

'When we listen to speech, we listen with a native accent,' Anne explains. 'Our language experience affects how we listen, and the native speaker enjoys an advantage in many situations, including listening in noise or recognising individual talkers. Using bilingual speakers, we can now compare the perceptual learning that underlies this adaptation to new talkers and adverse listening conditions in native and second language speakers.'

Anne wants to take it further: 'Through this research we can map the source of the native-language advantage within the neural processing of individuals. We can discover whether the brain's speech-level processes occur in different or overlapping regions depending on whether the subject is listening to his or her native or second language.'

Explaining the native-language listening advantage will require a range of techniques, collaboration across the world, a couple of languages—English and Mandarin—and 504 testing sessions. To establish voice adaptation, participants will be presented with ambiguous sounds and similar word-pairs. For adaptation to noise, participants will be prompted to identify a spoken word while a background noise is played. Anne's partner investigator at MIT, Dr Evelina Fedorenko, will use a novel fMRI technique to locate the neural processes underpinning the native listening advantage.



Anne's research will tackle a long-known but unexplained research problem: why do native speakers enjoy a listening advantage over second language speakers? Understanding this may change the way we teach listening in second language education.

**Project Title:** Explaining the native-language listening advantage by charting neural response and perceptual adaptation across languages—but within individuals

**Funding has been set at:** \$440,000

**Contact Details:** [a.cutler@uws.edu.au](mailto:a.cutler@uws.edu.au)

<http://www.uws.edu.au/marcs>

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