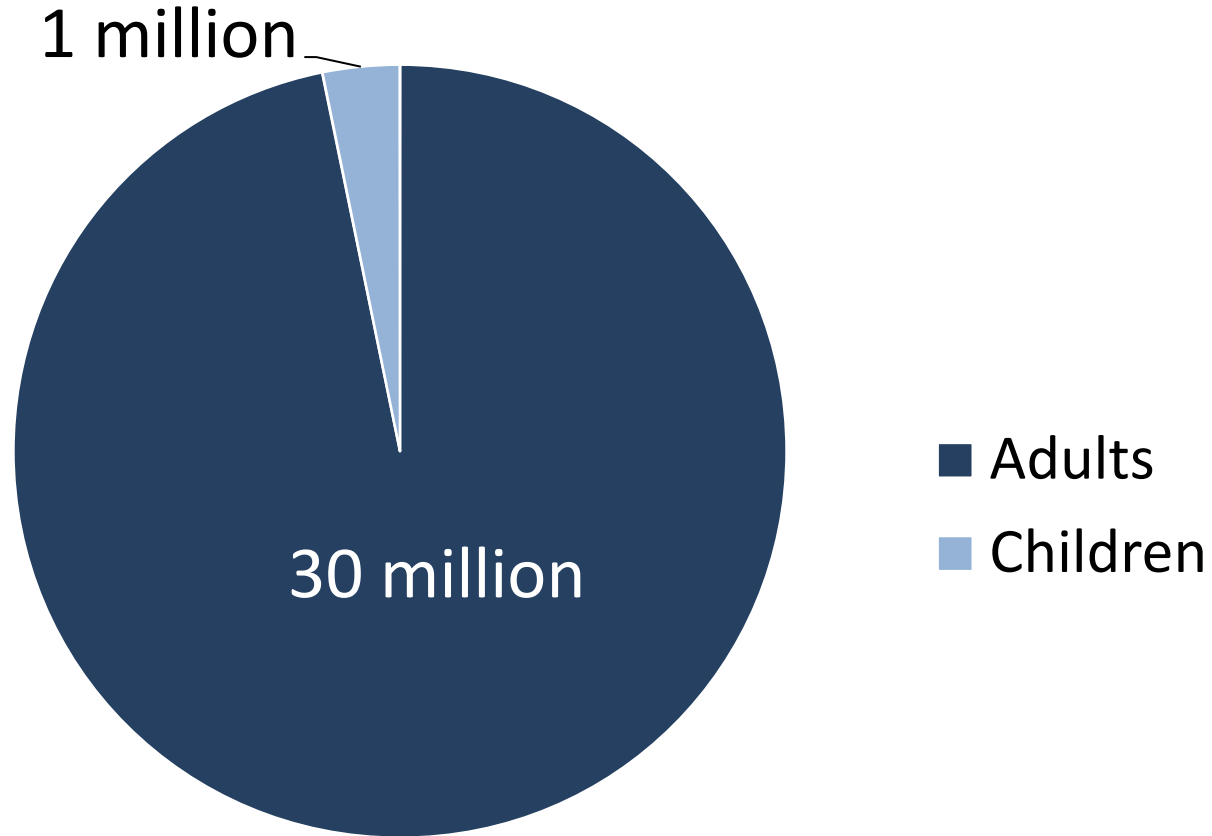


Children, Hearing Loss, and Communication

ANCS 2009

Hearing Loss



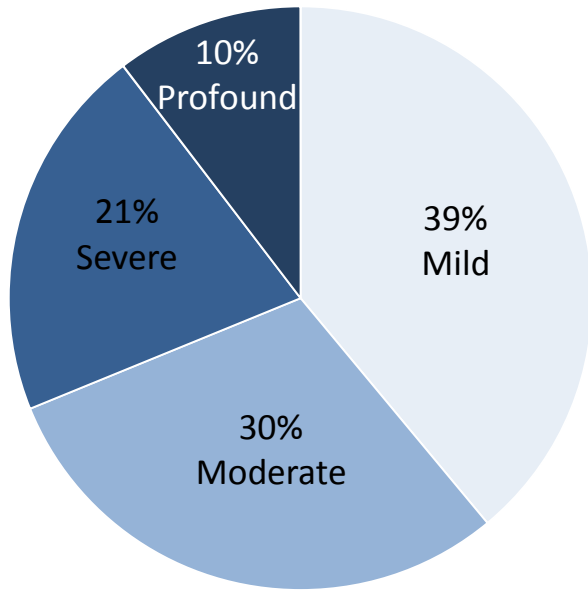
Adults use their residual hearing to
continue to communicate,



