

# Web of Science



Free Full Text from Publisher [Look Up Full Text](#) [Find PDF](#) Full Text Options Export... Add to Marked List

## Relative contributions of auditory and cognitive functions on speech recognition in quiet and in noise among older adults

By: Mukari, SZMS (Mukari, Siti Zamratol Mai Sarah)<sup>[1]</sup>; Yusof, Y (Yusof, Yusmeera)<sup>[2,3]</sup>; Ishak, WS (Ishak, Wan Syafira)<sup>[2]</sup>; Maamor, N (Maamor, Nashrah)<sup>[2]</sup>; Chellapan, K (Chellapan, Kalaivani)<sup>[4]</sup>; Dzulkifli, MA (Dzulkifli, Mariam Adawiah)<sup>[5]</sup>

### BRAZILIAN JOURNAL OF OTORHINOLARYNGOLOGY

Volume: 86 Issue: 2 Pages: 149-156

DOI: 10.1016/j.bjorl.2018.10.010

Published: MAR-APR 2020

Document Type: Article

[View Journal Impact](#)

### 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 r(2) =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 r(2) =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. (C) 2018 Associacao Brasileira de Otorrinolaringologia e Cirurgia Cervico-Facial. Published by Elsevier Editora Ltda.

### Keywords

Author Keywords: [Speech recognition](#); [Hearing threshold](#); [Auditory](#); [Cognition](#); [Elderly](#)

KeyWords Plus: [HEARING-LOSS](#); [WORKING-MEMORY](#); [PERFORMANCE](#); [PERCEPTION](#); [LISTENERS](#); [RECEPTION](#); [ATTENTION](#); [AGE](#); [DISCRIMINATION](#); [ASYMMETRY](#)

### Author Information

#### Reprint Address:

Universiti Kebangsaan Malaysia Univ Kebangsaan Malaysia, Inst Ear Hearing & Speech, Kuala Lumpur, Malaysia.

Corresponding Address: Mukari, SZMS (corresponding author)

+ Univ Kebangsaan Malaysia, Inst Ear Hearing & Speech, Kuala Lumpur, Malaysia.

#### Addresses:

+ [ 1 ] Univ Kebangsaan Malaysia, Inst Ear Hearing & Speech, Kuala Lumpur, Malaysia

+ [ 2 ] Univ Kebangsaan Malaysia, Fac Heath Sci, Kuala Lumpur, Malaysia

+ [ 3 ] Minist Hlth, Putrajaya, Malaysia

+ [ 4 ] Univ Kebangsaan Malaysia, Fac Engn & Built Environm, Bangi, Malaysia

+ [ 5 ] Int Islamic Univ, Kuliyyah Islamic Revealed Knowledge & Human Sci, Kuala Lumpur, Malaysia

### Citation Network

In Web of Science Core Collection

1

Times Cited

[Create Citation Alert](#)

#### All Times Cited Counts

1 in All Databases

[See more counts](#)

48

Cited References

[View Related Records](#)

#### Most recently cited by:

Yusof, Yusmeera; Mukari, Siti Zamratol-Mai Sarah; Dzulkifli, Mariam Adawiah; et al. [Efficacy of a newly developed auditory-cognitive training system on speech recognition, central auditory processing and cognitive ability among older adults with normal cognition and with neurocognitive impairment.](#) GERIATRICS & GERONTOLOGY INTERNATIONAL (2019)

[View All](#)

### Use in Web of Science

Web of Science Usage Count

0

2

Last 180 Days

Since 2013

[Learn more](#)

#### This record is from:

Web of Science Core Collection  
- Science Citation Index Expanded  
- Social Sciences Citation Index

#### Suggest a correction

If you would like to improve the quality of the data in this record, please [suggest a correction](#).

E-mail Addresses: [zamratol@ukm.edu.my](mailto:zamratol@ukm.edu.my)**Funding**

Funding Agency	Grant Number
Malaysian Ministry of Education	LRGS/BU/2012/UKM-UKM/K/02

[View funding text](#)**Publisher**

ASSOC BRASILEIRA OTORRINOLARINGOLOGIA &amp; CIRURGIA CERVICOFACIAL, AV INDIANOPOLOS 740, MOEMA, SAO PAULO, SP 04062-001, BRAZIL

**Journal Information**Impact Factor: [Journal Citation Reports](#)**Categories / Classification**

Research Areas: Otorhinolaryngology

Web of Science Categories: Otorhinolaryngology

**See more data fields**

◀ 1 of 1 ▶

**Cited References: 48**Showing 30 of 48 [View All in Cited References page](#)*(from Web of Science Core Collection)*

1. **[Are individual differences in speech reception related to individual differences in cognitive ability? A survey of twenty experimental studies with normal and hearing-impaired adults](#)** **Times Cited: 320**  
By: Akeroyd, Michael A.  
INTERNATIONAL JOURNAL OF AUDIOLOGY Volume: 47 Supplement: 2 Pages: S53-S71 Article Number: PII 905550509 Published: 2008
2. **[A dichotic listening study of attention control in older adults](#)** **Times Cited: 27**  
By: Andersson, Martin; Reinvang, Ivar; Wehling, Eike; et al.  
SCANDINAVIAN JOURNAL OF PSYCHOLOGY Volume: 49 Issue: 4 Pages: 299-304 Published: AUG 2008
3. Title: [not available] **Times Cited: 3**  
Group Author(s): ANSI  
Methods for calculation of the speech intelligibility index Volume: 1969 Issue: R Pages: 1-35 Published: 1997  
Publisher: ANSI, New York
4. **[Listeners modulate temporally selective attention during natural speech processing](#)** **Times Cited: 57**  
By: Astheimer, Lori B.; Sanders, Lisa D.  
BIOLOGICAL PSYCHOLOGY Volume: 80 Issue: 1 Special Issue: SI Pages: 23-34 Published: JAN 2009
5. **[Working memory and language: an overview](#)** **Times Cited: 870**  
By: Baddeley, A  
JOURNAL OF COMMUNICATION DISORDERS Volume: 36 Issue: 3 Pages: 189-208 Published: MAY-JUN 2003
6. **[Speech-in-Speech Listening on the LiSN-S Test by Older Adults With Good Audiograms Depends on Cognition and Hearing Acuity at High Frequencies](#)** **Times Cited: 32**  
By: Besser, Jana; Festen, Joost M.; Goverts, S. Theo; et al.  
EAR AND HEARING Volume: 36 Issue: 1 Pages: 24-41 Published: JAN 2015
7. **[How Linguistic Closure and Verbal Working Memory Relate to Speech Recognition in Noise-A Review](#)** **Times Cited: 67**  
By: Besser, Jana; Koelwijn, Thomas; Zekveld, Adriana A.; et al.  
TRENDS IN AMPLIFICATION Volume: 17 Issue: 2 Pages: 75-93 Published: JUN 2013
8. **[Listeners who prefer monaural to binaural hearing aids.](#)** **Times Cited: 27**  
By: Carter, A S; Noe, C M; Wilson, R H  
Journal of the American Academy of Audiology Volume: 12 Issue: 5 Pages: 261-72 Published: 2001 -May