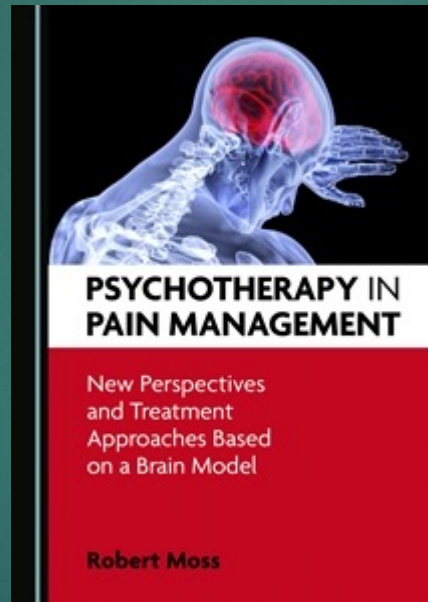



# Pain Management: The Clinical Biopsychological Approach

ROBERT A. MOSS, PH.D., ABN, ABPP

<http://cambridgescholars.com/psychotherapy-in-pain-management>





<https://www.aimspress.com/article/10.3934/Neuroscience.2020013>

- **Psychotherapy in pain management: New viewpoints and treatment targets based on a brain theory. *AIMS Neuroscience*.**





[https://w  
ww.resea  
rchgate.  
net/profil  
e/Robert  
\\_Moss2/r  
esearch](https://www.researchgate.net/profile/Robert_Moss2/research)

- ▶ All my related articles cited in the book and article are available on my page at Research Gate.



# This is an Introductory Workshop

Taught as if you do not know the information

For those of you who use a psychotherapy theoretical model [i.e., psychodynamic, humanistic/experiential, behavioral, cognitive behavioral (including third wave)], you will find many aspects you can fit into your model]

However, try to put your model aside temporarily because it will not be able to explain all aspects discussed

# Answering Questions

- ▶ At each break I will review the questions and reply to those immediately after the break
- ▶ I can be reached after the workshop at [clinicalbiopsychology@gmail.com](mailto:clinicalbiopsychology@gmail.com) and [rmoss1@nmhs.net](mailto:rmoss1@nmhs.net)
- ▶ I will be glad to talk by phone for any complicated questions that are too long to explain by email



# Organization of Today's Talk

---

Overview of the applied Clinical  
Biopsychological Model

---

Neurophysiological basis of pain  
and the Dimensional Systems Model

---

Negative emotional memory  
treatment

---

Interpersonal behavior patterns

---

Loss-related depression

---

Specific pain management  
strategies

---

Only Limited  
Discussion  
of Brain  
Physiology



---

This is an applied  
clinical model  
workshop for  
psychotherapists

---

Specific references  
are available in my  
articles at Research  
Gate



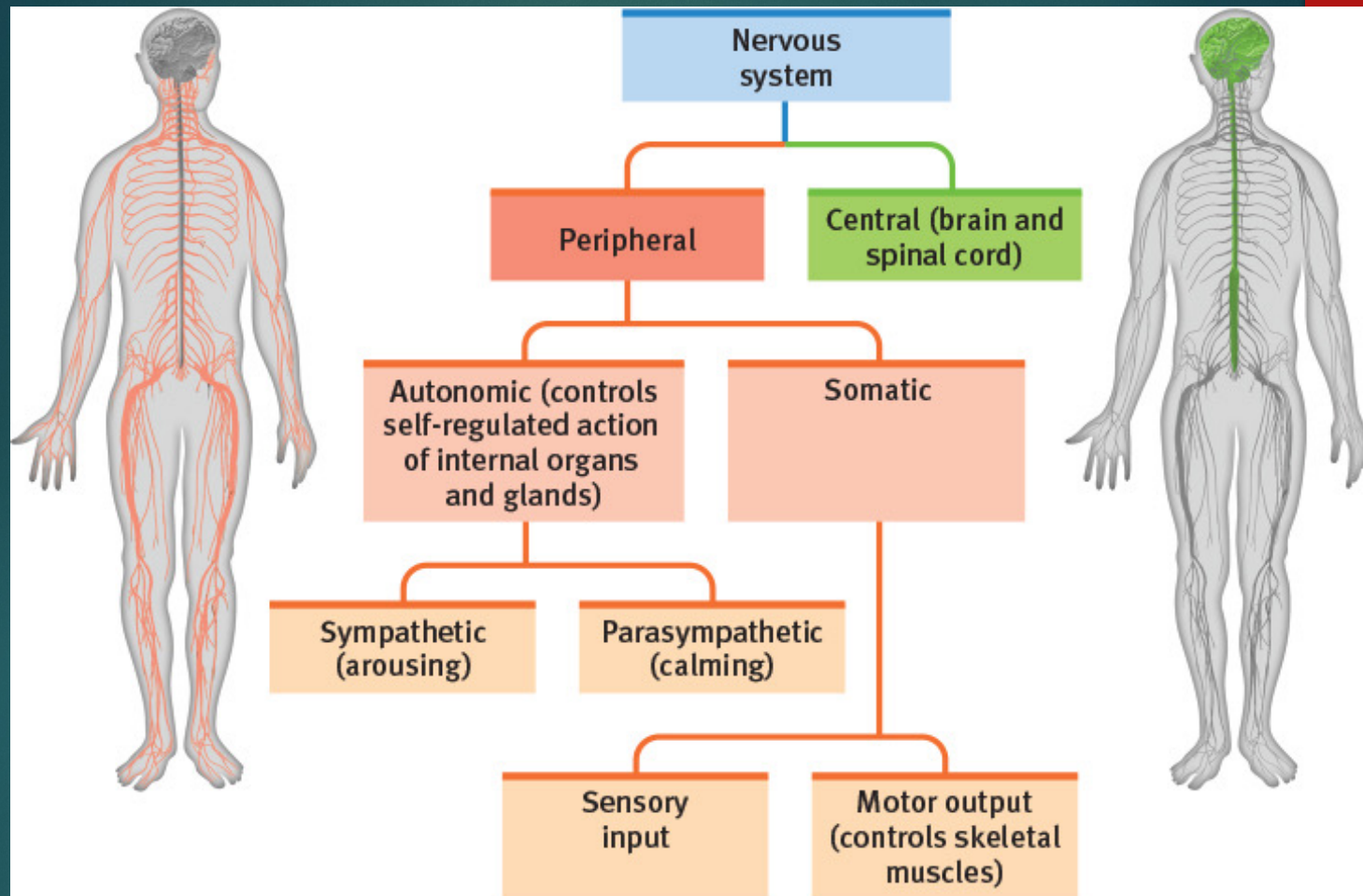
# Consistent Themes in My Theories

- ▶ Survival of the individual to allow survival of the species
- ▶ As in other areas of science, when there are competing theories, the simplest one is usually correct
  - ▶ In evolution, there is no reason to expect that effective simple mechanisms are abandoned for more complex ones in which more errors can occur

Case  
Conceptualization  
That “Fills the Gap”  
Between  
Assessment and  
Treatment

- ▶ Presents a new schema to normalize the psychological problems
  - ▶ Allows the patient (client) to verbally think and emotionally feel that if the therapist had the same learning history, he/she would have developed the same issues
  - ▶ Leads to a logical approach to treat each identified component contributing to the patient's problem

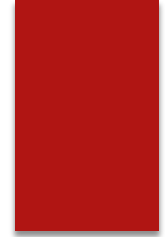




**Figure 2.5**

Myers/DeWall, *Psychology in Everyday Life*, 4e, © 2017 Worth Publishers

# Negative Emotional Response System



Anxiety, fear, anger, sadness, emotional hurt

Face-to-face with a dangerous animal

Its purpose is for survival

Each physical response is for specific aspects in support of the “fight-or-flight” system

It is better defined as the “fight, flight, or freeze” response largely controlled by the right cerebral cortex (Sympathetic Nervous System activation)



## Physiological Body Reactions



---

Increased respiration and heart rate to increase supply of oxygenated blood to organs

---

Blood vessels in (cold) hands and (cold) feet constrict such that if cut, there is less blood loss

---

A rise in blood pressure to compensate for any blood loss

---

Digestive system shuts down and blood is sent to other body areas needed for survival

## Physiological Reactions continued



---

Muscles tense in preparation for run/fight

---

Release of adrenaline to increase arousal

---

Glycogen is converted to glucose to provide more energy

---

Decreased blood flow to genitals and inhibited vaginal lubrication

---

Largely opposite physiological processes of the Parasympathetic Nervous System (PNS)

Explains  
Psychological  
Factors  
Affecting  
Physical  
Problem

---

Panic symptoms

---

GI problems [Butterfly feeling during SNS activation and GI Upset when relaxed and blood flow returns (PNS activation)]

---

Muscle tension exacerbates pain

---

Erectile and vaginal engorgement problems

---

Penetration vaginal pain related to vaginal dryness and lack of engorgement

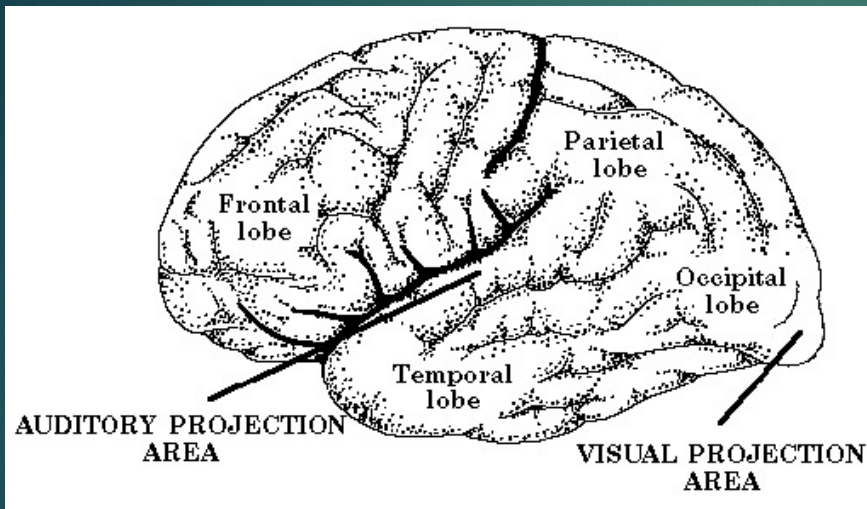
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Raynaud's Disease exacerbated by less blood

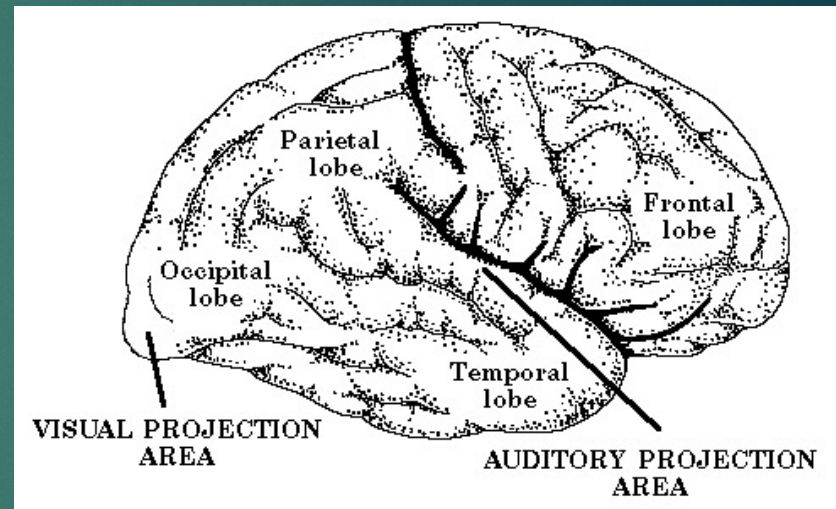


# Parallel Cortical Processing


► Left  
(analytical,detailed)



► Right (Gestalt,  
diffuse)



# Brain Organization



---

Remove skull and you see the cortex which controls all higher cognitive functions, such as speech and mechanical abilities

---

The back 2/3rds of both sides receive the same basic sensory input and the front 1/3 of each side control all actions, such as talking and moving a hand

---

Each side processes information semi-independently and in a different fashion

# Left side

Very detailed processing

Analytical

Slower than the right side

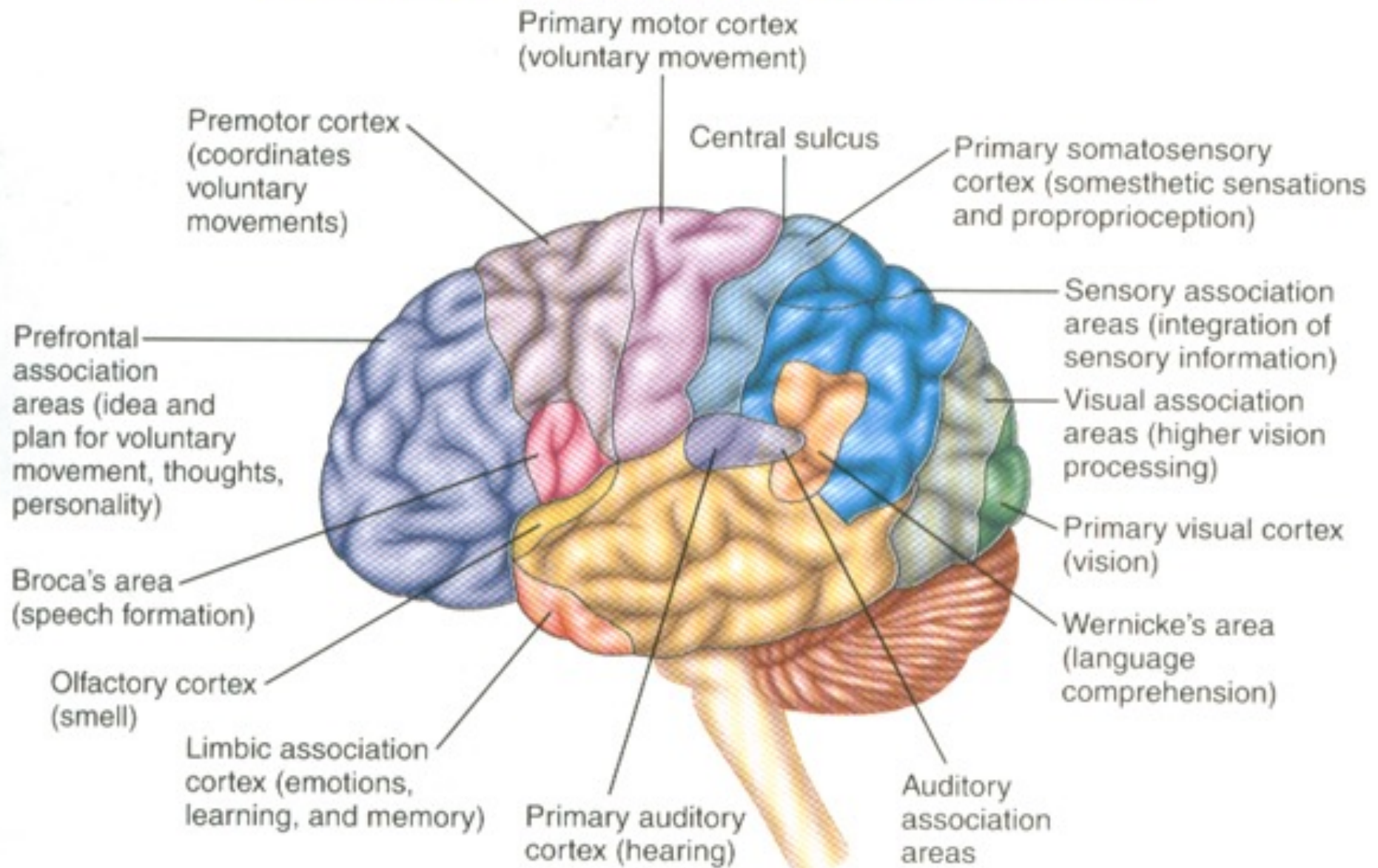
Left temporal allows us to understand spoken language

Left front allows us to speak

When we talk to ourselves in our heads that many people consider “consciousness,” it is done by the left front



# Functional Organization of the Cerebrum



# Right Side

Processes information much faster which means it cannot handle details, but gets the overall scheme of things

Right temporal allows us to appreciate music which lacks detail

It allows us to do mechanical tasks

It processes most emotional information

- We communicate emotions based on inflections, loudness in our voice and visually by facial expressions (Lacks detail so the right best handles it)

That simply  
means



---

The left back side allows us to  
understand spoken language

---

The left front side allows us to  
speak

---


The right back side allows us  
to understand emotions

---

The right front side allows us to  
express emotions



Explains  
Memory and  
Concentration  
Difficulties from  
Negative  
Emotions



---

Going back to the animal about to attack, if I relied on the slower left analytical side to save my life, I'd be eaten

---

The faster right side processes information, assumes control, and turns off activity in the left front side so it doesn't interfere

---

That is why when someone is distressed, they have jumbled thoughts, become forgetful of details, and cannot find the words they are trying to say

Not only  
does each  
side process  
information  
differently



---

They store their own memories for the functions they control

---

New words are stored in the left


---

New non-detailed emotional memories, whether positive or negative, are stored on the right

---

That means when dealing with a current situation, each side processes the information differently and compares against different memories in storage

## The Result Is:



---

We can verbally think one way about a situation, but emotionally feel different about that same situation

---

When that happens, no matter what I say to myself in my head, I cannot control the emotions coming from the right side

---

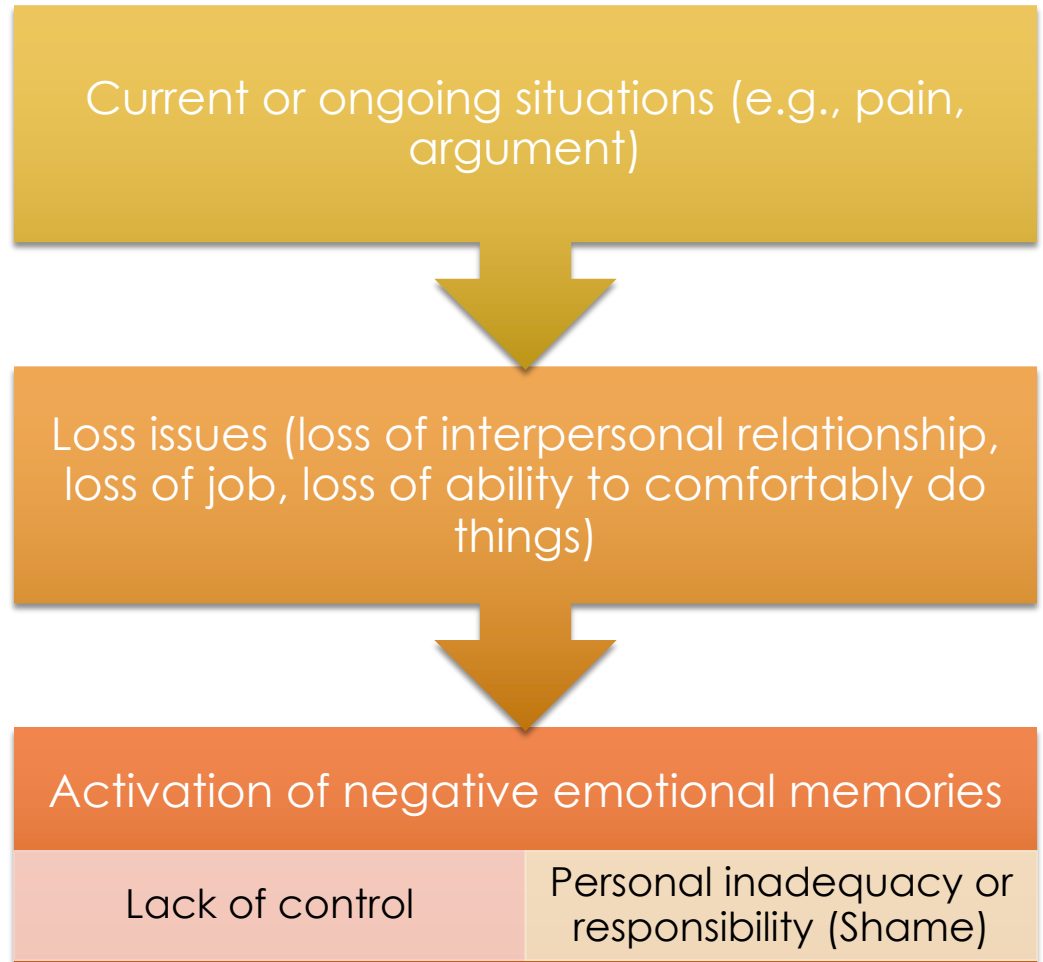
That “think/feel” conflict happens to all of us

---

Usually, it is the feelings that create the problems that lead people to seek therapy



# There are 3 Sources for Negative Emotional States



“Let me  
explain  
how our  
problems  
can be  
explained  
based on  
your  
history”

- ▶ Parental influences
  - ▶ Verbal or physical abuse
    - ▶ Anxiety around that parent
    - ▶ Later anxiety around authority individuals (teacher, boss, doctor)
  - ▶ Treated logically and fairly
    - ▶ Upside is that you feel comfortable around authority figures
    - ▶ Downside is when later negative situations occur, problems in verbally labeling the emotions and knowing what to do with the emotions



# School Years

- ▶ Peer bullying and don't fight back
  - ▶ Store negative emotional memories related to peers
  - ▶ Social anxiety around peer-level individuals as an adult
- ▶ Teachers (physical, sexual, psychological abuse) If sexual, lack control and negative
  - ▶ Negative emotional memories around future teachers and other authority individuals as an adult



# Romantic and Close Friend Relationships

- ▶ Romantic - Felt “in love” at the time and had a lack of control over it ending
  - ▶ Negative emotional memories reactivated in future romantic relationships
- ▶ Friends – Hurt, betrayed
- ▶ Both Types – think/feel they were not the person I thought I knew (leads to a lack of trust and comfort in developing new relationships)

# Work Relationships

- ▶ Difficult supervisors (Authority figure anxiety)
  - ▶ Lack of control
    - ▶ in that it is not possible to establish fair and consistent rules
    - ▶ Unable to leave the position, usually for months or years
  - ▶ Subordinate is made to feel that it is her/his fault with any problem situation
- ▶ Coworkers – Typically less damaging (Social anxiety)



# Non-Relationship Negative Emotional Memories

- ▶ Typically, a lack of control aspect only
  - ▶ If there is a history of negative relationship memories, then more likely to also have a sense of personal responsibility or inadequacy
- ▶ Physical injuries, particularly when trapped
- ▶ War traumas
- ▶ Sexual phobias (Ignorance and negative experiences)
- ▶ Rapes typically have the personal inadequacy/responsibility aspect and are treated in the same manner as other relationships memories



# Assessment of Relevant Memories

- ▶ Parents (Inquire for each parent figure childhood through late adolescence)
  - ▶ Occupation
  - ▶ Physical affection
  - ▶ How were you punished (looking back, was it fair?)
  - ▶ Yelling and/or guilt induction
  - ▶ Alcohol/drug use

# Siblings

- ▶ Did they verbally and/or physically pick on you?
- ▶ Treated differently by a parent?