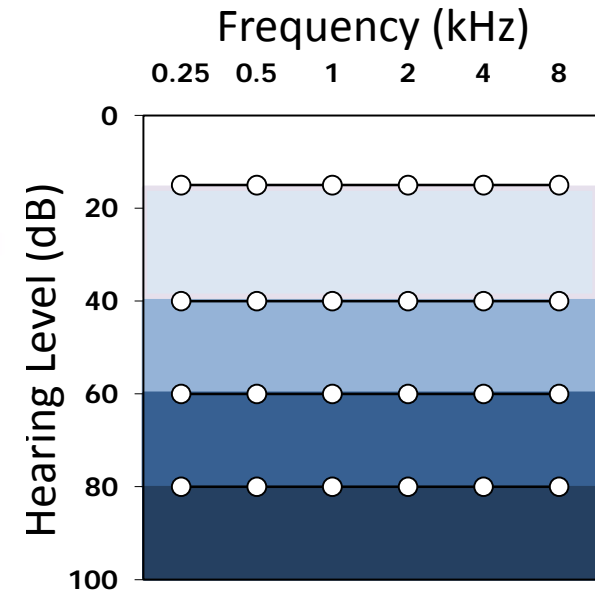
Age



Degree of Hearing Loss



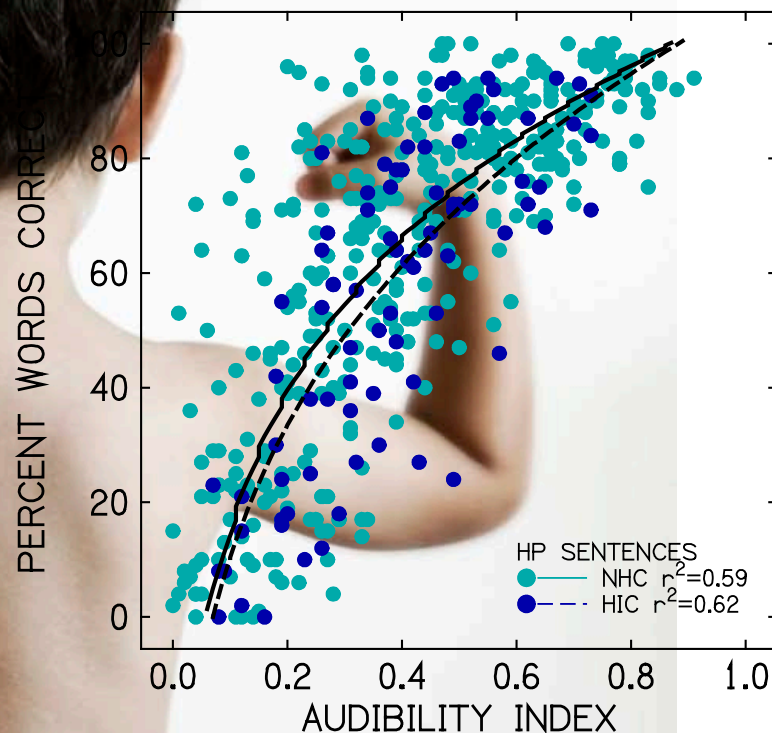
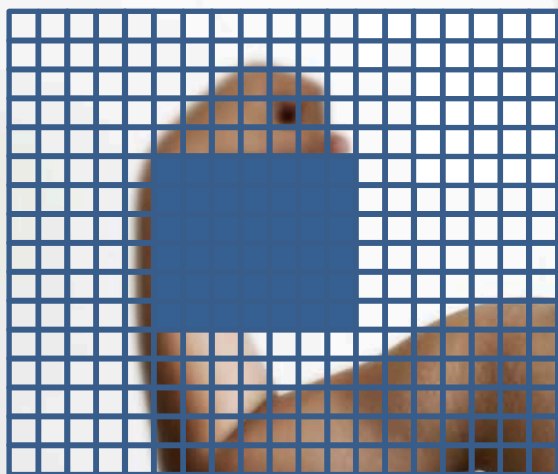
- Mild (15-40 dB HL)
- Moderate (41-60 dB HL)
- Severe (61-80 dB HL)
- Profound (>80 dB HL)



