

Music and Dementia



TivoliVredenburg 29 november 2014

ludwig en het brein

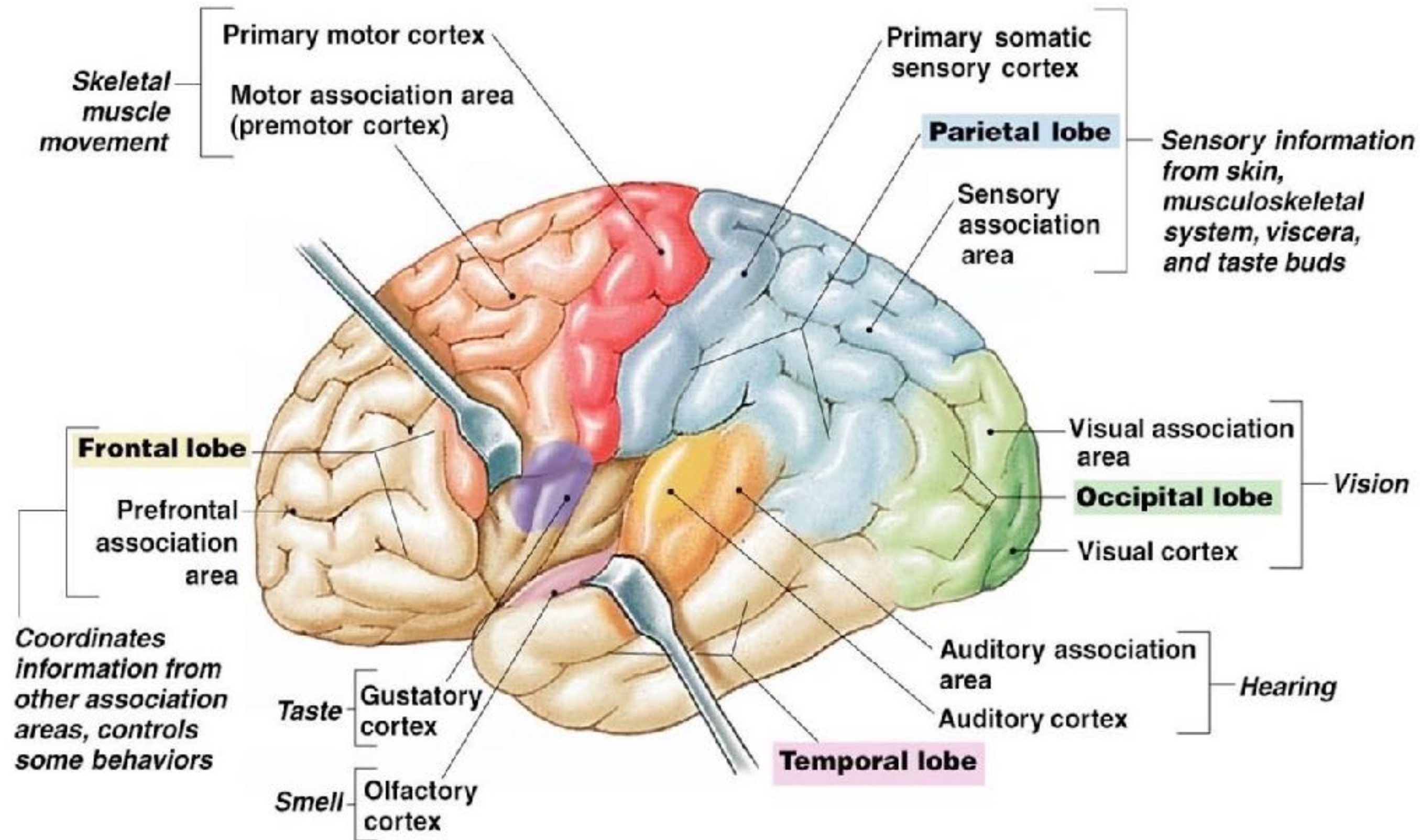
Roes of ruis? Live hersenonderzoek bij random
Classical Convention



<http://www.ludwiglive.nl/brainwaves/>

- Music and the Brain
- Memory in the Brain
- Dementia and Music

Your Brain

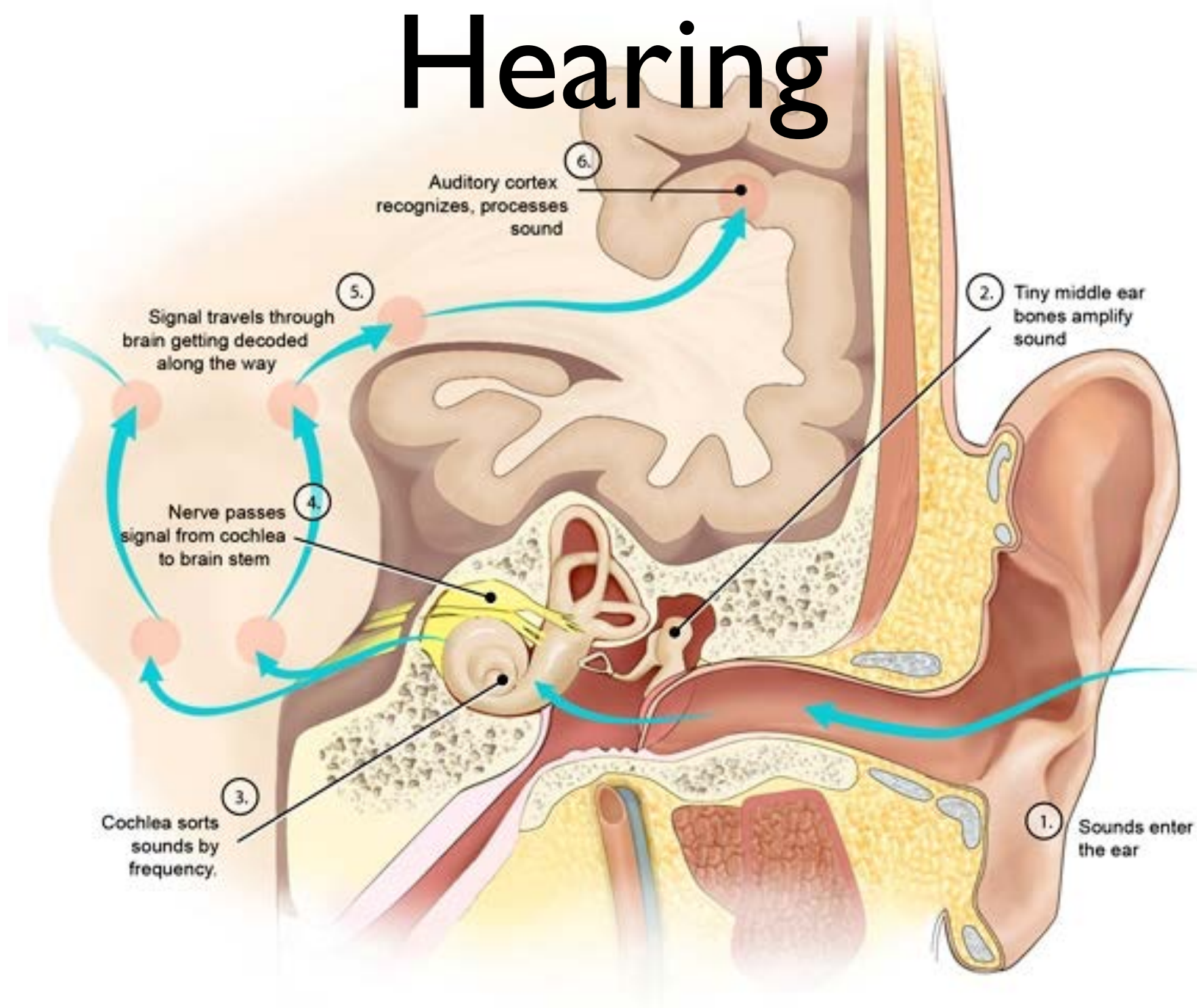


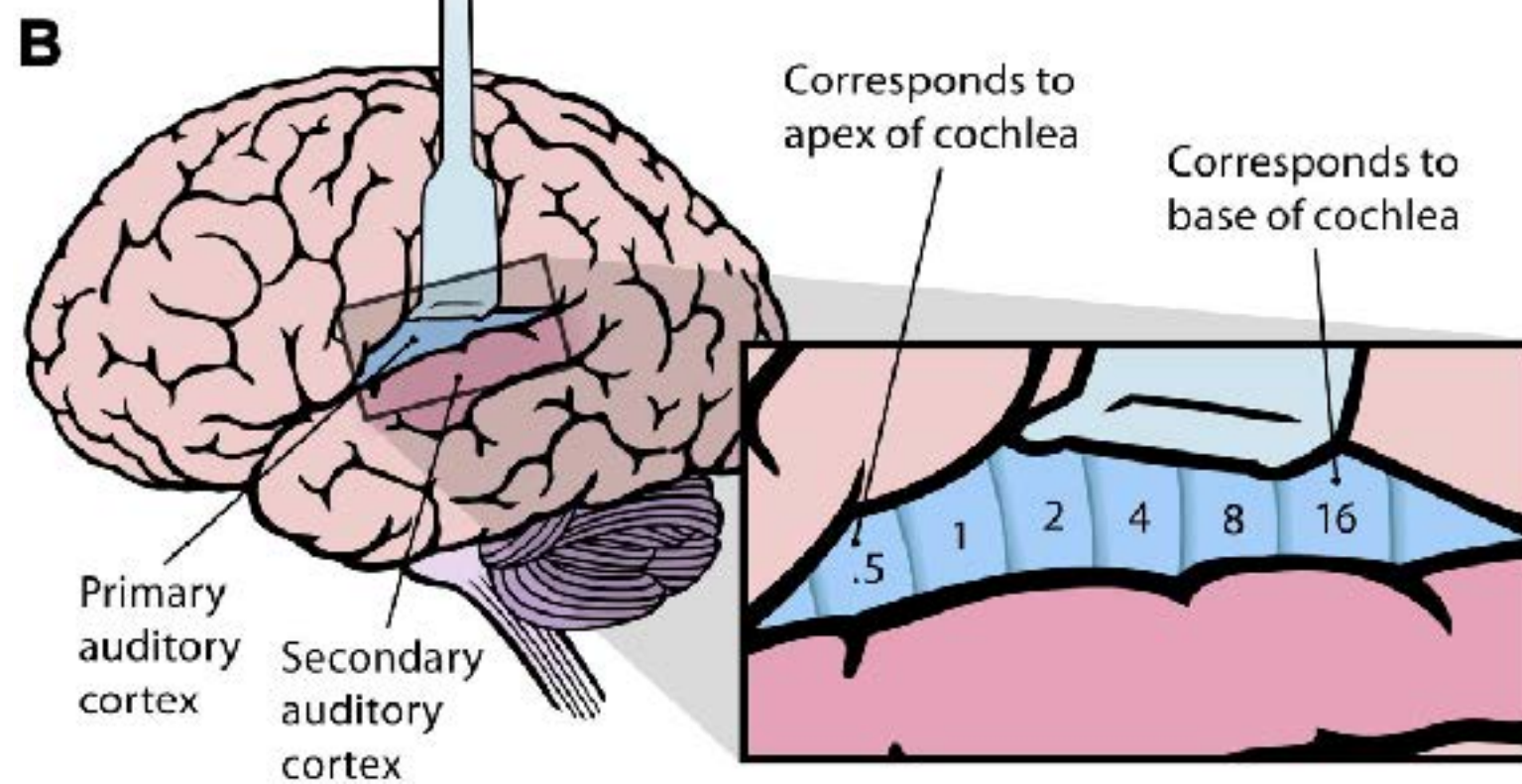
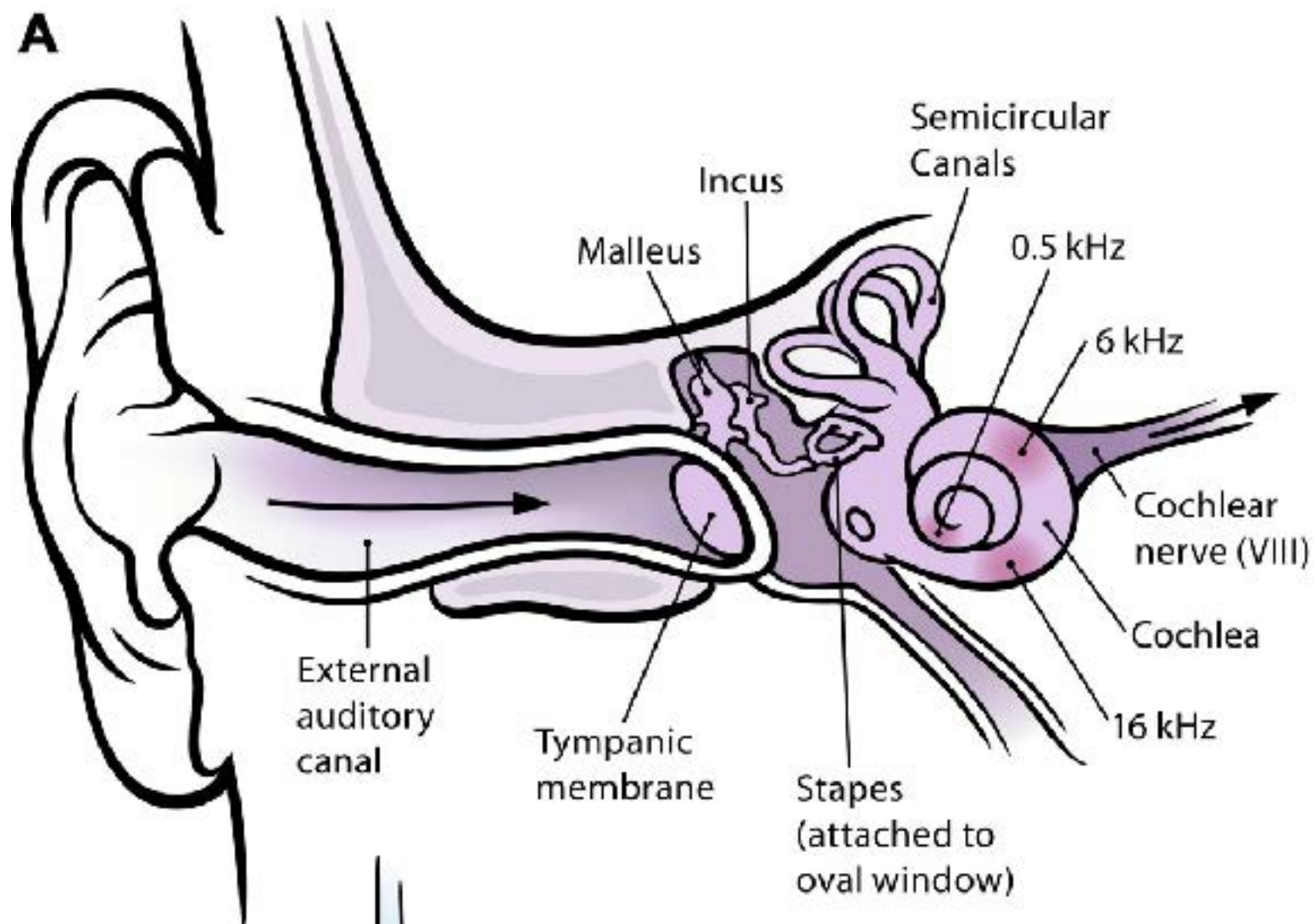


