Thinking 4

More on Hemispheric Asymmetry: Split Brain

Emotion & Cognition

- Which of the following statements is likely to best describe functional hemispheric asymmetry in someone who does handwriting with the right hand?

A. Speech production is heavily localized in the left hemisphere.

B. The left hemisphere is primarily responsible for integrating facts from the present with information from the past.

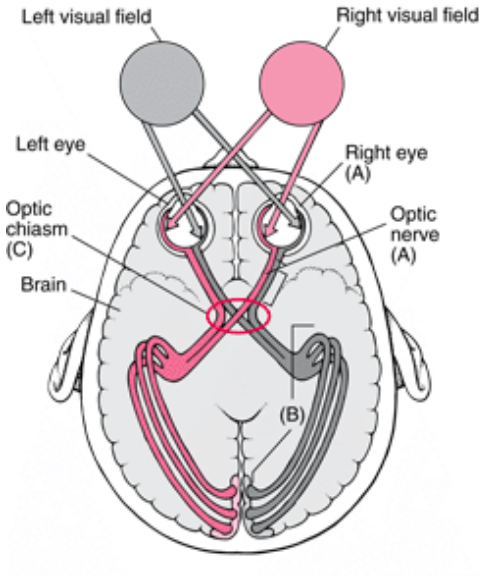
C. The right hemisphere is primarily responsible for face perception.

D. Both statements (A) and (B) are true.

E. All three of statements (A), (B), and (C) are true.

Living without a Corpus Callosum

- LEFT hemisphere
  - Input from the RIGHT visual field
  - Controls movement on the RIGHT side of the body
- RIGHT hemisphere
  - Input from the LEFT visual field
  - Controls movement on the LEFT side of the body
- When the corpus callosum is intact it is difficult to carry our two separate actions requiring attention



Hemispheric Communication without a Corpus Callosum

- Communication through actions
  - Both hemispheres can recognize printed words
  - Only the Left Hemisphere can produce speech
  - The Right Hemisphere communicates the word it saw to the Left Hemisphere by drawing it.
- By speaking, the Left hemisphere can communicate information to the Right hemisphere

Functional Hemispheric Asymmetries

- Left hemisphere functions as the "Interpreter"
- Right hemisphere recognizes and understands faces
  - Giuseppe Arcimboldo

- Dr. Unwin is examining the influence of how far in the future an unpleasant event will occur on how accurately people predict what their feelings will be following the event. Dr. Unwin is researching _____.

A. affective forecasting
B. framing effects
C. satisficing
D. utility theory
E. All of (A) – (D) above.

What is an emotion?

- A response triggered by a change in
  - physiological state
  - status of a goal

  that may result in changes of
  - physiological state
  - subjective feelings
  - behavioral tendencies
  - cognition
- How are emotion and cognition related?

- Which of the statements below do you believe is most accurate?

A. Emotion is a *less important* mental function completely *separate* from cognition.

B. Emotion and cognition are *equally important* but unrelated mental functions.

C. Emotion and cognition are *antagonistic* mental functions that *compete* to control our behavior.

D. Emotion and cognition are *interrelated* mental functions that each *depend* on the other.

Dutton & Aron: Procedure

- Female research assistant interviews male participants on suspension bridge or on short, solid bridge
- *Journal of Personality and Social Psychology,* 1974, Vol. 30, No. 4, 510-517

- Do you think the type of bridge affected whether men called the Research Assistant?

A. No, bridge type had no effect

B. Yes, men on the suspension bridge were less likely to call because they found the woman scary

C. Yes, men on the suspension bridge were less likely to call because they felt insecure

D. Yes, men on the suspension bridge were more likely to call because they felt attracted to the woman

Summary: Importance of Dutton & Aron

- Physiological arousal
  - In this case, caused by a scary location

  can be associated different emotions
  - In this case, romantic or sexual attraction
- It is different cognitive interpretations that cause the same physiological change to be interpreted in different ways

Cognitive Appraisal Theory

- Emotions depend on appraisals of the relationship between events and their goals
- Appraisals can be triggered by
  - By changes in physiological state
  - By changes in the status of a goal
- Different emotions can be evoked by different interpretations of the same events
- Cognitive system couldn't function without the emotional system to mark what is important

You are at the wheel of a runaway trolley quickly approaching a fork in the tracks. On the tracks extending to the left is a group of five railway workmen. On the tracks extending to the right is a single railway workman.