Speech Perception

(Stelmachowicz et al, 2001)

- Children
 - 23 HI Children
 - 60 NH Children
- Normal speech perception as a function of audibility



Speech Perception in Noise

Crandell (1993)

- Children
 - 20 HI Children
 - 20 NH Children
- Poor speech perception in noise



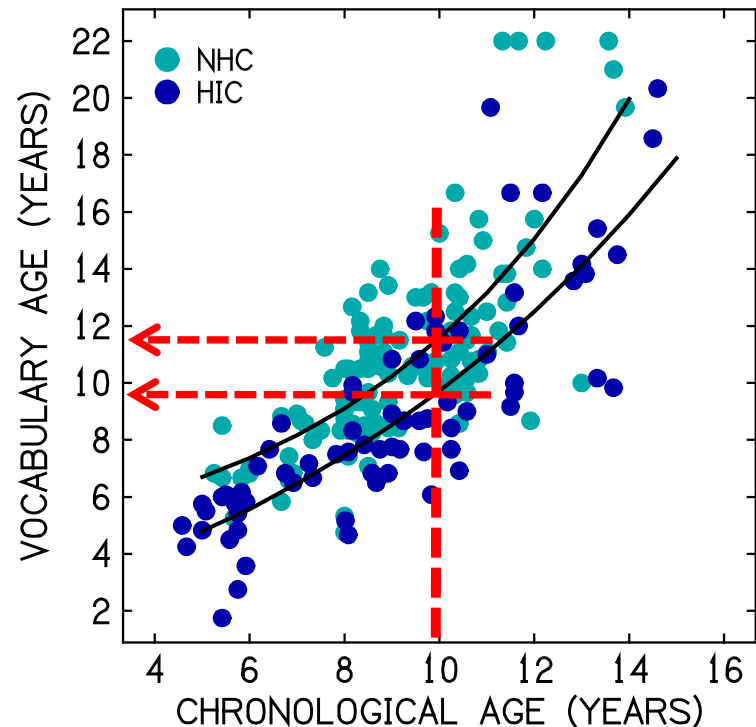
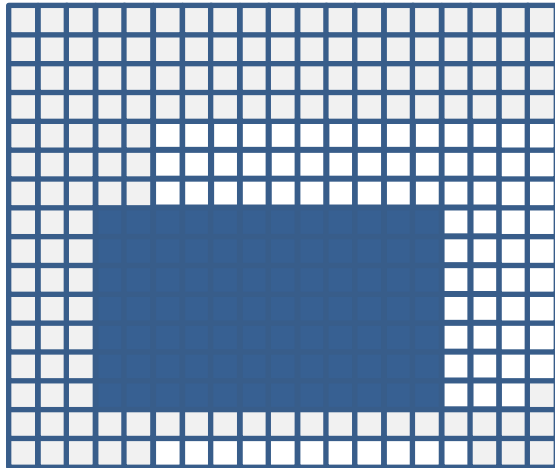
	NHC	HIC
Quiet	99.7% (0.7)	96.3% (6.9)
-6dB SNR	70.7% (15.4)	38.1% (25.4)

Language

(Pittman, 1998-2008)

