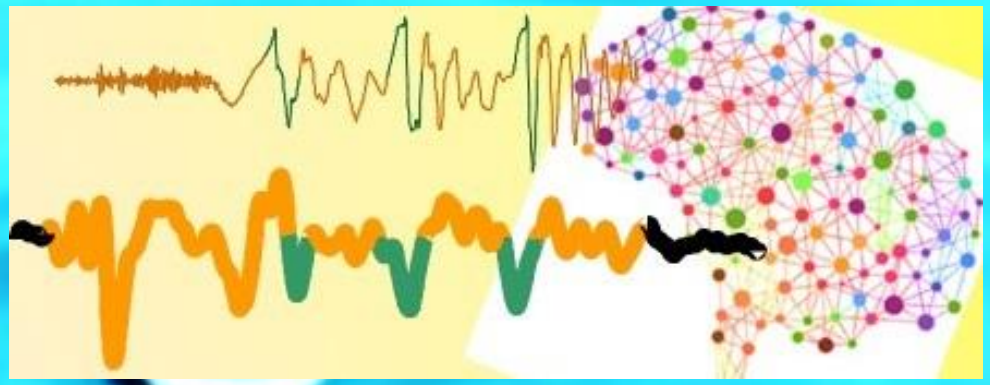
In The Name of GOD

دانشگاه علوم بهزیستی و توانبخشی

Speech-ABR;
Stimulus & Recording Parameters



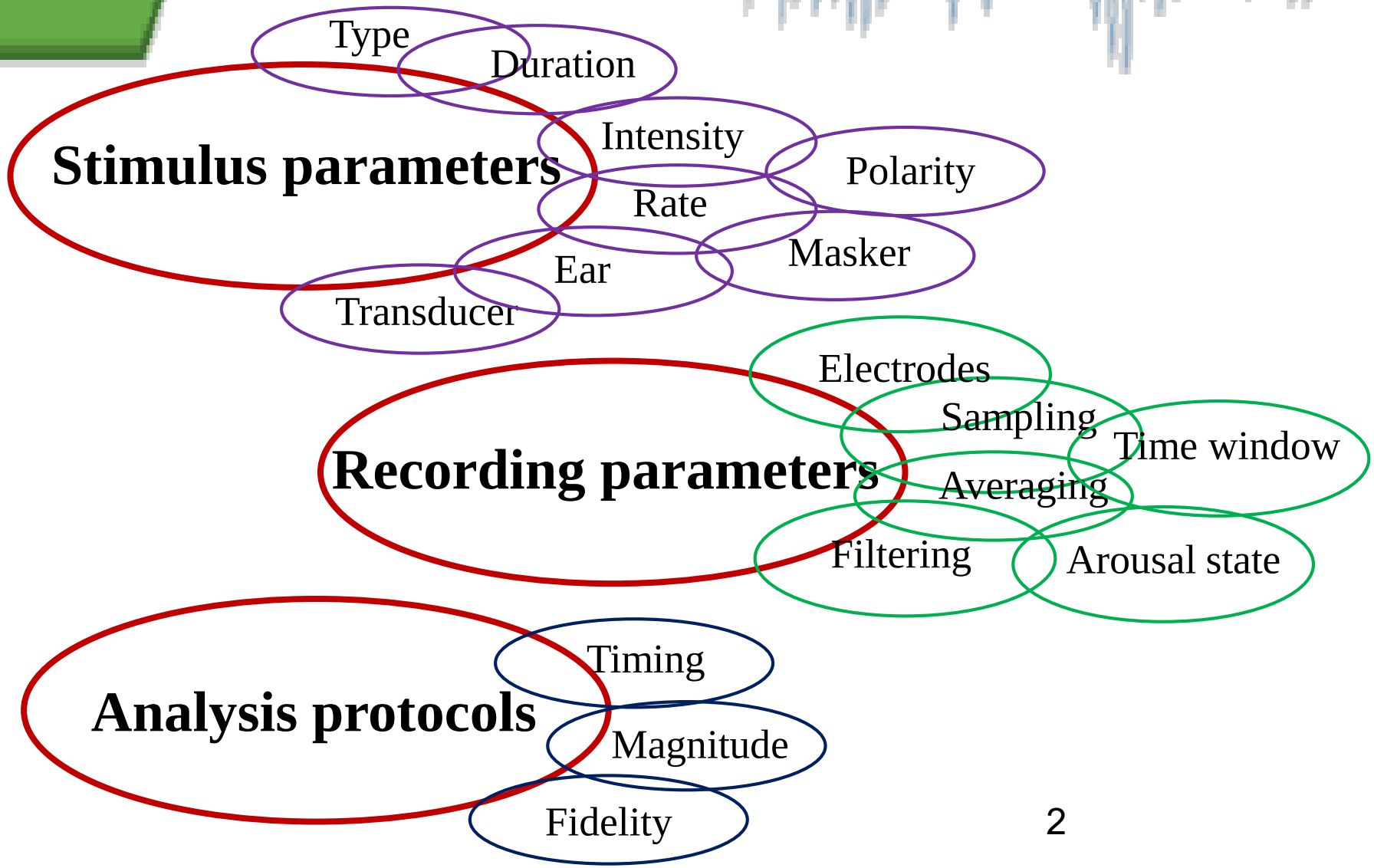
Mohanna Javanbakht

PhD of Audiology

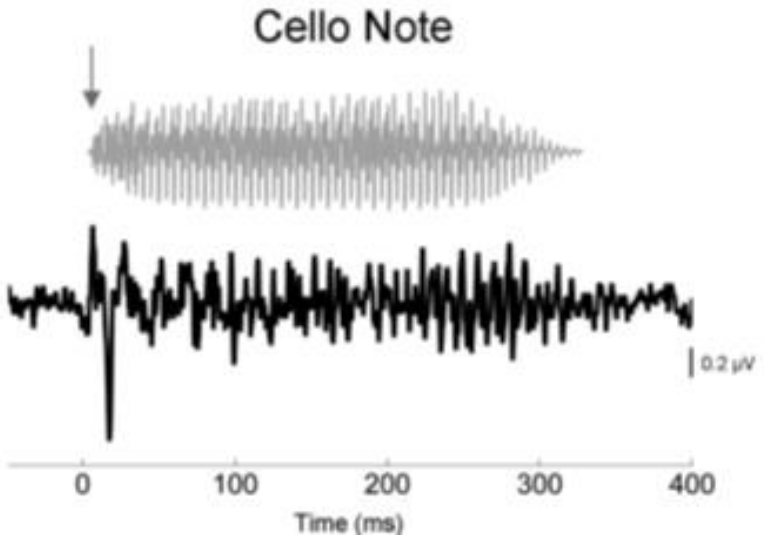
University of Social Welfare & Rehabilitation Sciences

