

Auditory Processing Disorders (APD): A distinct **clinical** disorder or not?



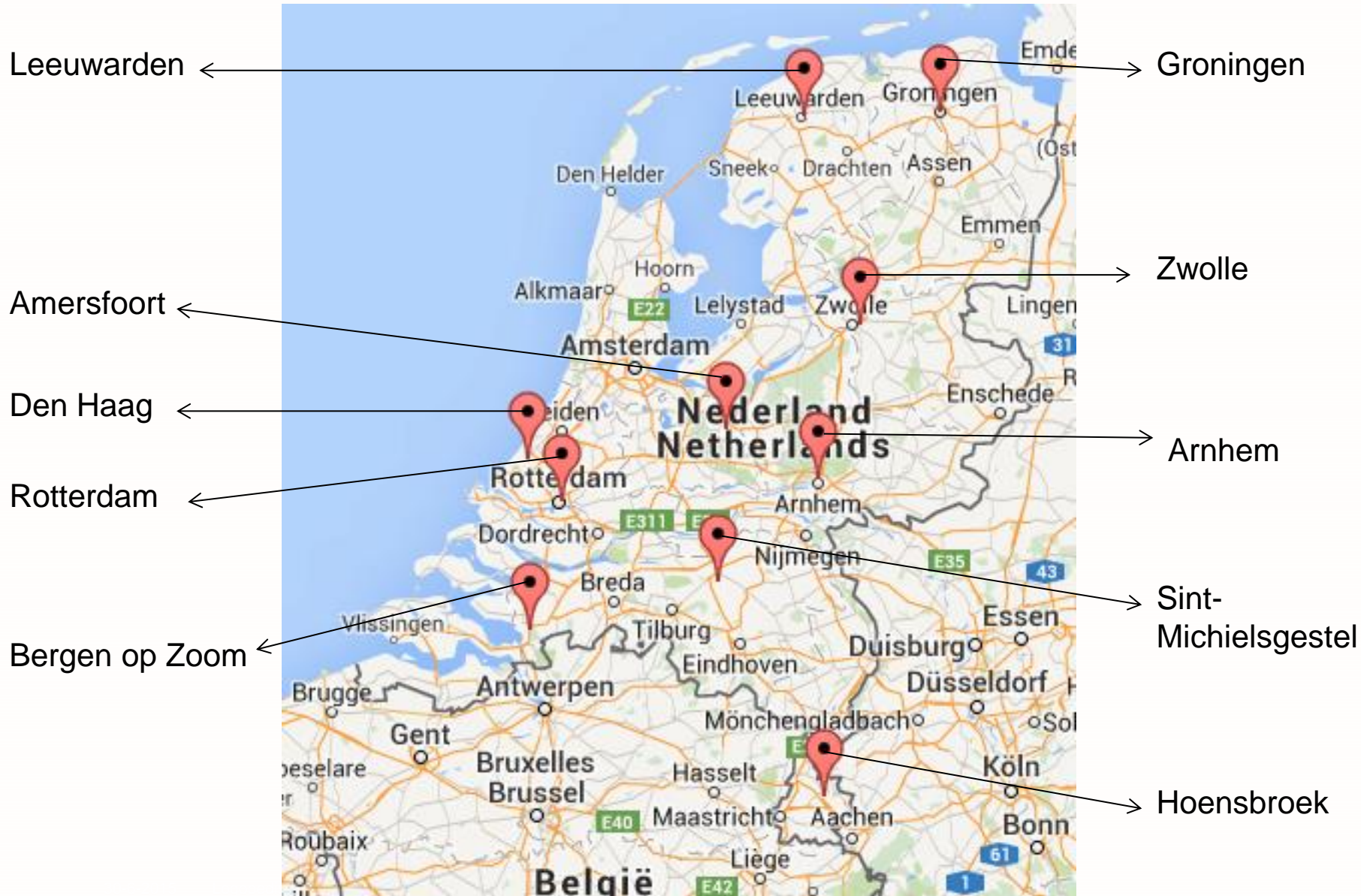
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Diagnostic procedures of **APD** in the Netherlands



Diagnostic procedures of **APD** in the Netherlands

Conclusions:

- A lot of diversity in diagnostic procedures across audiologic centers in the Netherlands.
- Doubts about validity and reliability of the APD test batteries.
- No consensus on the definition of APD.