- Children
 - 76 HI Children
 - 137 NH Children

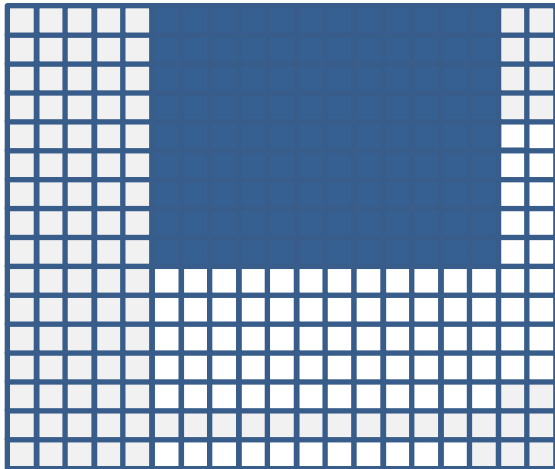
- Delayed lexical development as a function of age



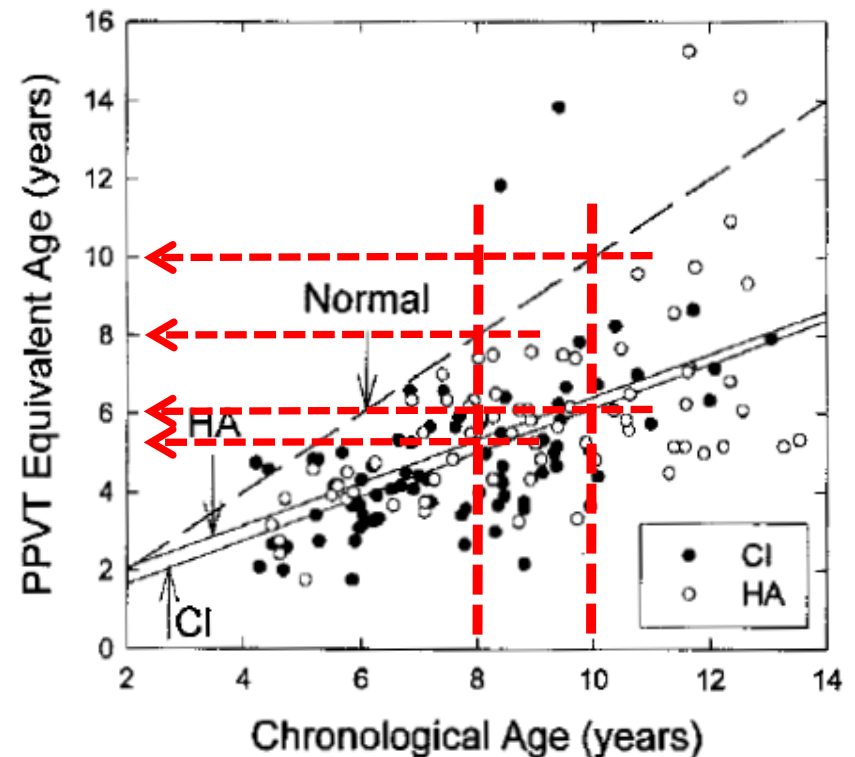
Language

(Blamey et al., 2001)