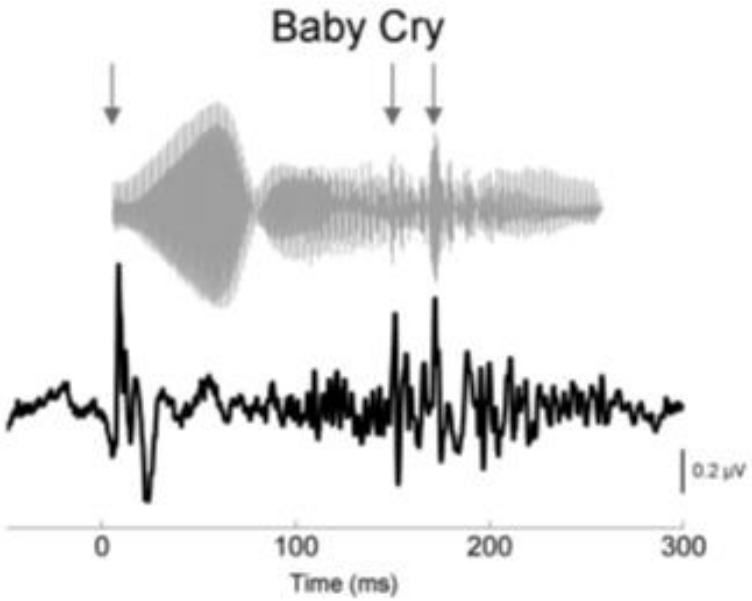
m.javanbakht@yahoo.com

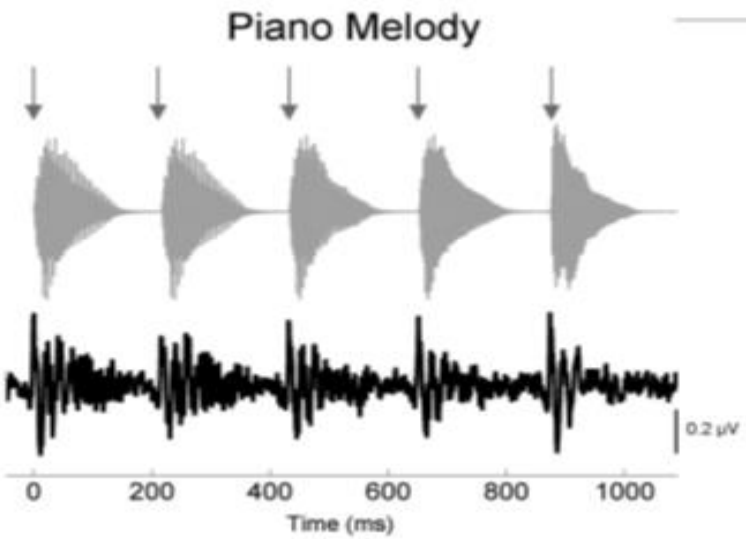
Evoked potential recording



Stimulus parameters: *Stimulus type*







Stimulus parameters: *Stimulus type*

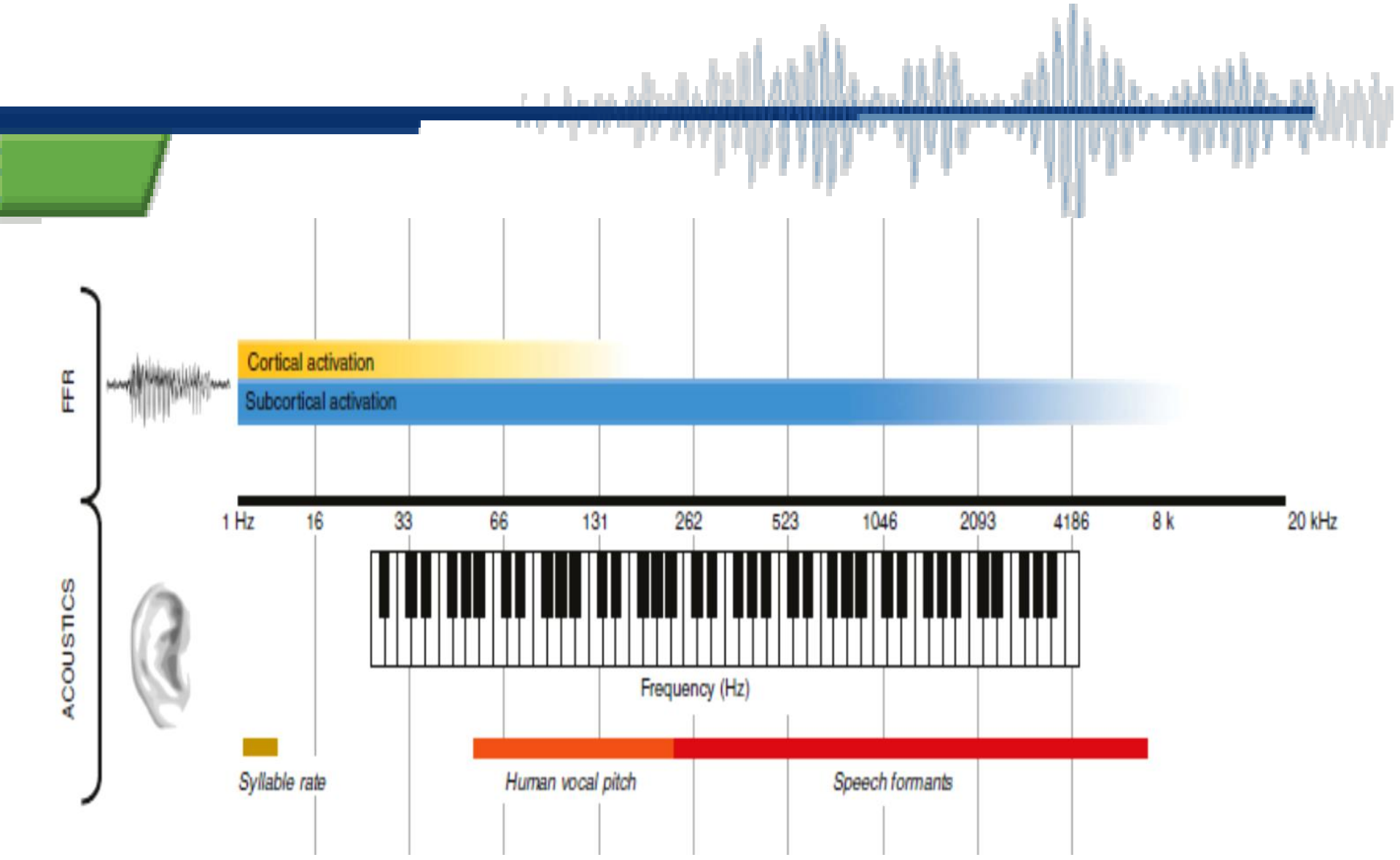
Speech (synthetic, natural, hybrid)
music,
non-speech vocal sounds,
environmental sounds,
etc.

