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Relative contributions of auditory and cognitive functions on speech recognition in quiet and in noise among older adults [Contribuições relativas das funções auditivas e cognitivas no reconhecimento da fala no silêncio e no ruído entre idosos]

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Abstract
Introduction: Hearing acuity, central auditory processing and cognition contribute to the speech recognition difficulty experienced by older adults. Therefore, quantifying the contribution of these factors on speech recognition problem is important in order to formulate a holistic and effective rehabilitation. Objective: To examine the relative contributions of auditory functioning and cognition status to speech recognition in quiet and in noise. Methods: We measured speech recognition in quiet and in composite noise using the Malay Hearing in noise test on 72 native Malay speakers (60–82 years) older adults with normal to mild hearing loss. Auditory function included pure tone audiogram, gaps-in-noise, and dichotic digit tests. Cognitive function was assessed using the Malay Montreal cognitive assessment. Results: Linear regression analyses using backward elimination technique revealed that had the better ear four frequency average (0.5–4 kHz) (4FA), high frequency average and Malay Montreal cognitive assessment attributed to speech perception in quiet (total r2 = 0.499). On the other hand, high frequency average, Malay Montreal cognitive assessment and dichotic digit tests contributed significantly to speech recognition in noise (total r2 = 0.307). Whereas the better ear high frequency average primarily measured the speech recognition in quiet, the speech recognition in noise was mainly measured by cognitive function. Conclusions: These findings highlight the fact that besides hearing sensitivity, cognition plays an important role in speech recognition ability among older adults, especially in noisy environments. Therefore, in addition to hearing aids, rehabilitation, which trains cognition, may have a role in improving speech recognition in noise ability of older adults. © 2018 Associação Brasileira de Otorrinolaringologia e Cirurgia Cérvico-Facial

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