An Evidence-Based Approach to APD

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WHAT IS EVIDENCE-BASED?

1. APD is a **well-established complex disorder of the auditory system (beyond the cochlea)**.

2. APD **test battery gold standard and norms with documented sensitivity and specificity for CANS lesions**

**ICD-10 & 11 BETA VERSION**
- ASHA 2005
- INTERNATIONAL BUREAU FOR AUDIOPHONOLIGIE 2007
- AAA 2010
- CANADIAN AUDIOLOGY 2012
- DANISH MEDICAL AUDIOLOGICAL SOCIETY 2014
- NEW ZEALAND REPORT 2014
- GERMAN SOCIETY OF PAEDIATRIC AUDIOLOGY 2015, 2019
APD IS A WELL ESTABLISHED DISORDER

TEST BATTERY GOLD STANDARD

EUROPEAN CONSENSUS 2017

HTTPS://DOI.ORG/10.3389/FNEUR.2017.00622
## Diagnostic Criteria for APD

### Criterion

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<tr>
<th>Pure Tone Audiometry</th>
<th>Explained</th>
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<td>≤15dB HL for each frequency between 250Hz-8000Hz in both ears</td>
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<th>Abnormal auditory processing results</th>
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<td>performance at or below 2 SD below the mean in at least 2 validated auditory processing tests</td>
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<th>Symptoms &amp; risk factors</th>
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<td>Reported by the affected individual/their family/educational environment AND/OR presence of risk factors</td>
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<th>Non-Verbal intelligence coefficient (IQ)</th>
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<td>&gt;80</td>
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<th>Ability to follow instructions in ideal conditions</th>
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<td>Patient can understand and reliably follow instructions for the AP tests and reliably perform the pre-testing training</td>
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BEST RESEARCH AVAILABLE

Filtered info
Pre-appraised!
Still needs vetting!!

Unfiltered info
You have to appraise!
Not for rookies!!

Hearing is more than we are currently testing

Emergence of an auditory deficit is essential

Tests of attention & memory are often implemented through the auditory modality

Interaction with HS & AP

PTA not enough

Hearing Sensitivity (HS)

Auditory Processing (AP)

Cognition

Language

Thought Process

Higher order cognition
Neuroplasticity-based auditory training via laptop computer improves cognition in young individuals with recent onset schizophrenia

Melissa Fisher, Rachel Loewy, Cameron Carter, Ashley Lee, J. Daniel Ragland, Tara Niendam, Danielle Schlosser, Lien Pham, Tara Miskovich, Sophia Vinogradov

Published: 20 January 2014

Neuroscience-informed auditory training in schizophrenia: A final report of the effects on cognition and serum brain-derived neurotrophic factor

Melissa Fisher, S. Mellon, +1 author Sophia Vinogradov

Published 2016 in Schizophrenia Research: Cognition • DOI: 10.1016/j.scog.2015.10.006

OBJECTIVE
We previously reported the interim effects in a per protocol analysis of a randomized controlled trial of an innovative neuroscience-informed computerized cognitive training approach in schizophrenia. Here we report the effects of training on behavioral outcome measures in our final sample using an intent-to-treat analysis. We also report the effects on serum brain-derived neurotrophic factor (BDNF).
SUPPRESSION IS INFLUENCED BY THE TIME WINDOW ANALYSED, EAR TESTED

52 APD children
Abnormal SinB:Cutoff 1.33dB

Otoacoustic emission suppression in children diagnosed with central auditory processing disorder and speech in noise perception deficits

Vasiliki (Vivian) Iliadou, Jeffrey Weiheing, Gail D. Chermak, Doris Eva Bamiou

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[Graphs showing normal and abnormal SinB suppression over time]
Gold Standard, Evidence-Based Approach to Diagnosing APD

By Vasiliki (Vivian) Iliadou, MD, PhD; Gail D. Chermak, PhD; Doris-Eva Bamiou, MD, PhD; and Frank E. Musiek, PhD

We caution clinicians not to be tempted to adopt a diagnostic label—hidden hearing loss—for which there is limited evidence in humans and no clinically proven means of directly assessing (only inferring) the underlying cochlear synaptopathy.

From left: Dr. Iliadou is an associate professor of psychoacoustics at the Medical School Aristotle University of Thessaloniki, Greece. She initiated the European APD Study Group and studies cognition measurement and APD. Dr. Chermak is the chair of the department of speech and hearing sciences at Washington State University. She is recognized internationally for her contributions to the diagnosis and treatment of APD. Dr. Bamiou of the University College London Ear Institute has received the BAAP Pat Jobson Prize (2002), the RSM Edith Whetnall prize (2012), and the BSA Thomas Simm Littler Prize (2017) for promoting the field of APD. Dr. Musiek is a professor in the speech language and hearing department at the University of Arizona, and has made notable contributions in neuroaudiology (CAPD), functional neuroanatomy, and auditory evoked potentials.