محرکات گفتاری و موسیقایی در Complex-ABR استفاده می شوند.

examine how different sounds are turned into neural code

Stimulus parameters: *Stimulus type*

Sense of sound



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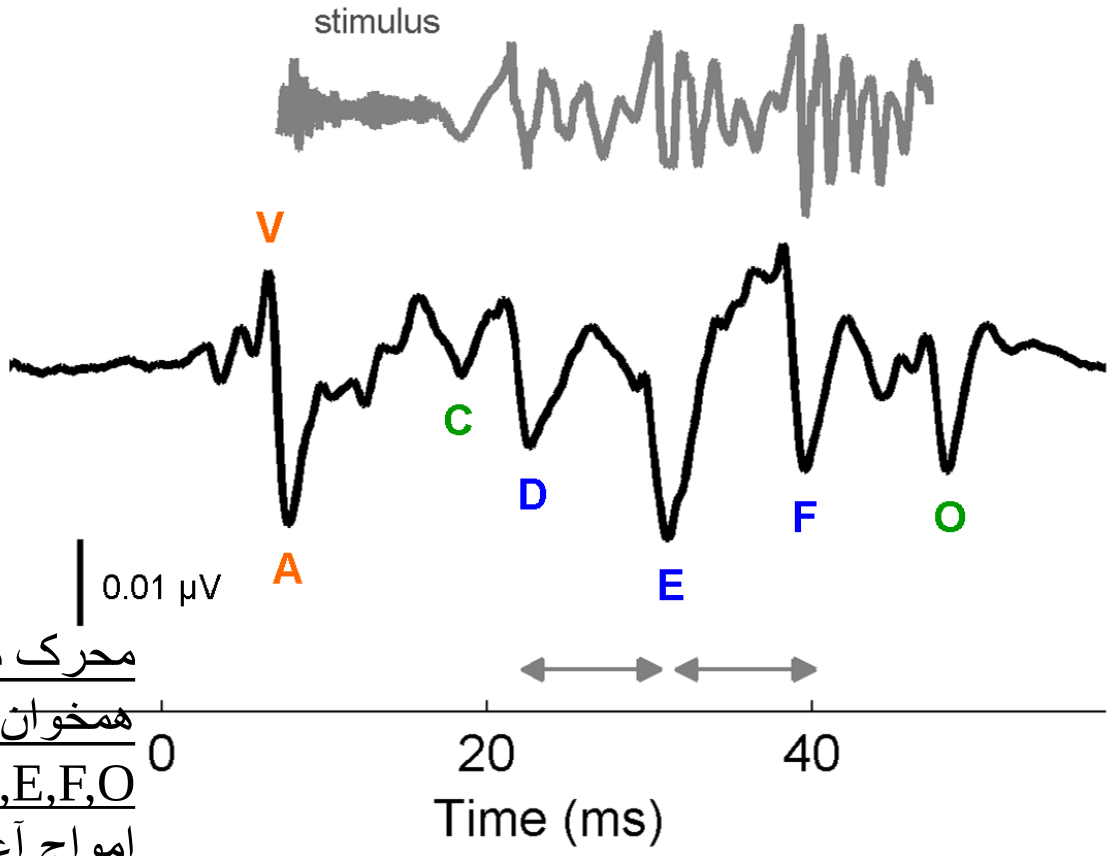
Stimulus parameters: *Stimulus type*

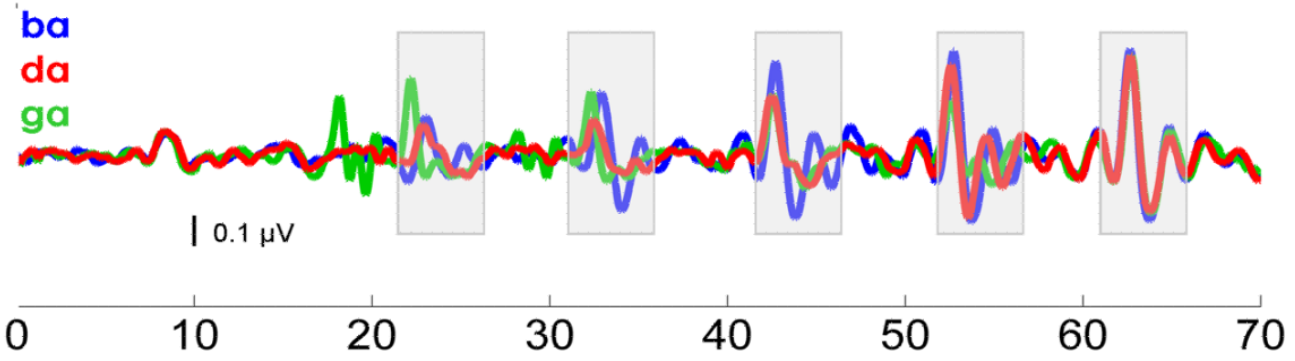
Transient:
well-defined temporal features
-strong attacks
-amplitude bursts

Sustain:
F0 < 500 Hz



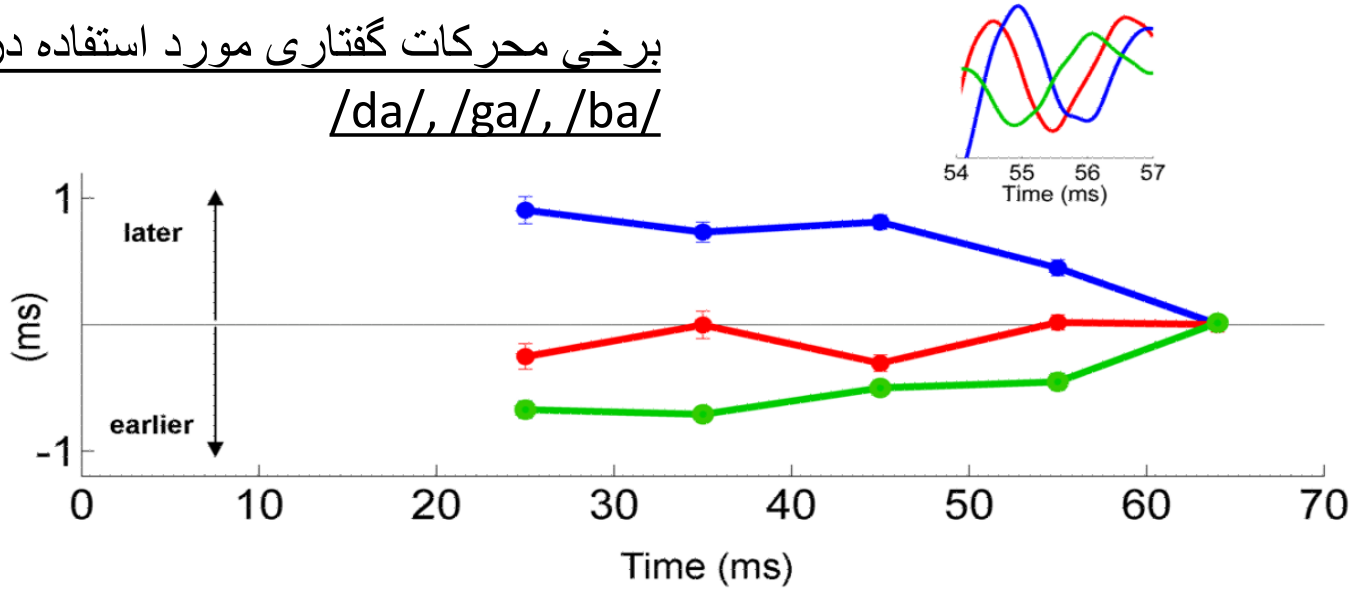
محرک مرسوم در Speech-ABR، محرک همخوان- واکه /da/ است. امواج آن، V,A,C,D,E,F,O است.
امواج آغازین یا onset: V.A
امواج پایانی یا offset: O

