In The Name of GOD

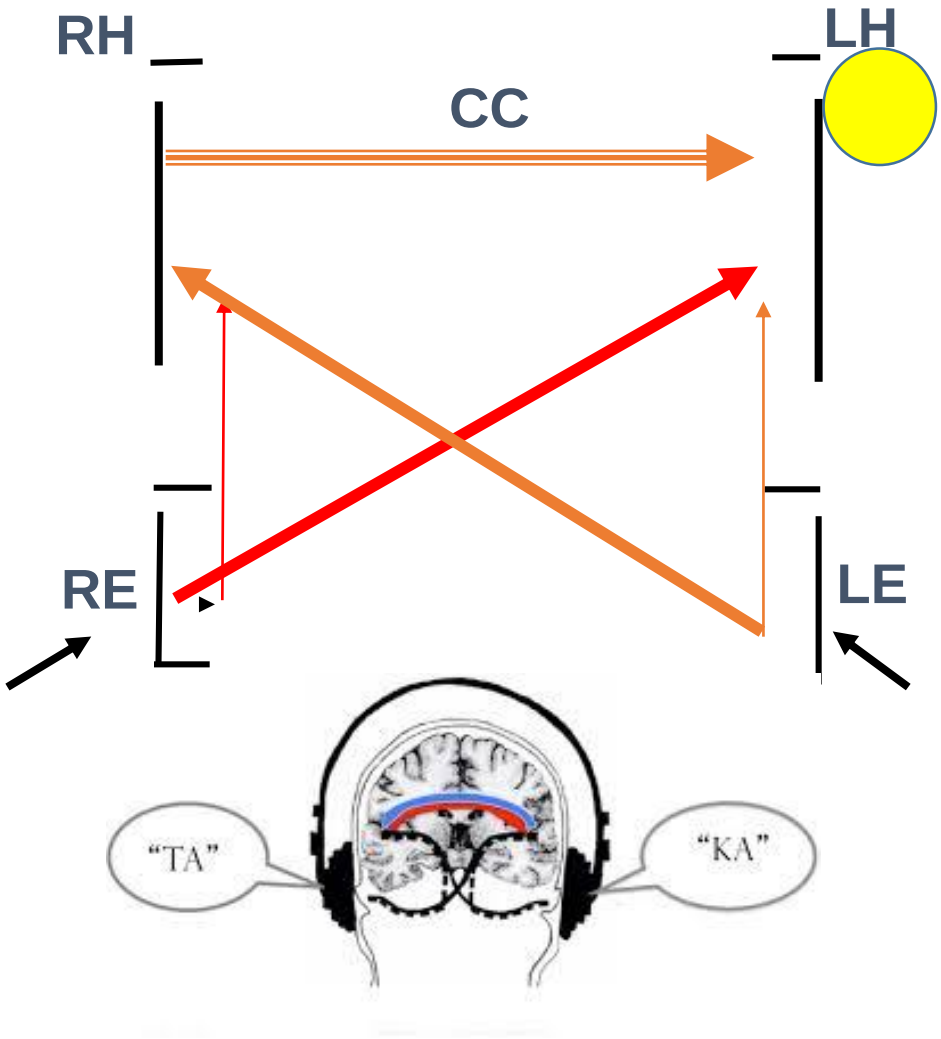
Dichotic Listening Tasks & the Corpus Callosum

