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# NEUROAUDIOLOGY NEWSLETTER

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## Quest for the Best in CAPD and NeuroAudiology: A Clinical Journey through APD, Past Present and Future

There was another excellent turnout for the 3<sup>rd</sup> annual Quest for the Best in CAPD and NeuroAudiology on March 28. The mini symposium focused on four major segments of information on CAPD (APD) and NeuroAudiology. In the first segment, Frank Musiek presented a historical and current review of the application of dichotic listening, pattern perception and gap detection procedures. Emphasized was the need to increase the education for audiologists not involved in CAPD/NeuroAudiology, and related professions such as neurology, neurosurgery, psychiatry and psychology.

Jay Hall, the next speaker, discussed the use of electrophysiologic procedures in the evaluation of those with APD. He emphasized the objectivity of these measures in the diagnosis of APD. In addition, he stressed the importance of carefully evaluating the peripheral hearing system prior to assessment of the central auditory system using tympanometry, the acoustic reflex, and otoacoustic emissions.

Bill Keith followed Dr. Hall with a nice, systematic review of intervention techniques for managing those with APD. He focused on three treatment areas: auditory training, amplification, and support therapies such as speech and language protocols. Dr. Keith also discussed a rather unique approach to management --- the use of audio books. He also discussed how amplification and auditory training would likely result in positive plasticity changes in the central auditory system.

## Audiology Trivia

1. The first papers on dichotic listening were published in the same year by Donald Broadbent and Paul Ptacek. What was that year?

a) 1949, b) 1954, c) 1959, d) 1964

2. Chasin (2026) reported that musicians' earplugs have been available since a key article published in 1988.

Who authored that?  
a) Staab, b) Killion, c) Ward, d) Rintelmann

3. The cochlear nucleus is located where?

a) lateral to 4<sup>th</sup> ventricle, b) lateral to the inferior colliculus, c) in the midbrain, d) in the medulla



## Quest for the Best in CAPD and NeuroAudiology: A Clinical Journey through APD, Past Present and Future

The final segment of the day was case studies, this popular topic was directed by Jennifer Shinn. Both learning and neurologically based cases were presented to the faculty and attendees. These cases triggered a most informative interaction for diagnosis and intervention aspects of APD among all participants.

Jenn Shinn closed the program thanking the attendees and the top notch technical and organizational help from Bryan Wong and Katie McLaren for making this a successful mini symposium.

## A Look at Misophonia and Auditory Processing: Does Misophonia Affect Spatial Hearing? A Study Using Closed-Field Assessment Tools

AUTHORS: URMI ROY, PRASHANTH PRABHU, KAVASSERY VENKATESWARAN NISHA  
PUBLISHED MARCH 2026 IN THE AMERICAN JOURNAL OF AUDIOLOGY  
PERSPECTIVE BY AMY BRADBURY

A recent study completed in India compared spatial hearing in individuals with misophonia by examining binaural interaction skills: interaural time difference (ITD) and interaural level difference (ILD) thresholds, and Virtual Acoustic Spatial Identification (VASI) scores, and potential correlations between these thresholds and the Amsterdam Misophonia Questionnaire (A-MISO-S). The results of the study showed that individuals with misophonia exhibited auditory spatial processing deficits, during binaural temporal processing (ITD) and VASI tasks, and when the sound sources are in the frontal plane away from the midline (R45 and L45). In contrast, ILD tasks remained unaffected, suggesting that interaural intensity coding mechanisms are preserved in the misophonic population. This finding may be considered secondary to diminished cognitive resources in complex spatial tasks and altered binaural processing in misophonics. It showed that future research should focus on a broader range of misophonia severity and should highlight the importance of targeted interventions supporting the misophonic population, specifically on improving attentional dysregulation and sustained auditory attention as well as cognitive behavioral therapy. This study was conducted with females and males ranging from 18-30. It could be of interest to consider looking at pediatric and elderly misophonic populations, particularly for pediatrics who spend a lot of their day in complex and noisy listening conditions in the educational setting. Based on these findings, it would be beneficial to include specific misophonia screening questions in the general case history for pediatric and adult patients, followed by a detailed questionnaire if screening questions show a risk for misophonia. Including, a listening fatigue and perceived listening difficulty questionnaire could further support a better understanding of the patient's functional deficits to support development of targeted intervention(s).



## NeuroAudiology/CAPD Corner

TOPIC: AUDITORY PROCESSING AND THE INSULA  
AUTHOR: FRANK MUSIEK, PHD



### Introduction

In recent history, there have been a number of articles, though scattered, that have implicated an auditory role for the insula. Recently, however, it has become apparent that there has been very little uptake in the awareness & understanding of the important role of the insula in auditory processing and by extension APD. Therefore, a brief commentary of some key articles seemed to be worthwhile for our readers.

