

July 2024

NeuroAudiology Newsletter

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New Outlooks Coming Through!

AUDIOLOGY TRIVIA

ANSWERS ON LAST PAGE

1) According to ASHA annual survey, the annual median salary for full time audiologists in the US (2023) was what?

a) \$67,590, b) \$78,950, c) \$84,880, d) \$91,000

2) A recent report of “Typical Range of Common Sounds” reported human snoring levels in dB SPL(A) in which of the following ranges?

a) 35-55, b) 40-81, c) 45-94, d) 50-101

3) The site of the first AAA annual meet was held where?

a) Key West, b) Houston, c) Kiawah Island, d) Miami

Welcome new contributing authors!

Welcome to Bill Keith, Ph.D., (pictured left below) Julianne Ceruti, AuD, Ph.D. (pictured right below) and Katie McLaren, B.A. as contributing authors to the CAPD/NeuroAudiology Newsletter. This is in addition to our other contributing author, Amy Bradbury, AuD! Dr. Keith is the founder of the specialist auditory processing clinic, SoundSkills; lead author of the New Zealand Guidelines on Auditory Processing Disorder; and a top notch APD researcher at the University of Auckland. Dr. Keith will serve as “Contributor at Large” and provide news on audiology in general, and generate comments on new research in our and related fields.



New Contributing Authors Cont.

Julianne is an experienced research and clinical audiologist specializing in hearing conservation, auditory processing, and NeuroAudiology. She serves as an Educational Audiologist at CREC Soundbridge and a Military Audiologist with the U.S. Army Reserve. Dr. Ceruti will generate and relay information to our “clinical corner” with insight on higher auditory processing and related disorders. Katie, an AuD student minoring in Neuroscience at the University of Arizona, will provide information on issues confronting students in today’s educational setting. We look forward to the new additions and insights these knowledgeable people will bring to the newsletter!

Upcoming Meetings

World Congress of Audiology, 2024

- September 19-22; Paris

Special Section: Hearing and Neurodevelopmental Disorders

- *Saturday September 21. 8:30-10am*

Chairperson: Professor Hung Thai Van

Speaker line up:

- Professor Frank Musiek, (keynote address)—Neuro-morphological Aspects of Auditory Processing in Neurodevelopmental Disorders
- Professor Hung Thai Van—Dichotic Testing in Dyslexia
- Professor Helen Grech—The Association of Developmental Language Disorder and Auditory Function
- Professor Doris-Eva Bamiou—Navigating Hearing Assessment in Autistic Children Beyond the Audiogram: From Science to Clinical Practice
- Professor Vasiliki Maria Iliadou—Hearing in Schizophrenia: What are we missing?



Auditory Processing Definition Disorder: What is your opinion?

Bill Keith

At the 2023 University of Saskatchewan International Virtual Conference on Auditory Processing Disorder, Wayne Wilson from the University of Queensland and I presented talks covering aspects of terminology in the auditory processing field. We conducted an informal live poll afterwards on topics we had discussed. Only a portion of attendees participated and, given that the poll followed straight on from our presentations, the exercise was far from unbiased. Nonetheless the results are interesting. Check your own opinion against the opinions of this group. Scores shown are numbers of votes.

Prompt	Agree	Disagree	Un-decided	Total
A spectrum or range of terminologies for CAPD is a good idea.	30	3	13	46
There is a place for the term 'disorder' in auditory processing deficit terminology.	26	7	15	48
I prefer 'listening difficulties' as an overarching term of central auditory processing deficits.	4	38	6	48
CAPD is more appropriate than simply APD.	10	16	21	47
If there are AP deficits <u>secondary</u> to a comorbidity as in ASD/head injury/developmental delay, it is acceptable to use the term CAPD.	14	22	8	44
If there are AP deficits that may underlie a comorbidity, as in dyslexia, it is acceptable to use the term CAPD.	29	8	10	47
It is acceptable to describe people with CAPD and a normal audiogram as having 'normal hearing'.	1	35	3	39

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To finish, we added a bonus question, not on terminology. This prompt was included because I seem to keep reading opinions that difficulty hearing speech in noise is the key marker of APD. I was reassured to see that the majority of respondents share my clinic's experience that oral comprehension difficulty, even in quiet, is the most frequently reported symptom in children with APD.