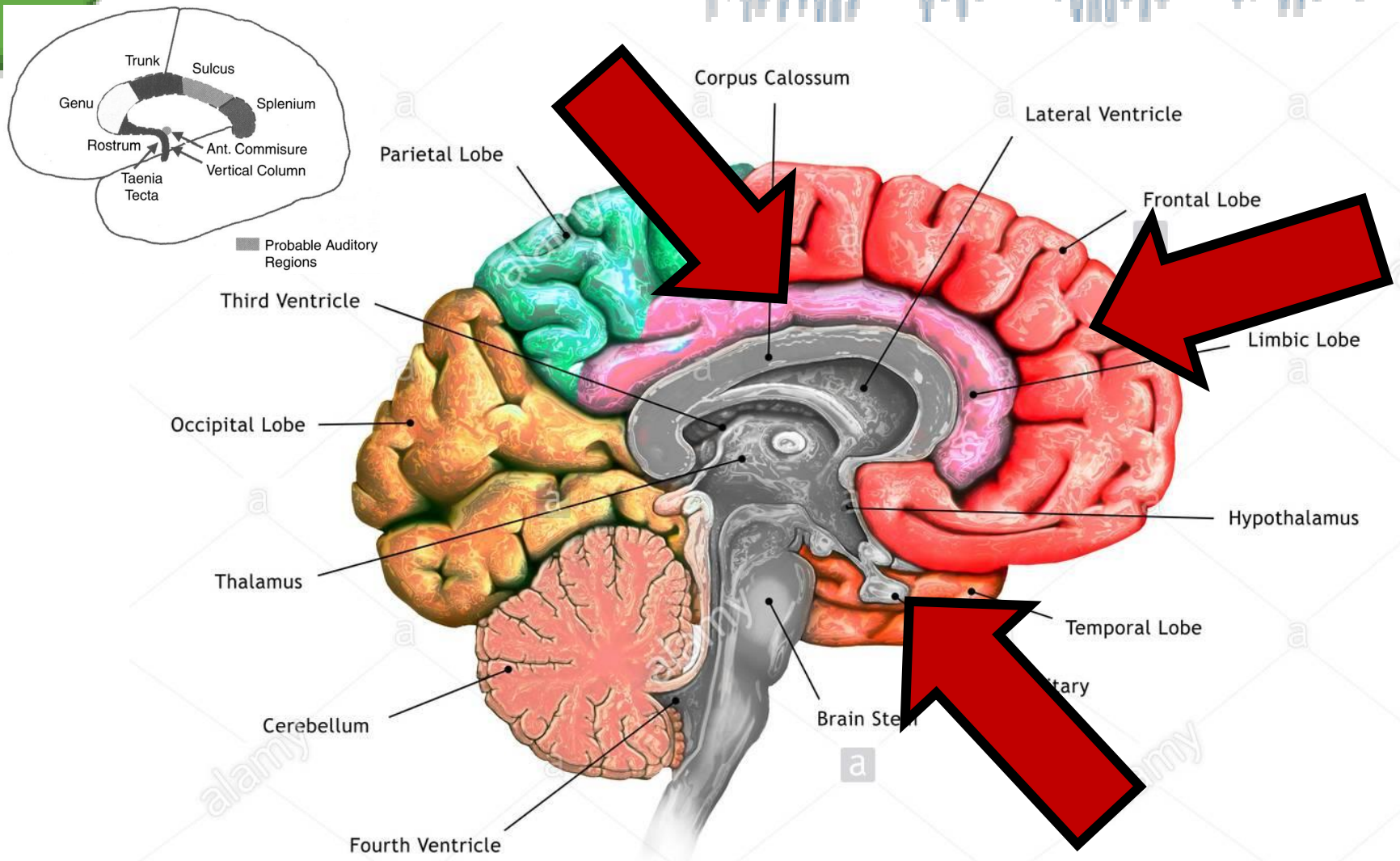
Mohanna Javanbakht

PhD of Audiology (USWR)

mo.javanbakht@uswr.ac.ir

دانشگاه علوم بهزیستی و توانبخشی


RH
LH
CC
RE
LE
"TA"
"KA"



the posterior region of the CC, isthumus or sulcus is specialized in interhemispheric transfer of auditory information : **excitatory** / inhibitory

