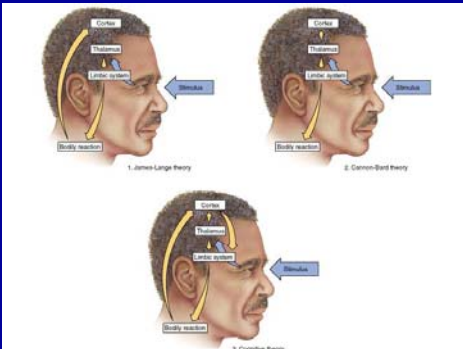




**NEUROSCIENCE FOR ARCHITECTS – EMOTION**  
NewSchool of Architecture and Design | San Diego CA | May 14 2007



**WHAT IS EMOTION?**

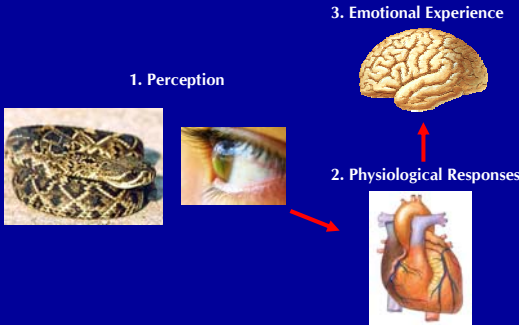


**THEORIES OF EMOTION**


"My theory ... is that the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur is the emotion... Without the bodily states following on the perception, the latter would be purely cognitive in form, pale, colorless, destitute of emotional warmth."

**JAMES-LANGE THEORY**

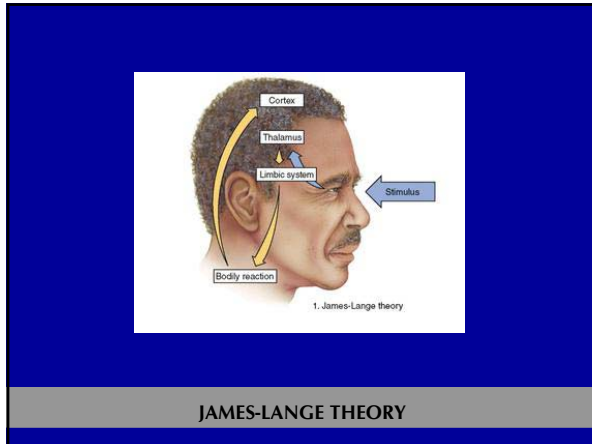
EVENT > AROUSAL > INTERPRETATION > EMOTION



