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Collaborative learning in healthy ageing: Does interlocutor identity matter?

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Introduction
As we get older, our learning and memory abilities decline. Learning collaboratively with a familiar person may help improve older adults’ learning and memory performance. We tested younger and older adults learning with familiar and unfamiliar partners, and older adults learning with a perceived Human and Computer partner. We explored whether interlocutor identity influences performance in collaborative learning, or whether collaboration alone is sufficient for accurate learning.

Method

Study 1
Participants: n = 48; 24 younger (mean 21.25, SD = 2.69) and 24 older (mean = 68.88, SD = 7.19).
Participants completed the task with a familiar partner and with a stranger, once as a Director and once as a Matcher.

The Director’s cards were set in a specific order, which they communicated to the Matcher. Pairs worked together to create and learn referential labels over nine trials.

Study 2
Participants: 24 older (mean 70.46 years, SD = 7.34) adults.
Participants completed a similar matching task with a Wizard of Oz computer program assuming the role of Director.

“Human” condition: participants told communicating with a Research Assistant in the next room, and the program ran using natural speech recordings. Deception was successful.

“Computer” condition: participants heard the same instructions in a synthetic speech voice.
Nine trials were completed in each condition collapsed into 3 trial bins.

Results

Study 1
Time taken to complete the task: Age group and trial showed a significant interaction, with older adults showing a greater decrease in the time to complete compared with younger adults (β = 44.72; SE = 6.31, t = 7.09). Participants completed the task in similar time with both familiar and unfamiliar partners (β = 9.60; SE = 6.84, t = 1.34).

Number of words: A significant interaction between age group and trial indicates that older adults showed greater decreases in word use than younger adults (D = β = 55.38, SE = 15.9, t = 3.58; M; β = 27.52, SE = 7.37, t = -3.73). Participants used a similar number of words with both familiar and unfamiliar partners (D β = 15.76, SE = 15.57, t = 1.01; M β = 0.85, SE = 5.65, t = -0.14).

Study 2
When interacting with the ”Computer”, older adults were initially quicker, but by final trials were significantly quicker when they believed they were interacting with a human (Figure 5).

There was also a trial by interlocutor identity interaction with trial having a greater effect on completion speed with a human partner than a computer partner (β = -17.96; SE =4.59, t =-3.78).

Conclusions
Within this collaborative learning paradigm, older adults complete the task with similar efficiency to younger adults over multiple trials.
Collaborating with a familiar partner does not improve performance compared with an unfamiliar partner.
When older adults believe they are interacting with a human, they complete the task more efficiently and accurately than when they believe they are interacting with a computer.

References

Further information
We are now conducting the same studies using a route learning task based on the Map Task paradigm to explore whether these effects are task specific or generalise to other learning and memory paradigms.

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