Summary: There was good agreement that a spectrum of terminologies is a good idea. Although we may not choose to use it all the time, we don't want to completely discard the 'disorder' label. 'Listening difficulties' was roundly rejected. We remain undecided as ever if CAPD is more appropriate than APD. Surprisingly 32% agreed that CAPD is still acceptable when AP deficits are secondary. I suspect paediatricians would contend that ASD, for example, is a singular disorder, not a cluster of individual disorders affecting faculties such as socialisation, language, sensory sensitivities, and visual and auditory processing. Most agree that using 'normal hearing' is not okay for this population.

Prompt	Noise	Comprehension	Other	Total
The most common complaint in children with CAPD is: <ul style="list-style-type: none">• Difficulty Hearing in Noise• Oral Comprehension, even in quiet, (e.g., in comprehending instructions)• Other	13	28	3	44

Let's hear from you now! Below is a link to this survey for our CAPD/NeuroAudiology Newsletter readership to weigh in on these important questions on auditory processing.

<https://www.surveymonkey.com/r/KHS2DGQ>



NeuroAudiology/CAPD Corner



Topic: The “Multiplicative Distortion” Principle

In 2016, Steve Bornstein wrote an informative article on “Soundfield systems for children with CAPD.” A key part of that article was information on the concept of multiplicative distortion (MD). The idea of MD was championed, if not originated, by J.D. Harris. Harris proposed that the combinations of distortions (usually of a speech signal) was not a simple additive action but rather, the effect was greater than additive. Some interesting experiments by Harris and later by Lacroix and colleagues supported the MD concept. In one study, filtered speech and interrupted speech were employed as distortions for a large group of normal hearing listeners. The group’s average performance for speech in quiet was 100%. When the speech was filtered, average scores decreased to 88% and for interrupted speech, to 93%; a 12 and 7% decrease. When speech was both filtered and interrupted one would expect scores to decline to 81% based on the additive theory. This, however, was not the case, as scores actually plummeted to 64%! Therefore, the principle of MD was supported in this experiment as well as other similar studies.

What implications does the MD principle have to CAPD? There are two that will be discussed here. One is that it is diagnostically useful. Multiplicative distortion tests such as compressed speech with reverberation is an example of two distortions within one test that is commonly used on central auditory evaluations and also represents an everyday practical listening situation. The second clinical implication is that an MD listening situation such as high ambient noise level and high reverberation in a classroom is one that is highly problematic and must be recognized and managed. The effect of MD in the classroom is one that can be devastating to all children but more so to those with CAPD. Awareness and action on these two applications of MD will enhance the diagnostics and management for our patients with CAPD.

CAPD Corner Suggested Reading

- Bornstein, S. (Sep 2016) A Rationale for the Use of Sound Field Systems for Children with Central Auditory Nervous System Dysfunction: Part 1. *Hearing Health and Technology Matters: Pathways*.
- Harris, J. D. (1960). Combinations of Distortion in Speech: The Twenty-Five Per Cent Safety Factor by Multiple-Cueing. *Archives of Otolaryngology*, 72(2), 227-232.
- Lacroix, P. G., & Harris, J. D. (1979). Effects of high-frequency cue reduction on the comprehension of distorted speech. *Journal of Speech and Hearing Disorders*, 44(2), 236-246.

The Learning Corner

The learning corner will offer citations of articles both old and new that may contribute to one's knowledge base for CAPD/NeuroAudiology.

- Karlsson, E. M., Hugdahl, K., Hirnstein, M., & Carey, D. P. (2023). Analysis of distributions reveals real differences on dichotic listening scores between left-and right-handers. *Cerebral Cortex Communications*, 4(2), 1-8.
- Westerhausen, R. (2024). Dichotic listening and interhemispheric integration after callosotomy: A systematic review. *Brain Research*, 148965, 1-13.
- Bamiau, D. E., Musiek, F. E., & Luxon, L. M. (2001). Aetiology and clinical presentations of auditory processing disorders—a review. *Archives of Disease in Childhood*, 85(5), 361-365.

AUDIOLOGY

1) The median salary for full time audiologists was (d) \$91,000.

TRIVIA

2) The typical range of human snoring was (b) 40-81 dB SPL (A)!

ANSWERS

3) The first AAA meeting was held in (c) Kiawah Island.

PAST NEWSLETTERS: Past newsletters can be found at:

hearinghealthmatters.org/category/pathways-society/