**JAMES-LANGE THEORY**



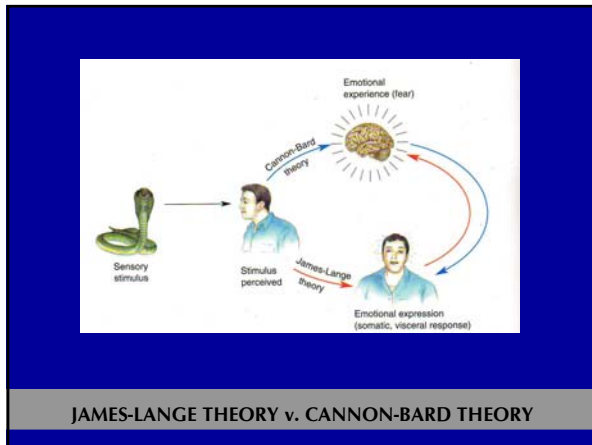
**JAMES-LANGE THEORY**



JAMES-LANGE THEORY



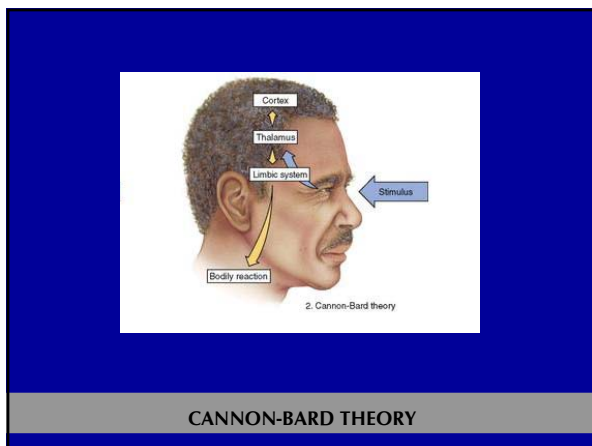
JAMES-LANGE THEORY



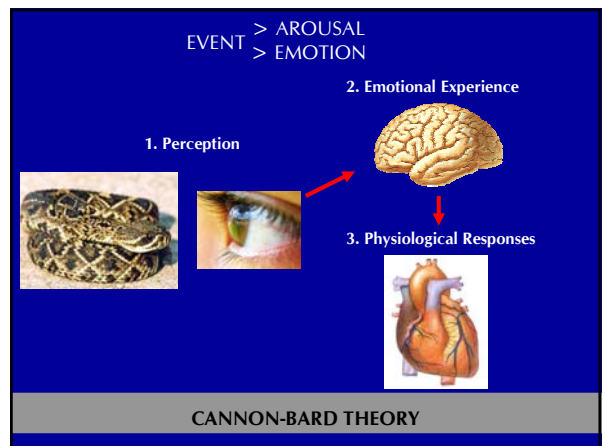
JAMES-LANGE THEORY v. CANNON-BARD THEORY



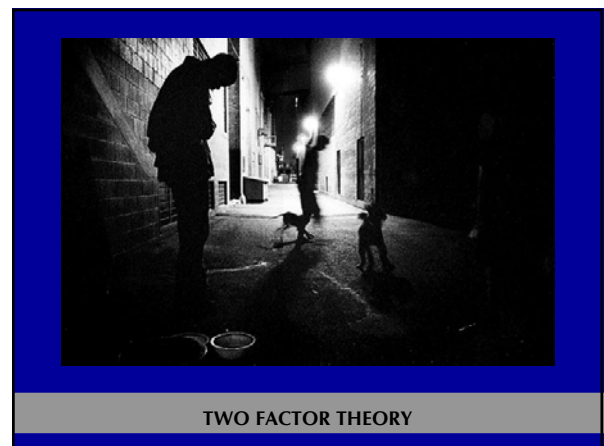
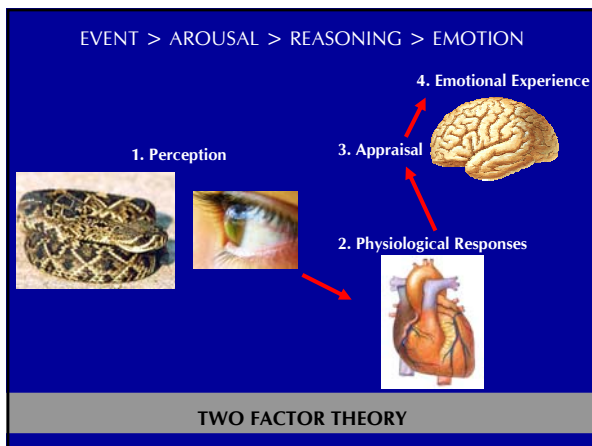
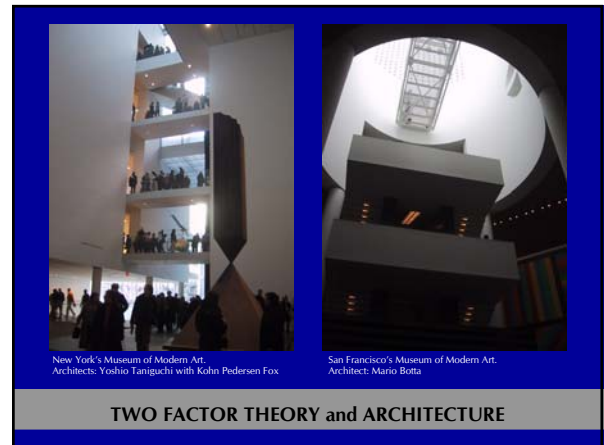
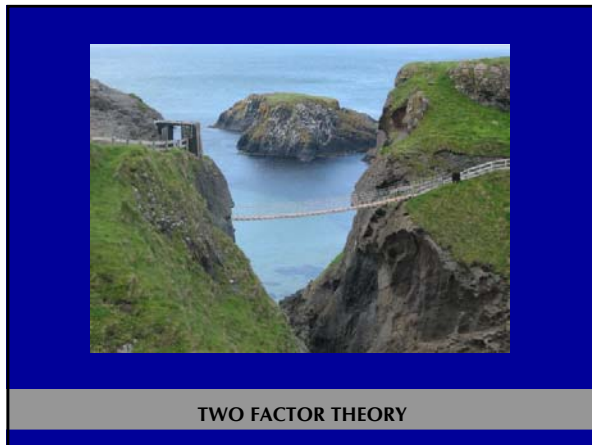
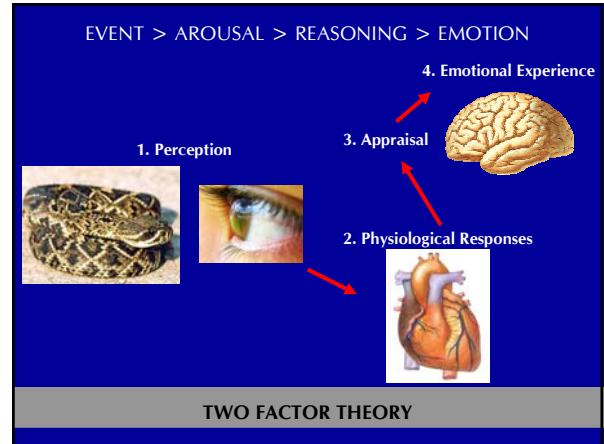
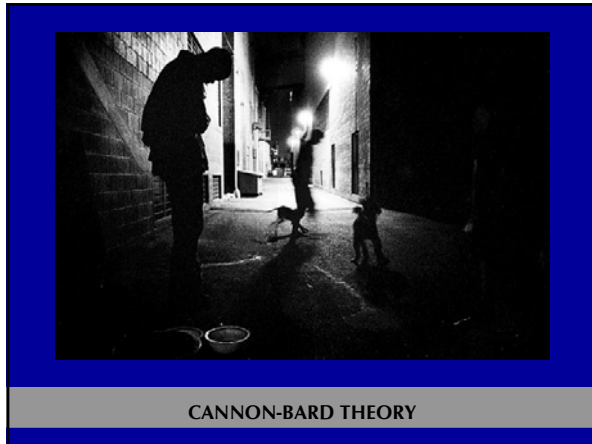
CANNON-BARD THEORY