Stimulus parameters: *Stimulus type*



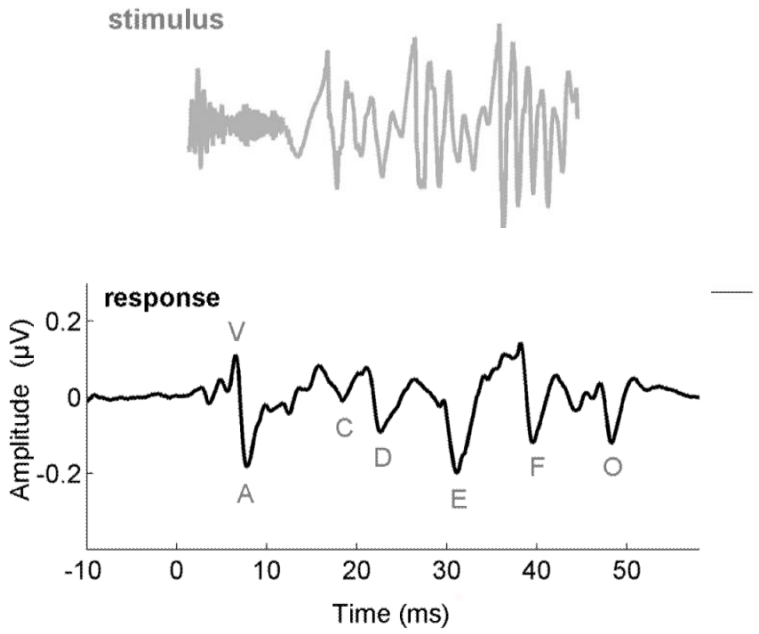
برخی محرکات گفتاری مورد استفاده در S-ABR:

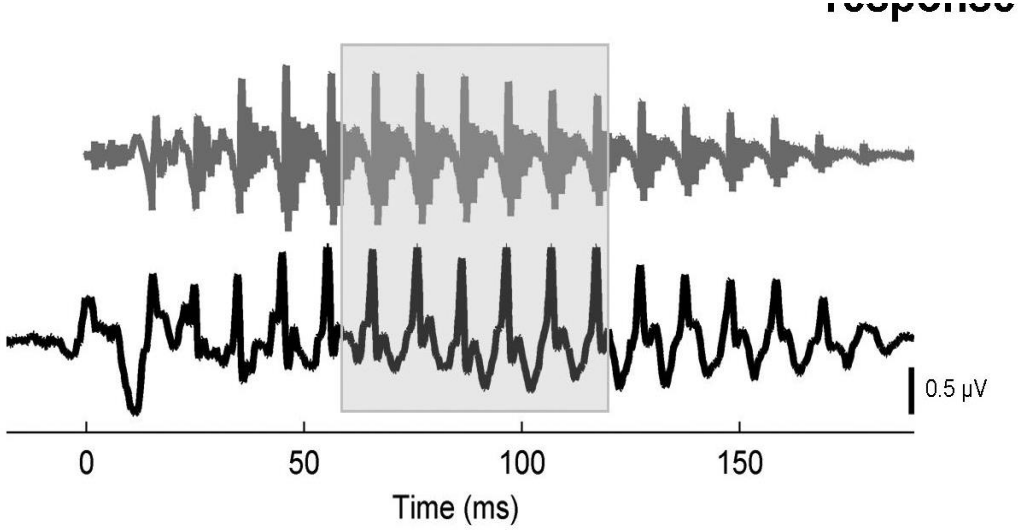
/da/, /ga/, /ba/



Stimulus parameters: *Stimulus duration*

short: **40 ms** to 100 ms …….. minimizes recording time
long: 100 ms to 500 ms …….. maximizes naturalness
More???!!!





Stimulus parameters: *Stimulus intensity*

1/ Supra Threshold
(60-80 dB SPL)

2/ Overall effects of intensity on AEP

3/ Increase Intensity:
- Transient Part …… 10dB////// 0.6 Lat. decrease
- Sustain/ FFR part ……. 10dB////// 1.4 Lat. Decrease

Different neural processing for the transient and sustained part of the speech-ABR response

Stimulus parameters: *Stimulus polarity*

Rare. = Cond.= Alt.

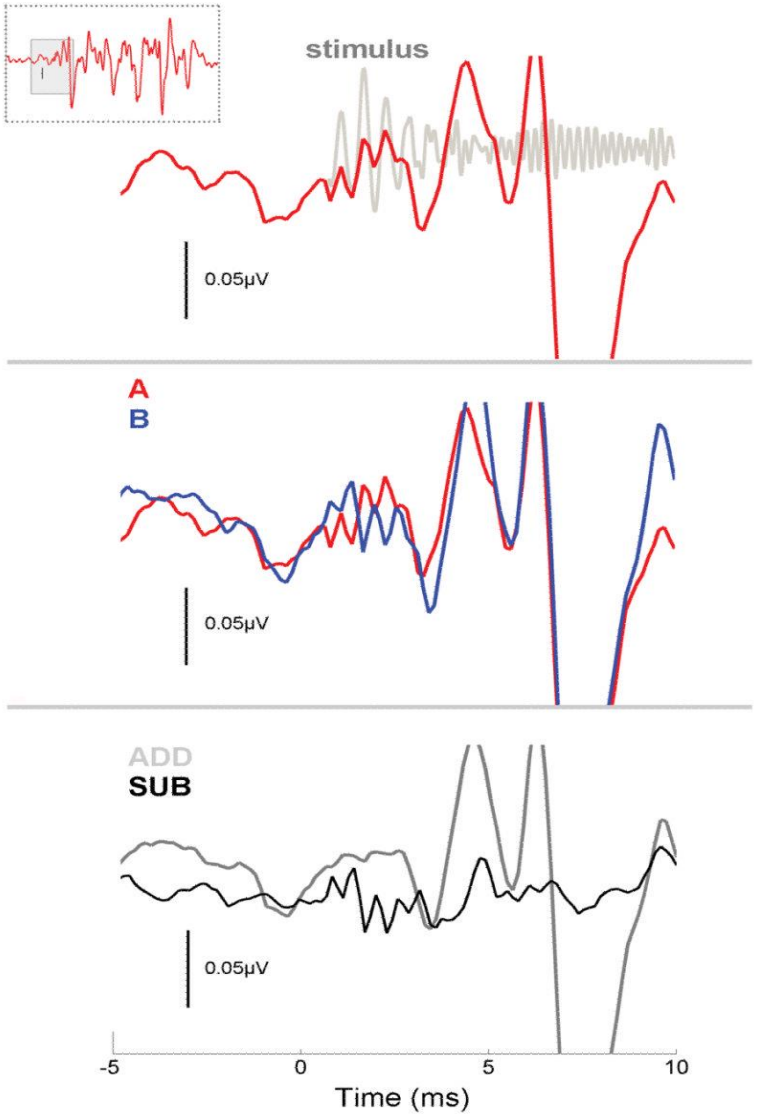
Alt.