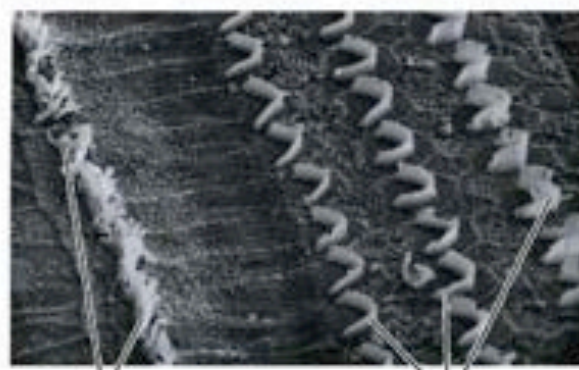
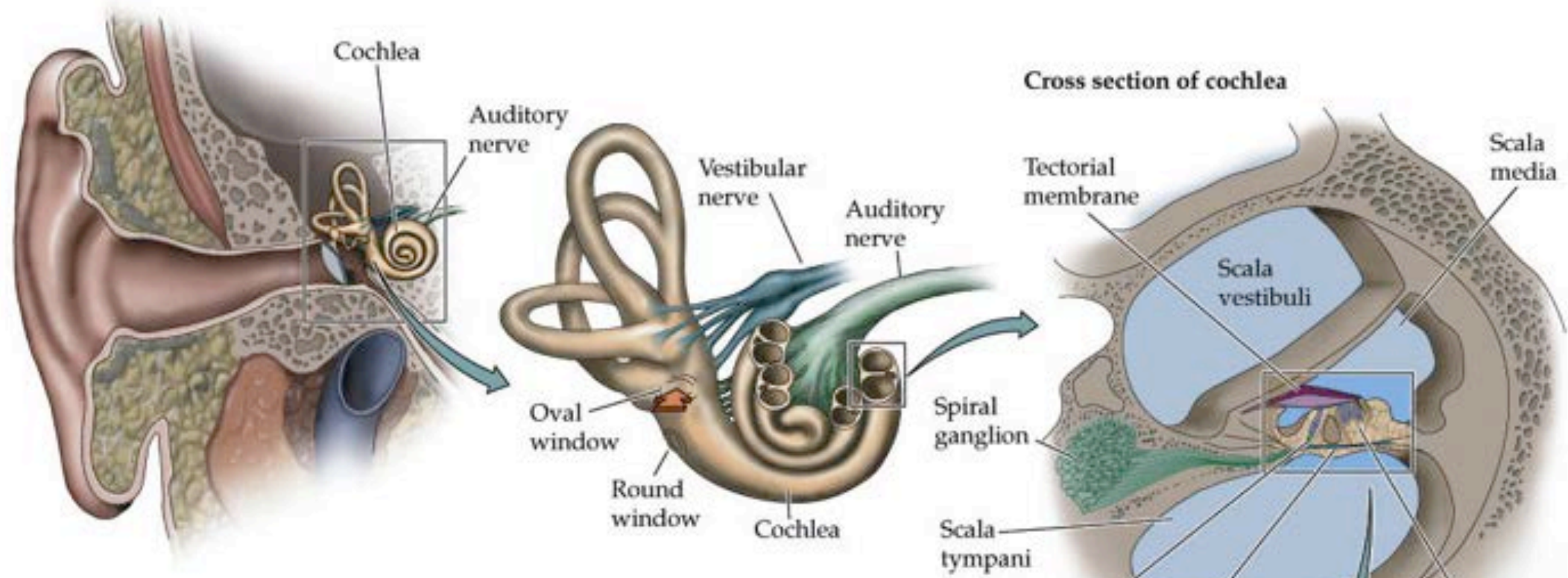
Human senses

- Seeing
- **HEARING**
- Smelling
- Tasting (& *spiciness*)
- Touch (*pressure, warmth, hairs*)
- Balance & acceleration
- Temperature
- Kinesthesia
- Pain
- Chronoception

Hearing

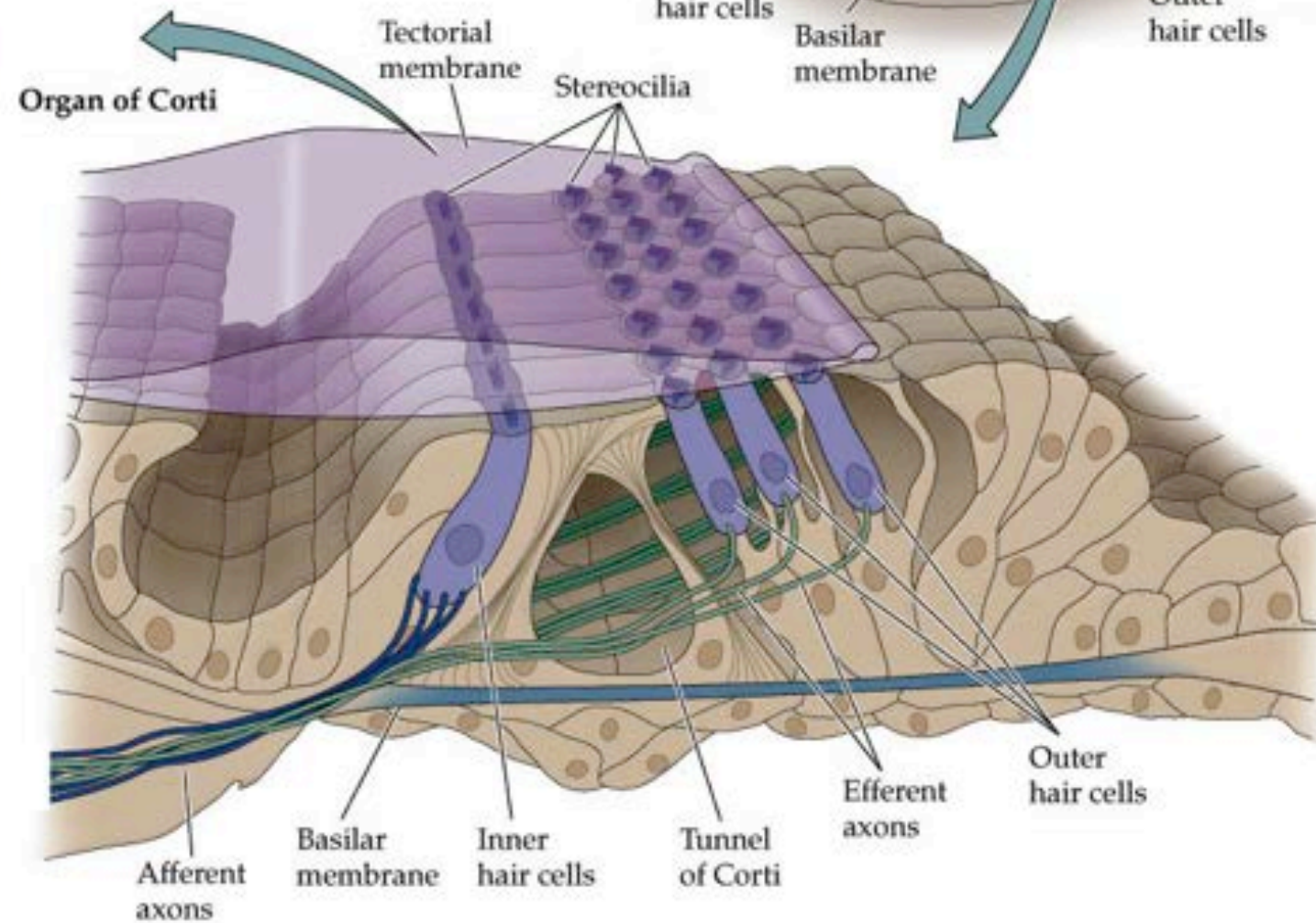






Stereocilia of inner hair cells

Stereocilia of outer hair cells



Music TO YOUR Brain

BY DWAYNE GODWIN
AND JORGE CHAM

HOW DOES MUSIC
MOVE US?



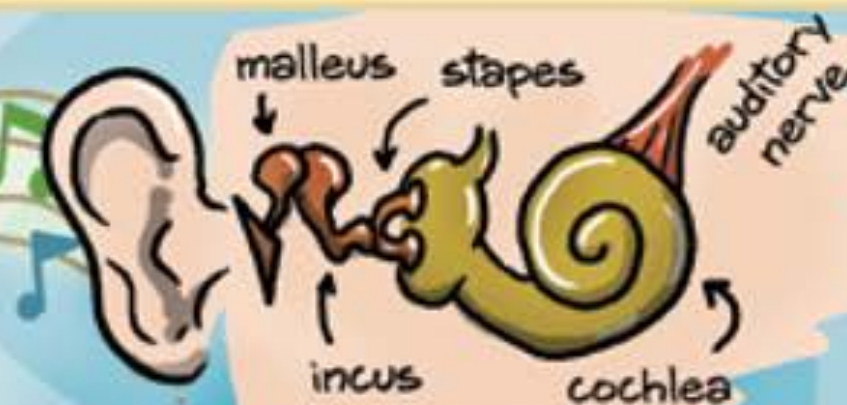
FIGURATIVELY AND LITERALLY?

MUSIC STARTS WITH
VIBRATIONS BY THE VOICE



OR AN
INSTRUMENT.

THE VIBRATIONS STRIKE THE EARDRUM

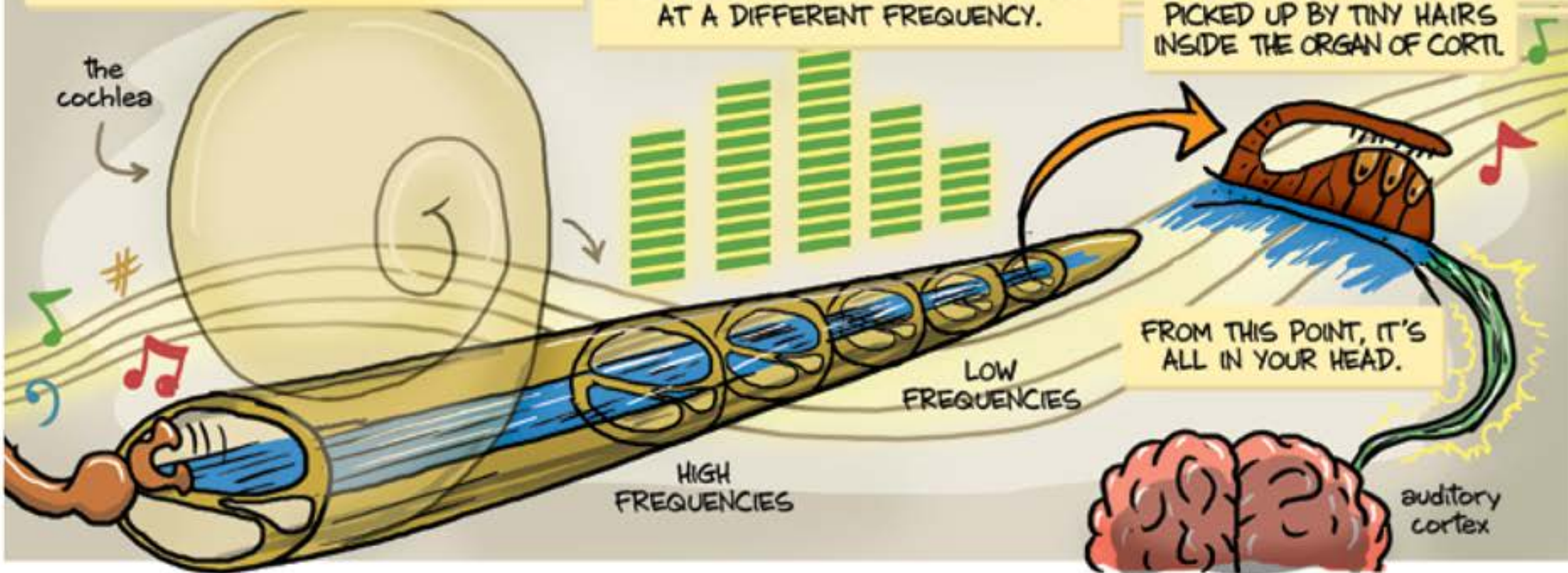


AND GET AMPLIFIED BY TINY BONES IN
THE MIDDLE EAR, STRIKING THE COCHLEA.