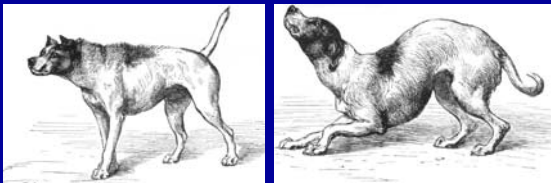
CANNON-BARD THEORY



CANNON-BARD THEORY




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Dog approaching another dog with hostile intentions. By Mr. Riviere

The Same in a humble and affectionate frame of mind. By Mr. Riviere

**ROLE OF FACIAL EMOTIONS**



**ROLE OF FACIAL EMOTIONS**

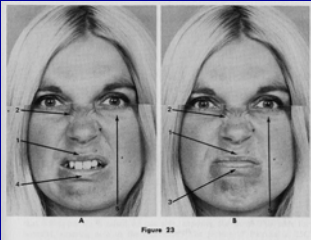


**ROLE OF FACIAL EMOTIONS**




**CROSS-CULTURAL CONSISTENCY**

EVENT > FACIAL CHANGES > EMOTION



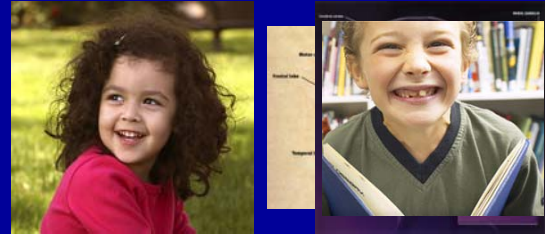
**FACIAL FEEDBACK THEORY**



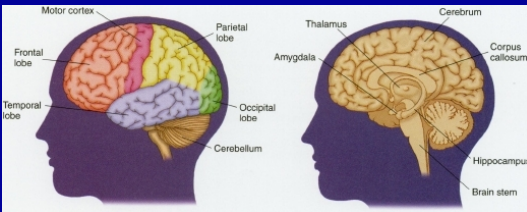
**FACIAL FEEDBACK THEORY**

"The automatic, preconscious components, including the intrinsic physiologic sensations that accompany them, are labeled *emotions*. The conscious awareness that we have emotions is labeled *feeling*."