# School

- ▶ Teachers who “had it in for you” or mistreated you in some way
- ▶ Peers who verbally and/or physically picked on you (did you fight back?)



# Work relationships

- ▶ Supervisors or coworkers whom you could never please no matter what you did?
  - ▶ “Had it in for you?”
  - ▶ How long did you work with each person?
  - ▶ Felt trapped?

# Other areas

- ▶ Any history of being abused sexually?
- ▶ Any deaths with which you had great difficulty? (This can include abortions and miscarriages)
- ▶ Any other particularly or negative things that happened to you about which I did not ask?
- ▶ Anything you feel is important that I never asked about



# At the End of Assessment, It is Possible to Explain

- ▶ The number of areas to be addressed in treatment
- ▶ The order in which the areas will be addressed
- ▶ How she/he developed the current set of difficulties (Conceptualization)





It's not pain chronicity or intensity that best predicts long term physical functioning after rehabilitation, it is:

- ▶ Low levels of pre-treatment emotional distress
  - ▶ Low levels of cognitive and behavioral risk factors
  - ▶ High levels of protective cognitive and behavioral factors
- 
- ▶ Tseli, Elena, Katja Boersma, Britt-Marie Stålnacke, Paul Enthoven, Björn Gerdle, Björn O. Äng, and Wilhelmus JA Grooten. 2019. "Prognostic factors for physical functioning after multidisciplinary rehabilitation in patients with chronic musculoskeletal pain: a systematic review and meta-analysis." *The Clinical Journal of Pain* 35, no. 2: 148-173.

# Provides Clues on What to Treat in Psychotherapy

- ▶ Meints, S. M., and R. R. Edwards. 2018. "Evaluating psychosocial contributions to chronic pain outcomes." *Progress in Neuro-Psychopharmacology and Biological Psychiatry* 87: 168-182.



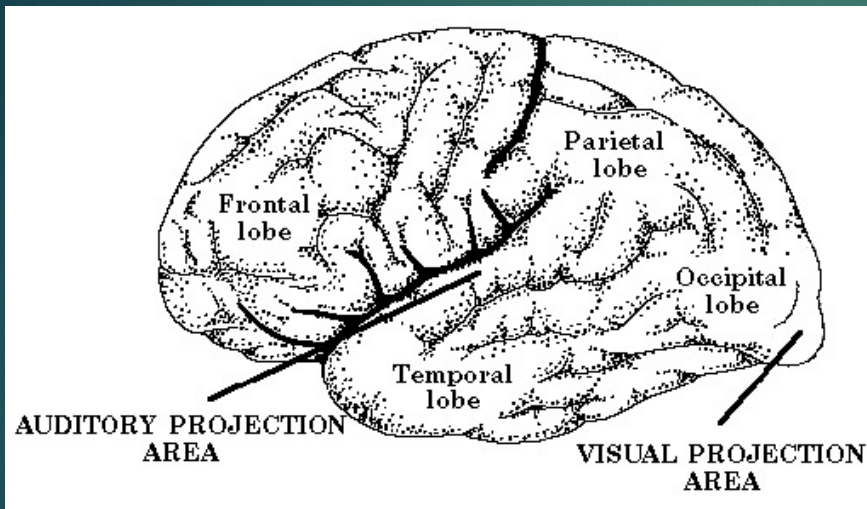
# Psychosocial Factors in Chronic Pain

- ▶ Depression may precede chronic pain as opposed to always being a consequence
- ▶ Early life trauma (negative emotional memories)
  - ▶ Static versus treatable?
  - ▶ I say persistent, but modifiable
- ▶ Racial/gender differences (non-modifiable)
- ▶ Social/Interpersonal factors
  - ▶ Both partner's and own personality factors, partner's depression, work relationship satisfaction
  - ▶ Vocational rehabilitation and couples therapy discussed elsewhere, but I found no treatment studies

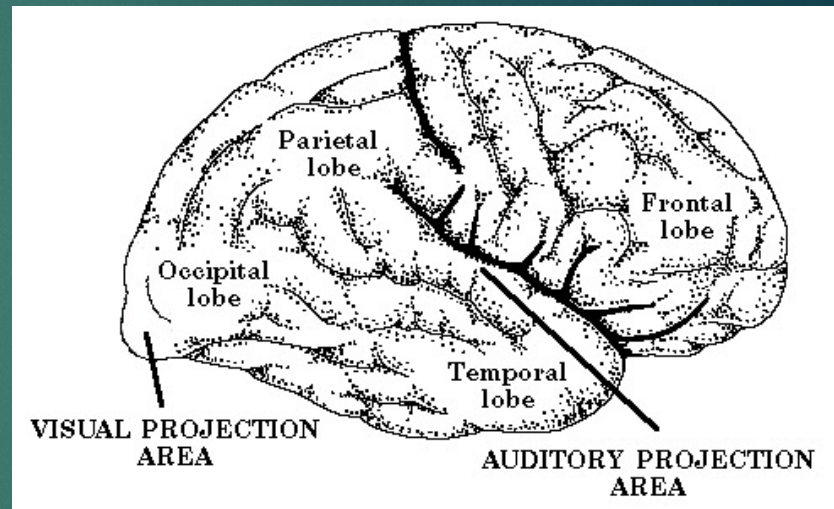


# Parallel Cortical Processing

► Left  
(analytical,detailed)



► Right (Gestalt,  
diffuse)



# Sensory input system

- ▶ Of the 5 senses, 3 are most influential of cortical cognitive processing patterns
  - ▶ Somatosensory (Simultaneous processing)
  - ▶ Auditory (Sequential processing)
  - ▶ Vision (Simultaneous/sequential processing)



# Sensory Processing



Accurate and ongoing sensory input is critical for interacting with the environment

External and internal stimuli have to be transduced to a meaningful neural code

Neurons can do one of two things (fire or don't fire) – therefore, they are binary



# Sensory processing



---

In evolutionary terms, the system builds on itself and does not abandon what is working

---

Therefore, cortical processing must code in a binary fashion and use a code that directly reflects external and internal stimuli

# Cortical columns



Minicolumn – 75 to 200  
neurons



Column (i.e.,  
macrocolumn) – several  
hundred minicolumns

- 0.4 to 1mm in diameter



# Columns as the binary digit (bit)



---

0 (off) or 1 (on) are only 2 options

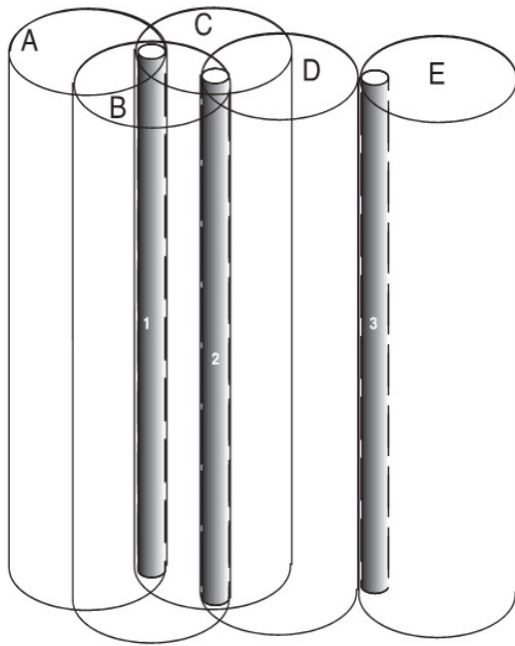
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Highly resistant to damage

---

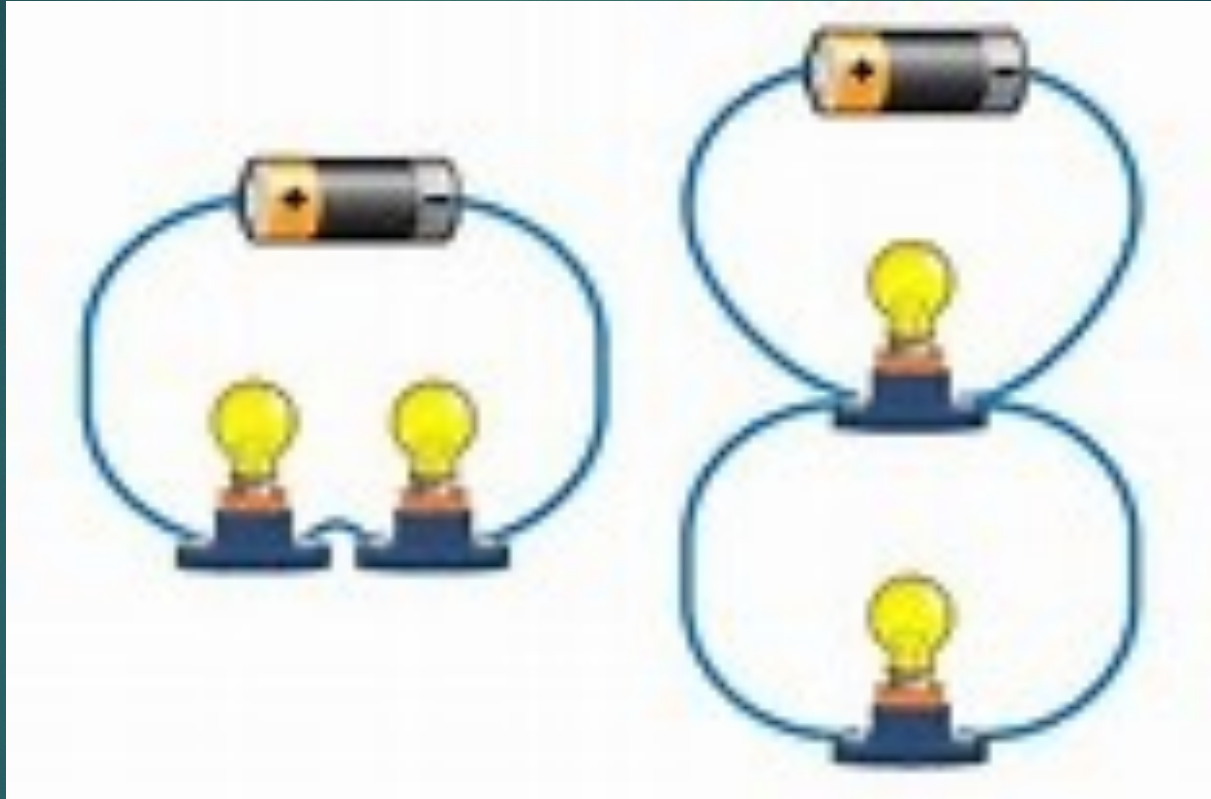
Overlapping nature would allow the sharing of minicolumns and could meet volume requirements





- ▶ Overlapping Columns that may share Minicolumns

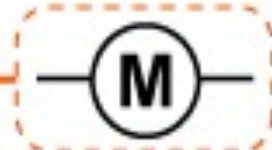
# Serial versus Parallel Circuits



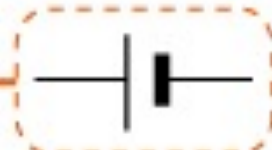
**BULB**



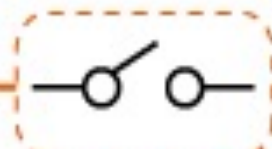
**MOTOR**



**BATTERY**



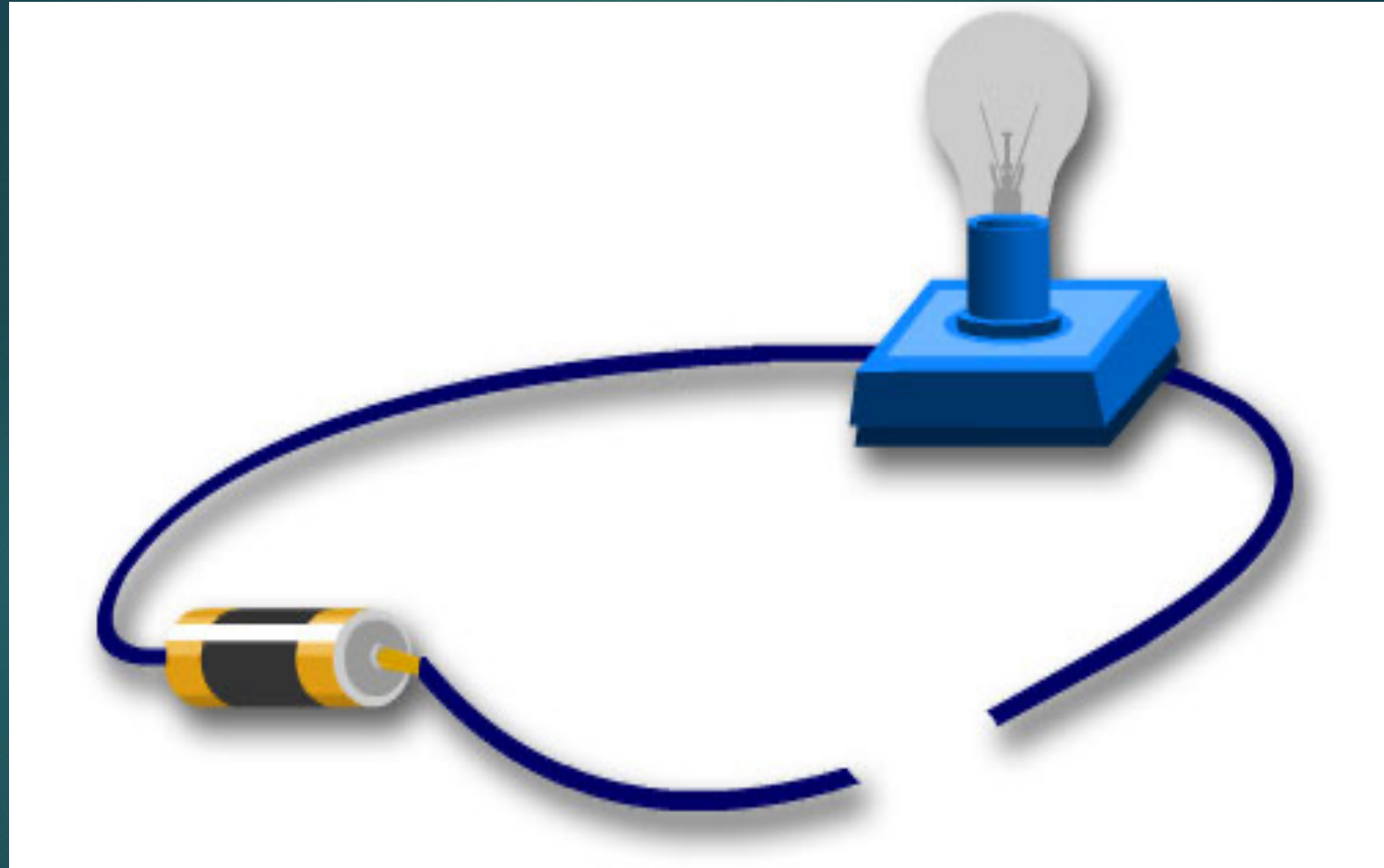
**SWITCH**



**BUZZER**







# Columnar Information and Circuits

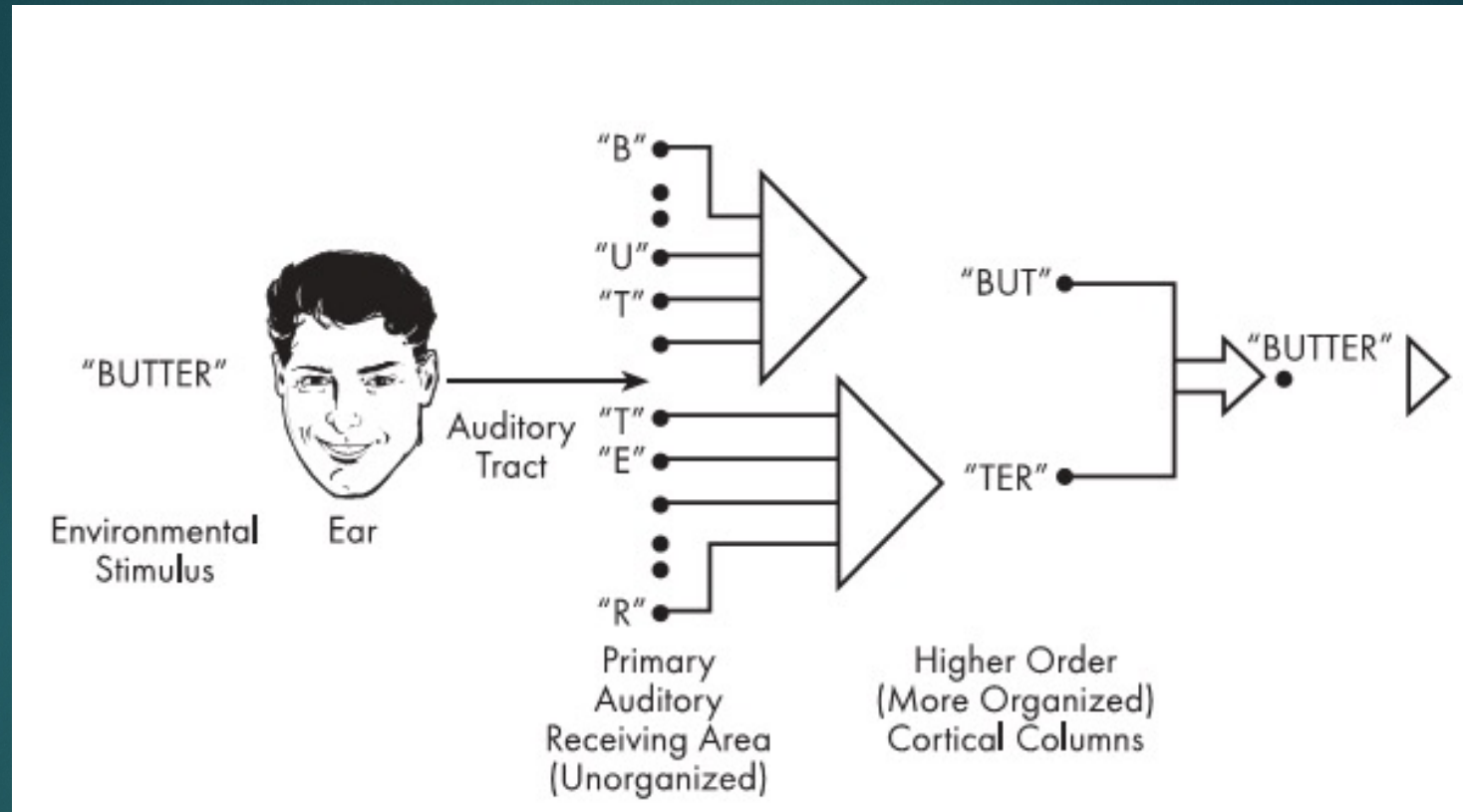
The nature of the input to a column determines its code

Auditory column in temporal lobe perceived as sound (frequency to phoneme/syllable to word)

Occipital column is perceived as visual

Posterior sensory cortical columnar circuits are feedforward in AND-gate fashion (Two or more lower-order columns project to same higher-order column)

# AND-Gate Pattern





# Posterior Cortical Activation Versus Frontal Action Activation

Bottom-up  
based on  
sensory input  
columns

- There is no inhibition from basal ganglia or frontal control
- For every posterior column a corresponding frontal action column forms

Top down  
based on  
frontal action  
columns

- Inhibition or activation of its posterior column
- Output based on higher-order to lower-order (decoding)

# Think of Dynamic Processing Across Multiple Circuits

- ▶ Keep in mind you are looking at a video, not snapshots, in real life; much, if not most, research on pain and mood are snapshots
- ▶ Pain and negative emotions are not static; they can vary from morning through evening which can contribute to which side assumes control
- ▶ There are constantly multiple sensory circuits being activated which result in multiple frontal columns being activated; only those which are attended can result in action and be consolidated into memory



# Memory is Defined as

- ▶ The strengthening of synaptic connections such that upstream columns in a given circuit activate the downstream columns.
  - ▶ Initial long-term memory involves increased neurotransmitter stores
  - ▶ Permanent long-term memory involves increased structural (axon and dendrites) connections at synapses
- ▶ Forgetting occurs when downstream columns are not activated by upstream columns



# Internal-External Processing

- ▶ The medial cortical columns code stimulus information that is internal and self-referential while the lateral cortex codes for external stimuli. Intermediate or transitional zones code for combinations of both.

