

# Auditory Ageing

Speech perception

Speech synthesis

Audiology

Inclusive design

## Adapting Synthetic Speech to Older Ears

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### The Investigation

#### What is Unit Selection Synthesis?

Speech sounds are generated by taking sequences of speech recorded by a speaker from a database of speech and putting them back together. The size of the units is flexible, and there is very little post-processing.

#### Objectives

How difficult is it for older people to understand speech produced by unit selection synthesis?

What measures of auditory ageing might predict older people's ability to understand synthetic speech?

What artefacts (clicks, distortions) are particularly problematic? (post-hoc analysis)

#### Plan

Audiological tests: A one-hour protocol that assesses several aspects of auditory ageing, including hearing loss and processing of auditory information in the brain

Cognitive test: Working memory span and general questionnaire. This is a good indicator of cognitive ageing and relevant to our experimental task.

Main experiment: Subjects hear 32 reminders (16 synthetic, 16 human) and answer simple question about each reminder.

40 older subjects and 12 younger subjects will be tested between December and March

#### Collaborators, Partners

Pauline Campbell and Christine dePlacido, Lecturers in Audiology, Queen Margaret University College  
Cerevoice (Matthew Aylett/Chris Pidcock), Edinburgh

#### References

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Hunt, K./Black, A. (1996): Unit selection in a concatenative speech synthesis system using a large database. *Proceedings ICASSP*

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### Potential Benefits



#### For older people

This project makes a technology more accessible to older people that is an integral part of phone based-systems, such as interactive voice response systems or assistive technology such as screen readers

**More flexible**: no recording new prompts if the content changes

**Easier to personalise**: choose the voice you like, with the accent you like.

#### For society

If synthetic speech becomes easier to understand for older people, it will also be easier to understand for younger people. Hearing loss is not limited to older people - adapting synthetic speech to people with impaired hearing will help wide range of users.

Getting in early to make technology more inclusive increases user acceptance of new technologies.

Synthetic speech can be used in technology for promoting independent living, for example reminding people of medication, appointments, or tasks or screen readers for visually impaired users.

#### Contact Details

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