On-beat rhythm and speech-in-noise perception in older adults with hearing aids

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INTRODUCTION

Deafness and hearing loss affects more than 1.5 billion people globally, and ~1 million Canadians. Communication challenges lead to increased risk of depression, loneliness, social isolation, and poorer quality of life compared to their normal-hearing peers[1].

As we enter the UN Decade of Healthy Ageing (2021–2030), exploring ways to improve the lives of older people—who are disproportionately affected by presbycusis (age-related hearing loss)—is a priority. Research suggests that musical activities such as singing may enhance speech-in-noise (SIN) outcomes[2].

OBJECTIVES

1) Examine the baseline correlates of older adults with hearing aids (HAs) enrolled in a choir intervention.

2) Identify cues that may support better communication and SIN outcomes, such as:

Cognition (Working memory)

Music perception (Pitch, rhythm, timbre)

METHODS

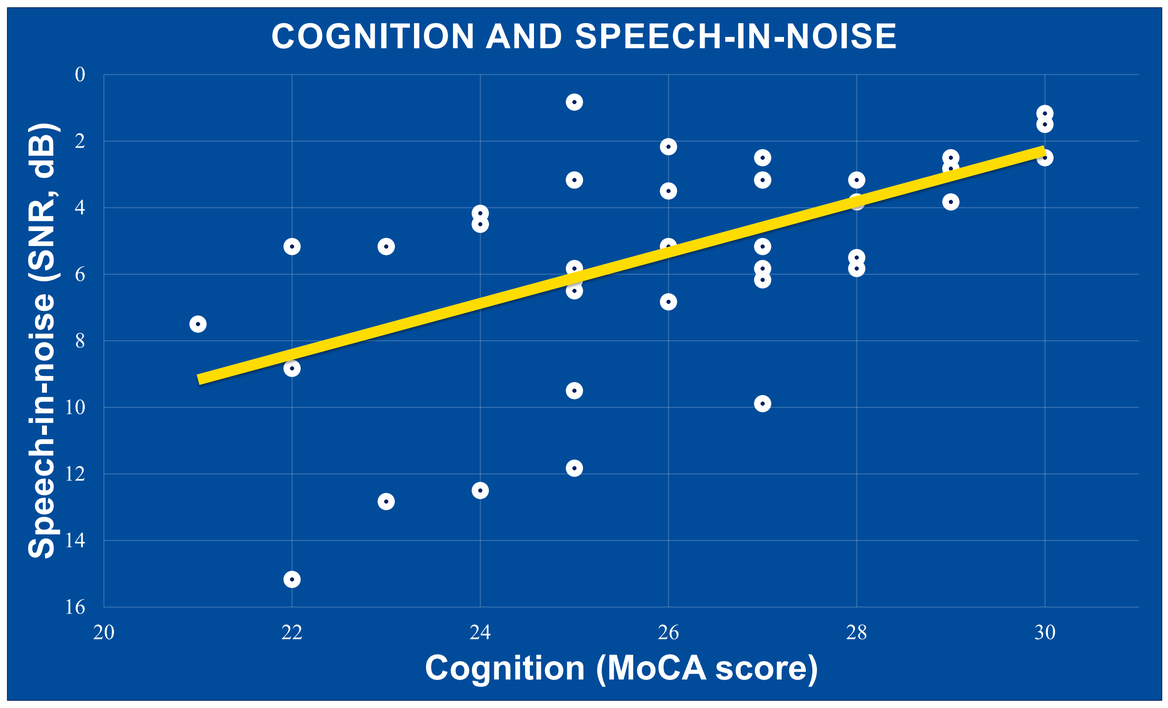
Participants:

Forty-two adults aged between 57 and 90 years (M_{age} = 73.5 years, 28 female and 14 male) with a moderate/moderately-severe bilateral hearing loss (M_{HL} = 46.9 dB HL_{4fPTA}).

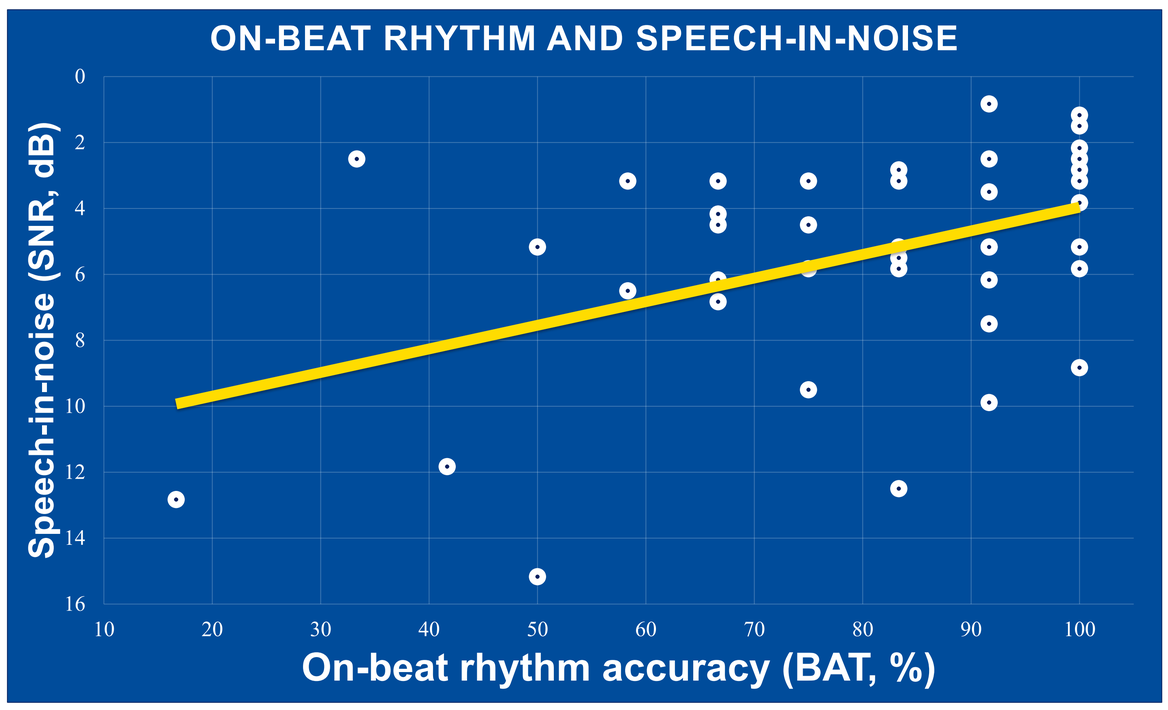
Assessments:

Montreal Cognitive Assessment (MoCA), QuickSIN (speech-in-noise test), and the Beat Alignment Test (BAT).

FINDINGS



As expected[3], there was a statistically significant correlation between cognitive scores and SIN perception, r(40) = -.55, p<.01.



There was a statistically significant correlation between on-beat rhythm and SIN, r(40) = -.44, p<.01.

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CONCLUSION

These findings suggest on-beat rhythm may support SIN perception for older adult HA users. While this association has been found in young adults with normal hearing[4]; to the best of our knowledge, this has not been reported for older adults with HAs.

Due to hearing loss reducing fine-frequency perception (but not rhythmic abilities), tasks that leverage rhythm may be particularly effective for interventions and rehabilitation.

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