*Disadvantages…….

Decrease HF amplitude

*Advantages ……..

Decrease Artifacts, ground Noise, CM



Stimulus parameters: *Stimulus rate*

rate: dependent on stimulus duration

10.9 Stim/Sec

Stimulus parameters: *Stimulus ear*

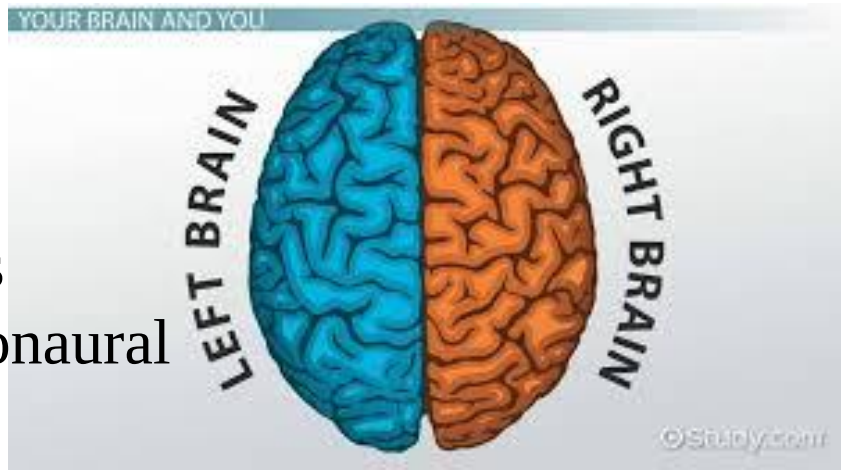
Monaural Stimulation:

separate norms should be collected for each ear

monaural is preferred for children

R=L (no laterality at BS level)

R≥L (Language processing Laterality)



Binaural Stimulation:

maximizes response characteristics

binaural is more realistic than monaural

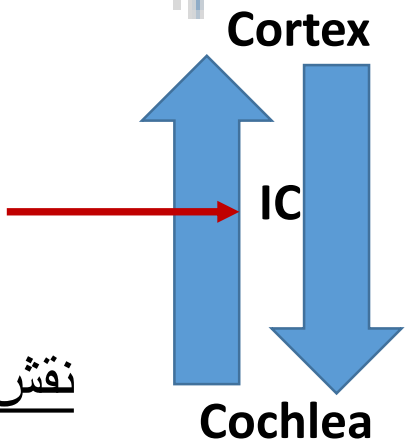
*BIC

Stimulus parameters: *Stimulus transducer*

Ear inserts…… minimizes stimulus artifact

Stimulus parameters: *noise and masking*

Ipsilateral……..
Contralateral…….
Bilateral…….
Speech in noise comprehension
Efferent system evaluation

