



Tinnitus Activities Treatment

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Tinnitus Activities Treatment

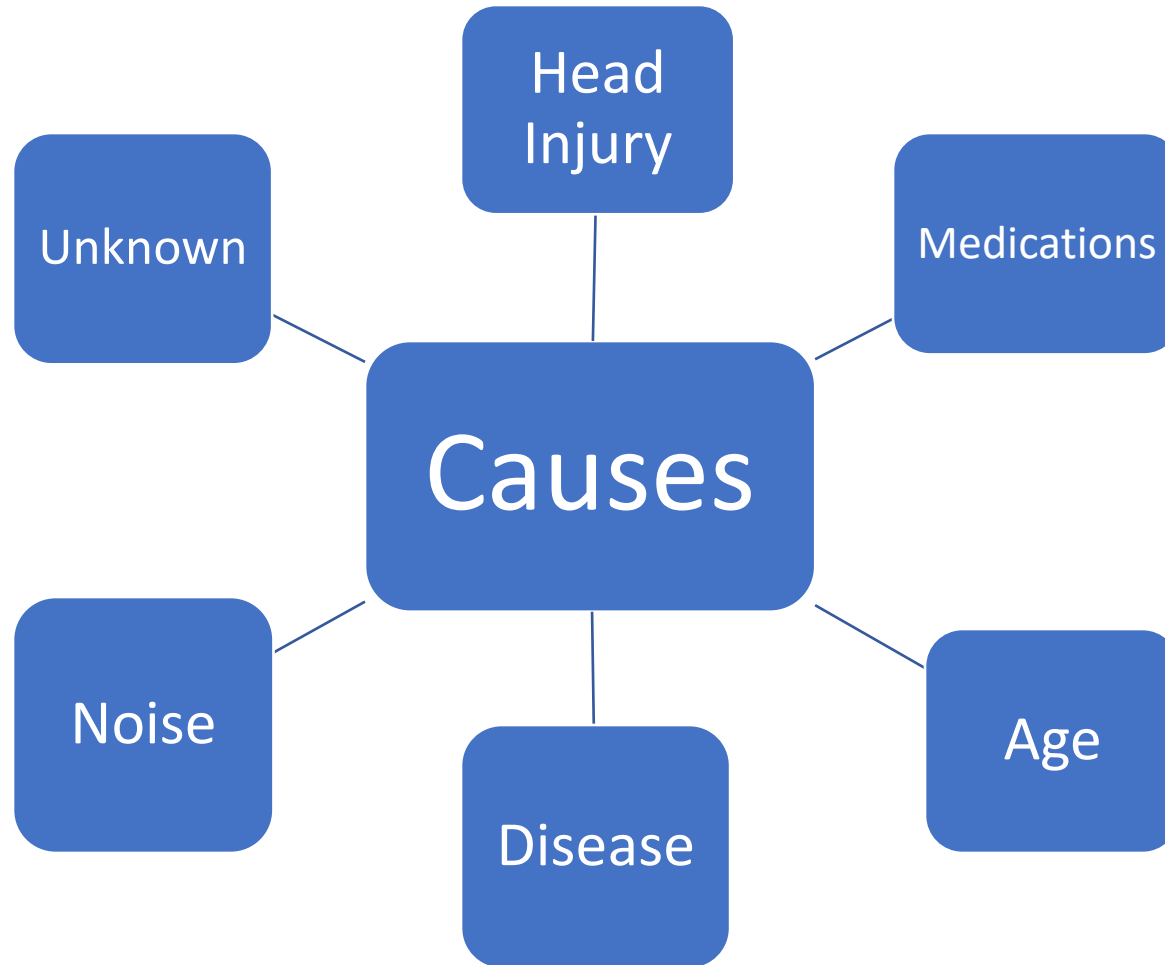
Introduction

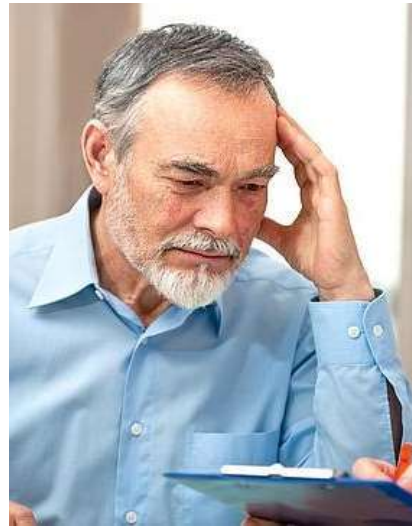
- 4 Topics
 - 1) Thoughts & Emotions
 - 2) Hearing
 - 3) Sleep
 - 4) Concentration
 - Chosen based in individual needs
- One Topic per counseling session
- Homework activities assigned, practiced in clinic, & reviewed next visit



Where do
YOU want to
start?

What do you think caused your tinnitus?





When your tinnitus began, what was your life like (home, work, etc.)?



How has tinnitus influenced
your life?



How do YOU
think we might
be able to help?

Four Topic Areas Considered in our Treatment

1. Thoughts and Emotions
2. Hearing and Communication
3. Sleep
4. Concentration

1. Thoughts and Emotions

- Hearing, hearing loss, and tinnitus
- Attention, behavior, and emotions
- Changing your reactions to tinnitus



2. Hearing and Communication

- Hearing and communication difficulties
- How tinnitus can affect hearing
- How to improve your hearing



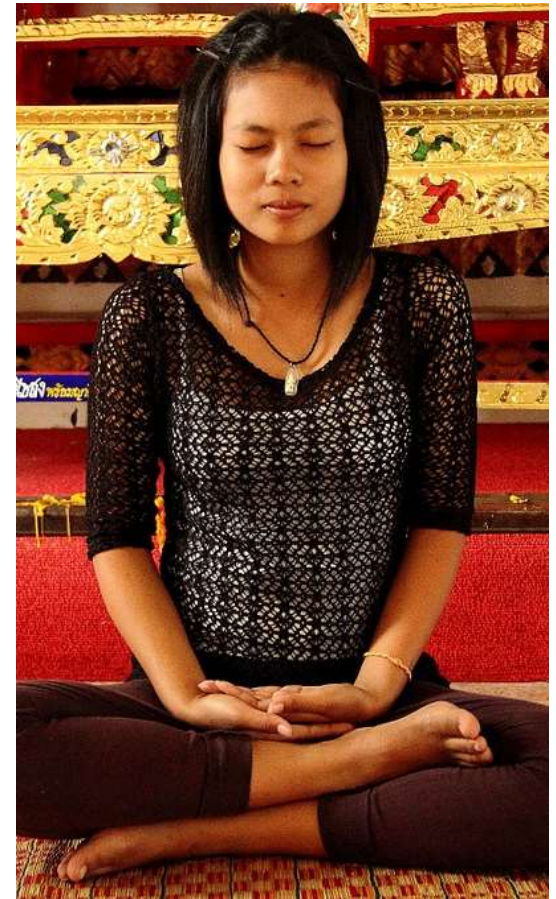
3. Sleep

- Normal sleep patterns
- Tinnitus and sleep
- Activities to facilitate sleep
- Waking up at night



4. Concentration

- Things that affect concentration
- How tinnitus affects concentration
- Strategies to improve concentration



Tinnitus Activities Treatment

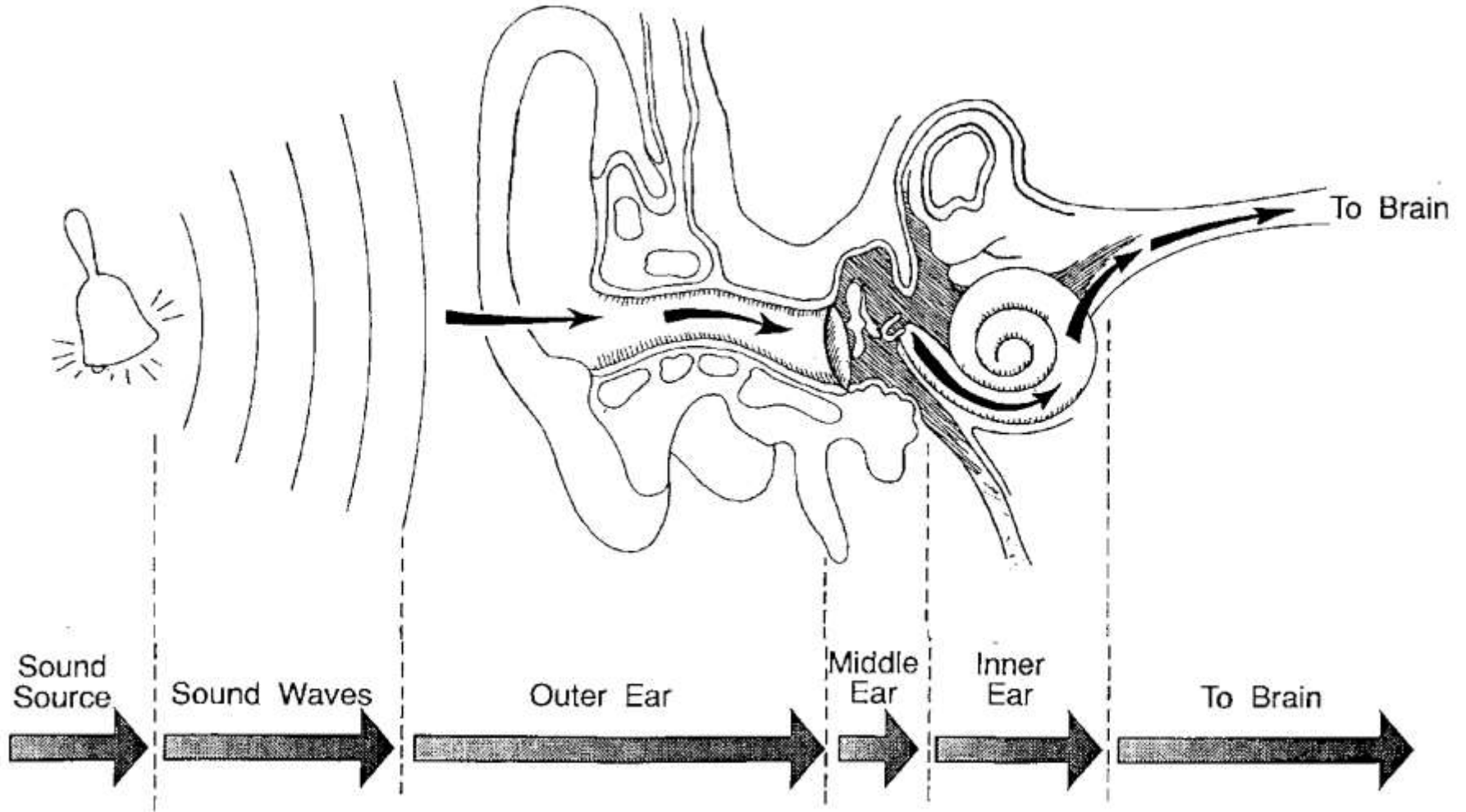
Thoughts and Emotions

Session

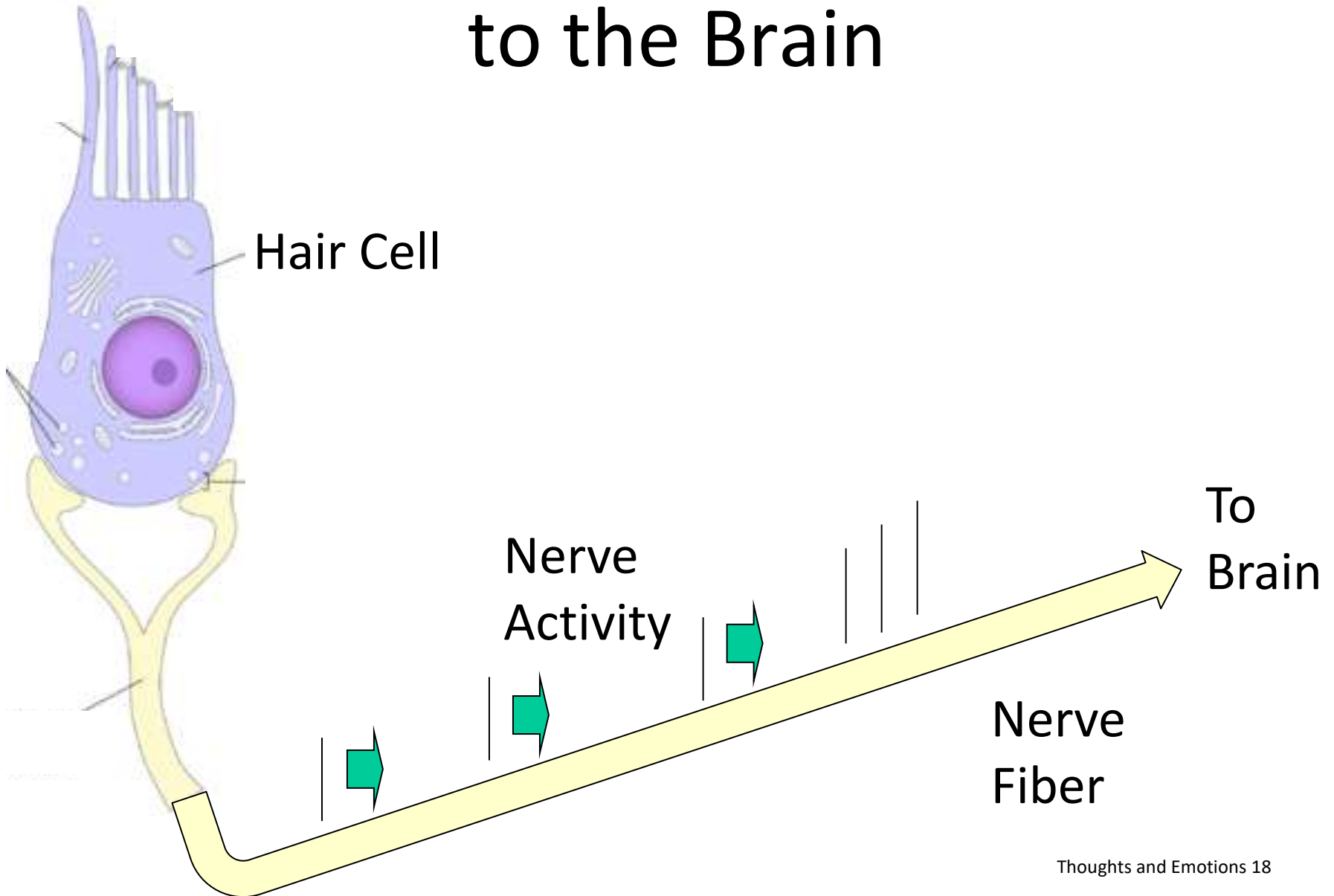
Overall Plan

1. Hearing and hearing loss
2. Tinnitus
3. Attention, behavior, and emotions
4. Changing your reactions
5. Activities for home

How We Hear

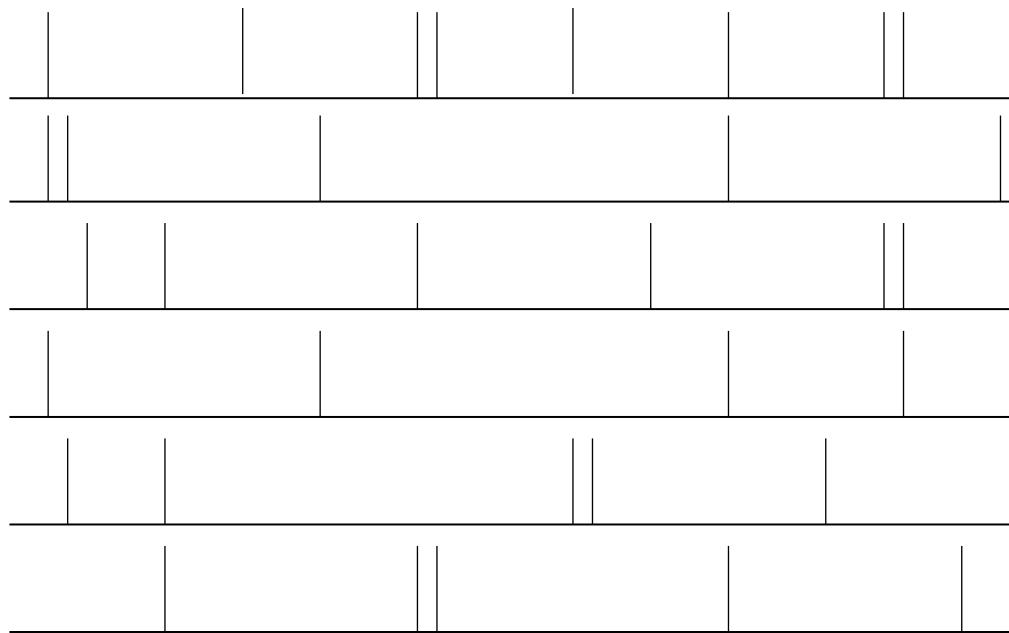


Nerve Activity Carries Information to the Brain



Spontaneous Activity on Hearing Nerves

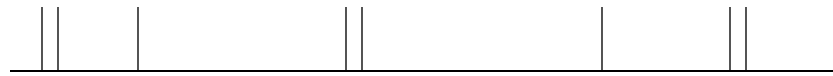
No Sound
(Quiet)



Hear
Silence

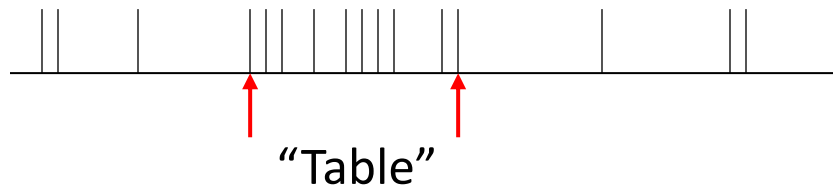
Different Nerve Responses Result in the Perception of Different Sounds