Dichotic Listening Tests

DL is a behavioral technique to study:

a broad range of cognitive processes

-Attention

-Memory

-Emotional processes ☹ ☺ 😐 …

-Brain Laterality and hemispheric asymmetry,

-Conditioning and learning

-Psychopathology

-Psycholinguistics

Binaural Listening

***binaural integration tasks**
***binaural separation tasks**

*Alternative terminology: free recall and directed or focused recall

Dichotic Listening

Binaural Listening

Dichotic Listening

REA

***In CC pathology ?? If:**
***dichotic speech stimuli (e.g. words, digits, CVs, sentences)**
***presented at a sufficient sensation level (SL)- 20dB Sl for DD/ 30dB SL for CVs**
***same SL should be used for each ear/** interaural peripheral differences make results bias
***similar onsets and offsets**
***LEA: in emotional tasks**

Binaural Listening

Dichotic Listening

REA

Brain Laterality and Disorders

-Corpus callosum deficit:
*split brain patients
*total or partial commisurotomies
*pre-surgical status of the brain
-multiple sclerosis (Atrophy of the callosum),
-vascular and mass lesions of the CC,
-traumatic brain injury (TBI),
-auditory hallucinations in schizophrenia
-APD

Binaural Listening

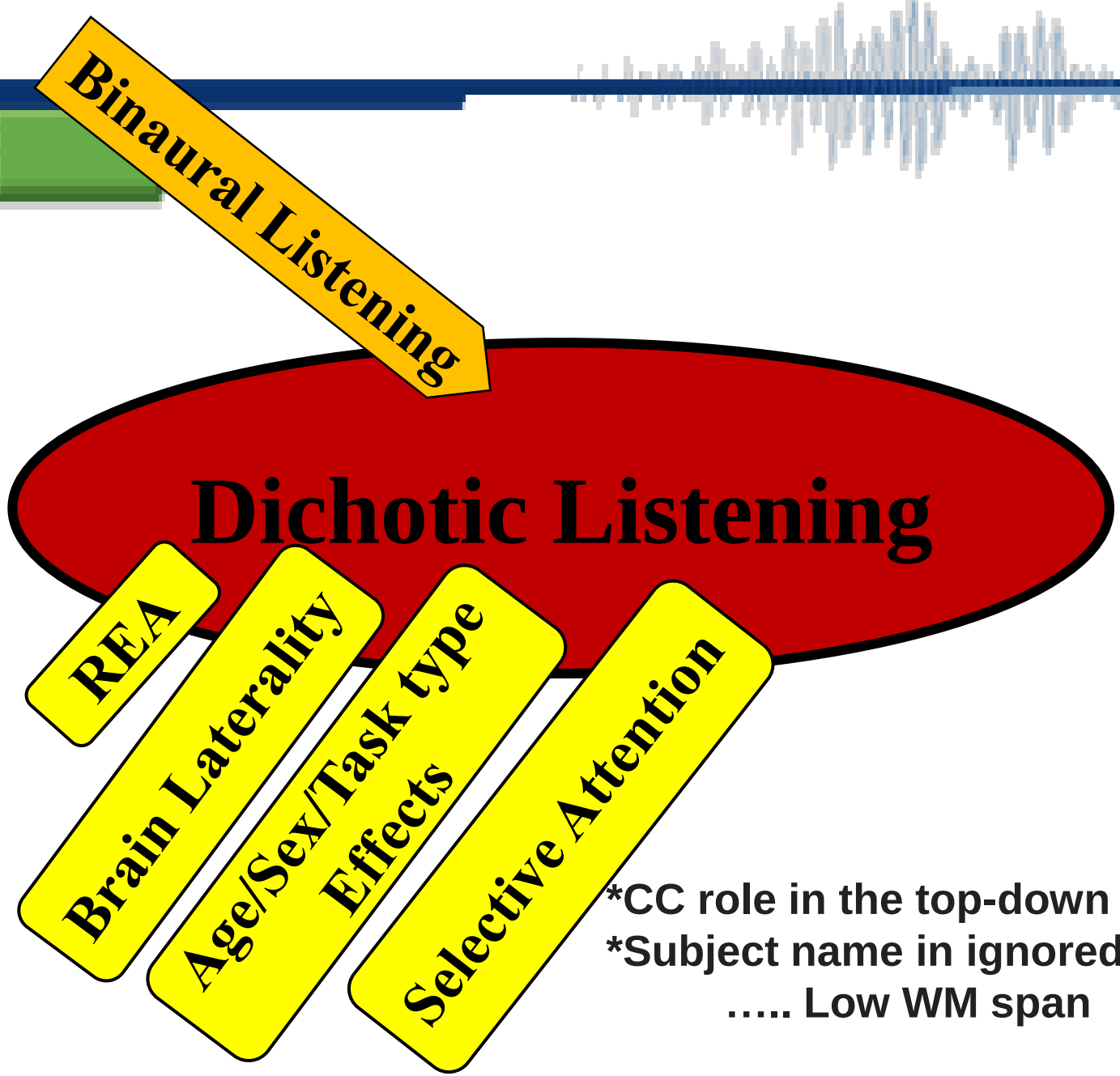
Dichotic Listening

REA

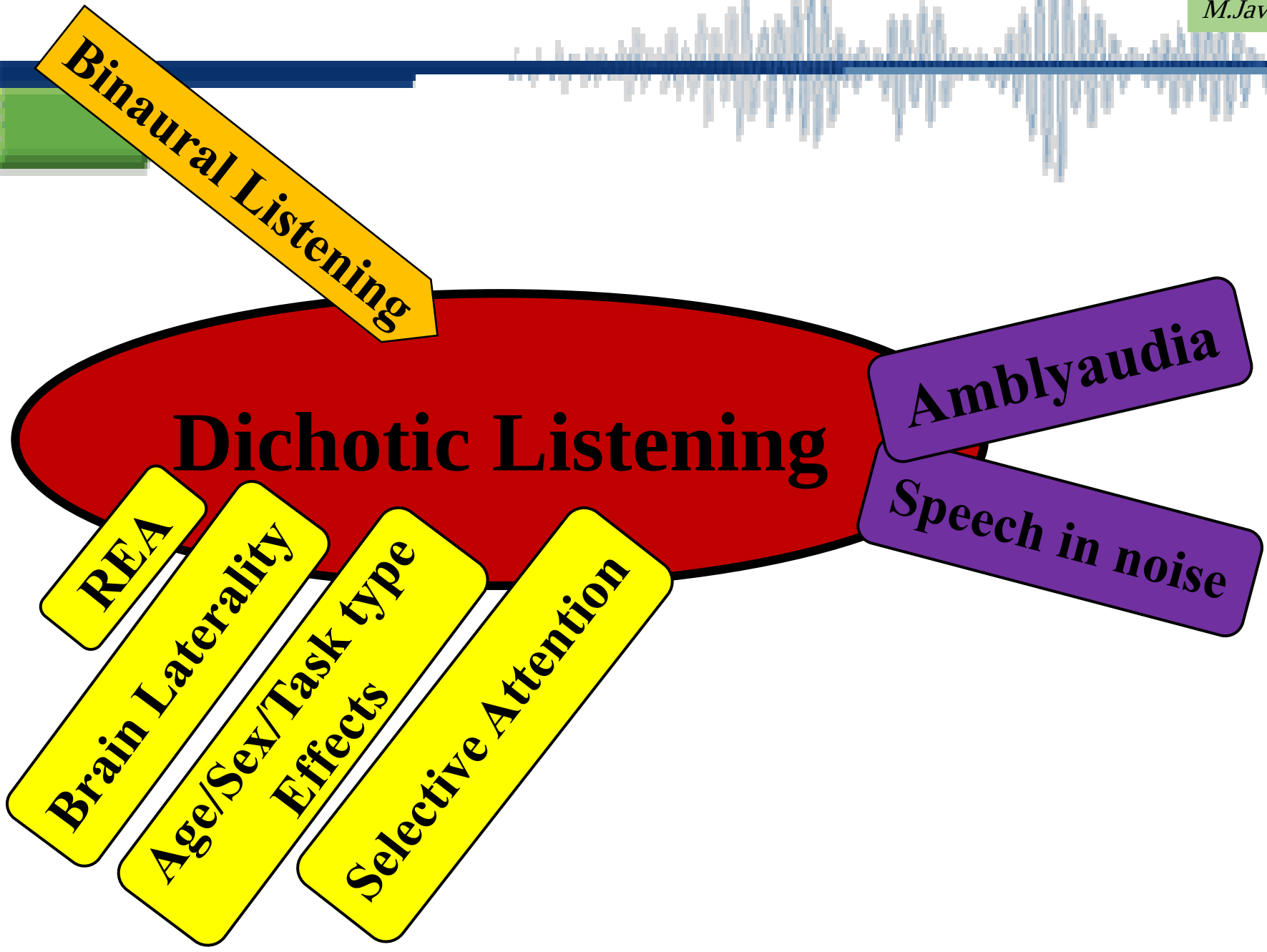
Brain Laterality

Age/Sex/Task type Effects

*Development of the CC is ongoing during the first two decades of life/ delay in callosal maturation??
*Central presbycusis / atrophy in aging (55-60 y.o)
….. Decreased Binaural separation…… SIN problems
*Gender differences: more & earlier in men
