

Hearing Loop

NEWSLETTER

JUNE — 2024

ISSUE №8



Focus Topic

New horizons in holistic, person-centered health promotion for hearing healthcare

Technology

Artificial Intelligence and hearing: enhancing the human experiences

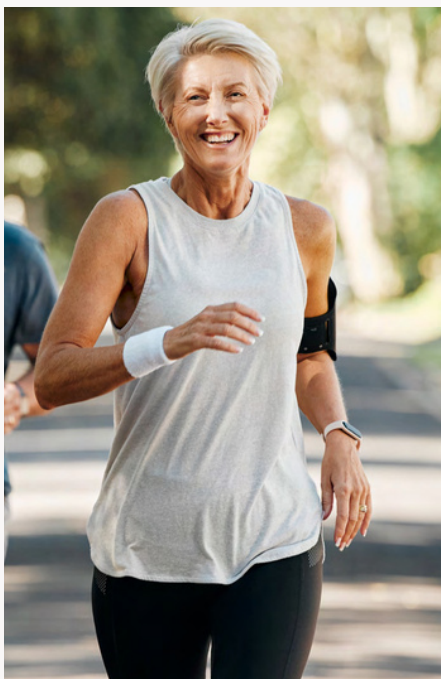
Dear partner,

Welcome to the latest edition of the Hearing Loop Newsletter. This issue is packed with insights on holistic hearing care, recent scientific findings on the collaboration between vision and hearing, the potential of Artificial Intelligence in hearing aids as well as treatment approaches for tinnitus patients with severe to profound hearing loss.

Happy reading!

The Triton Hearing Team

FOCUS TOPIC



New horizons in holistic, person-centered health promotion for hearing care

The impact of hearing loss extends far beyond just our ability to detect sounds and understand speech. Individuals with hearing loss are at a greater risk for developing a range of negative health conditions. An authoritative review¹, published in the leading clinical geriatric medicine journal, *Age and Ageing*, highlights the growing understanding of the connection between health and auditory function. The authors provide guidelines on embedding a person-centered care paradigm into daily clinical practice.

Key points from the review are:

- Hearing loss is linked to various adverse health conditions, including, but not limited to, poorer cardiometabolic health profiles and a heightened risk of falling; plus, it serves as a potentially modifiable risk factor for dementia.

- Health promoting activities, such as individuals adopting healthier behaviors or societies developing public health interventions, may play a pivotal role in fostering positive hearing health and mitigating the adverse effects of hearing loss and its co-morbidities.

In pursuit of the goal of delivering comprehensive, person-centered care to older adults, the review authors advocate for audiologists, and other hearing healthcare professionals, to collaborate within an inter-professional team.

Read the full review.



RESEARCH

Do eyes and ears collaborate?

What if our ears could detect the movement of our eyes? It may sound peculiar, but this discovery could significantly contribute to the development of future clinical hearing tests. Although we are unaware of it, our eyes emit sounds when they move. Thanks to these subtle 'eye sounds,' we can more accurately pinpoint the location of objects and sounds.

The collaboration between our ears and eyes may align visual and acoustic information, thereby enhancing perception. These hypotheses were recently published by a research team from Duke University², who combined

eye-tracking technology with microphones placed in the ear. Although the precise origin of these 'eye noises' remains elusive, researchers are hopeful that this approach could advance the diagnosis of hearing disorders.

Learn more.





Artificial Intelligence and hearing: enhancing the human experiences

In line with many industries, R&D teams in the hearing industry have been exploring ways to leverage Artificial Intelligence (AI) for better outcomes for hearing aid users. One of the most promising approaches is the utilization of Deep Neural Networks (DNNs), a class of machine learning models inspired by the intricacies of the human brain. It is deep in the sense that it consists of sequential layers of computation, allowing for the performance of very complex tasks.

DNN models have sparked optimism within the hearing industry, offering a potential solution to one of the most significant challenges faced by hearing aids users today:

effortless communication in noisy situations. By training hearing aids with human data, DNNs can deliver the closest human experience in such situations³.

While existing machine learning approaches target aspects like attenuation of specific frequencies in specific conditions, DNNs allow replication of the hearing experience of individuals with normal hearing, distinguishing between voices and background noise to provide users with a more seamless and immersive auditory experience.

Stay tuned!

GUIDELINES



Social-emotional well-being: a five-step plan for clinical practice

The connection between hearing well and feeling well has been the subject of numerous research projects in recent years. The way we socialize and communicate is very strongly linked to our hearing ability. Individuals with hearing loss often find themselves avoiding or withdrawing from social situations for various reasons: feelings of shame, frustration, or fatigue, are some examples.⁴ This can lead to isolation and loneliness⁵⁶ which may negatively impact well-being and even life expectancy⁷.

Considering the vital role that hearing care professionals play in enhancing the social-emotional well-being of their patients, a team of scientists led by Barbra Timmer from the University of Queensland Australia has devised a five-step guide⁸ for implementation in clinical practice. In a recent episode of "The Audiologist", a podcast by Phonak, Barbra Timmer introduces these recommendations and shares tips for quick wins when getting started.