### Background

In review (Musiek, 2017, Bamiou et al. 2003), the insula also known as the “Island of Reil” is located immediately medial to the temporal lobe. If one was to remove or “pull down” the temporal lobe the insula would be obvious. For many years, the functions of the insula were somewhat of a mystery though some did consider multiple, low level functions were possible. Later, multiple sensory/emotional processing was often alluded to in early research. One of the first insights of auditory function related to the insula was offered in the late 1950s by the noted neuroanatomist Clinton Woolsey. Woolsey showed definite tonotopic organization of the insula of the cat. Subsequent to Woolsey’s research a key study came out of NIH in animals that also implicated the insula as an auditory processor and if damaged some aspects of hearing would be compromised (Sudakov et al., 1971). A major break-through on insular function came a few years later in an animal study by Collavita and colleagues (1974). These researchers showed that, if the insula was ablated, auditory pattern recognition could no longer be accomplished. Therefore, complex auditory processing ability was lost. Over the next few decades, periodically case studies as well as other more extensive studies were published implicating the insula in auditory function/dysfunction. These studies were important but were scattered across various journals from labs with varied interests. The result was little uptake in clinical community of the role of the insula in hearing. In 2003 and 2006 two major publications by Bamiou and colleagues helped substantiate the insula as key player in higher auditory processing. The trend of this research was that if the insula was damaged, temporal processing suffered. This seemed to occur for most individuals who had insular compromise.

Specifically, Bamiou and colleagues (2006) showed that gaps in noise (GIN) and Frequency pattern perception were degraded in persons with damage to the insula. These findings bolstered our understanding of the role of the insula in hearing and added significance to previous reports that also that the insula was important in auditory processing.



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More recently and in a broader sense, Xu and colleagues (2019) demonstrated that sensorineural hearing loss affected the insula. One of the key findings in the Xu study was decrease functional connectivity (fc) within the insula was linked to SNHL. This means that those with SNHL were likely providing less auditory input to the insula. Also, that the insula is directly affected by peripheral alterations (i.e., hearing loss) and that subsequent connectivity in the insula to other areas of the brain were also decreased. This study provided direct evidence of auditory interactions of the insula at the most basic level. The decreased auditory connectivity to and from the insula argues strongly for compromise of high auditory functions like those reported previously by Bamiou and associates.

### Summary

Though there remains a paucity of clinical and basic research on auditory functions and the insula, it cannot be denied that his structure plays a critical role in auditory processing and basic auditory functions. This should be kept in mind as clinicians apply their knowledge to help those patients with neuroauditory dysfunction and auditory processing problems.

## NeuroAudiology/CAPD Corner References

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## Publications on Auditory Processing To Check out

Three recently published articles on auditory processing and the population of those with normal audiometric thresholds are worth bringing attention to.

J Am Acad Audiol 00:1–16 (2026)

### Case Report

#### Management of Functional Hearing Difficulties Using Low-Gain Amplification: Case Reports on Auditory Processing Evaluations

DOI: 10.3766/jaaa.250023

Alyssa J. Davidson, AuD, PhD\*  
Rebecca Bieber, AuD, PhD\*†  
Kimberly Jenkins, AuD\*

Three case reports are published here that highlight different patient experiences and how low gain hearing aids were determined to be an effective treatment option. Hearing aid settings are included in this publication.

In this Ear and Hearing paper, temporary changes in hearing thresholds in humans suggest hearing damage (consistent with animal models). This auditory damage can be detected with a binaural processing task: the tone-in-noise detection NoSpi.

#### Impaired Tone-in-Noise Detection in Individuals Who Report Temporary Hearing Symptoms After Noise Exposure

Douglas S. Brungart, Gregory M. Ellis, Daniel E. Shub, and Alyssa J. Davidson

A questionnaire cutoff was established here to identify those with normal hearing thresholds and no history of noise exposure and abnormal hearing difficulties.

Journal of the Association for Research in Otolaryngology  
<https://doi.org/10.1007/s10162-025-01016-w>

#### BRIEF REPORTS

#### Clinical Norms for Evaluating Hearing Difficulty in Patients with “Normal” Hearing Thresholds

Gregory M. Ellis<sup>1,2</sup> · Alyssa Davidson<sup>1</sup> · Douglas S. Brungart<sup>1</sup>

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## Upcoming Conferences

### American Academy of Audiology

April 22-25, 2026, San Antonio, TX

### Acoustical Society of America

May 11-15, 2026, Philadelphia, PA

### International Hearing Aid Research Conference

August 5-9, 2026



## Auditory Processing Bootcamp

Join Drs. Jennifer Shinn, Frank Musiek, and Trey Cline to advance your knowledge and skills evaluating and testing auditory processing!

October 22-25, 2026 at the University of Kentucky, Department of Otolaryngology

--Interactive Lectures

--Hands-on-Training

--Small Group Setting: limited spaces available

Registration Opens July 15

Contact: [Jennifer.Shinn@uky.edu](mailto:Jennifer.Shinn@uky.edu)

## Learning Corner

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

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- Prakash, P., Carvalho, S., Prabhudessai, S., & Rathod, S. (2026). Auditory brainstem response anomalies despite normal hearing in a child with Down syndrome: case-based insight. *The Egyptian Journal of Otolaryngology*, 42(1), 21.
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## Trivia Answers

1. (B) Dichotic listening papers published in 1954.
2. (B) Mead Killion wrote the article on musicians' earplugs.
3. (A) The cochlear nucleus is located lateral to the 4th ventricle.