

## Cognitive Neuroscience

Name \_\_\_\_\_

DL Site \_\_\_\_\_

If you are absent, view the program here:

<http://www.learner.org/discoveringpsychology/25/e25expand.html>

### Answer the following questions as you watch:



**1. The case of Phineas Gage, 1848 is significant to psychologists because:**

- a. Gage was a study in unusual behavior
- b. brain injury was connected with behavioral changes

#### Tools to measure brain functions

**2. The purpose of the EEG is to:**

- a. record brain waves
- b. show brain structure
- c. show the brain in action

**PET scans first showed the brain in action**

**3. The purpose of the fMRI is to:**

- a. show the physiology of the active brain
- b. record brain waves

#### How we see the world: applying fMRI studies

Light energy goes to the retina, becomes neural signals to the thalamus and finally to the primary visual cortex.



**4. Dr. David Heeger**, talks about V1, the primary visual cortex, which receives the neural signals. Which statement is **false**?

- a. it receives the neural signals
- b. there are about 40 distinct visual areas
- c. we cannot photographically record what we see

**5. According to the concept of brain specialization the \_\_\_\_\_ cortex tells us where things are in space while the \_\_\_\_\_ lobe tells us what kind of object we are looking at.**



**Dr. Nancy Kanwisher of MIT**, studies a portion of temporal lobe which recognizes faces.

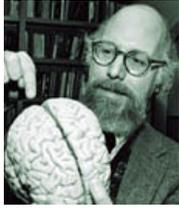
**5. This is a small patch of brain in the back \_\_\_\_\_ hemisphere**

**6. By saying that the brain has *plasticity* we mean that:**

- a. the brain is not able to adapt to the environment
- b. the brain changes as a result of experience

**7. To what concept does the “The Mind’s Eye” refer?**

- a. the ability of the limbic system to put visuals to memories
- b. using the same part of your brain to think mentally about an image as well as actually seeing it



**Dr. Stephen Kosslyn** of Harvard studies how visual perception and imagery overlap.

**8. What fraction of the brain areas used by mental imagery and visual perception are held in common?**

- a. about  $\frac{1}{4}$    b.  $\frac{3}{8}$    c.  $\frac{2}{3}$



**Dr. John Gabrieli**---to understand how the brain adapts to reading--- presents reading text backwards.

**9. Gabrieli used this experiment to illustrate how we learn to read, slowly at first with the \_\_\_\_\_ hemisphere until we do it with ease, relying on the knowledge stored in the \_\_\_\_\_ hemisphere.**

**10. The visual/spatial area of the brain is in the \_\_\_\_\_ hemisphere. The verbal/linguistic area is in the \_\_\_\_\_ hemisphere.**



**11. Dr. Paula Tallal** uses computer games to teach dyslexics the skill of decoding phonemes, improving their reading ability.

**This happens, in only a few weeks, by:**

- a. associating an image with a sound through repetition  
b. moving the phoneme decoding skill into the high speed language

area of the brain



**Mahzarin Banaji** says biased attitudes can be an automatic part of our behavior even when we claim to be tolerant. To uncover our implicit attitudes, Banaji has adopted the IAT, implicit attitudes test. It measures the strength of association between two concepts.

<https://implicit.harvard.edu/implicit>

**12. According to her results:**

- a. whites associate which with good and black with bad  
b. half of blacks see black as good  
c. both a and b are true

**11. Liz Phelps's research studying emotional reactions to white and black faces showed:**

- a. that most whites blink more strongly when shown an unfamiliar black face with a startling sound.  
b. a correlation of greater amygdala activation with greater startle response to black faces.  
c. The part of the brain where experience is registered emotionally is the amygdala.  
d. all of these are correct