BART Psychotherapy

Beyond the Art of BART:
Bilateral Affective Reprocessing of Thoughts:
(hearts, guts and minds) Information for clinicians

Presentation by: Dr Art O'Malley

Child Psychology Conference 6-7 Oct 2016
Mascot Child and Famiy Services Ltd

Three brains

Head brain

- Analytical
- Logical (objective)

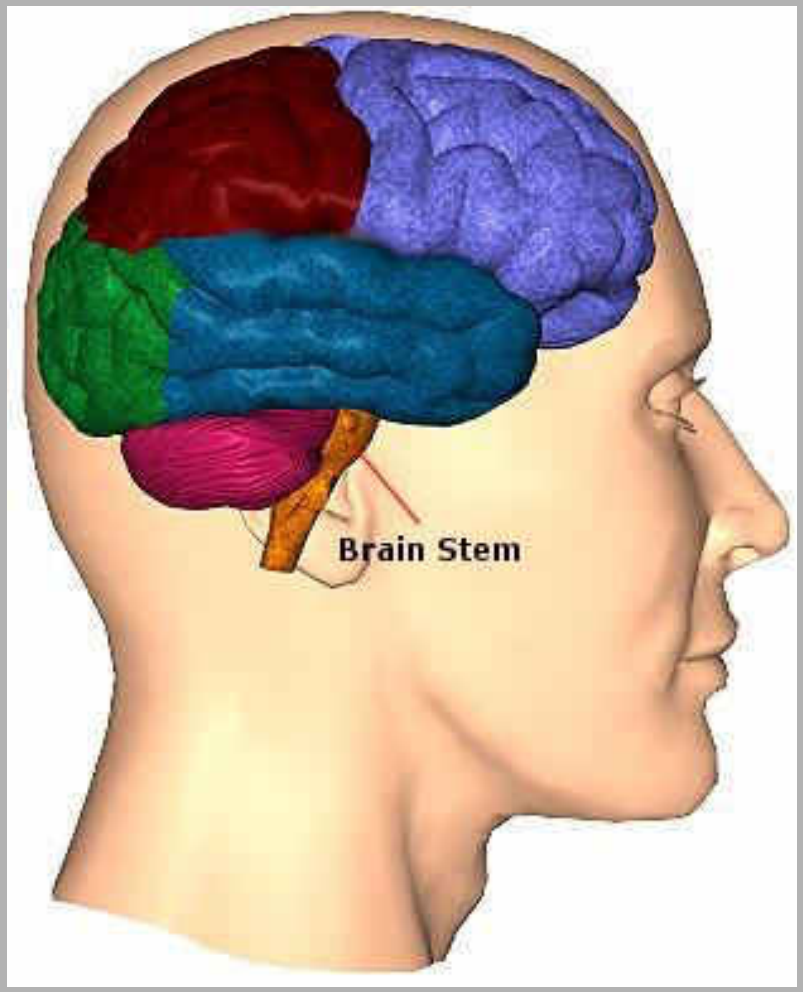
Heart brain

- Emotional
- Subjective

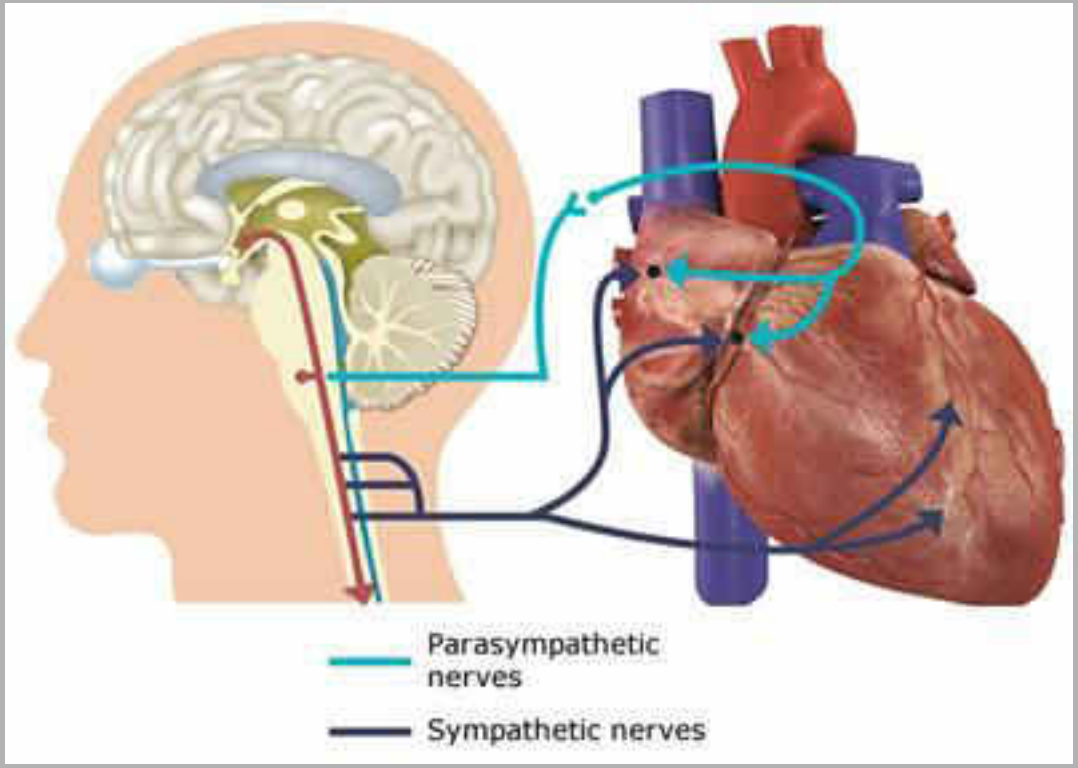
Gut brain

- Reactive (reflective)
- Turbulent

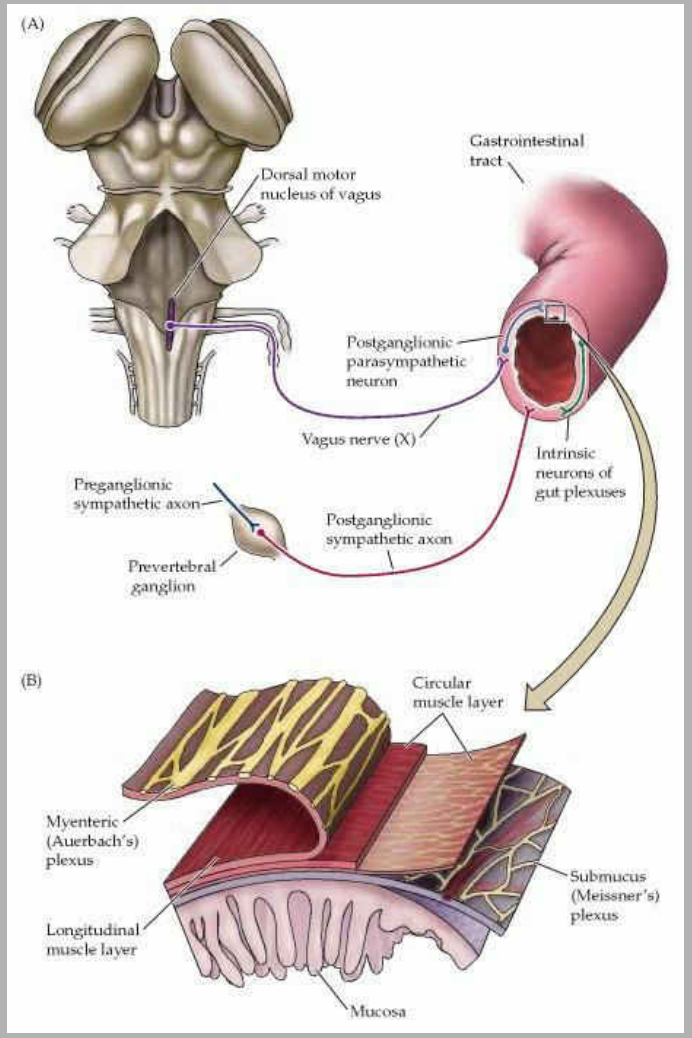
Brain overview



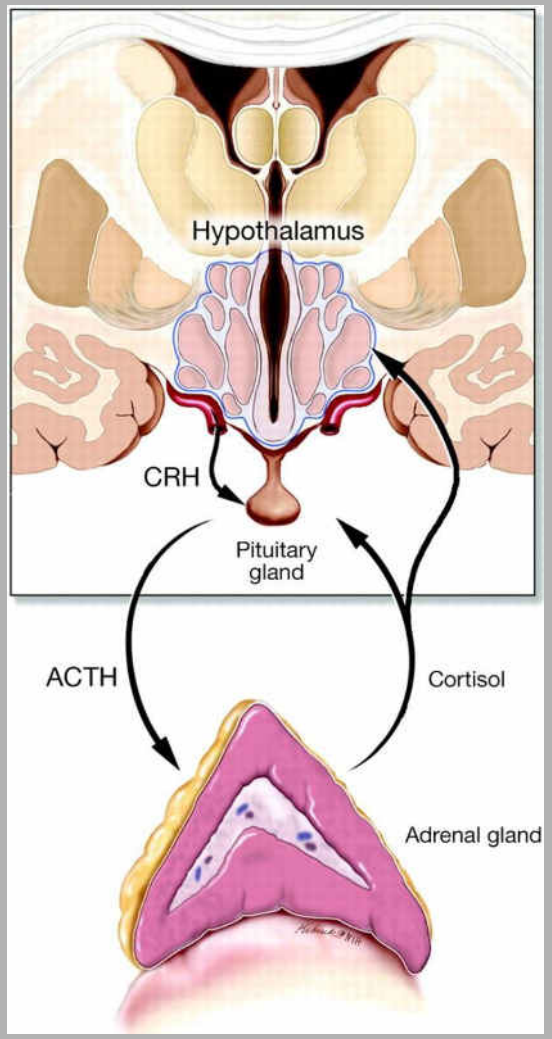
Heart–Brain connection



Gut–Brain connection

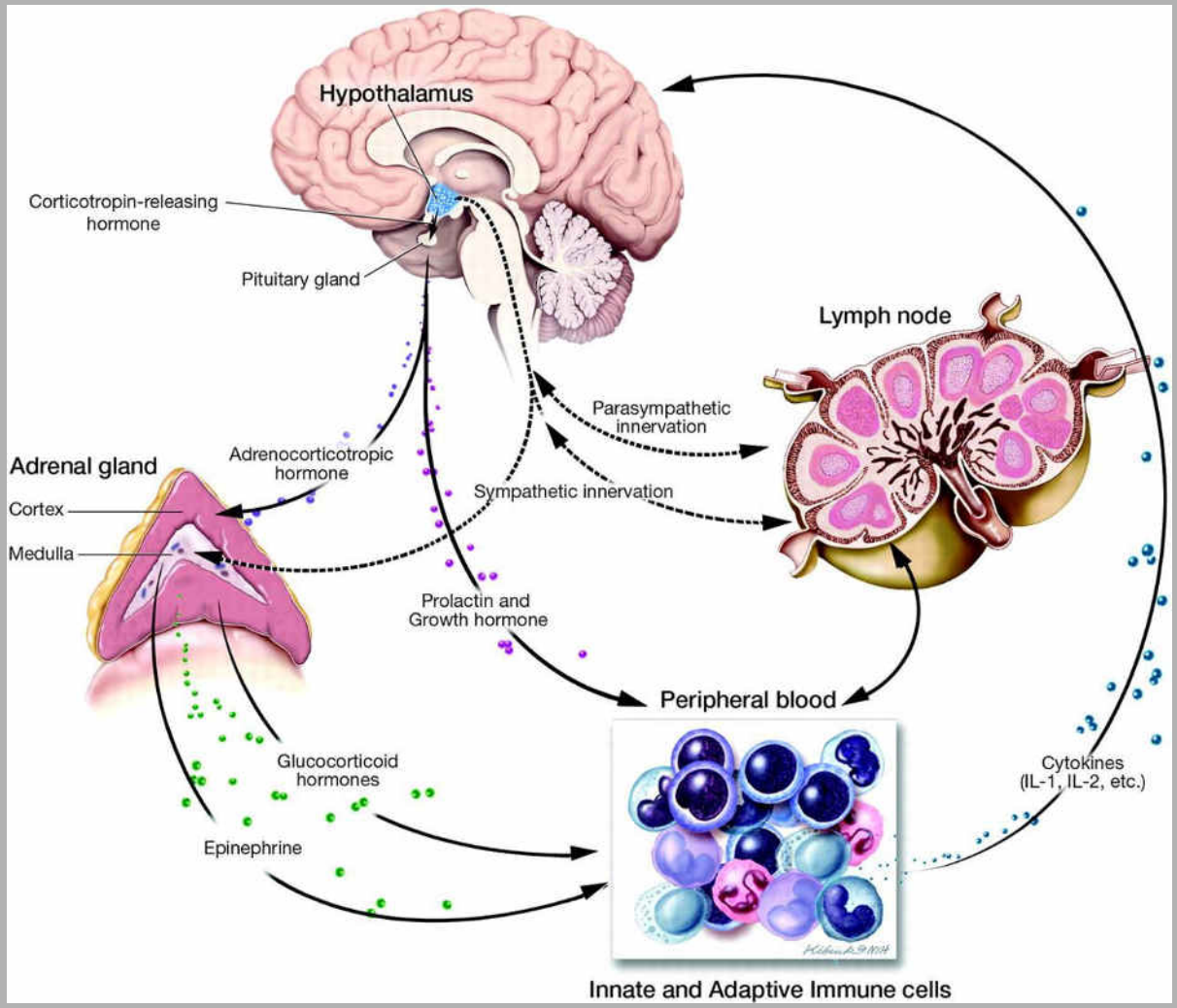


Hypothalamic–pituitary–adrenocortical axis



Lane R. D. et al. *Psychosomatic Medicine* 71,2 (2009), 117–34

Brain–immune system interactions



Lane R. D. et al.
Psychosomatic Medicine
71,2 (2009), 117–34

Manual objectives

- Understanding of different types of traumatic stress
- Focus on children and adolescents but equally applicable to adults
- Update on neurobiology and research
- Development of my treatment model which has evolved over 10 years of treating patients with complex trauma

Manual summary

- Disorders of extreme or ‘toxic’ stress
- Risk factors and outcomes
- Triggers and aetiology
- In utero influences
- Neurobiology (handy take-home model)
- Stress hormones and limbic system
- Stages of Bilateral Affective Reprocessing of Thoughts (BART stages 1–5)

Controversial aspects

- Nature of dissociation
- Visual model of autonomic nervous system
- Bilateral affective reprocessing therapy evidence
- As an integration of head, heart and gut brain reprocessing
- Quintessential model of the brain and neurobiological rationale (2008–2011)

Extreme stress in children

- *'Over the years our bodies become walking autobiographies, telling all those around us friend and foe alike of the minor and major stresses of our lives'* Marilyn Ferguson
- In other words our bodies keep score in our constant battle to process traumatic (wounding) events

Reaction to trauma

- Most children have a normal reaction that resolves over time.
- A minority become overwhelmed:
  - Hyper-reactive due to chronic stress
  - Go on to develop PTSD or
  - Developmental trauma disorder

Trauma in childhood

- Immune and neurological problems:
  - Asthma
  - Allergies
  - ADHD
  - Girls CFS, fibromyalgia, IBS, pelvic pain
  - Headaches
  - GIT problems
  - Dysmenorrheal symptoms

Conditions associated with PTSD

- Depression
- Anxiety
- Substance misuse
- Eating disorders
- OCD
- Dissociative disorders
- Borderline personality disorder

Children in foster care

- Rates of PTSD vary from 12 -40%
  (Kolko et al. *Child maltreatment,* 2010)

- In the general population: the rate for female adolescents is twice that for males
  (Stam, 2007. *Neuroscience and Biobehavioural reviews*)

Following sexual abuse

- 50% met criteria for PTSD (Barlow, 2002)
- 30% of rape victims
- 60% of sexual assault victims in war experience PTSD
- Worldwide massive ongoing tsunami of cases of PTSD

Risk factors

- Trauma type
- Exposure to violence esp. domestic
- Gender
- Age
- Socioeconomic status
- Developmental level
- Past psychiatric history
- Support and acute reaction to trauma

What improves outcome?

- Child's perception of family support crucial in moderating the disorder.
- Once established by one month persist unless targeted effective trauma-focused therapy is received.
- Trauma-focused therapy necessary to improve psychological well being and establish resilience leading to recovery.

