



HEARING LOSS IN CHILDREN: Nature & Impact

DBE Workshop
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UNIVERSITEIT VAN PRETORIA
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IMPORTANCE OF HEARING

“Blindness separates people from things, deafness separates people from people”



Immanuel Kant (German philosopher)

Translated by Helen Keller (Keller, 1910)

“The problems of deafness are deeper and much more complex if not more important, than those of blindness. Deafness is a much worse misfortune, for it means the loss of the most vital stimulus – the sound of the voice that brings language, sets thought astir, and keeps us in the intellectual company of man.”

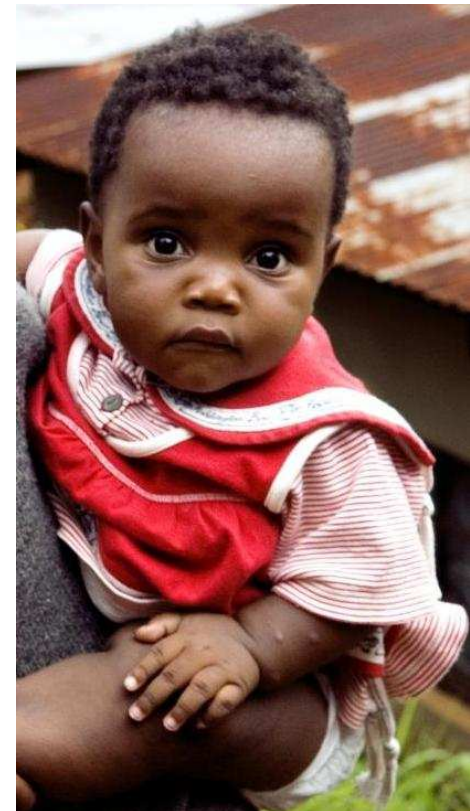


Helen Keller (Keller, 1910)

2004 - Ray Charles – blind musician leaving his fortune for the deaf

IMPORTANCE OF HEARING

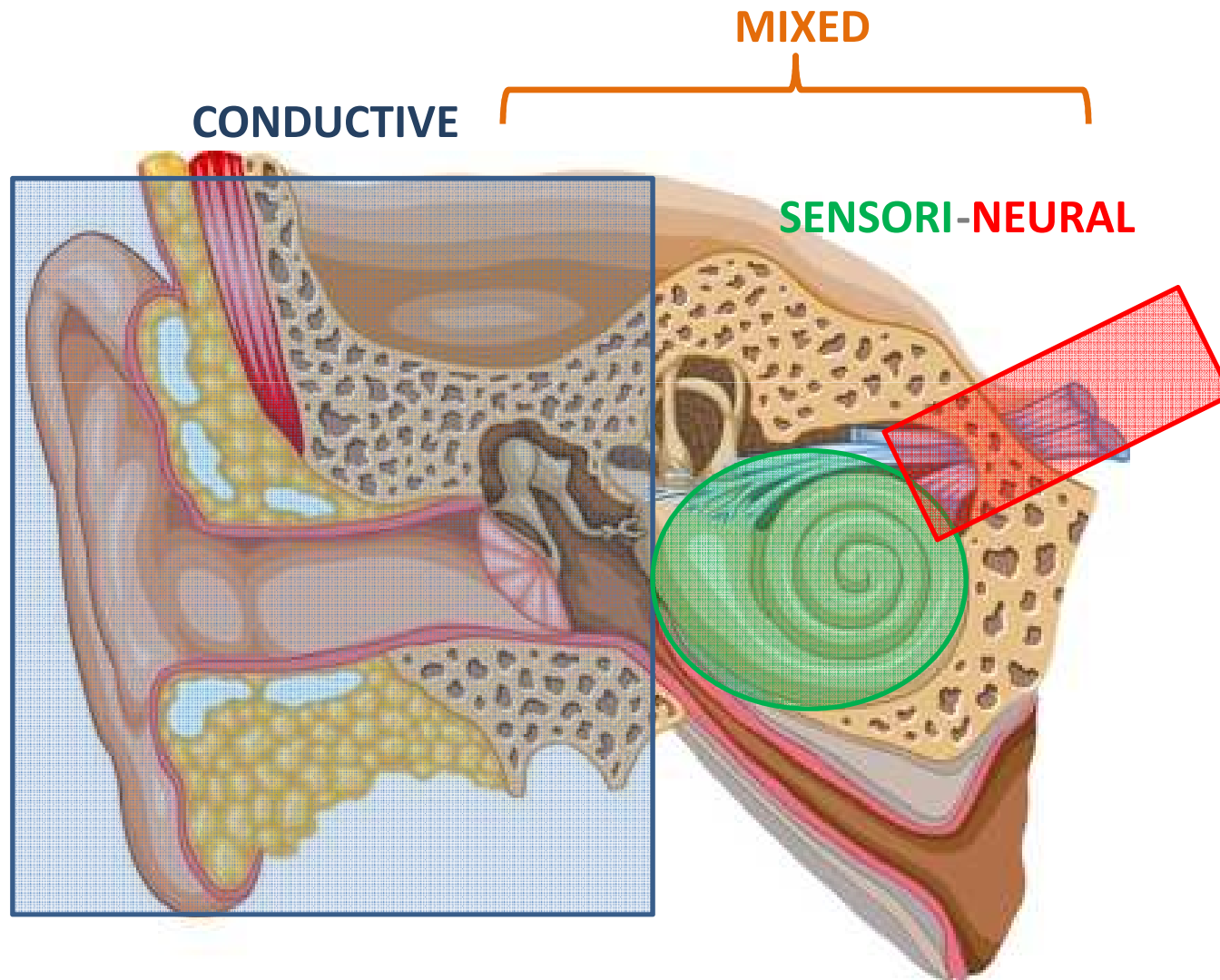
- Critical language development periods early in life (first 3 years of life)
 - Audition primary input
 - Loss or degradation of auditory input restricts language development
- Language is critical to a myriad of outcomes:



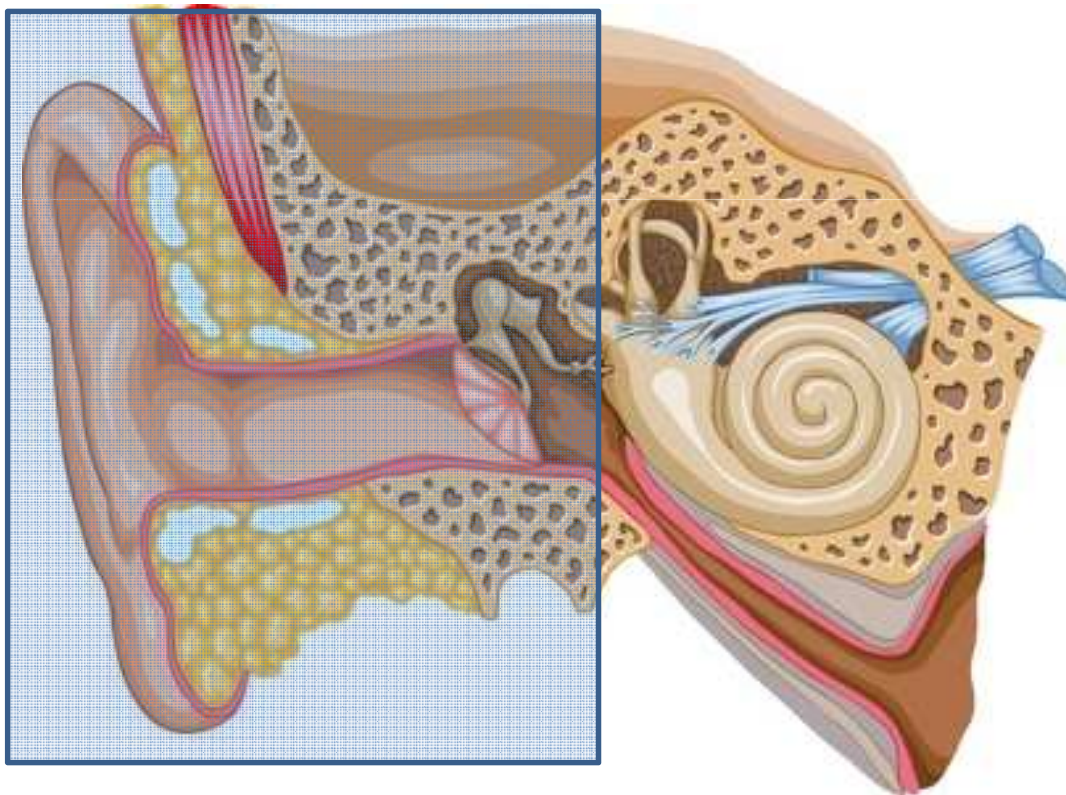
IMPORTANCE OF HEARING



HEARING LOSS – TYPES & CAUSES



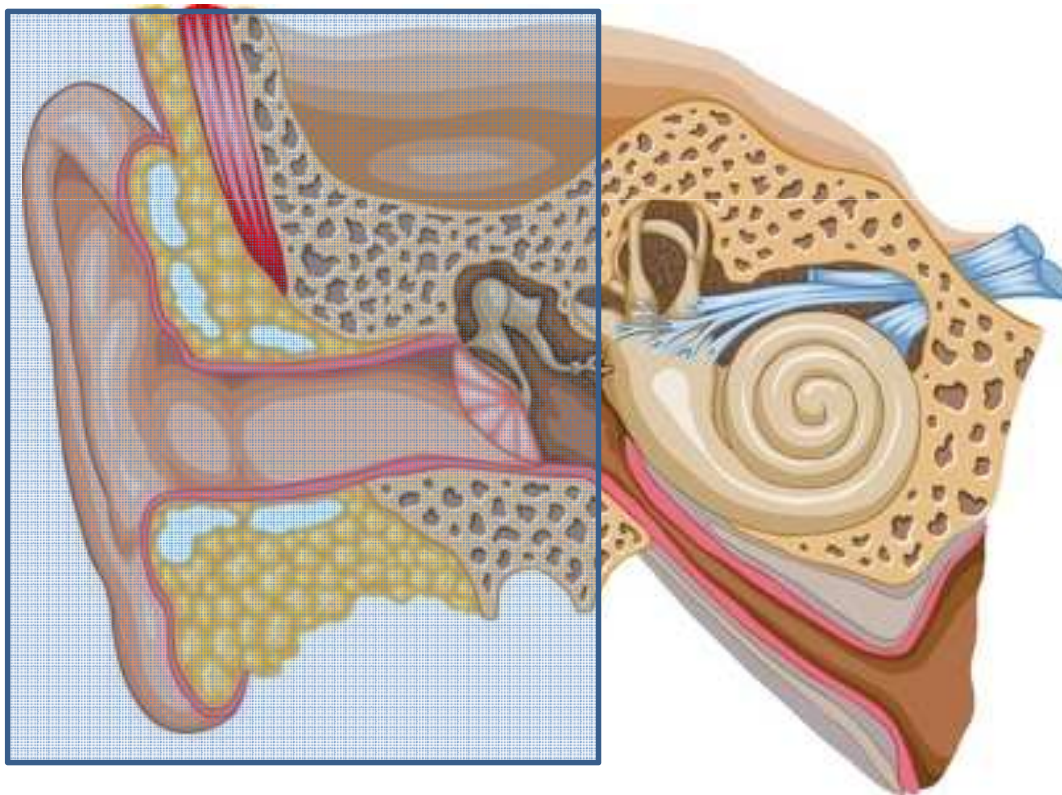
HEARING LOSS – TYPES & CAUSES



Causes:

- Malformation of outer ear (intra-uterine)
- Wax (obstructions)
- Eardrum perforation
- Middle ear infection
- Glue ear
- Cholesteatoma

HEARING LOSS – TYPES & CAUSES



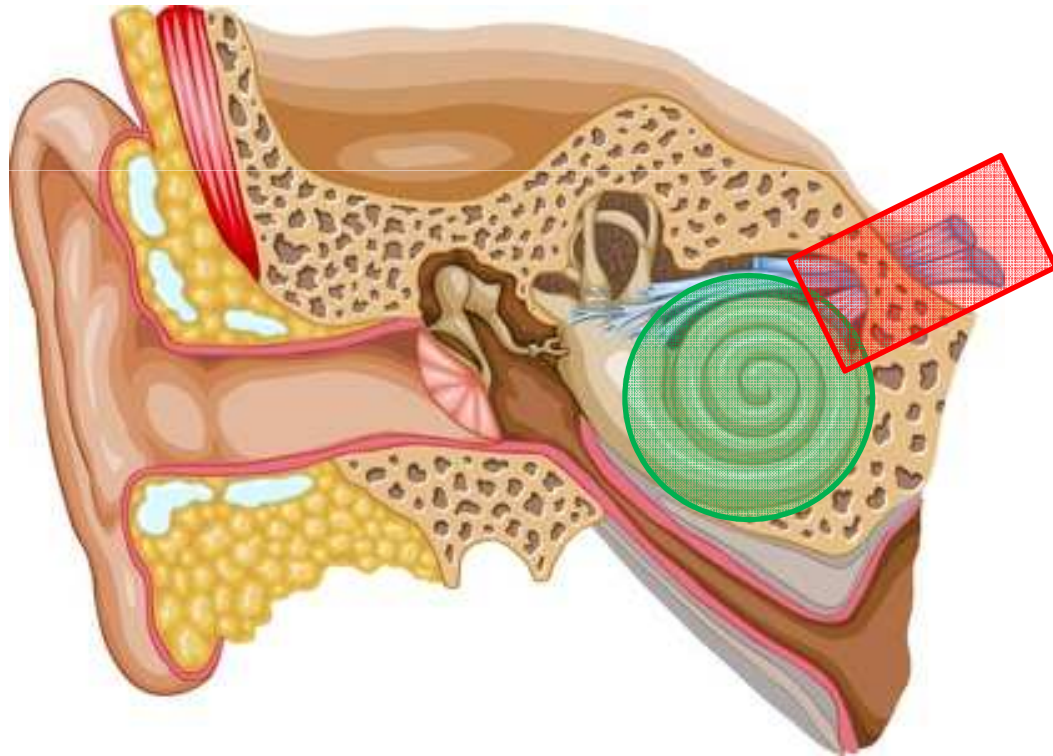
Nature:

- Transient
- Severe cases permanent

Prevalence:

- SA studies, ME pathology:
13 – 29%
- Meyer & van den Berg
(1985) – **13.4 %** (1 – 2 yoa)
- Meyer et al. 1987 – **13.6%**
(1st grade)

HEARING LOSS – TYPES & CAUSES



Causes:

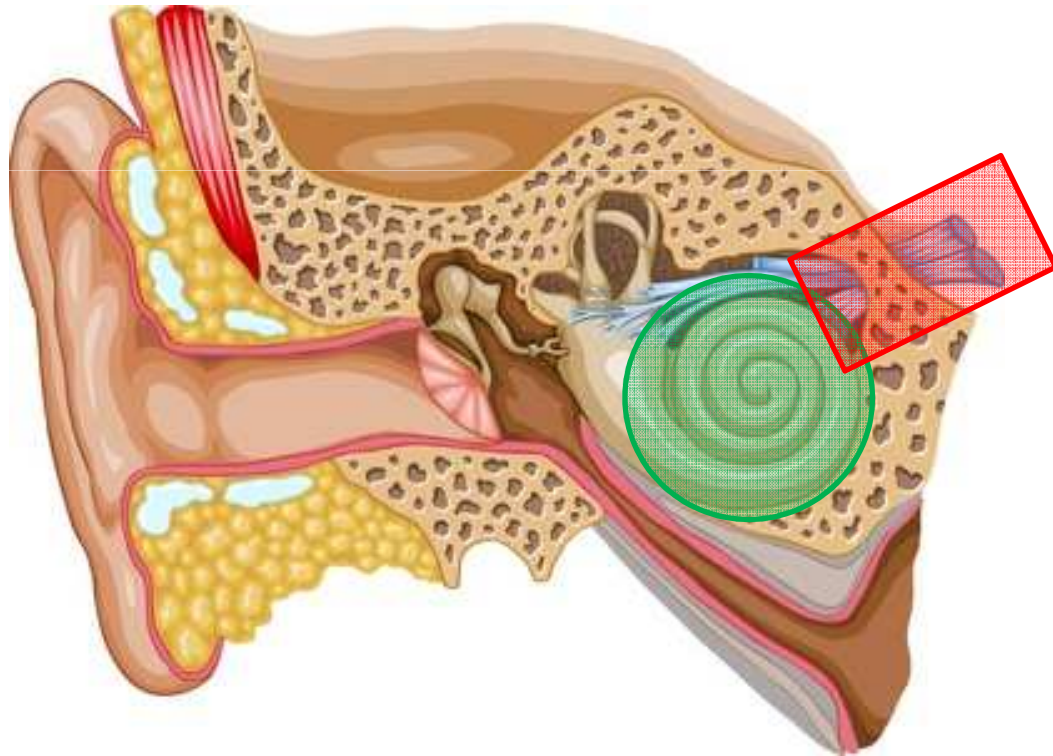
Congenital/early onset

- Genetic (hereditary)
- Maternal infections
- Birth trauma & peri-natal risks (Lbw, hypoxia, ototoxicity)

Acquired/late-onset

- Infections (e.g. Meningitis)
- Late-onset/progressive genetic
- Ototoxicity
- Acoustic trauma
- Head trauma

HEARING LOSS – TYPES & CAUSES



Nature:

- Permanent

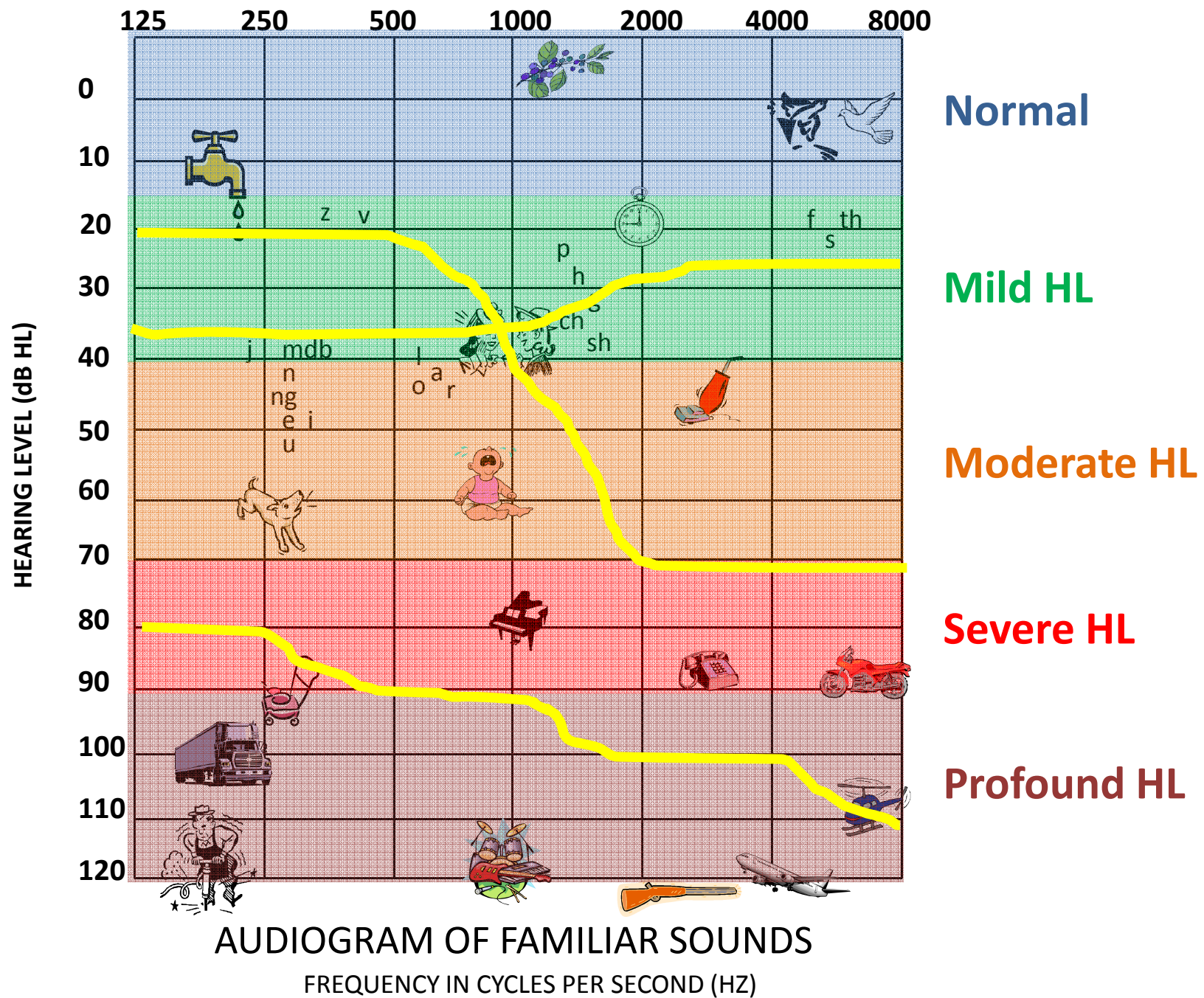
Prevalence:

1.8% children aged 1 – 12 years of age (*Venda; Meyer & van den Berg, 1985*)

2% of grade 1 pupils (*Eersterus; Meyer et al. 1987*)

Estimates: 12/1000 (**1.2%**) at 9 years of age

HEARING LOSS – DEGREE & CONFIGURATION



HEARING LOSS - IMPACT

Outcomes affected:

1. Speech & language
2. Academic
3. Psychosocial emotional
4. Vocation



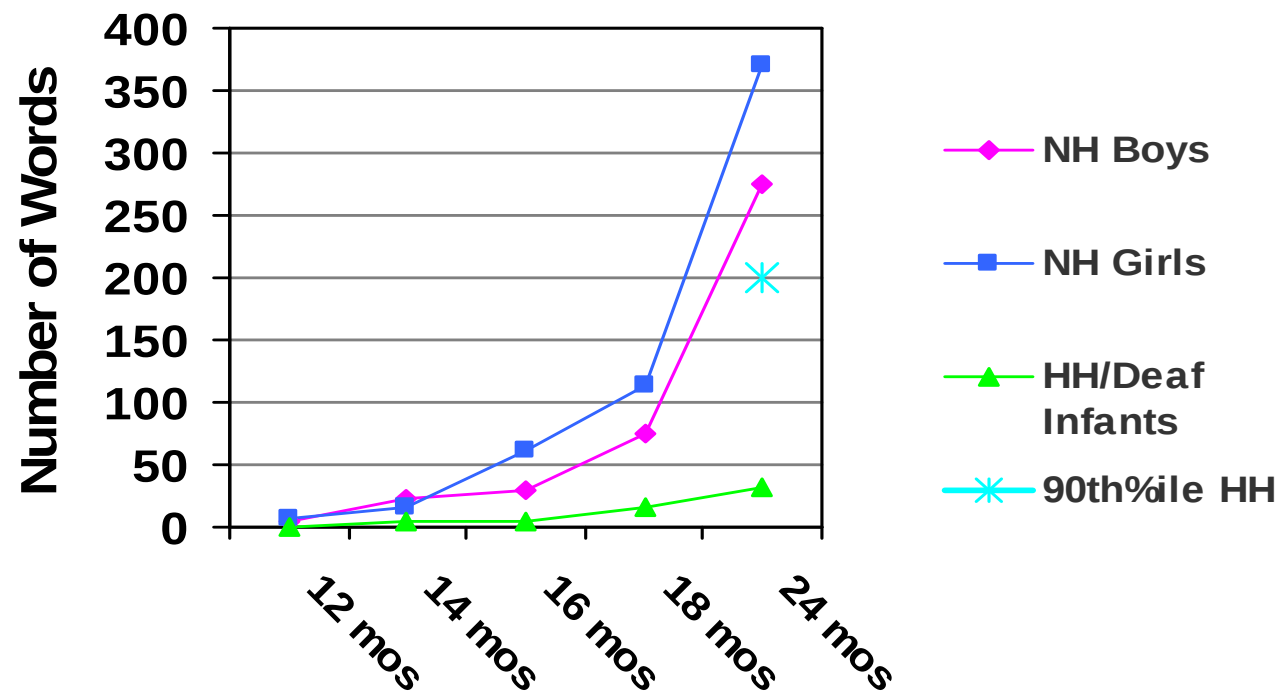
HEARING LOSS IMPACT

- Late identified hearing loss without early intervention leads to **irreversible deficits in language, speech and developmental domains**, with far-reaching **social** and **economic** ramifications
- Impacts significantly on aspects such as **language** and **literacy** development, **speech perception** and **production**, and on **socialisation** and **family dynamics**
- Individuals differences but children **faced** with **greater challenges** than hearing peers

(Yoshinaga-Itano & Gravel, 2001; Yoshinaga-Itano et al., 1998; Mohr et al., 2000; Carney & Moeller, 1998)