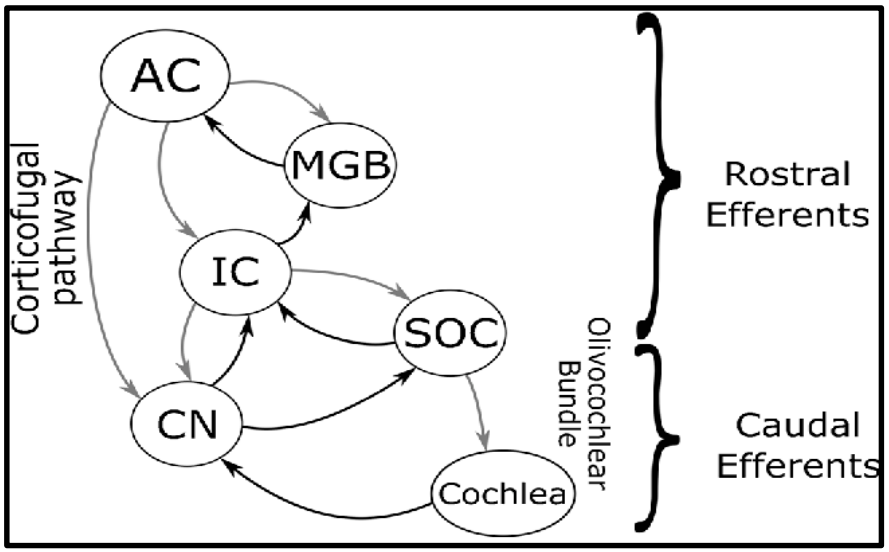


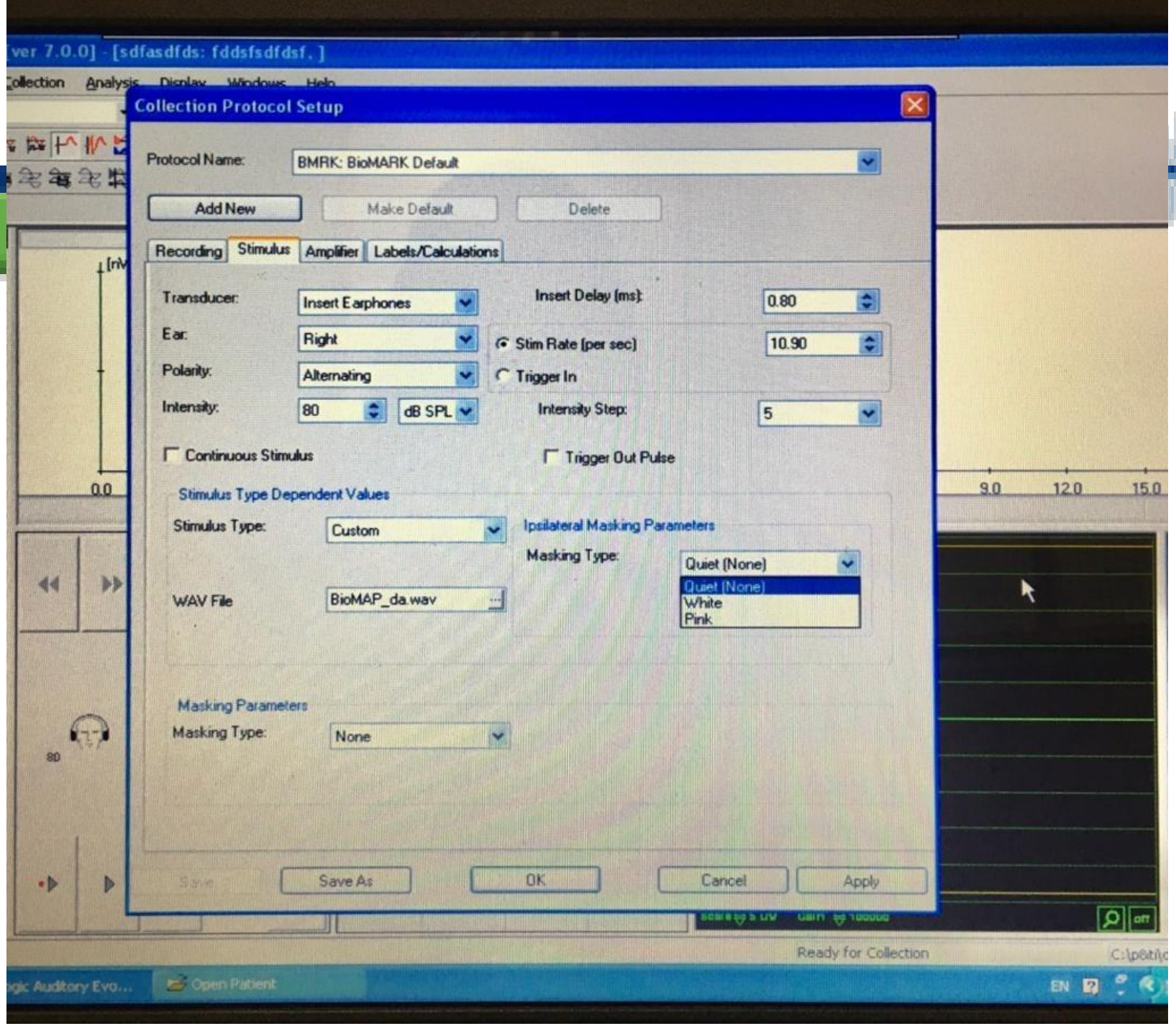
نقش IC در پاسخ Speech-ABR بارز است

گزارش برتری های پردازشی در موسیقی دانان، دوزبانه ها و چندزبانه ها

اختلال پاسخ در اوتیسم و اختلالات یادگیری و دیسلکزیا

قابل کاربرد در پایش نتایج اثرات توانبخشی CAPD یا اختلالات پردازش شنوایی مرکزی




ver 7.0.0] - [sdfasdfds: fddsfsdfdsf,]
Collection Analysis Display Windows Help
Collection Protocol Setup
Protocol Name:
BMRK: BioMARK Default
Add New
Make Default
Delete
Recording
Stimulus
Amplifier
Labels/Calculations
Transducer:
Insert Earphones
Insert Delay (ms):
0.80
Ear:
Right
Stim Rate (per sec)
10.90
Polarity:
Alternating
Trigger In
Intensity:
80
dB SPL
Intensity Step:
5
Continuous Stimulus
Trigger Out Pulse
Stimulus Type Dependent Values
Stimulus Type:
Custom
Ipsilateral Masking Parameters
Masking Type:
Quiet (None)
Quiet (None)
White
Pink
WAV File
BioMAP_da.wav
Masking Parameters
Masking Type:
None
Save
Save As
OK
Cancel
Apply
0.0
9.0
12.0
15.0
80
Ready for Collection
Open Patient
EN

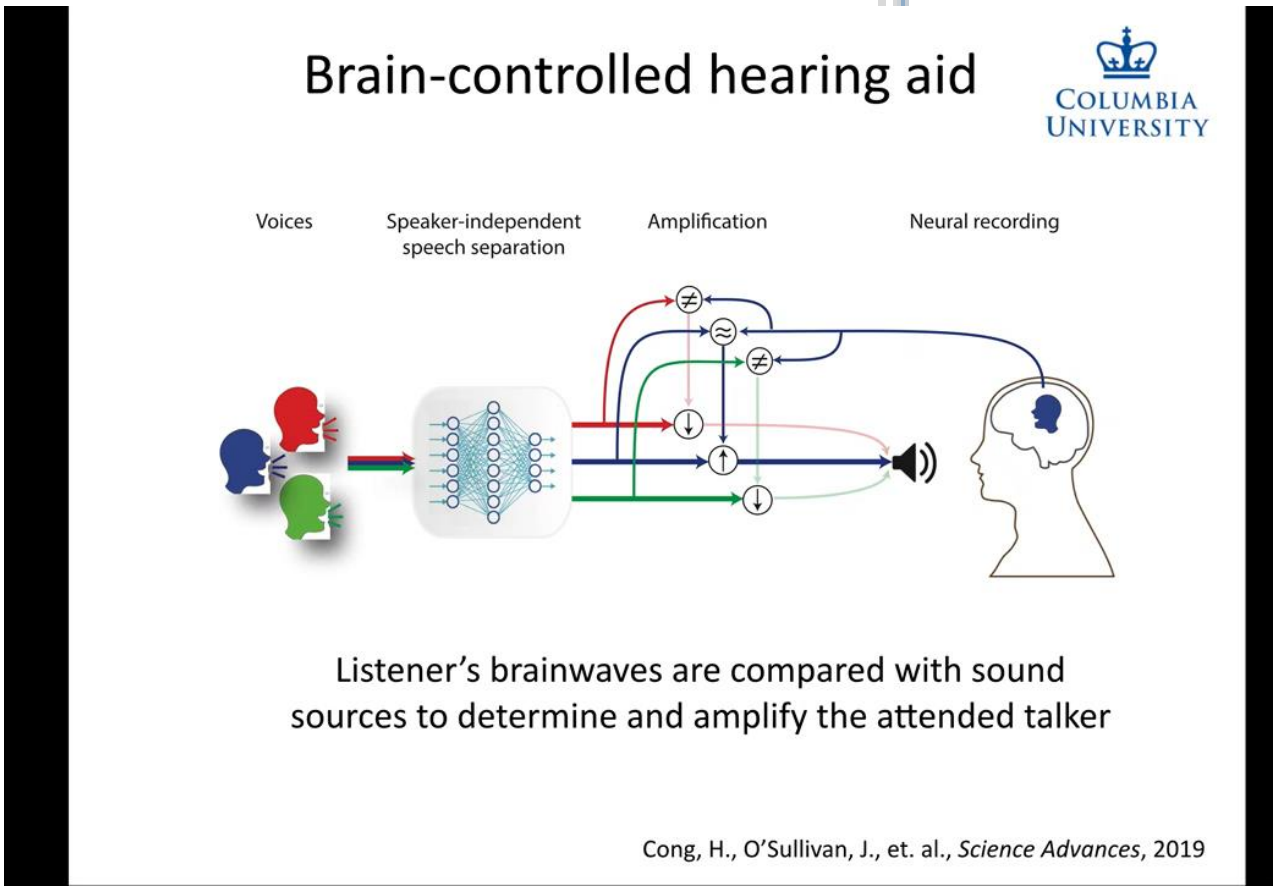
Recording parameters: *Arousal and attention*

Sleep or Awake ???

Active or Passive??

آزمودنی بهتر است در حالت بیدار و غیرفعال باشد.