Symptoms

- First month after trauma termed acute stress disorder or ASD >50% go onto develop PTSD
- Late onset PTSD is the norm:
  - Cumulative effect of exposure
  - Fear conditioning
  - Kindling
  - Sensitization

Children

- Regression (thumb sucking, bedwetting
- Mute or immature speech)
- Nightmares (sheer terror monsters)
- Sleep disturbances
- Reenactment through trauma play
- Hyperarousal with a startle response
- Irritable, angry, detached
- Memory clouded impaired concentration

Adolescents

- Sense of foreshortened future
- Forecast future in negative terms
- Regression :
  - High risk behaviour
  - Suicidality
  - Substance misuse
  - Non suicidal self-injury
  - Depressive withdrawal

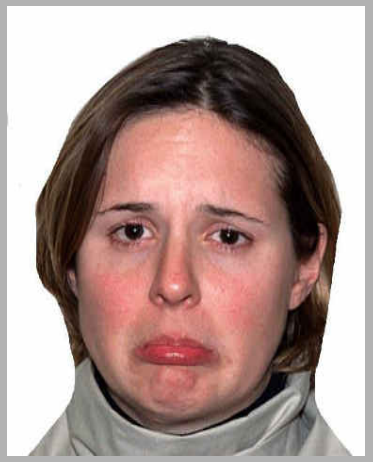
Anticipatory stress response

- Feeling based on emotions:
  - Fear
  - Distress
  - Anger
  - Rage
  - Humiliation
  - Shame
  - Despair
  - Panic

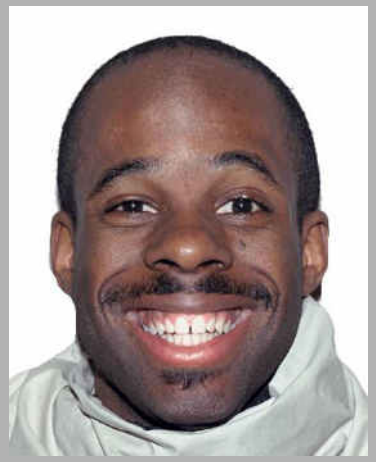
Different emotions and facial expressions

Disgust

Anger



Sadness

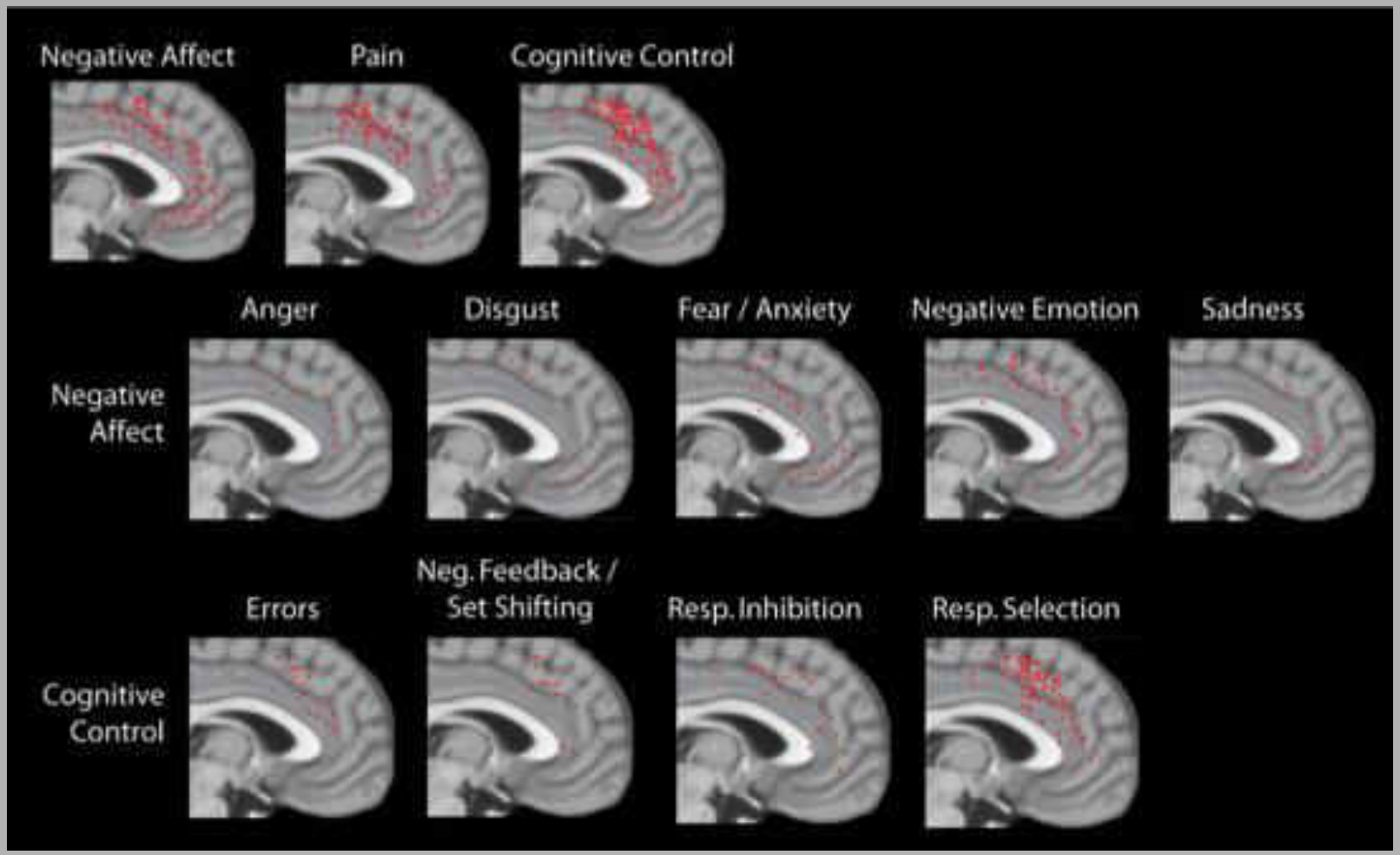


Happiness

Fear

Surprise

fMRI of affect and cognition



Shutdown scale for dissociation

1. Fainting
2. Dizziness/transitory blindness
3. Transitory deafness or changed acoustic perception
4. Numbness
5. Transitory paralysis
6. Analgesia
7. Heavy and tired

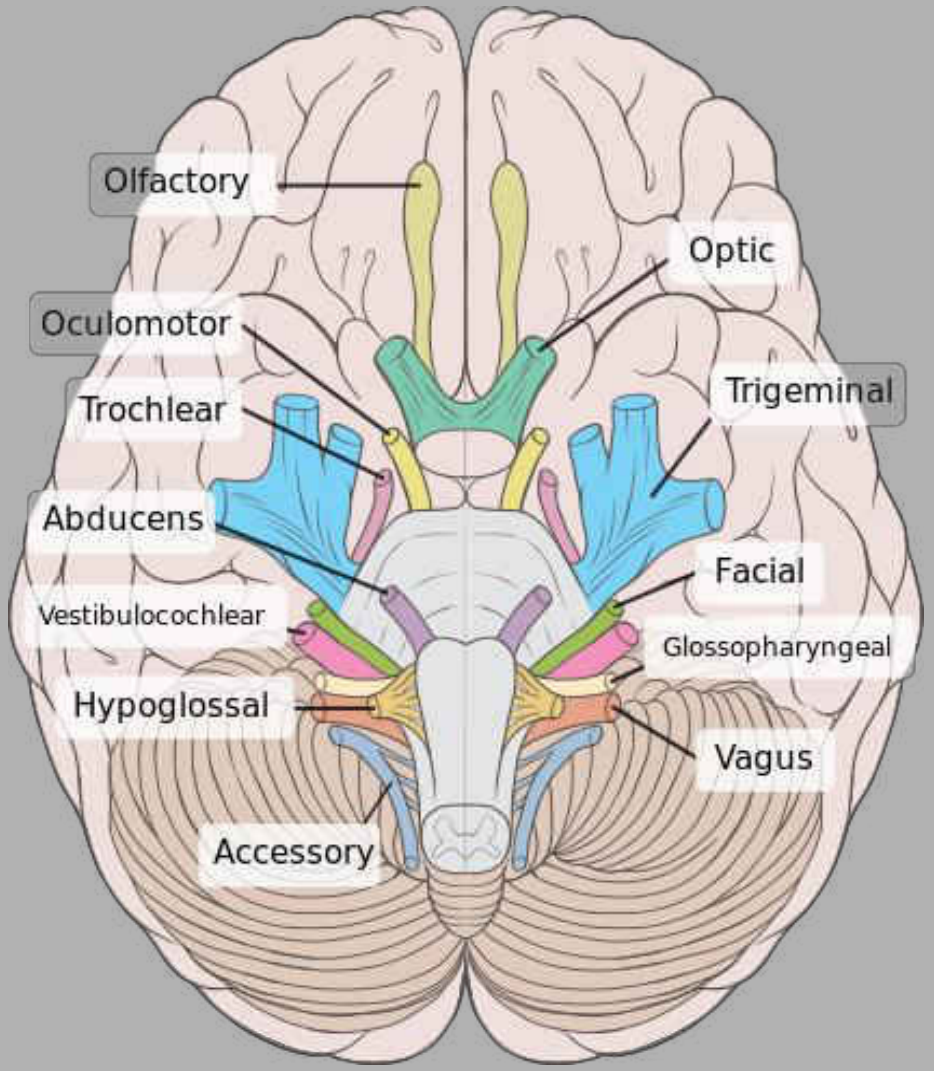
Shutdown scale for dissociation, continued

9. Tension
10. Feeling of nausea or cold sweat
11. Ever felt as though you were outside your body
12. Moments when you were unable to speak or could only whisper for a period of time
13. Ever felt suddenly weak and warm

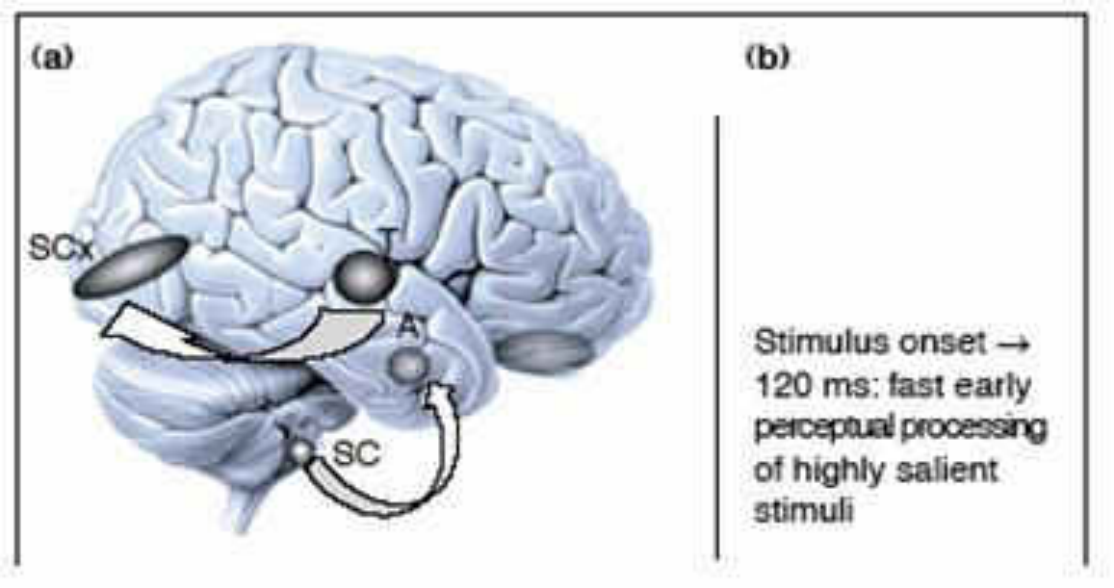
Triggers

- Place
- Smell
- Sensation
- Texture
- Taste
- Touch
- Anniversary
- Memory thought or feeling

Cranial nerves origin from stem of brain



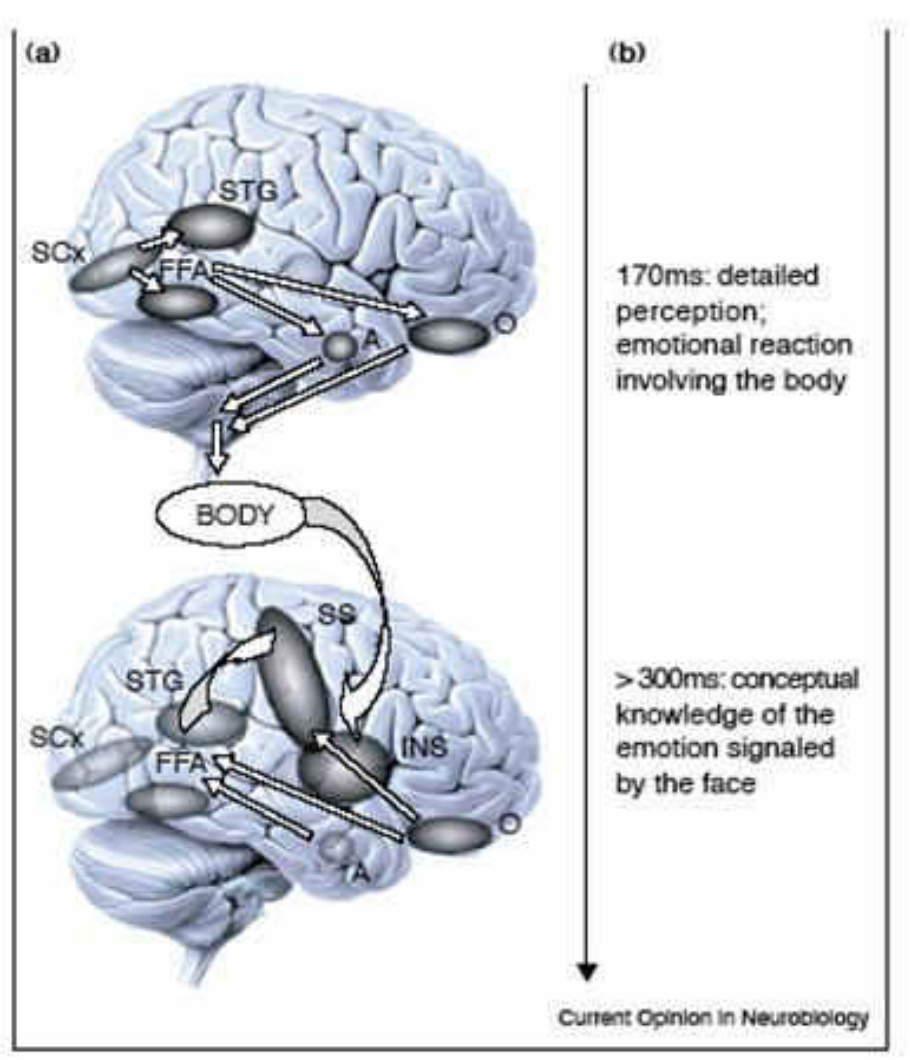
Different neural systems at different time points: amygdala & OFC



Early processing of salient stimuli. Subcortical route feed-back to OC.

Bottom-up process

Different neural systems at different time points: amygdala & OFC continued

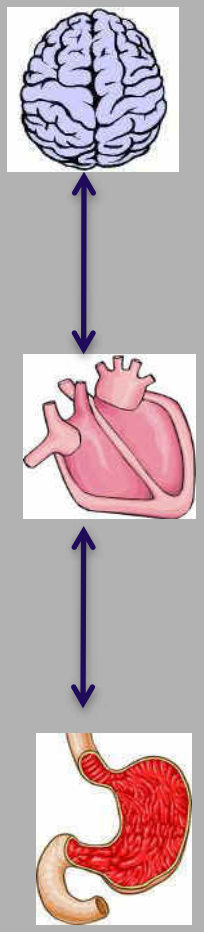


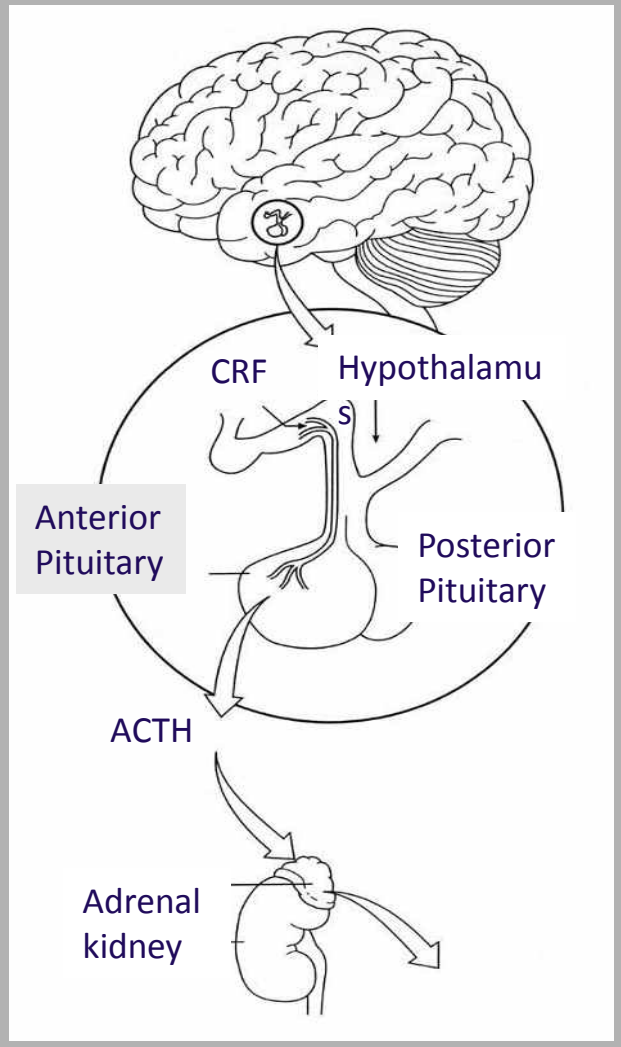
Detailed perception through core system and emotional reaction (OFC).

Interaction between visual and somatosensory areas in recognition of facial emotion, and possible simulation.