THE MEMBRANE THAT SEPARATES THE DIFFERENT CHAMBERS IN THE COCHLEA VARIES IN STIFFNESS...

...CAUSING EACH SECTION TO VIBRATE AT A DIFFERENT FREQUENCY.

THE VIBRATIONS GET PICKED UP BY TINY HAIRS INSIDE THE ORGAN OF CORTI.



MUSIC IS NOT JUST AN AESTHETIC RESPONSE, IT'S HARDWIRED TO HOW WE FEEL.

SAD OR DISSONANT MUSIC DIRECTLY ACTIVATES THE AMYGDALA, WHICH REGULATES NEGATIVE EMOTIONS...

IT TAKES A SYMPHONY OF NEURAL SIGNALS TO APPRECIATE A SYMPHONY.

"PLAY THE WAY YOU FEEL!" CHOPIN SAID.

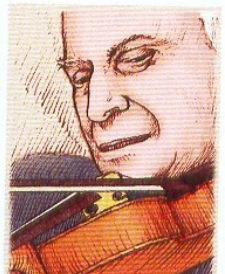
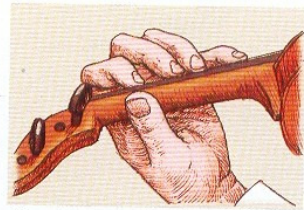
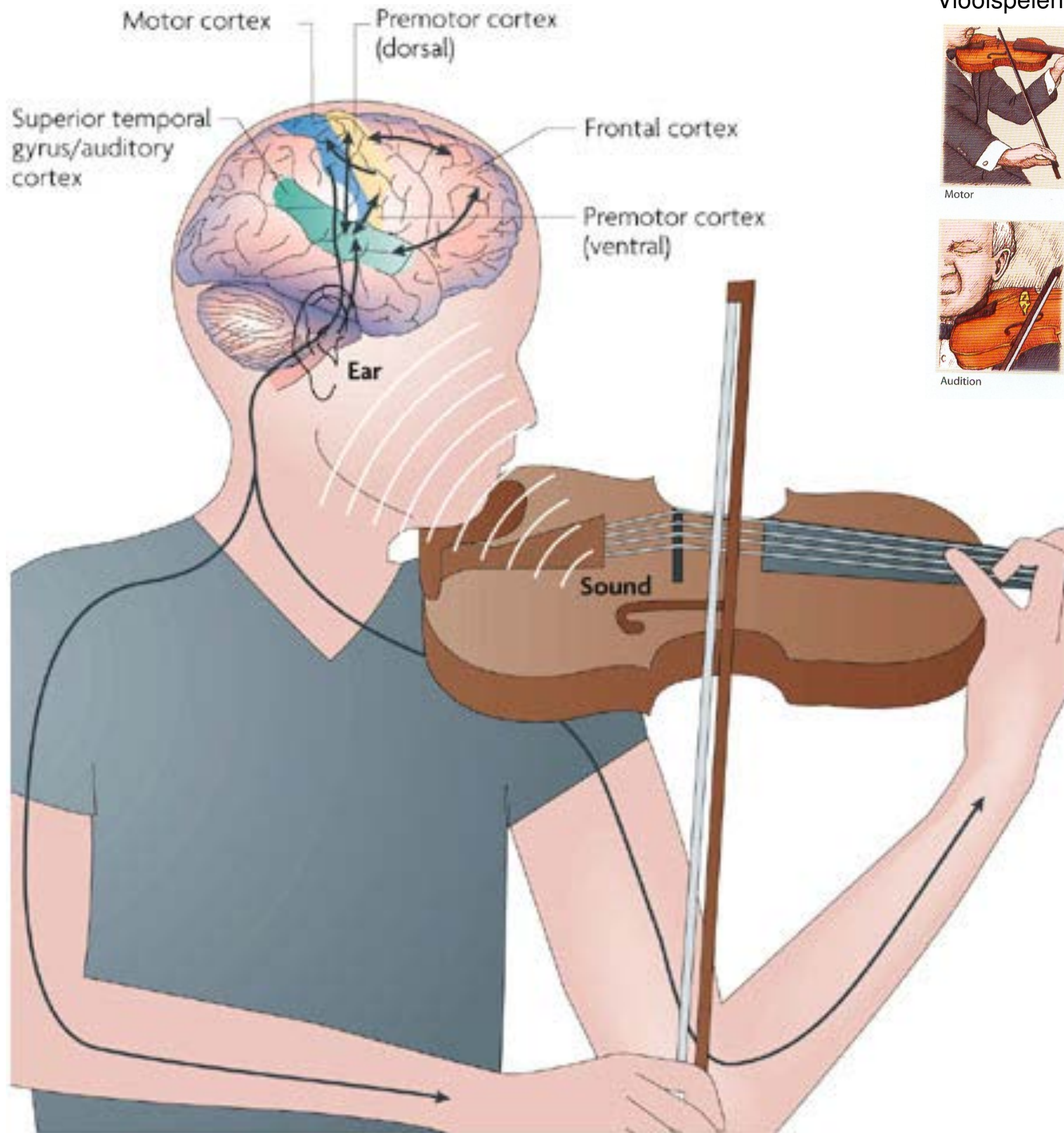
DO YOU FEEL THE WAY YOU PLAY?



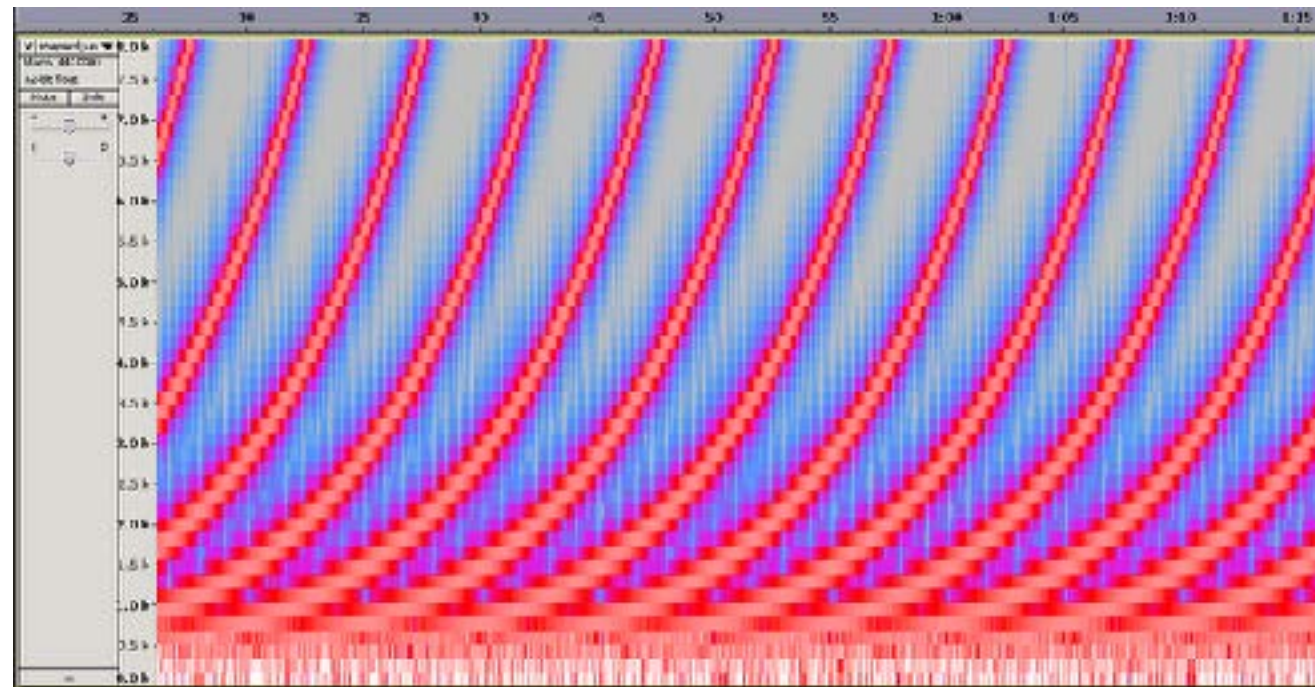
... WHEREAS HAPPY OR HARMONIC MUSIC CAN TRIGGER DOPAMINE RELEASE (LIKE A DRUG).



Vioolspelen: bewegen, horen, zien en voelen



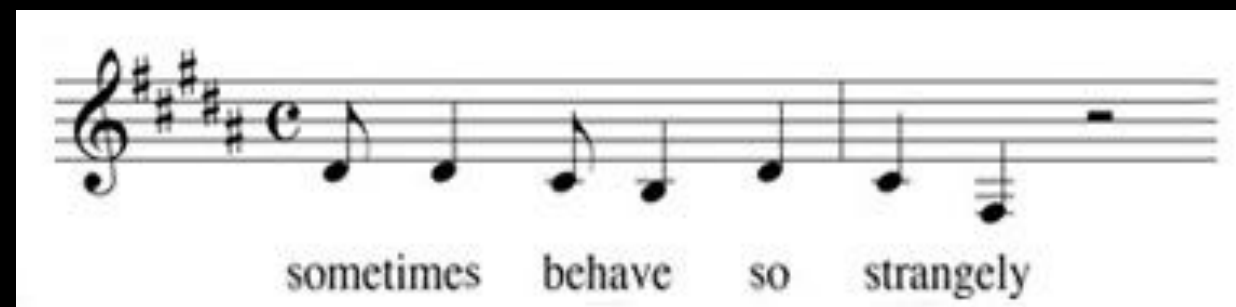
Shepard tone



More? :) See: https://en.wikipedia.org/wiki/Auditory_illusion

Language vs. Music

Diana Deutsch : “The sounds as they appear to you are not only different from those that are really present, but they sometimes behave so strangely as to seem quite impossible.”