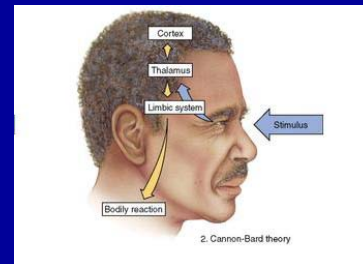
EMOTION V. FEELING



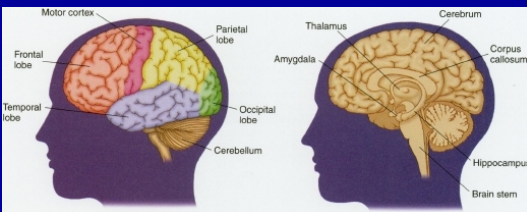
NEURAL BASIS OF EMOTION



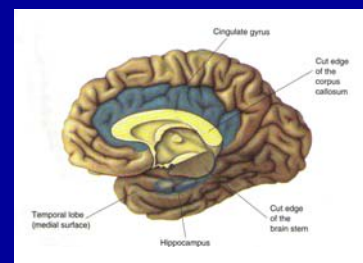
EMOTIONAL CENTER?



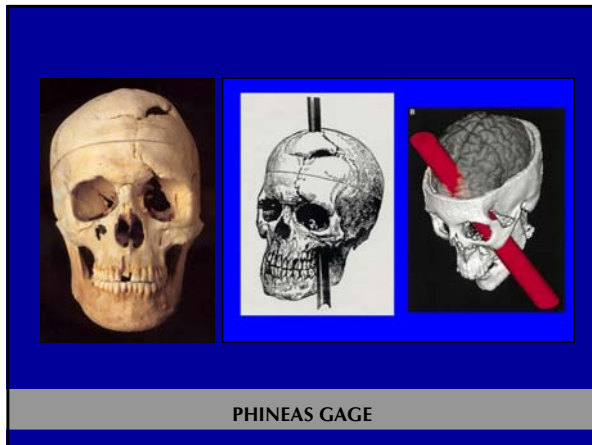
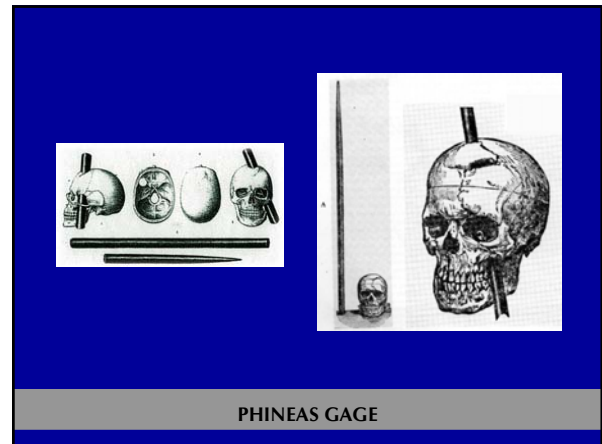
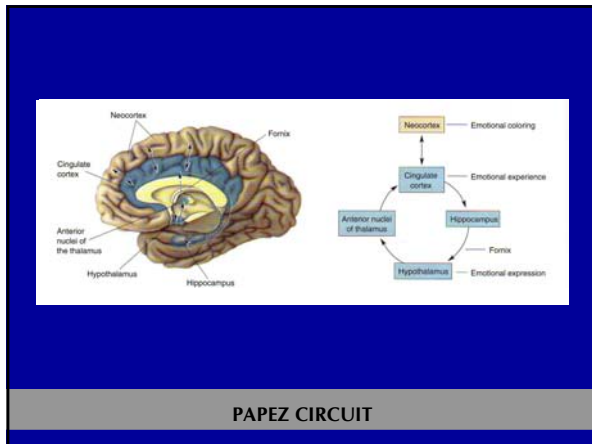
CANNON-BARD THEORY



EMOTIONAL CENTER?



LIMBIC SYSTEM



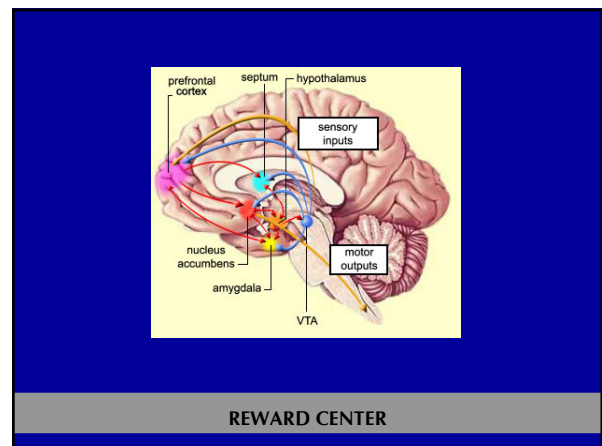
FEAR  
- Fear pathway involving the amygdala and cortex

JOY  
- Reward circuit

ANGER  
- Underactive executive function

SADNESS  
- Overactive/underactive amygdala and frontal cortex

**EMOTION AS A DISTRIBUTED SYSTEM**



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