- Children
 - 40 HI Children
 - 47 CI Children



- Impaired lexical development as a function of age



Word Learning

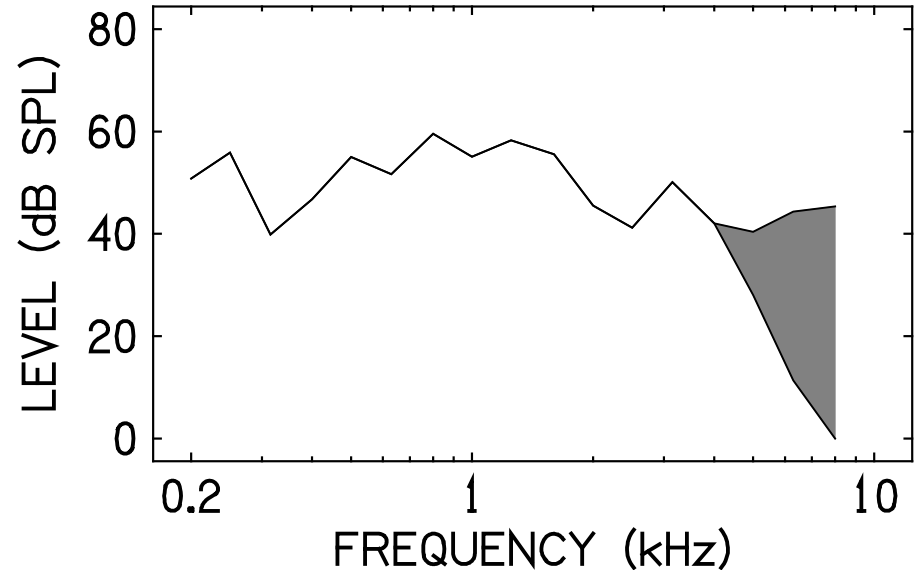
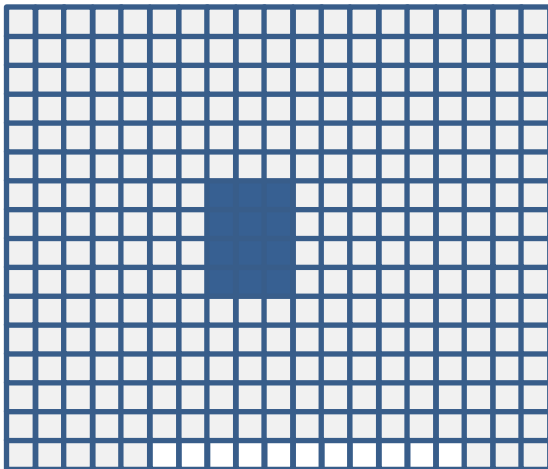
(Pittman, 2008)

- Purposes: To determine the rate of word learning in children with hearing loss compared to children with normal hearing.
