Neuroanatomy for the Clinical Psychologists: Understanding the Brain in the Clinical Context

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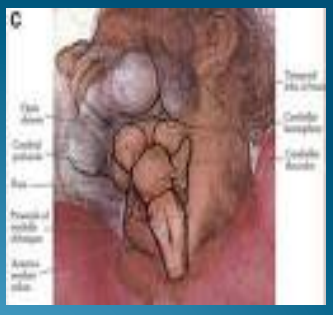
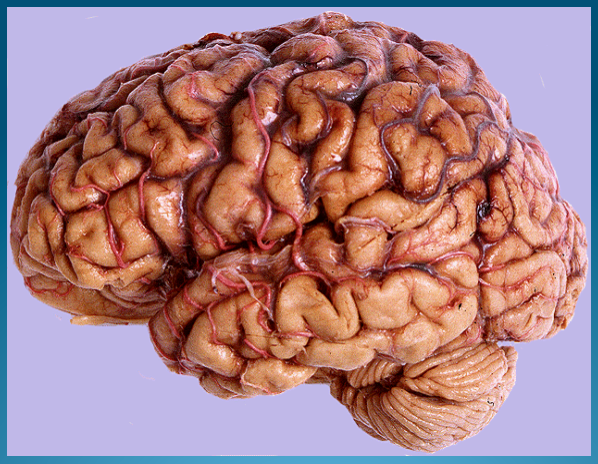
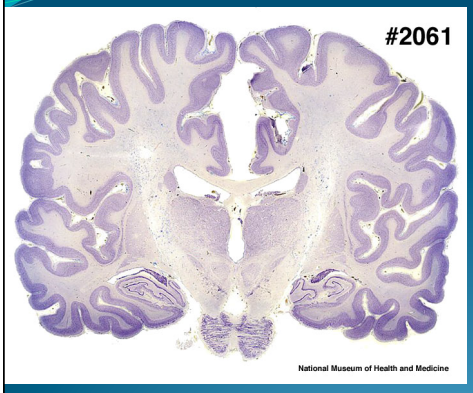
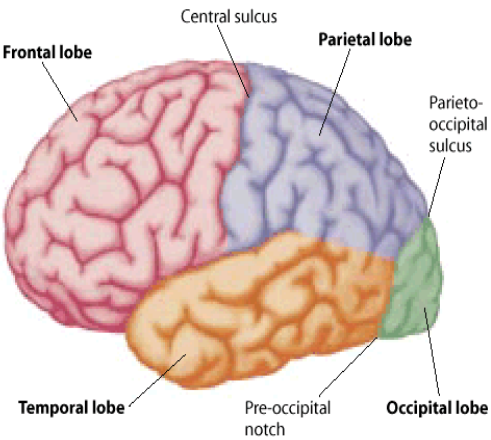
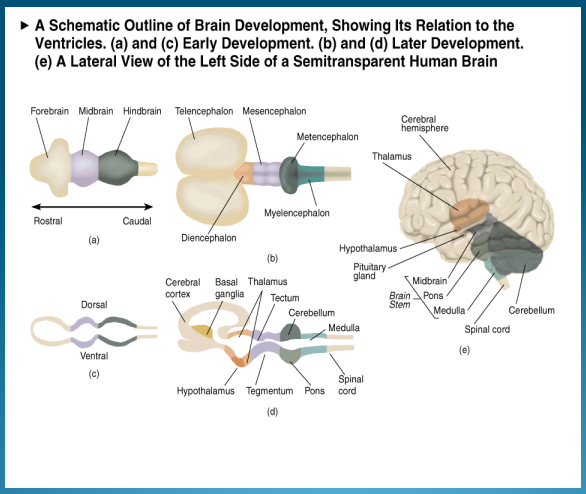