# Anterior cingulate cortex

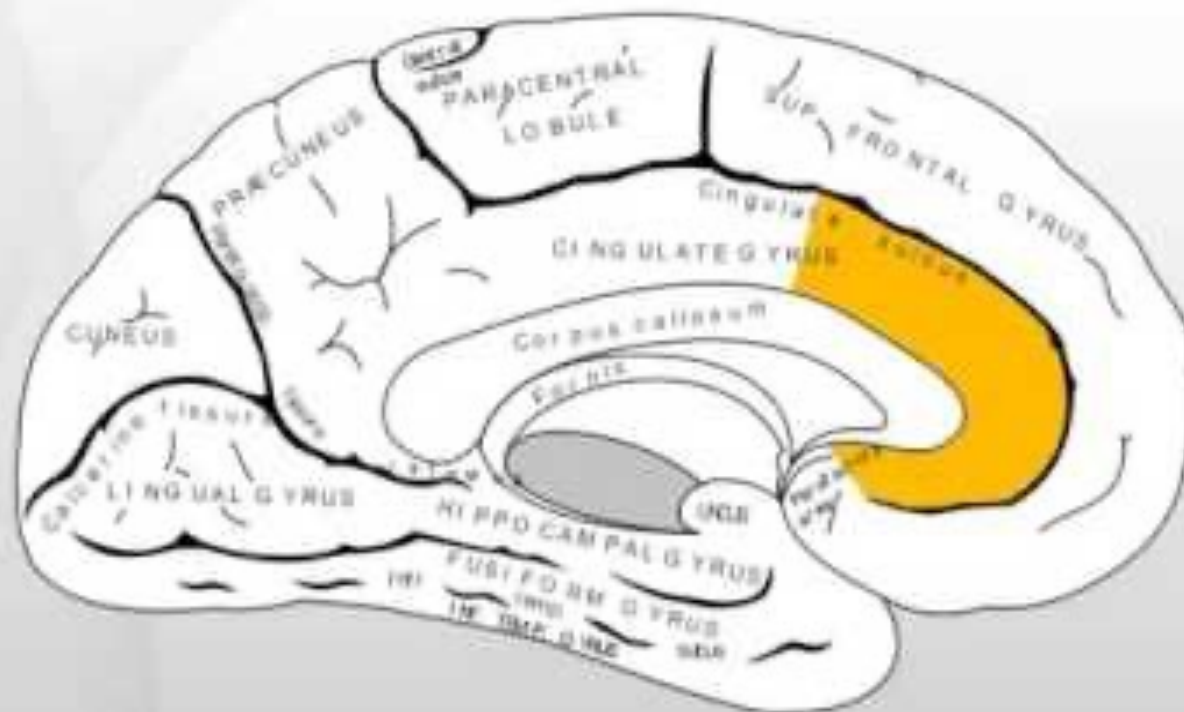
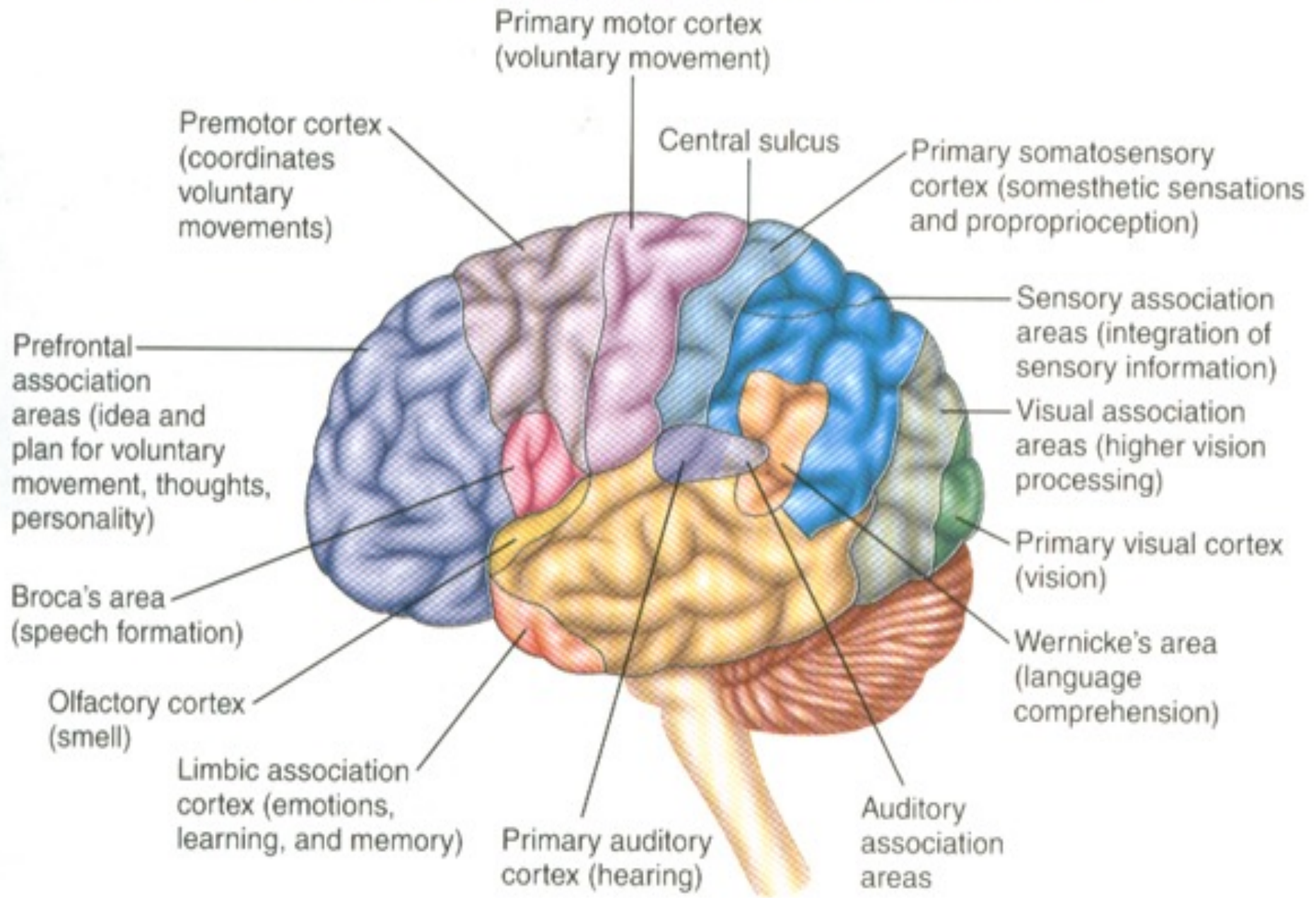


Image from Wikipedia.org. Licensing details available at [wikipedia.org/wiki/File:Anterior\\_cingulate\\_cortex.png](https://commons.wikimedia.org/wiki/File:Anterior_cingulate_cortex.png)



# Functional Organization of the Cerebrum

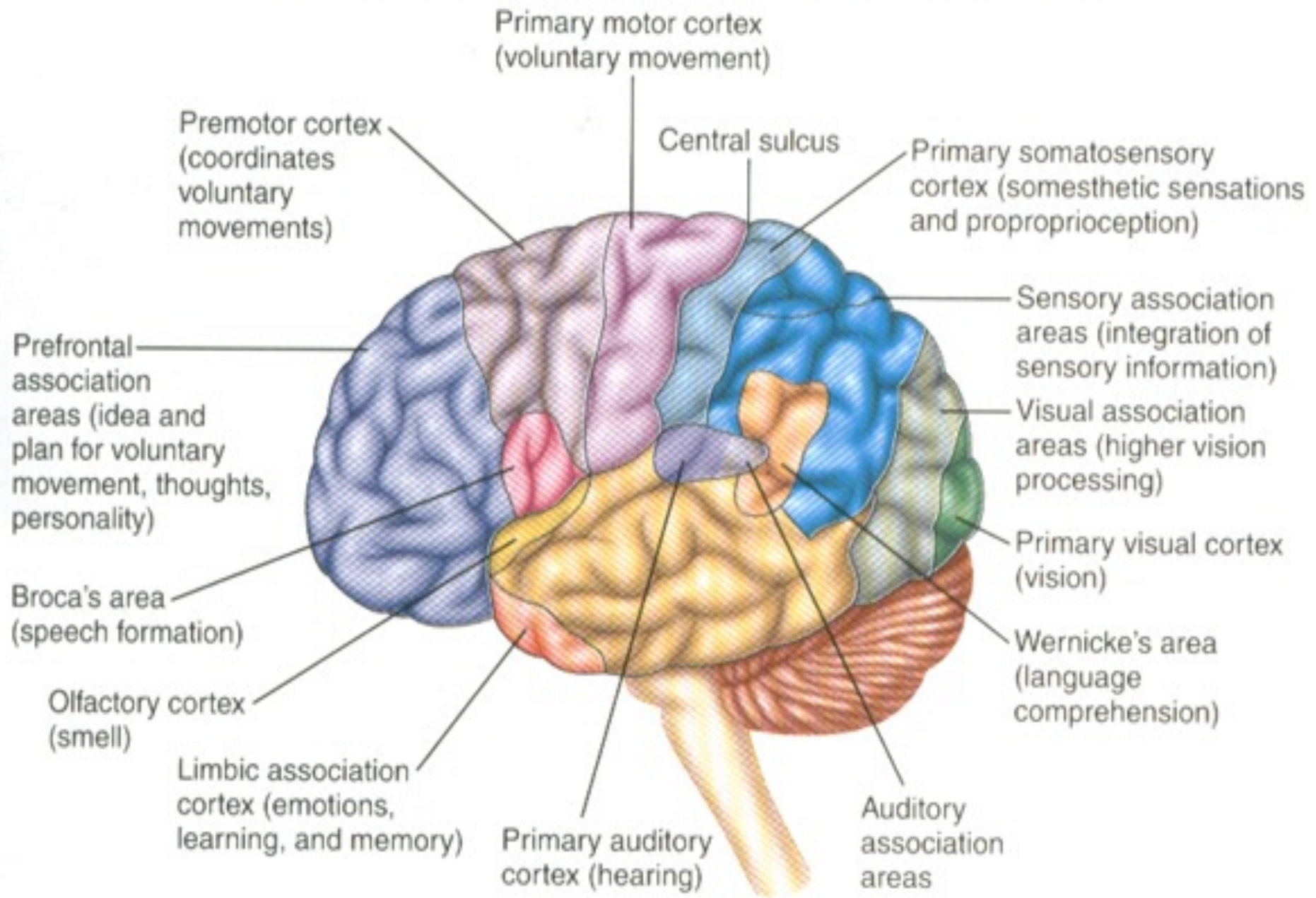




# Proximal-Distal

- ▶ In relation to proximal versus distal to the body stimulus coding, the central sulcus is considered the most proximal cortical location. The post-central sulcus parietal cortical area would code for somatosensory (i.e., body sensation) stimuli. Both vision (occipital lobe) and audition (temporal lobe) involve distal sensory information. The pre-central sulcus primary motor strip involves the body directly while anterior prefrontal processing involves information manipulation largely independent of the body.

# Functional Organization of the Cerebrum





# Anterior cingulate cortex

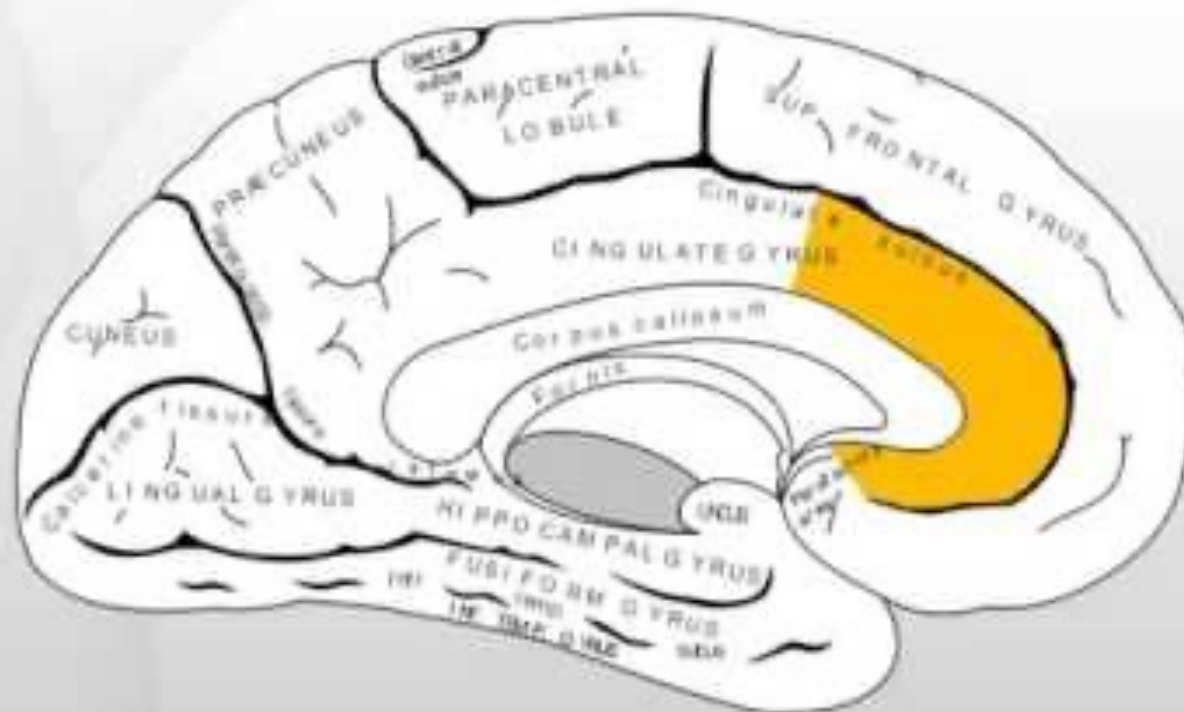


Image from Wikipedia.org. Licensing details available at [wikipedia.org/wiki/File:Anterior\\_cingulate\\_cortex.png](https://commons.wikimedia.org/wiki/File:Anterior_cingulate_cortex.png)

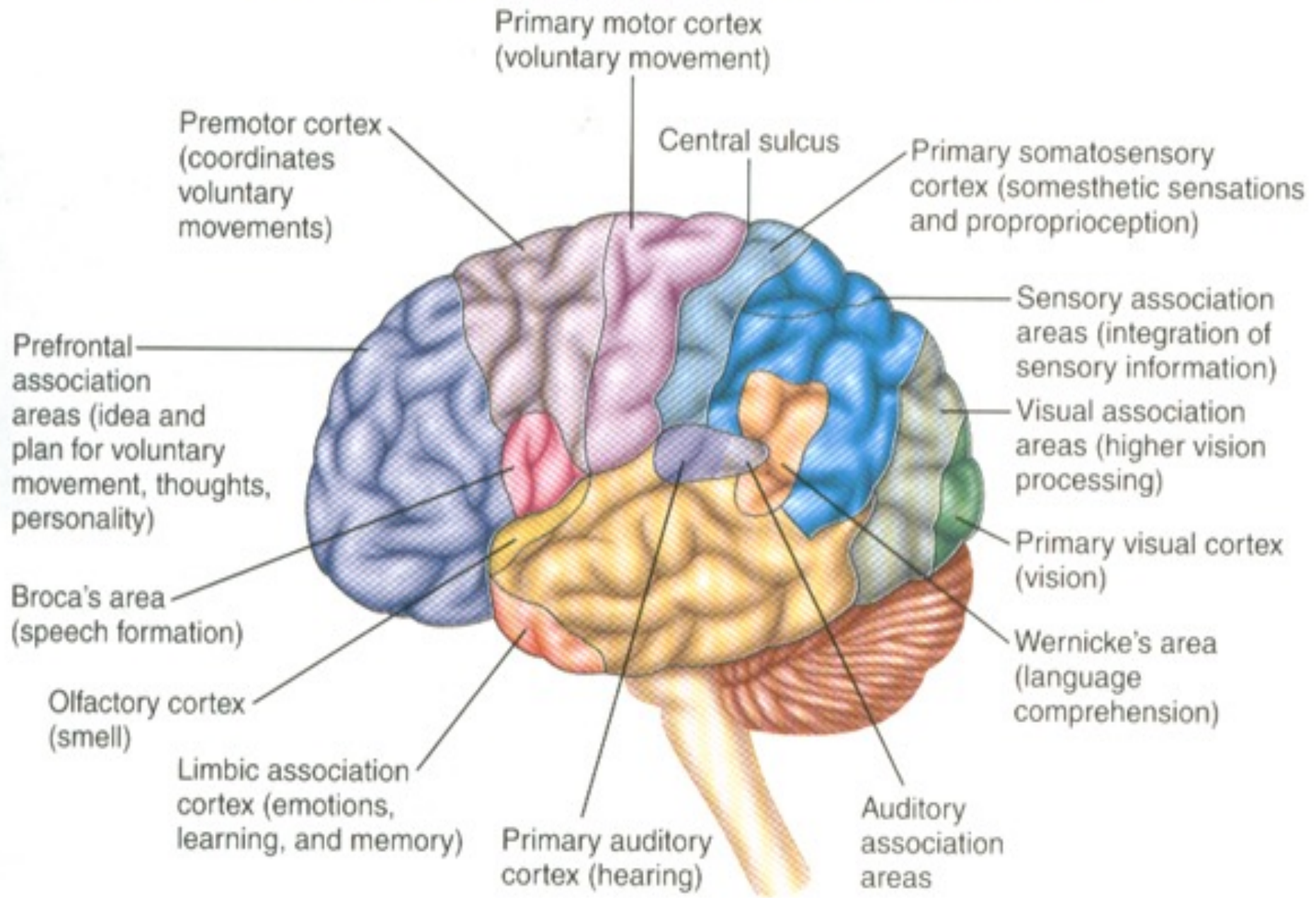
# Sequential-Simultaneous



- ▶ Ventral cortex processes in a sequential manner and dorsal cortex in a simultaneous manner, with intermediate areas using both modes of processing.



# Functional Organization of the Cerebrum



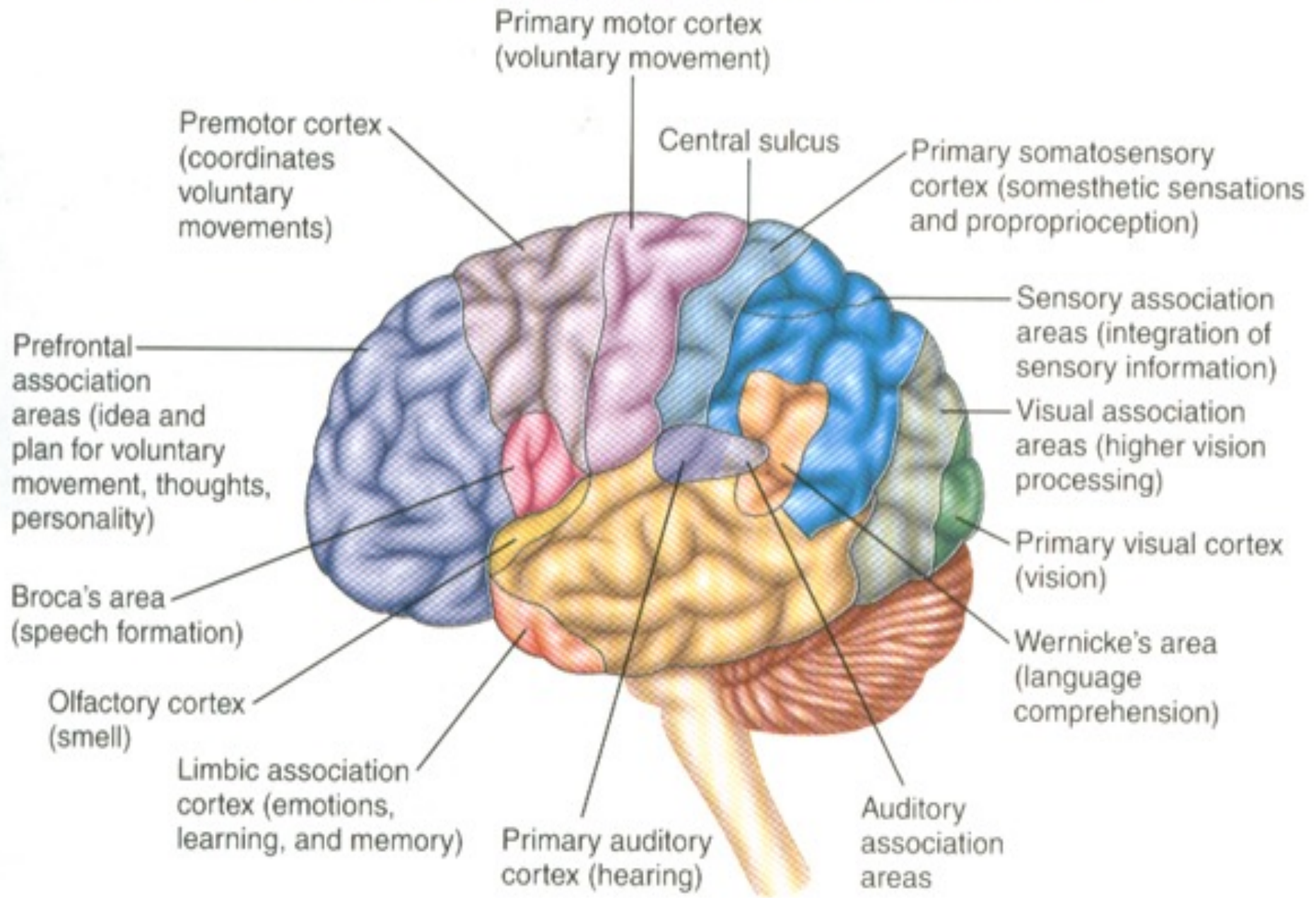
# Reception-Action



- ▶ The parietal, temporal, and occipital lobes contain all receptive, or sensory, information while the frontal lobes code for all action-related information.