- Rate: Defined as the number of exposures necessary to achieve 70% performance
- Conditions: Compared rate for limited and extended bandwidth conditions.



Method

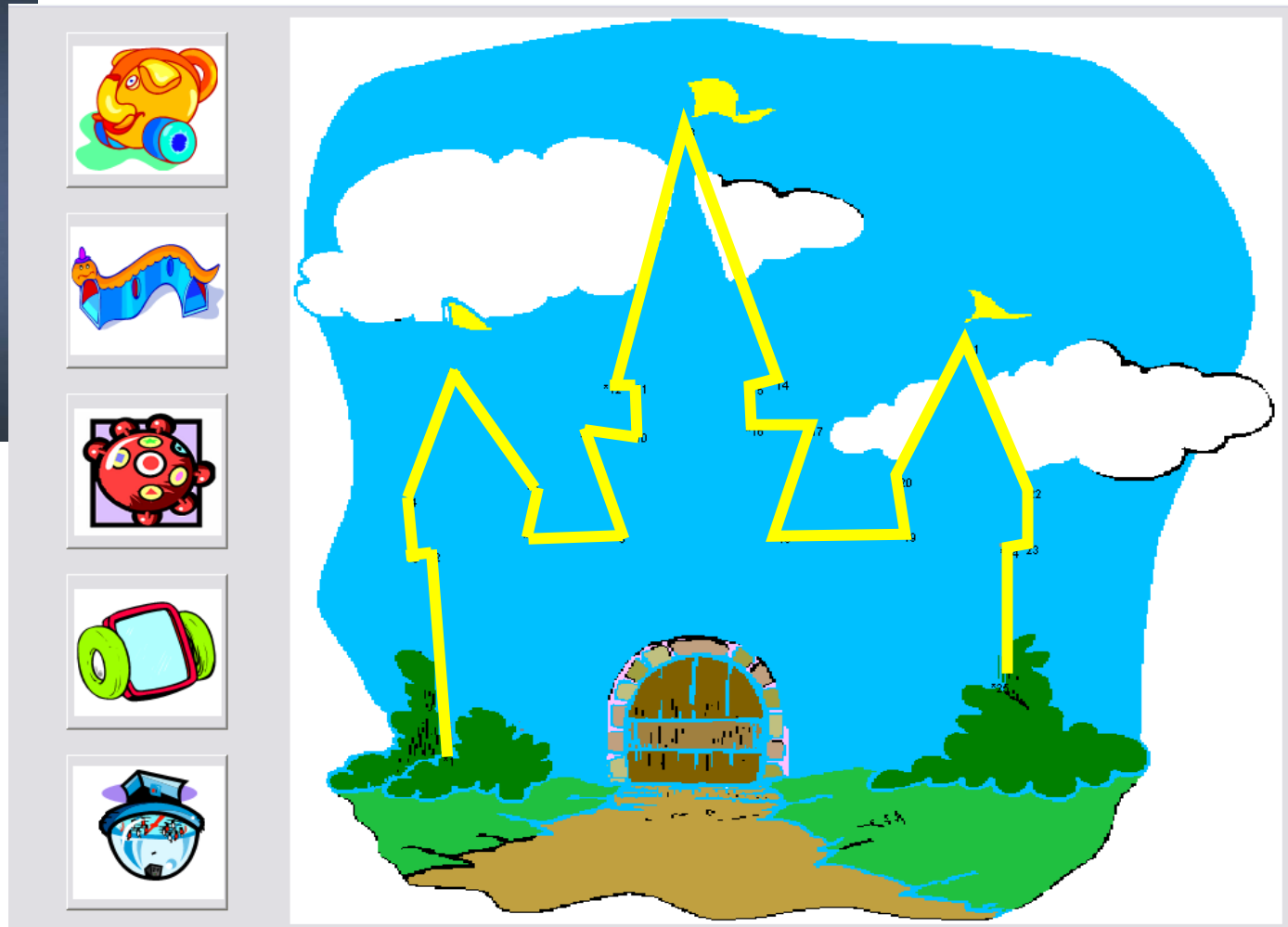
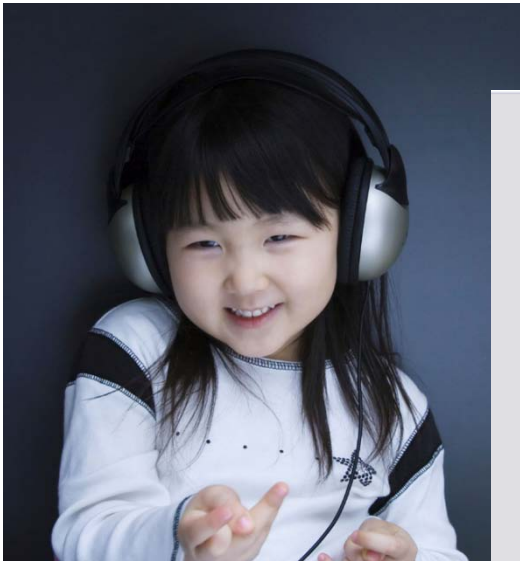
- Children
 - 36 with NH
 - 14 with HL
- Stimulus Bandwidths
 - Limited (4 kHz)
 - Extended (9 kHz)