Attention Effect



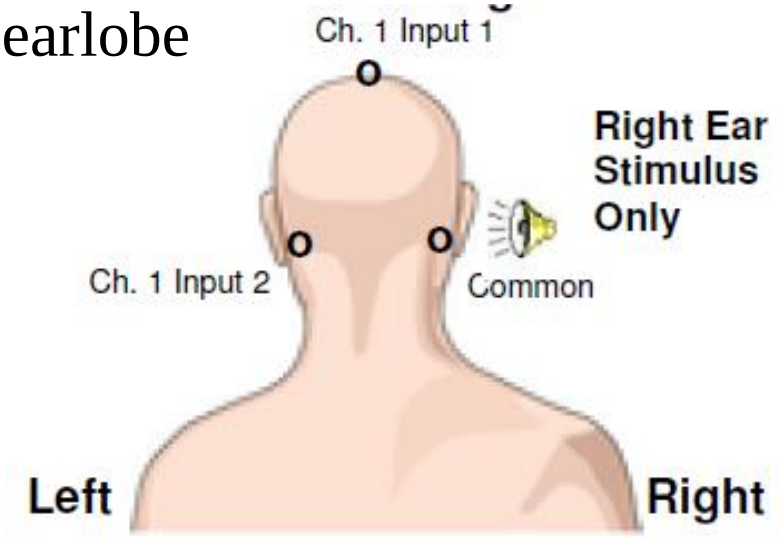
Recording parameters: *Electrode Montage*

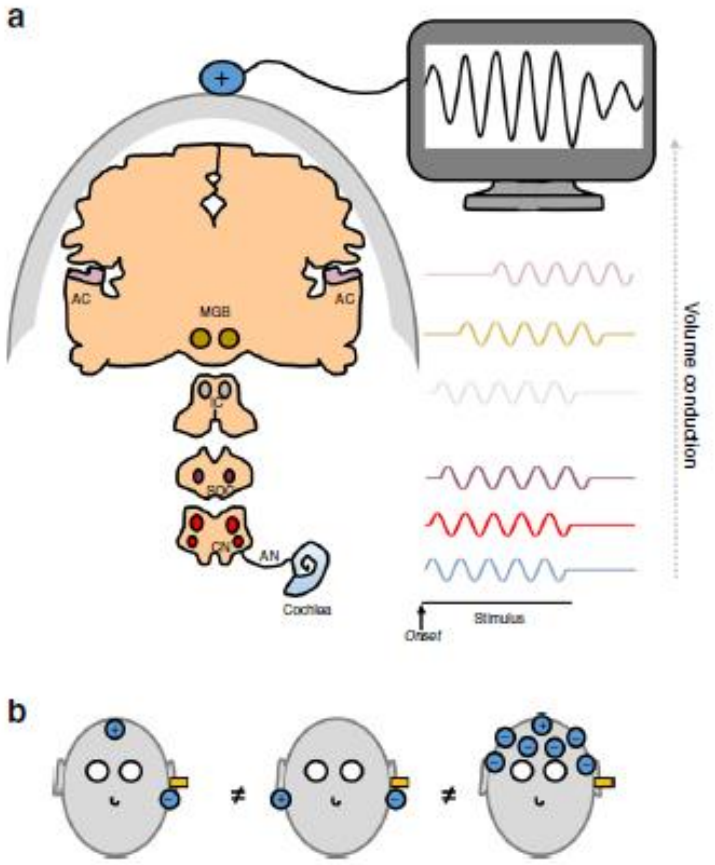
vertical montage ???

*active Channel: Cz; (FPz?)

*reference: earlobe(s); (mastoid ?) ipsi

*ground: forehead or opposite earlobe





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Recording parameters:

Sampling Rate:
6000-20000 Hz

Filtering:
low pass cutoff: 2000-3000 Hz
high pass cutoff: 30-100 Hz
(1-3000 Hz)