No Sound
(Quiet)



Hear
Silence

Word
"Table"



Hear
"Table"

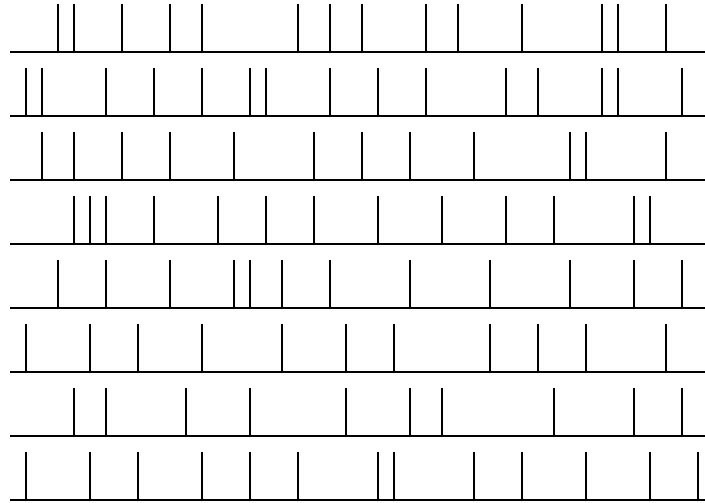
Sound of
a Cricket



Hear a
Cricket

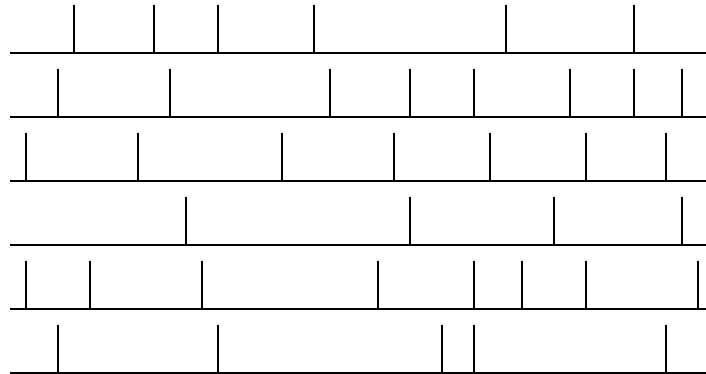
Nerve Activity

Normal
Hearing



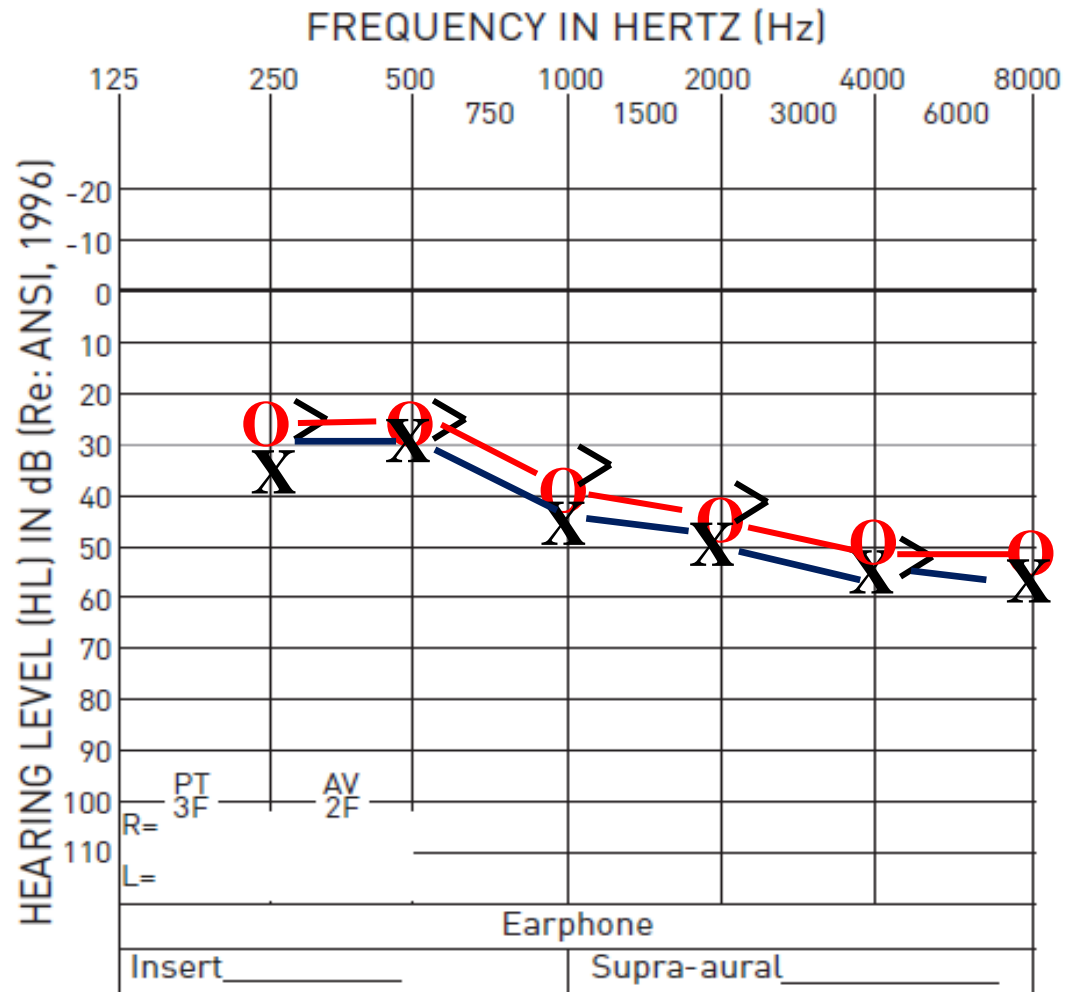
Lots of information
sent to the brain

Hearing
Loss



Limited information
sent to the brain

Your Audiogram



PART 2: TINNITUS



- A sound in ear(s) or head
- Heard differently by different people
(e.g. ringing, buzzing, hissing, etc.)

There Are Many Different Causes of Tinnitus



Tinnitus is Common

- 15 in 100 (15%) people have tinnitus
- 1 in 100 (1%) people have troublesome tinnitus
- 30 in 100 (30%) people over 60 years old have tinnitus



Expectations for Relief

- Currently no drug or surgery can reliably eliminate the source of tinnitus
- However, **YOU** can change your reaction to tinnitus and how it affects you



Tinnitus is an Increase in Spontaneous Nerve Activity

Normal
Hearing



Hear
Silence

Hearing Loss
(No Tinnitus)



Hear
Silence

Tinnitus



Hear
Sound

PART 3: ATTENTION

1. Types of attention
2. How things capture our attention
3. Emotional state has an effect on attention

Many Stimuli Compete for Our Attention



Touch



Vision



Smell



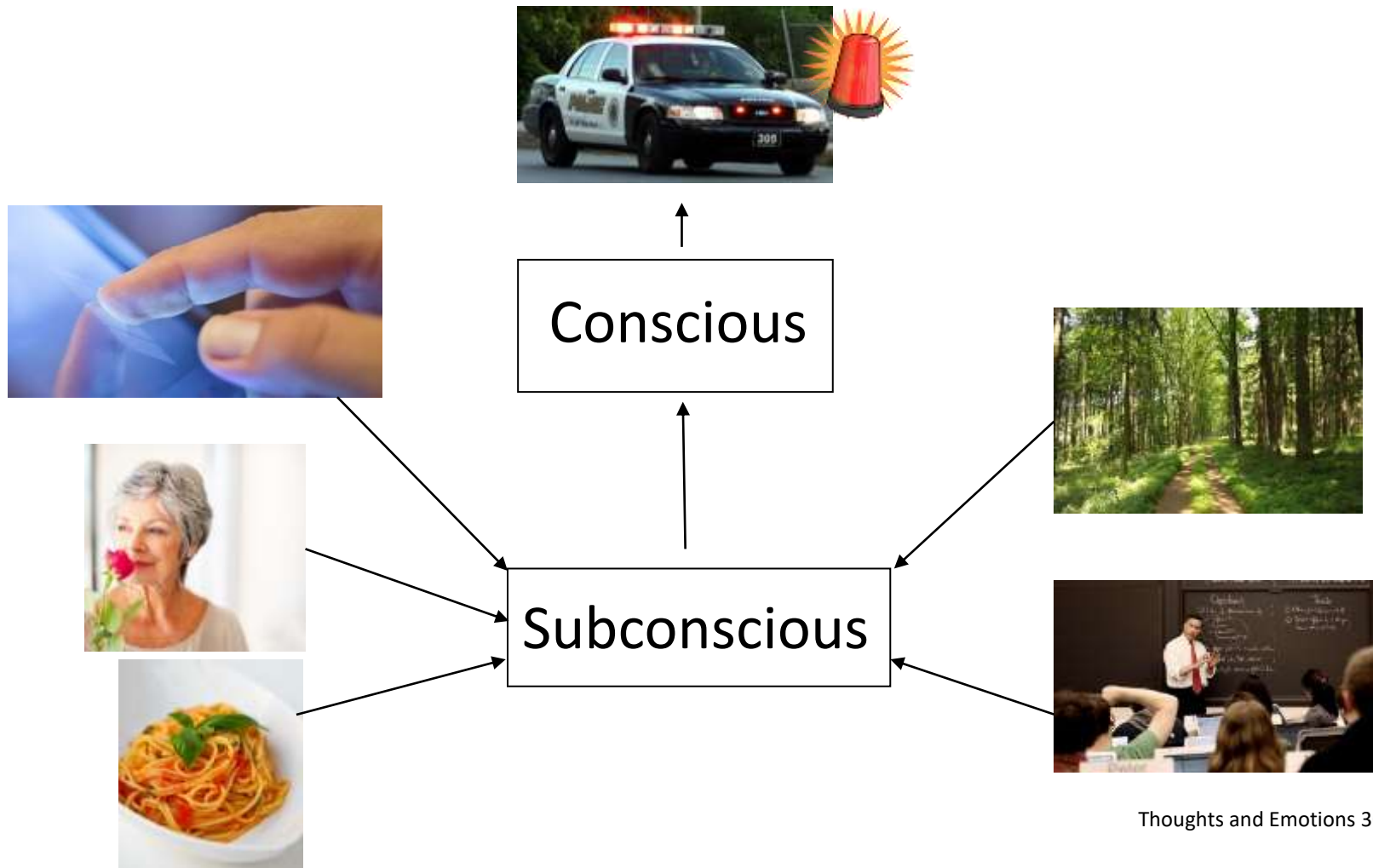
Sound



Taste



An important sound can *grab* our attention



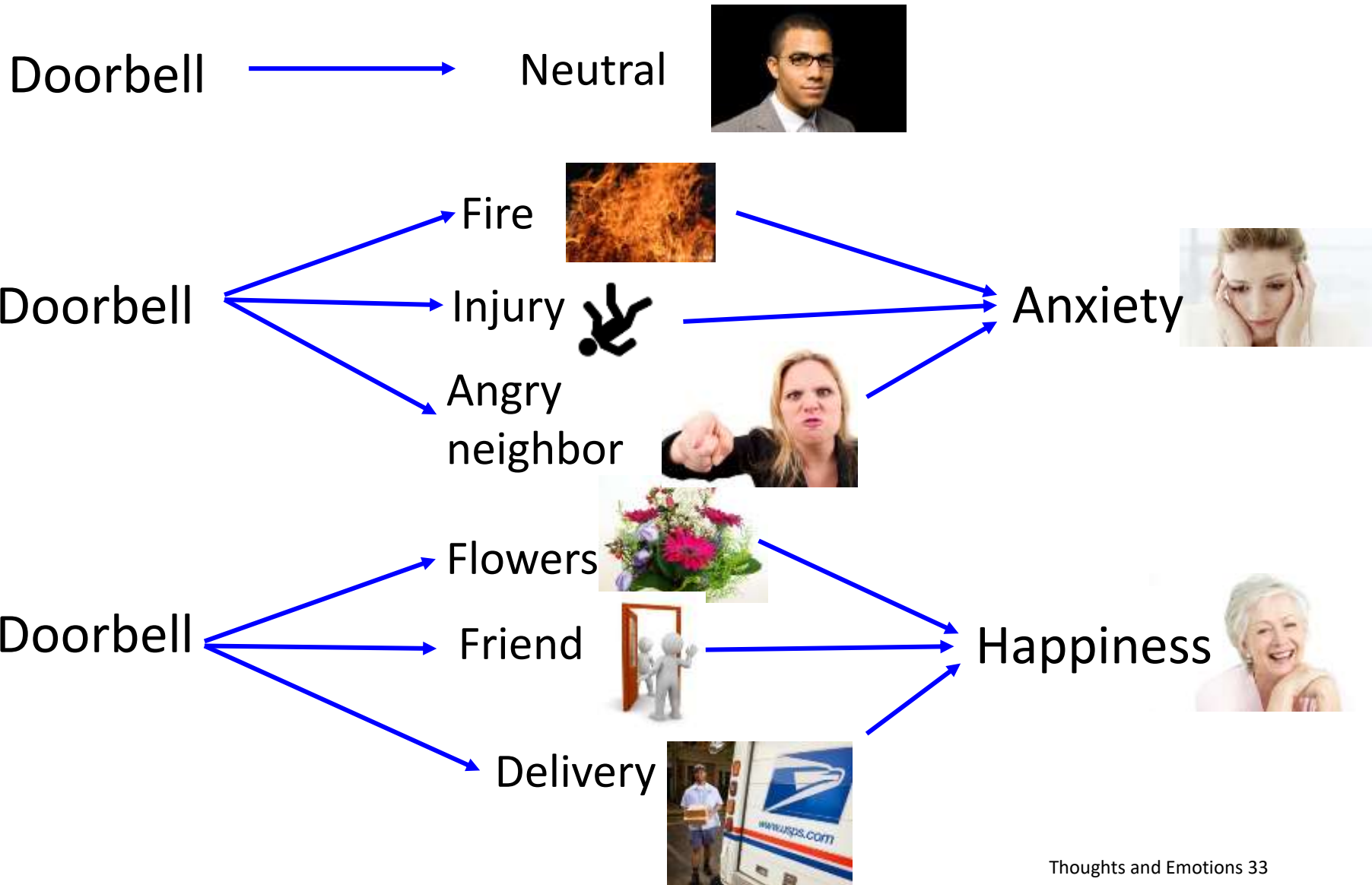
Tinnitus does not...

- Make you deaf
- Lead to senility
- Imply a sign of mental illness

- When you worry about such things, you can become preoccupied with tinnitus

PART 4: CHANGE THE EMOTIONAL REACTION TO TINNITUS

Our Thoughts and Emotions



Change Negative Thoughts

- What kind of thoughts have you had about your tinnitus?
 - Situations where tinnitus is bothersome
 - Thoughts and beliefs about tinnitus
 - Feelings about tinnitus



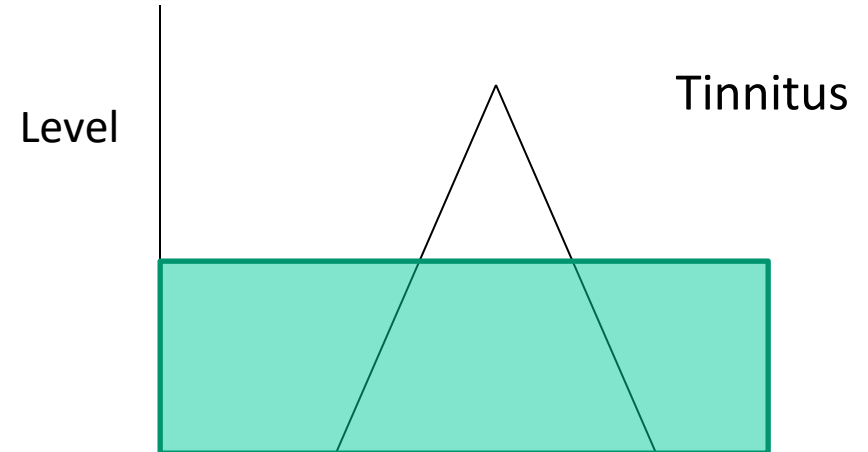
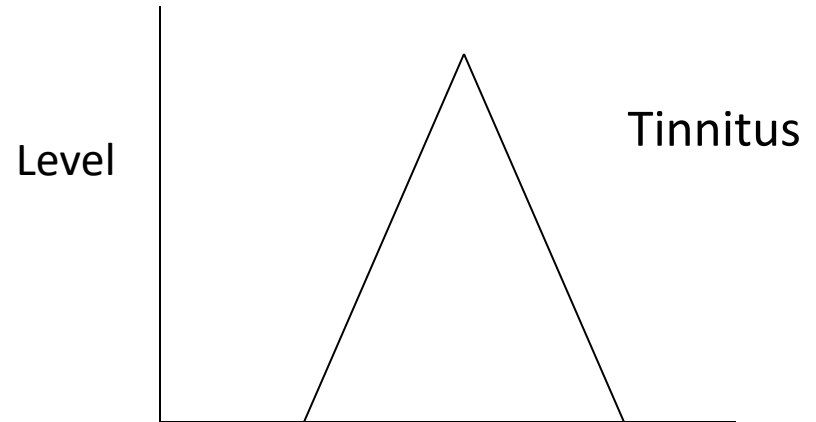
3. Refocus on Other Activities

- What hobbies do you have?
- What activities help you ignore your tinnitus?
- What new activities could you become involved in?



