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NeuroAudiology Newsletter

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Happy New Year from the NeuroAudiology Group!



AUDIOLOGY TRIVIA

ANSWERS ON LAST PAGE

1) Carhart's article on "Carhart's notch" was first published in what year?

a) 1946, b) 1950, c) 1958, d) 1964

2) The human auditory nerve is composed of approximately how many fibers?

a) 15,000, b) 23,000, c) 30,000, d) 41,000

3) True or False. The NoSo component of the Masking Level Difference is more challenging to detect than the NoSpi component?

As everyone settles on their "New Year new me" goals, one resolution to keep in mind is to celebrate yourself more, for the small and big things. With this in mind, two recent accepted publications are worth celebrating!

- Filippini, R., Leite Filho, C. A., Barros, G. M. S. B., Musiek, F. E., & Schochat, E. (2022). Evidence of Validity and Normative Values of a New Auditory Backward Masking Test. *Journal of Clinical Medicine*, 11(17).

See abstract on Page 2.

- Davidson, A., Eitel, M., Lange, R. T., French, L. M., Lippa, S., Brickell, T. A., & Brungart, D. (*in press*). Efficient estimation of the binaural masking level difference (MLD) using a technique based on manual audiometry. *Journal of Speech, Language, and Hearing Research*.

Other celebratory news:

Ear and Hearing announced their new Editor in Chief: Ruth Litovsky, PhD. Congratulations!

[https://journals.lww.com/ear-](https://journals.lww.com/ear-hearing/Citation/2023/01000/Editorial__Introducing_New_Editor_in_Chief.1.aspx)

[hearing/Citation/2023/01000/Editorial__Introducing_New_Editor_in_Chief.1.aspx](https://journals.lww.com/ear-hearing/Citation/2023/01000/Editorial__Introducing_New_Editor_in_Chief.1.aspx)

New Publication Abstract

Article: Evidence of Validity and Normative Values of a New Auditory Backward Masking Test.

Abstract: There are still no valid, clinically feasible instruments to assess backward masking (BM), an auditory temporal processing (ATP) phenomenon. The aim of this study was to develop, standardize and present evidence of validity for a behavioral test for BM assessment. Young adults were submitted to a BM test (BMT), where they were asked to identify a 1000 Hz pure tone followed by a narrowband noise with interstimulus intervals of 0 to 400 ms and signal-to-noise ratio (SNR) between -20 and -30 dB. The correct response rate and target sound detection threshold were calculated, and the results compared with those of young adults with abnormal ATP tests and older adults. Diagnostic accuracy analyses were carried out. Young adults with normal ATP obtained an average correct response rate of 89 and 87% for SNR -20 and -30 dB, respectively, with average thresholds between 10 and 15 ms and no difference between the left and right ears. Results were more consistent at SNR -20 dB, and the best diagnostic accuracy was obtained for SNR -20 dB, with good specificity, but low sensitivity. Normative values were obtained for the BMT, which proved to be clinically feasible, with preliminary evidence of validity.

Audiology Podcasts

Who doesn't love a good podcast?

A new podcast devoted to audiology titled, "This Week in Hearing," is hosted by Bob Traynor. This podcast covers popular topics in audiology while inviting experts to discuss issues in the field. Topics have already included: OTCs, Regenerative Medicine, Auditory Processing Disorders, Assisted Listening Devices, and Interviews from representatives in the field of audiology.

Current and previous podcasts can be accessed here:

<https://podcasts.apple.com/us/podcast/this-week-in-hearing/id1580652299>



NeuroAudiology/CAPD Corner



Topic: Hearing loss, auditory processing, and dementia

Accumulating evidence has hit high gear in regard to the relationships between hearing loss (HL), auditory processing (AP), and dementia in the elderly. Though there is not yet a clear cause and effect, strong correlations across many studies between HL, AP, and dementia are gaining attention across many disciplines. Hearing loss is considered to be one of the key risk factors for dementia—specifically, Alzheimer’s disease. Key underlying aspects of this risk factor center around the fact that the memory center in the brain, the hippocampus, is located on the medial side of the temporal lobe, close to Heschl’s gyrus. Degenerative contamination and related dysfunction of the auditory cortex, because of its close proximity to cognitive areas, is considered a likely possibility. Also, peripheral HL and central auditory dysfunction either singly, or in combination, reduces the available neural input to the frontal lobe (cognitive) and the hippocampus, hence the distinct possibility of alteration of cells in these brain regions (trans-synaptic degeneration).

In addition to these underlying neural mechanisms, behaviors of individuals with HL can mimic those of cognitive decline and contribute to the overall problem. What is key in this regard is that behaviors related to HL can be helped. As audiologists know, amplification of various types, enhancing listening and communication behaviors, and keeping active can all serve to offset the effects of HL and lessen the influence of cognitive decline. Information dissemination to the general public about the relationships of HL, AP, and dementia is an important step for hearing clinicians and researchers to take. This effort can serve to help many patients with their everyday communication and overall well-being.

CAPD Corner Suggested Reading

- Lin, F. R. (2011). Hearing loss and cognition among older adults in the United States. *Journals of Gerontology Series A. Biomedical Sciences and Medical Sciences*, 66(10), 1131-1136.
- Loughrey, D. G., Kelly, M. E., Kelley, G. A., Brennan, S., & Lawlor, B. A. (2018). Association of age-related hearing loss with cognitive function, cognitive impairment, and dementia: a systematic review and meta-analysis. *JAMA otolaryngology-head & neck surgery*, 144(2), 115-126.
- Johnson, J. C., Marshall, C. R., Weil, R. S., Bamiou, D. E., Hardy, C. J., & Warren, J. D. (2021). Hearing and dementia: from ears to brain. *Brain*, 144(2), 391-401.
- See also: <https://hearinghealthmatters.org/category/pathways-society/> (December): **Politics and Processing** F. Musiek

Upcoming Conference Presentations

American Auditory Society: March 2-4, 2023

- Expanding and validating the use of the Tinnitus and Hearing Survey to measure relative severity of auditory problems: Alyssa Davidson, Greg Ellis, Doug Brungart
- Central auditory processing testing in native and non-native English speakers: Bridget McNamara, Alyssa Davidson, Rebecca Bieber, Sandy Gordon-Salant, Doug Brungart

American Academy of Audiology: April 19-22, 2023

- Feasibility and assessment of tablet-based delivery for behavioral auditory measures: Alyssa Davidson, Kelli Clark, Doug Brungart
- Evidence of Validity and Normative Values of a New Auditory Backward Masking Test: Renata Filippini, Frank Musiek, Eliane Schochat, et al.

AUDIOLOGY

TRIVIA

ANSWERS

1) Carhart's notch was first published in (B) 1950.

2) The human auditory nerve is comprised of about (C) 30,000 fibers.

3) True! The NoSpi provides a release from masking, making the NoSo component more challenging to detect.

PAST NEWSLETTERS: All past newsletters can be found at: musiek.faculty.arizona.edu