Top-down process

PTSD: hormonal changes



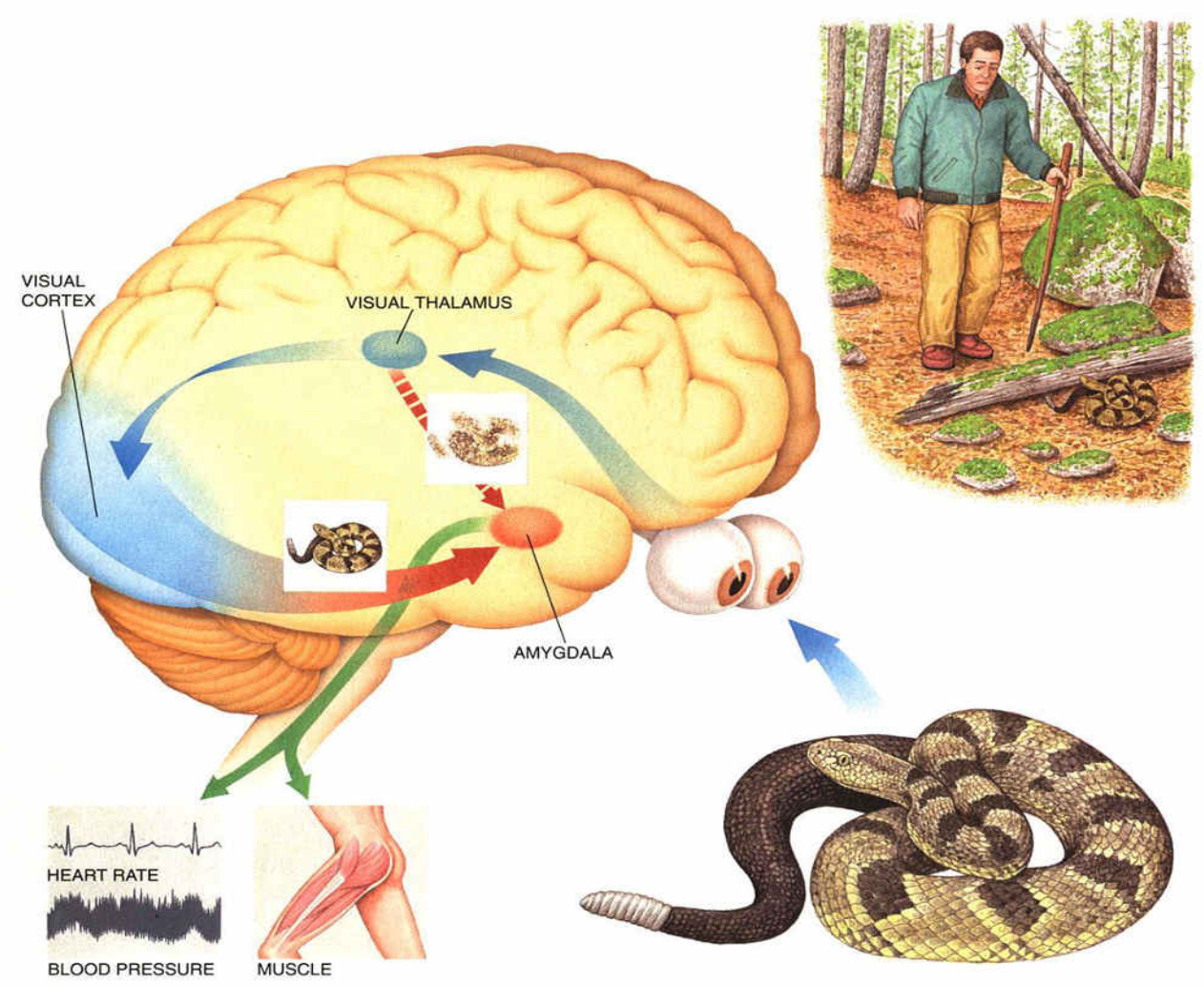


– Norepinephrine

Chronic stress

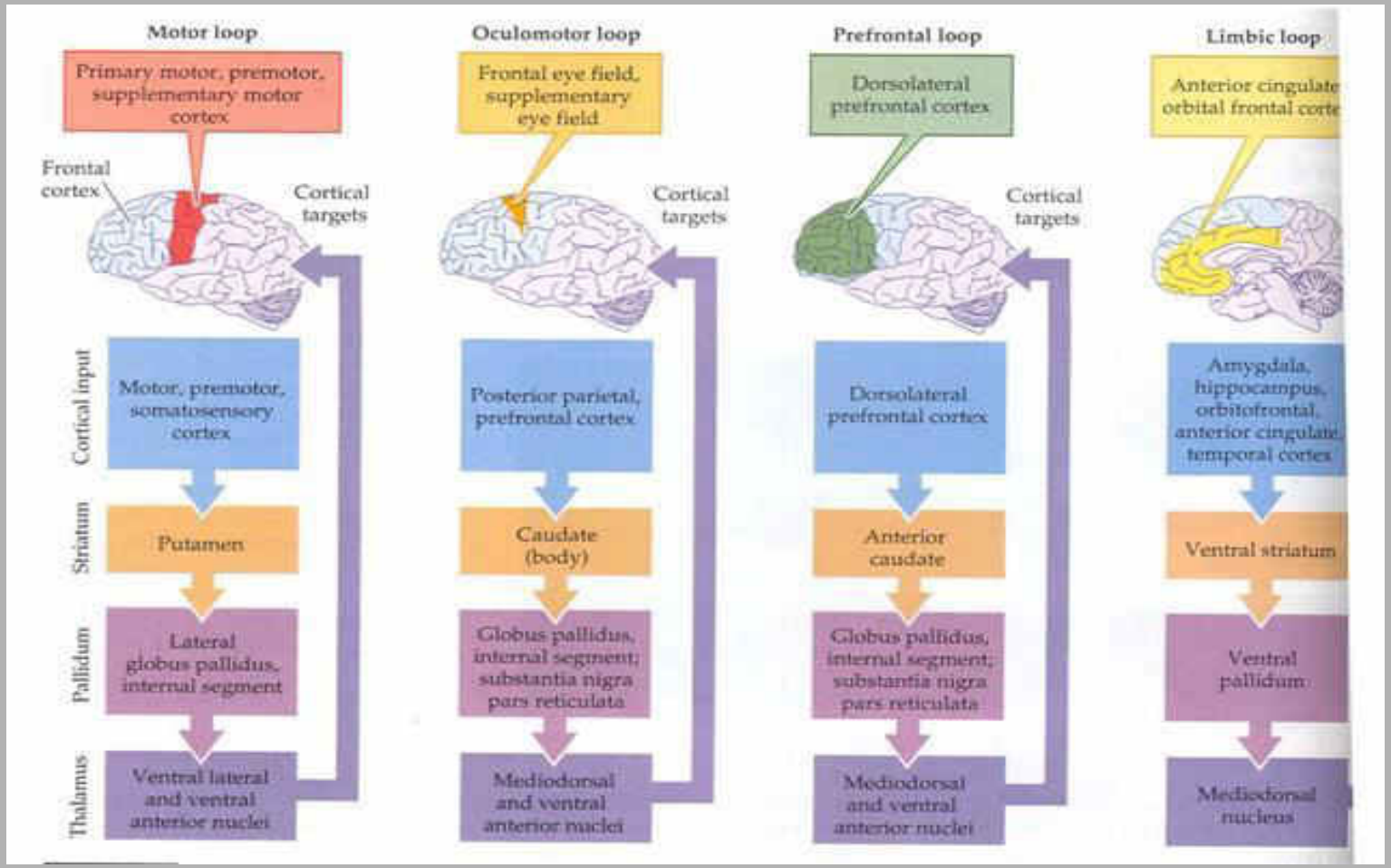
↑ Cortisol

Classical triggering response



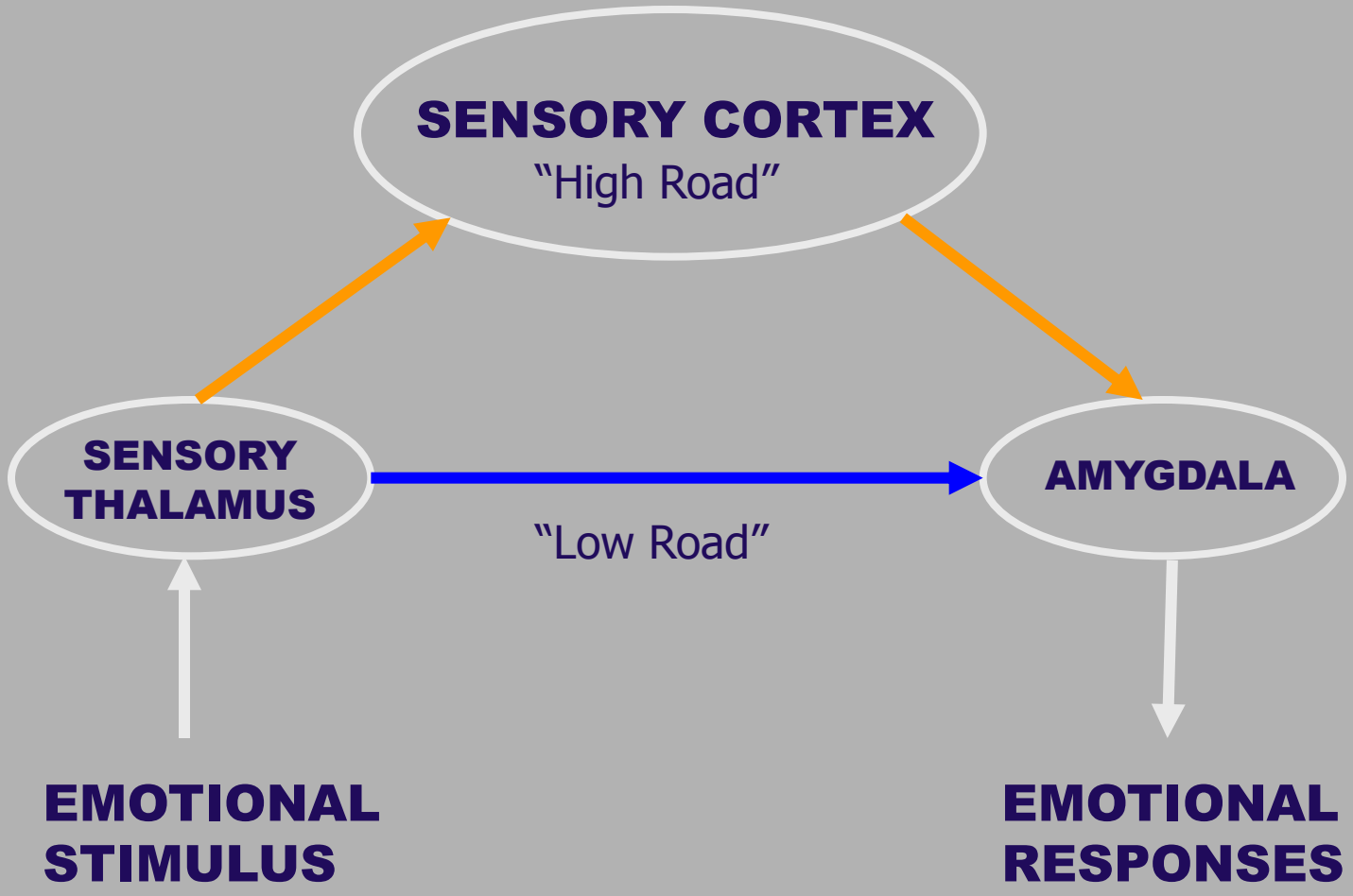
LeDoux,
Scientific American, 1994

The brain's segmented processing capabilities

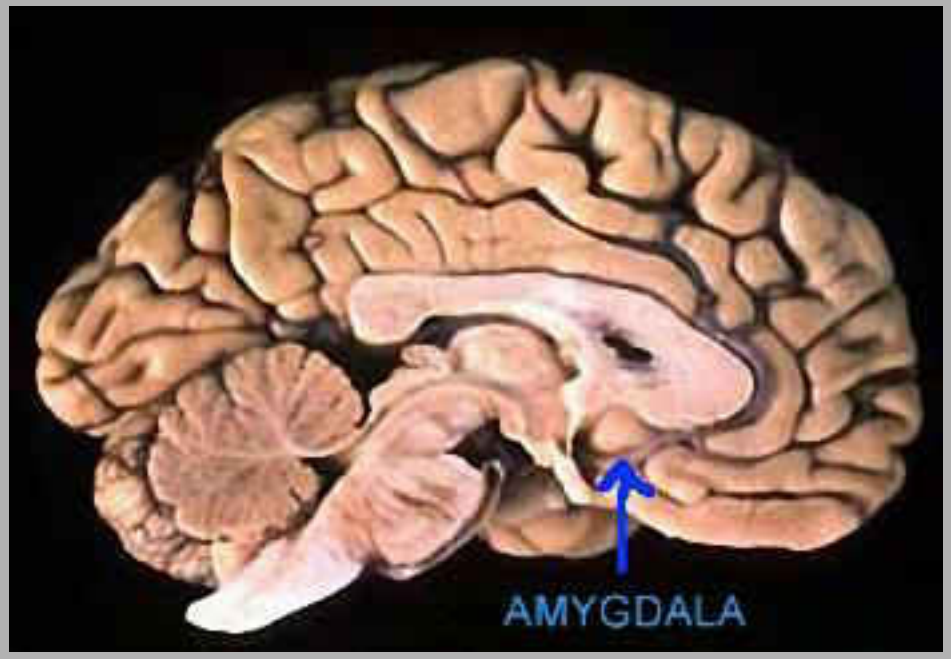


From *Scientific American*

Psychotherapy: roads to processing



Amygdala



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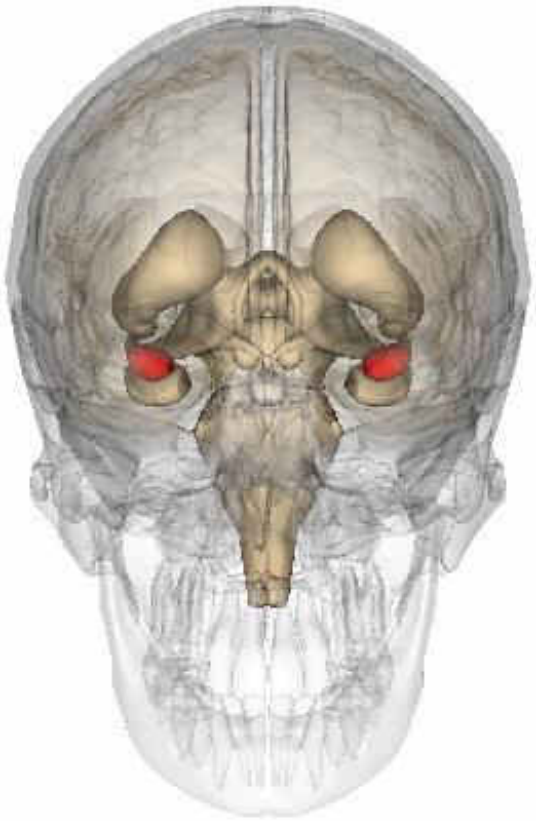
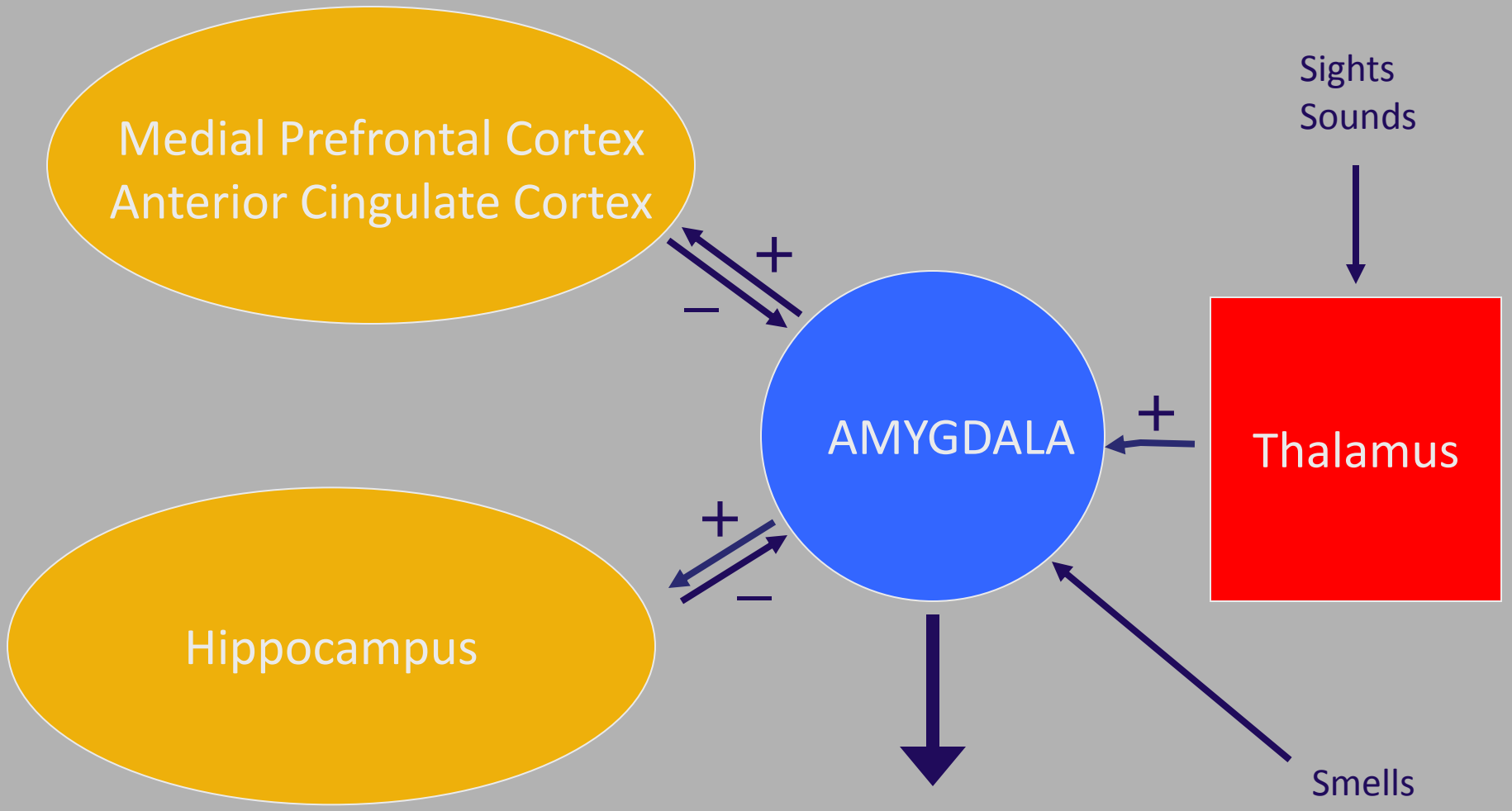


Working with tsunami victims

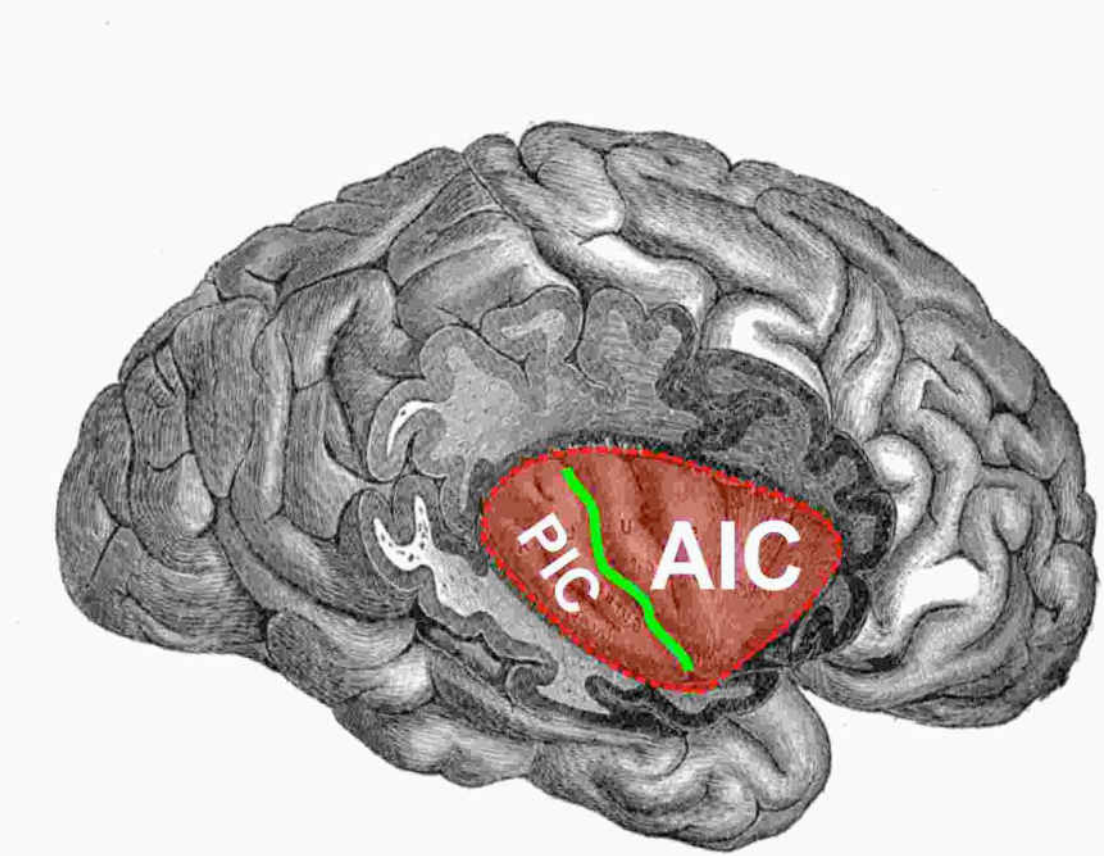
Coordination of threat response



Institute of Medicine

"…scientific evidence on treatment modalities for PTSD does not reach the level of certainty that would be desired for such a common and serious condition among veterans… additional high quality research is essential for every treatment modality."