4. Reduce the Contrast Between Tinnitus and Background Sounds

Decrease Prominence of Tinnitus



Background sound masks unwanted sounds



Ways to Add Low Level Background Sound

- Listen to recorded material:
 - Relaxation CDs
 - Smartphone apps
 - Nature sounds
 - Music



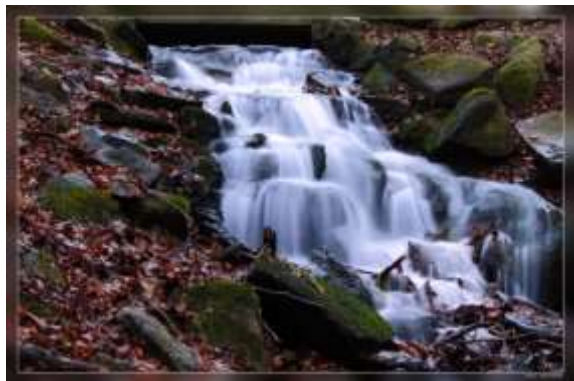
Do Any Sounds Make Your Tinnitus Less Noticeable?



Rain



Music



Waterfall



Static

Example Tinnitus Diary – Week 1

- Make changes in your daily life so you are doing more activities where your tinnitus is better and fewer activities where your tinnitus is worse. List the new activities and how your tinnitus was affected.

Activity

- Day 1: *Walking*
- Day 2:
- Day 3:
- Day 4:
- Day 5:
- Day 6:
- Day 7:

Effect on Tinnitus

- Day 1: *Heard birds chirping, did not notice tinnitus*
- Day 2:
- Day 3:
- Day 4:
- Day 5:
- Day 6:
- Day 7:

Tinnitus Activities Treatment

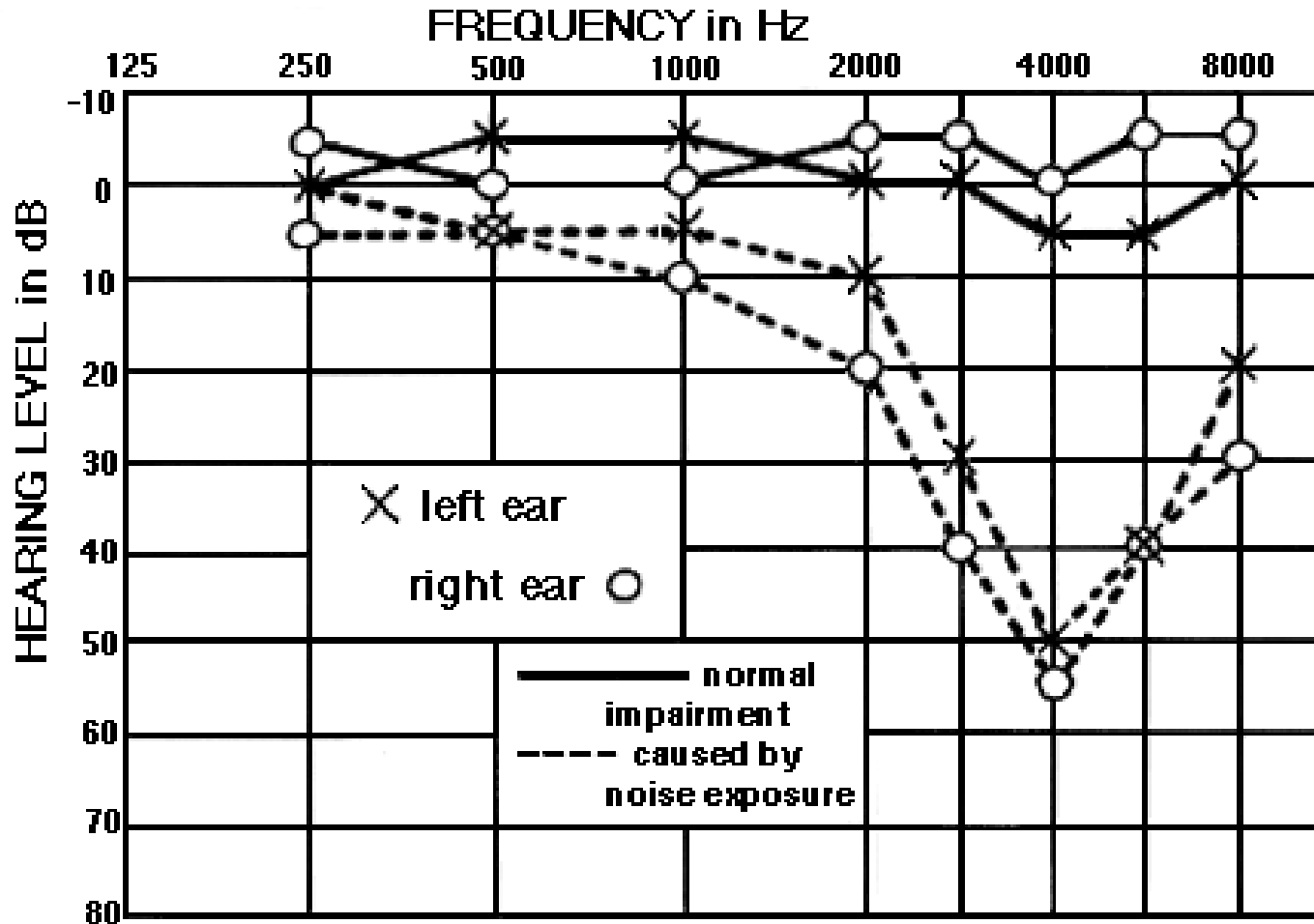
Hearing and Communication

Session

Overview

1. Goals of treatment
2. Hearing and communication difficulties
3. Factors that affect hearing and communication
4. How tinnitus can affect hearing
5. How to improve your hearing
6. Activities for home

Hearing thresholds after noise exposure



3. Factors that Affect Communication

- Hearing loss
- Background noise
- Ability to see the talker
- Familiarity with talker
- Familiarity with topic of discussion
- Stress level



Background Noise

- Difficult situation for many people
- Noise covers up speech
- Remove noise source if possible
- Move away from noise or re-position yourself so that the noise source is away from the talker



Ability to See the Talker



- Lip reading
- Facial cues
- Body language

Your Situation!

- What situations cause you difficulty?
- What techniques have you tried to improve your communication?
- What techniques have been successful?
- What techniques have been unsuccessful?
 - *Thinking what to say next instead of listening attentively*
 - *Getting others to communicate for you*

4. How Tinnitus Can Affect Hearing



- Tinnitus is not damaging your hearing
- Tinnitus can make it harder to hear sounds and distract one from listening
- Tinnitus can also mask some sounds

Benefits of Hearing Aids

- Better hearing of sounds and speech
- More opportunity to interact in conversation because communication is easier
- Localization of sound—important for safety
- What is your experience with hearing aids?



Watching Faces

- Good lighting
 - Avoid light shining directly behind the talker
 - You need enough light to see talker's face
- Positioning
 - Face the talker
 - Position yourself close to the talker
 - Minimize noise
 - Minimize visual distractions

6. Activities

- Keep track of what strategies you use and how they help you hear and communicate better.
 - Can you see the talker's face?
 - Where was the lighting?
 - Can you move to see the talker's face?
 - If a new hearing aid user, try to distinguish different sounds.
 - Rehearse repair strategies.



Tinnitus Activities Treatment

Sleep Session

Overview

1. Normal sleep patterns
2. Things that affect sleep
3. Daytime activities to facilitate sleep
4. Evening activities to facilitate sleep
5. Preparing for sleep
6. Waking up at night
7. Waking up in the morning
8. Activities

1. Normal Sleep Patterns

- The amount of sleep varies greatly from one individual to another
 - 6.5-9 hours/night
- Normal sleep includes several periods of light sleep or awakenings
 - Older adults have more awakenings
- Tinnitus doesn't usually wake people



2. Things That Affect Sleep

- Stress and emotions
- Environmental factors
 - Noise
 - Light
 - Temperature
- Irregular work schedules
- Learned sleeplessness patterns
- Jet lag/time zone changes

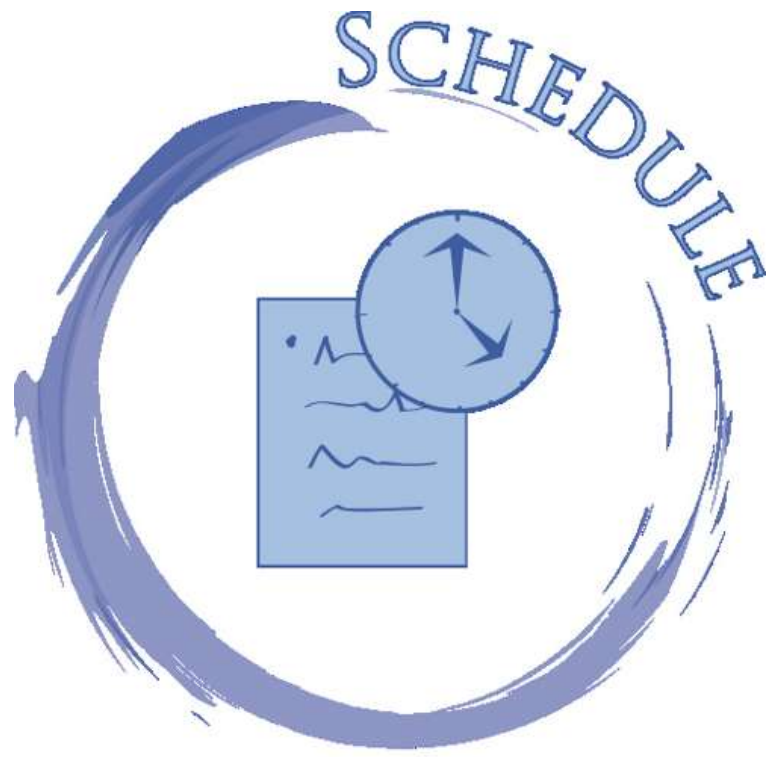




Things That Affect Sleep, continued

- Physical conditions (sleep apnea, restless leg)
- Medications
- Caffeine (coffee, tea, cola, chocolate)
- Nicotine (smoking)
- Alcohol (excessive)

4. Evening Activities to Facilitate Sleep



- Create a curfew separating day and night
 - At least 1 ½ hours before bedtime
- After that time, avoid:
 - Stress
 - Exercise
 - Eating

Choose soft,
pleasant sounds
you enjoy

- Music
 - Calm, soothing, steady, classical
- Sounds of nature
 - Waves, rain
- Broadband noise
 - ‘ssshhh’



5. Preparing for Sleep with Relaxation

Techniques:

- Progressive muscle relaxation
- Visual Imagery



Progressive Muscle Relaxation

- Learn to systematically tense and relax groups of muscles
- With practice, you will recognize a tensed muscle vs. a relaxed muscle
- This skill allows you to produce physical muscular relaxation at the first signs of tension



Progressive Muscle Relaxation- Practice Exercise



1. Start with your arms
2. Make a fist and tense your arms for 15 seconds
3. Release the tension
4. Breathe deeply and pay attention to the sensation of your arms relaxing



Visual Imagery - Practice Exercise

1. Close your eyes
2. Think of a relaxing scene (the beach)
3. Try to imagine the scene as clearly as you can
4. The smell of the water, warm sand on feet, sound of ocean
5. Allow yourself to relax as you imagine the location in your mind

8. Activities



- What things may be affecting your sleep?
- Could you change your activities or arrange your bedroom differently to improve sleep?
- Utilize the daytime and evening activities to facilitate sleep
- Prepare for sleep using relaxation techniques and background sounds
- Maintain a sleep diary if problems persist

Tinnitus Activities Treatment

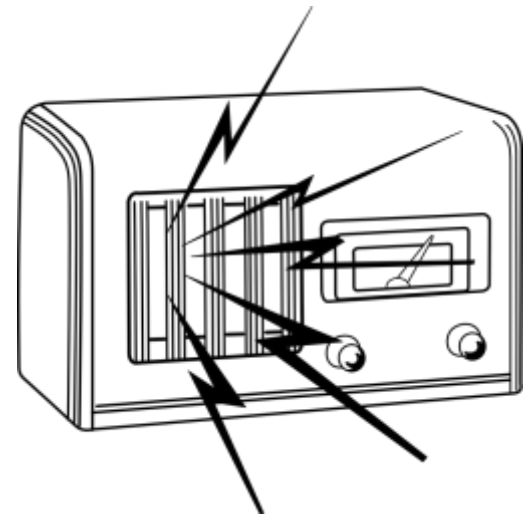
Concentration Session

Overview

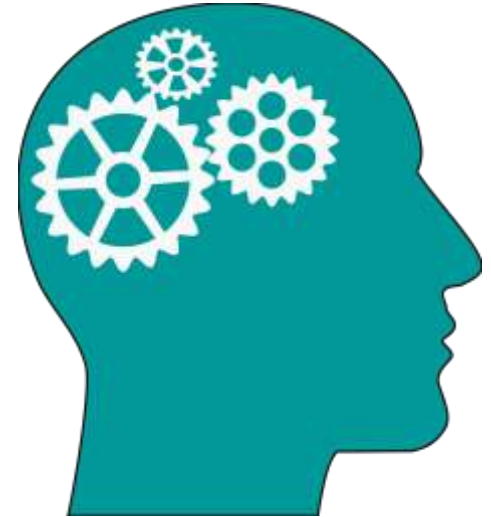
1. Things that affect concentration
2. How tinnitus affects concentration
3. Strategies to improve your concentration

1. Things That Affect Concentration

- The environment:
 - Noise
 - Distractions
 - Temperature
 - Lighting



2. How Tinnitus Affects Concentration



- We perform best when we focus on one thing at a time
- We can multi-task, but we are less efficient
- When we focus attention to our tinnitus, it is harder to concentrate on other things

3. Strategies to Improve Concentration



1. Interpret tinnitus as not important
2. Eliminate distractions
3. Stay focused
4. Adjust work habits
5. Decrease prominence of tinnitus
6. Take control of your attention

3. Stay Focused

- Actively participate
- Take notes
- Ask questions
- Repeat information
- Organize and categorize important points



5. Decrease Prominence of Tinnitus

- Use background sound in the environment



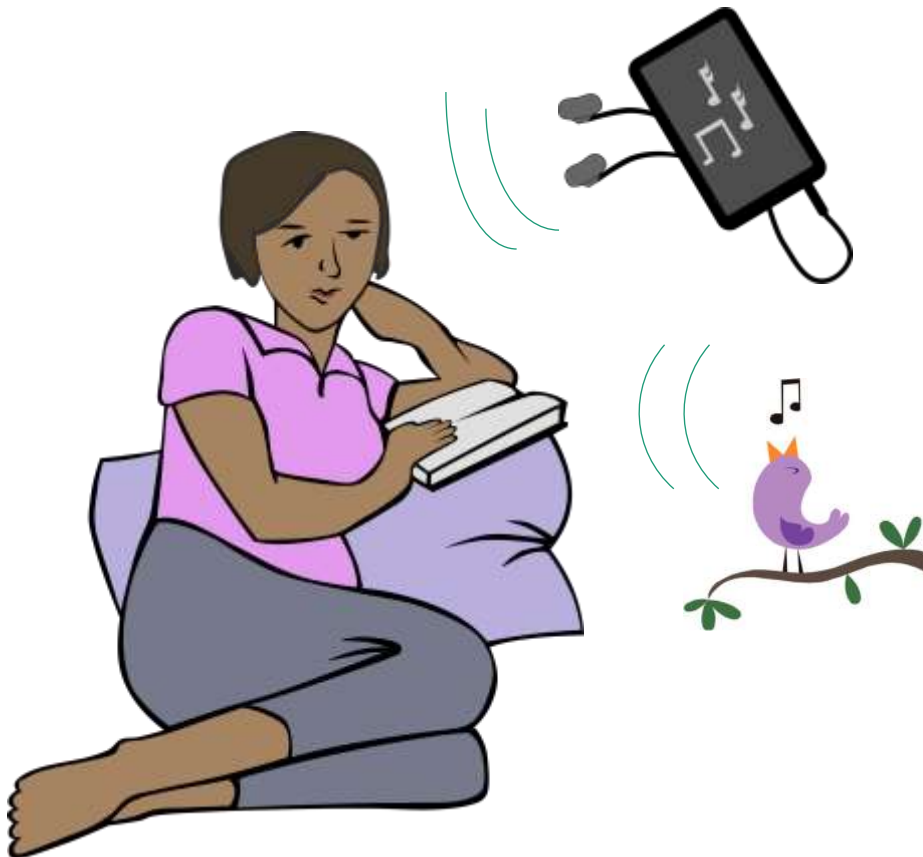
- If you have difficulty concentrating at work, try playing background music or sounds

6. Take Control of Your Attention

- The focus of our attention is largely under voluntary control
- You can learn to control the focus of your attention under various conditions
- By bringing the focus of attention under control, tinnitus-related distress will be reduced at certain times



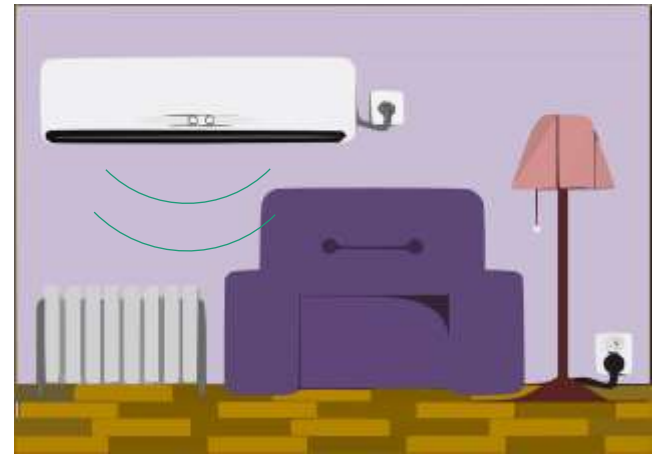
Attention Control Exercises



- Learn to switch attention from one stimulus to another (e.g. object, sensation, thought, activity) at will
- Allows you to refocus your attention from your tinnitus onto other stimuli

Sound Attention Example

1. Listen for a prominent sound around you (e.g. people talking, heater noise)
2. Now listen to a different sound in the room
3. Continue to try and focus on certain sounds while ignoring other sounds around you