Memory

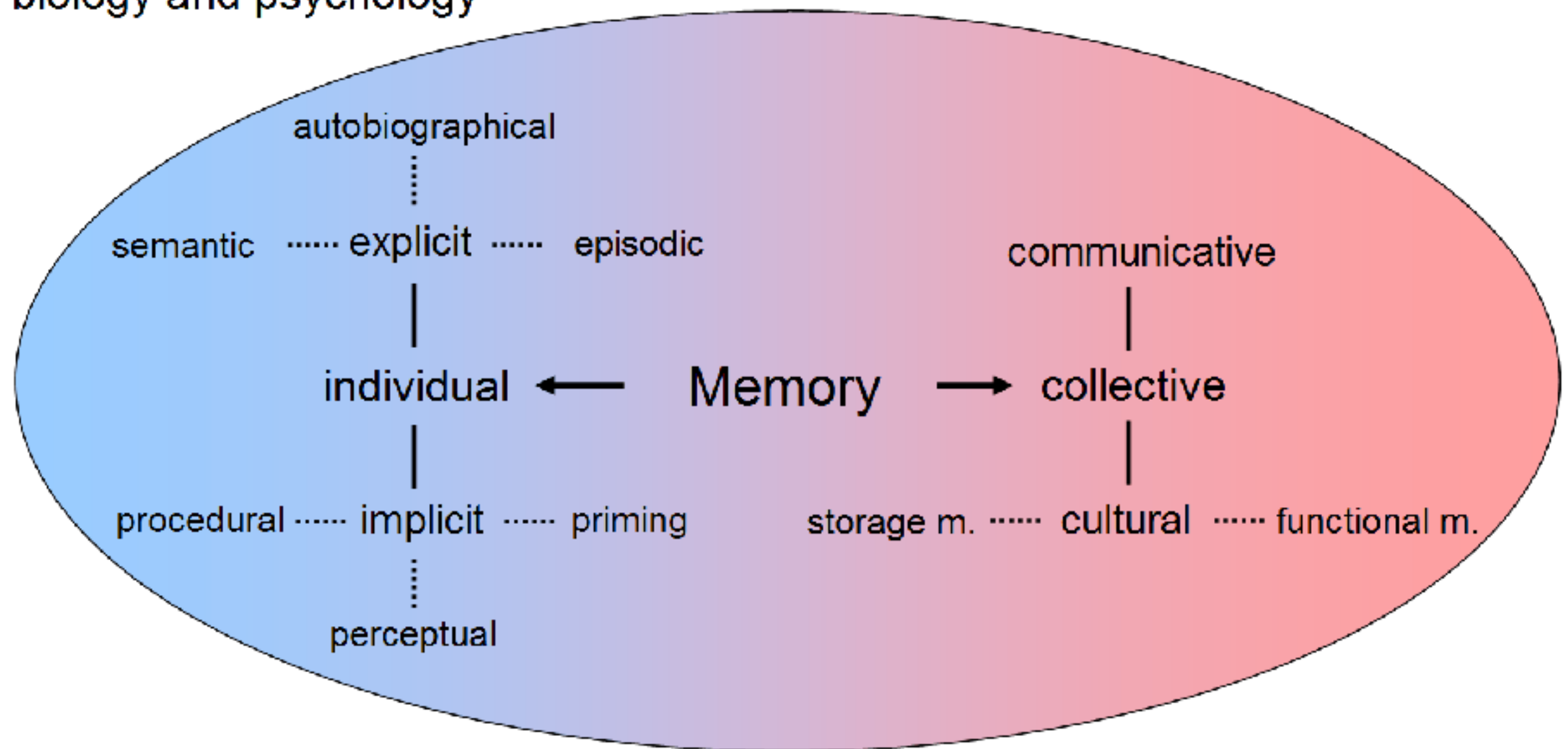
kahoot.it

Memory

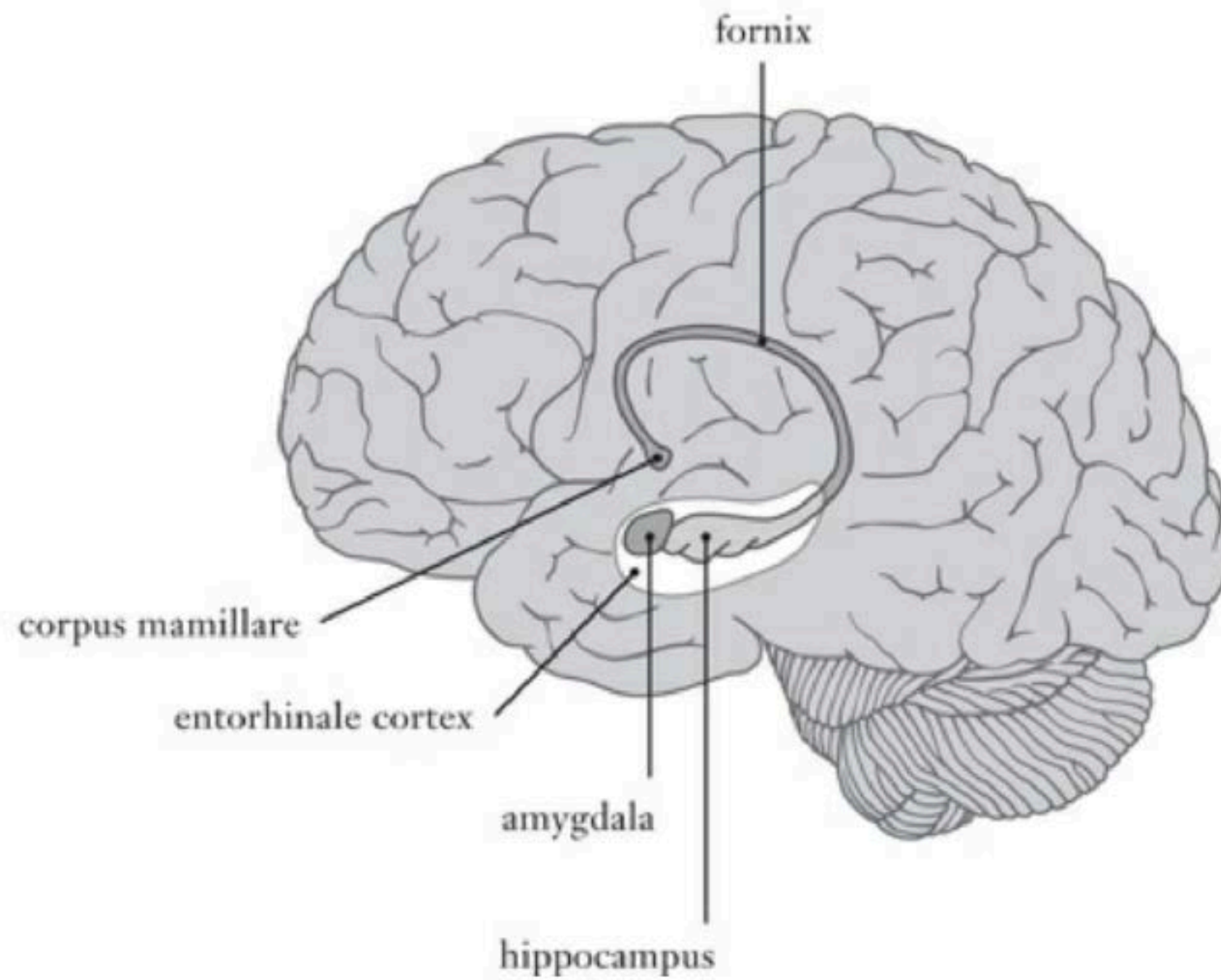
“Memory is the faculty of the mind by which information is encoded, stored, and retrieved.”

Memory is vital to experiences and related to limbic systems, it is the retention of information over time for the purpose of influencing future action.

biology and psychology

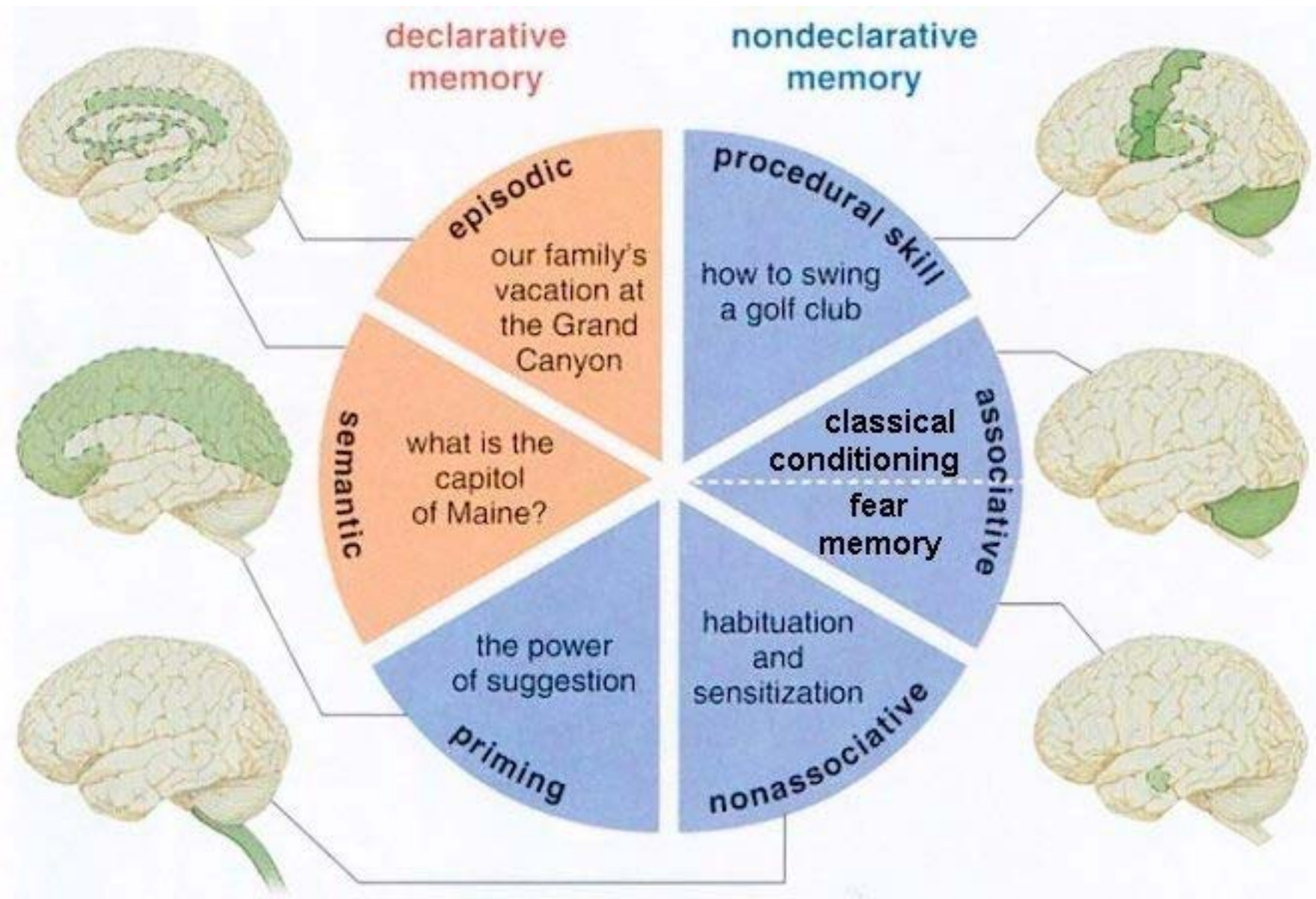


social and cultural studies

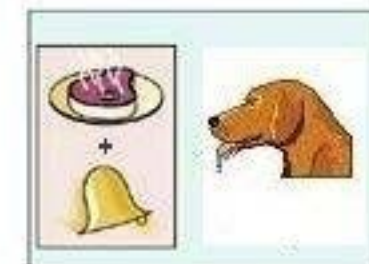
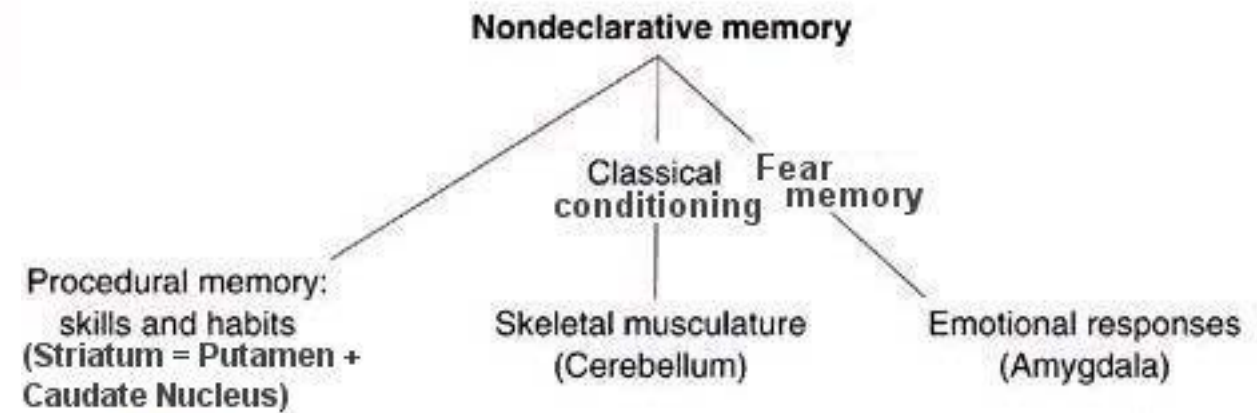
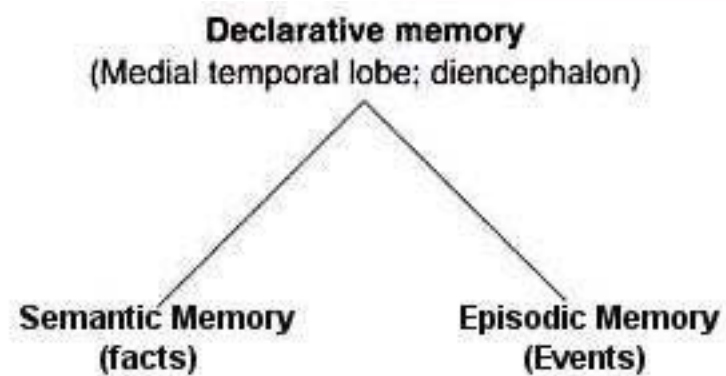
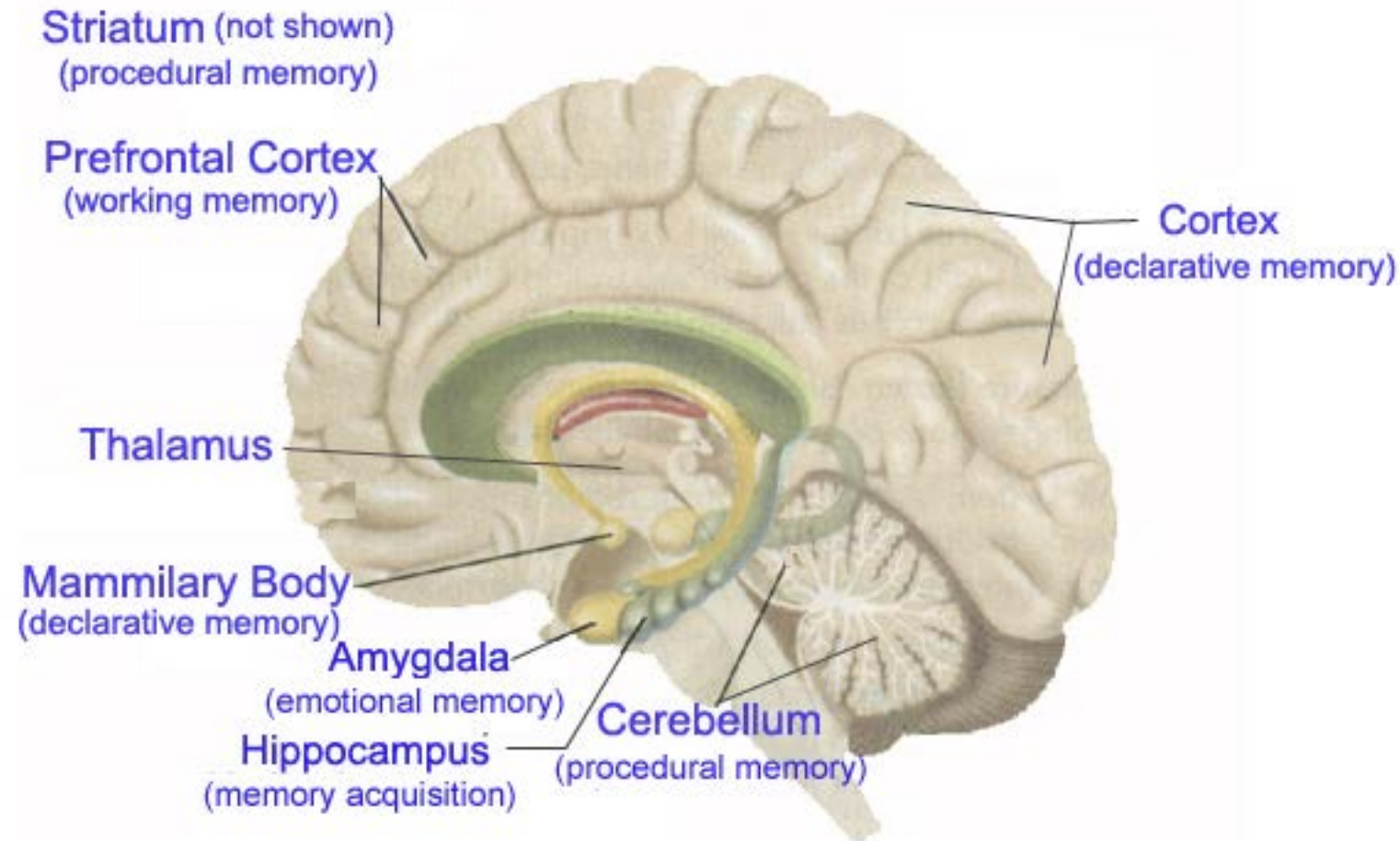