HEARING LOSS IMPACT

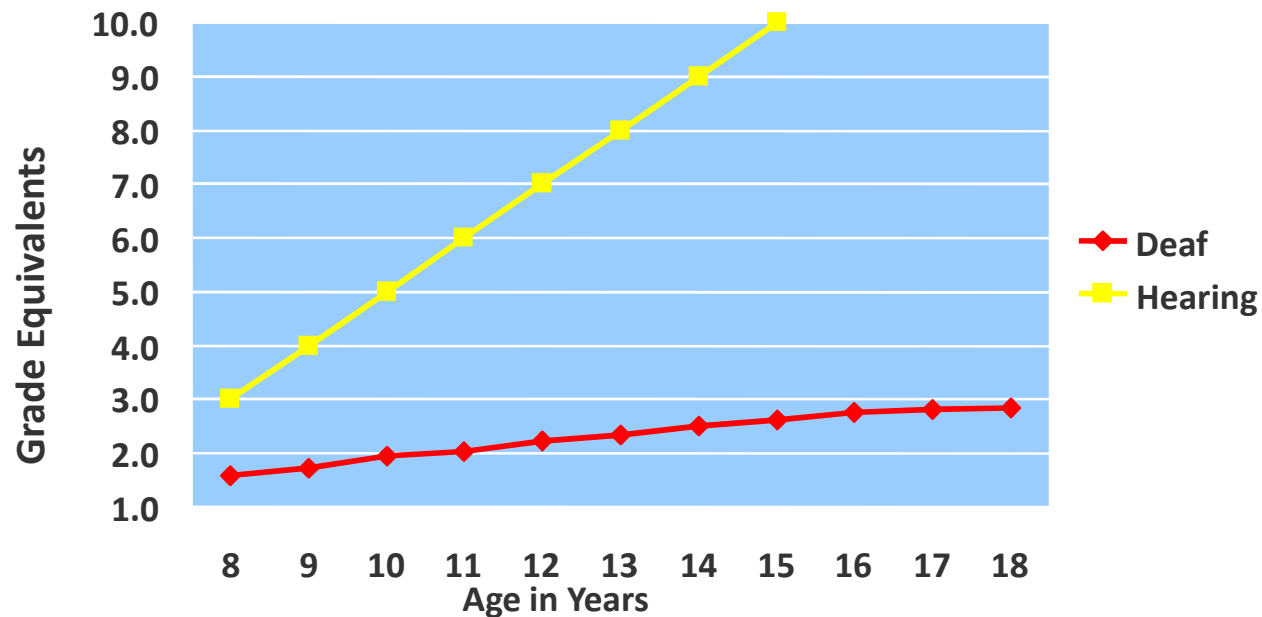
- Early vocabulary development



(Mayne, et al, 2000)

HEARING LOSS IMPACT

- Reading Comprehension Scores of Hearing and Deaf Students



7.5 years behind by
age of 15

18+ reading
compreh **50-60%** of
chronological age

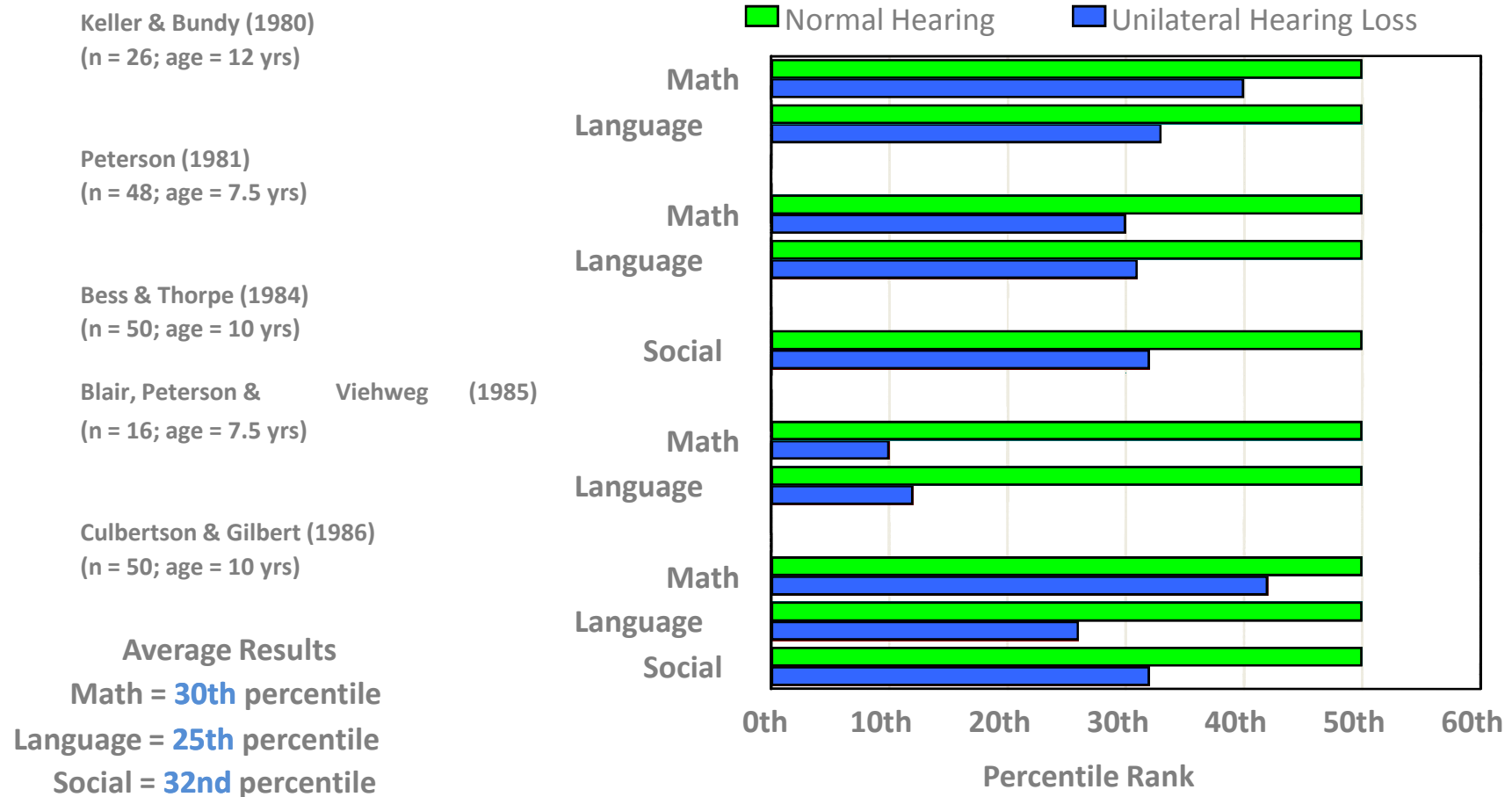
Schildroth & Karchmer, (1986). Deaf children in America, San Diego: College Hill Press.

