

Navigating auditory assessment in autistic individuals: a narrative review

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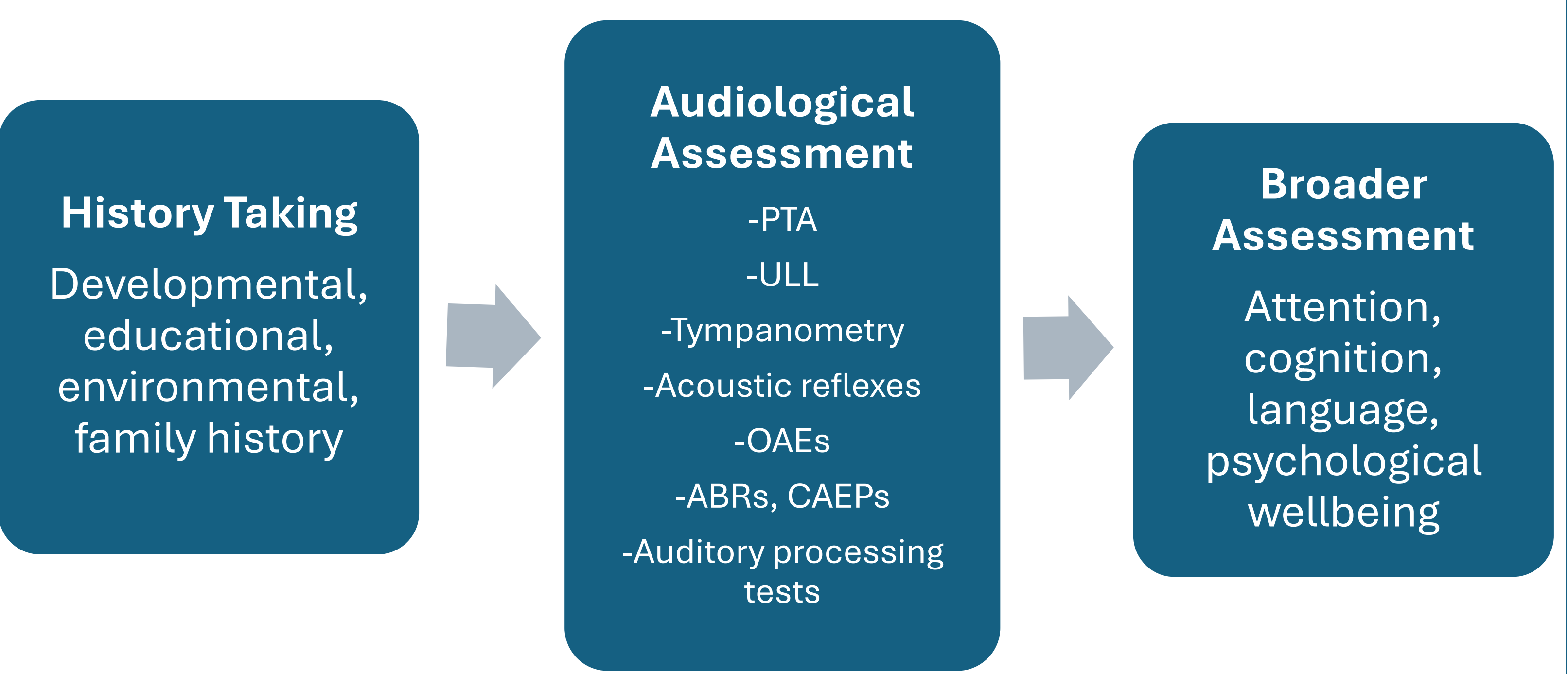


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BACKGROUND

- Abnormal sensory responses have been a diagnostic criterion for autism since DSM-5 (2013) ¹
- Auditory hypersensitivity is among the most frequently reported sensory symptoms ²
- Autistic children often present to GP, ENT, or audiology services with auditory complaints despite normal audiometry
- Auditory symptoms may precede autism diagnosis and significantly impact quality of life

RECOMMENDED CLINICAL ASSESSMENT PATHWAY



CONCEPTUAL FRAMEWORK

Auditory perception in autism reflects interactions between intrinsic neural factors and external listening demands.

Intrinsic factors:

- Central auditory nervous system connectivity
- Cognitive abilities (attention, memory, executive functions)
- Language profile and neurodevelopmental comorbidities

Extrinsic factors:

- Task complexity and predictability
- Multisensory environmental load
- Room acoustics and quality of stimulus

REFERENCES

¹ Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) American Psychiatric Association, 2013

² Williams ZJ, Suzman E, Woynaroski TG. Prevalence of Decreased Sound Tolerance (Hyperacusis) in Individuals With Autism Spectrum Disorder: A Meta-Analysis. *Ear Hear.* 2021 Sep/Oct;42(5):1137-1150.

³ Zhou D, Hua T, Tang H, Yang R, Huang L, Gong Y, Zhang L, Tang G. Gender and age-related brain structural and functional alterations in children with autism spectrum disorder. *Cereb Cortex.* 2024 Jul 3;34(7):bhae283.

⁴ Wilson KC, Kornisch M, Ikuta T. Disrupted functional connectivity of the primary auditory cortex in autism. *Psychiatry Res Neuroimaging.* 2022 Aug;324:111490. doi: 10.1016/j.psychres.2022.111490. Epub 2022 May 10. PMID: 35690016.

⁵ Boddaert N, Belin P, Chabane N, Poline JB, Barthélémy C, Mouren-Simeoni MC, Brunelle F, Samson Y, Zilbovicius M. Perception of complex sounds: abnormal pattern of cortical activation in autism. *Am J Psychiatry.* 2003 Nov;160(11):2057-60. doi: 10.1176/appi.ajp.160.11.2057. PMID: 14594758.