*Rehabilitative audiology…. Binaural interference….. rejection of binaural amplification…. Can enhance the success of the fitting.
*Different Stimuli /
*Electrophysiological assessment of dichotic processing



*CC role in the top-down attentional control
*Subject name in ignored ear
….. Low WM span


Binaural Listening
Dichotic Listening
Amblyaudia
Speech in noise
REA
Brain Laterality
Age/Sex/Task type Effects
Selective Attention

Dichotic Digit Test

Mahdavi ME, Aghazadeh J, Tahaei SAA , et al, 2015

Dichotic Digits Results		
	Right Ear(ch1)	Left Ear(ch2)
1	6 . 1	8 . 2
2	2 . 5	10 . 3
3	5 . 3	9 . 6
4	7 . 3	10 . 1
5	8 . 6	3 . 1
6	9 . 2	7 . 5
7	3 . 10	2 . 7
8	5 . 8	1 . 10
9	2 . 9	5 . 3
10	10 . 5	7 . 9
11	1 . 9	6 . 3
12	3 . 1	8 . 6
13	5 . 3	2 . 9
14	2 . 5	3 . 10
15	8 . 2	6 . 3
16	7 . 10	2 . 5
17	9 . 5	7 . 3
18	8 . 9	10 . 5
19	1 . 6	9 . 2
20	5 . 7	8 . 9
	Score =	Score=