HEARING LOSS IMPACT

- Children with **congenital bilat sev-to-prof HL** leave edu system at **18 yoa** - ave **mid-3rd** to **mid-4th** grade **reading**
- Language abilities equivalent to **9 and 10-year-old**
- On average, **late-identified children** with HL exhibit **discrepancy** of **40 to 50 points** between nonverbal performance test scores and language ability
- Even for children in **top 10%** nonverbal/language **discrepancy** average is **20 points**

HEARING LOSS IMPACT

Effect of Unilateral Hearing Loss



HEARING LOSS IMPACT

Effect of Minimal Hearing Loss

- Study on Children with **minimal SNHL**
(uni- or bilat SNHL between 20 and 40 dB & HF HL >25 dB at two or more freq above 2 kHz)
- **37% failed** at least one grade
- **Greater dysfunction** ($p < 0.05$) than children with normal hearing on:
 - *behaviour,*
 - *energy*
 - *stress*
 - *social support & self-esteem*
- Even minimal hearing loss categories have a **significant impact** on development and performance

(Bess et al, 1998)

HEARING LOSS IMPACT

Effect of Unilateral Hearing Loss

CHILDREN WITH UNILATERAL HL:

Substantially **behind peers** on all measures

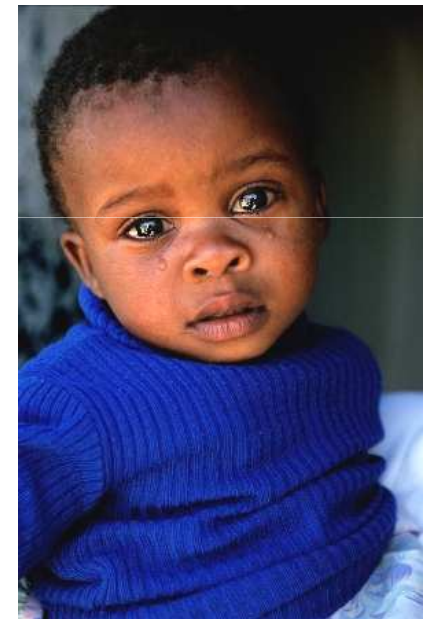
For a 10 year old this translates to a **deficit** of **1 – ½ years** in math & reading

HEARING LOSS IMPACT

- **Self-esteem** and **socialisation** significantly affected
- **50%** of deaf or hard-of-hearing school-aged children **express concerns** on **making friends** or being **accepted** by classmates, compared to **15.5%** in hearing peers
- Children with HL also scored **significantly higher** on **scales of aggression** compared to norm
- Parents rated them to have **difficulties** in areas of **aggression, impulsivity** and **immaturity**

HEARING LOSS IMPACT

- **Social stigma** and **maltreatment**
- Children with HL and other communication disorders - more **maltreatment** such as **neglect** and **physical, emotional** and **sexual abuse**
- Children with communication disorders **more 1st incidences** from 0 – 5 years than all other disabilities



(Hibbard et al, 2007; Knutson et al, 2004; Kvam, 2004; Sullivan & Knutson, 2000; Olusanya, 2008)

HEARING LOSS IMPACT

- USA - **Income** of hearing impaired population **30 – 45% less**
- UK – hearing impaired **3 times** more likely to be **unemployed**
- Limited **societal contribution** to and restricted **economic participation**
- More **pronounced** in **developing countries**



(Ruben, 2000; Yoshinaga-Itano & Gravel, 2001; Mohr et al. 2000)

HEARING LOSS IMPACT

SUMMARY

- Lifelong impairment in **language** & **speech skills**
- Poorer **academic achievement**
- Poorer **psycho-social** development
- Increased **un-** and **under-employment**

A photograph of two young students, a boy and a girl, looking intently at a document held by the boy. The boy is wearing a green and yellow school uniform with a tie. The girl is wearing an orange shirt and a colorful beaded necklace. They are surrounded by other students in similar uniforms, suggesting a school setting. The text "COMMENTS / QUESTIONS?" is overlaid in white on the right side of the image.

**COMMENTS /
QUESTIONS?**