Sound and Tinnitus Example

1. Pay attention to a sound in the room (e.g. background music, heater noise, etc.)
2. Now switch your attention to listening to your tinnitus
3. Switch back to listening to the sound in the room and ignore your tinnitus
4. Practice paying attention to other sounds while ignoring your tinnitus



Activities

- Remember to use background sound to make tinnitus less prominent
- Practice attention control exercises
 1. Visual
 2. Sound
 3. Sound plus tinnitus
 4. Sound plus reading

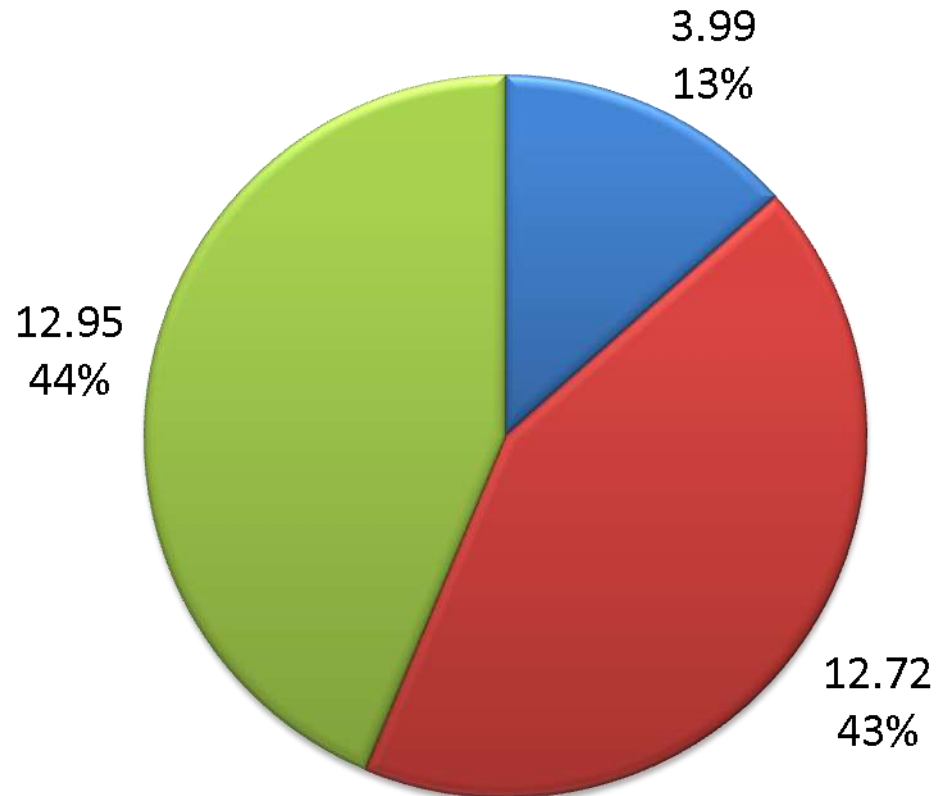




HEARING AIDS FOR TINNITUS

Rich Tyler

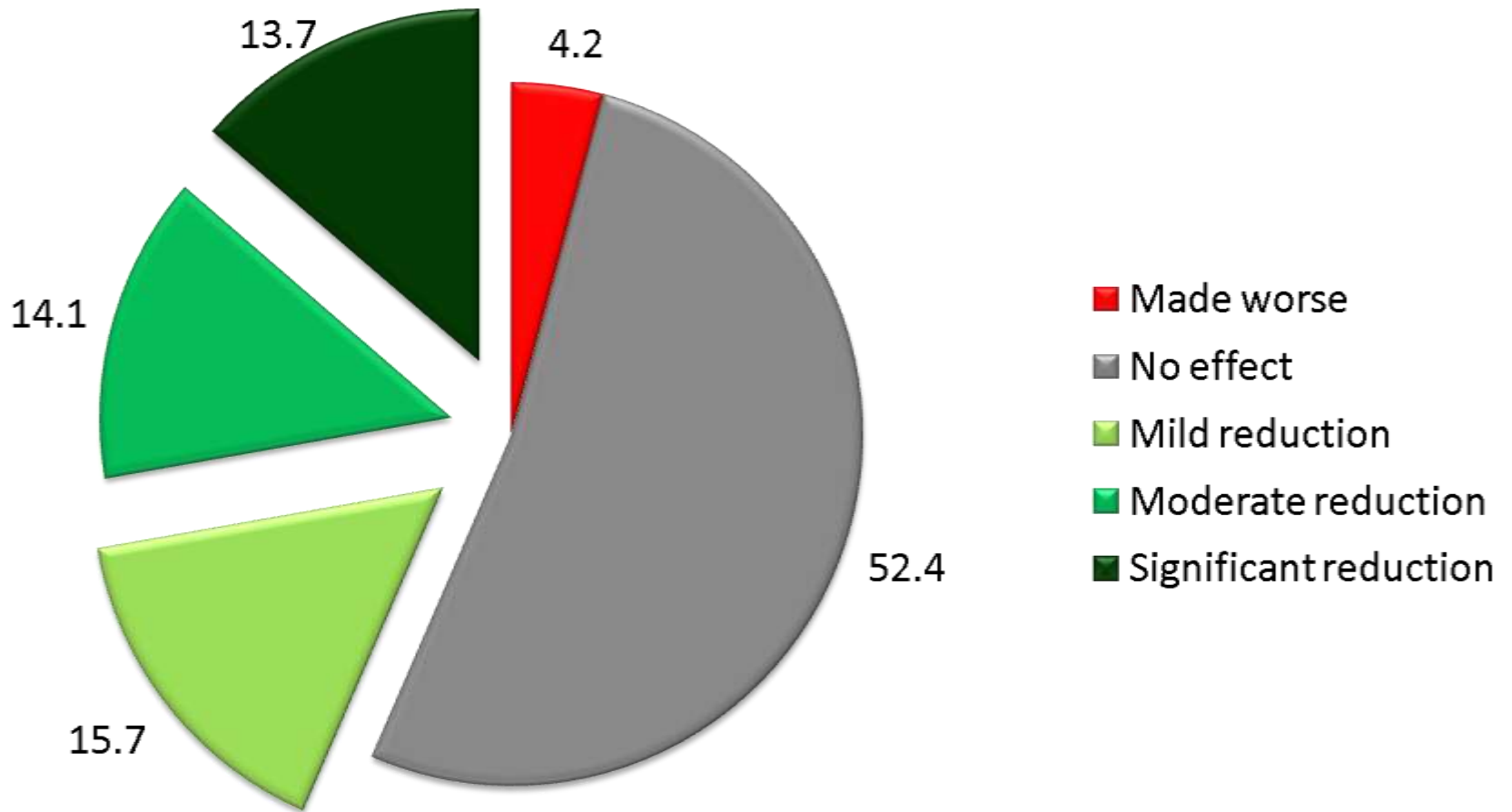
Tinnitus population (millions, 2008)



■ Hearing aid owners ■ Hearing-impaired non-adopters ■ Normal hearing

Kochkin, Tyler & Born (2011)

**Direct Query on Hearing Aids.
Effectiveness in mitigating effects of tinnitus (n=1,314)**



Hearing Aids

could help tinnitus because:

- Improve Communication
 - Therefore Reduce Stress
- Amplify Background Sound
 - distraction/partial masking

Post Masking Effects of Hearing Aids (and maskers)

- **Acoustic stimulation can reduce the magnitude of the tinnitus after the hearing aids are turned off!!!**
- **Can be for minutes or hours in different patients**

Hearing aids can make tinnitus worse !!

- Does not happen very often
 - 1 in 100 ???
- During HA use or after removal
- Amplified sound exacerbates tinnitus
- Turn gain down, reduce maximum output
 - Over several months, increase gain
- Tactile sensation around ear could make tinnitus worse
 - Try alternative aid/earmold strategies

Tinnitus Sound Therapy

Rich Tyler

Treatment developed

- Vernon (1984)
 - wearable devices
 - Total masking; but patient must decide on actual level so not disturbing



Neurophysiological Models

- Tinnitus result of changes in spontaneous activity
- Can reduce prominence of abnormal spontaneous activity by adding noise

Low level noise makes tinnitus more difficult to detect

(from Tinnitus Activities Treatment)

Tinnitus



Low Level
Noise



Tinnitus in
Low Level
Noise



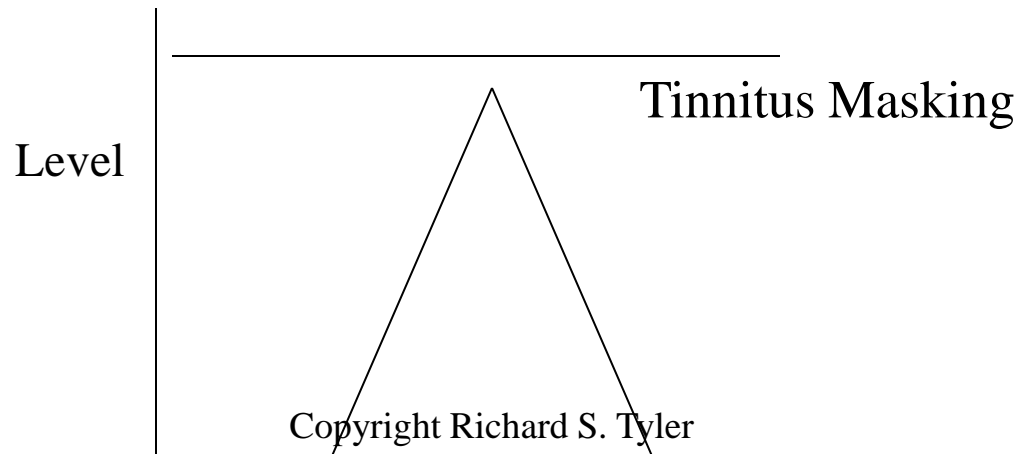
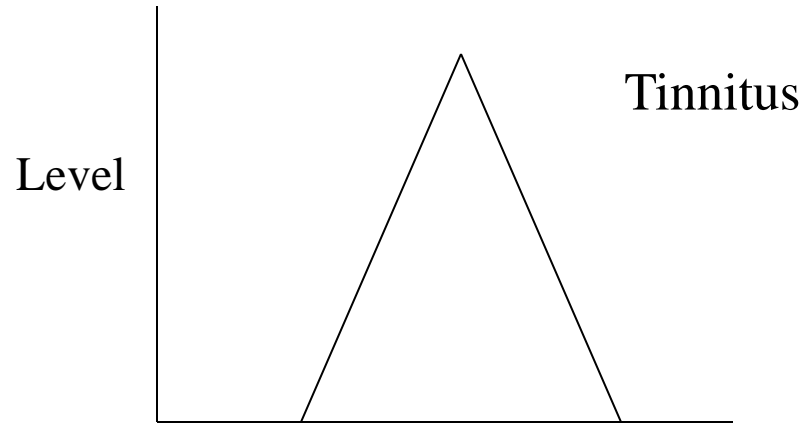
Differences among Sound Therapies

- Level
- Sound quality
- Philosophy
 - Tinnitus or reaction to tinnitus
- Mechanisms
 - Line-busy, brain remapping....

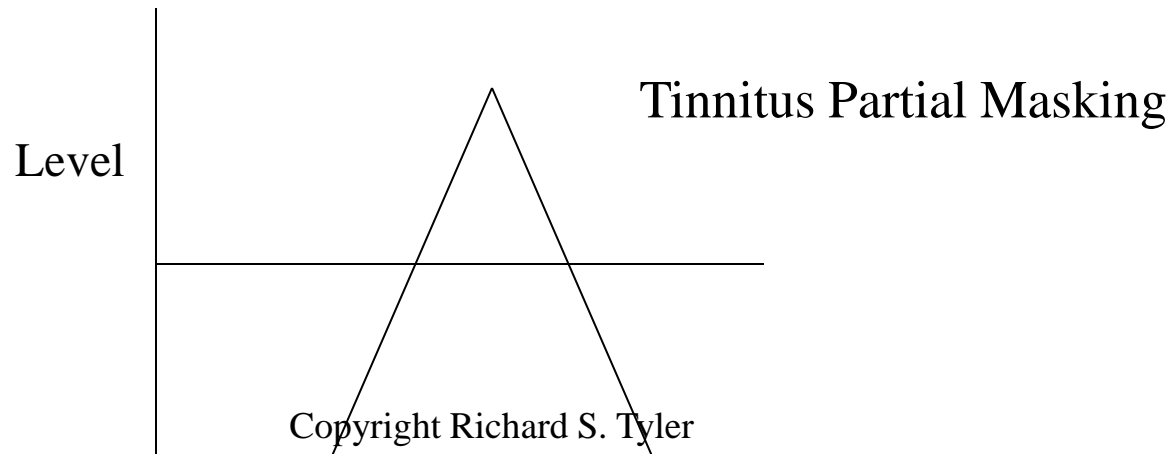
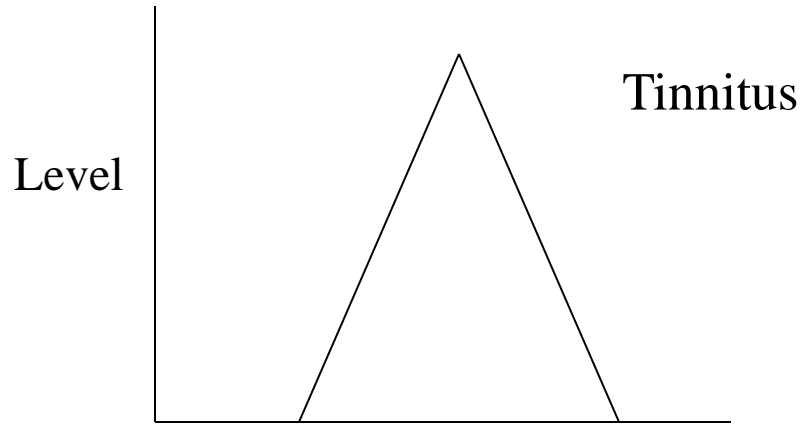
Level of the background sound

- Total masking
 - covers tinnitus completely
 - person hears a ‘masker’ instead of their tinnitus
 - Effective for some
- Partial masking
 - tinnitus and the acoustic sound can be heard
 - reduces the prominence and/or loudness

Complete/Total Masking



Partial Masking



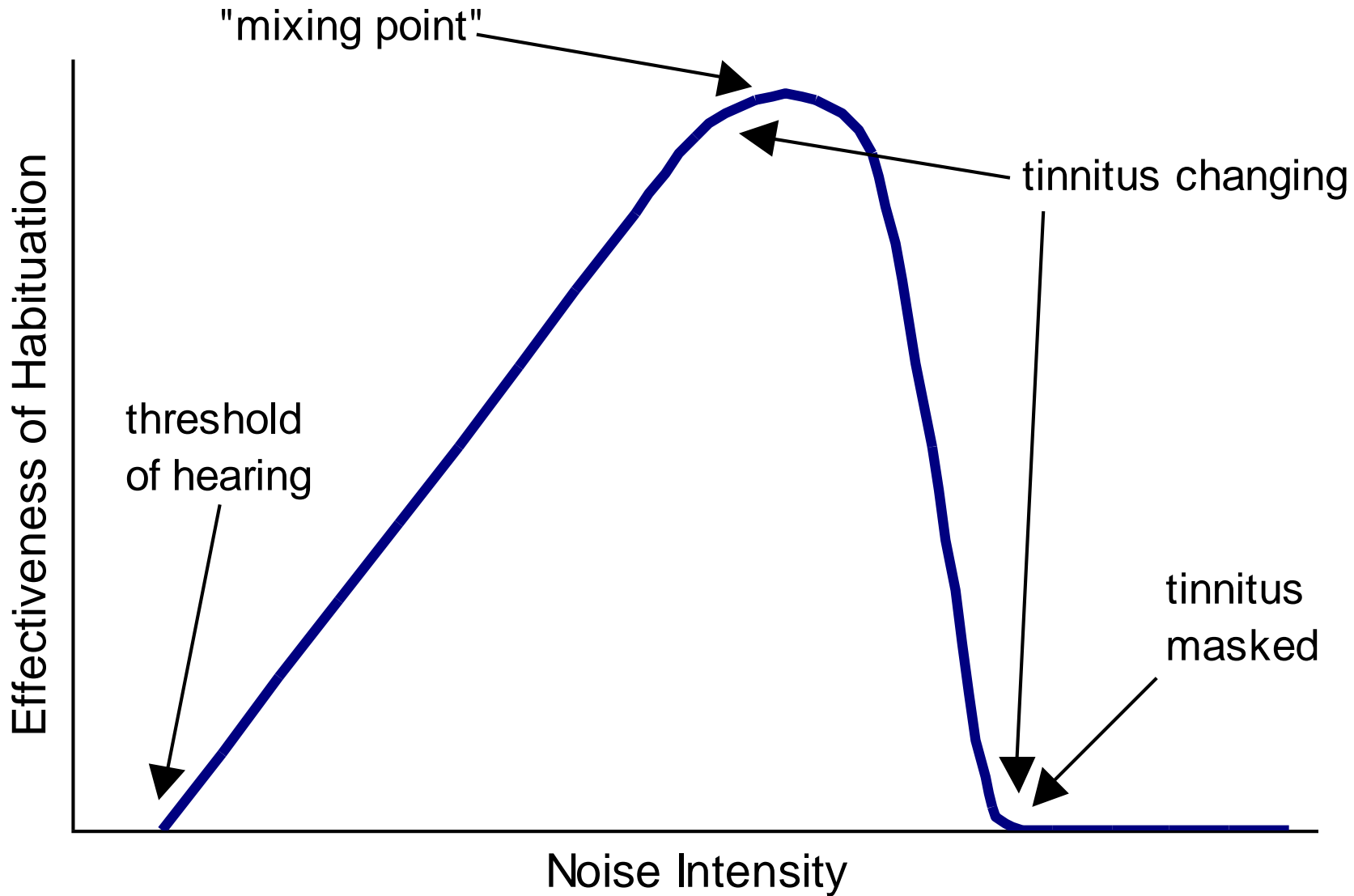
Partial Masking

- good if bothered by higher-level noise or if complete masking requires high levels
- Caution, perception of noise often adapts, don't want the patient 'chasing after the noise' and raising the level

“Mixing Point”

- Jastreboff (1995) “where the patient perceives that the tinnitus sound and the external sound start to mix or blend together” (Tinnitus Retraining Therapy).