# Functional Organization of the Cerebrum

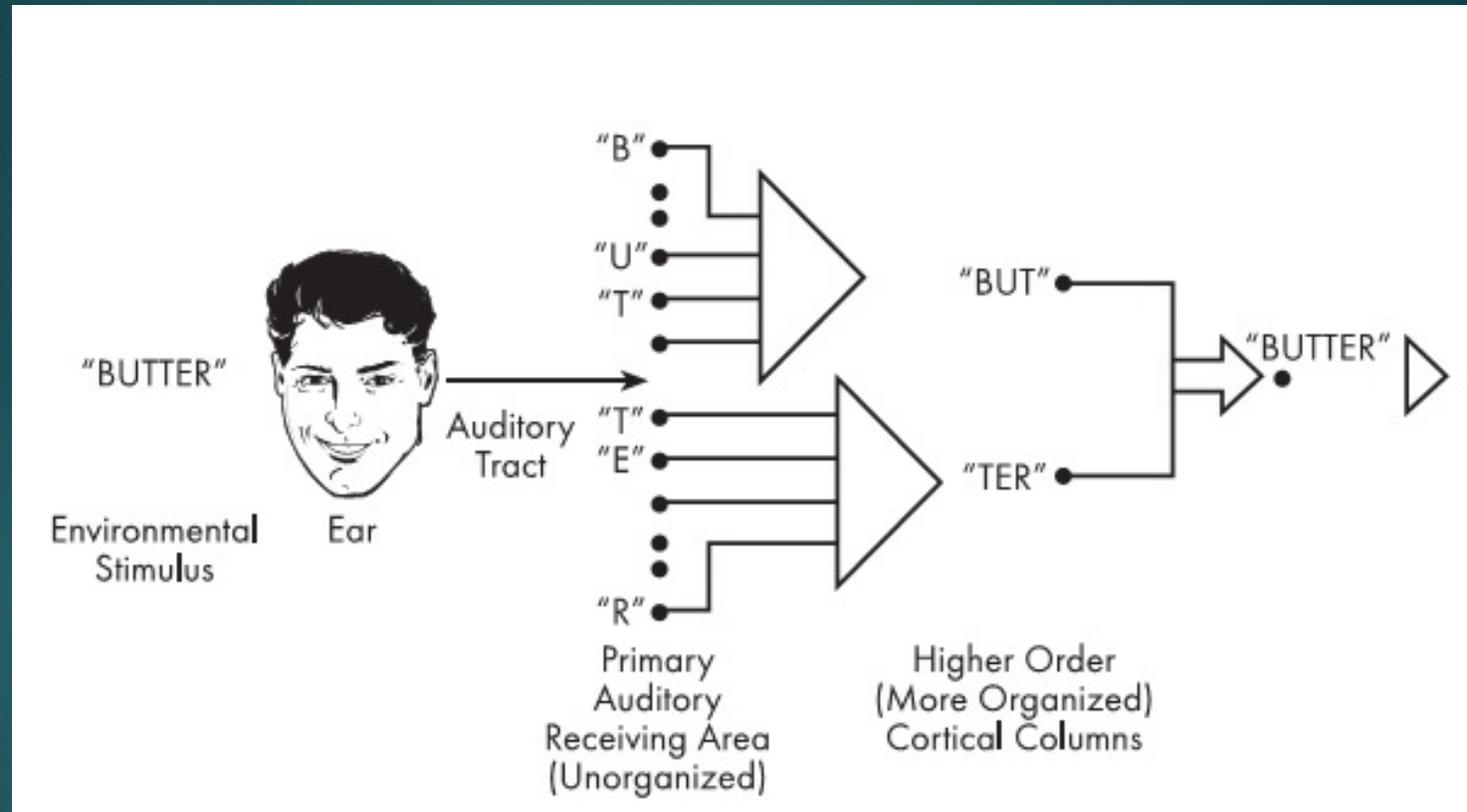


# Unorganized-Organized

- Receptive information progresses from less-organized, or lower-order, information to more-organized, or higher-order, information (i.e., coding) as the stream moves away from the primary sensory receiving areas (i.e., bottom-up processing). On the other hand, the frontal action columns progress in a rostral to caudal more-organized, or higher-order information to less-organized, or lower order information (i.e., decoding) as the stream goes toward the premotor and primary motor areas. The frontal action columns' control of posterior lobe receptive columns is also present (i.e., top-down processing).



# Sequential Processing

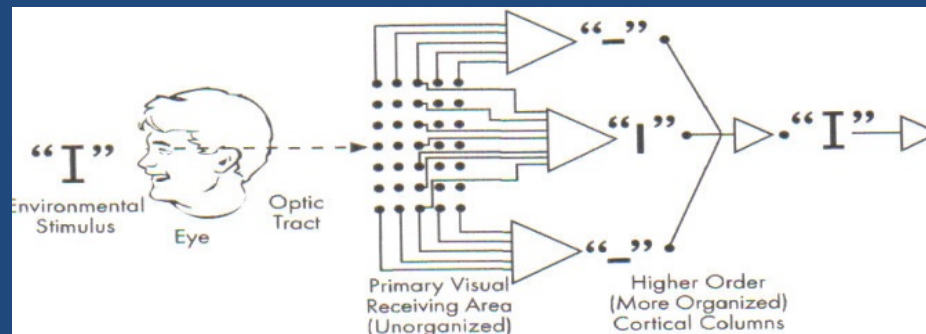


# Phoneme/Syllable to Word to Sentence

- ▶ Phonemic columns (approximately 44 phonemes in English language) and/or syllabic columns project to word columns
- ▶ Word columns activated in order (syntax) lead to sentence columns which connect to other areas to supply meaning



# Simultaneous Processing



# Geon Columns Project to Complex Shape to Object Columns

- ▶ Approximately 36 geons proposed
- ▶ Each geon column projects to columns representing combinations of the geons in parietal lobe (simultaneous processing)
- ▶ The complex columns combine to specific objects in anterior temporal lobe (sequential processing)



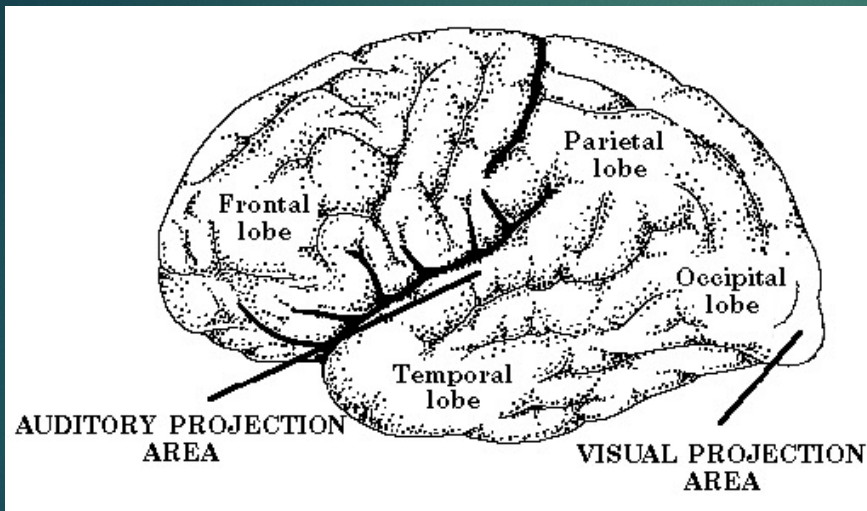
# Global-Analytical



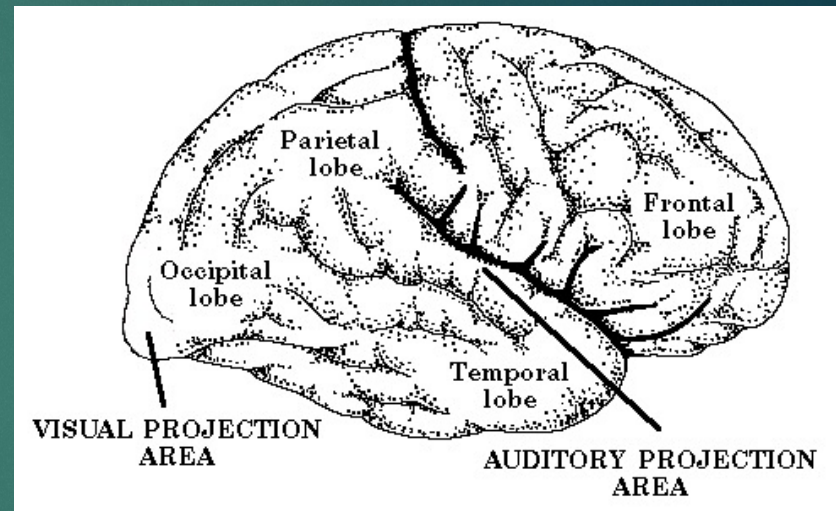
- ▶ Each cortical hemisphere acts as a separate, albeit interconnected, processing unit which means that each of the aforementioned dimensions is contained within each hemisphere. However, there are fewer columns from the time of sensory input to the response level in the right hemisphere. This means that the right cortex can process information faster, but with fewer details (i.e., global processing). The greater number of interconnected columns in the left hemisphere allows more detailed processing and memory storage (i.e., analytical processing)

# Parallel Cortical Processing

► Left  
(analytical,detailed)



► Right (Gestalt,  
diffuse)





# Axon size groups

A $\alpha$  – 70 to 120  
meters/second

A $\beta$  – 40 to 70  
meters/second

A $\delta$  – 12 to 36  
meters/second

C (Unmyelinated) – 0.5  
to 2.0 meters/second

# Nociceptor Types

## Mechanical nociceptors (A $\delta$ fibers)

- Intense mechanical stimulation

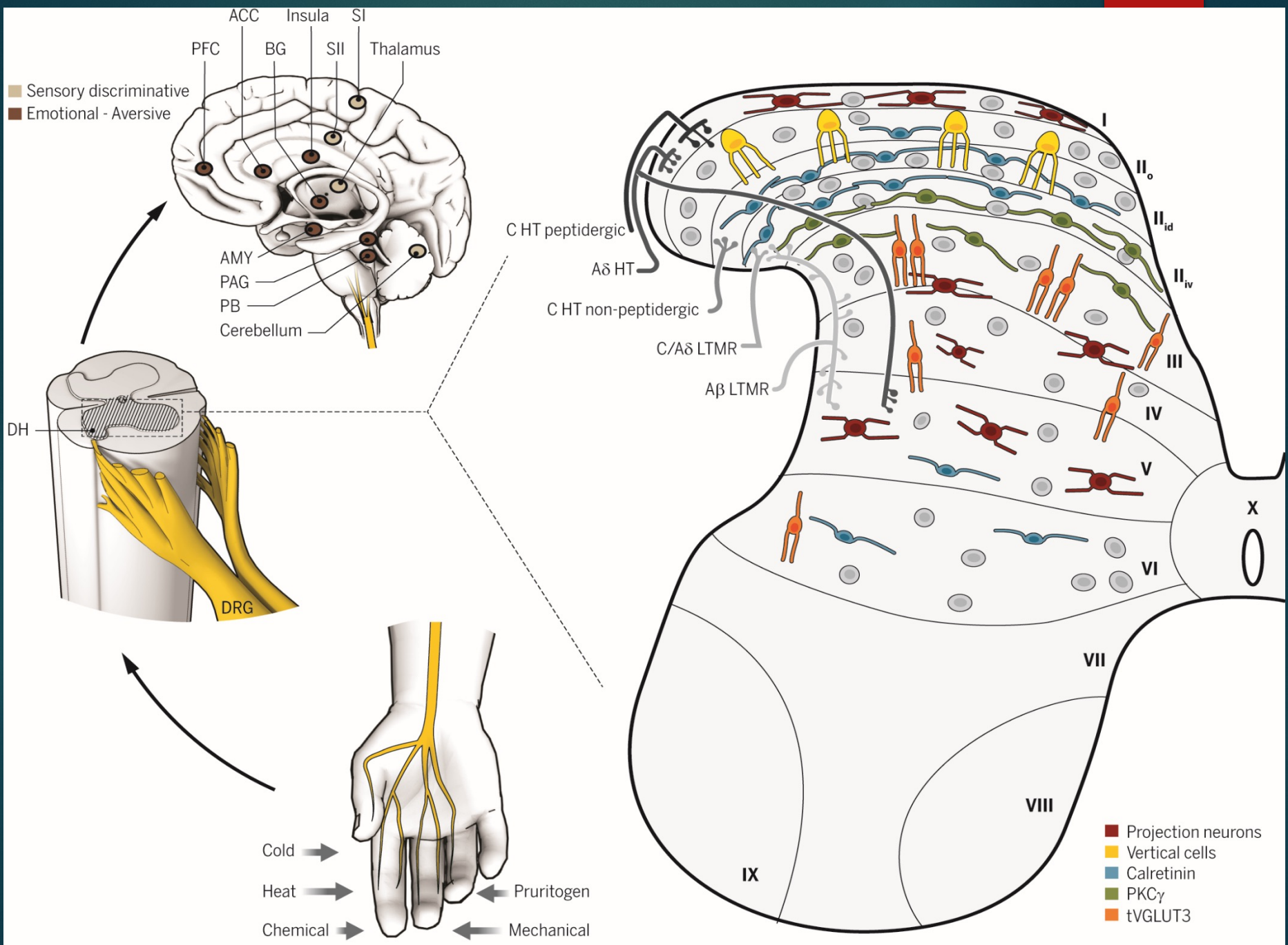
## Polymodal nociceptors (C fibers)

- Noxious mechanical stimulation
- Noxious heat
- Terminals end over a distance of more than a dozen millimeters (poor localization)



## Connections involved in emotional and motivational aspects

- ▶ Nociceptor input to the brain from spinal cord C fibers is to the parabrachial nucleus which projects to the central amygdala and to the thalamus which projects to the insula and middle cingulate cortex.





# Anterior cingulate cortex

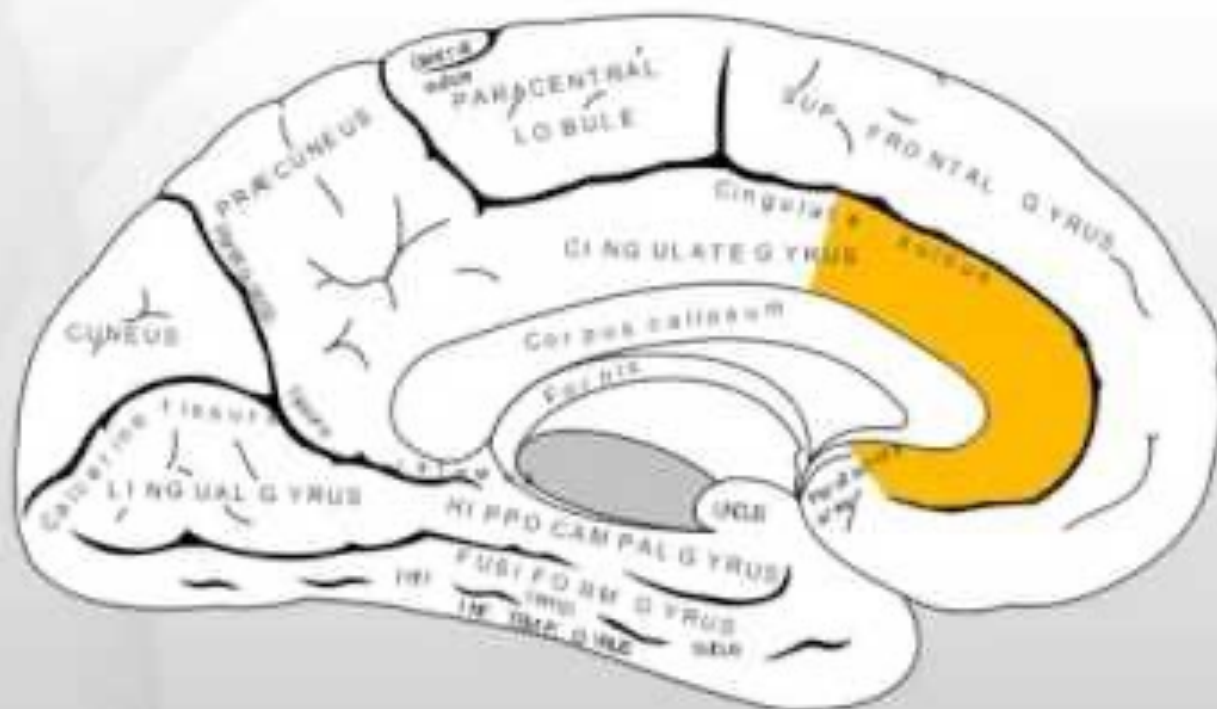


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# Law of Specific Nerve Energies



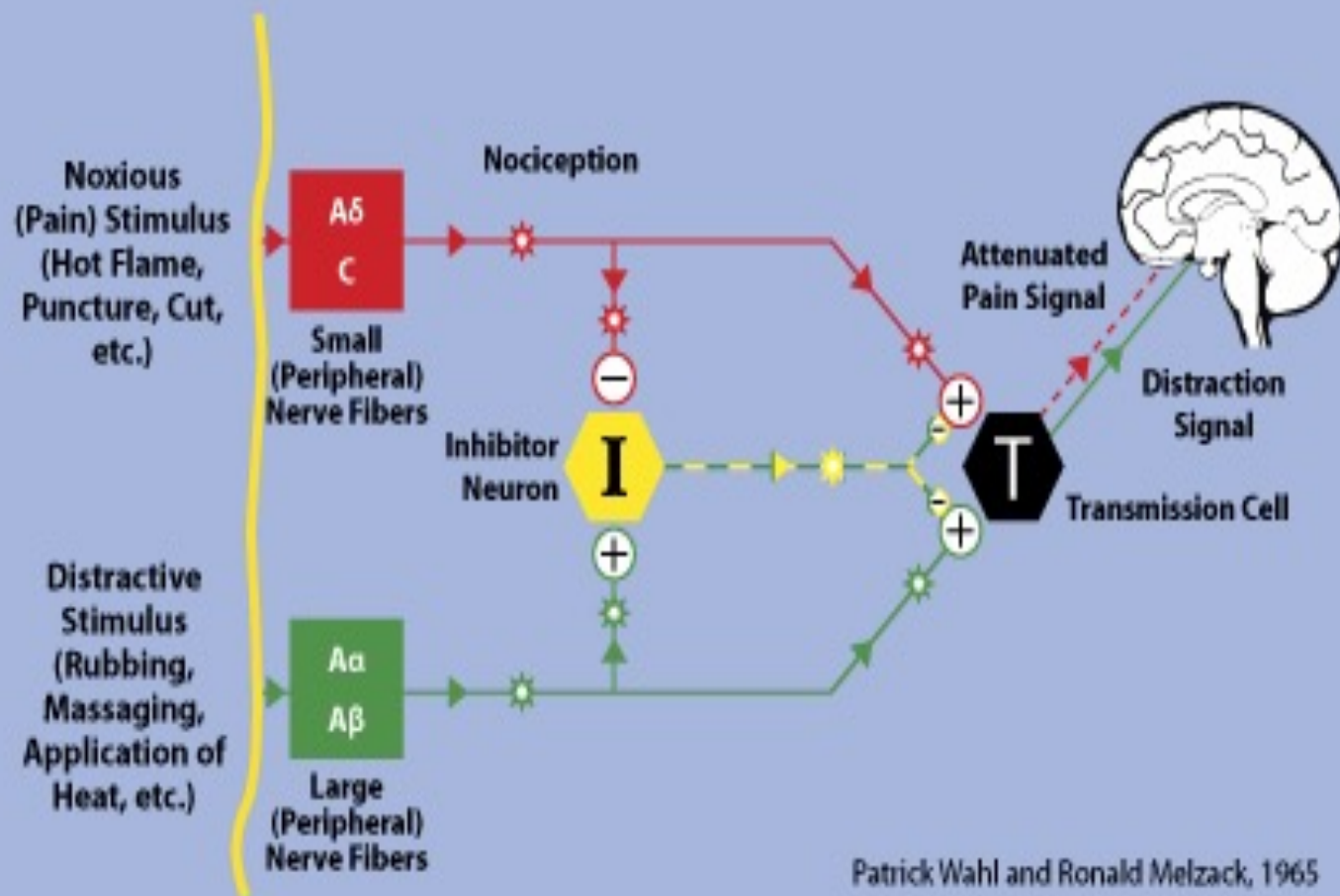
Pain receptor  
level

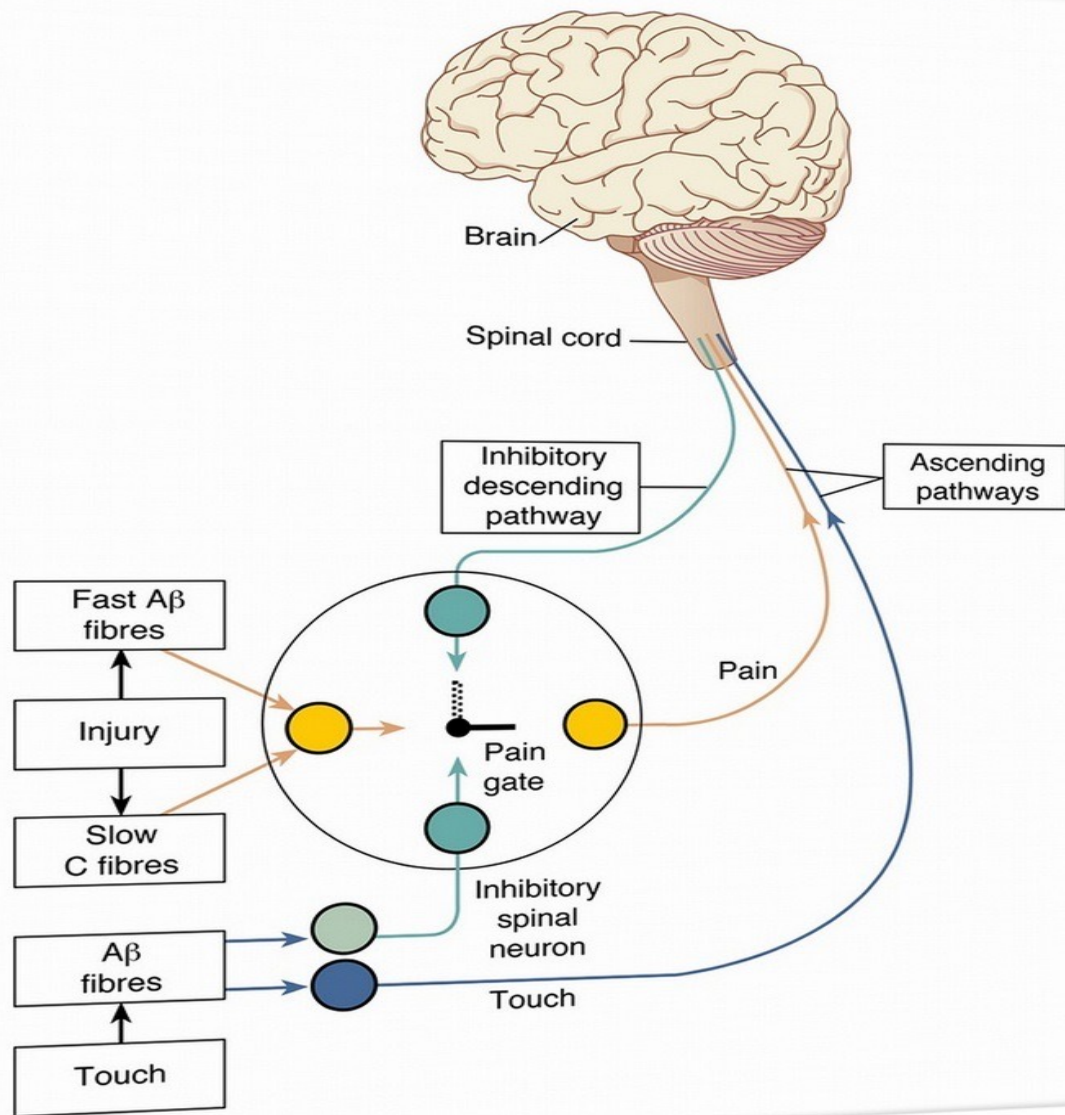
Dorsal root  
ganglion level

Thalamic level  
(Thalamic  
syndrome)

