



Emotion and Cognition (Part 2)

**Does your heart pound
because you are afraid...
or are you afraid
because you feel
your heart pounding?**

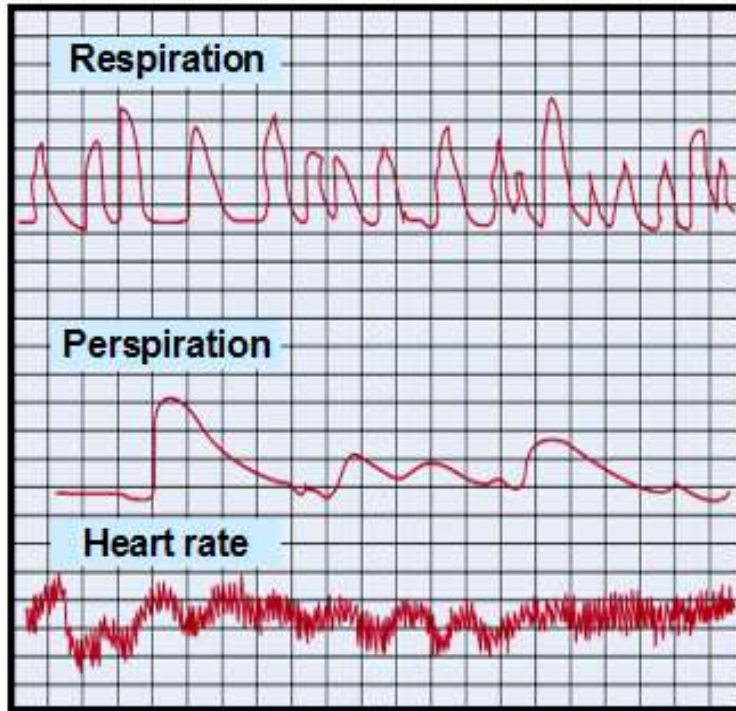




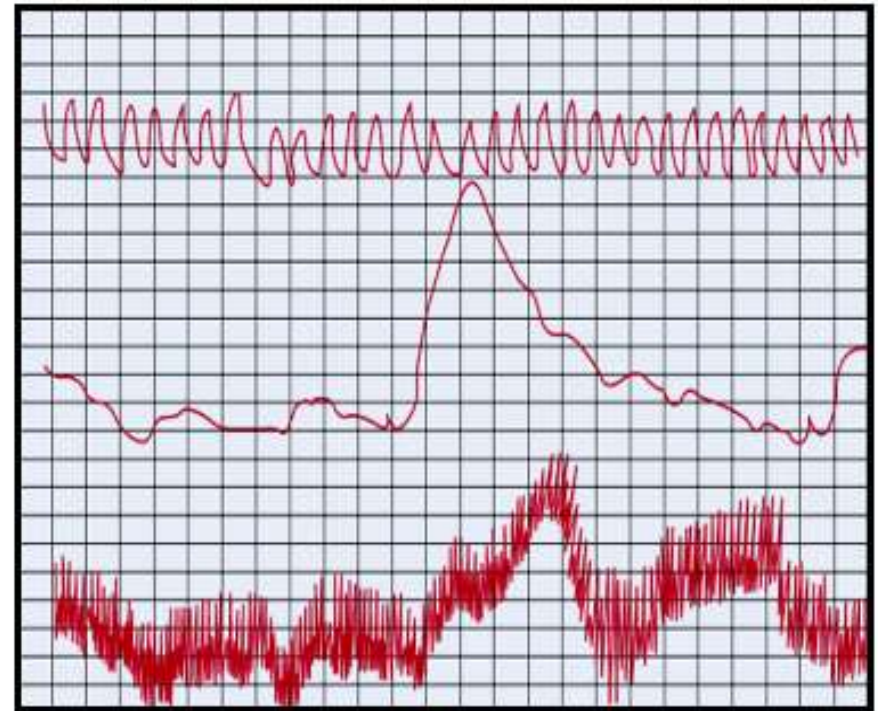
What is the connection
between how we *think*
(cognition) and how we *feel*
(emotion)?

Can we change our
emotions by changing our
thinking?