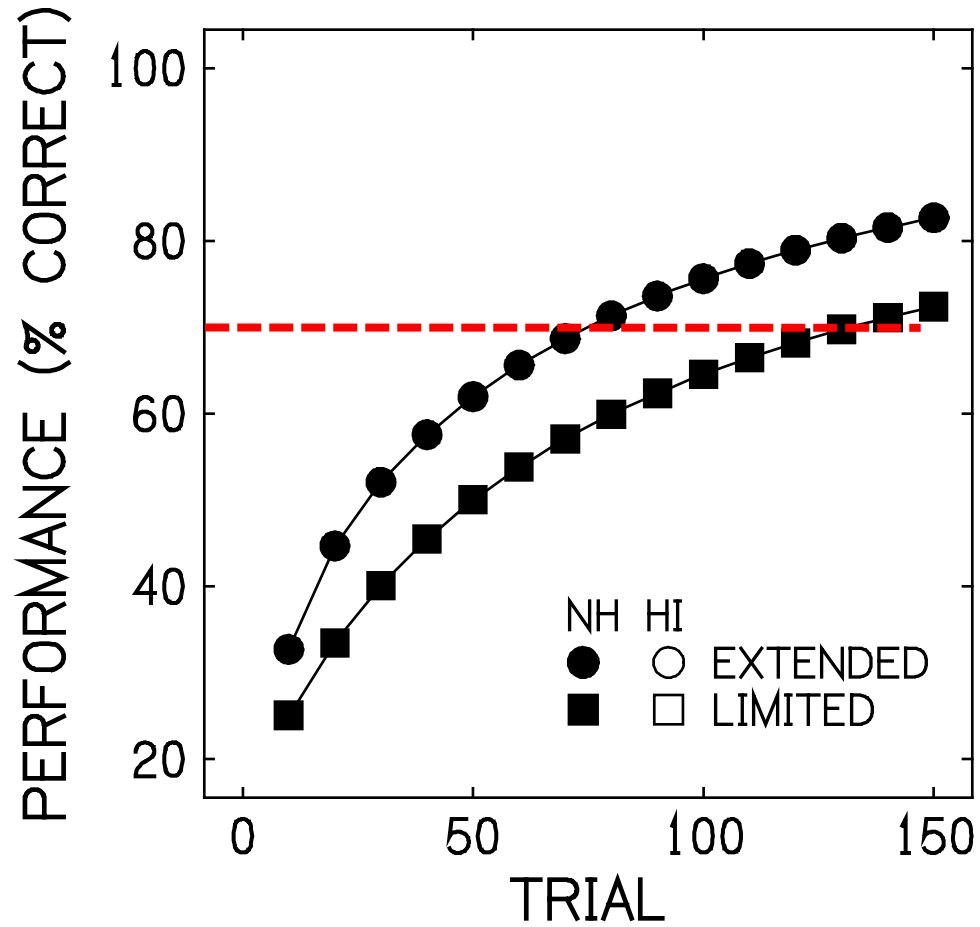
Novel-Word Construction

			Limited	Extended
saθnəd	soθnud			
daztəl	doztul			
fasnəʃ	fosnush			
stamən	stomun			
hamtəl	homtul			