If you do nothing the trolley will proceed to the left, causing the deaths of the five workmen. The only way to avoid the deaths of these workmen is to hit a switch on your dashboard that will cause the trolley to proceed to the right, causing the death of the single workman.

Is it appropriate for you to hit the switch in order to avoid the deaths of the five workmen?

A. Yes

B. No

You are a doctor. You have five patients, each of whom is about to die due to a failing organ of some kind. You have another patient who is healthy.

The only way that you can save the lives of the first five patients is to transplant five of this young man's organs (against his will) into the bodies of the other five patients. If you do this, the young man will die, but the other five patients will live.

Is it appropriate for you to perform this transplant in order to save five of your patients?

A. Yes

B. No

Role of Emotions in Decision Making

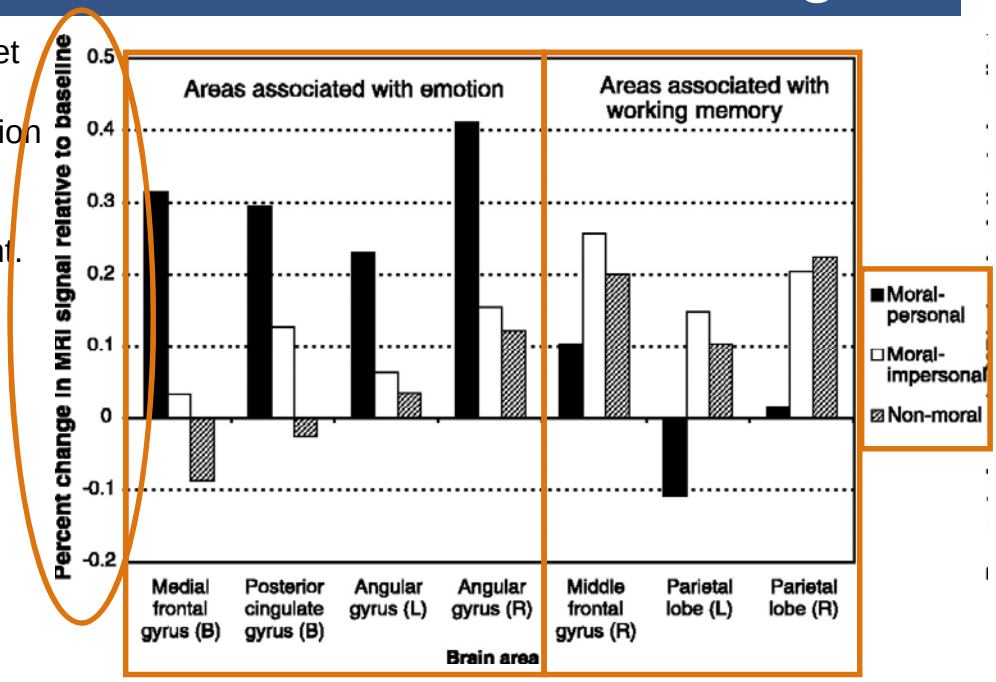
A runaway trolley is heading down the tracks toward five workmen who will be killed if the trolley proceeds on its present course. You are on a footbridge over the tracks, in between the approaching trolley and the five workmen. Next to you on this footbridge is a stranger who happens to be very large.

The only way to save the lives of the five workmen is to push this stranger off the bridge and onto the tracks below where his large body will stop the trolley. The stranger will die if you do this, but the five workmen will be saved.

Is it appropriate for you to push the stranger on to the tracks in order to save the five workmen?

Crucial Difference: Degree of Emotional Processing

Greene, J. D., et al. (2001). An fMRI Investigation of Emotional Engagement in Moral Judgment. *Science, 293,* 2105 – 2108.



Summary: Greene et al. (2001)

- Decisions about problems with a moral component vary in their emotional content
- While making a decision, activity in different brain areas reflect
  - Degree of thought
  - Degree of emotional response
- Differences in the degree of emotional response versus thought predict the different responses to the trolley versus doctor scenarios

Looking Forward

- For Monday
  - Gleitman: Ch. 9, pp. 365-375
  - Zap #15: Gestalt Problem Solving
  - Zap #16: Missionaries & Cannibals
- Next Wednesday
  Chapter test on Thinking
- No Class next Friday
- Coffee at Phoenix Grill?