AMYGDALA

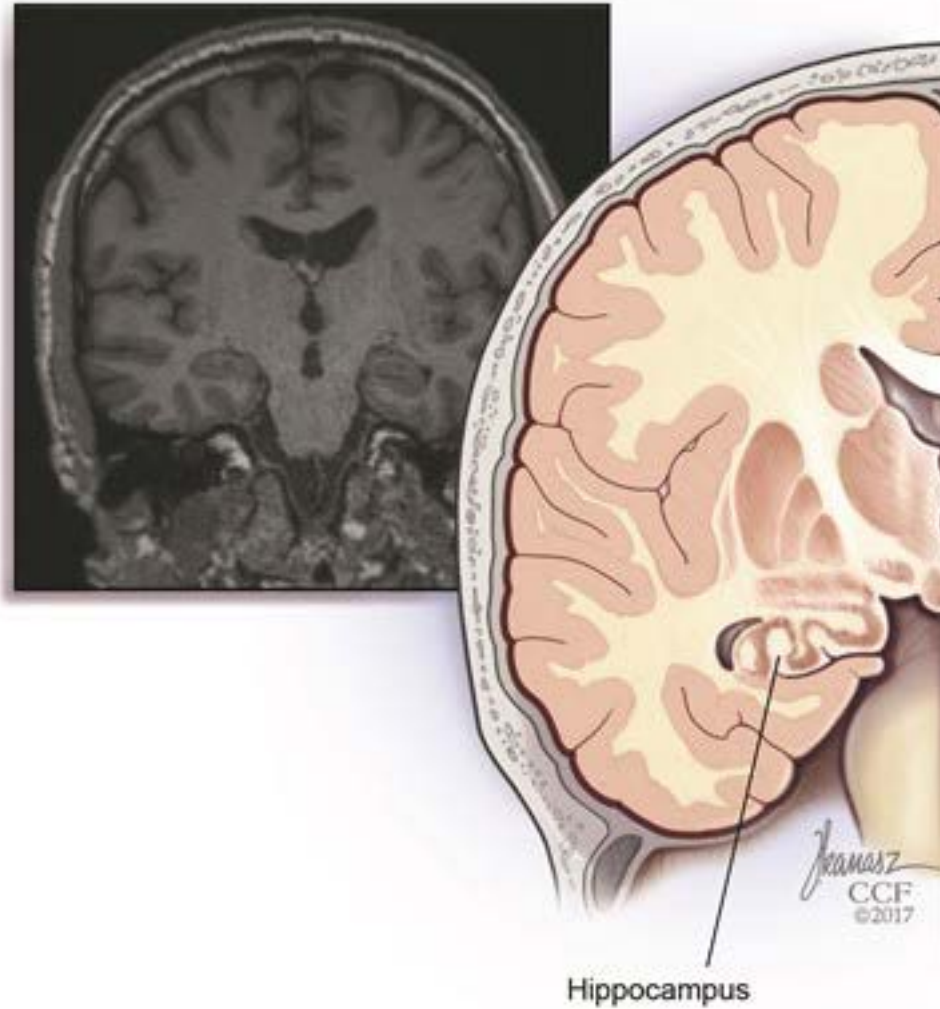




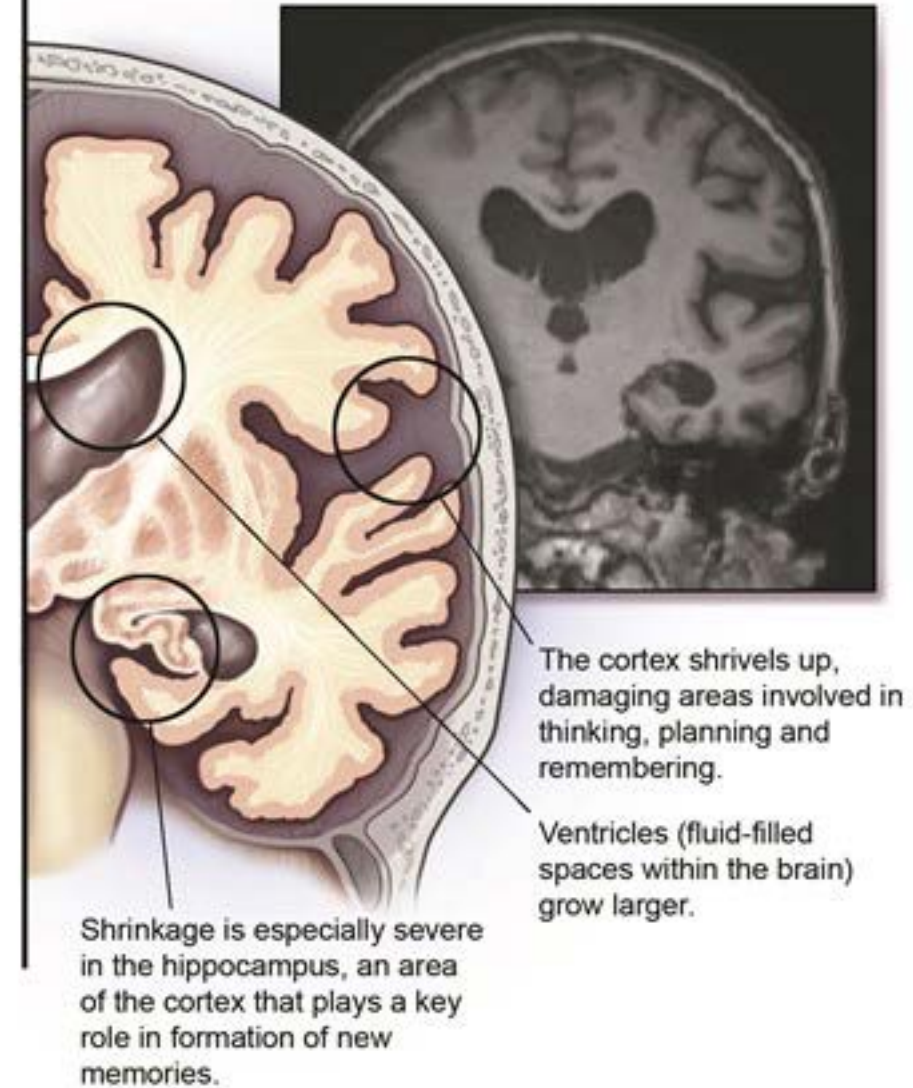
The Brain and Memory



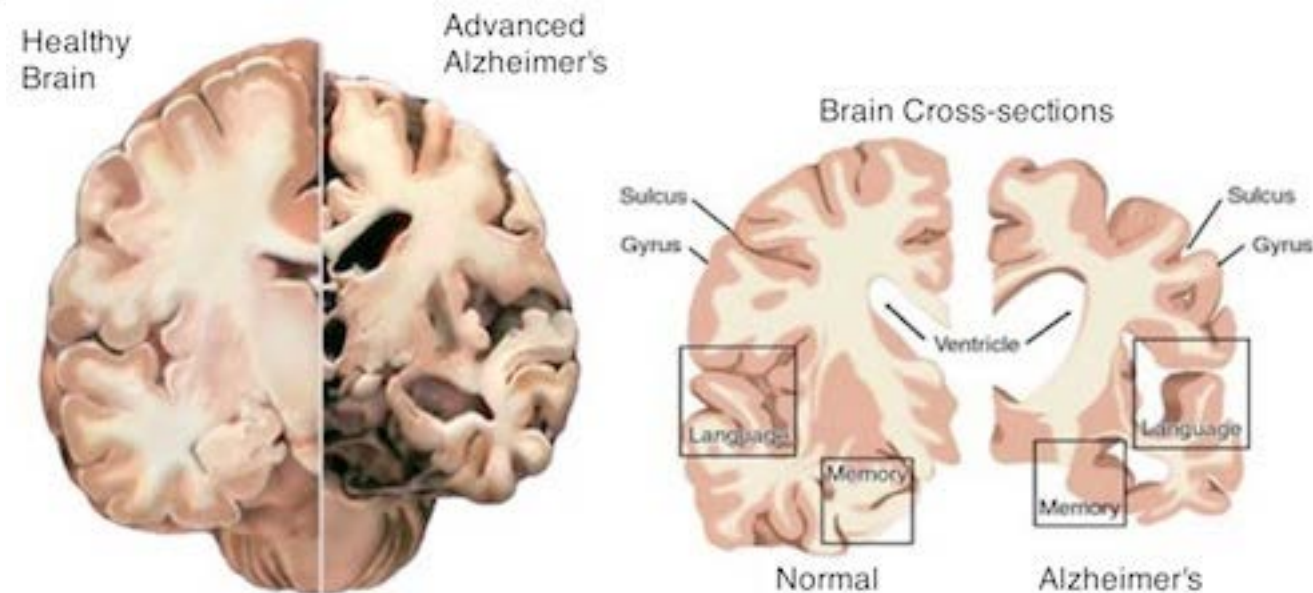
Healthy brain

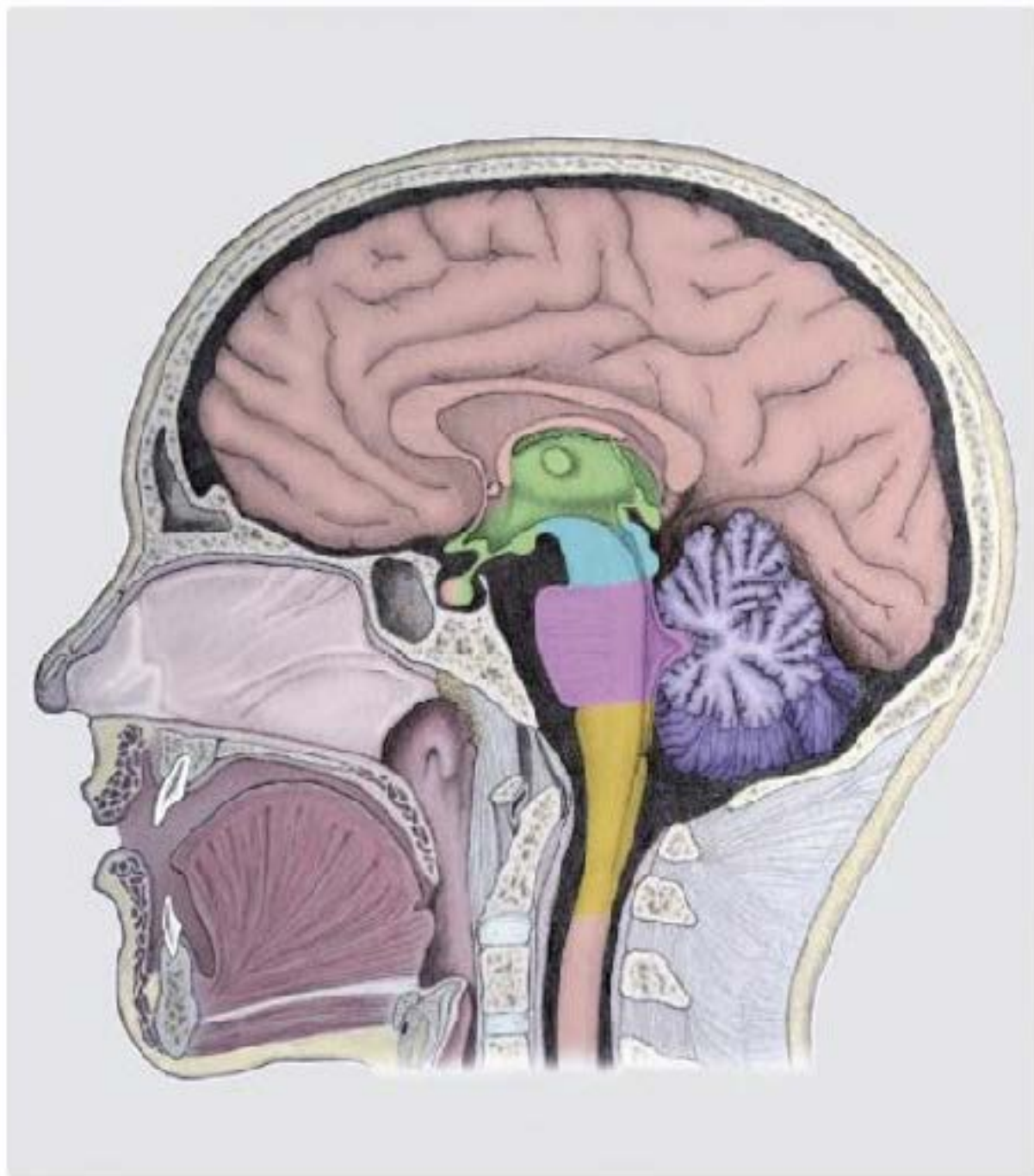


Alzheimer's brain



MRI scans (gray) and illustrations (color) show the differences between a brain affected by Alzheimer's disease and a normal brain.