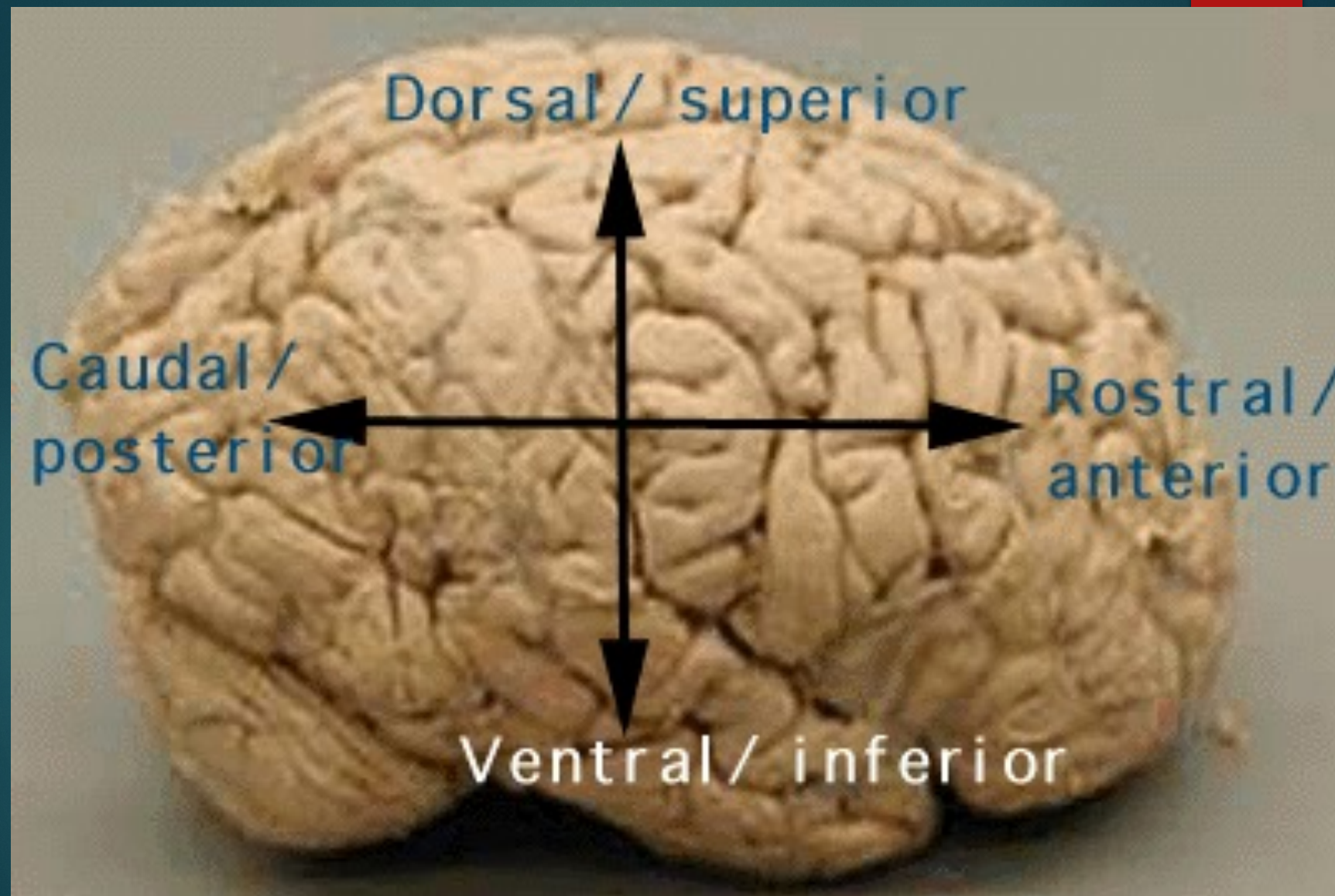


# The "Gate Theory" of Pain

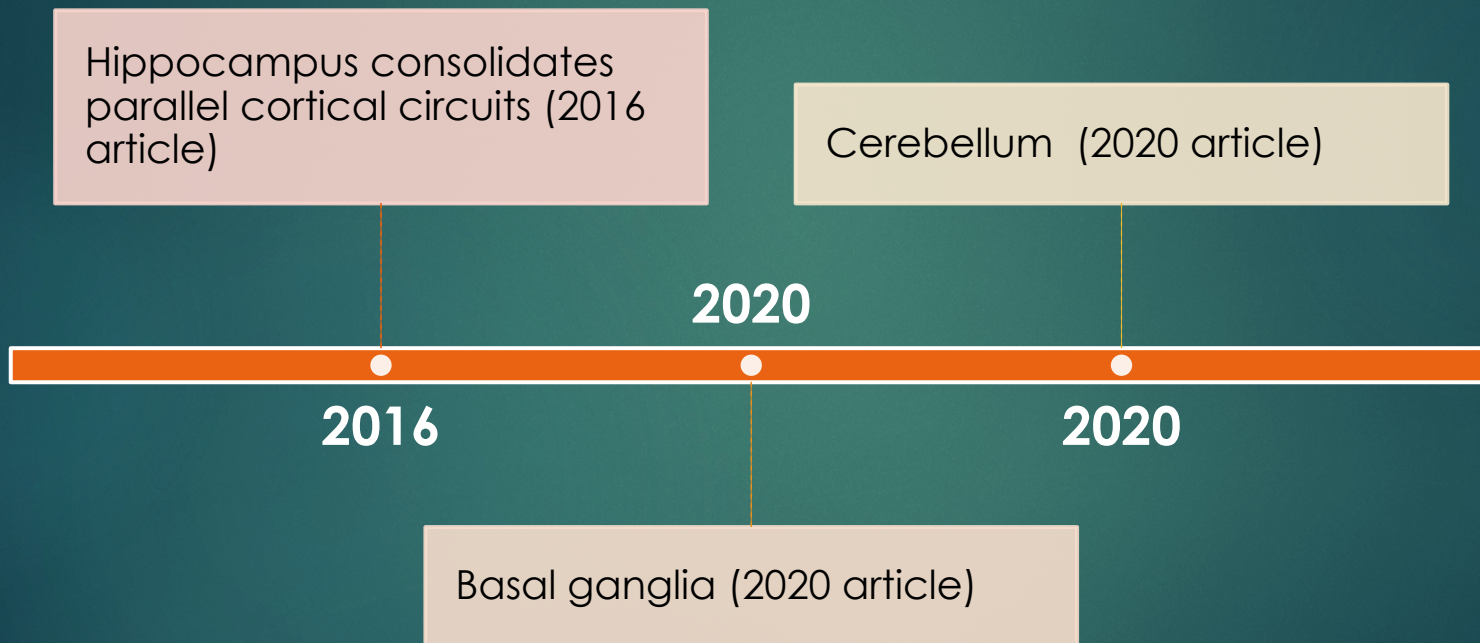




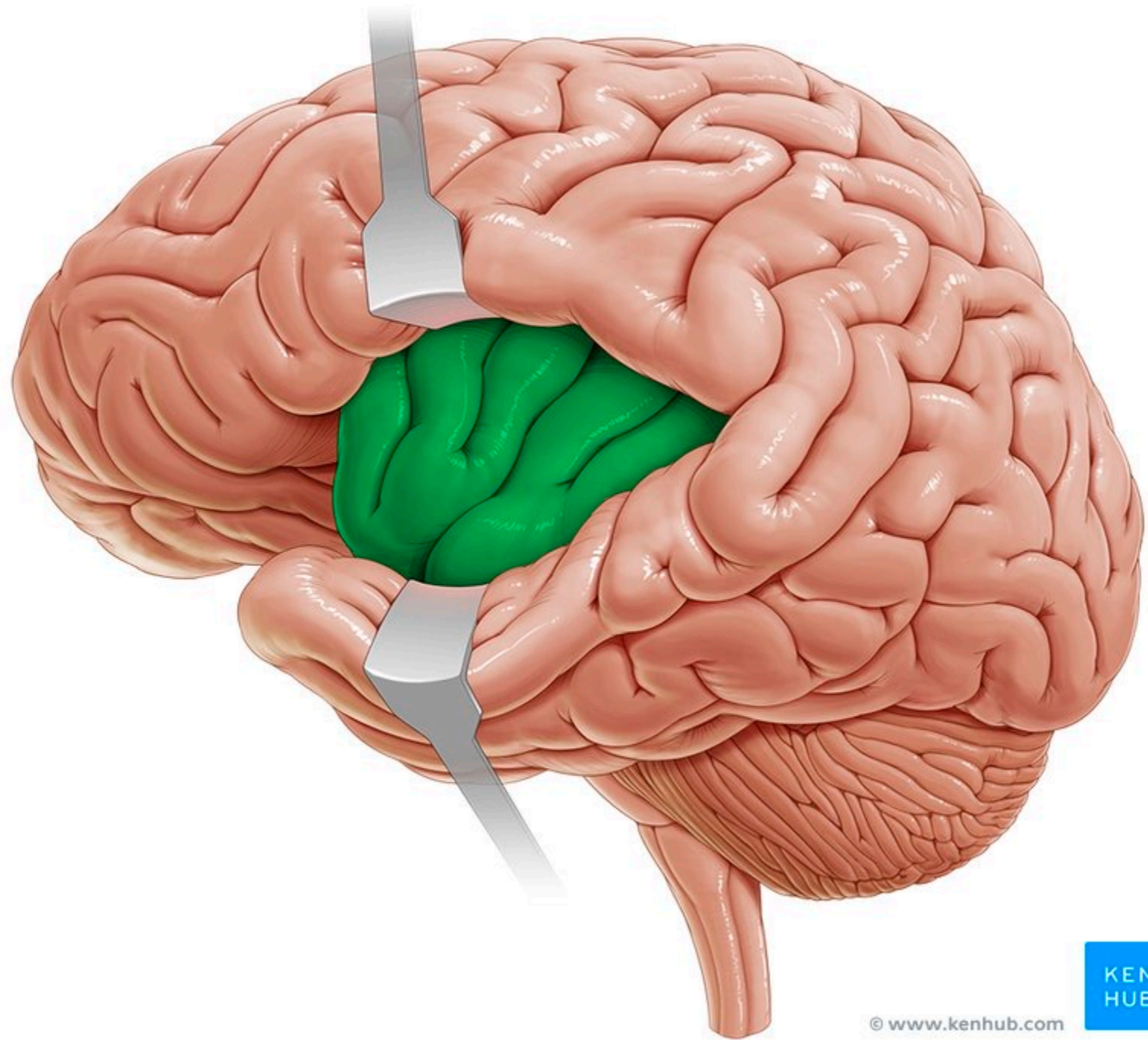




# My Articles on Involvement of All Structures in Cognitive Processing Relates to Cortical Column Circuits







# Insular Coding – “How Much”

CT fiber – pleasant touch from non-glabrous (hairy) skin

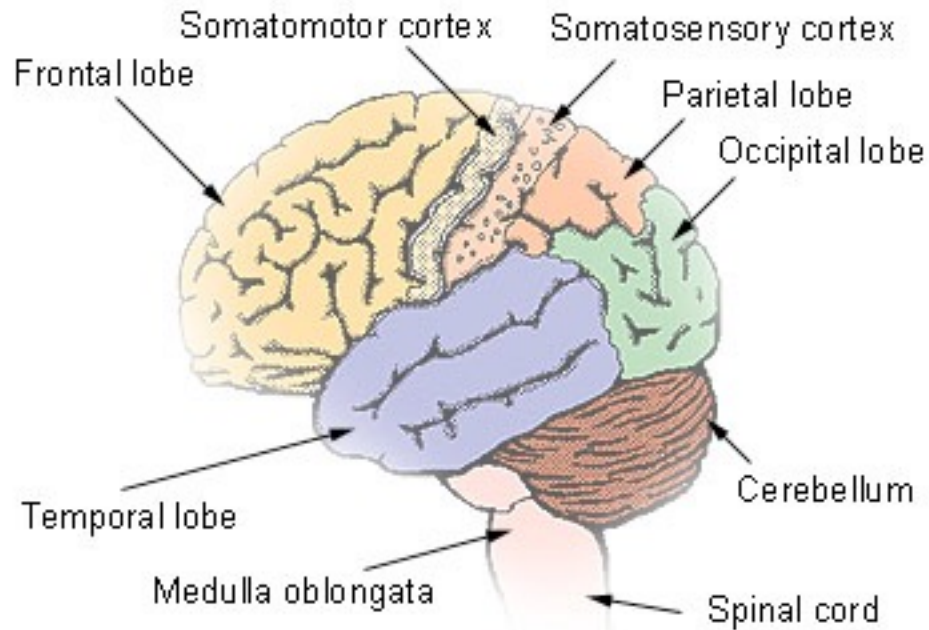
C fiber – pain intensity

Internal organ sensation (Gut)

From posterior to anterior goes from lower-order, primary sensation to higher-order, complex (e.g., multisensory such as sound and visceral; emotional input from amygdala)

Sensory processing only and projects to action frontal areas





**Lobes of the cerebrum**

Central Sulcus at  
Somatosensory  
and  
Somatomotor  
Cortex

# Anterior cingulate cortex

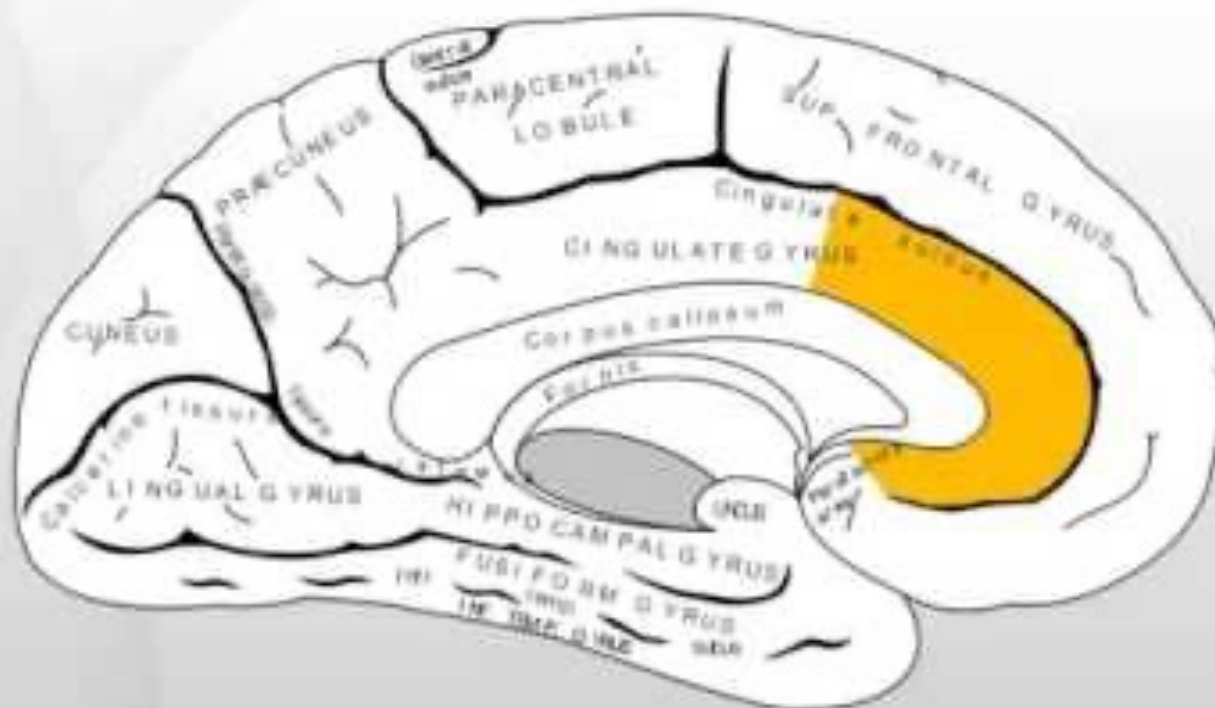


Image from Wikipedia.org. Licensing details available at [https://commons.wikimedia.org/wiki/File:Anterior\\_cingulate\\_cortex.png](https://commons.wikimedia.org/wiki/File:Anterior_cingulate_cortex.png)



## Cingulate cortex – Choosing Action

Middle cingulate cortex is  
input area

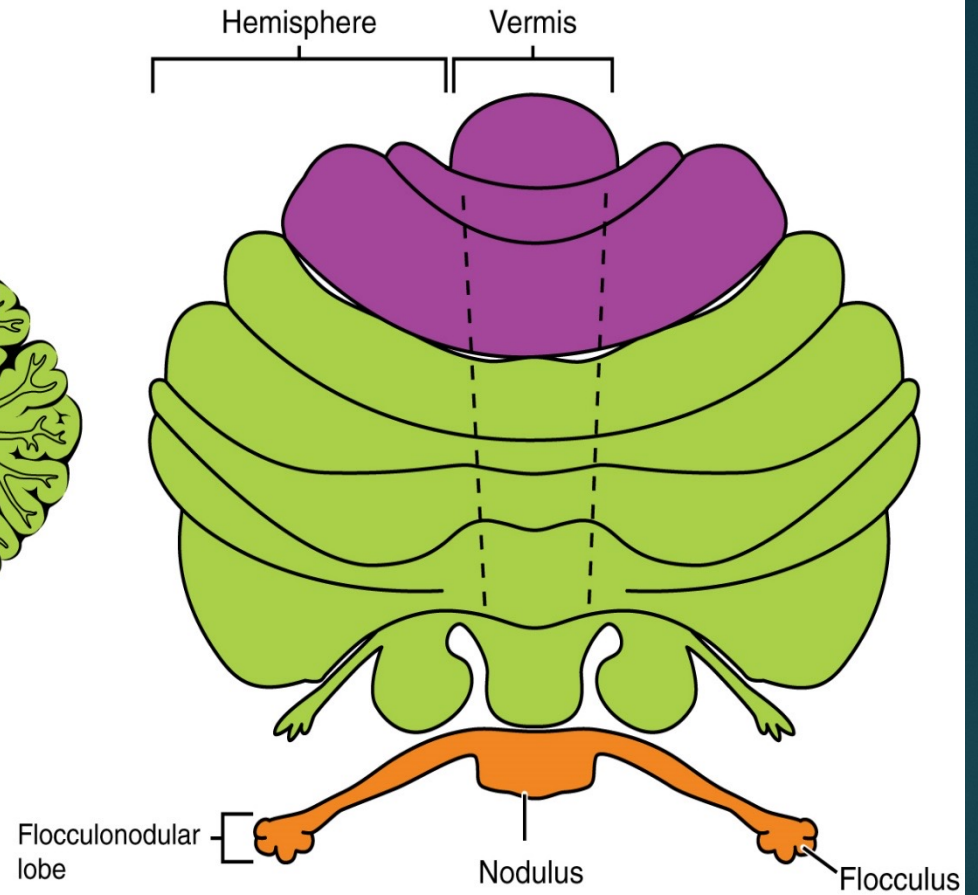
The more posterior, the  
higher-order sensory  
processing

