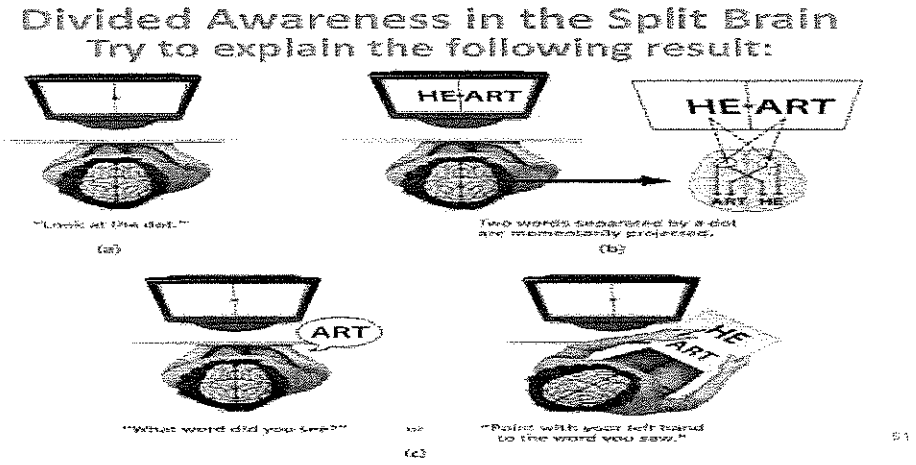
MODULE 13 BRAIN HEMISPHERE ORGANIZATION AND THE BIOLOGY OF CONSCIOUSNESS

OUR DIVIDED BRAIN

- Lateralization is where the brain's do indeed look a-like but there are certain differences each lobe possesses. Left hemisphere can impair reading, writing, speaking, arithmetic reasoning, and understanding.
- Connecting the "two brains" is the **CORPUS CALLOSUM**. The CC has the ability to transfer messages between each hemisphere, letting the "two brains" communicate and work effectively.
- Doctors believed that the CC could be over firing when seizures occur and therefore, had an idea to cut the CC to reduce seizures. It worked. The result? Seizures subsided and the hemispheres began working individually. These patients are known as **SPLIT BRAIN** patients.
- The findings were experimented using the visual aid. The left hemisphere controls the right side of the body. If the right eye sees a plant, the message would be sent to the left hemisphere then sent out to the appropriate structures for the next task of watering it. Due to the left hemisphere receiving the message, if the CC was cut, the patient would be able to verbally say plant. If the left eye saw the plant, the right hemisphere would not be able to produce the speech to proclaim it a plant. The patient knows what it is and to water it but does not have the ability to state "Plant."
- Same with having two screens for these SPLIT BRAIN patients to look at. Together, the eyes would be able to proclaim the fields as saying HE|ART. If the patient was to only look with their right eye, the patient would only be able to state ART. If the patient was to instead point at what they say, the patient would actually point towards the "HE" field. When the CC cannot communicate, the brain only sees half of the picture if looking with one eye.
- Remember: Broca's Area is located in the left hemisphere, while Wernicke's Area is located in the right hemisphere.
- The left hemisphere is the "interpreter" of behavior.



RIGHT-LEFT DIFFERENCES IN THE INTACT BRAIN

- When performing a perceptual task, brain waves, bloodflow, and glucose consumption reveal increased activity in the right hemisphere while a person speaking or calculating increases the left hemisphere.
- Language is more universal within both hemispheres.
- The right hemisphere excels in making inferences, helps us modulate our speech, and helps orchestrate our sense of self.

THE BIOLOGY OF CONSCIOUSNESS

- CONSCIOUSNESS is our awareness of ourselves and our environment. This is our thought processes and being aware of those thoughts.
- COGNITIVE NEUROSCIENCE is the interdisciplinary study of the brain activity linked with our mental processes.
- How the synchronized activity produces awareness- how matter makes mind – remains a mystery.

DUAL PROCESSING: THE TWO-TRACK MIND

- DUAL PROCESSING is the principle that information is often simultaneously processed on separate conscious and unconscious tracks. Looking at a bird flying in the air, we are aware that it is a bird but on the under belly of our brain, we processed more information, such as colors, forms, and movements.
- BLINDSIGHT is where a person can act out as if they can see. This occurs when trying to reach for, grasp, or navigating objects is not impaired but the area concerned with consciously recognizing objects is. This can occur in the opposite with being able to state what an object is but not being able to hold it properly or know what to do with it. The visual cortex is somehow impaired.
- In everyday life, we mostly function like an automatic point-and-shoot camera, but with a manual (conscious awareness).

BE ABLE TO ANSWER: What are the mind's two tracks, and what is "dual processing"?

PRACTICING FRQ: Brain lateralization means that each hemisphere has its own functions. Give an example of both a left hemisphere and a right hemisphere function. Then explain how the two hemispheres communicate with one another.