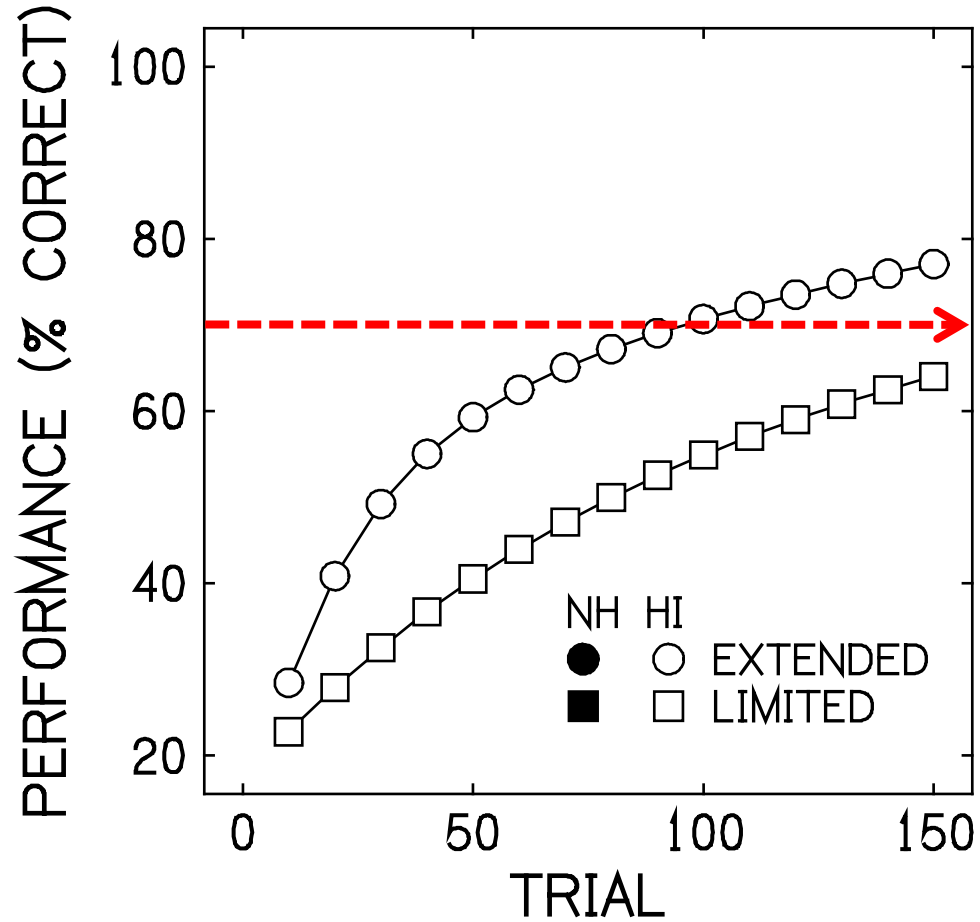
Learning Game



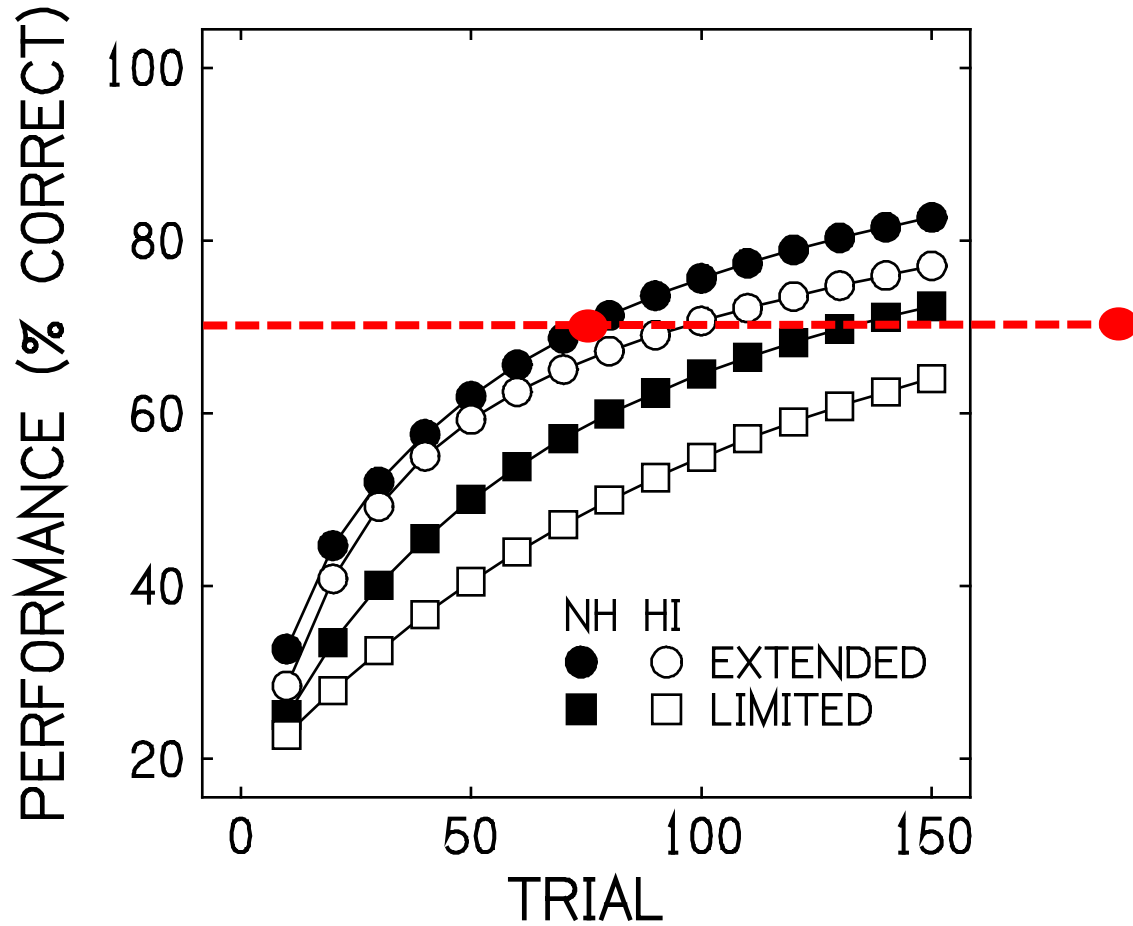
Results



Results



Results



Summary

- HI children's speech perception and language development are impaired under degraded listening conditions.
- HI Children are able to perceive speech and learn new words as well as NH children under optimal listening conditions.
- The development of amplification specifically for children may play an important role in their communication development as well as their academic success.