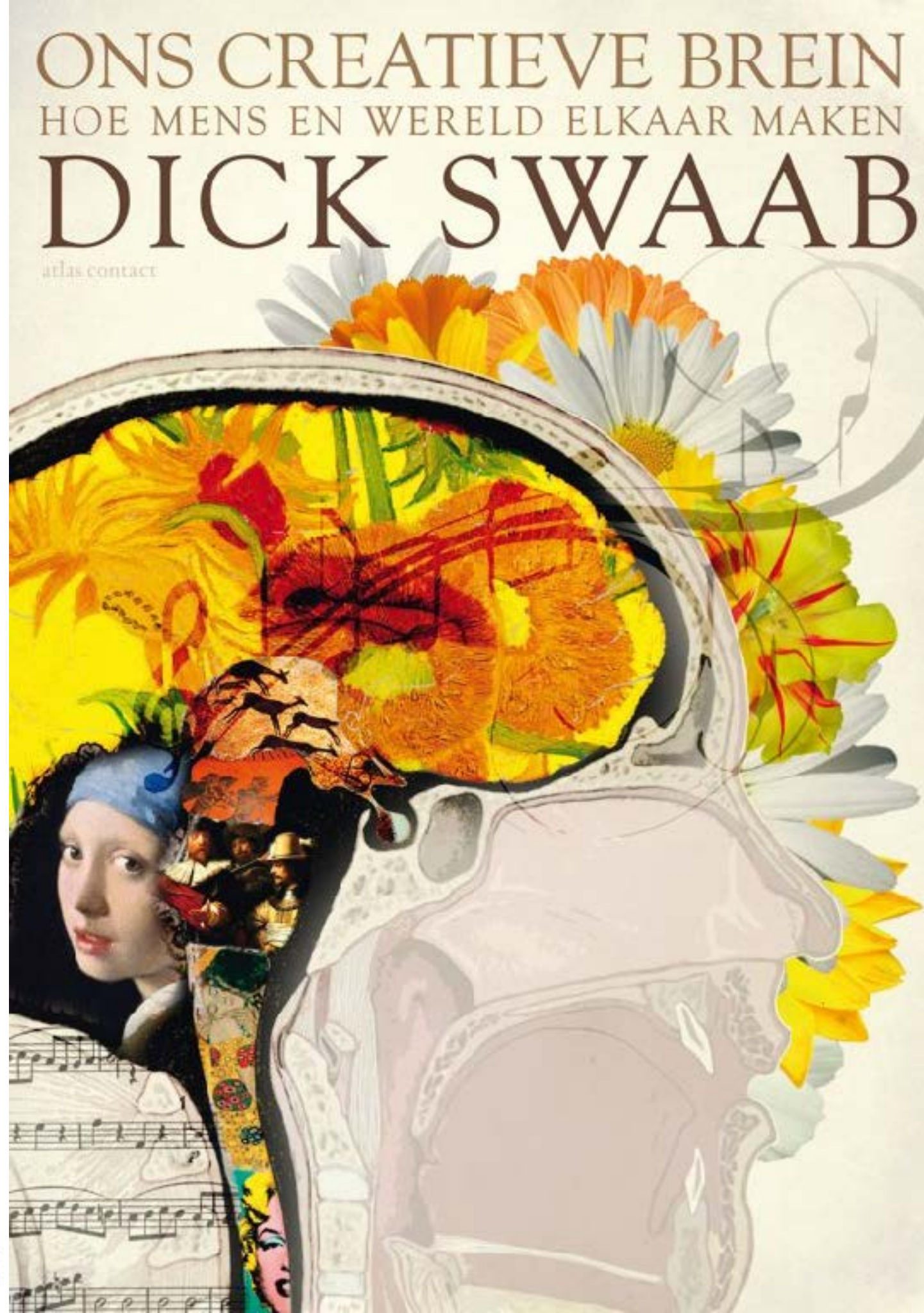


Dick Swaab

WIJ ZIJN ONS BREIN

VAN BAARMOEDER TOT ALZHEIMER

'Het standaardwerk over het brein, en dat is niets te veel gezegd.' - TROUW



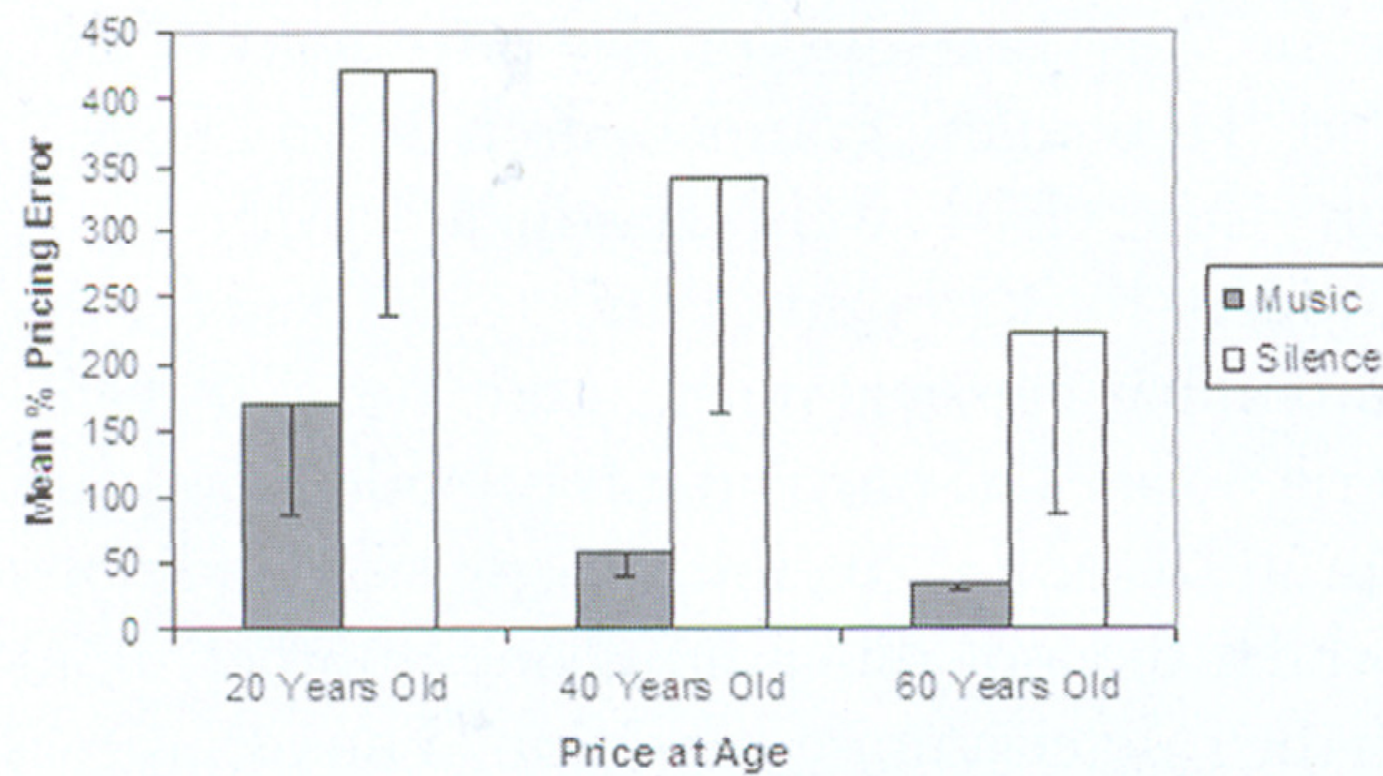
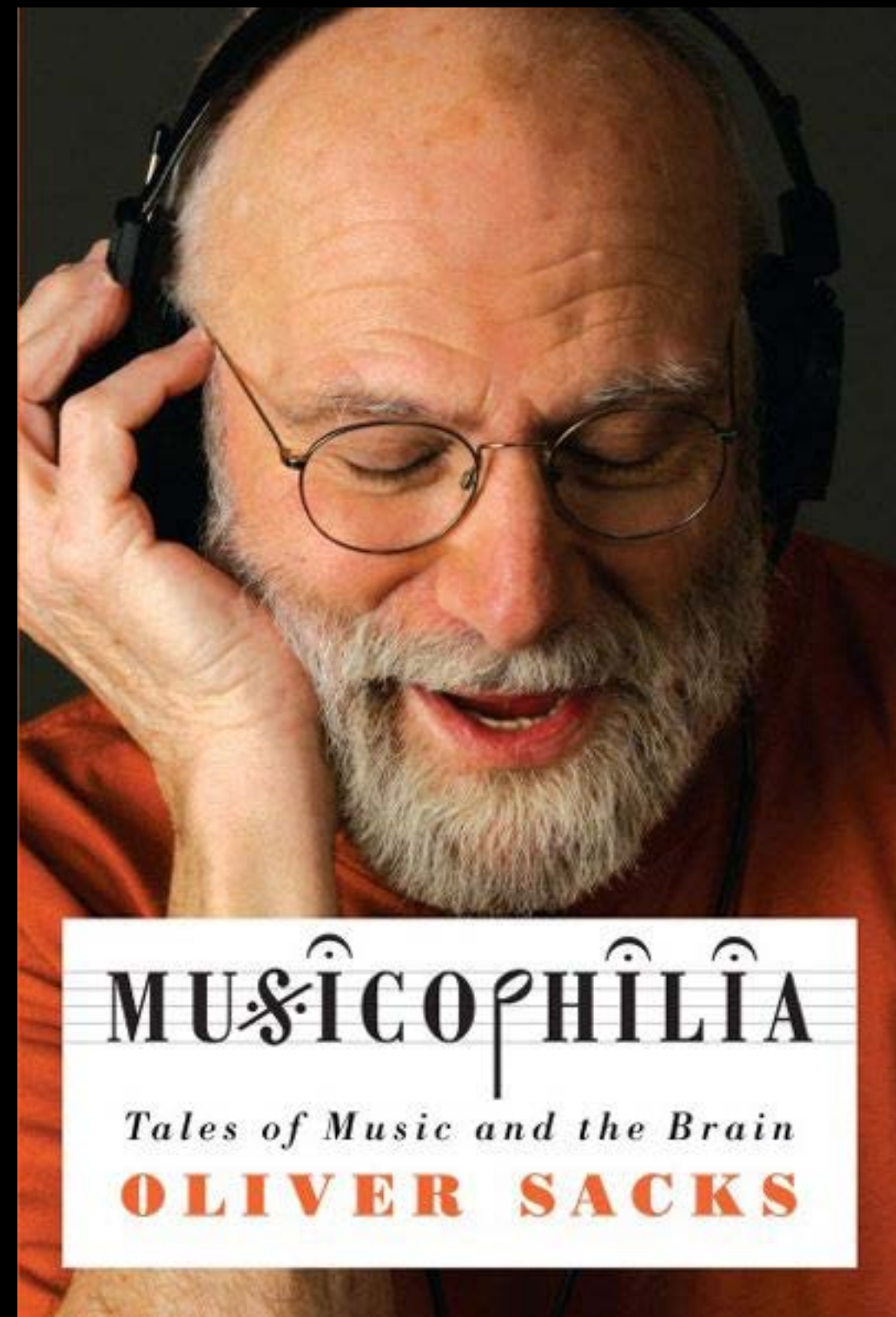
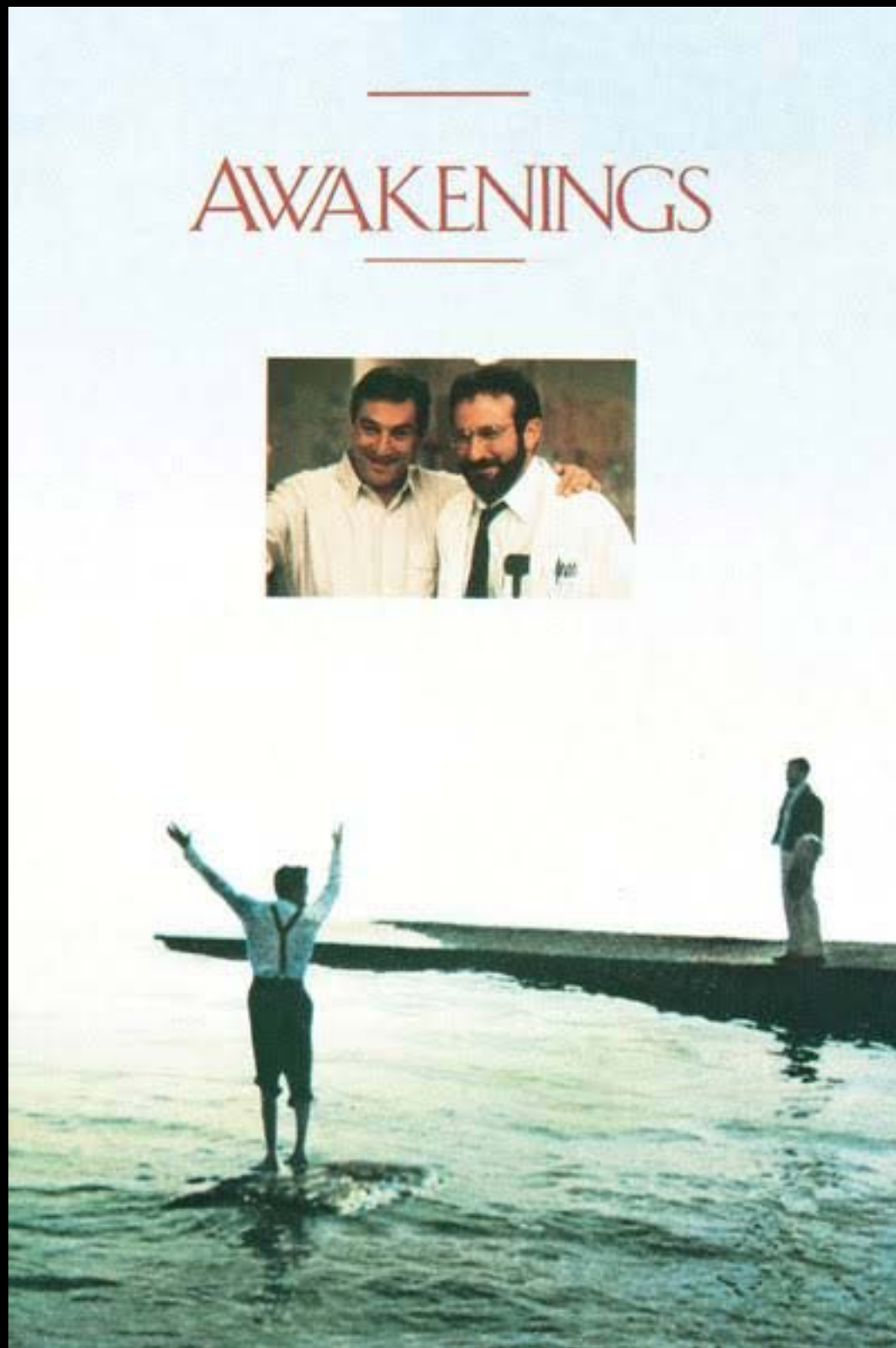