Insular cortex



Processing of internal bodily signals (interoception).

Integration of mental map and sensory information to create sense of self.

My Dissociation Model (2015)

Rapids

RAPIDS *R*acing thoughts
*A*ffective dysregulation
*P*artitioned personality
*I*mpulsivity *D*istress
*S*uicidality

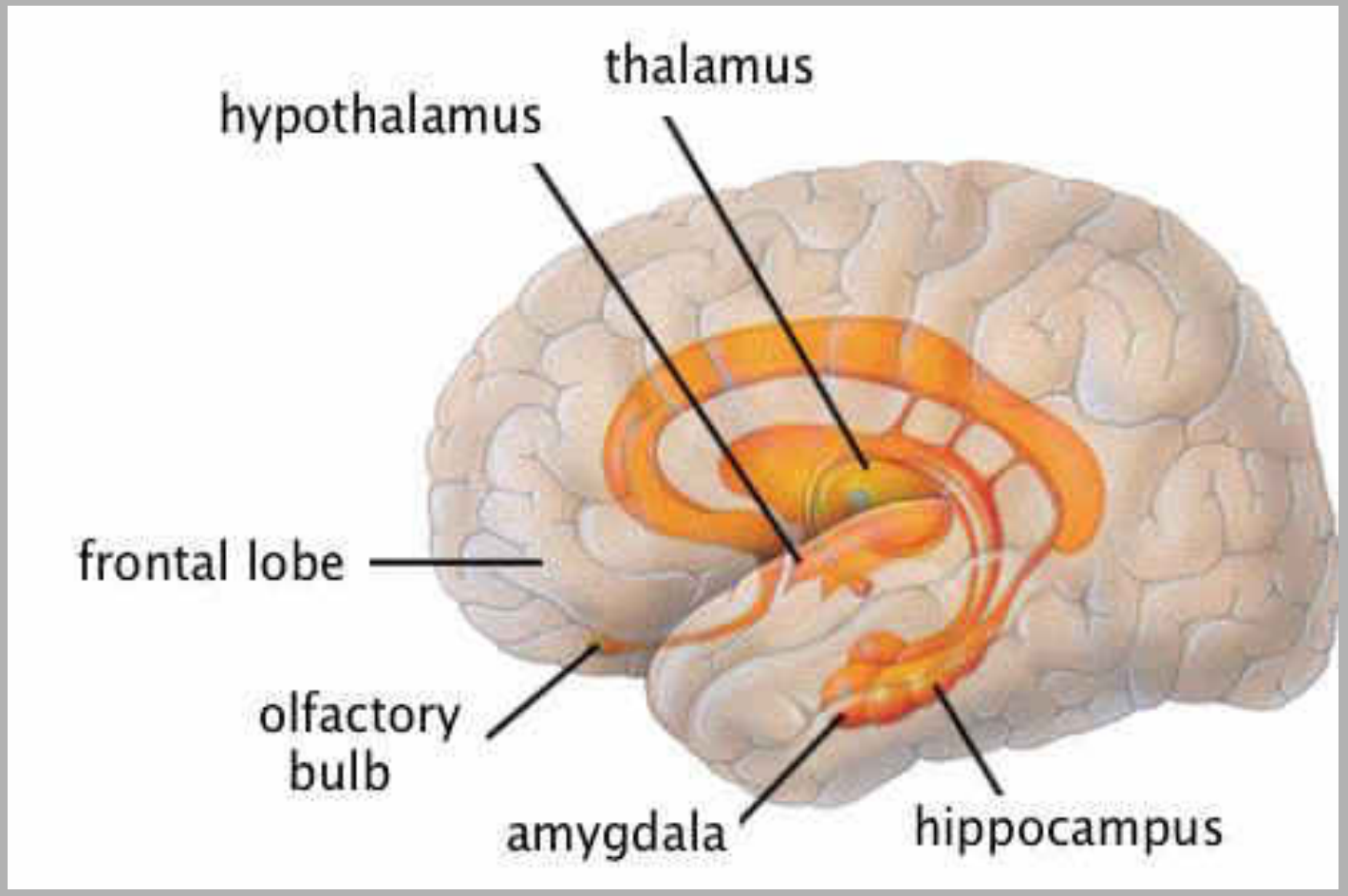
Waters

WATERS *W*indow of
*A*ffect *T*olerance
*E*motions *R*egulated and
*S*tabilised

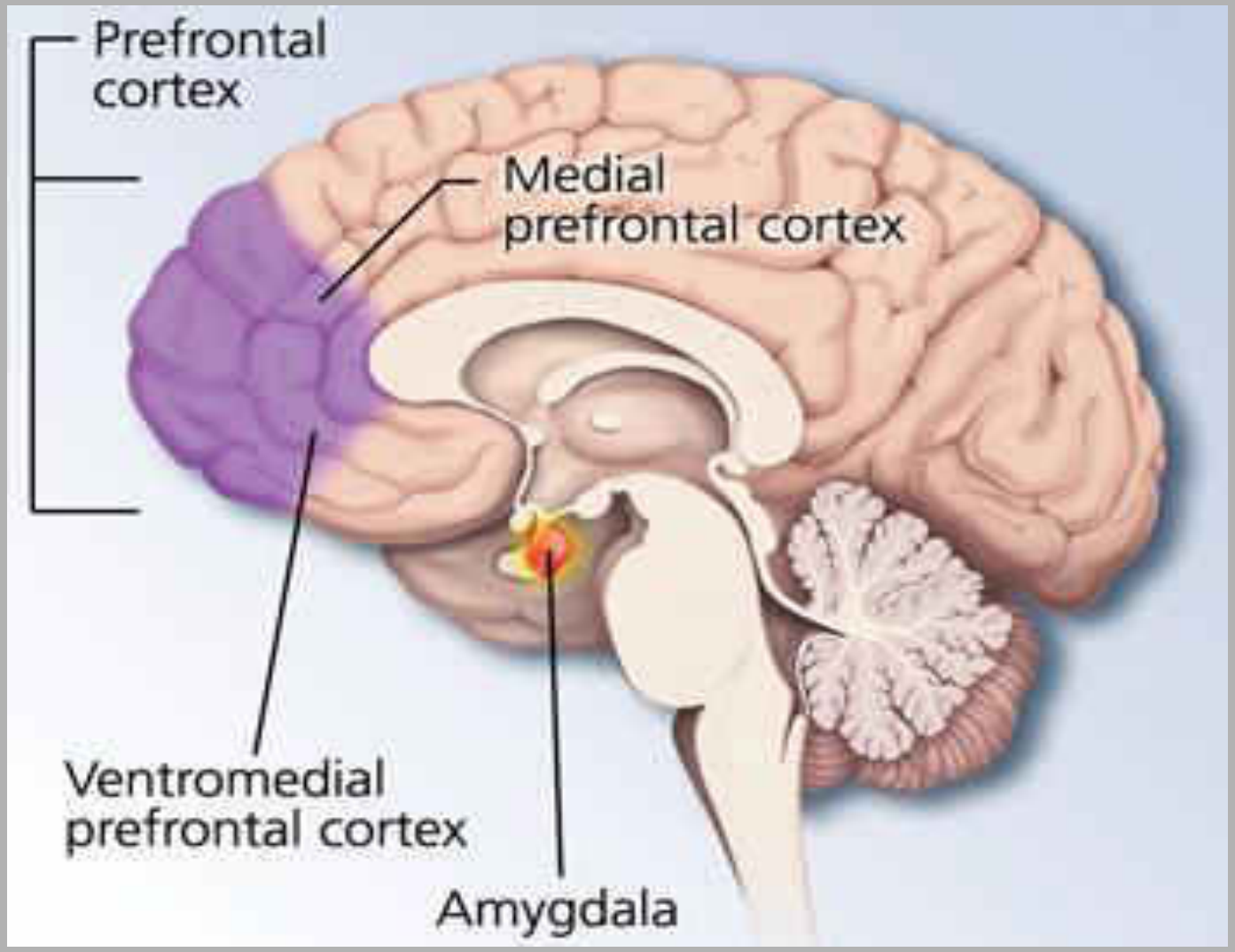
Frozen

FROZEN *F*reeze
*R*eaction *O*blivious to
the outside world
*Z*onked out *E*motionally
*N*umb

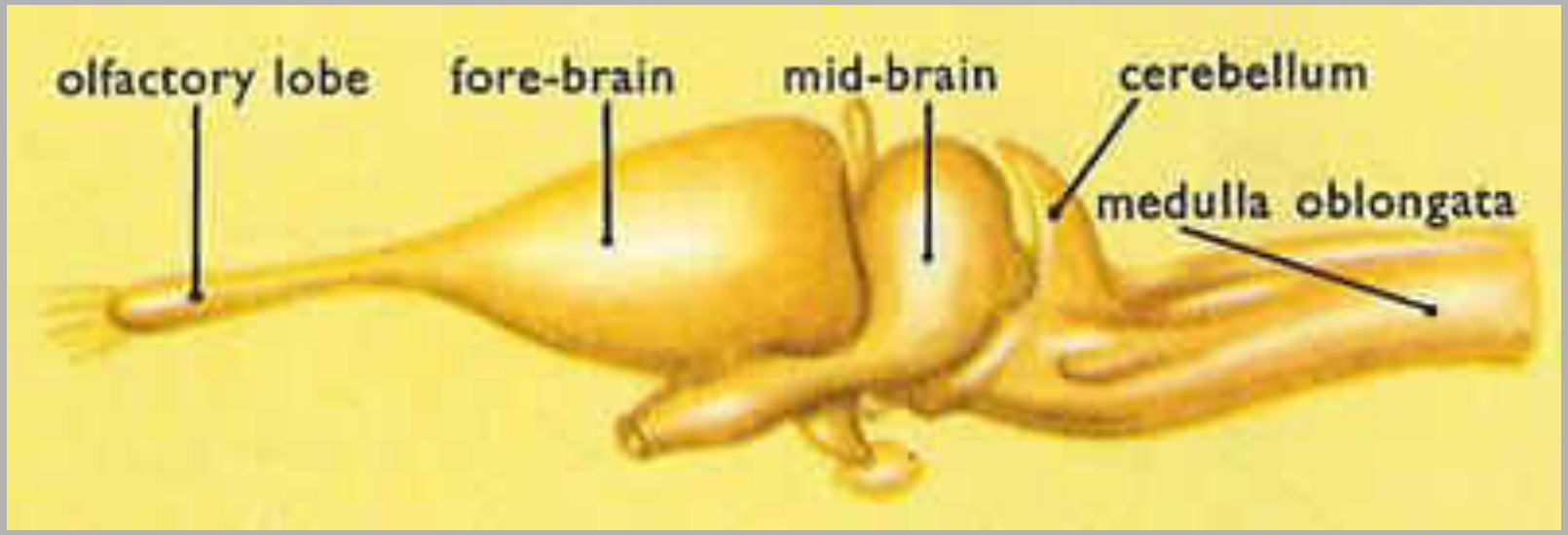
Key limbic structures



Brain structures involved in dealing with fear and stress

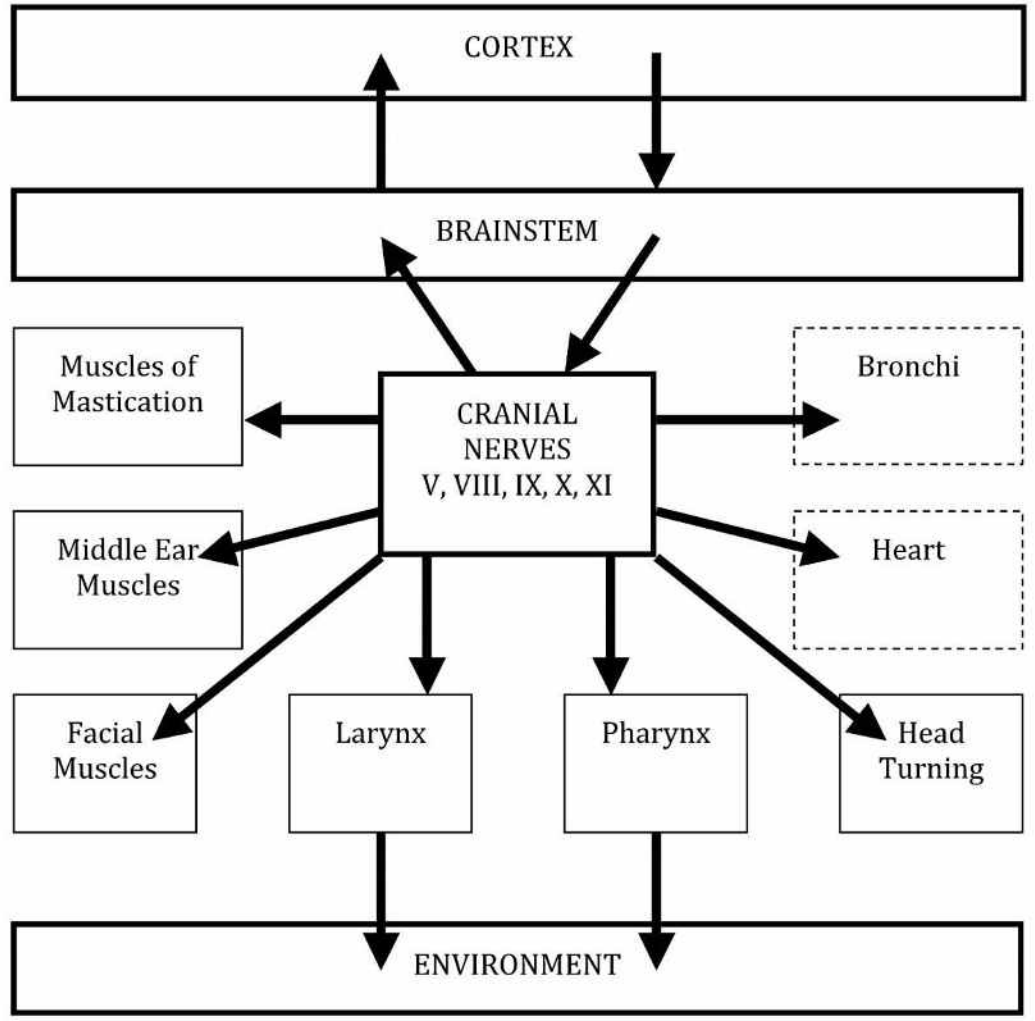


Reptilian brain

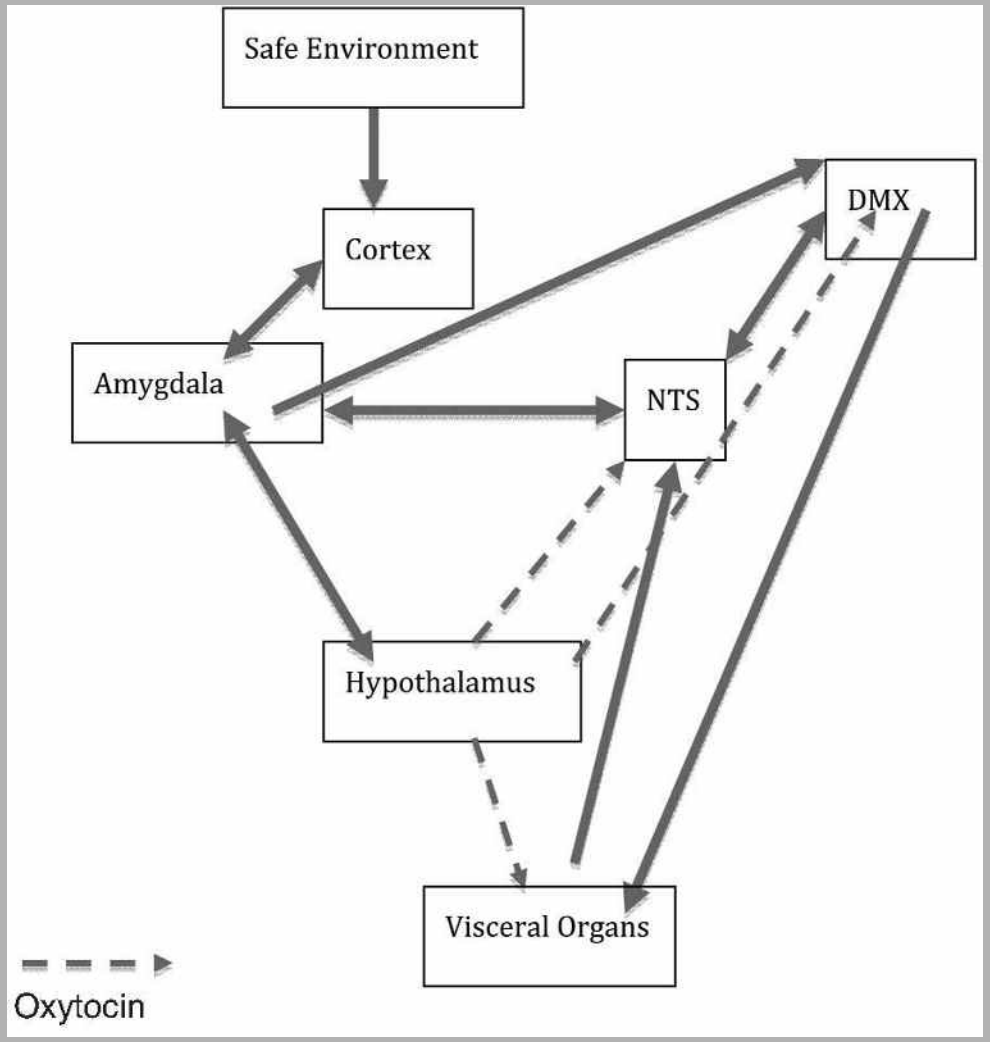


Note similarity to our brainstem which is engaged when threatened either externally or in our imagination.