Aim:

To describe characteristics of auditory processing disorders (APD) by evaluating the literature in which children with suspected or diagnosed APD were compared with typically developing children.

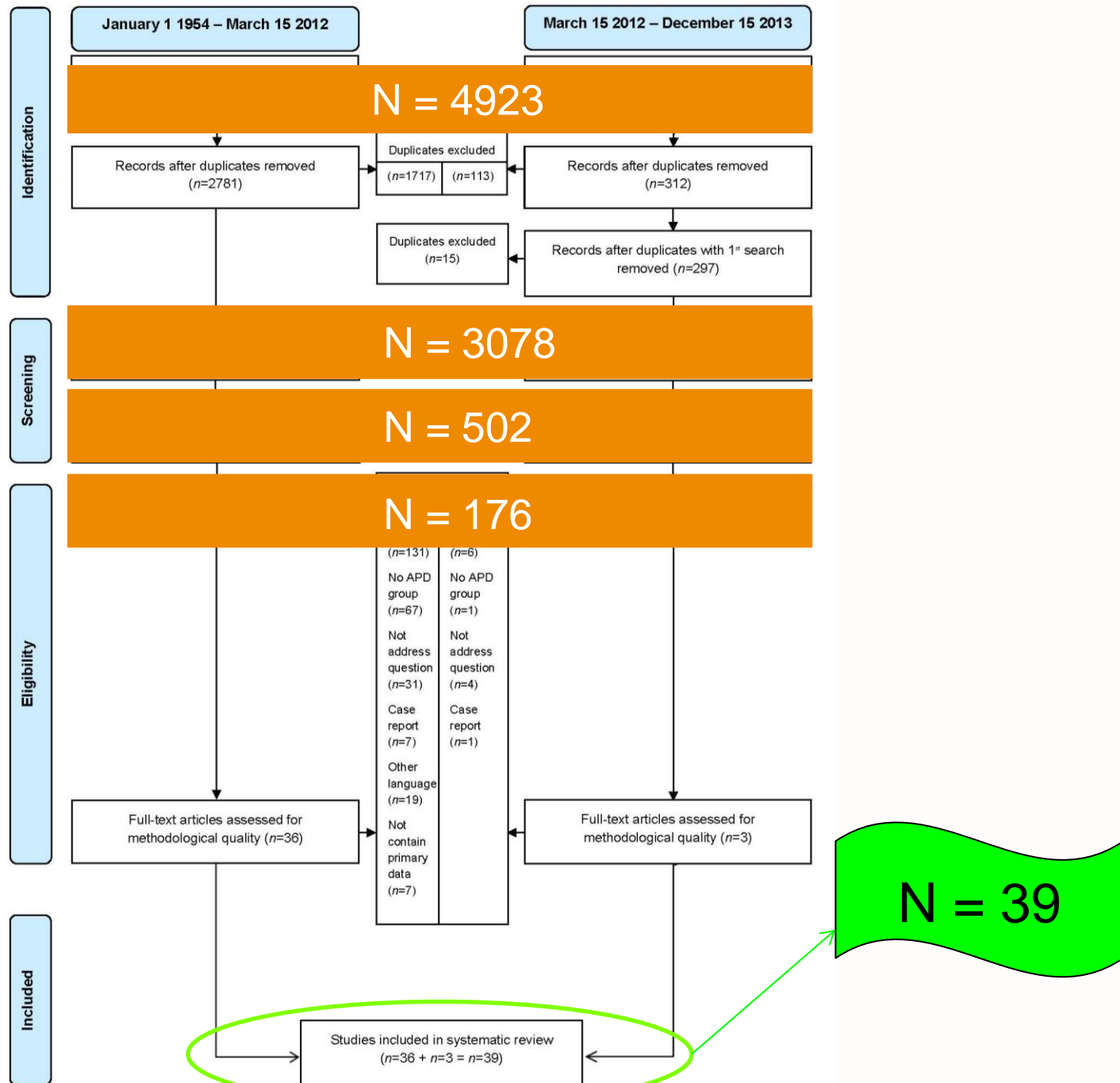
Central question:

Are the listening difficulties of children with (suspected) APD due to a specific auditory deficit, or to a multimodal deficit?