Figure 3. Memory for prices in dementia patients recalled either in a quiet room or while listening to music popular during young adulthood.

Schulkind 2009

BBC Oliver Sacks - tales of Music and the Brain



[https://youtu.be/tqrNEmuSCis?
t=14m34s](https://youtu.be/tqrNEmuSCis?t=14m34s)



<https://www.beatiewolfe.com/power-of-music-and-dementia/>

?

Score 20 more points:

(divided by 20)

What's the:

Year

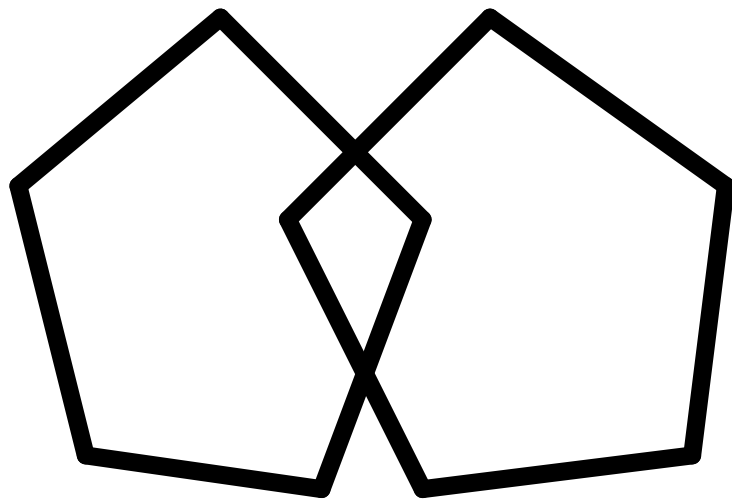
Season

Day of the week

Name of School

Room number

Draw this form after 7 seconds view:

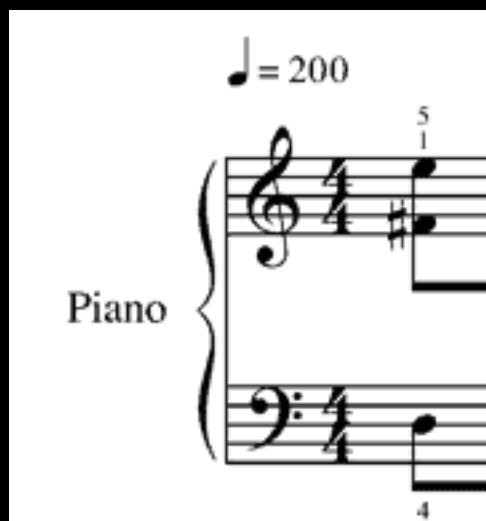


Remember the original image from test 1?
How many items can you recall and name?



How many extra with 2 seconds review?

What is this music from?

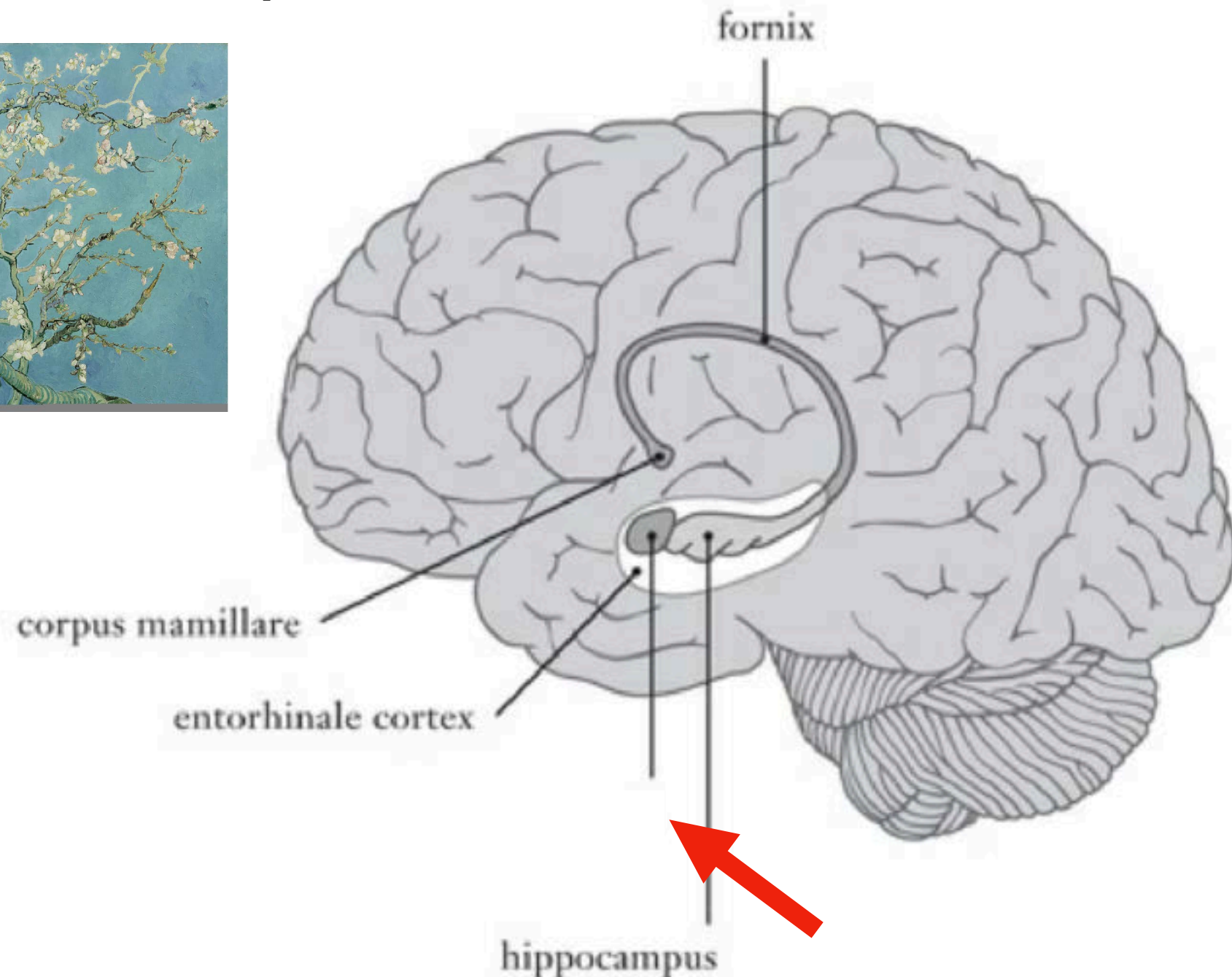


What's the weight of your Brain?

What were the “lyrics” to this “music?”



What was the “word to remember” (and its function??



What's the:

Year - 2018

Season - Summer

Day of the week - Thursday

Name of School - Postech

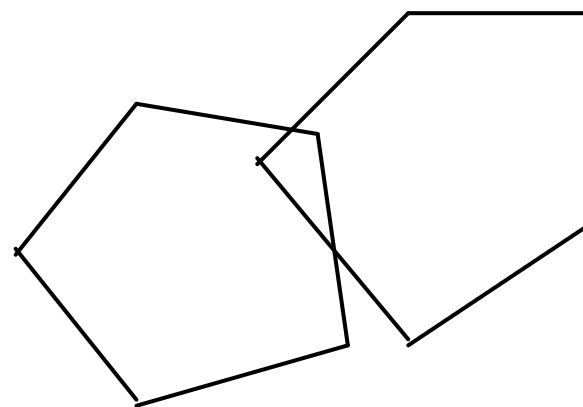
Room number - 105

5 pts.