Tinnitus Retraining Therapy



Tinnitus Activities Treatment

- Mixing point too loud for most patients
- Mixing point should **not** be the goal in Partial Masking
- Use lowest level that is effective
- Some prefer total masking
- Mixing point is not superior to total masking
- Tyler, R., Noble, W., Coelho, C., & Ji., H. (2012). Tinnitus Retraining Therapy: Mixing Point and Total Masking Are Equally Effective. **Ear Hear** 33(5):588–594

Sound Therapy Stimulus Options

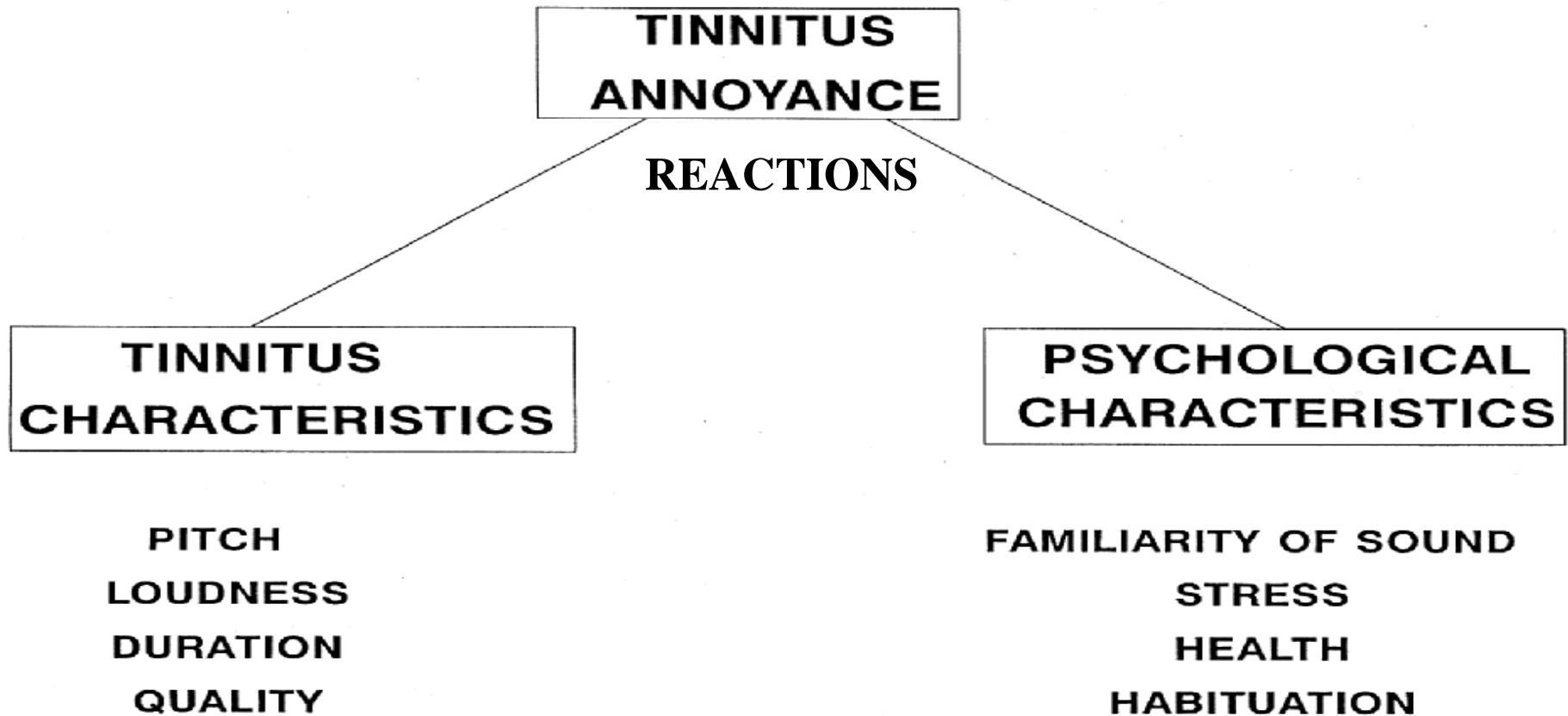
- Broadband noise
- Noise modifying spectrum
- Noise modifying envelope
- Combined tones, modulated tones
- Music, processed music
- Spectrally adjusted sounds to account for the audiogram
- Notch noise or music around pitch match

Non-wearable maskers

- Locations
 - Office/workspace/home
 - Bedroom for sleep – leave on all night
 - Including in or under the pillow
- Device options
 - Specialty instrument
 - Plays ocean waves, rain on leaves, etc
 - Music player
 - Radio, cell phone, compact disc player
 - Household appliances
 - Fan, detuned radio

Measuring Tinnitus and Reactions to Tinnitus

Psychological Model of Tinnitus



Tyler, R. S., Aran, J-M., & Dauman, R. (1992). Recent advances in tinnitus. *Am J Audiol*, 1(4): 36-44.

Why Measure Tinnitus?

- For the patient
- For the clinician
- For research
- For legal cases

Measurement: For the patient

- Patients are often concerned about their mental status
- Measurement provides confirmation that **tinnitus is real**
- Useful to demonstrate they have hearing loss and this is evidence that their tinnitus is caused by some disease

REMEMBER

AVERAGE NORMAL HEARING IS 0 dB HL

The Measurement of Tinnitus

- **Tinnitus**
 - **Pitch, Loudness, Masking...**
- **Reaction to tinnitus**
 - **Primary Functions**
 - **(Emotions, Hearing, Sleep, Concentration)**

Psychoacoustic Testing of Tinnitus

- **Pitch Matching:** Obtained by matching the pitch of the predominant tinnitus tone(s), generally by providing a choice between two options.
- **Loudness Matching:** Obtained by finding the perceived volume of the patient's tinnitus.
- **Minimum Masking Level (MML):** Obtained by finding the minimum intensity level for noise needed to obtain masking of the tinnitus.
- **Residual Inhibition:** Measures change in perception (if any) following 60-second presentation of masking noise, as well as the duration of the effect.

Why tinnitus pitch ?

– Mechanisms

- Relationships to audiogram?

- Decrease in pitch

 - Decrease in spontaneous activity?

– Fit device?

- Noise spectrum?

 - Shailer, Tyler and Coles (1981)

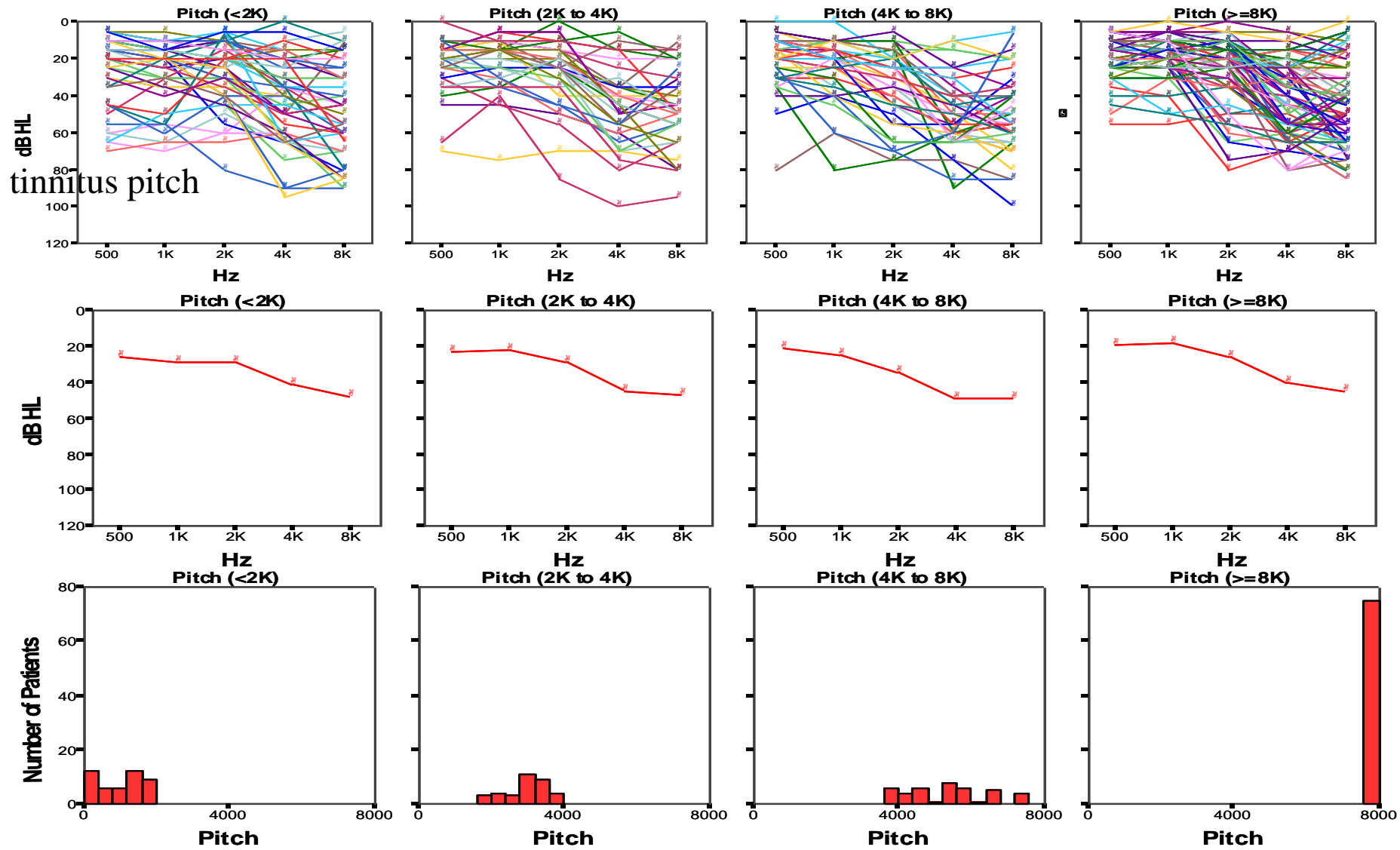
- Placement of frequency of masker notch?

PITCH

- the most prominent pitch
 - Might sound like a cricket, noise...
- Several methods available
 - Keep it simple
- Test with monaural stimuli
- Test in ipsilateral or contralateral ear
- Can be highly variable

Pitch and Audiogram ?

- Tyler and Conrad-Armes (1984)
 - sometimes associated with an increase or a decrease in threshold
 - Sometimes low-frequency edge of a steep high-frequency threshold loss.
 - Others no relationship



Loudness Magnitude Estimation

-subjective rating

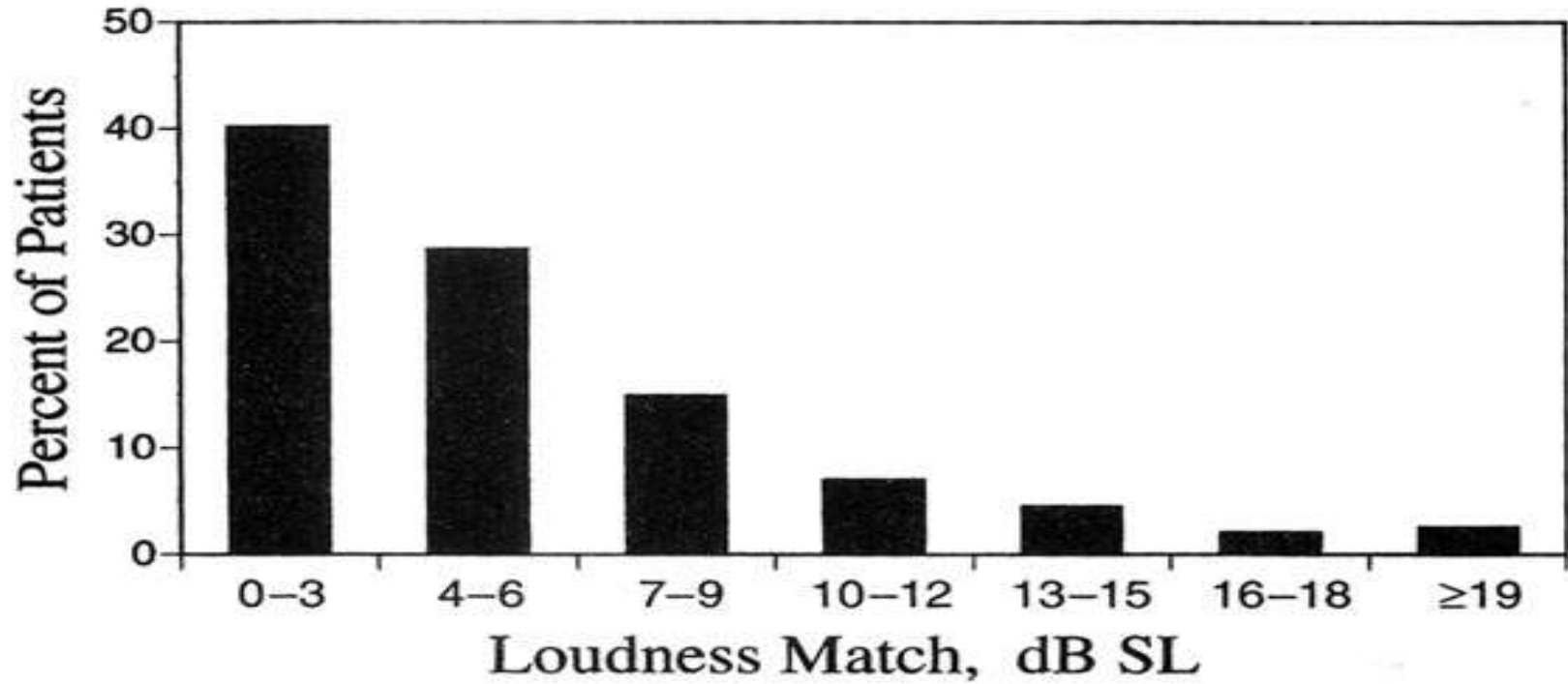
Tinnitus Loudness Rating

1.	Describe the typical <i>LOUDNESS</i> of your tinnitus using a scale from 0-100. (0 = <i>VERY FAINT</i>; 100 = <i>VERY LOUD</i>)	_____ (0-100)
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LOUDNESS MATCHING

- Adjust my tone so that it has the same loudness as your tinnitus
- Methods of limits, adjustment or an adaptive method
- Test in ipsilateral with monaural stimuli

Most matches are less than 10 dB sensation level

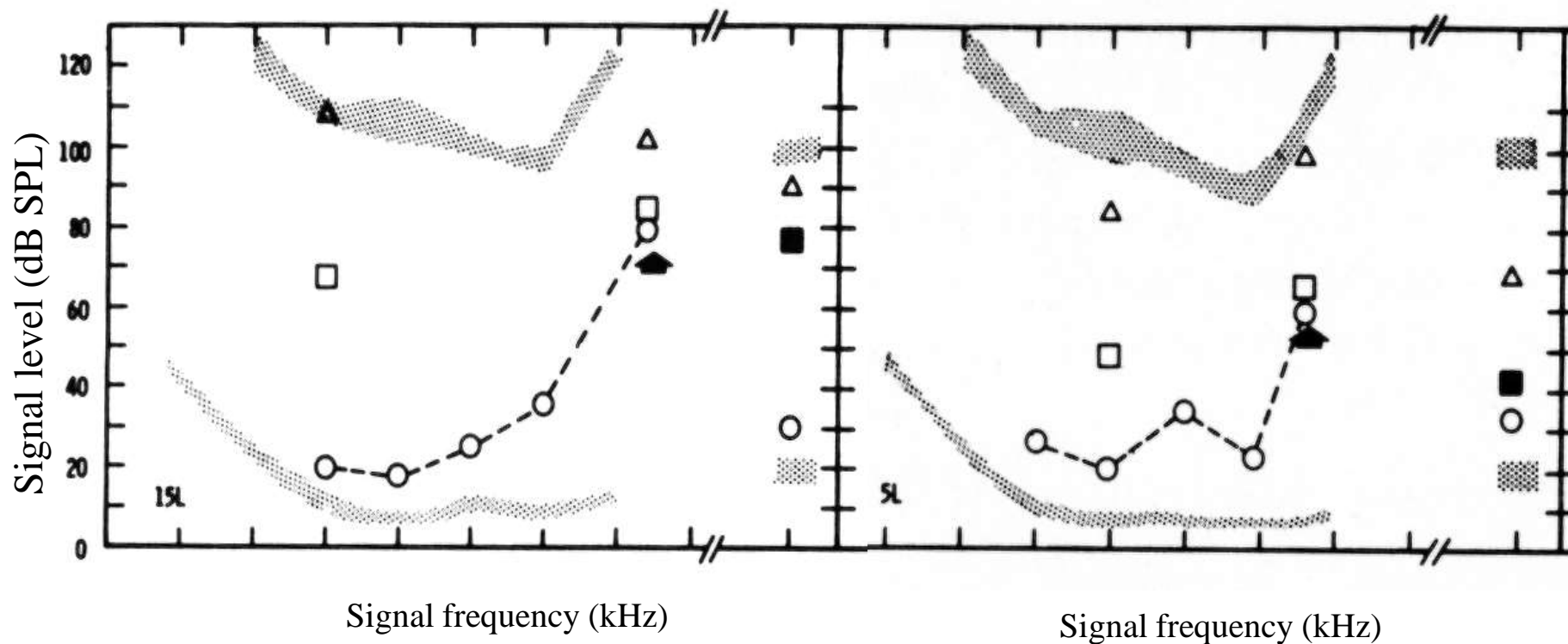


Vernon and Meikle (2000)