The more anterior is higher-  
order action choice

Midsagittal section of cerebellum



Superior view of an “unrolled” cerebellum





# Cerebellum – Controls All Overlearned, Automatic Actions

Almost half the total neurons in the brain

Almost 80% of the surface area as the cerebral cortex

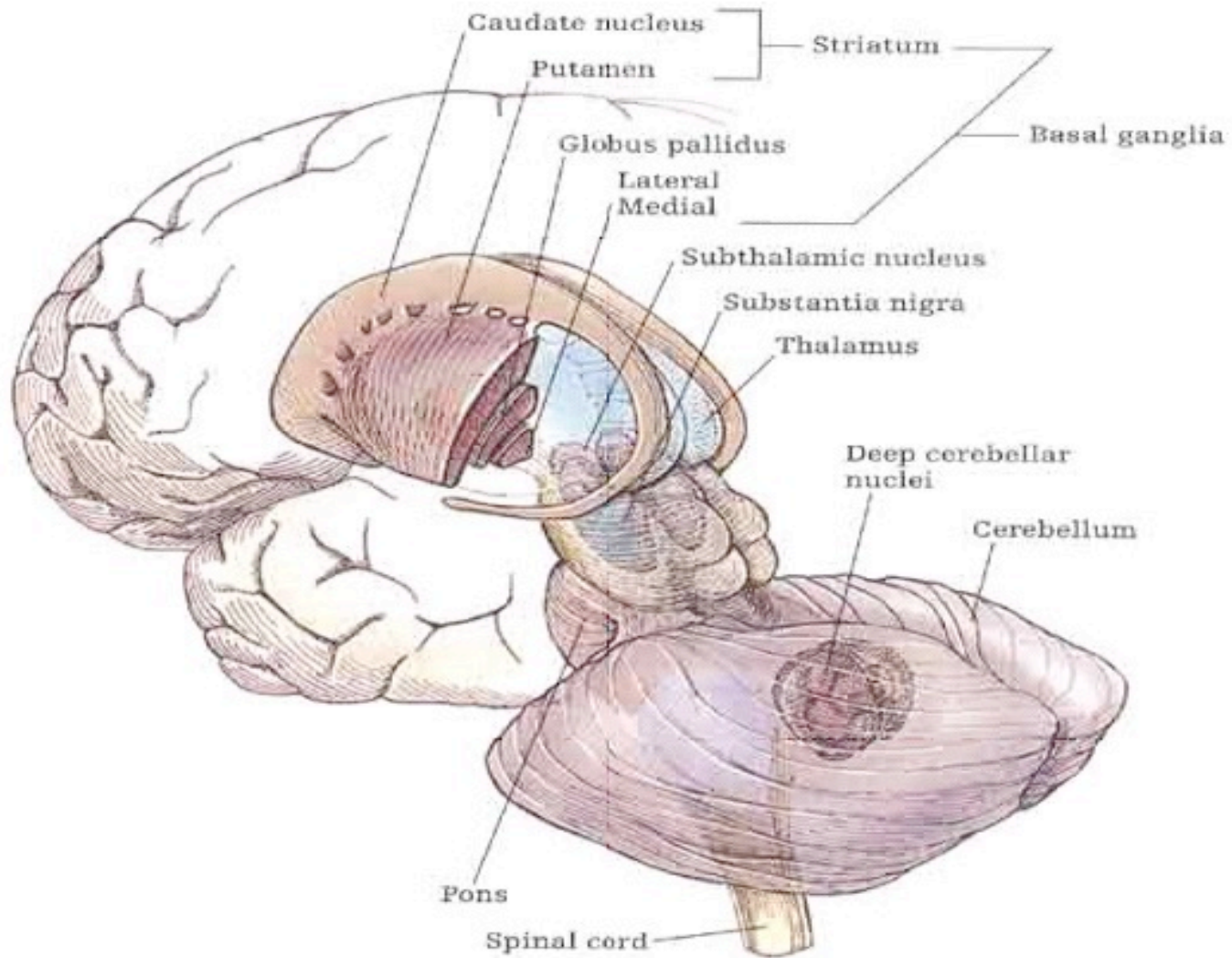
Any frontal lobe overlearned behaviors (action columns)

Habitual behavior

Syntax in speech

Overlearned information in lectures/presentations

Personality patterns





# Basal Ganglia – Inhibition for Cortical Columns (Braking System)

Explains why so many functions are associated with the basal ganglia (BG)

Subthalamic nucleus (STN) receives input from all cortical areas except primary visual cortex

STN proposed to bring cerebellum online via pontine nucleus activation

Putamen involved with habitual behavior

Substantia nigra (versus globus pallidus) activation likely reflects cerebellar control





# Three Basic Orientations



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Cognitive-Behavioral

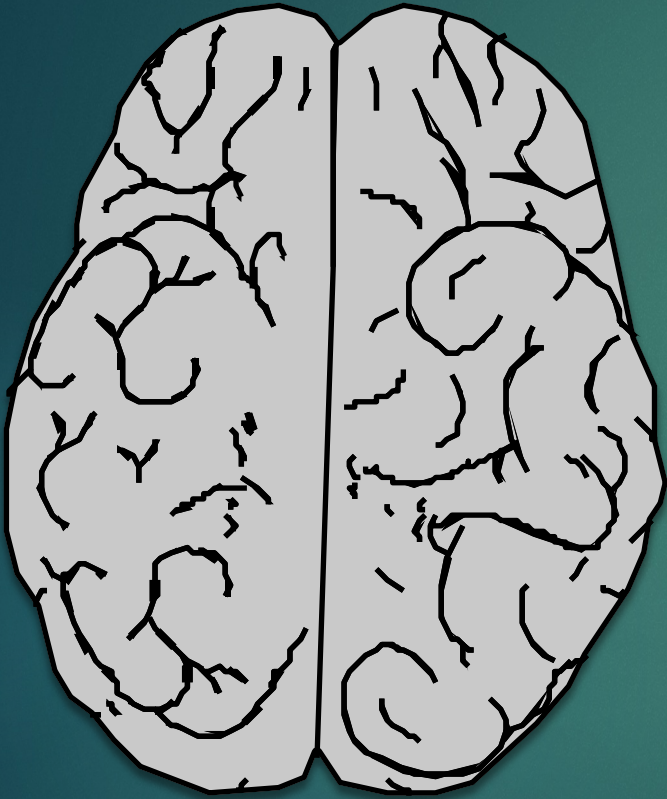
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Psychodynamic

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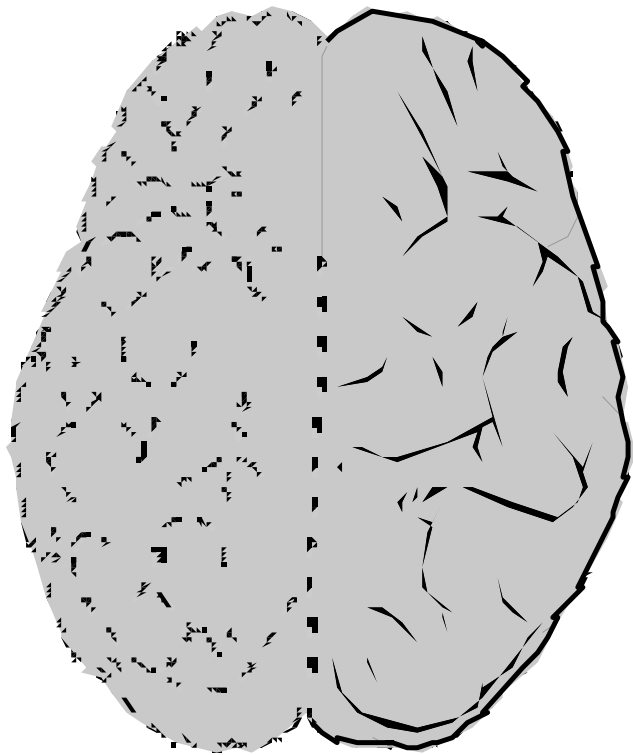
Humanistic/Existential (includes experiential approaches such as Emotion Focused Therapy)

# Psychoanalytic



- ▶ “I know there are two of you in there. If I sit here and don’t interfere too much, given enough time, I believe you will find each other.”

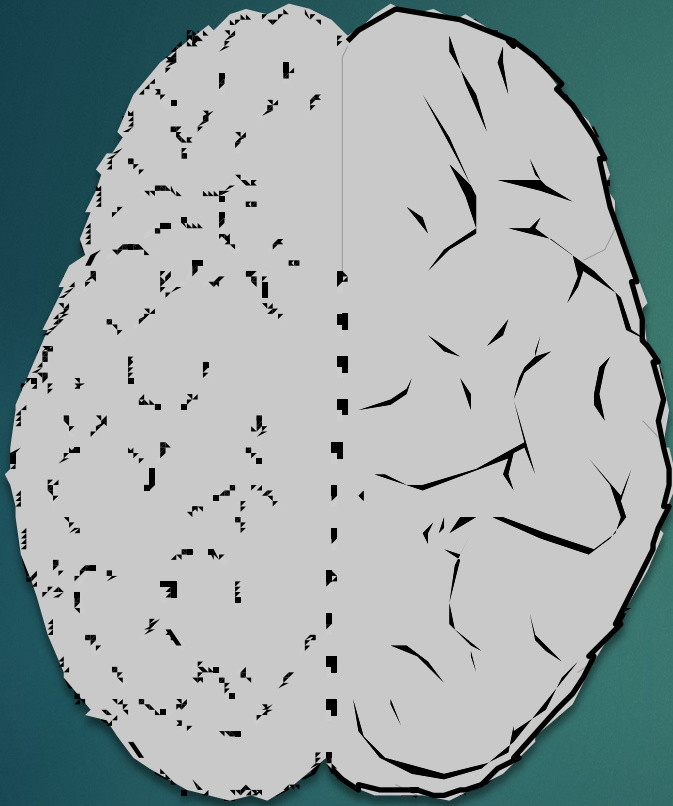




# Humanistic

“IF I’M WARM,  
GENUINE AND  
EMPATHETIC, I BELIEVE  
YOUR EMOTIONS WILL  
STRAIGHTEN  
THEMSELVES OUT.”

# Experiential



- ▶ “Of course, you have emotions. Pay attention to what you feel right now, deal with any unfinished business, and I’ll come along for the ride.”

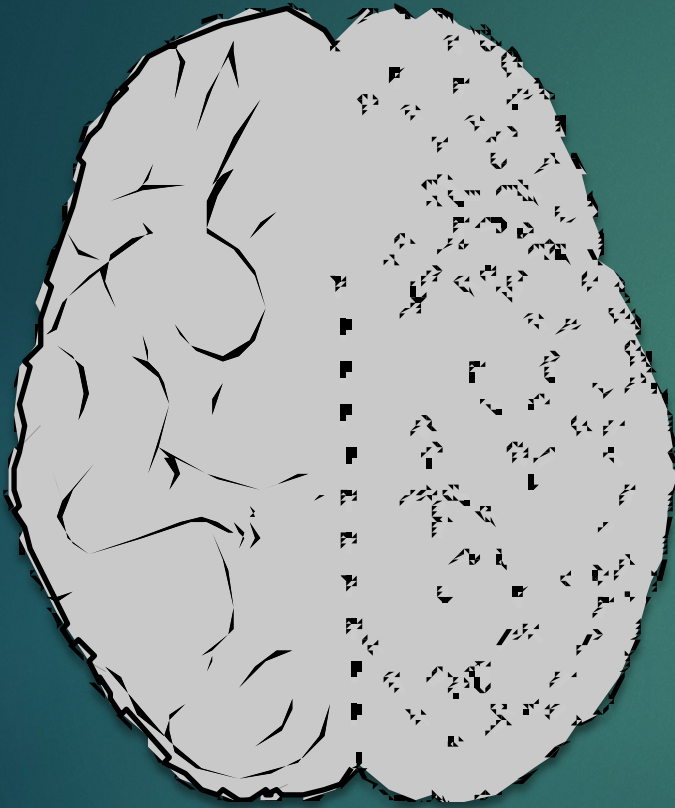


# Behavioral



- ▶ “Of course, you can learn without forming memories. All we have to do is rearrange everything and everyone around you.”

# Cognitive– Behavioral



- ▶ “You verbally think, therefore you feel. Therefore, you should prefer to think rationally, or at least you should test out alternative ways of looking at things in your life.”



# Technical Eclecticism



- ▶ “It’s too confusing to think about why I am going to approach your case the way I am. I know 17 things to do, so we’ll try one at a time, and hopefully something will work.”

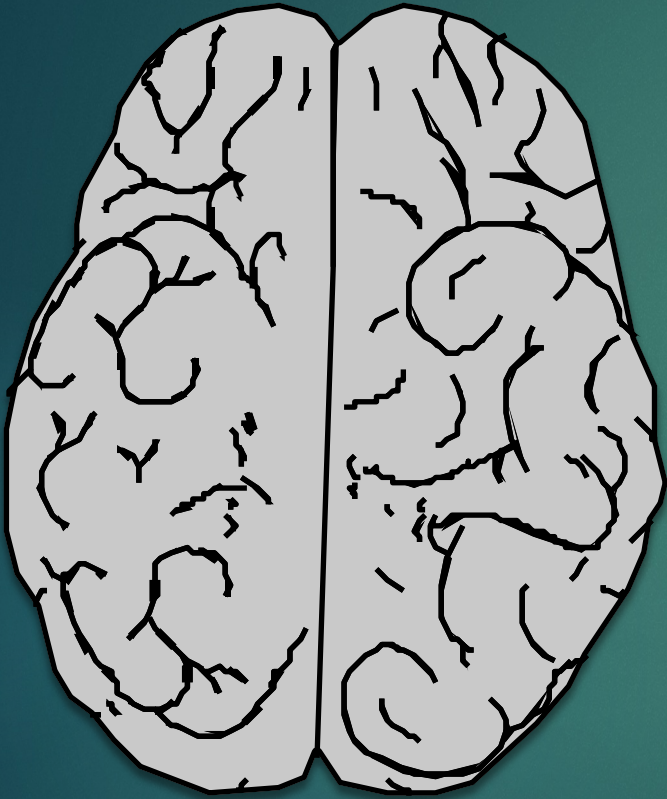
# Empirical Technical Eclecticism

## DSM-5

- ▶ “You have enough symptoms to be diagnosed as PTSD, major depression and avoidant personality disorder. For a 23-year-old, 5'4", Caucasian, heterosexual female, we have treatment manuals telling us how to address two out of the three disorders. Sixty-two percent of your kind are expected to show at least a 30% decline in reported symptoms if you don't drop out of treatment before the recommended 18 sessions are completed.”

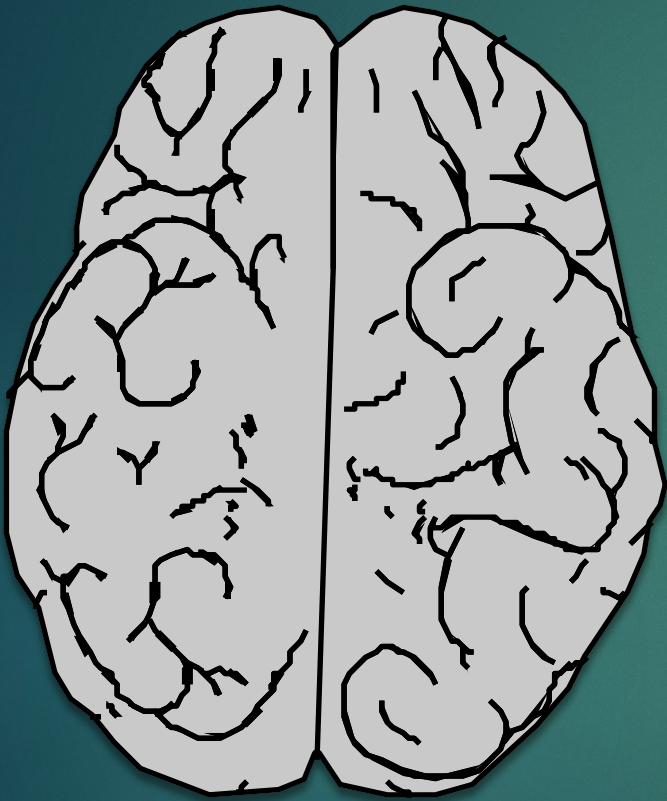


# Theoretically Based Eclecticism



- ▶ “We are what we are. We believe our own approach is the best, but we realize we don’t know how to explain and effectively treat everything. We will not reject each other’s techniques, just each other’s explanations. Therefore, I can often explain to you why you have the problems you do. If my basic approach doesn’t work, I know 17 things to do, and we’ll try one at a time, and hopefully something will work.”

# Clinical Biopsychology



- ▶ “We each have a brain. We each have two minds, as does everyone with whom we have a relationship. We verbally think and form verbal memories. We emotionally think and form emotional memories. Verbal and emotional processing occurs independently, but each can influence the other internally, and by controlling the external world perceived by the brain. It is possible to use a brain model to guide assessment, conceptualization and treatment with clients/patients.”



# Two Universal Motivational Rules For Human Behavior

Experience positive emotions; avoid or deactivate negative emotions

Positive (negative) emotions continually present cannot remain as positive (negative) as when initially experienced

Memories  
Can  
Determine  
Whether  
Stimuli Are  
Perceived  
As Positive  
or  
Negative

Both external  
and internal  
stimuli

This has survival  
value



# Memories Can Determine Whether Stimuli Are Perceived As Positive or Negative

## Earlier positive memories remain


- Experience positive feelings is by stimulating these

## Earlier negative memories remain

- Attempt to deactivate and/or avoid stimulation of these

# Clinical Biopsychological Approach

Specific assessment and conceptualization (2 separate “minds”)



3 sources of negative emotions

Current factors (pain, arguments)

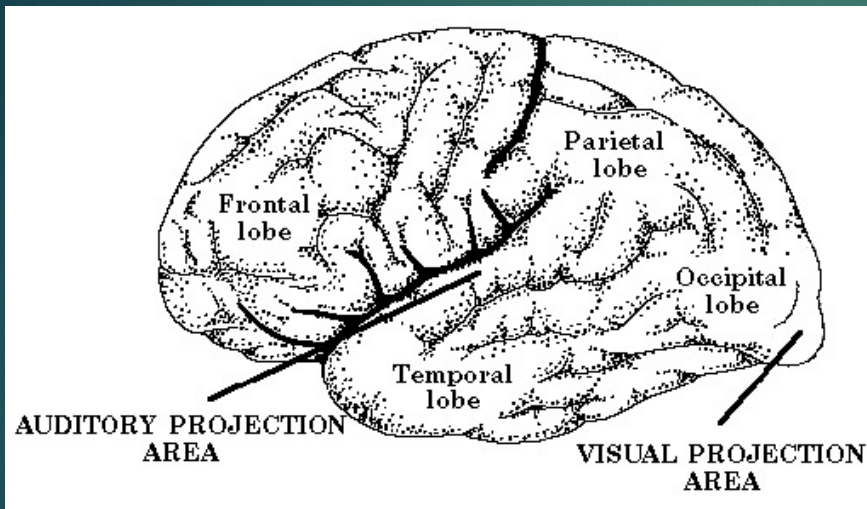
Loss issues (independence in activities typically done, job/income, relationships)

Negative emotional memories involving loss of control/uncontrollability and personal inadequacy/responsibility

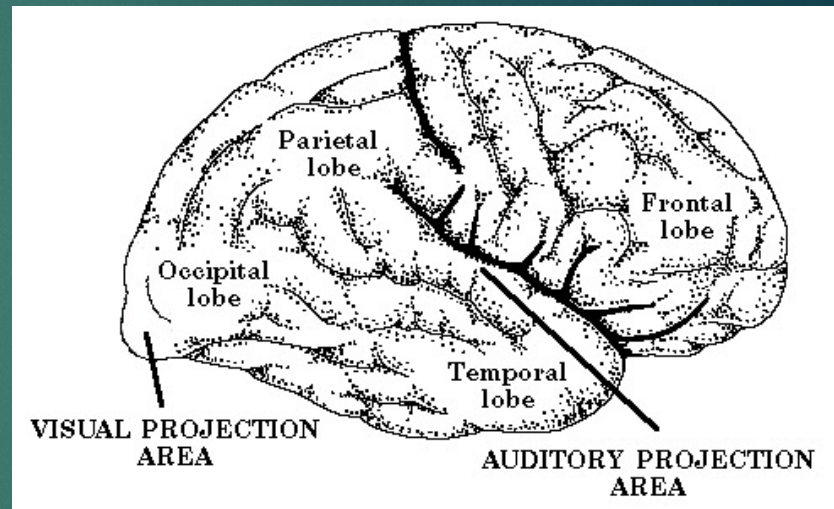


# Parallel Cortical Processing

► Left  
(analytical,detailed)



► Right (Gestalt,  
diffuse)



# Parallel Cortical Processing And Memory Storage



## ▶ Left

- ▶ Language
- ▶ Reading
- ▶ Writing
- ▶ Careful planning
- ▶ Rote calculations/  
geometry
- ▶ Schemas/interpretation

## ▶ Right

- ▶ Novel mechanical tasks
- ▶ Navigation in personal space
- ▶ Spatial/relational math
- ▶ Non-detailed emotional processing and expression