Listen
in.



Managing tinnitus in individuals with severe to profound hearing loss

Tinnitus and hearing loss are strongly connected, although the severity of hearing loss does not correlate with the severity of tinnitus.⁹ Whilst there is a broad understanding of managing tinnitus in individuals with mild- to-moderate hearing loss, these management strategies are sometimes insufficient to address the specific and complex listening needs of adults with severe to profound hearing loss (SPHL).¹⁰

After excluding underlying medical conditions and conducting a thorough case history, the first step in managing tinnitus for adults with SPHL is the fitting of hearing aids or cochlear implants. These devices may also include technology for masking tinnitus sounds.¹⁰

For those experiencing bothersome tinnitus, advanced counseling methods, such as Cognitive Behavioral Therapy (CBT) may provide further relief.⁹¹¹ CBT can help modify dysfunctional behaviors associated with tinnitus, thereby alleviating tinnitus-related symptoms like sleep disorders.

Learn
more.





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¹David W Maidment, Margaret I Wallhagen, Kathryn Dowd, Paul Mick, Erin Piker, Christopher Spankovich, Emily Urry (2023). New horizons in holistic, person-centred health promotion for hearing healthcare, *Age and Ageing*, 52 (2). <https://doi.org/10.1093/ageing/afad020> ²Stephanie N. Lovich, Cynthia D. King, David L. K., Rachel E. Landrum, Christopher A. Shera Jennifer M. Groh (2023). Parametric information about eye movements is sent to the ears. <https://doi.org/10.1073/pnas.2303562120> ³Peter Udo Diehl, Yosef Singer, Hannes Zilly, Uwe Schönfeld, Paul Meyer-Rachner, Mark Berry, Henning Sprekeler, Elias Sprengel, Annett Pudszuhn, Veit M. Hofmann (2022). Restoring speech intelligibility for hearing aid users with deep learning. *CoRR abs/2206.11567* ⁴WHO (2021). *World Report on Hearing*. Geneva ⁵Shukla, A., Harper, M., Pedersen, E., Goman, A., Suen, J. J., Price, C., Applebaum, J., Hoyer, M., Lin, F. R., & Reed, N. S. (2020). Hearing Loss, Loneliness, and Social Isolation: A Systematic Review. *Otolaryngology--head and neck surgery: official journal of American Academy of Otolaryngology-Head and Neck Surgery*, 162(5), 622-633. <https://doi.org/10.1177/0194599820910377> ⁶Bott, A., & Saunders, G. (2021). A scoping review of studies investigating hearing loss, social isolation and/or loneliness in adults. *International Journal of Audiology*, 60(sup2), 30-46. <https://doi.org/10.1080/14992027.2021.1915506> ⁷Choi, J. S., Adams, M. E., Crimmins, E. M., Lin, F. R., & Ailshire, J. A. (2024). Association between hearing aid use and mortality in adults with hearing loss in the USA: a mortality follow-up study of a cross-sectional cohort. *The Lancet. Healthy longevity*, 5(1), e66-e75. [https://doi.org/10.1016/S2666-7568\(23\)00232-5](https://doi.org/10.1016/S2666-7568(23)00232-5) ⁸Timmer, B. H. B., Bennett, R. J., Montano, J., Hickson, L., Weinstein, B., Wild, J., Ferguson, M., Holman, J. A., LeBeau, V., & Dyre, L. (2023). Social-emotional well-being and adult hearing loss: clinical recommendations. *International journal of audiology*, 1-12. Advance online publication. <https://doi.org/10.1080/14992027.2023.2190864> ⁹Cima, R.F.F., Mazurek, B., Haider, H., Kikidis, D., Lapira, A., Noreña, A., & Hoare, D.J. (2019). A multidisciplinary European guideline for tinnitus: diagnostics, assessment, and treatment. *HNO*, 67(1), 10-42. <https://doi.org/10.1007/s00106-019-0633-7> ¹⁰Turton, L., Souza, P., Thibodeau, L., Hickson, L., Gifford, R., Bird, J., Stropahl, M., Gailey, L., Fulton, B., Scarinci, N., Ekberg, K., & Timmer, B. (2020). Guidelines for best practice in the audiological management of adults with severe and profound hearing loss. *Seminars in Hearing*, 41(03), 141-246. <https://doi.org/10.1055/s-0040-1714744> ¹¹Tunkel, D. E., Bauer, C. A., Sun, G. H., Rosenfeld, R. M., Chandrasekhar, S. S., Cunningham Jr, E. R., Archer, S. M., Blakley, B. W., Carter, J. M., Granieri, E. C., Henry, J. A., Hollingsworth, D., Khan, F. A., Mitchell, S., Monfared, A., Newman, C. W., Omole, F. S., Phillips, C. D., Robinson, S. K., . . . Whamond, E. J. (2014). Clinical practice guideline: Tinnitus. *Otolaryngology-Head and Neck Surgery*, 151(2_suppl), S1-S40. <https://doi.org/10.1177/0194599814545325>