Loudness Matching

- Although the dB sensation level can be small,
- **SENSATION LEVEL IS NOT LOUDNESS**
- tinnitus patients almost always have hearing loss and loudness recruitment
- Therefore, loudness match a few dB SL can be loud

Loudness Matching

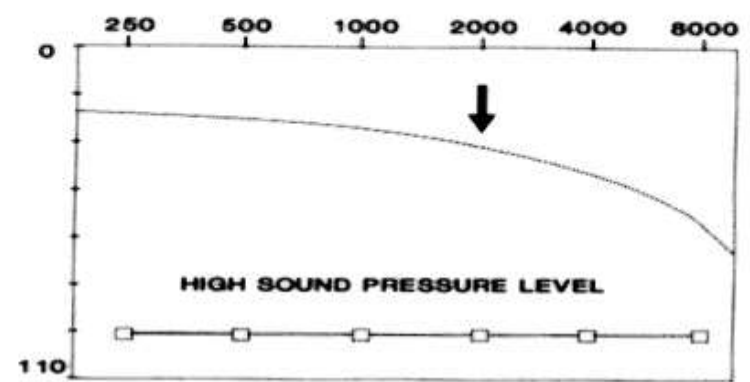
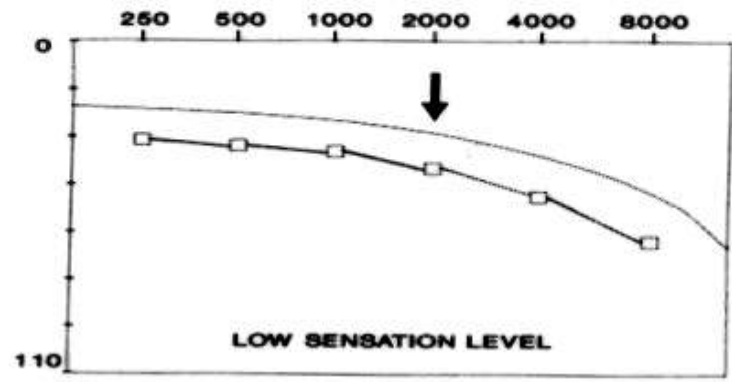


Frequency Dependent Masking

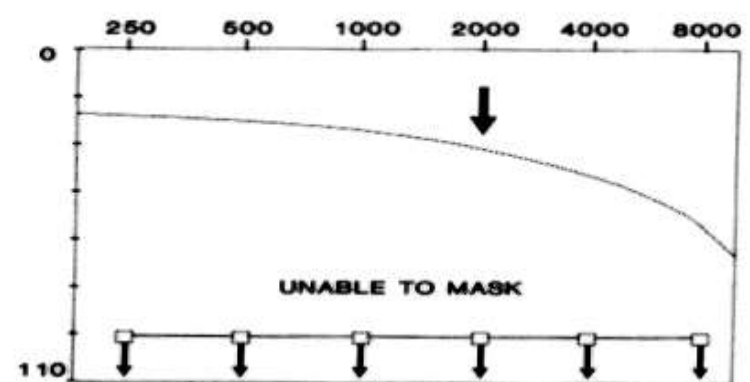
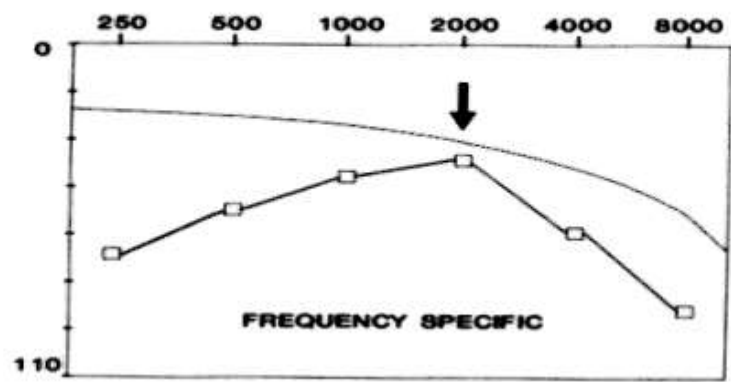
- Adjust the level of my pulsed tone until it just masks your tinnitus
- Test tone above and below frequency of most prominent pitch

FREQUENCY (Hz)

dB Hearing Level

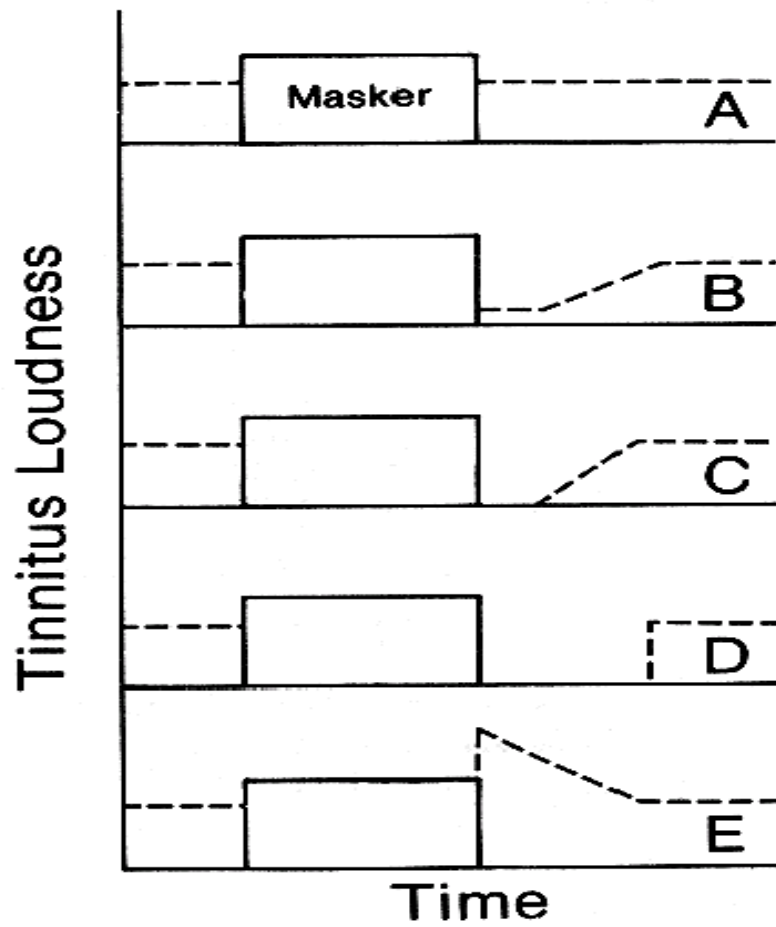


dB Hearing Level



TINNITUS POSTMASKING (or RESIDUAL INHIBITION)

- Present continuous noise that masks the tinnitus
 - (e.g. 10 dB SL for 60 seconds)
- Turn masker off
- Quantify loudness of tinnitus Pre- and Postmasker



Measuring the Reactions to Tinnitus

Open-ended questionnaire

(Tyler and Baker, 1983)

- **Please list the difficulties you have as a result of your tinnitus**
- List them in order of importance
- Useful clinically to identify issues relevant from patient's perspective

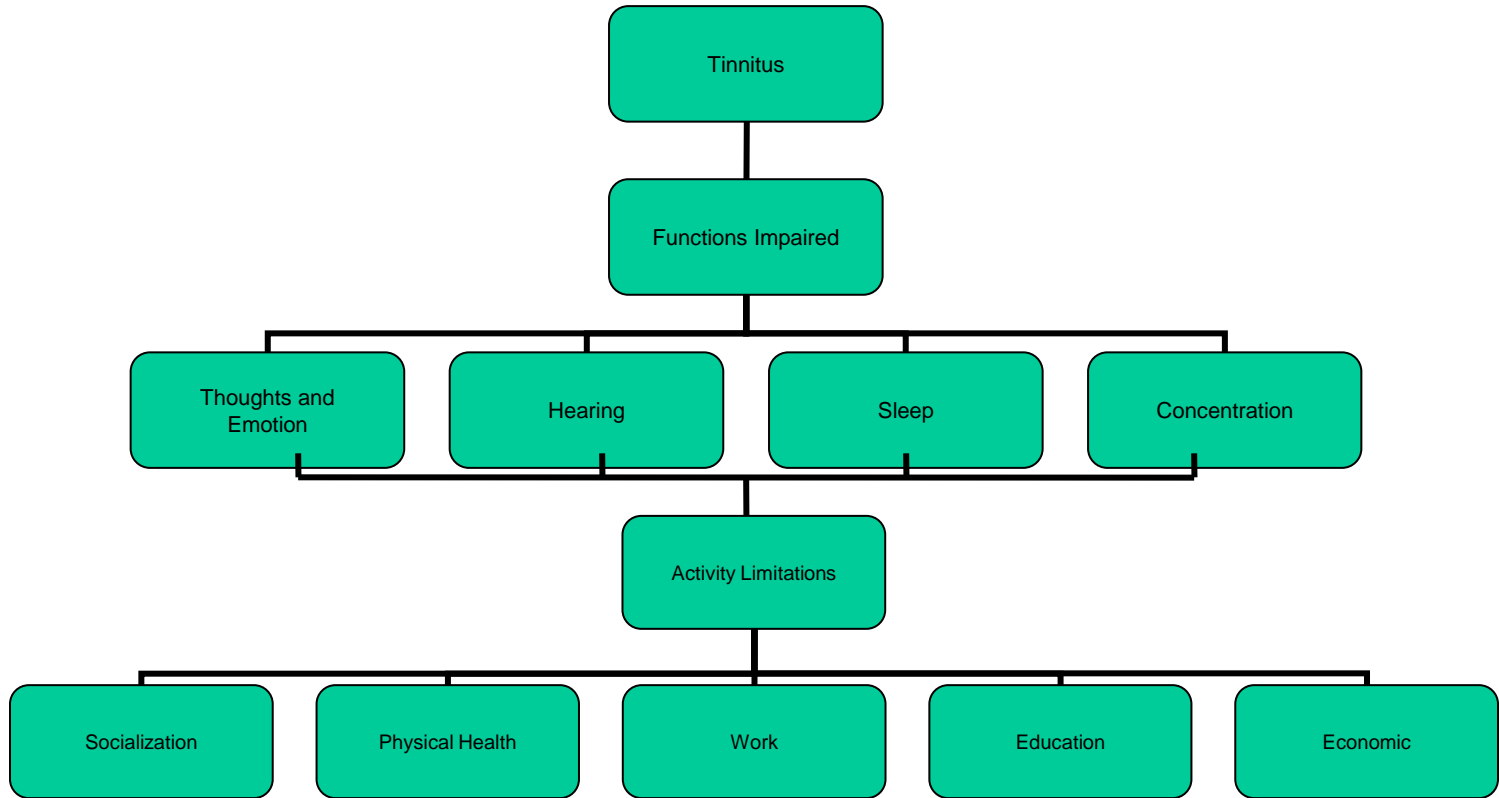
Tinnitus Handicap Questionnaire

(Kuk, Tyler, Russell, & Jordan, 1990)

- First tinnitus questionnaire validated n= 275
- 27 items, scored from 0-100
- used worldwide, translated in many languages (Google Iowa tinnitus)
- Designed to test treatment effectiveness

Tinnitus Functional Index

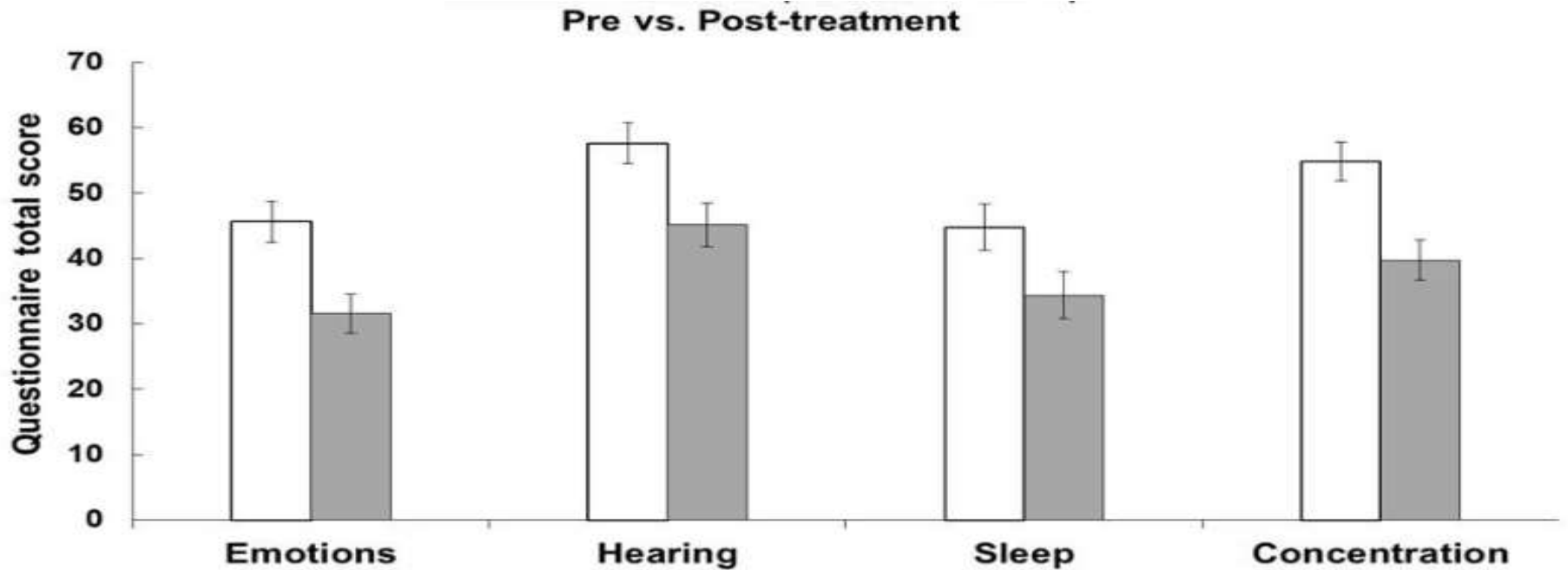
- General question
 - Do you feel in control in regard to your tinnitus?
- BUT ALSO Quality of Life Questions
 - How much has your tinnitus interfered with
 - your enjoyment of social activities?
 - Your relationships with family, friends and other people?



Tinnitus Primary Functions Questionnaire (examples)

- I have difficulty focusing my attention on some important tasks because of tinnitus.
- My emotional peace is one of the worst effects of my tinnitus.
- In addition to my hearing loss, my tinnitus interferes with my understanding of speech.
- I lie awake at night because of my tinnitus

Tinnitus Primary Functions Questionnaire (2014)



Clinical trial of Tinnitus Activities Treatment

Possible Future Treatment ??

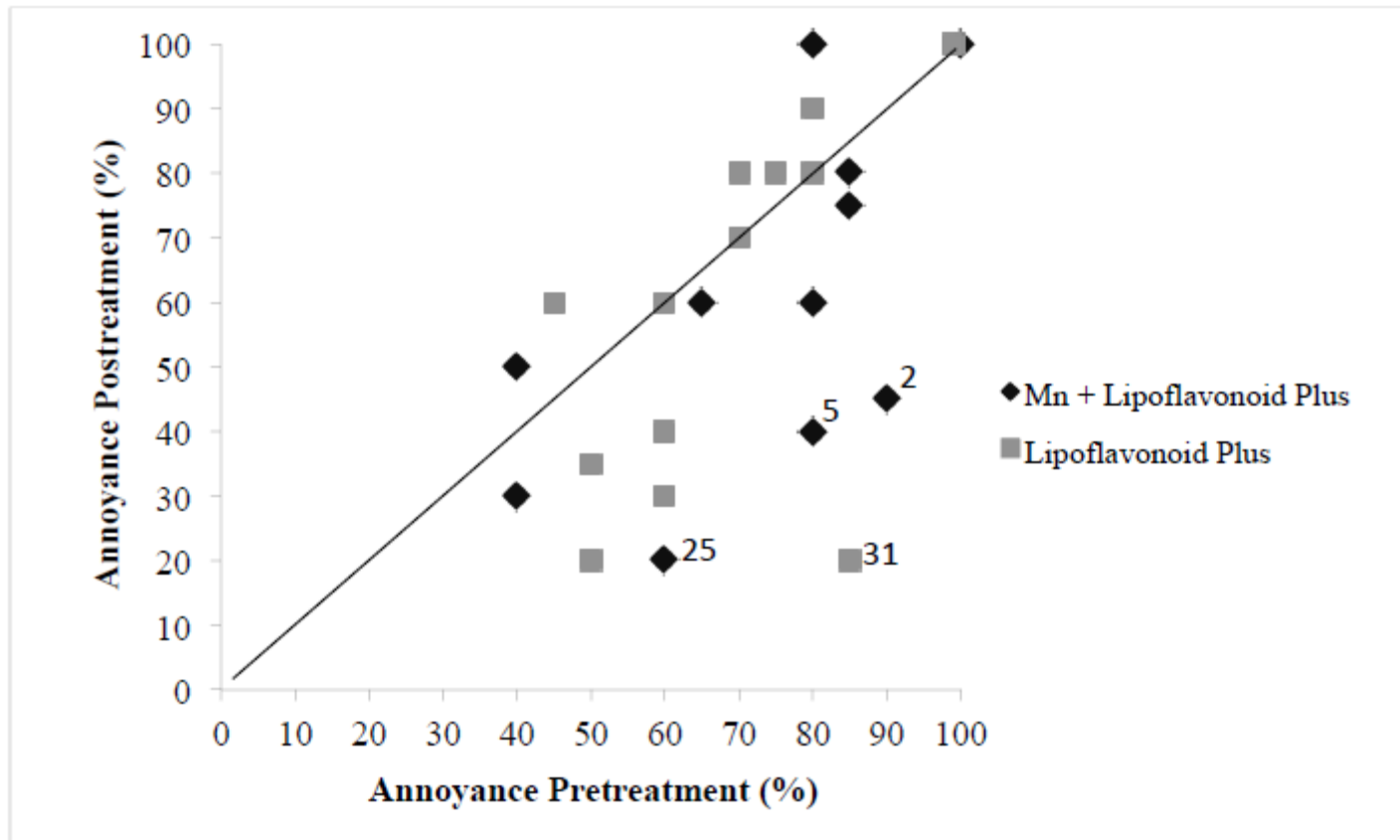


Figure 7. Difference of each participant in the tinnitus annoyance pretreatment and posttreatment. The numbers are the patients who got a score decrement more than 40 points.