→ Pubmed, CINAHL, ERIC, PsychINFO, Communication & Mass Media Complete & EMBASE

- Studies published from 1954 up to 15 December 2013
- Peer-reviewed journals
- English
- < 18 with diagnosis of APD or suspected APD compared to the performance of typically developing children







Methodological quality

Weak intern validity: 0 – 1 points

Moderate intern validity: 2 – 4 points

Strong intern validity: 5 – 7 points

ASHA's levels-of-evidence (ASHA's LOE) scheme (Mullen, 2007)

✗	✓	Study Design
✗	✓	Assessor Blinded
✗	✓	Random Sample
✗	✓	Groups/Participants Comparable
✗	✓	Valid Primary Outcome Measure(s)
✗	✓	Significance Reported or Calculable
✗	✓	Precision Reported or Calculable
0 points	7 points	



Weak intern validity: 0 – 1 points

N = 4

Moderate intern validity: 2 – 4 points

N = 34

Strong intern validity: 5 – 7 points

N = 1

Case-control or cross-sectional

Cross-sectional

Study Design

2 x



Assessor Blinded



Random Sample

3 x



Groups/Participants Comparable

21 x



Valid Primary Outcome Measure(s)

34 x



Significance Reported or Calculable

33 x

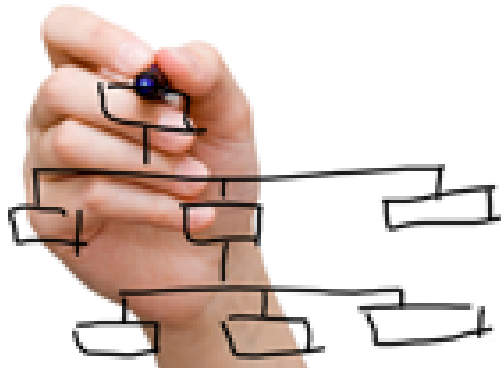


Precision Reported or Calculable

Significant group differences between children with (suspected) APD and typically developing children.

Type of measurements used:

- Questionnaires & Checklists;
- Auditory and visual behavioural tests;
- Cognitive, language, and reading behavioural tests;
- Brain measurements.



Questionnaires & Checklists

7 studies

All reported significantly less adequate performances in children with APD.

- CHAPPS (Smoski et al., 1998): poorest scores on the subscales 'noise', 'memory' and 'attention'.
- Children's Communication Checklist -2 (CCC-2; Bishop 2003): poorer General Communication Composite (GCC) scores and all individual CCC-2 scale scores.
- Observational Rating Scale from the CELF-4 (Semel et al., 2003): poorer listening skills

Auditory and visual behavioural tests

17 studies

Sixteen of the 17 studies found significantly lower scores in children with APD.

- All studies used various tests to measure auditory behavior (e.g., Dichotic digits test; Duration Patterns test; Frequency Patterns test; Listening in Spatialized Noise test; Random Gap Detection test).
- Lower scores on auditory as well as on visual behavioural tests.
- The only study with strong intern validity (Moore et al., 2010): Poor performance of children on individual AP tests is related to poor speech-in-noise performance and more deficient speech-in-noise is also associated with lower cognitive scores.

Cognitive, language, and reading behavioural tests

6 studies

All found significantly lower scores in children with APD.

- Lower verbal and/or non-verbal cognitive abilities on subtests from the WISC (Wechsler, 1991; Wechsler et al., 2004).
- Lower scores on tests for language (grammar, phonology, and vocabulary) and reading.
- More inferior performance on a visual alertness task and intrinsic auditory attention measures.

Brain measures

12 studies

Ten of the 12 studies reported significantly abnormal performance in children with APD.

- 6 studies → Auditory Brainstem Responses (ABR)
- 5 studies → Otoacoustic emissions (OAE)
→ Two of the 5 reported no group differences.
- 1 study → Functional MRI (fMRI) and diffusion tensor MRI (DTI)

- Significant dissimilarities were found between typically developing children and children with (suspected) auditory processing disorders.
- The listening difficulties are not specific to the auditory modality.
- The listening difficulties may be a consequence of cognitive, language, and attention issues rather than bottom-up auditory processing.

- Distinct clinical disorder, or not?
- The listening difficulties are not specific to the auditory modality.
- Interdisciplinary perspective → auditory, cognitive, language and reading functioning.
- Lack of valid and reliable auditory processing tests.



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Thank you for your attention

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<http://avp.taalexpert.nl/onderzoek/>



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