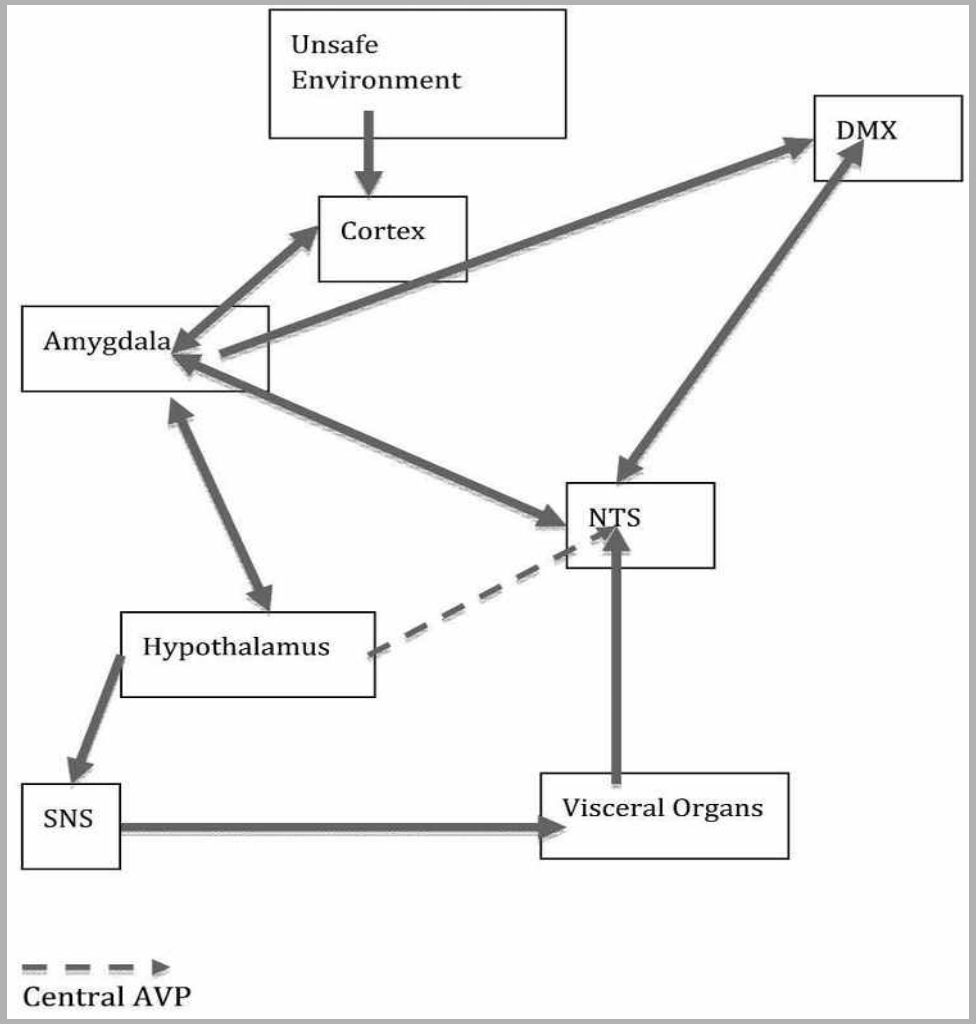
Relationship between the cortex, brainstem and environment



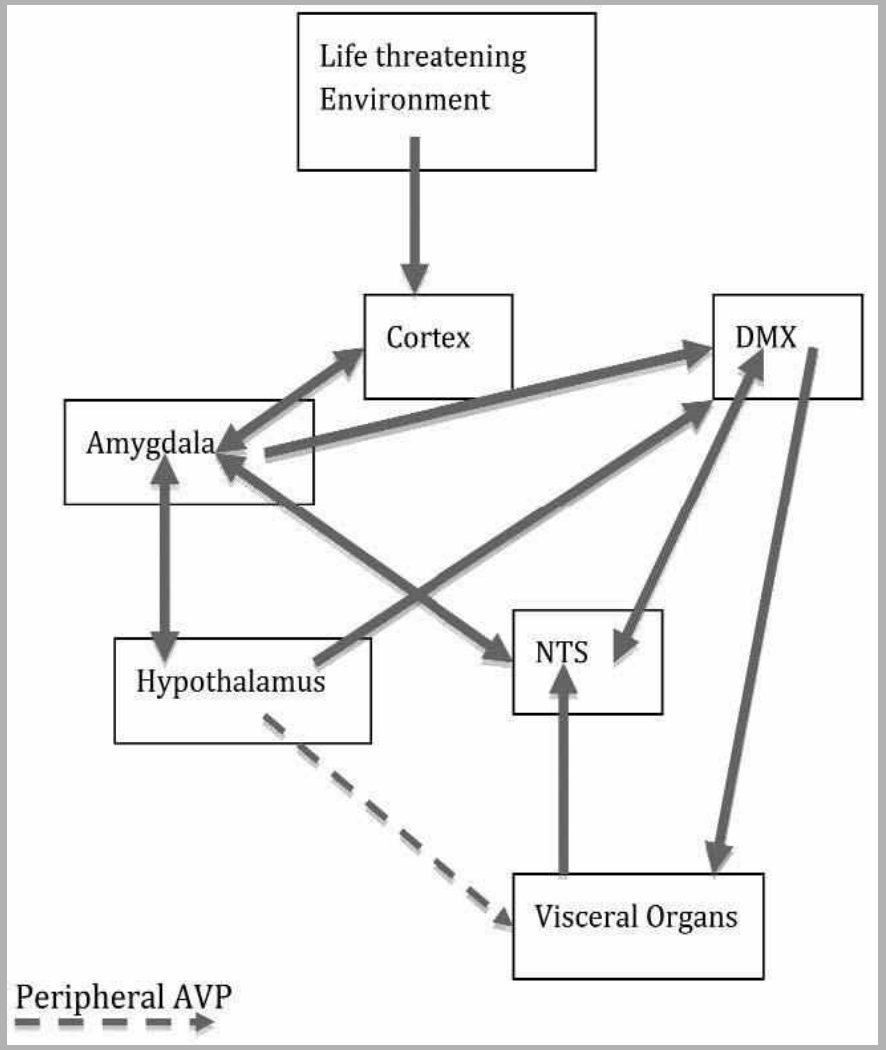
Regulation of DVC in safe environment



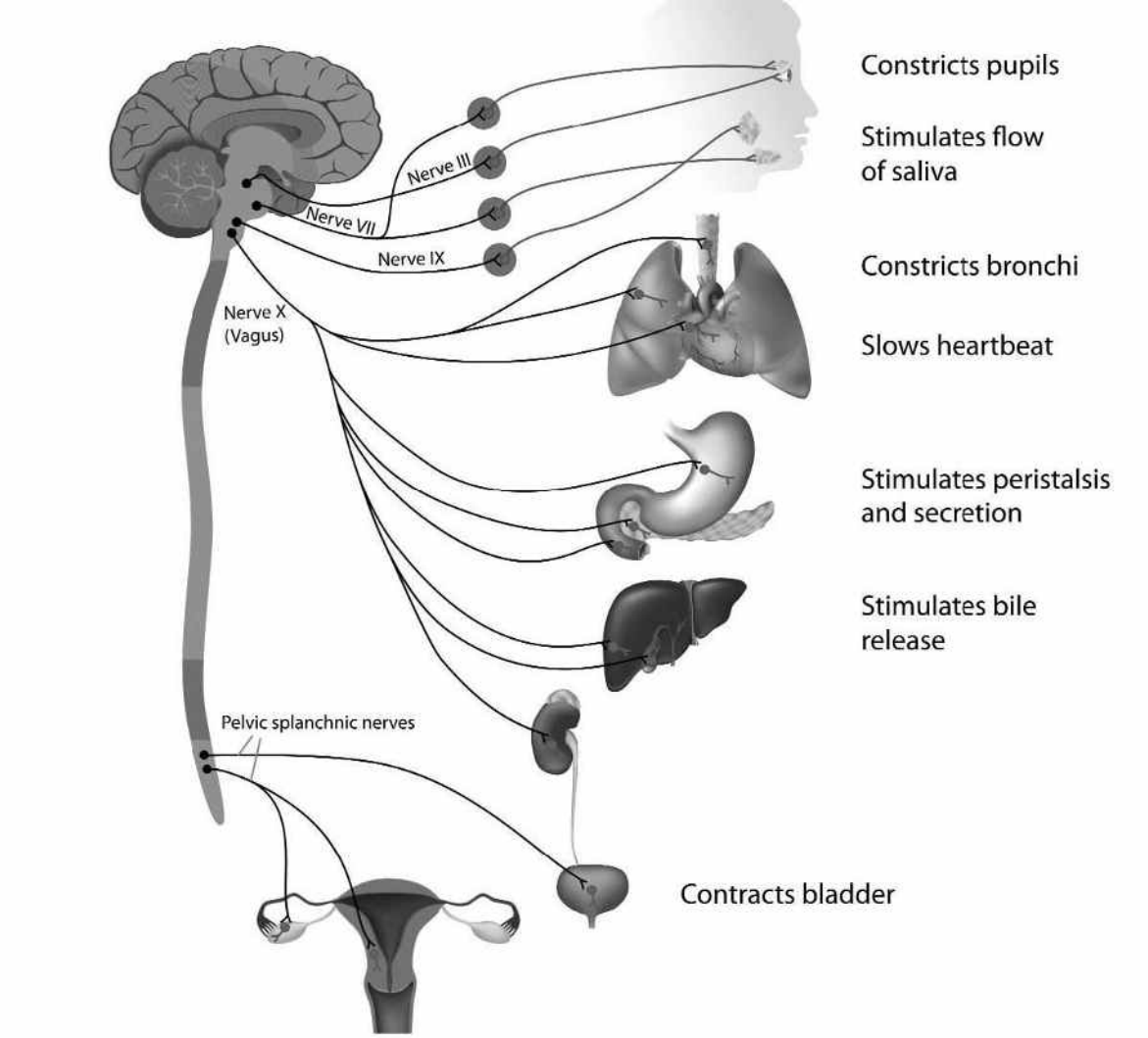
Regulation of DVC in unsafe environment



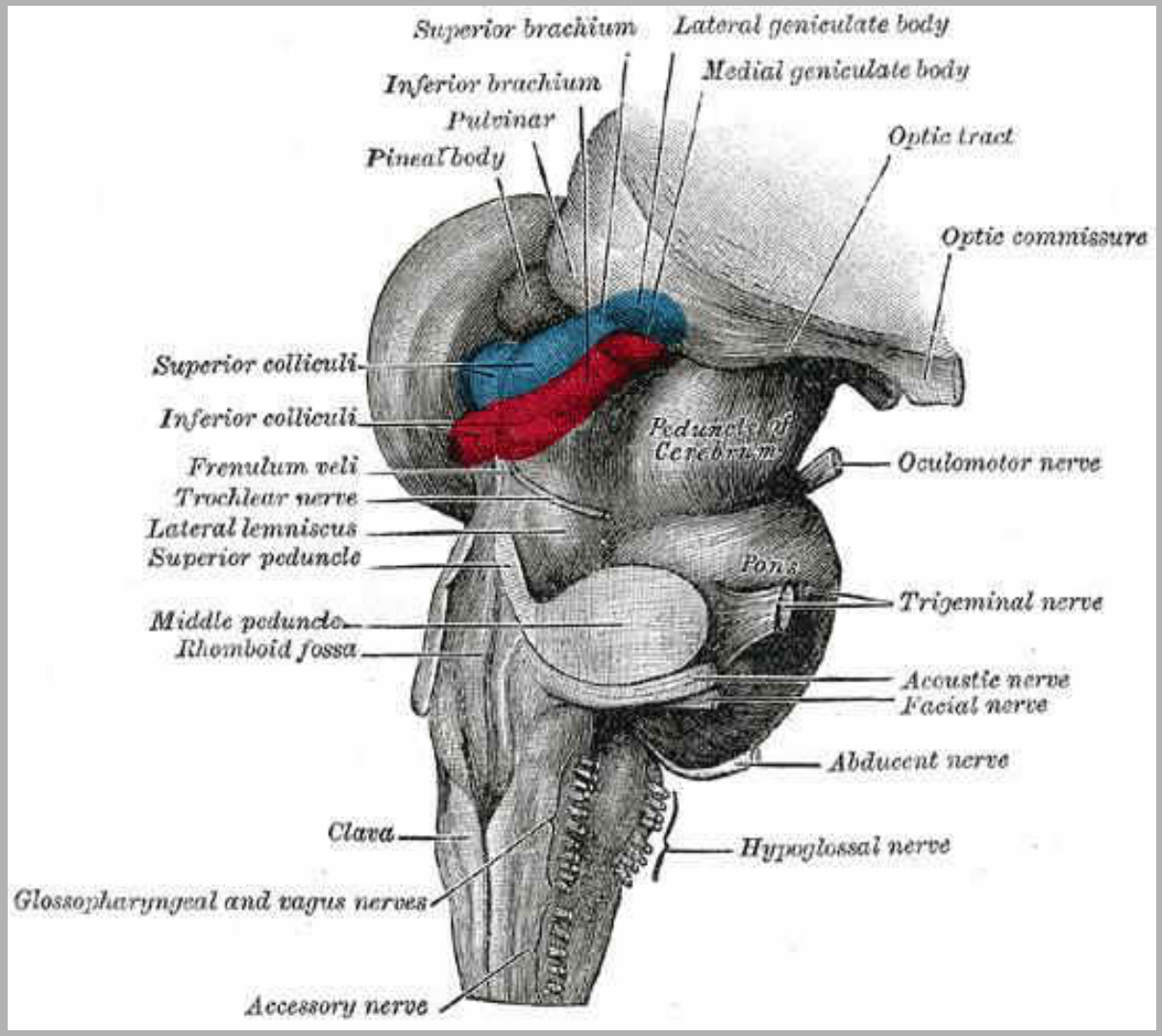
Regulation of DVC in life threatening environment