Coelho, C., Witt, S., Ji, H., Hansen, M., Gantz, B., & Tyler, R. (2013). Zinc to treat tinnitus in the elderly: A randomized placebo controlled crossover trial.

Otology and Neurotology, August 2013, Vol.34(6), pp.1146-1154

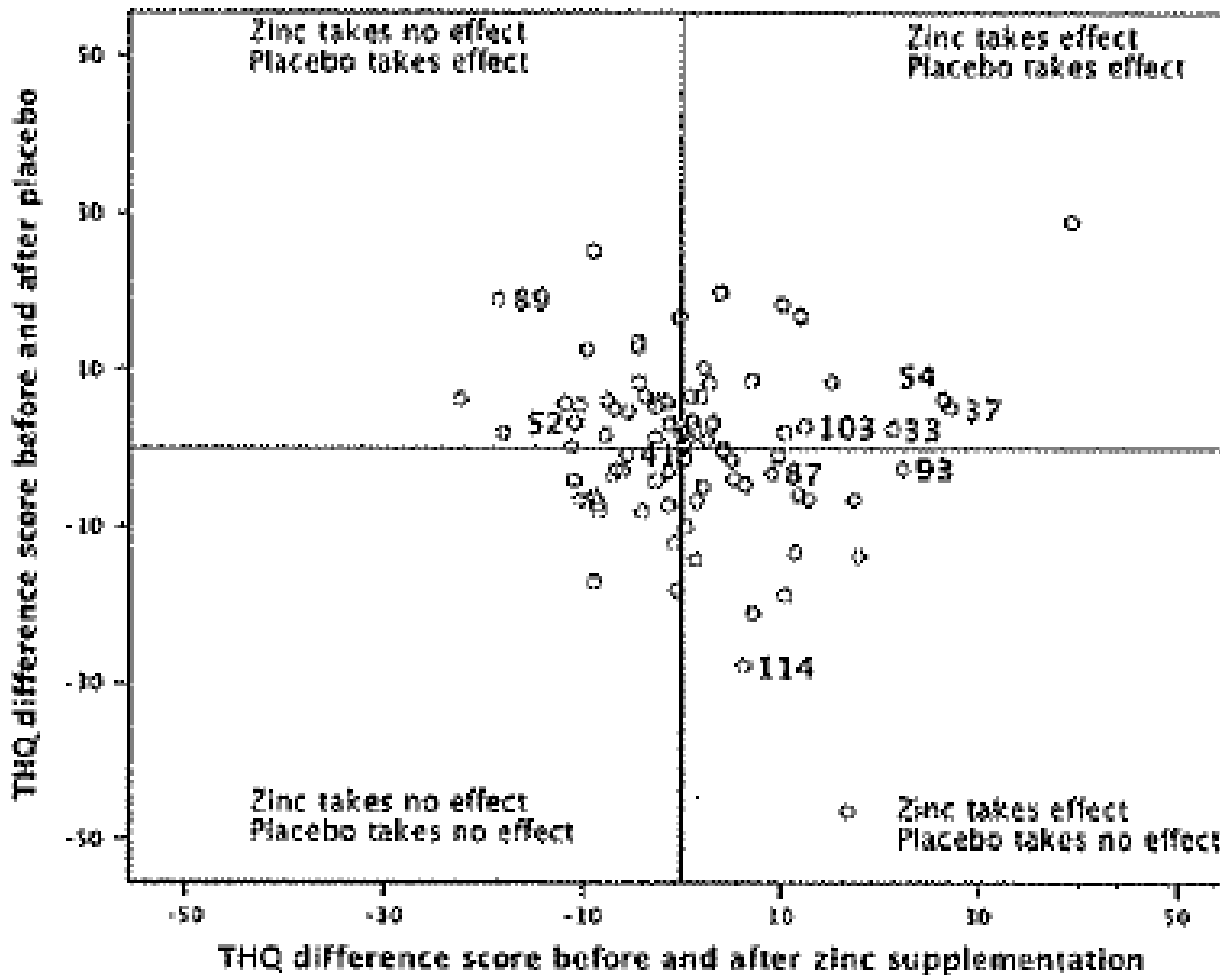


FIG. 3. THQ difference scores before and after zinc and placebo treatment. Copyright Richard S. Tyler

Possible Future Treatment ??

- Focus on subgroup, not all patients
- Medications / Supplement ?
- Non-invasive vagal nerve stimulation

Vagal Nerve Stimulation

1. VNS promotes plasticity

Vagus Nerve Stimulation for Epilepsy

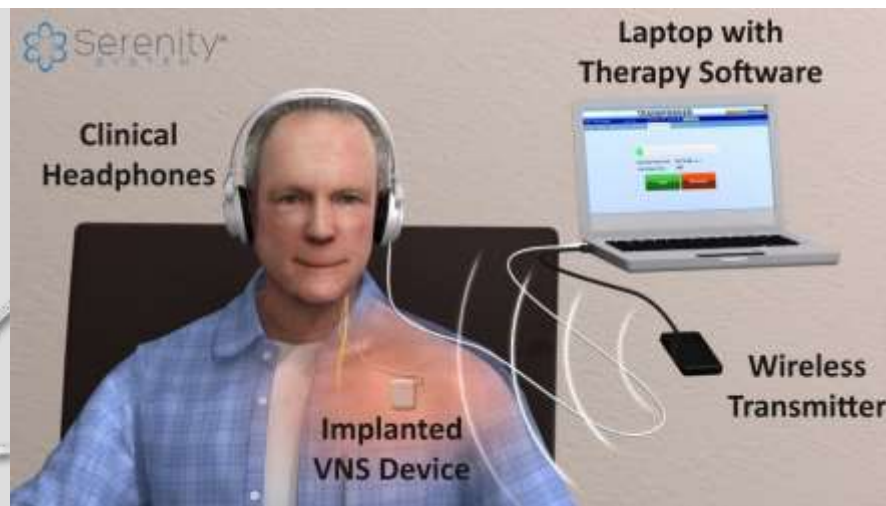
- Cyberonics has implanted 110,000 patients since 1997 – for epilepsy
- Vagus nerve easily accessible via the neck
- Short procedure (about 1 hour)
- Good safety profile. Most common adverse event is a hoarse voice for 1-2 weeks



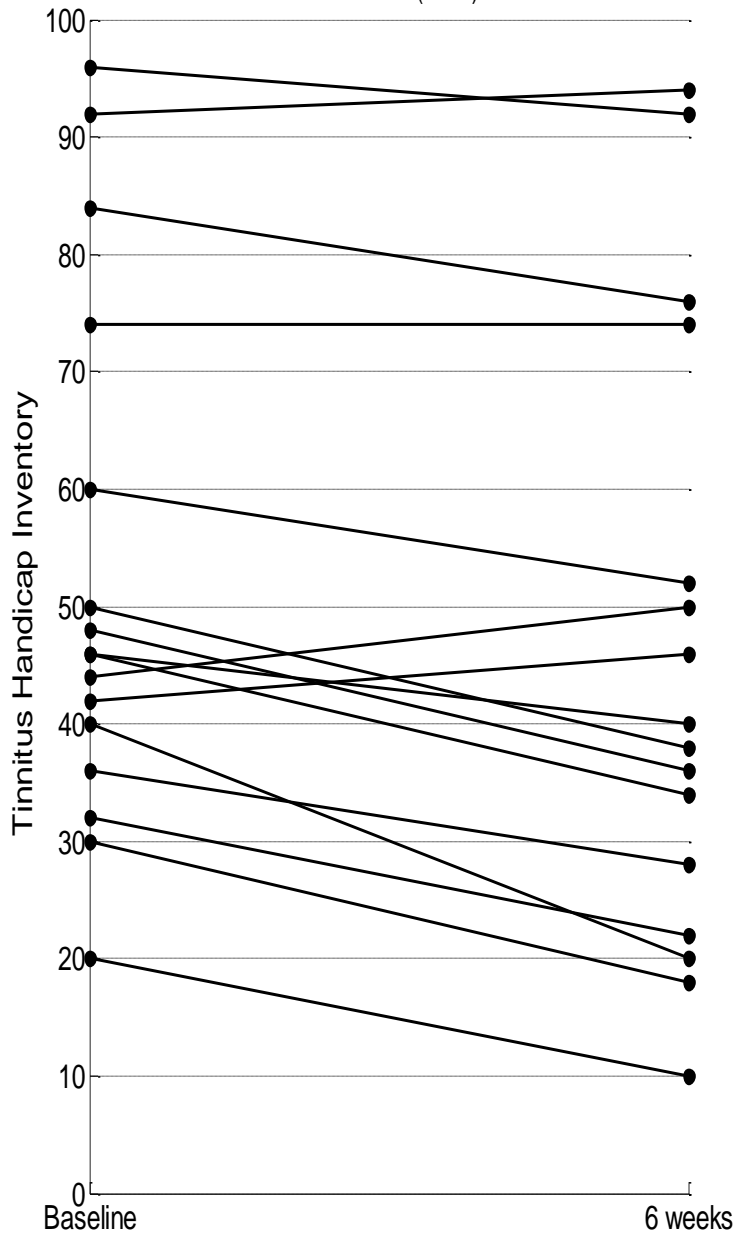
VNS for Tinnitus – Serenity System

2.5 hour session daily, for 6 weeks)
therapy sessions while at home.

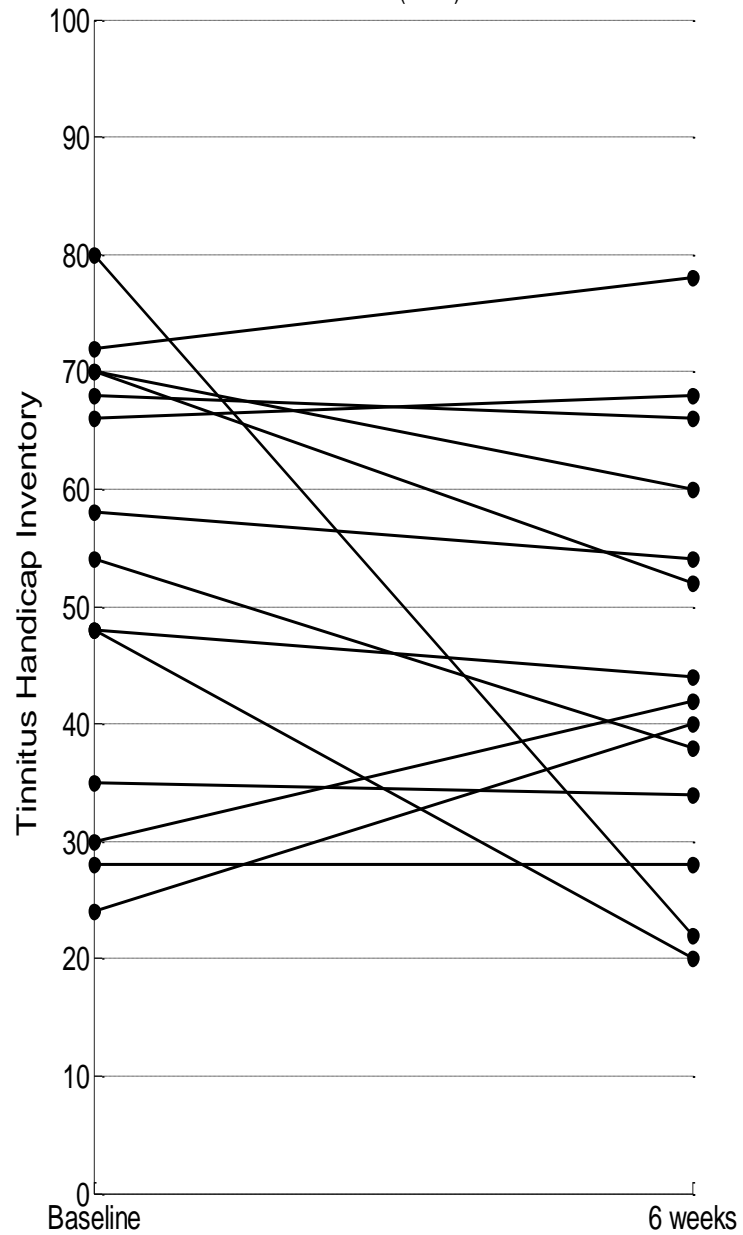
Patient given laptop with software
for paired stimulation / tone
therapy



Paired VNS (n=16)



Control (n=14)



Somatosensory Tinnitus

Richard Tyler, PhD

And

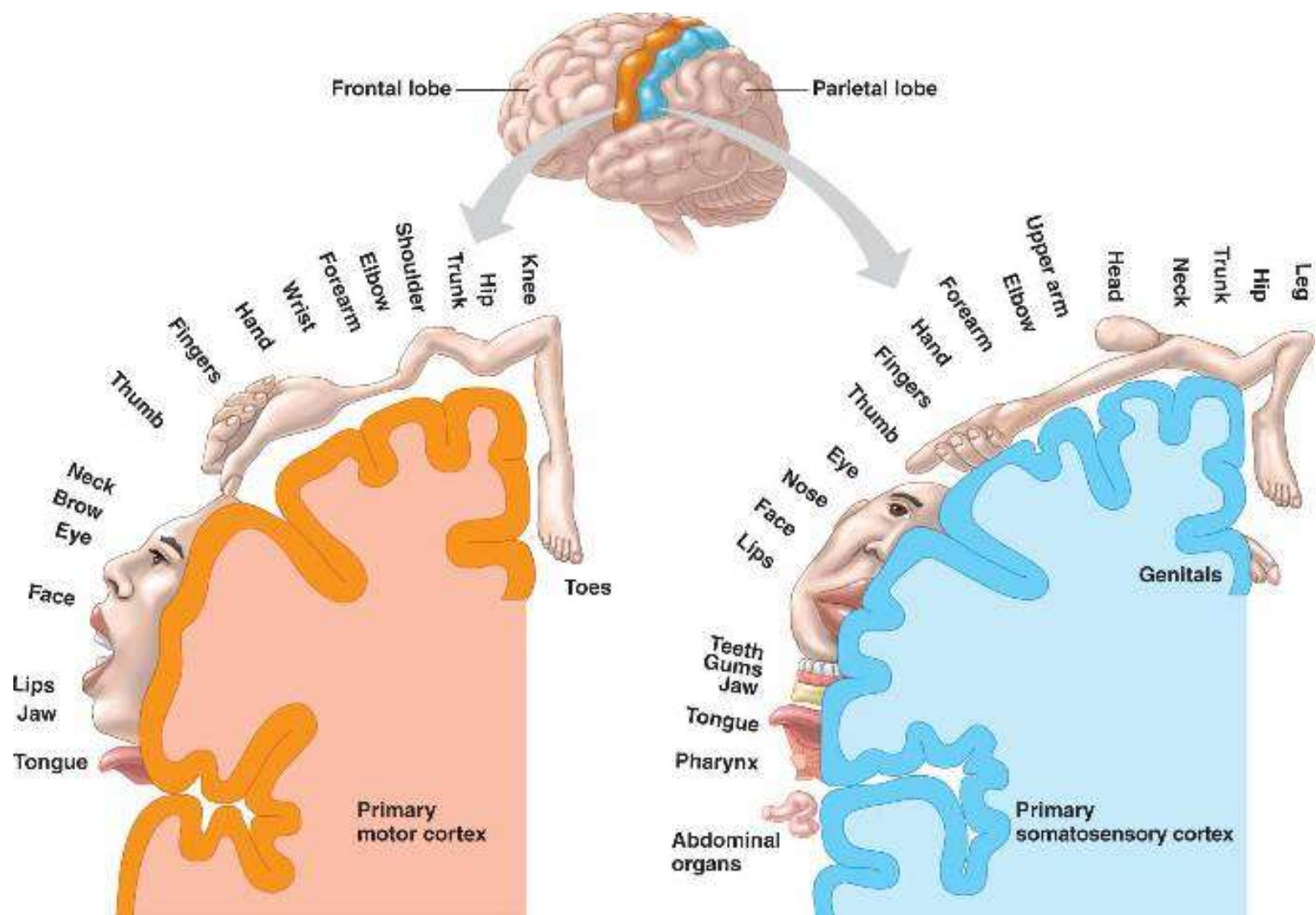
Claudia Barros Coelho MD, PhD

somatosensory system

- **sensory system**
- concerned with the conscious perception of touch, pressure, pain, temperature, position, movement, and vibration, which arise from the muscles, joints, skin, and fascia.

