BRAIN & BEHAVIOR

I. "TEST" OVER TUESDAY: CORRELATIONAL OR EXPERIMENTAL?

Who likes salty foods? Who doesn't? Why?

Hypothesis An individual's preference for salty foods is partly determined during fetal life by the extent of "morning sickness" in the mother

Research: Pregnant rats were given diuretics (causes loss of salt and water) or control injections

Offspring of experimental diruetic group showed a preference for salty solutions

What kind of research?_____

Is the hypothesis also true for humans? _____ _____ but cannot do the experiment for _____ reasons

Research: College students were asked about salt preferences and their mothers' morning sickness; Students liked saltier foods if their moms vomited frequently;

What kind of research? _____

Research: Infants were given tastes of salty or plain water; Babies liked the salty water when their moms vomited frequently during pregnancy. What kind of research? _____

Is salt preference linked to morning sickness?_____

Is salt preference caused by morning sickness?_____ _____ Why?

the research is _____

TAKE HOME MESSAGE

An educated _____consumer (and a smart psych 101 student) can distinguish between correlational and experimental research and knows the _____of each!

II. NEURON STRUCTURE

The basic unit of the nervous system is the neuron. Module 4 covers the structure of the neuron, the electro-chemical nature of communication among neurons, the _____ nature of the action potential, and the way neurotransmitters work at synapses. Won't go over in lecture, but you are responsible for the information. Use the study guide!

III. NEUROANATOMY – CEREBRAL CORTEX

Figure 4.7 shows the structure of the Nervous System. In lecture, we'll only consider the Cerebral Cortex.

Fissures, gyri, sulci. Convolutions allow more _____ to be packed into a smaller space

A. Phrenology—pseudo-science in which identified a person's strengths and weaknesses by mapping the _____ and _____ on the skull. Bump meant more brain for a particular _____ or _____ and depression meant less. No empirical support for bumps and depressions or specific map of abilities, but support for the general concepts of function-_____ specialization and relationship between amount of cortex and _____. (See figure .1 in the text)

B. Gross brain anatomy. Will consider different brain _____ and their functions.

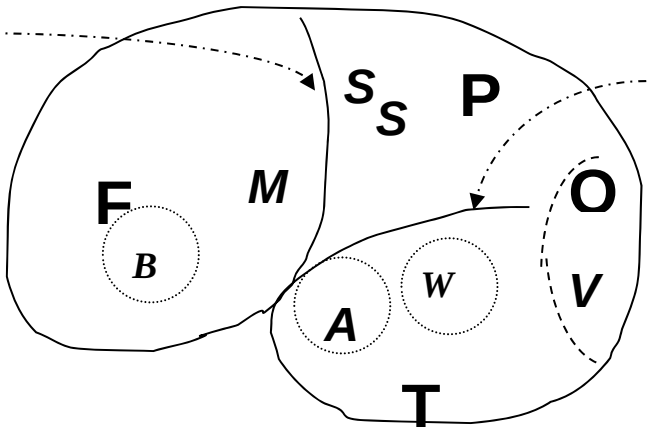
_____ fissure forms two hemispheres

_____ and _____ fissure divide each hemisphere into three of the four lobes

LOBES OF THE BRAIN

Central Fissure

Lateral Fissure



Lobe & Function

F_____

P_____

T_____

O_____

C. Structures and functions.

1. Frontal lobe - contains _____ cortex anterior to central fissure;

_____ movement

2. Parietal lobe - contains _____ cortex posterior to central fissure

. Both motor and somatosensory information _____ - _____

left _____ = right_____ and

right _____ = left _____

a. _____ of cortex and location in Figure 6.2. Together they form the sensory/motor homunculus.

b. Phantom limbs - created by input to _____ regions of the somato-sensory cortex.

Loss of hand: input from arm and face can produces sensation in the _____

Video

Phantom limbs illustrate brain _____.