REA

*The cut off norm is 90 % and lower for 12 years to adult

*7 years 7:11 ; 55 % left, 70 % right

*8 years to 8:11 ; 65 % left, 75 % right

*9 years to 9:11 ; 75 % left, 80 % right

*10 years to 10:11 ; 78 % left, 85 % right

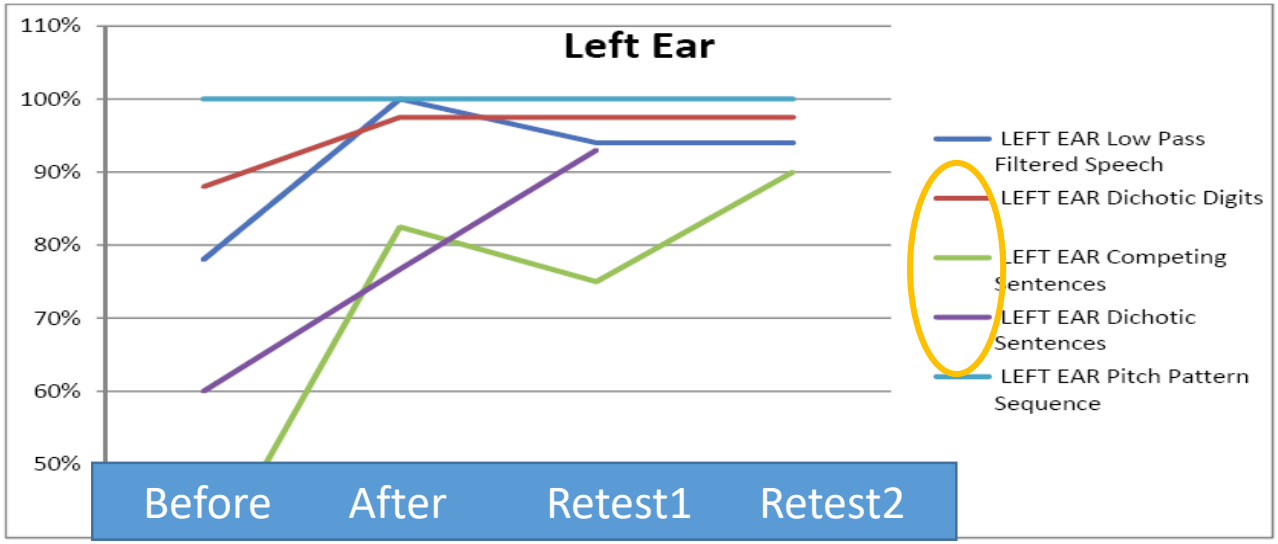
*11 years to 11 years, 11 months; 88 % left, 90 % right

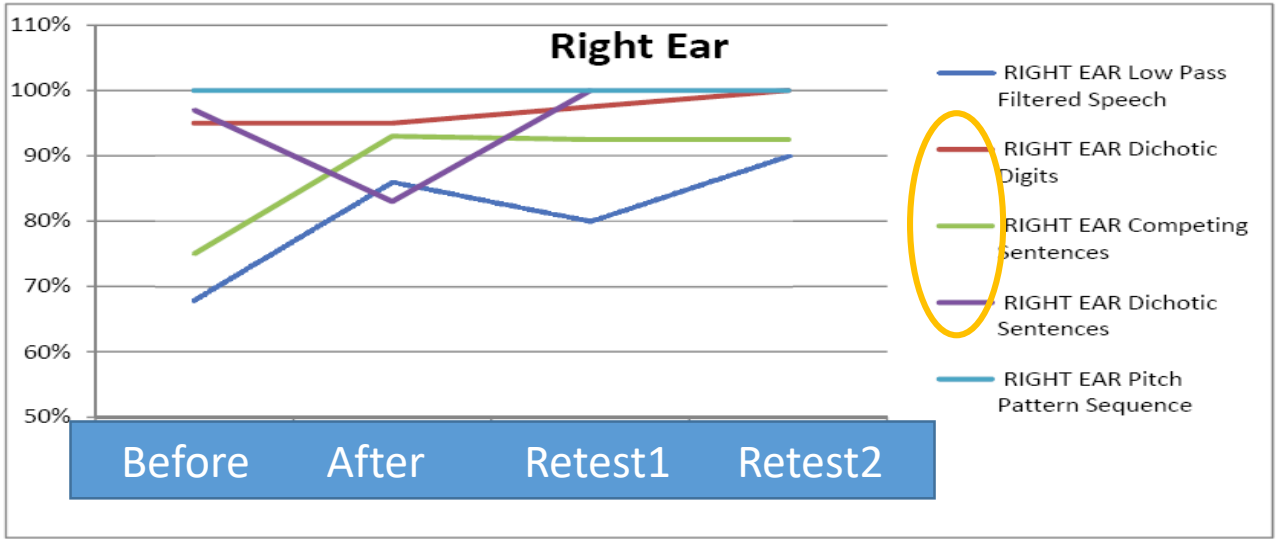
Case Study:

"AZ", female, age 11

turning her head to one side or covering one eye

M.Javanbakht






In the middle of difficulty lies opportunity
Albert Einstein