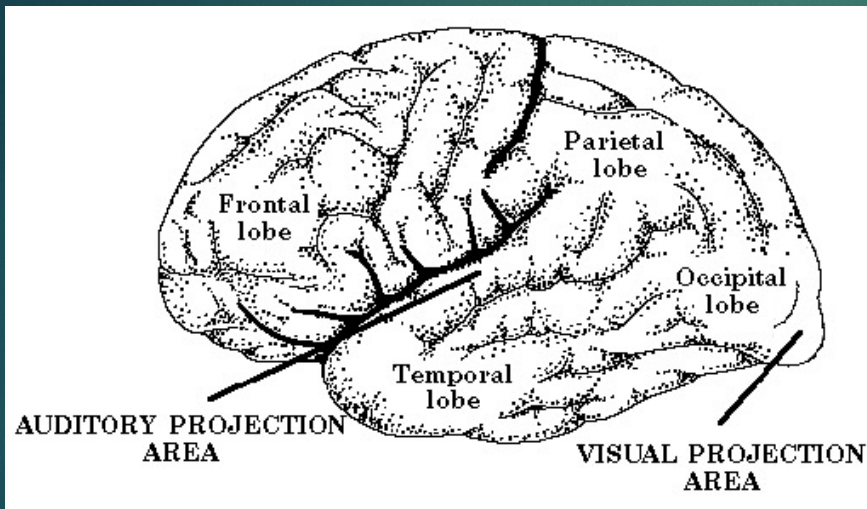


# Verbal Interpreter and Emotional Interpreter

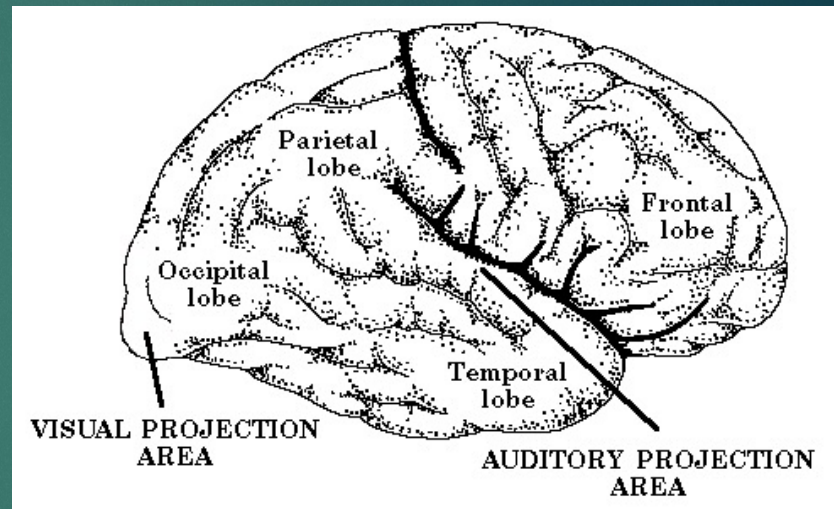
- ▶ Left frontal ventral lateral cortex – Verbal
  - ▶ Verbal self-talk (Most often considered “consciousness”)
  - ▶ Motor plan for verbal language expression
- ▶ Right frontal ventral lateral cortex – Emotional
  - ▶ Emotional self-talk
  - ▶ Motor plan for emotional language expression
    - ▶ Intonations, speed, volume
    - ▶ Profanity associated with emotion

# Parallel Cortical Processing

► Left  
(analytical,detailed)

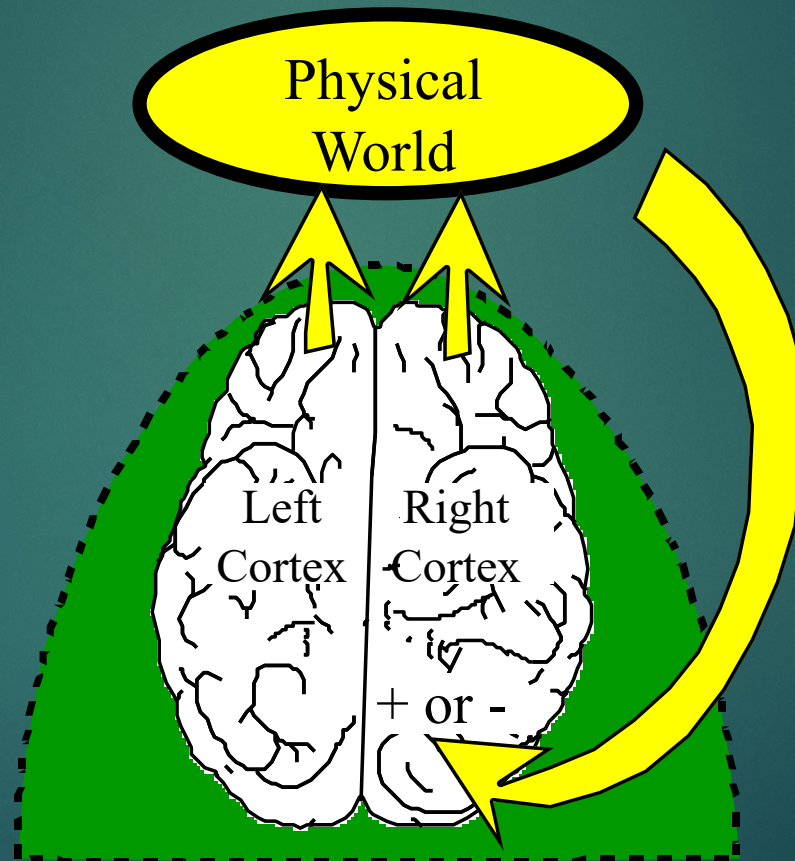


► Right (Gestalt,  
diffuse)





# Ways the Cortex Attempts to Determine Emotions Based on Activation of Emotional Memories



# Interhemispheric Congruence



- ▶ Left and right analyses and responses are consistent
- ▶ Thinking and feeling are consistent
- ▶ Associated perception of internal peace
- ▶ The hemisphere which can best solve or respond to a situation assumes control with accurate verbal awareness





# Open Access Article

- ▶ Sorenson, j., Bautista, K. E., Lamvu, G., et al. (2018) *Evaluation and treatment of female sexual pain: A clinical review*, 10(3): e2379
- ▶ [\(6\) \(PDF\) Evaluation and Treatment of Female Sexual Pain: A Clinical Review \(researchgate.net\)](#)



# Sexual Pain Disorders

- ▶ Dyspareunia – recurrent or persistent discomfort that happens before, during, or after intercourse.
  - ▶ Superficial (pain localized to the vulva or vaginal entrance) or deep (pain perceived inside the vagina or lower pelvis often associated with deep penetration)
  - ▶ Primary (occurs at initial intercourse) or secondary (occurs after some time of pain-free intercourse)
- ▶ Vulvodynia – Chronic pain (3 months) with no known etiology which may or may not be associated with intercourse
  - ▶ Localized, generalized, or mixed; provoked, spontaneous, or mixed

# Medical History Questions

- ▶ PAIN CHARACTERISTICS Timing, duration, quality, location, provoked, or unprovoked
- ▶ MUSCULOSKELETAL HISTORY Pelvic floor surgery, trauma, obstetrics
- ▶ BOWEL AND BLADDER HISTORY Constipation, diarrhea, urgency, frequency
- ▶ SEXUAL HISTORY Frequency, desire, arousal, satisfaction, relationship
- ▶ PSYCHOLOGICAL HISTORY Mood disorder, anxiety, depression
- ▶ HISTORY OF ABUSE Sexual, physical, neglect



# Open Access Article

- ▶ Confroti, C. (2017). Genito-pelvic pain/penetration disorder (GPPPD): An overview of current terminology, etiology, and treatment. *UOJM*, 7(2):48-53. doi:10.18192/uojm.v7i2.2198
- ▶ [Genito-Pelvic Pain/Penetration Disorder \(GPPPD\): An Overview of Current Terminology, Etiology, and Treatment | University of Ottawa Journal of Medicine \(scholarsportal.info\)](#)

## DSM-5 Classification

- ▶ GPPPD – Recurrent difficulty/pain on sexual intercourse or penetration attempts, and it is classified as a female sexual dysfunction in the DSM-5. May or may not be caused by vulvodynia.
  - ▶ Includes the former categories of dyspareunia and vaginismus (marked tensing or tightening of the pelvic floor muscles during attempted intercourse)
- ▶ Vulvodynia is not classified as a sexual dysfunction, but can cause or contribute to female sexual dysfunction



## Non-Medical Treatment Approaches

- ▶ Cognitive behavioral therapy which may include mindfulness (third wave)
- ▶ Treatments that involve a form of exposure therapy (desensitization)
  - ▶ Sensate focus
  - ▶ Directed masturbation
  - ▶ Vaginal dilator therapy (Physical therapy)
- ▶ For all approaches, education (i.e., a new schema) is a major component

# Interpersonal Emotion Regulation Model

- ▶ Rosen, N. O., & Bergeron, S. (2019). Genito-pelvic pain through a dyadic lens: Moving toward an interpersonal emotion regulation model of women's sexual dysfunction. *The Journal of Sex Research*, 56(4-5), 440-461.
- ▶ [https://sophiebergeron.ca/images/publications/Rosen\\_2018\\_Genito-pelvic.pdf](https://sophiebergeron.ca/images/publications/Rosen_2018_Genito-pelvic.pdf)



# Distal Factors

- ▶ Social context
- ▶ Childhood interpersonal trauma
- ▶ Intimacy
- ▶ Attachment (Right cortex in early childhood)
- ▶ Catastrophizing
- ▶ Attributions
- ▶ Ambivalence over emotional expression
- ▶ Sexual Communication

# Proximal Factors

- ▶ Partner responses to pain
- ▶ Affection
- ▶ Mood: anxiety & depression
- ▶ Sexual motivation





# Treatment of Past Negative Emotional Memories



- ▶ Non-relationship traumas (e.g., accidents, natural catastrophes, war)
  - ▶ Out of control, but not personally responsible
  - ▶ Isolated, typically major, incidents
  - ▶ "Bottle-up" and fail to discuss or voluntarily re-experience memories



# Treatment of Past Negative Emotional Memories



- ▶ Relationship negative emotional memories
  - ▶ Out of control and personally responsible/inadequate
  - ▶ Repeated incidents, often more minor

# Non-relationship Negative Emotional Memory Treatment Approaches

- ▶ Originating events
  - ▶ Imaginal flooding
  - ▶ "Processing memories"
  - ▶ Eye movement desensitization and reprocessing
    - ▶ Often past influential negative emotional memories are activated
- ▶ Sexual phobia development
  - ▶ Lack of accurate information in childhood and adolescent years
  - ▶ Parental statements leading to guilt and shame
  - ▶ Initial experiences are negative (e.g., painful, forced)
  - ▶ New negative memories stored for each problem encounter



# Emotional Restructuring (ER)



- ▶ Use for relationship memories that have personal responsibility aspect
- ▶ Deal with one relationship at a time
- ▶ Can be done in less than an hour, but when first starting plan on a two-hour session

# Imaginal Flooding (Exposure)

- ▶ Patient recalls all aspects of event, from time prior to the trauma to the point at which the patient again felt secure and no longer in danger
- ▶ Between 3 to 4 descriptions
- ▶ The therapist initially slows and enhances sensory recall of the situation by questions
- ▶ Rule of thumb for both imaginal and *in vivo* exposure is that anxiety will dissipate in 45 to 60 minutes provided the situation is static/stable (no changes are occurring)



# Imaginal Flooding to Situations that Never Happened

- ▶ Fear of illness/death (hypochondriasis) and public speaking
- ▶ Therapist ends up describing an extreme that could never occur
  - ▶ Patient dies and talks to those coming past the casket
  - ▶ Public speaking leads to White House Press Corps following her/him instead of the president

# *In Vivo* Exposure

- ▶ The first step is to decide on the final goal
- ▶ Design steps from that with little anxiety to the final goal
- ▶ Start with the lowest anxiety producing step
- ▶ The patients never pushes beyond the step to be done that day
- ▶ I have the patient repeat each step twice
  - ▶ Allows the patient to see how quickly anxiety dissipates between the first and second exposure
  - ▶ Leads to conclusion that if left side knows there is logically no danger, the right can learn the same



# Sexual Phobia Treatment

- ▶ Schedule 4-hour time, but typically only 3 are needed
- ▶ Explicit video with sound muted
  - ▶ Patient views video throughout the session
- ▶ First hour
  - ▶ Describe what is happening in the video
  - ▶ Imagine parent in empty seat and what is he/she thinking about you
  - ▶ Converse with parent
  - ▶ Any words or phrases that create anxiety

# Sexual Phobia Treatment

- ▶ Second hour – Patient views the video alone
- ▶ Third hour – repeat activities of the first hour
- ▶ If any anxiety persists, fourth hour is patient alone
- ▶ Debriefing



# Six Steps of ER



1. Recall of negative situations (anxiety increases)
2. Behavioral description (anxiety decreases)
3. Role reversal (anxiety decreases, anger increases)
4. Imagery (anger peaks and decreases, relief)
5. Completion of description (relief, sad)
6. Forgiveness sequence (relief)

# ER with Sexual Abuse

- ▶ May use role play in which the patients becomes the therapist to convince the “patient” (role played by the therapist) that it was not “her fault
- ▶ If rape
  - ▶ Use taker description
  - ▶ Forgiveness is optional, particularly if the perpetrator is not a person with whom the patient has a close relationship



# Complicated Bereavement (Phobic Response)


- ▶ Patient describes from the time the death became known until the end of the funeral
- ▶ Therapist role plays the deceased person (another option is using an empty chair technique) and the patient is asked to say whatever she/he would want to say knowing it is the last time the deceased will be seen
- ▶ At the end the patient is asked/told to say “goodbye”
  - ▶ Gentle prompting is often needed
  - ▶ If cannot, asked to do so on her/his own between sessions





# Type-T (Taker) and Type-G (Giver) Concept Support

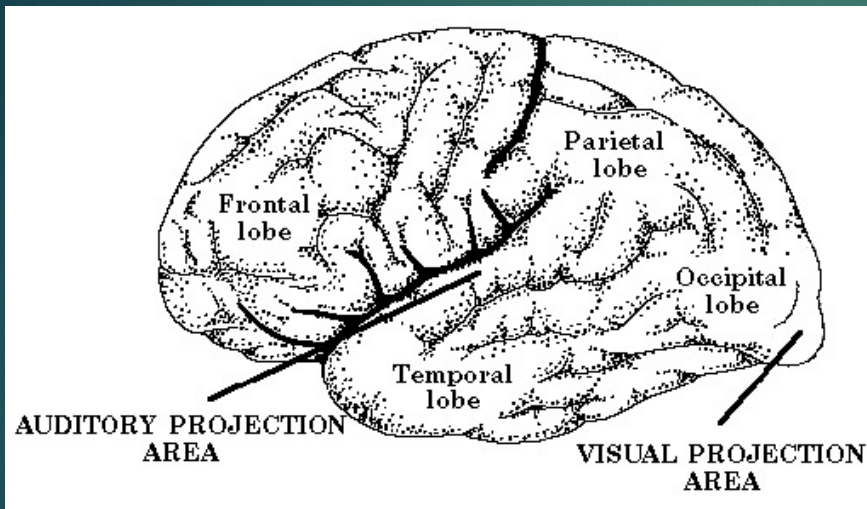
- ▶ The psychodynamic concept of enactments in therapy (and outside in real life)
  - ▶ Behavioral patterns repeat themselves and are based on earlier life patterns
- ▶ Consistent with the concept of personality and personality disorders

- 
- ▶ How many of you can speak Korean?
  - ▶ How many of you can speak English?

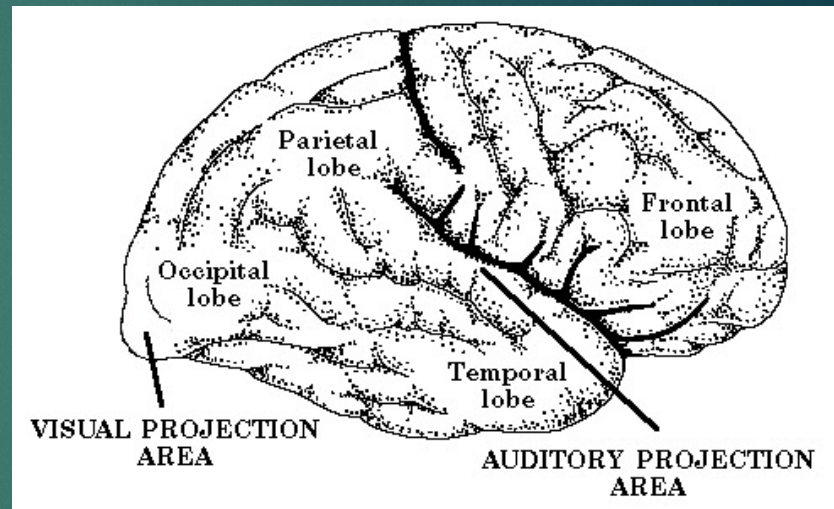


# Parallel Cortical Processing

► Left  
(analytical,detailed)



► Right (Gestalt,  
diffuse)



# Relationship Behavioral Patterns: Learned and Remain Through Life

- ▶ Basic and universal rules
  - ▶ Seek positive and avoid negative emotional states
  - ▶ Nothing continually present can maintain its original level/strength of emotion



# Consistent With These Rules...

- ▶ Once formed in the right posterior hemisphere, emotional memories remain
- ▶ Emotional responses are largely determined by right frontal memories
- ▶ Cerebellum assumes control of overlearned behavior patterns of the right frontal lobe
- ▶ Verbal responses are primarily determined by left frontal memories

# Five Factor Theory (Big Five) Metatraits

- ▶ Higher order factor structure
- ▶  $\alpha$ , or Stability = Agreeableness, Conscientiousness, and reversed Neuroticism (Type-G or Giver)
- ▶  $\beta$ , or Plasticity = Extraversion and Openness/Intellect (Type-T or Taker)



# Type-T (Taker) and Type-G (Giver) Concept Support

- ▶ The psychodynamic concept of enactments in therapy (and outside in real life)
  - ▶ Behavioral patterns repeat themselves and are based on earlier life patterns
- ▶ Consistent with the concept of personality and personality disorders

# Pattern Characteristics



## ▶ Giver

- ▶ “I want to be the ‘good guy’ and cannot stand to feel like a ‘bad guy’”
- ▶ Rule governed
- ▶ Do as I do (Follows own rules)
- ▶ Consistent

## ▶ Taker

- ▶ “I win-I get my way”
- ▶ Situation governed
- ▶ Do as I say (Breaks own rules)
- ▶ Inconsistent



# Pattern Characteristics



## ▶ Giver

- ▶ Avoids conflict
- ▶ Be the best or back away
- ▶ Uncomfortable as center of attention
- ▶ Reluctant to accept things

## ▶ Taker

- ▶ Creates conflict
- ▶ Portrays self as the best, whether accurate or not
- ▶ Relishes being center of attention
- ▶ Readily accepts things

# Pattern Characteristics



## ▶ Giver

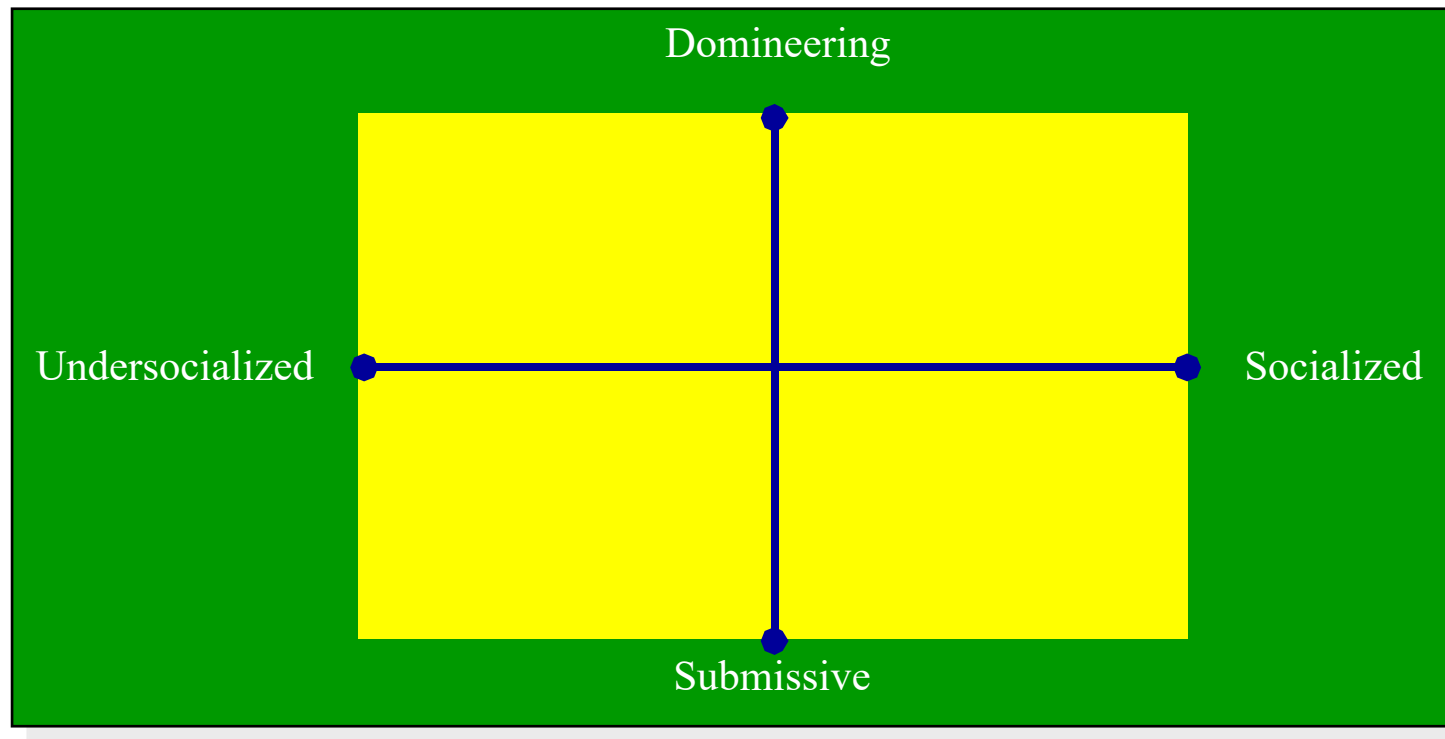
- ▶ Only blows up briefly if placed in a position where feels like bad guy
- ▶ Manner of giving depends on learning history
- ▶ Functional alcoholics

## ▶ Taker

- ▶ Often will blow up, be cold, be nice to get what is wanted at the time
- ▶ Gives only to get what is desired at the time
- ▶ Dysfunctional alcoholics



# Type-T (Taker) and Type-G (Giver)



# Reasons Type-T/G Descriptions Are Important in Treatment

- ▶ Has client externally focus
  - ▶ Decreases out of control/unpredictability feelings
  - ▶ Decreases personal responsibility aspects (i.e., not what is it about me, but what is it about the other person that causes the behavior)



# Reasons Type-T/G Descriptions Are Important in Treatment

- ▶ If reality based
  - ▶ It will be naturally reinforced
  - ▶ Others' behaviors/reactions can be predicted
  - ▶ It is possible for the patient to alter his/her own behavior to increase more desirable behaviors in others

# Dealing with Givers in Equal Relationships

- ▶ (a) empathic statements identifying the giver's think/feel conflict
- ▶ (b) explaining how the giver's behavior creates emotional hurt
- ▶ (c) requesting the giver to develop specific ways she/he can reduce your patient's hurt
- ▶ (d) additional gentle reminders and empathic statements when the giver fails to follow through with agreed upon behavior change
- ▶ and (e) praise for compliance.