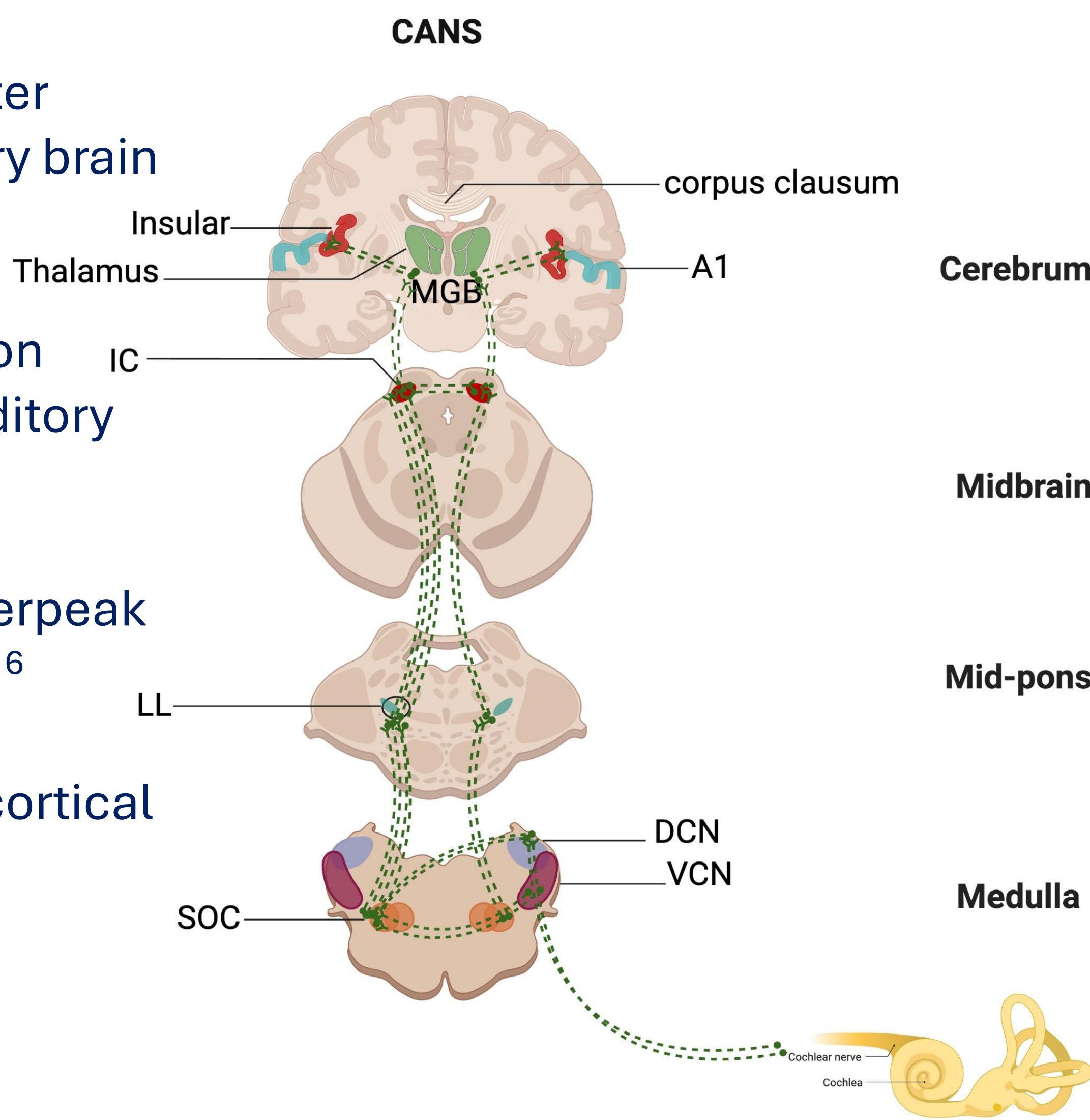
⁶ Miron O, Ari-Even Roth D, Gabis LV, Henkin Y, Shefer S, Dinstei I, Geva R. Prolonged auditory brainstem responses in infants with autism. *Autism Res.* 2016 Jun;9(6):689-95. doi: 10.1002/aur.1561. Epub 2015 Oct 19. PMID: 26477791; PMCID: PMC5057307.

⁷ Kamita MK, Silva LAF, Matas CG. Cortical auditory evoked potentials in autism spectrum disorder: a systematic review. *Codas.* 2021 May 21;33(2):e20190207. Portuguese, English. doi: 10.1590/2317-1782/20202019207. PMID: 34037100.

CENTRAL AUDITORY NERVOUS SYSTEM

Recent evidence suggests:

- Altered functional connectivity in auditory cortex ³
- Elevated grey matter volumes in auditory brain regions ⁴
- Abnormal activation patterns in the auditory cortex ⁵
- Elongated III–V interpeak latencies on ABRs ⁶
- Atypical auditory cortical responses ⁷



MANAGEMENT STRATEGIES

Environmental & technology-based:

- Remote microphone systems
- Classroom acoustic optimisation
- Noise-attenuating or noise-cancelling devices

Training:

- Targeted auditory training
- Music-based interventions
- Metacognitive listening strategies

KEY MESSAGES

- Auditory symptoms may be the presenting feature of autism, even with normal hearing.
- Normal audiograms do not exclude significant auditory difficulties, reflecting central processing differences.
- Multidisciplinary assessment is essential, with audiologists playing a key role.
- Individualised management can improve learning, social participation, and mental health outcomes.

USEFUL INFORMATION



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