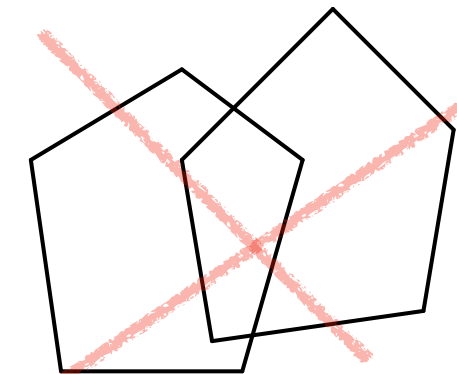
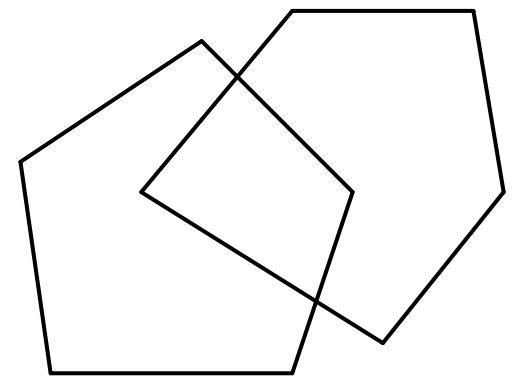
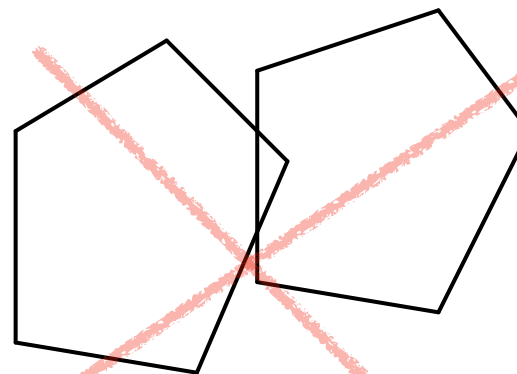
Draw this form after 7 seconds view:

Scoringsvoorbeelden:

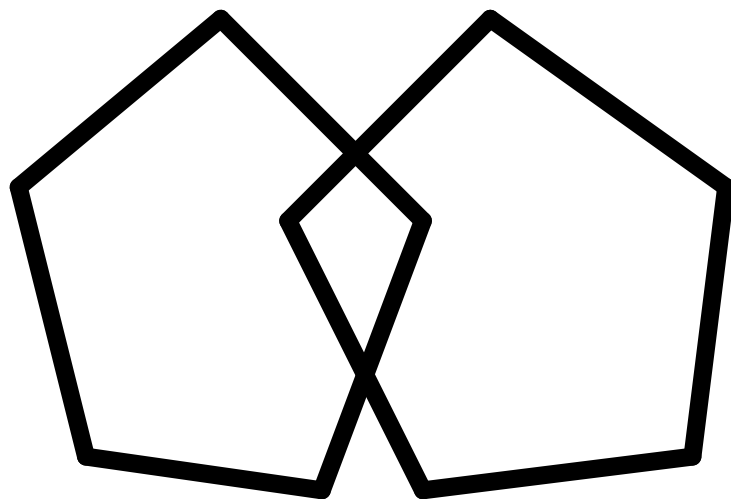
correct = 1 punt:



Niet correct = 0 punten:



1 pts.



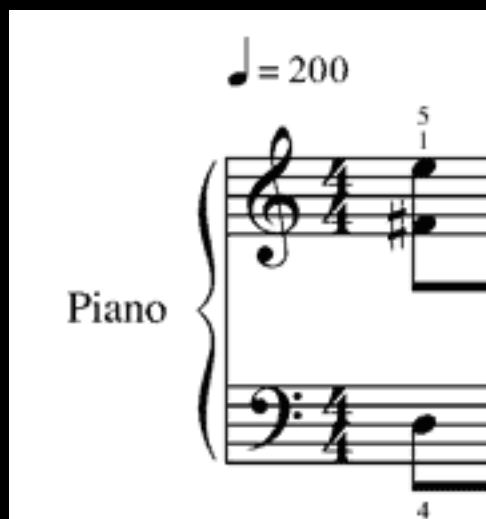
Remember the original image from test 1?
How many items can you recall and name?



How many extra with 2 seconds review?

1 pts. per item

What is this music from?



1 pts.

What's the weight of your Brain?

1500 gram
(\pm 150 gram)

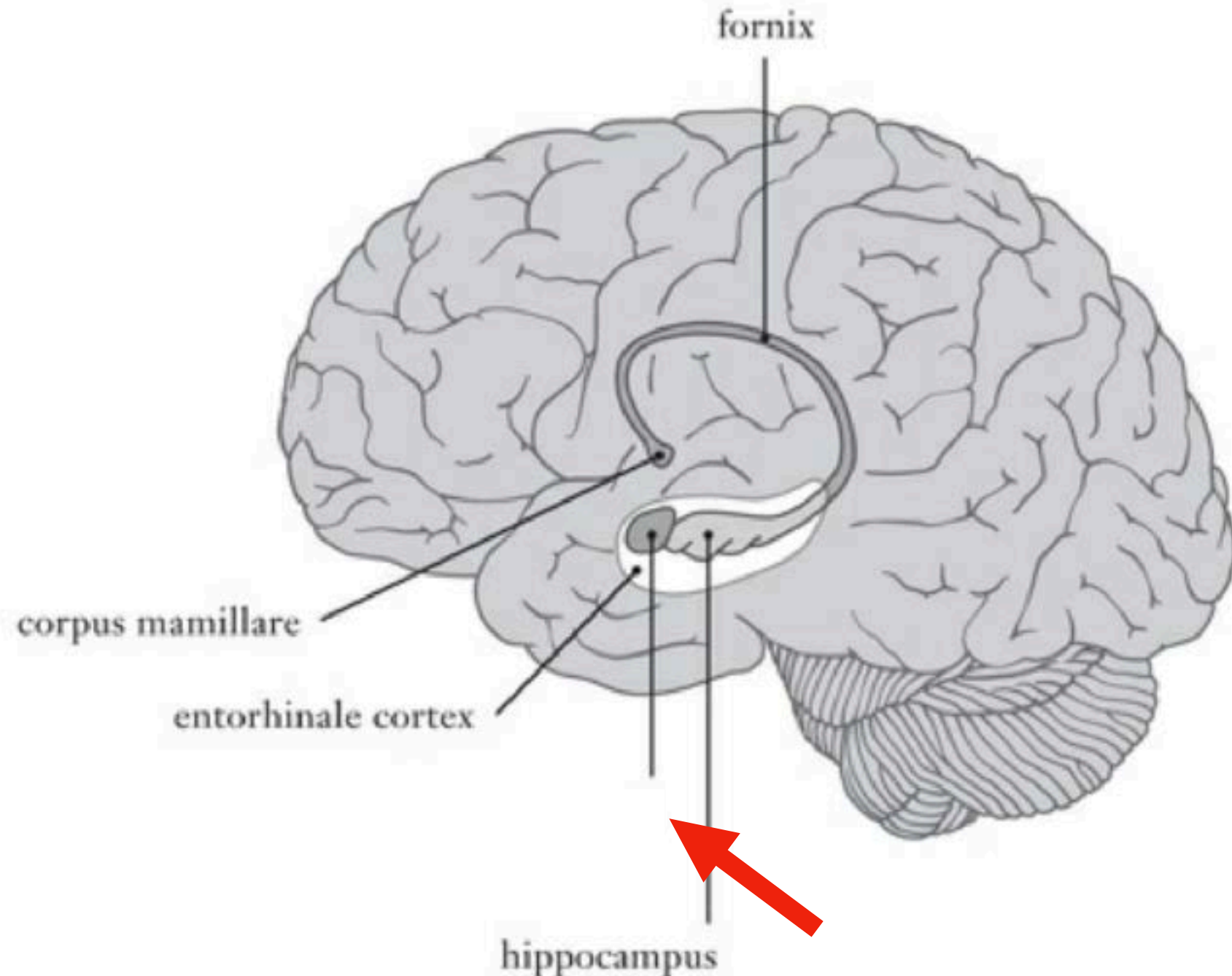
1 pts.

What where the “lyrics” to
this “music?”



1 pts.

What was the
“word to remember”
(and its function??

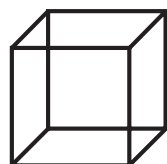
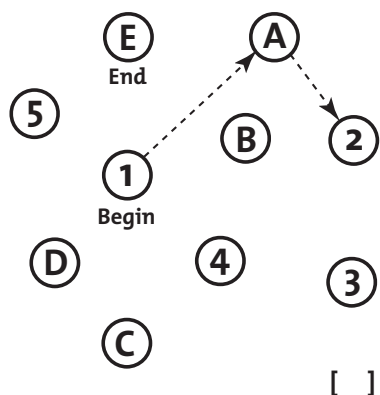


1 pts.

MONTREAL COGNITIVE ASSESSMENT (MOCA)

NAME :
Education :
Sex :Date of birth :
DATE :

VISUOSPATIAL / EXECUTIVE

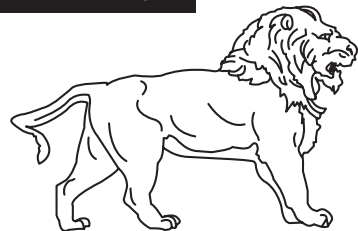
Copy
cubeDraw CLOCK (Ten past eleven)
(3 points)

POINTS

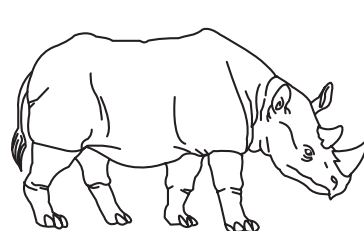
[] [] []
Contour Numbers Hands

___/5

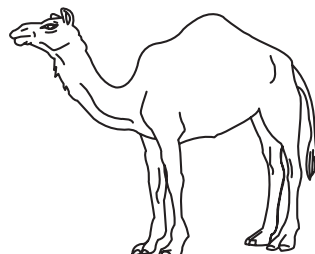
NAMING



[]



[]



[]

___/3

MEMORY

Read list of words, subject
must repeat them. Do 2 trials.
Do a recall after 5 minutes.

FACE

VELVET

CHURCH

DAISY

RED

1st trial

2nd trial

No
points

ATTENTION

Read list of digits (1 digit/ sec.).

Subject has to repeat them in the forward order

[] 2 1 8 5 4

Subject has to repeat them in the backward order

[] 7 4 2

___/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors

[] FBACMNAAJKLBAFAKDEAAAJAMOF AAB

___/1

Serial 7 subtraction starting at 100

[] 93

[] 86

[] 79

[] 72

[] 65

4 or 5 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt

___/3

LANGUAGE

Repeat : I only know that John is the one to help today. []

The cat always hid under the couch when dogs were in the room. []

___/2

Fluency / Name maximum number of words in one minute that begin with the letter F

[] ____ (N ≥ 11 words)

___/1

ABSTRACTION

Similarity between e.g. banana - orange = fruit [] train - bicycle [] watch - ruler

___/2

DELAYED RECALL

Has to recall words

WITH NO CUE

FACE

VELVET

CHURCH

DAISY

RED

Points for
UNCUED
recall only

___/5

Optional

Category cue

Multiple choice cue

ORIENTATION

[] Date

[] Month

[] Year

[] Day

[] Place

[] City

___/6

© Z.Nasreddine MD Version November 7, 2004

Normal ≥ 26 / 30

TOTAL

___/30

Add 1 point if ≤ 12 yr edu

www.mocatest.org

Gestandaardiseerde MMSE

© RM Kok, FRJ Verhey, 2002

Naam patiënt :

Datum invullen :

Naam invuller :

Ik ga u nu enkele vragen stellen en geef u enkele problemen om op te lossen. Wilt u alstublieft uw best doen om zo goed mogelijke antwoorden te geven.

noteer antwoord

score:

- a. Welk jaar is het?
b. Welk seizoen is het?
c. Welke maand van het jaar is het?
d. Wat is de datum vandaag?
e. Welke dag van de week is het?

(0-5) _____

- a. In welke provincie zijn we nu?
b. In welke plaats zijn we nu?
c. In welk ziekenhuis (instelling) zijn we nu?
d. Wat is de naam van deze afdeling?
e. Op welke verdieping zijn we nu?

(0-5) _____

- Ik noem nu drie voorwerpen. Wilt u die herhalen nadat ik ze alle drie gezegd heb?
Onthoud ze want ik vraag u over enkele minuten ze opnieuw te noemen.
(Noem "appel, sleutel, tafel", neem 1 seconde per woord)
(1 punt voor elk goed antwoord, herhaal maximaal 5 keer tot de patiënt de drie woorden weet)

(0-3) _____

- Wilt u van de 100 zeven aftrekken en van wat overblijft weer zeven aftrekken en zo doorgaan tot ik stop zeg?
(Herhaal eventueel 3 maal als de persoon stopt, herhaal dezelfde instructie, geef maximaal 1 minuut de tijd) Noteer hier het antwoord.

of
Wilt u het woord "worst" achterstevoren spellen?
Noteer hier het antwoord.

(0-5) _____

- Noemt u nogmaals de drie voorwerpen van zojuist.
(Eén punt voor elk goed antwoord).

(0-3) _____

- Wat is dit? En wat is dat?
(Wijs een pen en een horloge aan. Eén punt voor elk goed antwoord).

(0-2) _____

- Wilt u de volgende zin herhalen: " Nu eens dit en dan weer dat ".
(Eén punt als de complete zin goed is)

(0-1) _____

- Wilt u deze woorden lezen en dan doen wat er staat?
(papier met daarop in grote letters: "Sluit uw ogen")

(0-1) _____

- Wilt u dit papiertje pakken met uw rechterhand, het dubbelvouwen en het op uw schoot leggen? (Eén punt voor iedere goede handeling).

(0-3) _____

- Wilt u voor mij een volledige zin opschrijven op dit stuk papier?
(Eén punt wanneer de zin een onderwerp en een gezegde heeft en betekenis heeft).

(0-1) _____

- Wilt u deze figuur natekenen?
(Figuur achterop dit papier. Eén punt als figuur geheel correct is nagetekend. Er moet een vierhoek te zien zijn tussen de twee vijfhoeken)

(0-1) _____

TOTALE TEST SCORE: (0-30) _____

Best score for test 1 = 1 point

Best score for test 2 = 1 point

Still present here = 1 point

감사합니다