3. Temporal lobe - below lateral fissure, contains primary _____ cortex

4. Occipital - posterior lobe, contains primary_____ cortex.

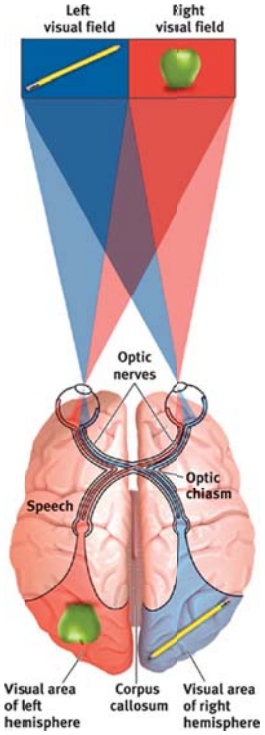


Fig. 6.10

Is there visual cross-wiring? Yes, but not by _____. Each eye sends information to each hemisphere, but there is cross-over of _____ _____.

left visual field, the visual information left of _____.

right visual field, the visual information _____of fixation.

_____ visual field goes to the _____ hemisphere and

_____ visual field goes to the _____ hemisphere.

Have considered all 4 lobes and their major function. Haven't considered the most important function of the frontal lobe- _____ and _____. It's what makes us _____.

Prefrontal _____ areas also underlie _____ and _____ control of emotion and action as shown by the case of _____..

IV. HEMISPHERIC SPECIALIZATION

Why two hemispheres? Left brain versus right brain thinking? _____ _____

The hemispheres are joined by a band of fibers called the _____ _____.

Information travels _____ between the two halves. But, there is some specialization.

A. Left -Language

Language _____ is associated with frontal lobe and language _____ is associated with temporal lobe

1. Broca's area, in fronal lobe, _____ programs for speech

Broca's patient: Tan - Broca's expressive _____ - slow, labored speech

2. Wernicke's area, temporal lobe, comprehension of _____

Wernicke's receptive _____, comprehension deficits

B. Right -Visuospatial analysis

Right hemisphere specialized for analysis of complex _____ _____, including faces

Damage to the right parietal lobe produces sensory _____ of the left half of the _____ and the left half of the visual _____

V. SPLIT-BRAIN PHENOMENA

Suppose that the two hemispheres were NOT connected, because the corpus callosum had been cut.

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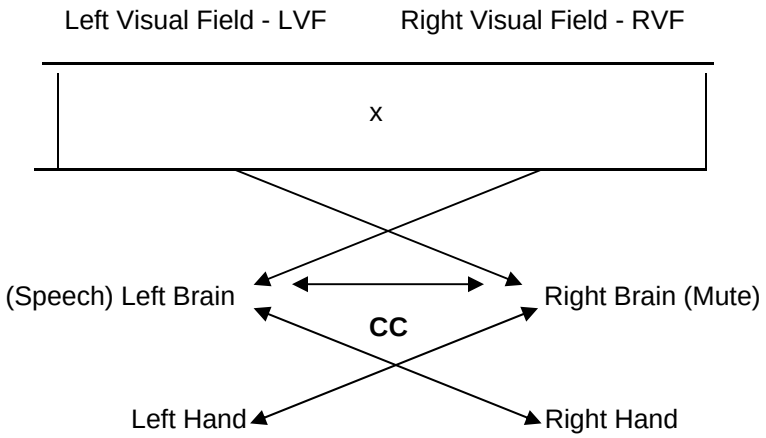
A. ROGER SPERRY - Nobel prize winner (1981) transection of the corpus callosum (_____ _____) to help people with extreme epilepsy

B. Studies using _____ visual input show each hemisphere is

_____ independent



1. Key to LVF—What did you see? _____ Split Brain Response _____

2. Reach into grab-bag with your right hand-Can you select it? _____ Split Brain? _____

3. Reach into grab-bag with your left -hand - Can you select it? _____ Split Brain? _____

4. Split Brain Hemispheres give different answers when different inputs.

Input : _____ _____

Spoken Intact Response _____ Spoken Split Brain Response _____

Pointing Split Brain left hand _____ Pointing Split Brain right hand _____

Input: Chimeric face

Spoken Intact Response _____ Spoken Split Brain Response _____

Pointing Split Brain left hand _____ Pointing Split Brain right hand _____

5. Summary of studies with lateralized visual inputs:

Can name stimuli presented to _____ visual field or _____ hand

CANNOT name stimuli presented to _____visual field or to

_____hand, but can use _____ hand to identify those stimuli

C. Cannot write well with _____ hand

D. Cannot easily copy complex visuospatial diagrams with _____ hand

E. Left (verbal) hemisphere assumes is in control and_____ reasons for actions;

Called _____ (Chicken and shovel anecdote)