# Dealing with Takers in Equal Relationships

- ▶ (a) drawing limits
- ▶ (b) unilateral rules
- ▶ (c) becoming predictable
- ▶ (d) altering what they say to you directly
- ▶ and (e) using temporary exits.

# Dealing with Takers in Superior Relationships

- ▶ (a) feeding information
- ▶ (b) avoiding negative comments and making positive comments about the taker, particularly to her/his superior, if possible
- ▶ (c) letting the taker make suggestions tied to the person's work
- ▶ and (d) communicating information in writing





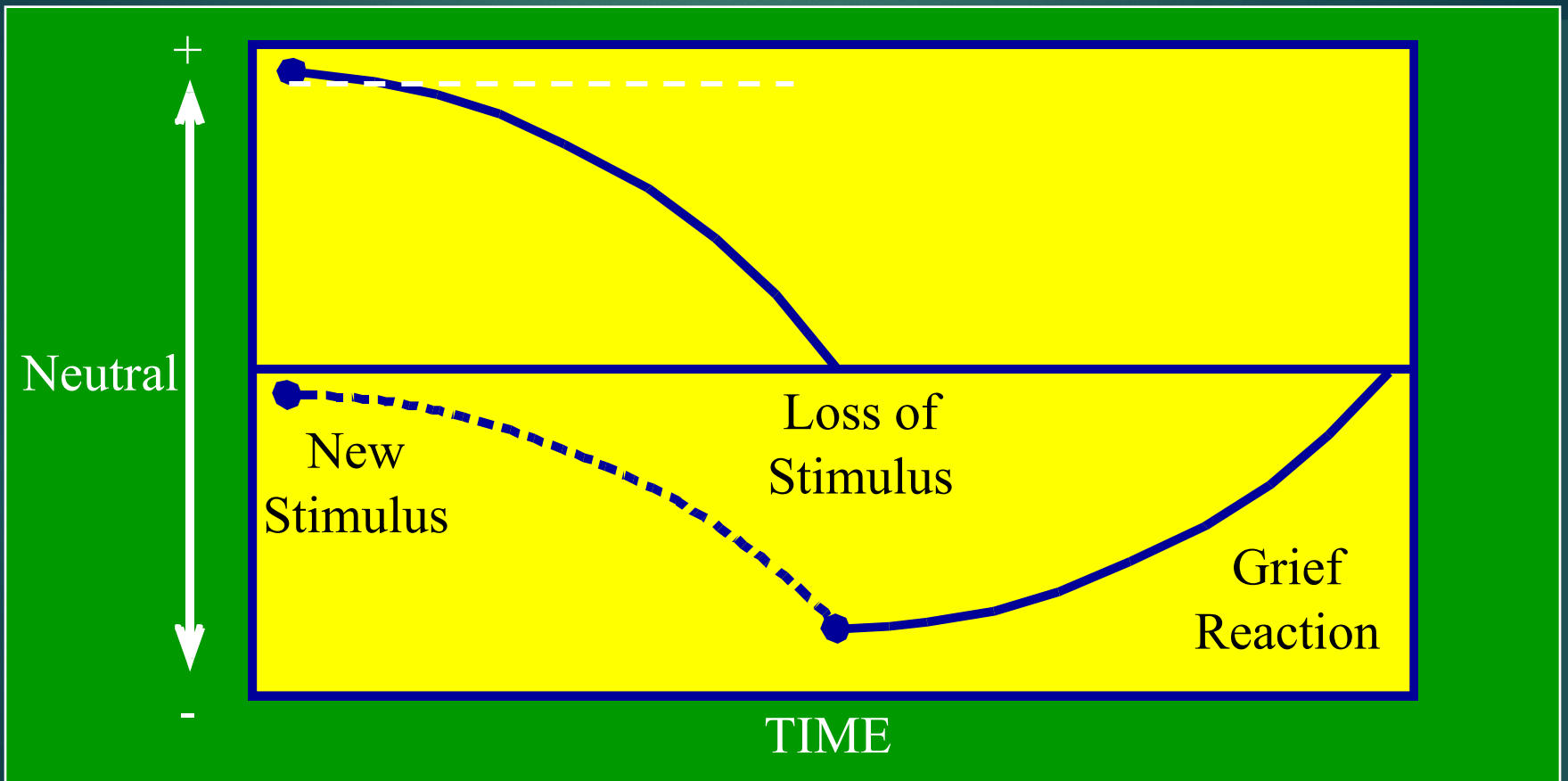
# Opponent-Process Theory

Mainly used as a  
concept in addiction

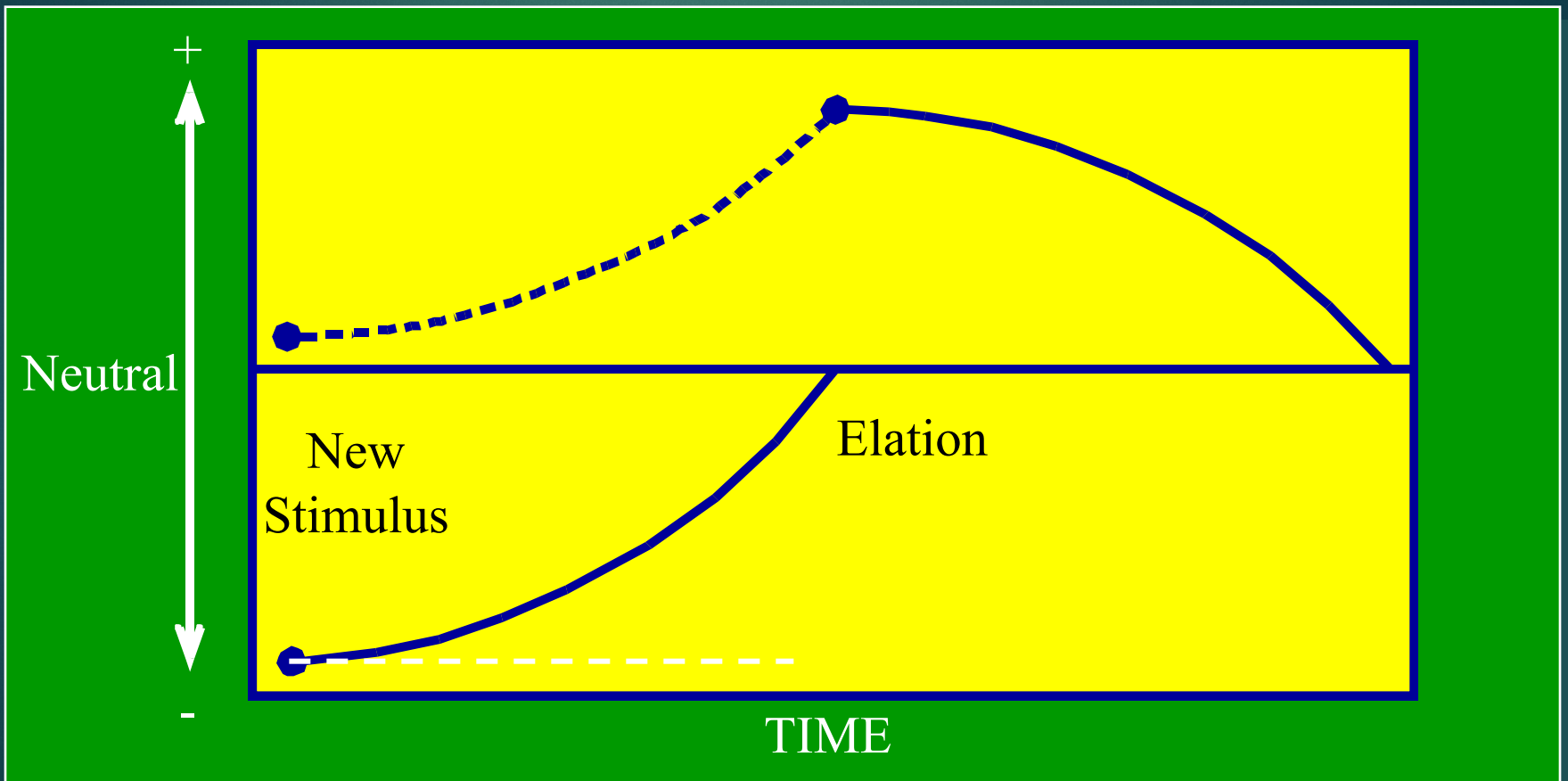
Loss-related depression  
explained on this basis




# Loss of Previously Positive Stimulus



# Loss of Previously Negative Stimulus







The Intensity and Duration of  
the Opponent Emotional  
Experience Is a Function of  
the Intensity and Duration of  
the Emotion Initially  
Experienced

# Dealing Adaptively with Loss

- ▶ Educate on normal patterns
  - ▶ Denial
  - ▶ Dysphoria/depression
  - ▶ Anger
  - ▶ Acceptance
- ▶ Educate others as to their inability to fix it and will let them if they can do something for you other than simply be there
- ▶ Maintain a healthy schedule despite a lack of pleasure



# Constructivist Approach

- ▶ Not just losses due to pain, but going somewhere (constructing meaning)
- ▶ New life goals, including spiritual growth for those whose belief system is consistent

# After Therapy Expectations Communicated to the Patient

- ▶ As realities of others' behavior is accepted, there may be increased depressive symptoms based on the loss of false beliefs related to significant others' ability to provide desired behaviors
- ▶ Discuss what the patient may expect based on new perceptions
  - ▶ Accept personal responsibility for making decisions on whether she/he accept limitations and grieve the loss of the desired behaviors, or does she/he decide to change/leave the relationship or situation (Most patients do not make immediate decisions)





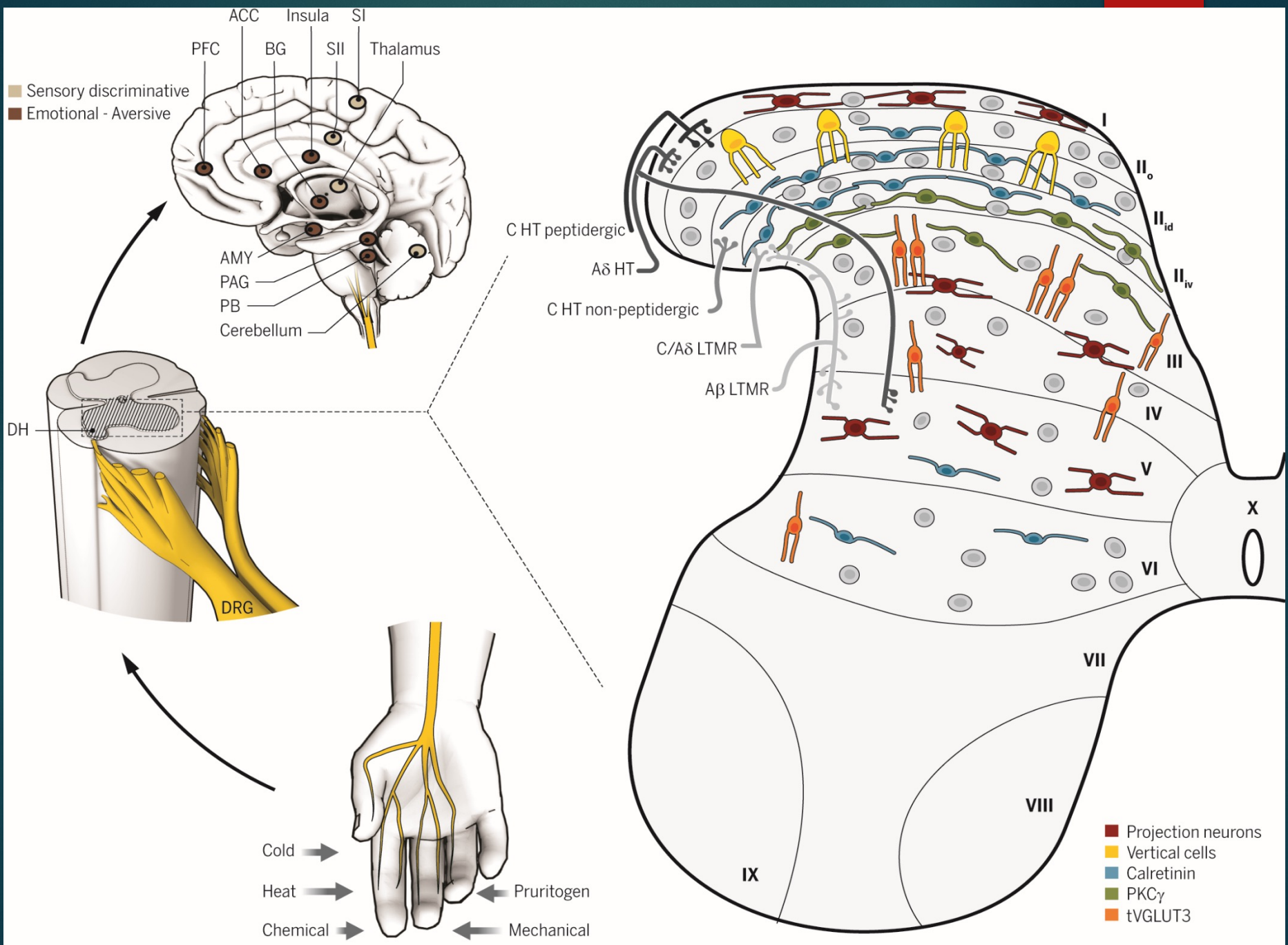
# Psychological Treatments Predated the 1990's Position on Opioid Treatment

- ▶ Bill Fordyce developed the first approach involving behavior therapy (inpatient, decrease pain complaints, no open litigation)
- ▶ Few comprehensive pain programs (physician, nurses, psychologists, PT, use of pain cocktails)
  - ▶ Failed to prove benefit in reducing long term costs and return to work
  - ▶ Devolved into outpatient Back School, Work Hardening, etc.



# Accept that the Pain is Permanent and Not Curable

- ▶ Convinced no stones left unturned in search for a cure
- ▶ False alarm (i.e., not signaling ongoing damage and the pain becomes the focus of treatment, not the pain's cause)
- ▶ Improve quality of life
- ▶ NSAIDS, acetaminophen, anticonvulsants, antidepressants, opioids, injections, PT (e.g., Aqua Therapy), TENS/Muscle Stimulators, Spinal Cord Stimulator, Pain Pumps





# Common Psychological Treatments

- ▶ Relaxation procedures (progressive relaxation, hypnosis/imagery)
- ▶ Habit reversal and sleep manipulations for some types of headaches
- ▶ Behavioral pacing (up/down time)
- ▶ Distraction (role of attention to pain experience)
- ▶ Develop List of Multimodal Management Strategies (TENS, Ice Massage, Relaxation, etc.)

# Relaxation for Pain

- ▶ Muscle tension increases muscle cell activity and, thereby, producing more waste (e.g., lactic acid). Waste accumulates in extracellular space which chemically causes pain receptor activation
- ▶ Pain not immediate when tense muscles, such as your arm
- ▶ If maintain tension, gradual onset of pain
- ▶ When relaxed, the pain does not immediately go away because you need time for oxygenated blood to transport the waste out of the extracellular space



# Relaxation for Sleep Onset

- ▶ Pain is often perceived to worsen when attempting to fall asleep due to lack of external focus/attention
- ▶ Active sleep induction system (melatonin)
  - ▶ Tryptophan through diet transported to brain via carrier proteins
  - ▶ Carbohydrates cause other amino acids to be absorbed into blood vessel walls
- ▶ Passive sleep induction system
  - ▶ Must be relaxed which means calm mind
  - ▶ Relaxation distracts mind while relaxing body

# Relaxation for Anxiety Management

- ▶ I first address negative emotional memories because many patients find relaxing to feel like loss of control
- ▶ If progressive relaxation is used for sleep onset, I suggest using alternative ways for anxiety management
  - ▶ Mindfulness
  - ▶ Imagery/hypnosis



All they have to do is click on any of the links below and they can download it. Open your own Dropbox account (I believe they give 10 gigabytes for free which would more than cover these files). And then you can upload these files and give links to people and they can download copies for themselves.

### Imagery Relaxation

[https://www.dropbox.com/sh/5vxsi8z6o1fdpg/AACP\\_Pd\\_BrRAGOfTyxeBGuGMa?dl=0](https://www.dropbox.com/sh/5vxsi8z6o1fdpg/AACP_Pd_BrRAGOfTyxeBGuGMa?dl=0)

### Progressive Relaxation

[https://www.dropbox.com/sh/5ssl4jexzdvtbw2/AAA4Balk\\_FgCE6jfoiFaMUWba?dl=0](https://www.dropbox.com/sh/5ssl4jexzdvtbw2/AAA4Balk_FgCE6jfoiFaMUWba?dl=0)

### Bad Thoughts, Feelings, People

<https://www.dropbox.com/sh/h1d0lto7239v3rq/AAACsQzDn6AcK3fjrY6ZO69Ua?dl=0>

# Common Migraine and Morning Onset Headaches

- ▶ Common migraines without aura
  - ▶ Related to temporomandibular joint dysfunction and oral habits (teeth clenching, gum chewing)
- ▶ Classic migraines with aura (sleep past regular awakening time – weekends, holidays, vacation)
- ▶ Dull frontal headaches present upon awakening
- ▶ [\(PDF\) New Approaches in the Assessment and Treatment of Chronic Headaches \(researchgate.net\)](#)



# Behavioral Pacing

- ▶ Push self to finish tasks despite pain getting severe and leading to “pay backs”
- ▶ Givers most often due to the desire to accomplish tasks
- ▶ Takers may claim to have overdone or sporadically do it to get more
- ▶ Educate patient on up and down times to increase productivity with less overall pain

# Behavioral Pacing Continued

- ▶ Prescribed pattern depends on activity
- ▶ How long before pain increases?
  - ▶ If uncertain, you can have the patient self-monitor
- ▶ Ask about typical daily and weekly activities and how performed (relates to developing alternative ways to perform tasks that have not been considered)
- ▶ I start at about  $\frac{1}{4}$  of the time before pain onset with a break after 5-to-10 minutes for a week
- ▶ If needed, increase down time or take more frequently



# In Addition to Pacing

- ▶ If has pain medication, consider taking before activities that reliably increase pain (with prescribing physician's approval)
- ▶ This is sometimes used in PT to allow the patient to increase activities and range of motion and may not be needed after conditioning is improved
- ▶ Remind patient that increased physical activity is not just for pain, it is for better cognition and cardiovascular health

# Competing or Changing Activities

- ▶ Psychotherapist can assist other therapists (PT and OT) by discussing patient issues that may interfere with exercise, better body mechanics, and using adaptive equipment
  - ▶ Fear of pain signaling tissue damage
  - ▶ Changing cerebellar controlled requires repeated monitoring, altered behavior, and practice across multiple situations/locations (e.g., body mechanics, parafunctional oral habits, repositioning to accomplish task)
- ▶ If trying to decrease maladaptive behavior/patterns, use incompatible behaviors that can be increased (e.g., lips together, teeth apart; objects in hands to avoid behaviors)



# Competing or Changing Activities, continued

- ▶ “Think outside the box”
  - ▶ Exercise in pool
  - ▶ Use under-the-desk elliptical while watching TV
  - ▶ Do kitchen/shop duties while sitting and/or by rearranging how things are done (e.g., do cutting at table or while sitting on a stool, tray in lap, foot propped up while standing at the sink, vacuuming from a rolling chair)
  - ▶ If problems recalling medications, use of pill planners and phone alarms
  - ▶ For ideas, look at occupational therapy catalogues

# Motorized Carts/Chairs

- ▶ For pain patients (mainly givers) who cannot comfortably do tasks, such as shopping or attending social activities
- ▶ Impediments to adaptive use
  - ▶ Physicians reluctant to approve with the excuse that patients will get less exercise leading to many patients not doing tasks (e.g., let someone else shop); help patient to explain the need and offer to do regular exercise
  - ▶ Embarrassment – Explain that the only way to reduce anxiety (i.e., fear of the unknown) is to do it; as a patient does it several times, the anxiety dissipates



# Attention/Focus

- ▶ With external focus, particularly with interactive behaviors, pain perception is reduced
  - ▶ Interesting discussion, goal-directed activity, video game are examples
  - ▶ If early in the processing of adapting to permanent pain conditions, keep in mind there can be general anhedonia due to loss issues
  - ▶ Alternative behaviors may not be as rewarding (e.g., bass fisherman who cannot cast doing passive fishing, avid reader using audio books)
- ▶ If having to wait for an event (e.g., medical test, disability hearing), then distraction is one's "best friend"

# For Excessive Worry

- ▶ Pattern of thinking about situation until anxiety gets high, and then put out of one's mind; then the longer without thinking about it, anxiety grows because feels like doing nothing and pulls back up
- ▶ Worry list
- ▶ Worry times scheduled 2 or more times a week
  - ▶ Speak into phone recorder
  - ▶ List out all possible options
  - ▶ List all positive and negative consequences of each option
  - ▶ Listen to the recording when finished



# Stress and Irritability

- ▶ “Our mind is good at dealing with a single source of stress, but not with multiple sources”
- ▶ Pain is stressful
- ▶ Increased irritability and being snappy is the right cortex’s way of making stressors go away
- ▶ Be aware of this and make others aware before non-desired behaviors occur (akin to warning behaviors shown by other animals, such as dog with growl with raised hair or shark bowing body)

# Financial Issues

- ▶ Become familiar with Social Security disability process and, if applicable, your state's worker's compensation system
- ▶ Assist patient in understanding the process and making adaptive choices on how to deal with the system without jaded comments; simply deal with the reality





# Questions and Answers

THANK YOU FOR YOUR  
ATTENDANCE