#2061
National Museum of Health and Medicine

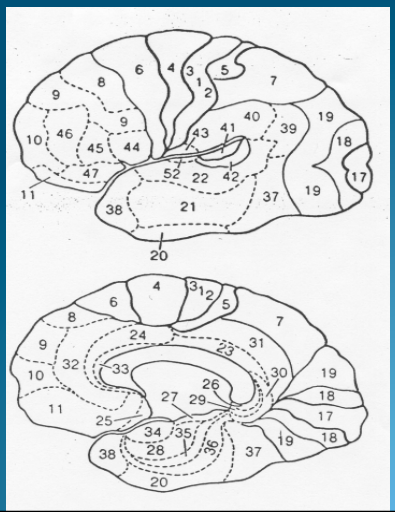


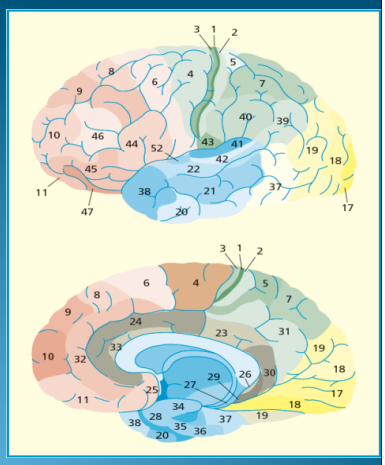
I. Developmental Approach



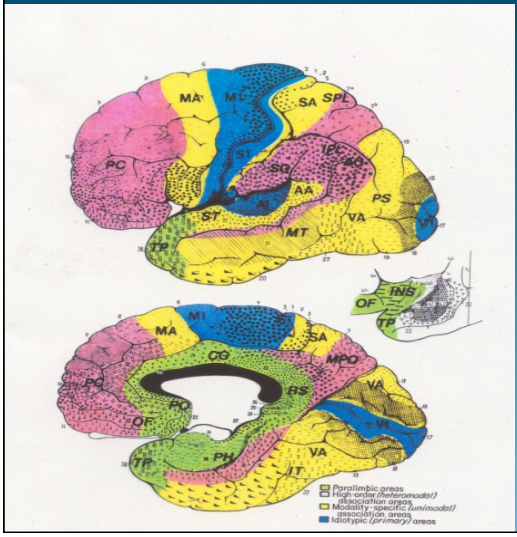
Major Division	Ventricle	**Subdivision**	Principle Structures
Forebrain	Lateral Ventricle --- Third Ventricle	Telencephalon --- Diencephalon	Cerebral Cortex Basal Ganglia Limbic System --- Thalamus Hypothalamus
Midbrain	Cerebral Aqueduct	Mesencephalon	Tectum Tegmentum
Hindbrain	Fourth Ventricle ---	Metencephalon --- Myelencephaln	Cerebellum Pons --- Medulla oblongata

II. Cytoarchtectural Approach (e.g. Brodman's areas)

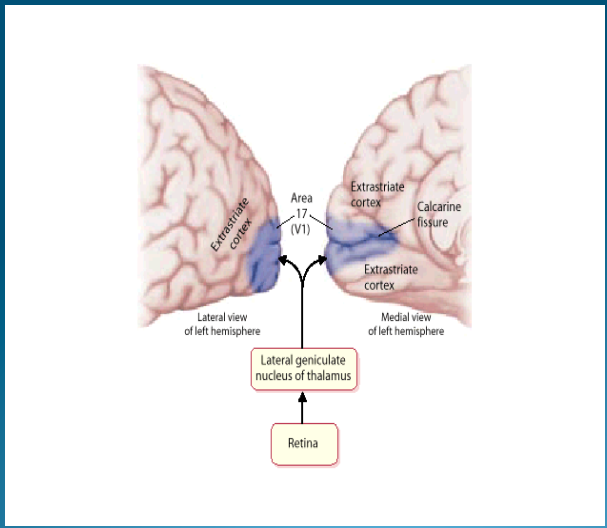


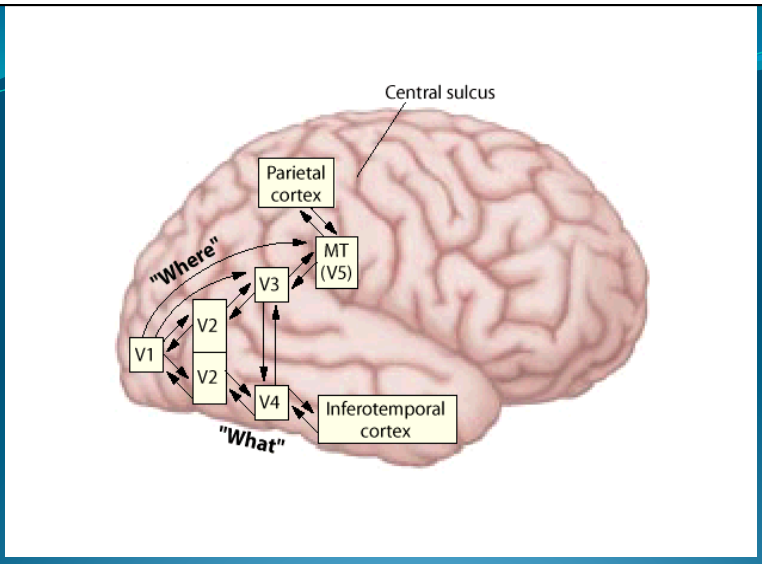


3. Functional Organization



1. Primary Areas -blue (modality specific)
2. Secondary Association Areas –yellow (modality specific)
3. Multimodal/Supramodal pink
4. Limbic Ring green





Functional Neuroanatomy
from "centers" to functional systems

Erroneous Assumptions

1. Unitary notion of brain function
   --organicity ↔ modularity
2. Lesions have specific effects only
   general deterioration associated with overall slowing of processing
   --present information more slowly'
   --talk in shorter sentences
3. Any lesion will produce a "measureable" deficit - negative signs
   --structured vs. unstructured situations

Importance of a Conceptual Model of Brain/Behavior Relationships

1. Sets A Reasonable Expectation of Performance
   i.e. severity/mechanics of TBI

2. Anticipates Deficits Associated with a Neurobehavioral Disorder
   i.e. *what kinds of problems should this stroke patient have and what can I suggest to the family*

3. Recognition of Performance that is Inconsistent with a Neurobehavioral Disorder
   i.e. is this magnitude of forgetting expected or could it be compliance?

Important Elements of a Well Reasoned Approach

1. Effects of brain lesions are not directly proportional to their size

2. Brain injury also results in more general effects – slowing, etc.

3. Keep in mind the nature of brain injury/lesion – pathological processes have different effects depending on type, diffuse/ local, chronicity, size, toxicity

4. Individual differences – age, education, handedness, culture, etc.