Integration in brain from several modalities (multimodal)

- We need fast, reliable *perception of the environment*
- requires integration of sensory information simultaneously
- Takes place in many areas in the brain
- input coming from different systems (e.g. vision, audition, touch)



DCN DISINHIBITION; Levine (2005)

AUDITORY Pathway

Cochlea

Auditory Nerve

Ventral Cochlear Nucleus

Dorsal Cochlear Nucleus

SOMATIC Pathway

Head

Neck

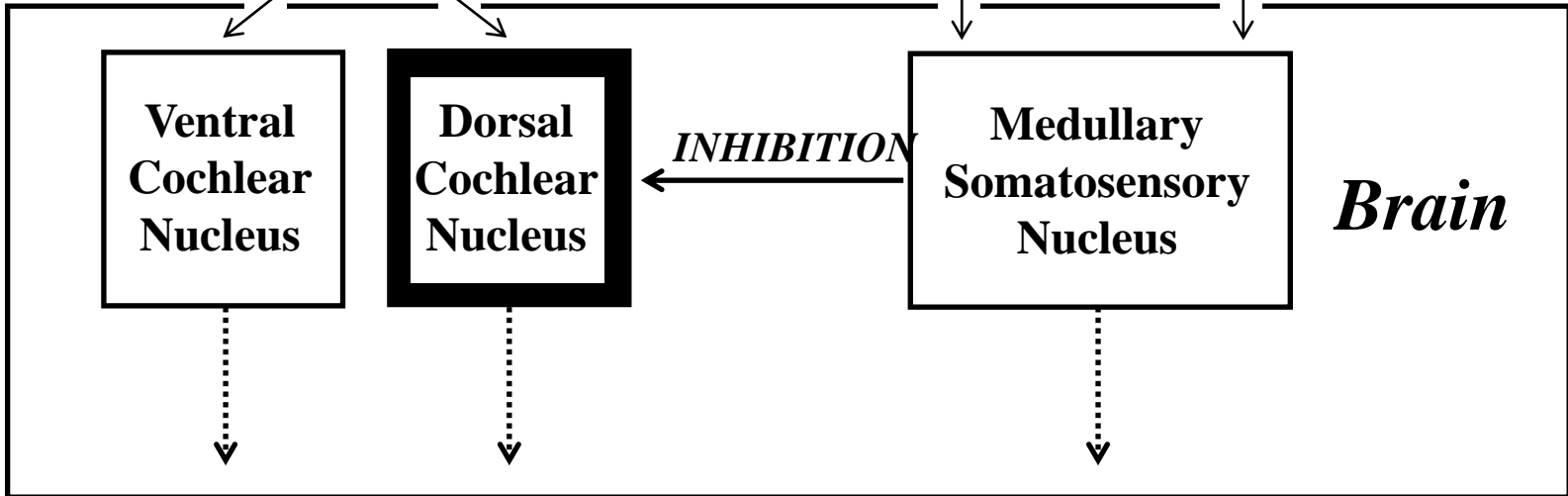
Cranial Nerves

Spinal Nerves

Medullary Somatosensory Nucleus

Brain

INHIBITION



The Meaning of life and how to measure it!

Richard S. Tyler, Ph.D.

Departments of Otolaryngology and
of Communicative Sciences and
Disorders

- How happy are you?
- How is your quality of life?
- Is it better than your neighbors?
- Is it worse than last year?
- How would it change if you went deaf, or blind, or couldn't talk?

EQ-5D
Health Questionnaire

Please consider each of the following situations on the left and, for each situation, answer on the right by writing a number between 0 and 100 using the conditions specified.

Mobility	0=I have no problems in walking about <i>to</i> 100=I cannot walk about and am confined to a bed	
Self-Care	0=I have no problems with washing or dressing <i>to</i> 100=I am unable to wash or dress myself	
Usual Activities (e.g. work, housework, family or leisure activities)	0=I have no problems with performing my usual activities <i>to</i> 100=I am unable to perform my usual activities	
Pain or Discomfort	0=I have no pain or discomfort <i>to</i> 100=I have extreme pain or discomfort	
Anxiety or Depression	0=I am not anxious or depressed <i>to</i> 100=I am extremely anxious or depressed	
Overall Health State	0=Best imaginable health state <i>to</i> 100=Worst imaginable health state	

Doesn't the meaning of life depend on

- Your past experiences
- Your age
- Your expectations
- Your gender
- Your employment status
- Your personal interests
-

New Approach?

24 items covering broader range

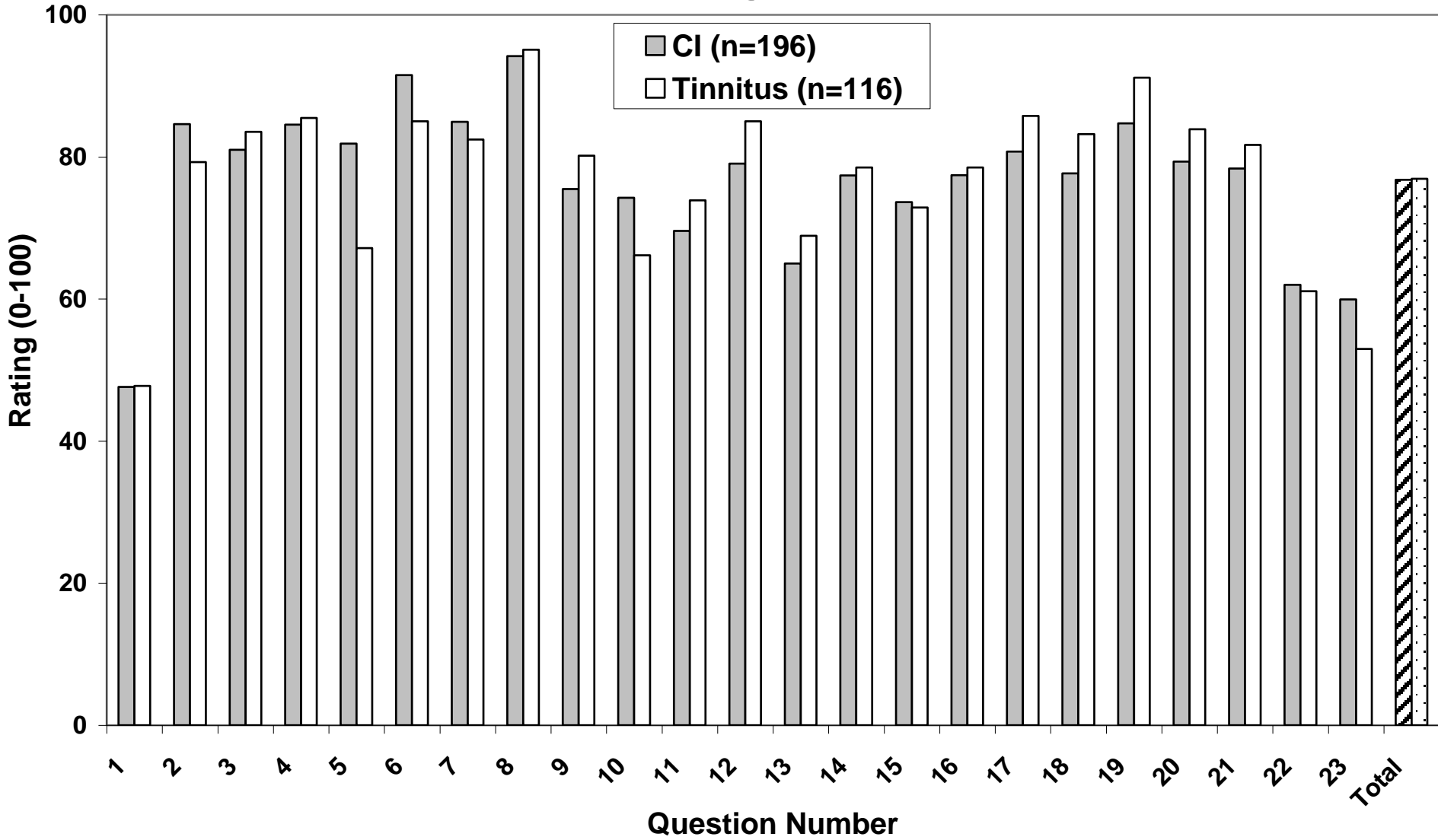
Some questions on specific abilities

Please indicate your agreement with each statement on a scale from 0 (completely disagree) to 100 (completely agree).

E.g.

I have no difficulty hearing in any situation.

Meaning of Life

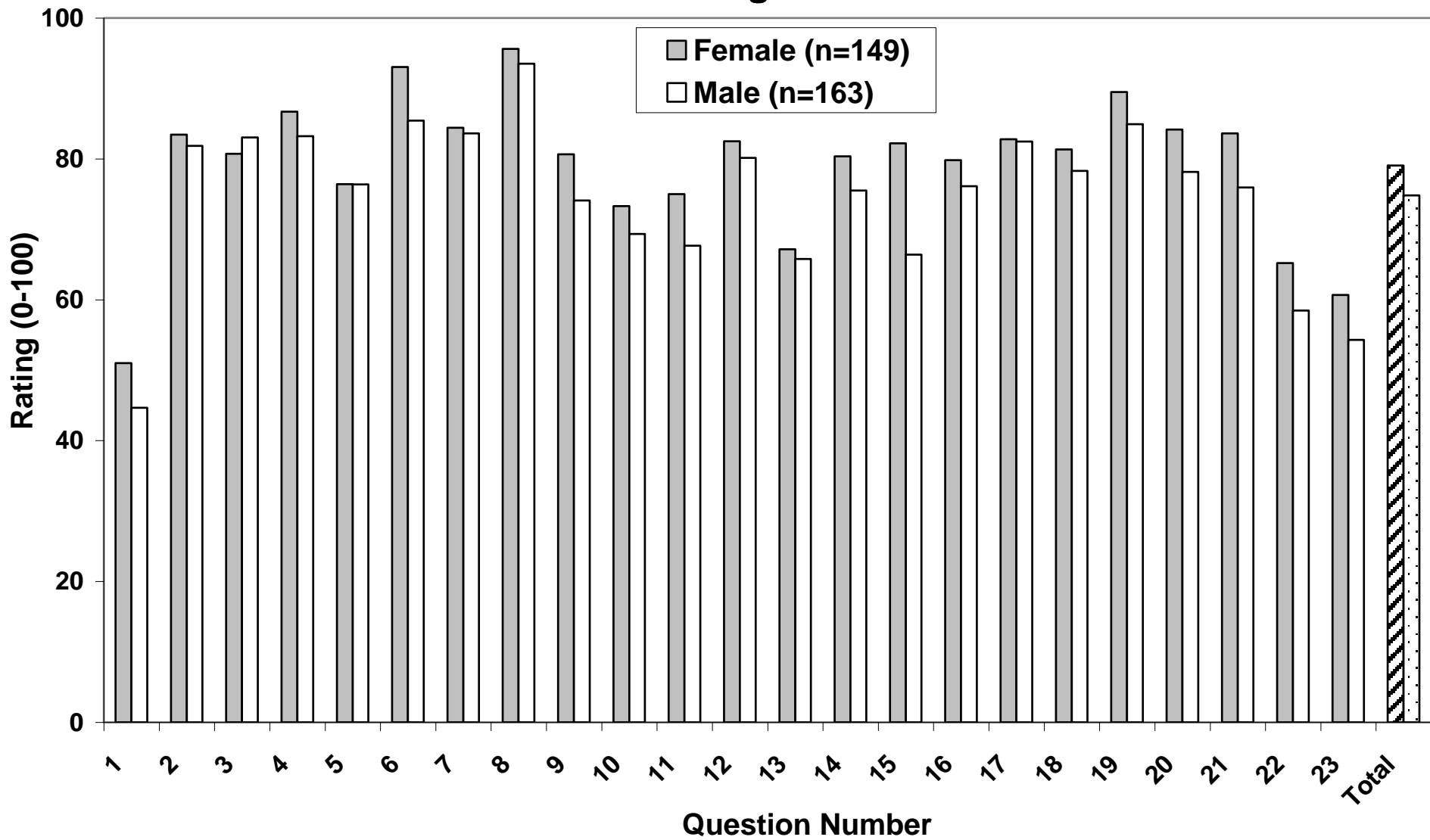


1 and 5?

CI versus tinnitus

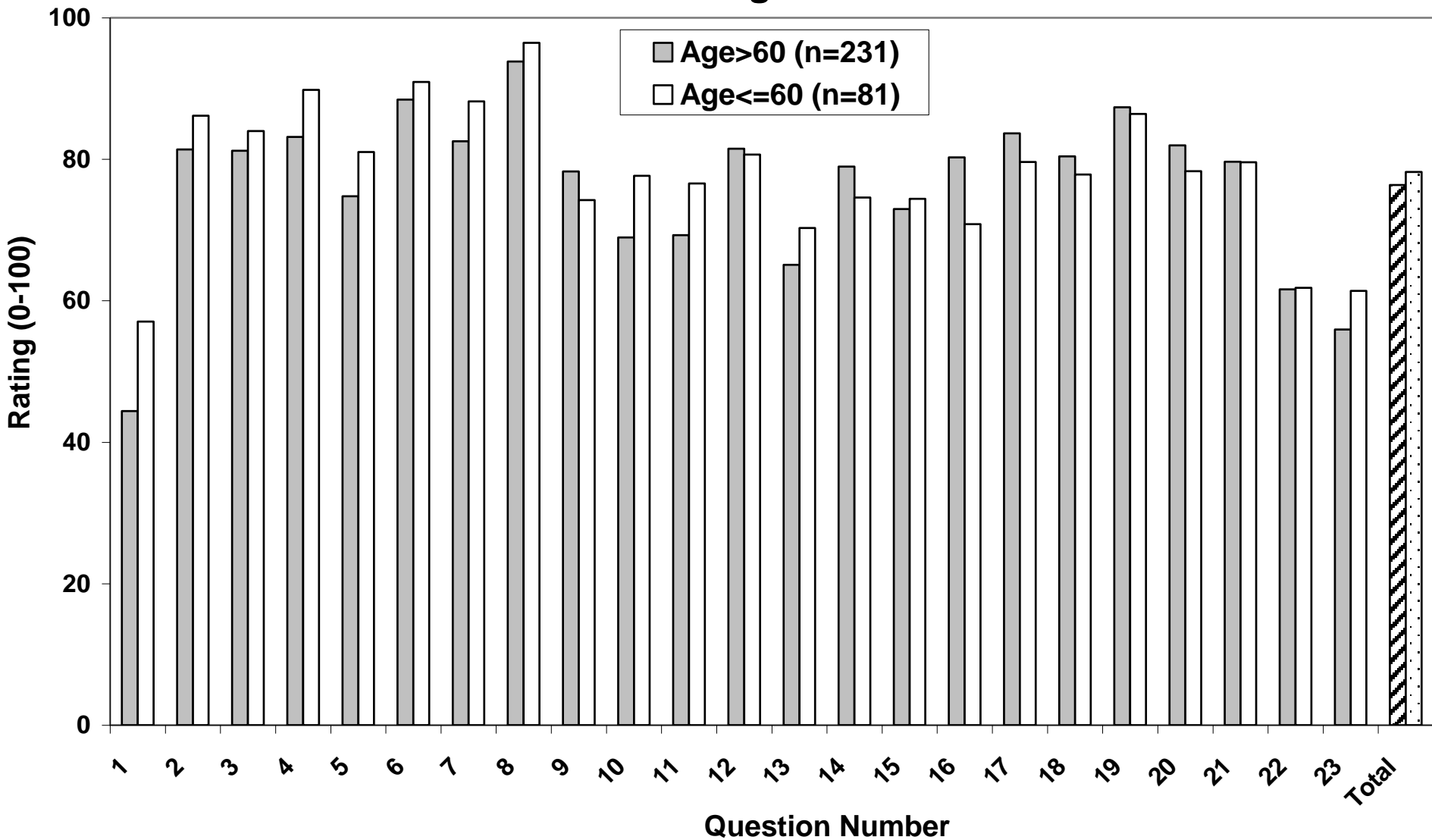
1. I hear well in any situation.
5. I sleep well

Meaning of Life



11 and 15 ?

Meaning of Life



10 and 16 ?

Age

10 I always remember things

16 I am satisfied with my financial situation.

Five Factors

9	I have many friends that I socialize with.
11	I have many hobbies.
12	I have emotional support from many others.
13	I participate in several recreational activities.
19	I have close friends or family that I can confide in.
15	I am satisfied with my sex life.
16	I am satisfied with my financial situation.
17	I feel good about my self image.
20	In general, I get all the pleasure I want out of life.
21	I think the future looks very bright.
2	I see well in any situation.
3	I walk easily in any situation.
4	I talk well and am easily understood.
7	I concentrate and focus well.
8	I eat and drink with ease.
10	I always remember things.
18	I am very healthy.
5	I sleep well.
14	In general, I feel very relaxed.
22	I never feel depressed, sad or anxious.
23	I never experience pain or discomfort.
1	I hear well in any situation.
6	I manipulate things well with my hands.

Meaning of Life

- Here it as, after all these
years.....

Meaning of Life

- Friendship
- Positive outlook
- Physical health
- Mental health

Editors Comments; J Am Acad Audiol

This month's "gem" is a paper by Dr. Richard Tyler and his colleagues at the University of Iowa. "An exploratory step toward measuring the 'Meaning of Life'.

A factor analysis identified four constructs

1. "friendship and positive outlook,"
2. "physical health,"
3. "hearing and mental health,"
4. "satisfaction with life."

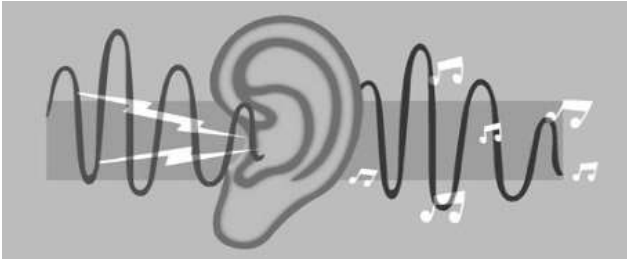


Gary P. Jacobson, PhD

There is much additional information in this article, and one hopes that this device might be available for clinical use in the future.

Gary P. Jacobson, PhD

**29th Annual International Conference on
Management of the Tinnitus and Hyperacusis
Patient**



July 22-23, 2022

(Covid backup September 2-3)

The University of Iowa

**Diagnosis, Treatments, Medications, Psychiatry,
Imaging,**

Surgery, Sound Therapy, Manufacturer Forum,

Neuromodulation

Future

GREETING S FROM IOWA









