Getting the Brain into Gear

An online healthy ageing study

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Introduction

- The world population is **ageing rapidly**[1]
- Ageing is accompanied by cognitive difficulties, including **word-finding** difficulties[2,3,4,5]
- **Healthy lifestyle** choices might counteract age- and dementia-related cognitive difficulties[6]
- **Cognitive Reserve** (CR): a healthy and engaging lifestyle increases people's ability to compensate for cognitive decline[7]

Aim: To investigate the relationship between age-related word-finding difficulties and CR.

Hypothesis: Word-finding difficulties increase with age and is modulated by CR.

Method

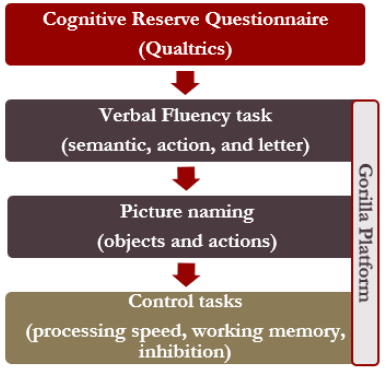
Participants:

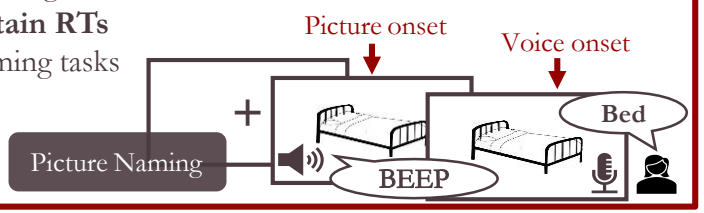
- Healthy, right-handed young (18-30 years; N=25), middle-aged (40-55 years, N=25), and older adults (65-80 years; N=24).

Tasks

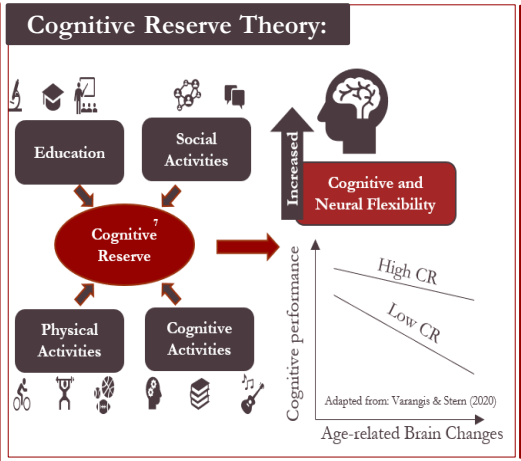
- CR questionnaire (Qualtrics).
- Verbal Fluency and Picture Naming.
- Control tasks for general cognitive processing.

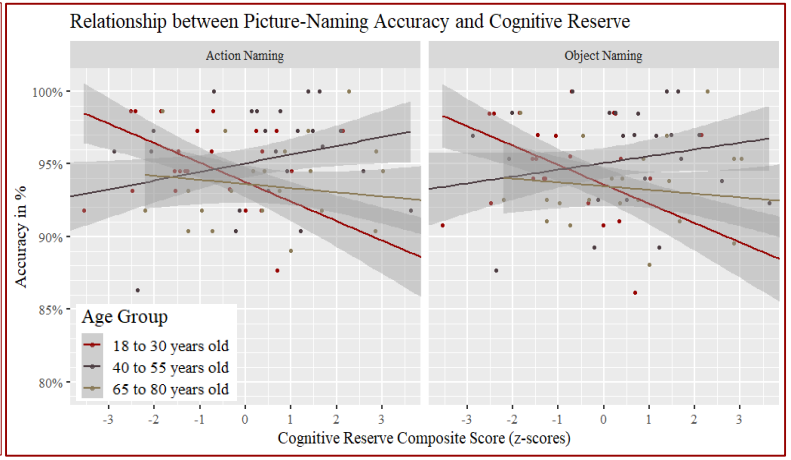
CheckVocal to **obtain RTs** for the picture-naming tasks





Cognitive Reserve Theory:





Results and Discussion

Linear-Mixed Effects Models for Picture Naming.

Reaction Times (**Young**: 1048.7ms; **Middle**: 1037.9ms; **Older**: 1077.4ms)

- No significant effects for either objects or actions.

Accuracy (**Young:** 94.3%; **Middle:** 95.2%; **Older:** 93.1%)

- Significant interaction effect Age Group*CR for young (actions: $t(72.05)=-3.11$, $p=.003$) and middle-aged adults ($t(69.9)=2.97$, $p=.004$) for objects and actions.

Discussion:

- No age effect on picture-naming reaction times or accuracy after accounting for individual variability.
- In middle-aged adults, higher CR levels might lead to higher naming accuracy.
- Younger adults might not need CR to reach high naming accuracy

Tips Online Speech Research

- Create **clear instructions** with example pictures or an instruction video**,** including example trials.
- Test out different **browsers** during piloting.
- Verbal Fluency: add a **countdown** and **timer**.
- Measuring RTs: consider inter-trial and inter-subject variability in **microphone recording lag**.
- Consider being present to offer additional explanations and help (e.g., via conference call).

References:

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