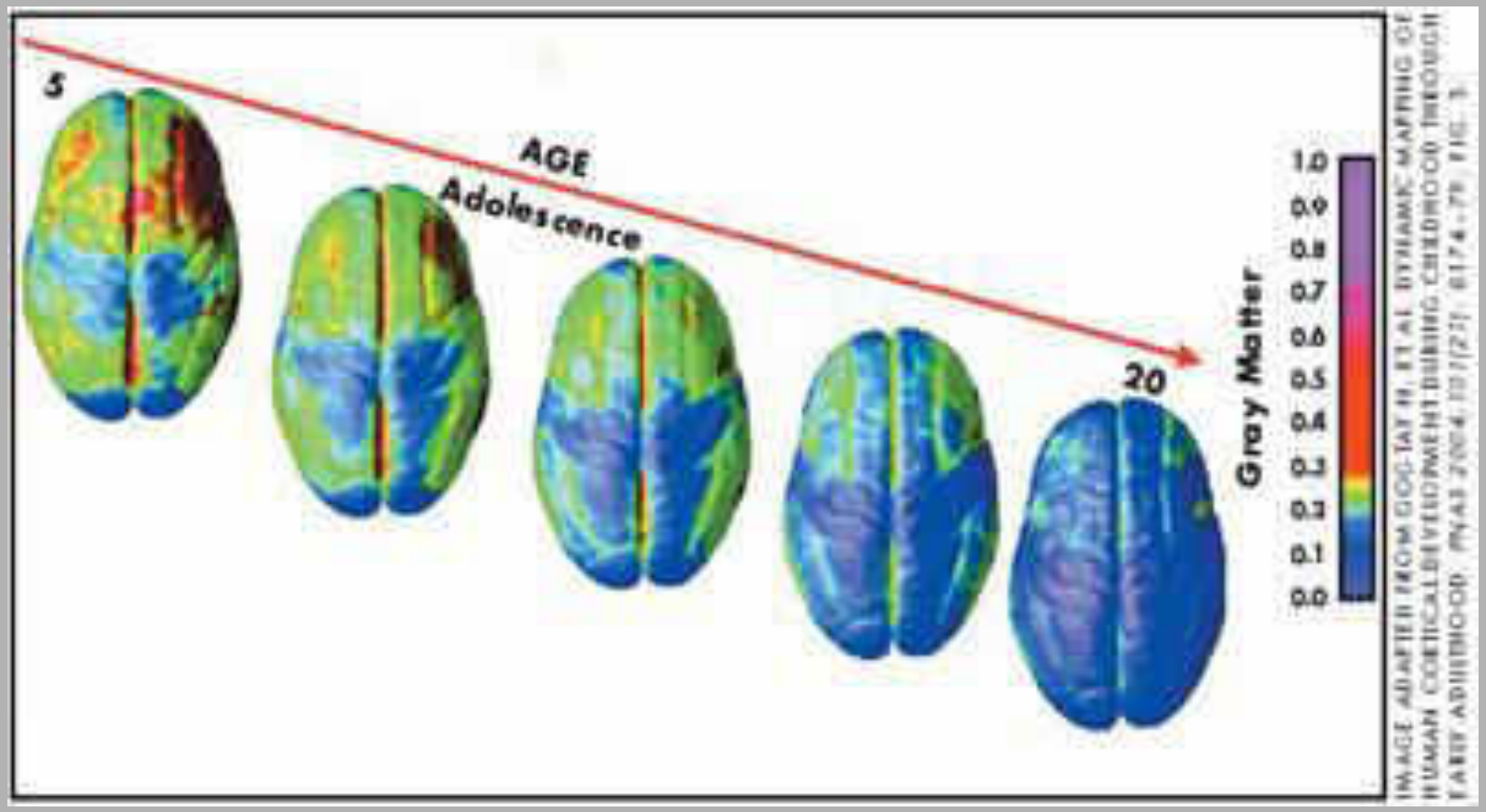
Parasympathetic system



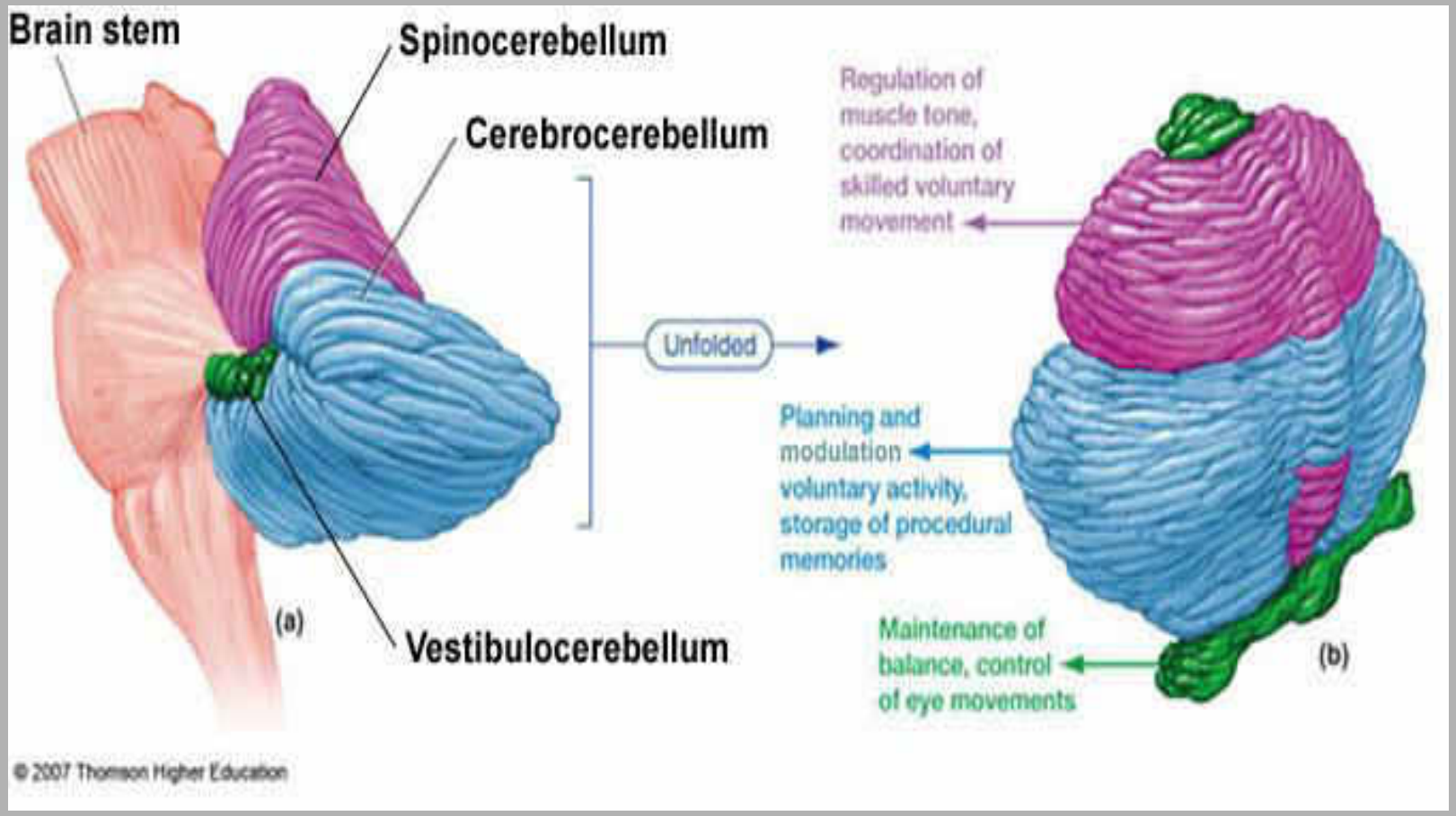
The brain stem



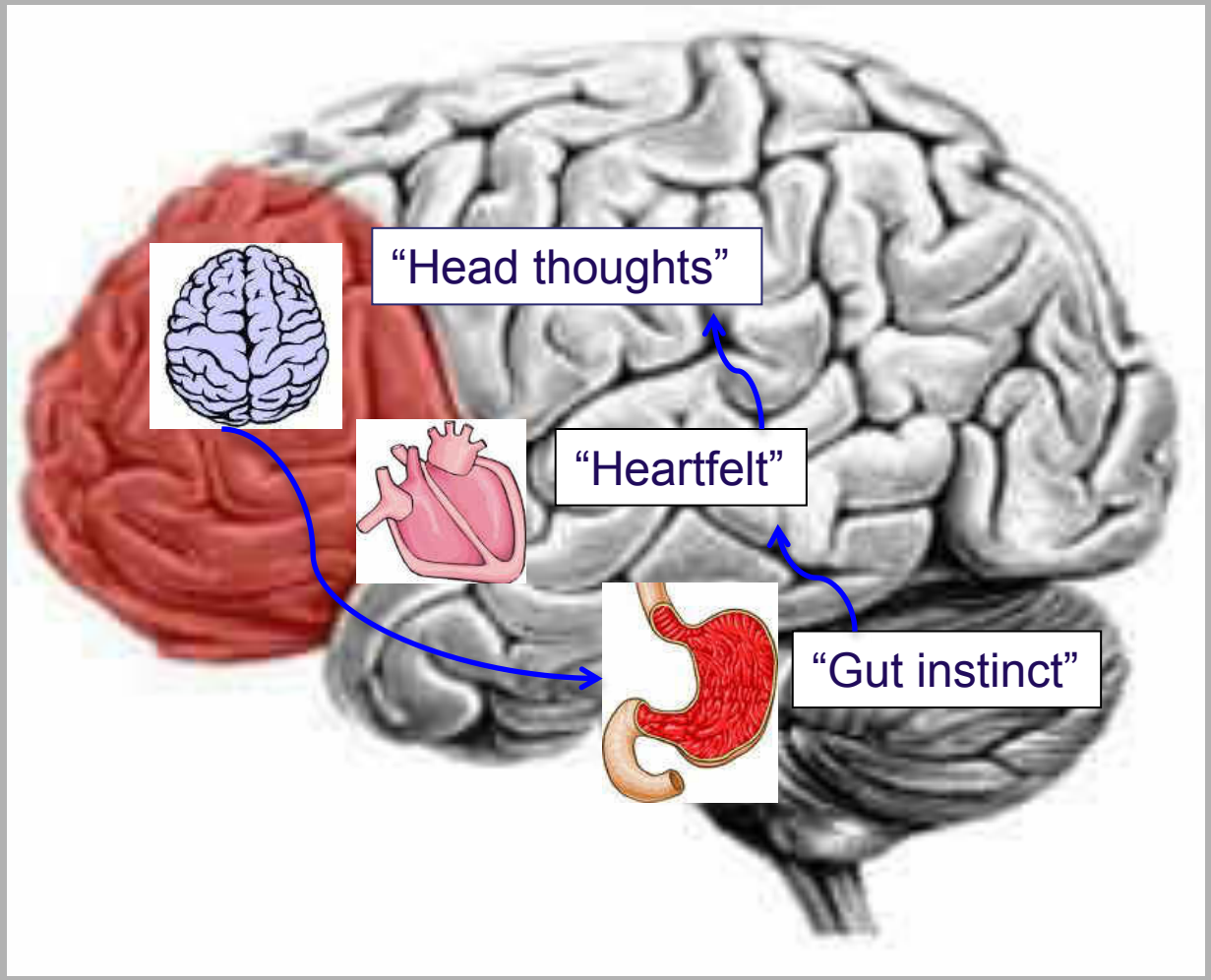
Adolescent brain development



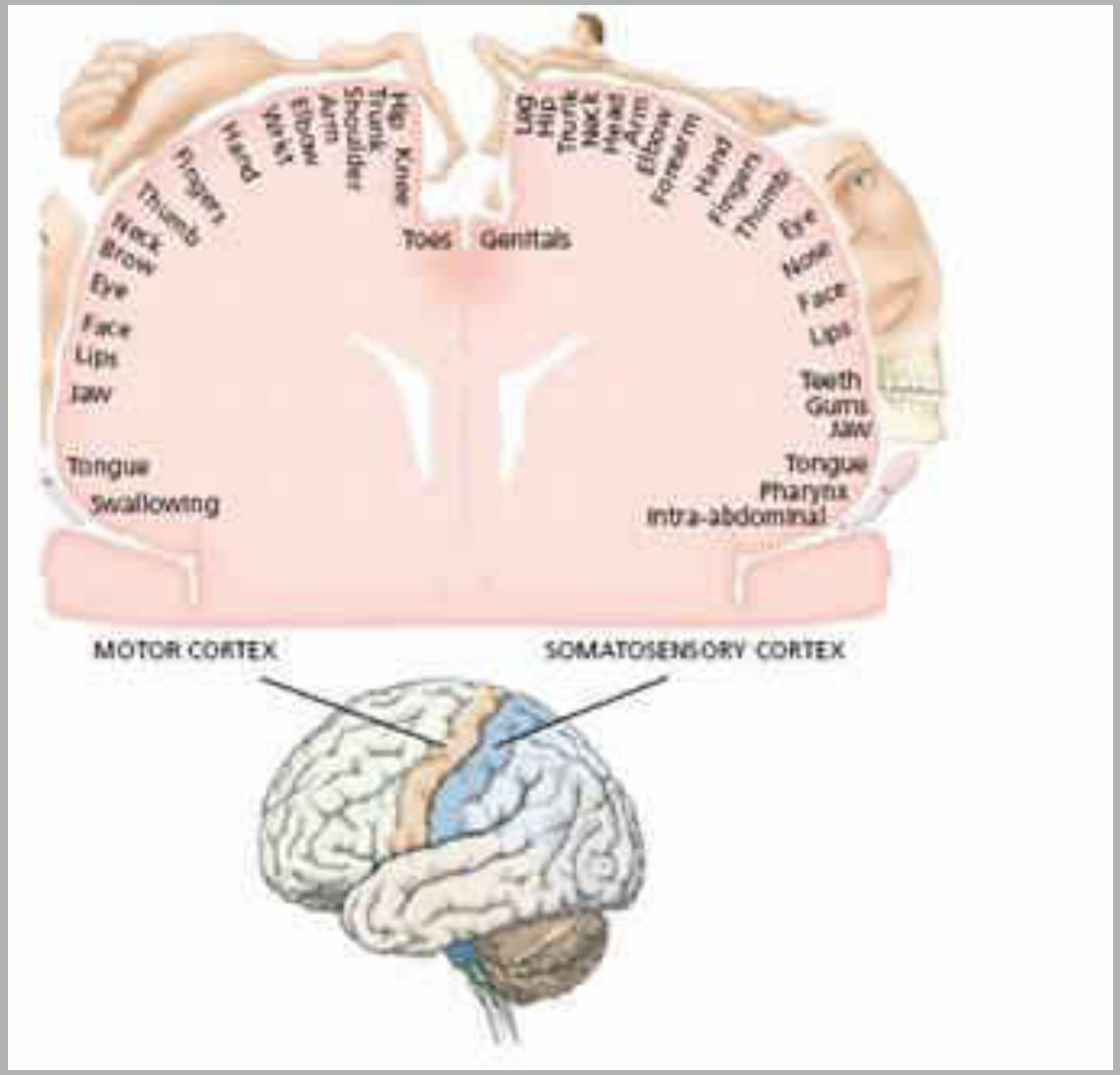
Cerebellum (little brain)