Speech-ABRTime Window :
begin 10-50 ms before stimulus onset to back to rest

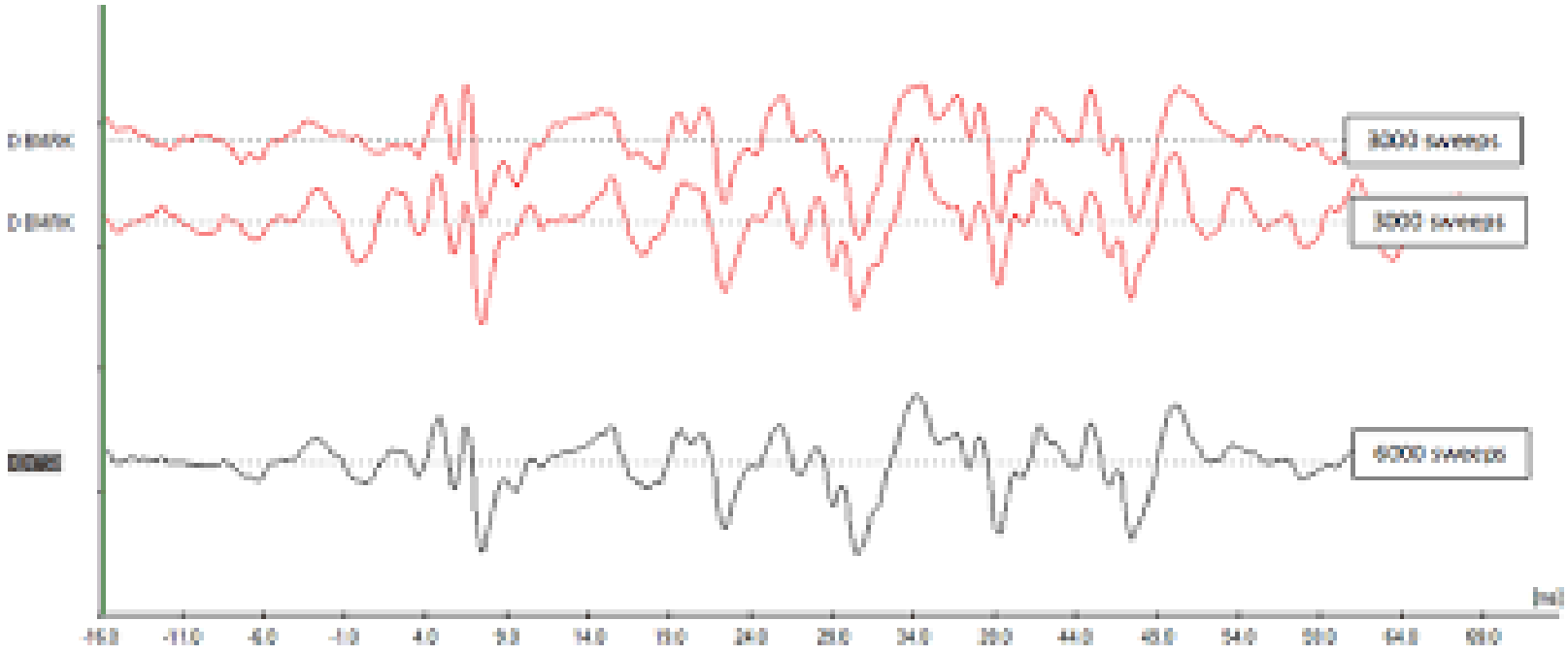
دریچه زمانی طولانی تر نسبت به ABR مرسوم

Recording parameters: *Averaging*

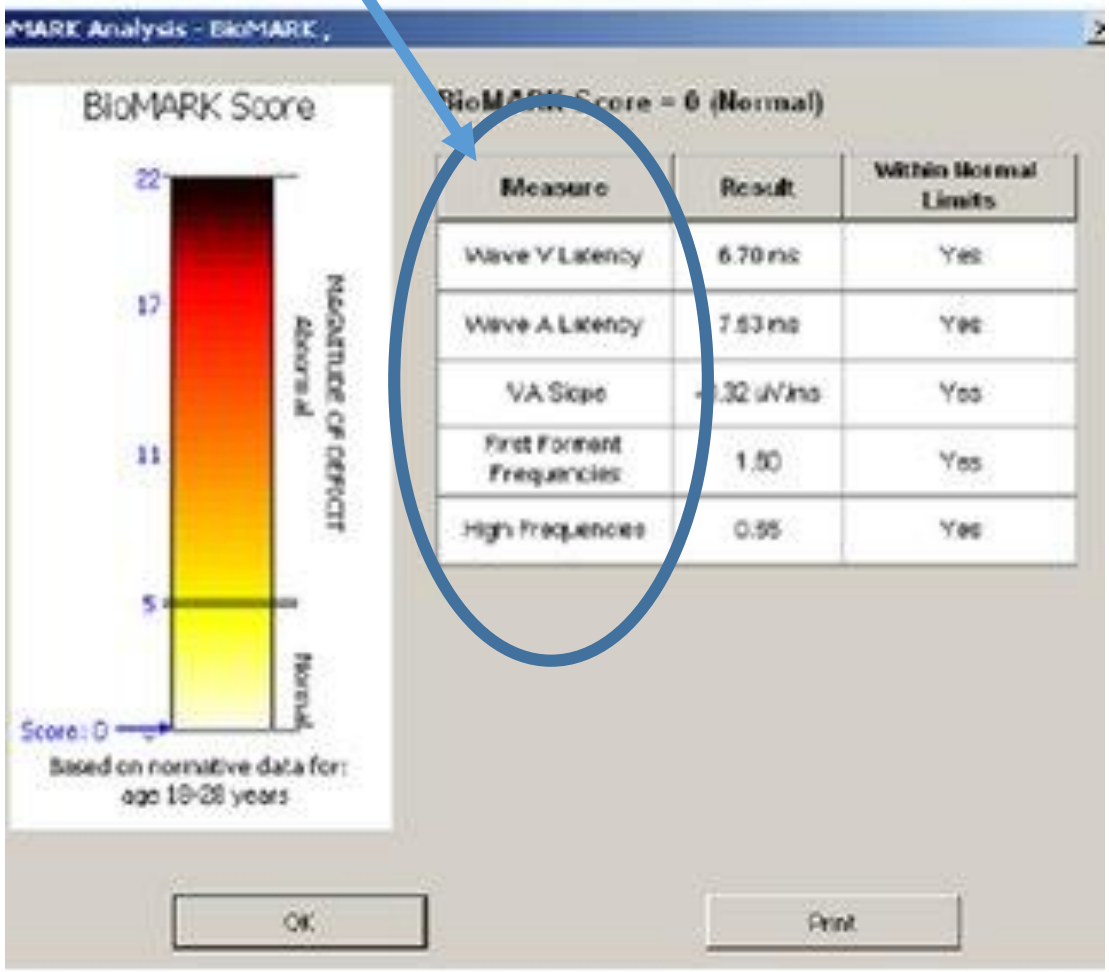
Signal Averaging:

2 or more sub-averages of 2000-3000 sweeps

determine response reproducability



پارامترهای تشخیصی S-ABR



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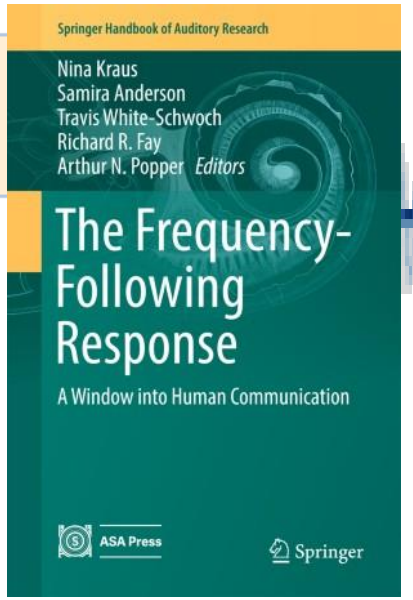
Auditory brainstem response to complex sounds: a tutorial

Erika Skoe[a,+] and Nina Kraus[a,b]



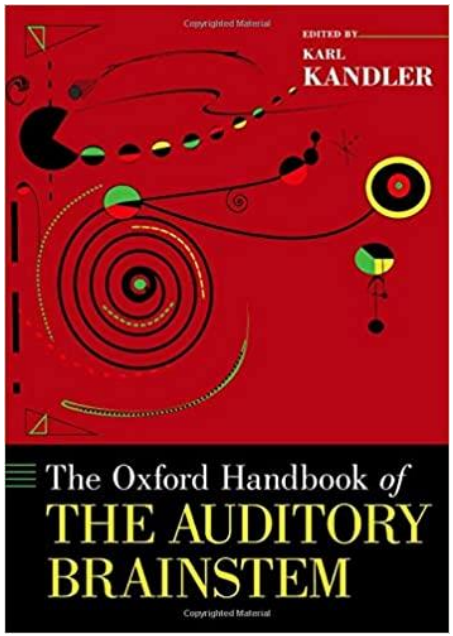
And Vestib Res (2019);28(2):75-86.

REVIEW ARTICLE

Speech-evoked auditory brainstem response: a review of stimulation and acquisition parameters

Abdollah Moossavi[a], Yones Lotfi[b], Mohanna Javanbakht[c*], Soghrat Faghihzadeh[c]

[a]- Department of Otolaryngology, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
[b]- Department of Audiology, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[c]- Department of Biostatistics and Epidemiology, Zanjan University of Medical Sciences, Zanjan, Iran



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Speech-ABR in contralateral noise: A potential tool to evaluate rostral part of the auditory efferent system

Yones Lotfi[a], Abdollah Moossavi[b], Mohanna Javanbakht[a,*,1], Soghrat Faghih Zadeh[c]

[a] Department of Audiology, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[b] Department of Otolaryngology, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
[c] Department of Biostatistics and Epidemiology, Zanjan University of Medical Science, Zanjan, Iran

M.Javanbakht,2020

At last but not least: Virtual Practice


In the middle of difficulty lies opportunity
Albert Einstein