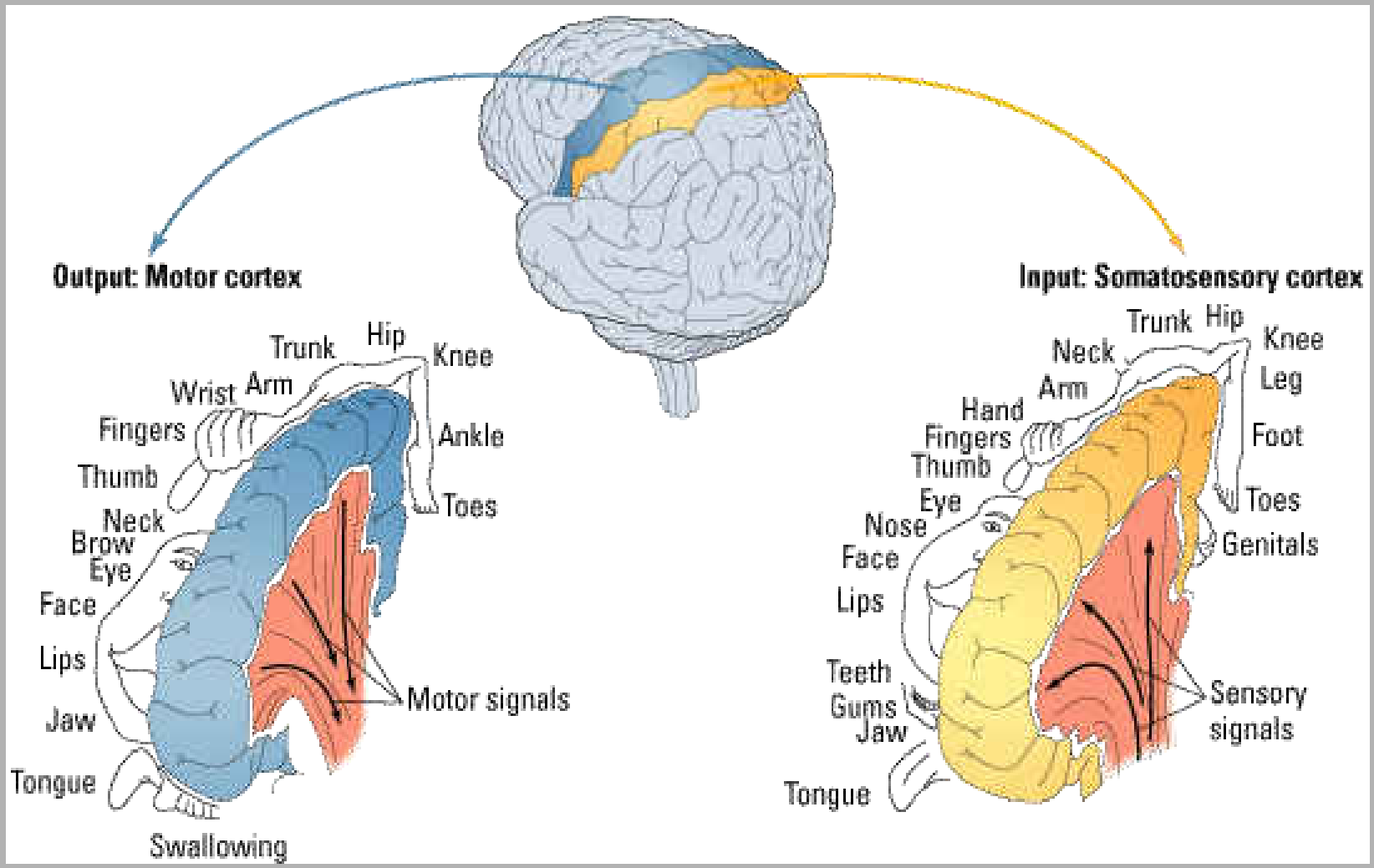
Three brains in one



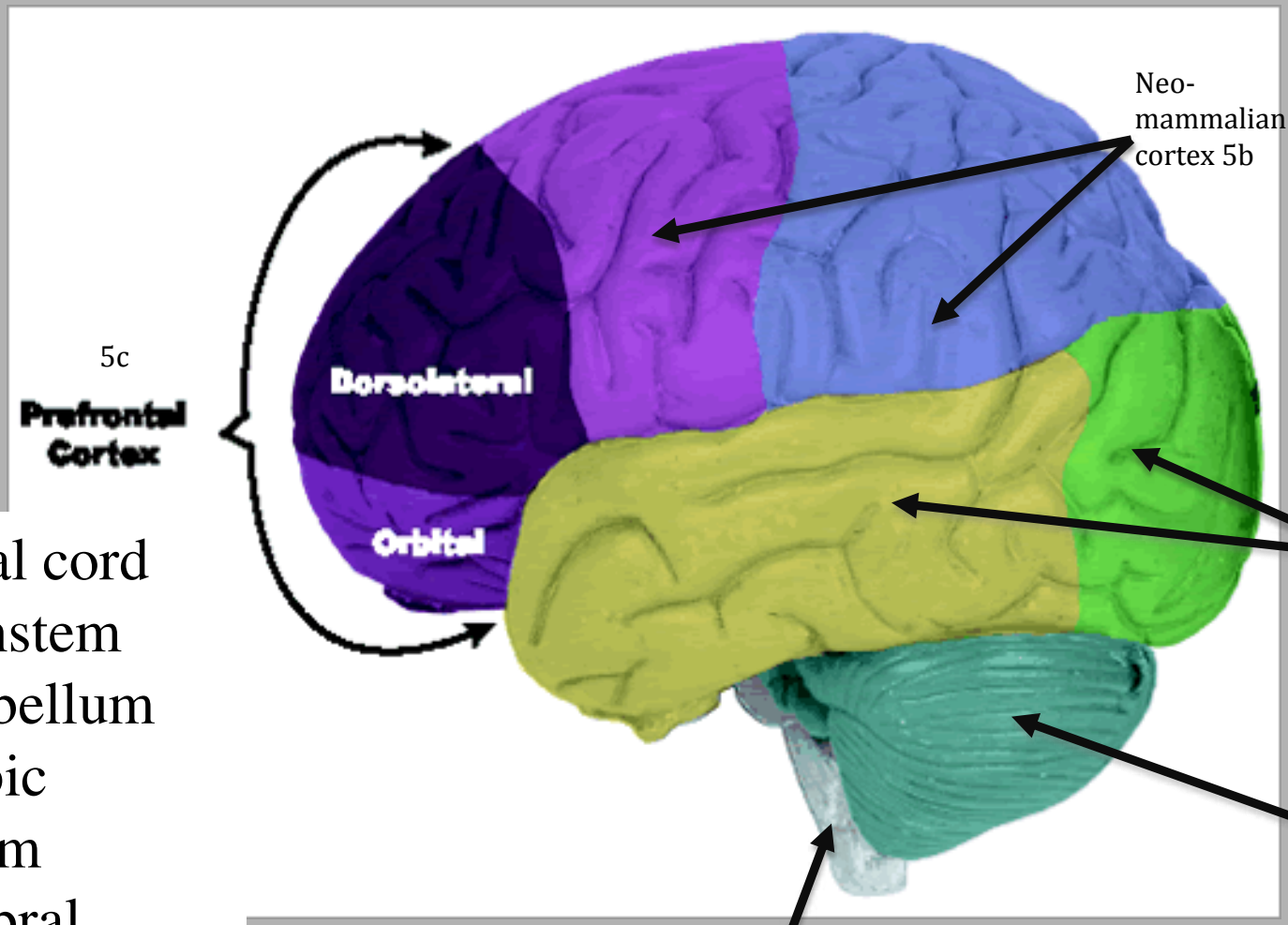
Interoceptive body maps



Sensory input and motor output



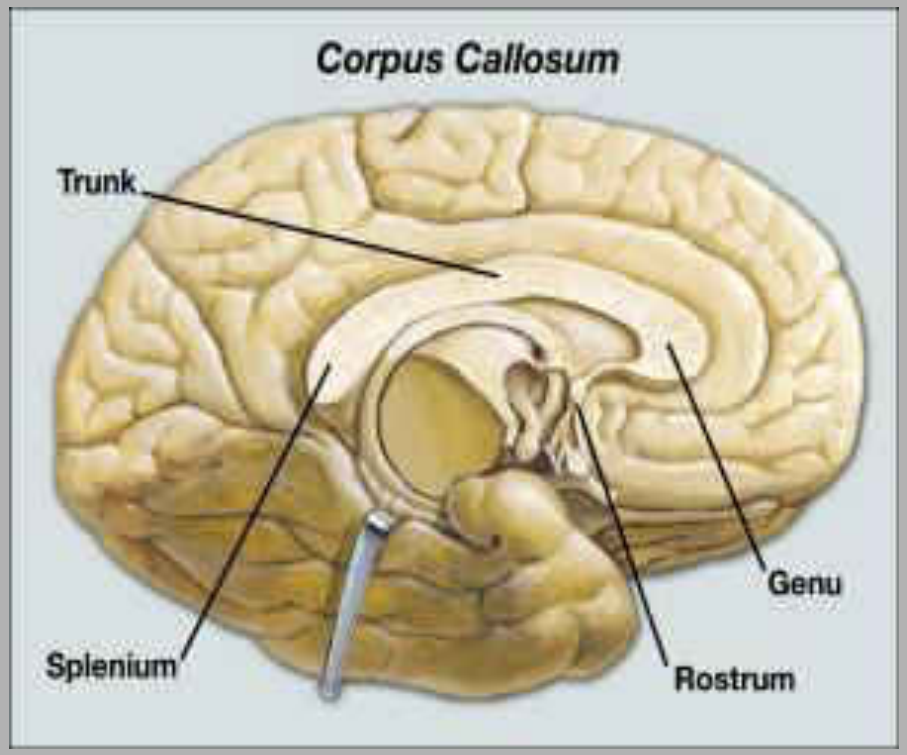
Quintessential model of the brain (O'Malley 2016)

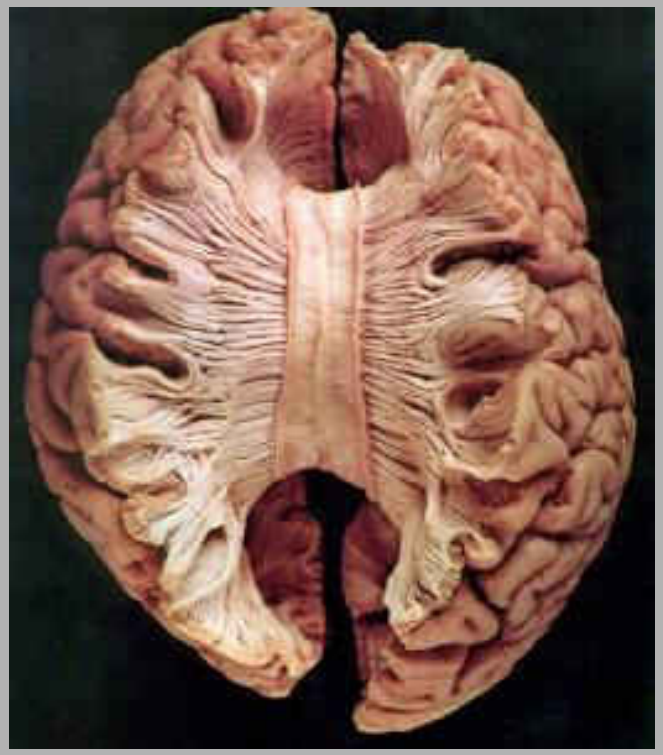


1. Spinal cord
2. Brainstem
3. Cerebellum
4. Limbic system
5. Cerebral cortex (a, b

Corpus callosum

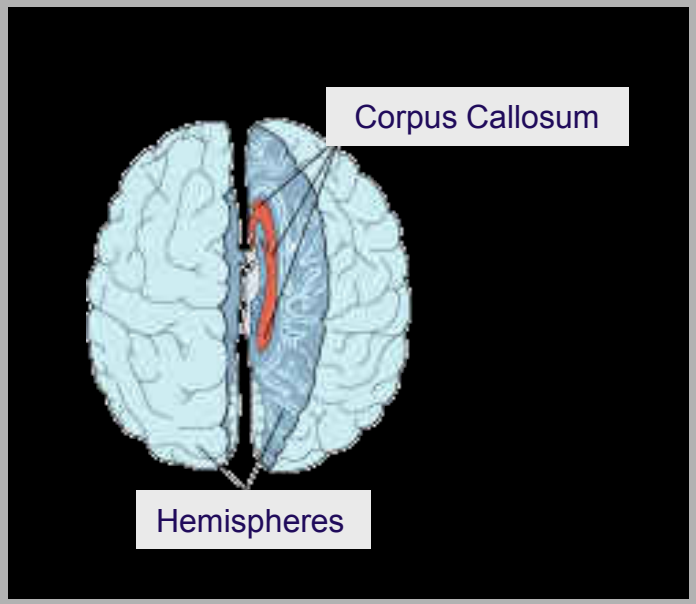
Largest tract in the brain

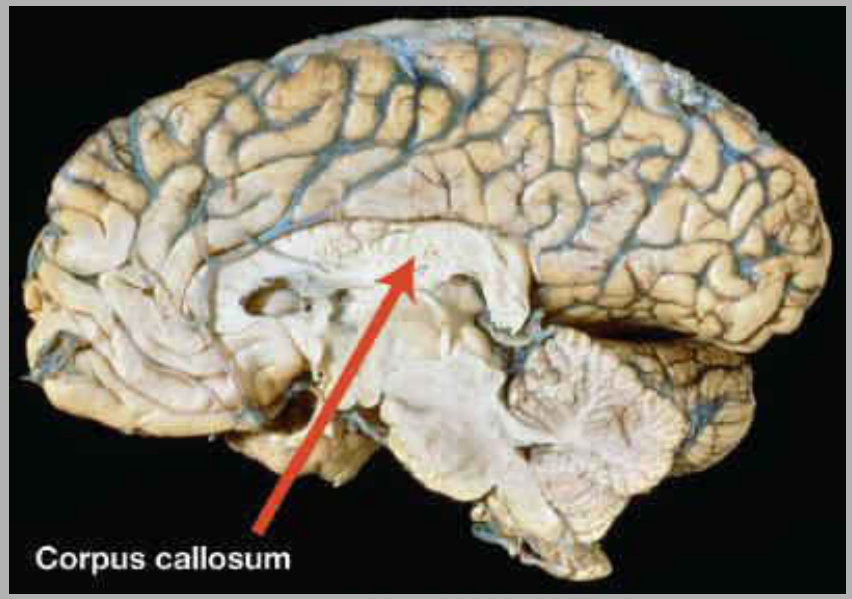




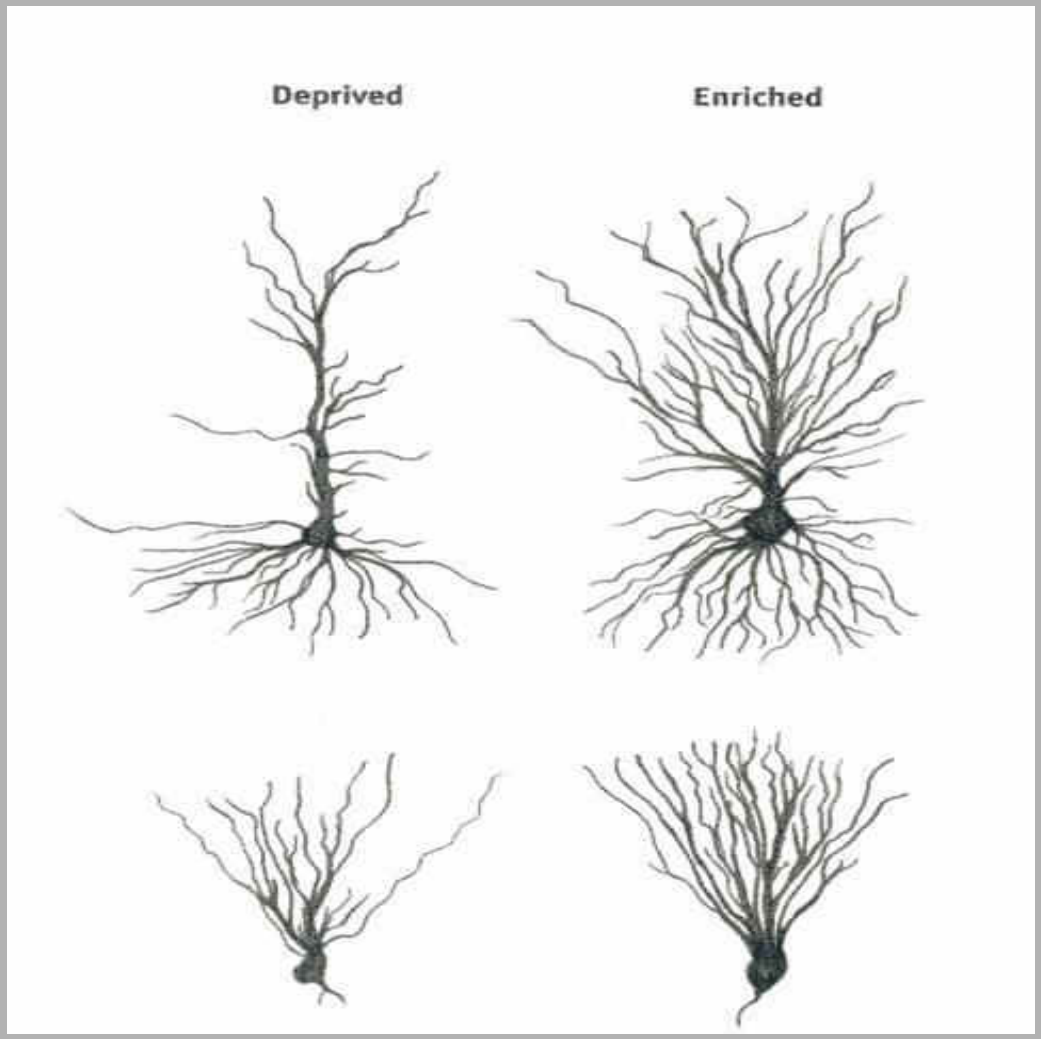
Cerebral hemispheres

- Cerebral hemispheres - the two sections of the cortex on the left and right sides of the brain.
- Corpus Callosum - thick band of neurons that connects the right and left cerebral hemispheres

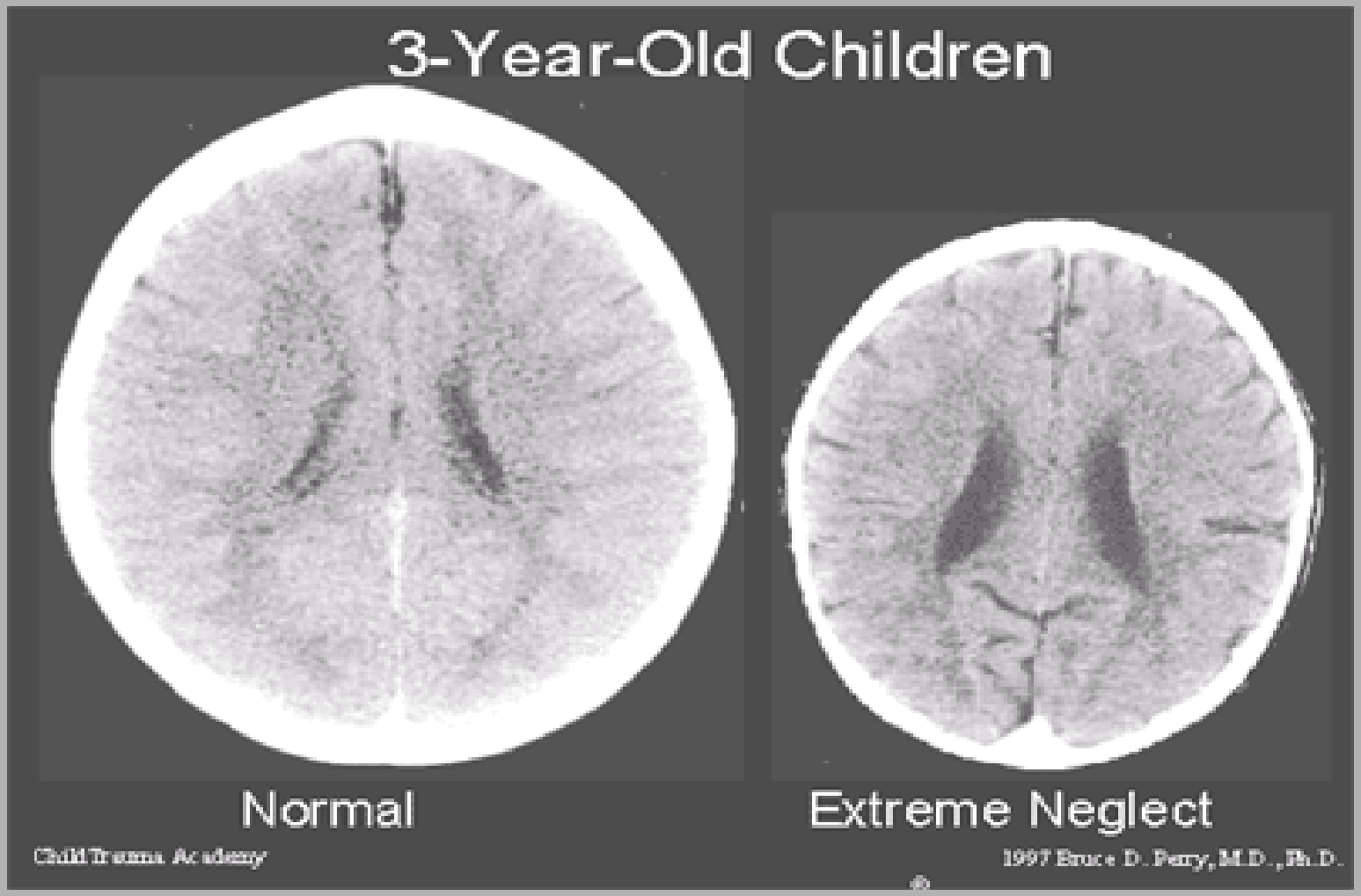




“Neurons that fire together wire together” Donald Hebb



Example of extreme neglect



Borderline personality disorder

- Often presents with co-morbid PTSD or developmental trauma disorder
- Patients' amygdalae deactivated
- Reduced pain sensitivity
- Hence repeated non-suicidal self injury (NSSI)

Dissociative subtype

- Complex neural network involved
- Top-down memory suppression occurs involving brain structures:
  - Dorsolateral/ventrolateral PfC
  - Anterior cingulate cortex
  - Presupplementary motor area
  - Dorsal premotor cortex
  - Intraparietal sulcus
  - Right putamen
  - Hippocampal inhibition bilaterally

Horowitz and impact of events scale

- State of intrusive feelings and compulsive actions
- State of denial with emotional numbing and constricted ideation
- Thus over or under modulation of affective response to traumatic stress
- Emotional reprocessing is overwhelmed by extreme traumatic input

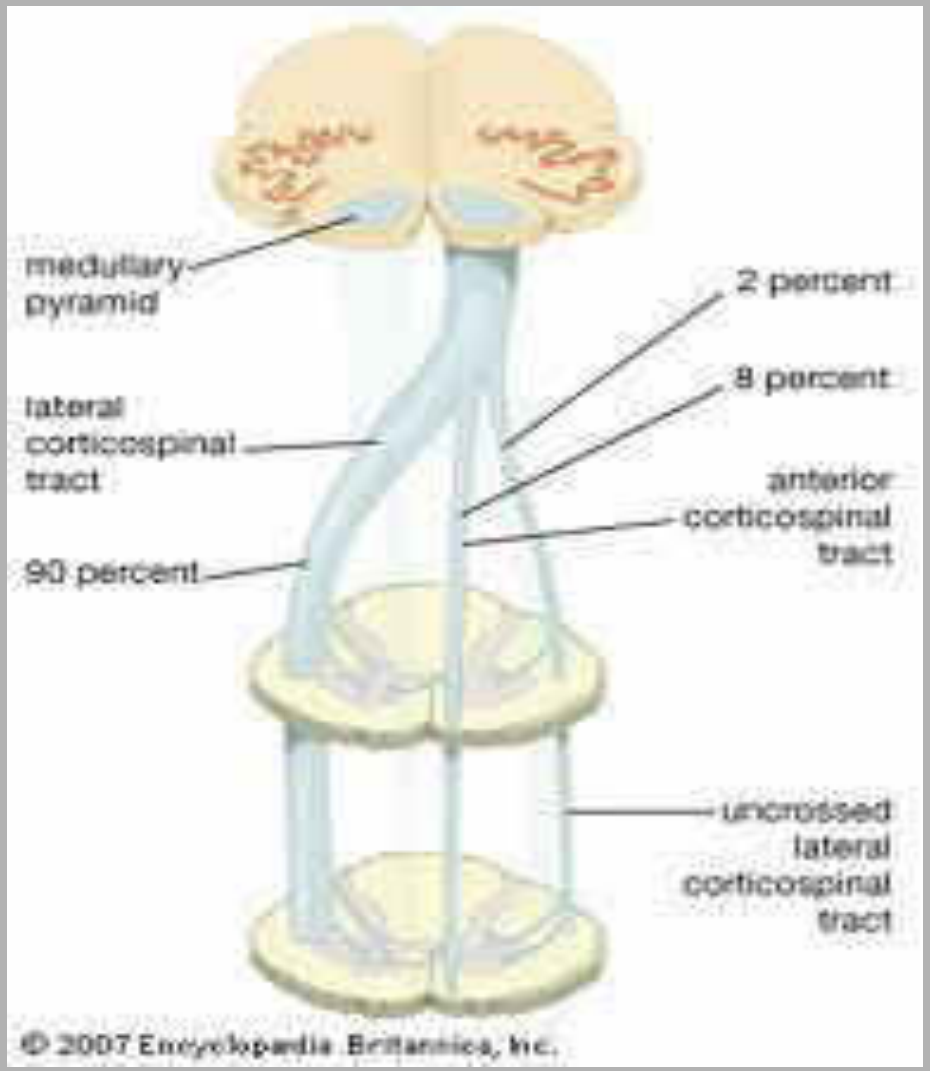
Implications, treatment and research

- Imaginal exposure to trauma related stimuli
- Dissociative and numbing symptoms prevent engagement
- Mood regulation and grounding skills
- Modify disordered attachment schemas
- Develop competence in social interactions

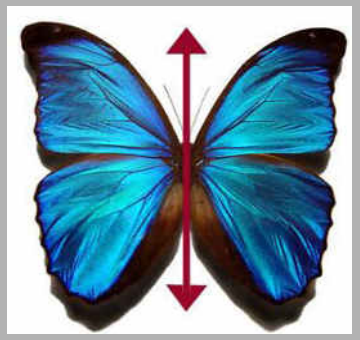
Basic skills

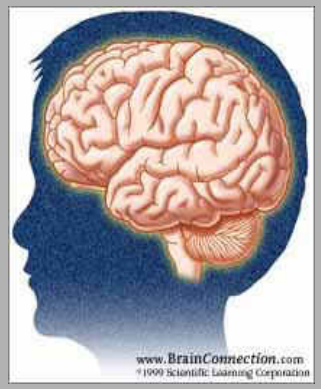
- Relaxation, mindfulness training, coping skills, anger management and grounding
  - Tolerate negative emotion
  - Use social support
  - Calm/soothe self
  - Moderate self-loathing
  - Control destructive impulses (self-harm, violence, substance abuse)
  - Articulate feelings
  - Maintain hope

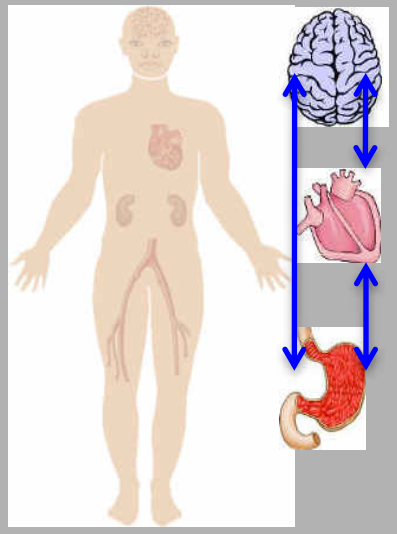
Bilateral innervations from periphery to brainstem



BART S1

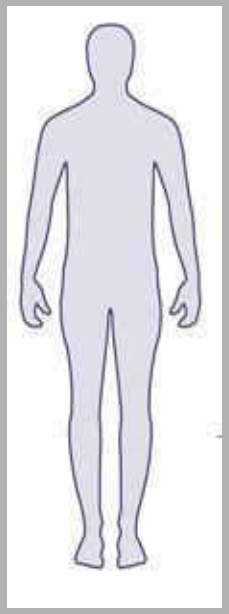


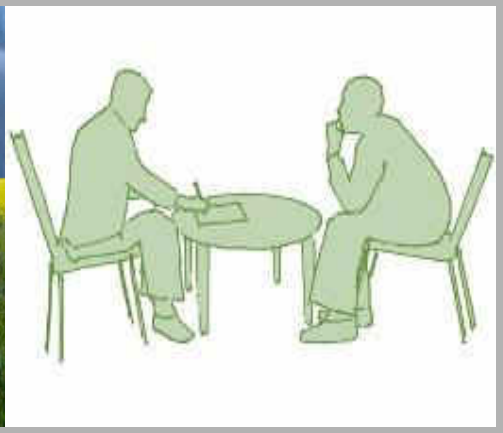




BILATERAL AFFECTIVE REPROCESSING THOUGHTS

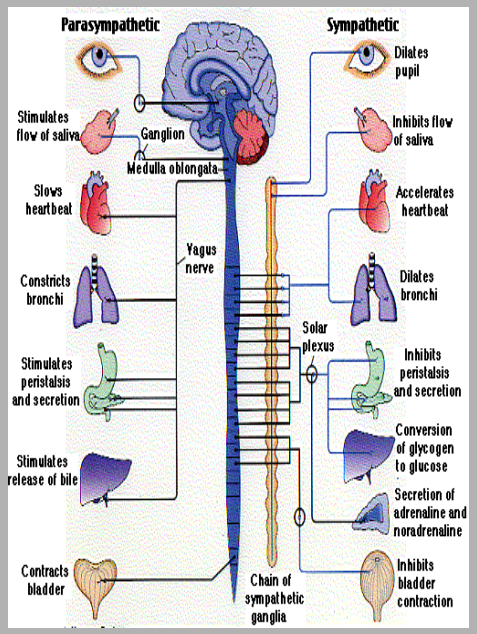
BART S2





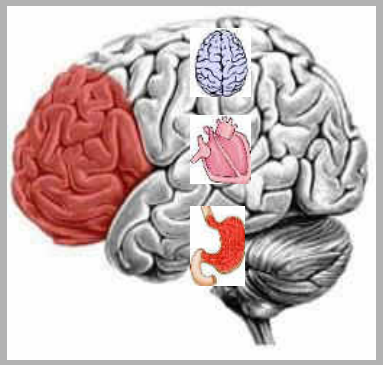
BODY'S ACCELERATED RECOGNITION *of* THOUGHTS

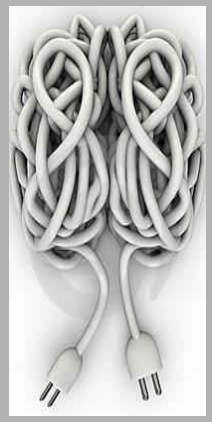
BART S3



BRAIN'S ANS *is* RESILIENT *and* TOGETHER

BART S4





BRAIN'S AXONS REWIRED *for* TRANSMISSION

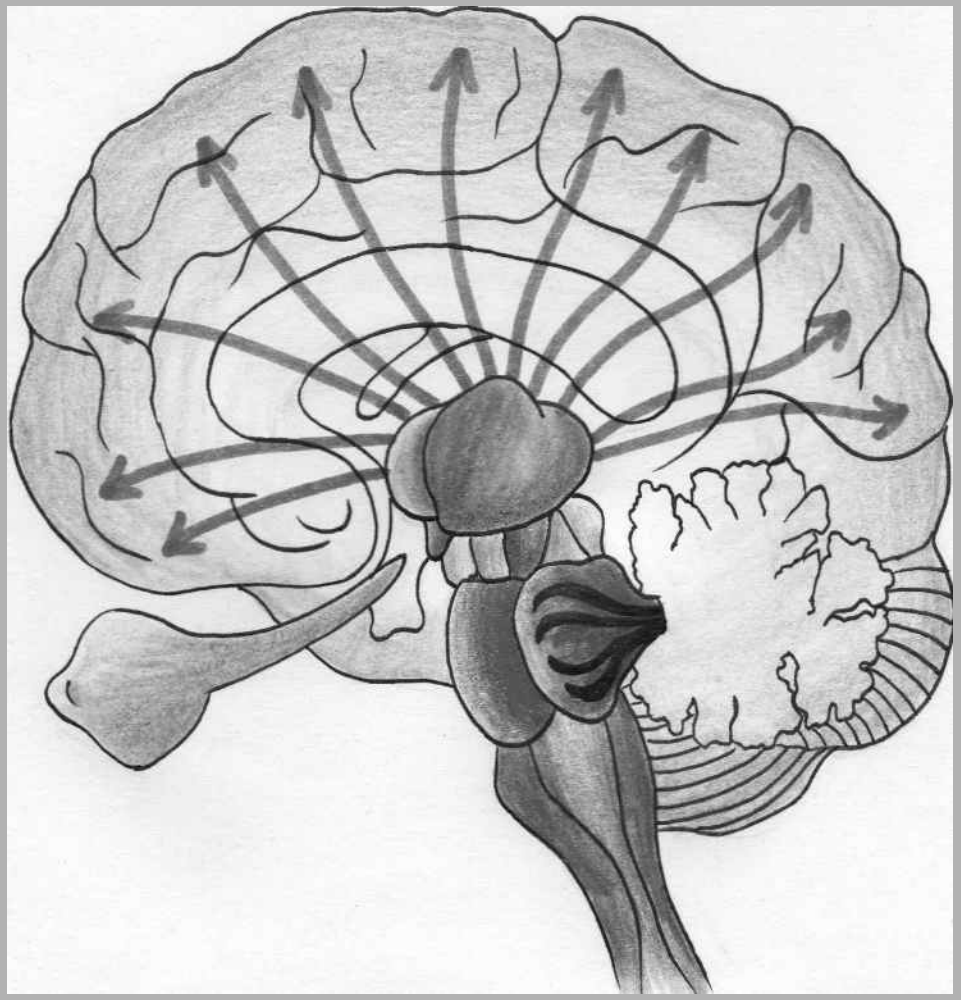
BART S5: trauma therapy

BETTER ACTIVE RECOVERED TRIUMPHANT

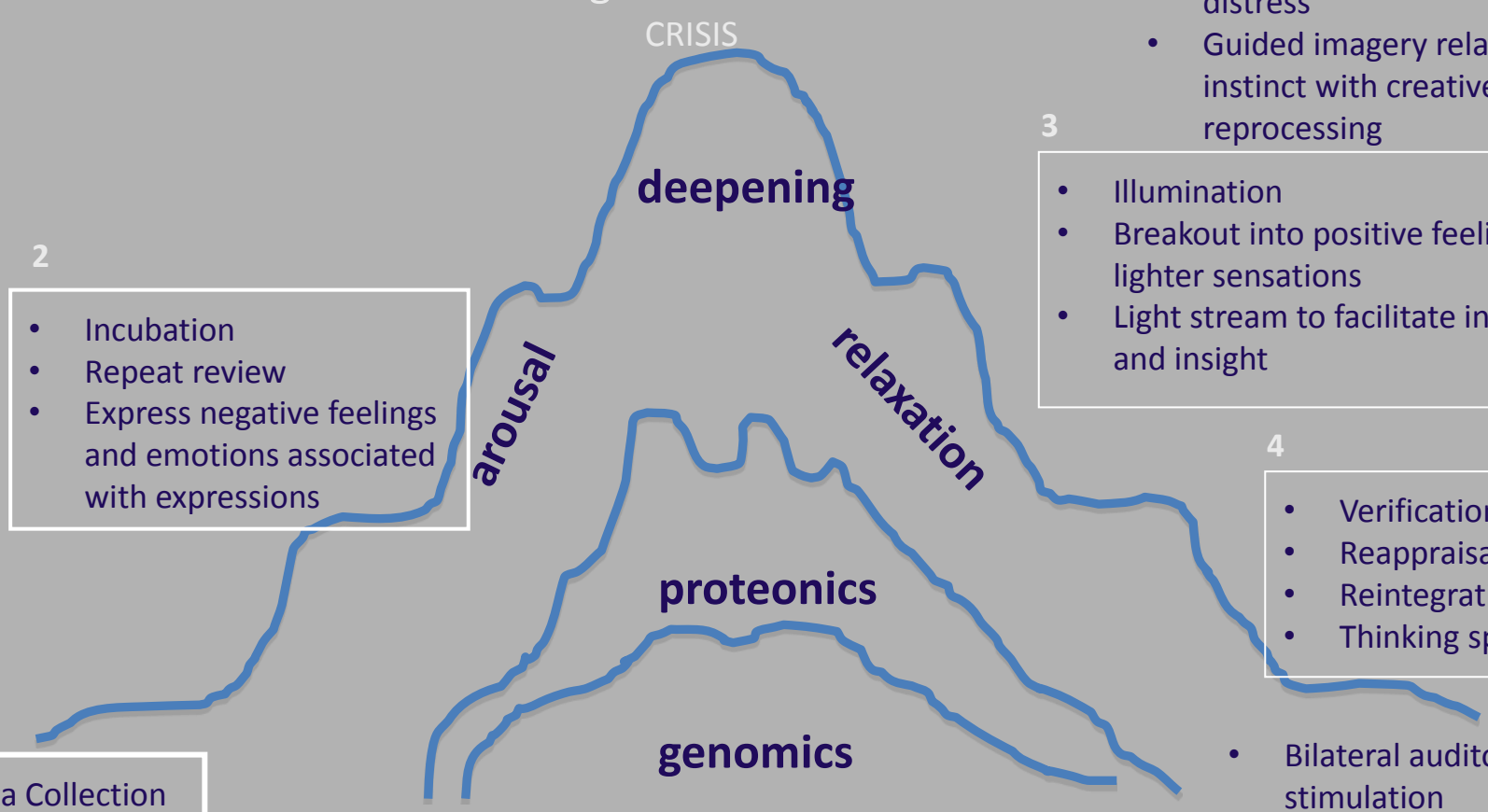
BART trauma therapy 1–5

- Better integration of top-down and bottom-up processing
- Most active trauma stored initially at gut level
- Recovered knowledge like our home – i.e. built from our earliest experiences through childhood, adolescence and into adulthood
- Triumph of integration, Proto, core and autobiographical self become one (Damasio)

Thalamortical binding at a gamma wave frequency of 40Hertz



Model of BART session cf neuroscience model of Rossi



1
- Data Collection
- Initiation
- Sensations

2
- Incubation
- Repeat review
- Express negative feelings and emotions associated with expressions

3
- Pause at point of maximum distress
- Guided imagery related to gut instinct with creative reprocessing
- Illumination
- Breakout into positive feelings and lighter sensations
- Light stream to facilitate initiation and insight

4
- Verification
- Reappraisal
- Reintegration
- Thinking space

- Bilateral auditory stimulation
- +/- Tactile pulses
- +/- Manual castanets

Patient feedback

- Mother and son with OCD
- Mother and son with intensive therapy
- Psychotherapist with preverbal trauma
- Psychotherapist with attachment difficulties
- Girl 11 with pathological demand avoidance
- Boy 20 with written feedback

Conclusions

- Distinguish types of PTSD symptoms
- Effect of trauma on key brain structures:
- PFC, insular cortex thalamus, superior Colliculus
- Periaqueductal grey brainstem, heart and gut
- Window of affective tolerance emotional regulation and stabilisation WATERS in relation to FROZEN & RAPIDS dissociative states
- Increased activation PFC means inhibition of limbic system blood flow
- Over modulation of emotions leading to complex dissociative symptoms

Current and future research

- Use of impact of events scale (IES) acute and chronic versions to select patients with similar symptom patterns
- Buzzers activate reprogramming of thoughts and help to reorganize tasks
- Research the optimum frequency of bilateral activation for thalamocortical binding
- Bidirectional communication between immune and nervous system with enteric and cardiac nervous systems