Polygraph testing



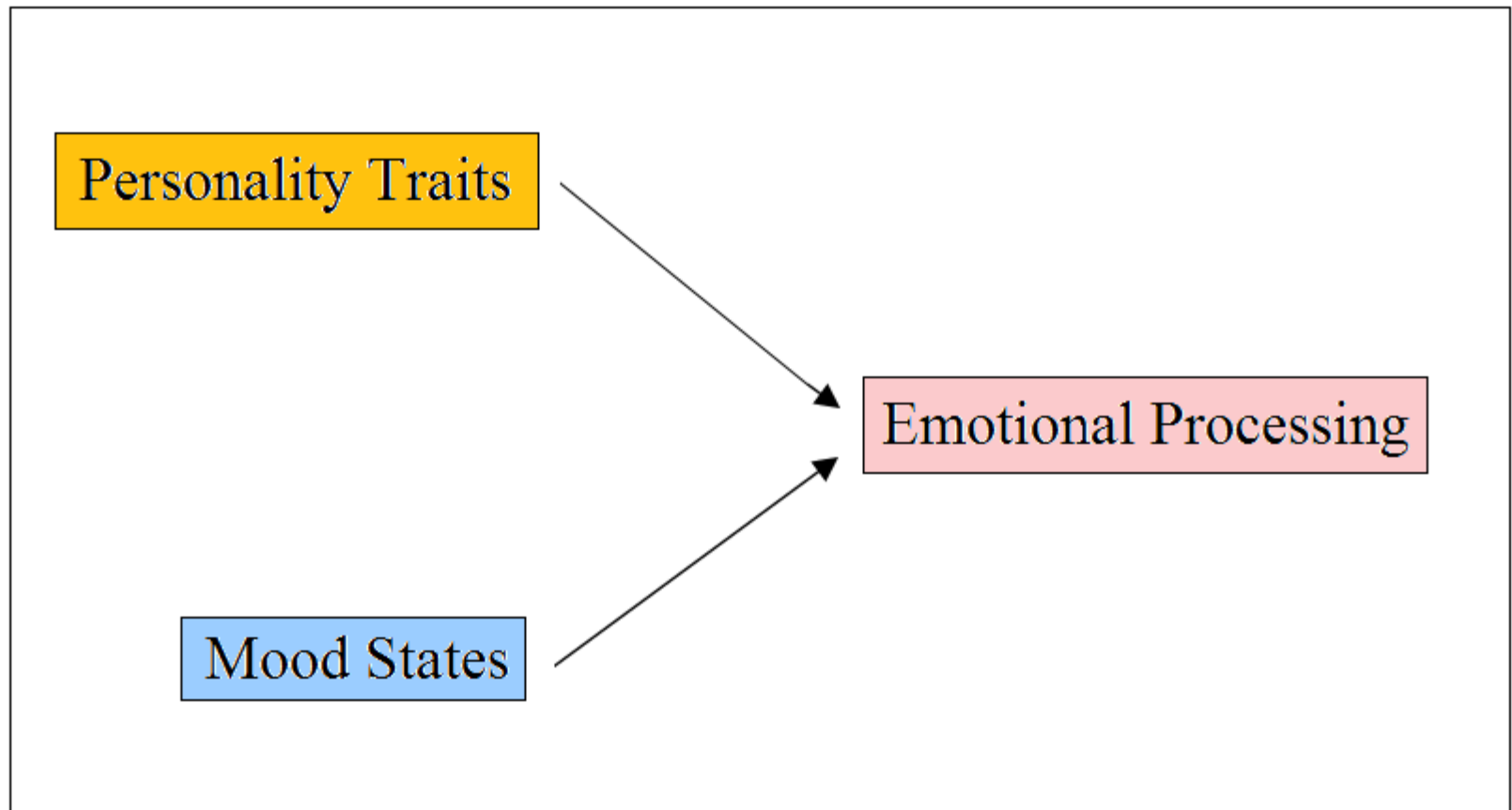
Control
question
(a)



Relevant
question
(b)



TRADITIONAL MODEL



MEDIATOR MODEL

Personality Traits

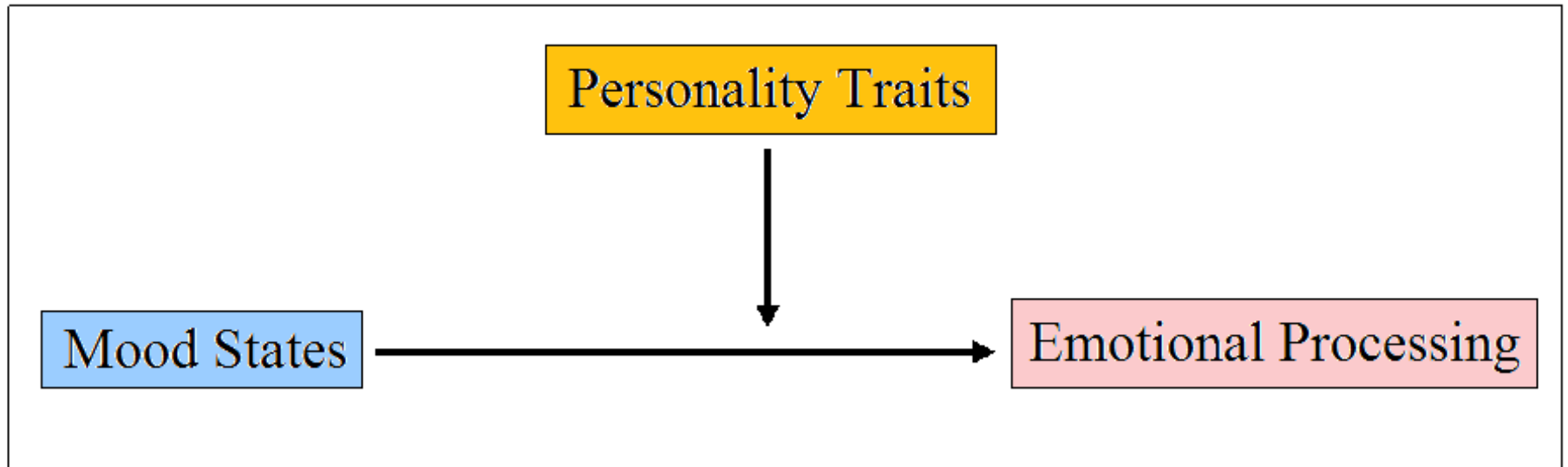


Mood States



Emotional Processing

MODERATOR MODEL



CLASSICAL CONDITIONING



UCS

Scary image/stimuli

UCR

Emotional
reaction
(fear)

BEFORE CONDITIONING

Neutral Stimulus

Static (noise)

UCS

Scary image/stimuli

UCR

Emotional
reaction
(fear)

AFTER CONDITIONING

CS

Static (noise)

CR

Emotional
reaction
(fear)





Emotion and Cognition

- **Episodic memory**

- Distinct, long-lasting, vivid recollection of stimuli
- Not necessarily the most accurate
(confidence \neq accuracy)



A satellite view of Manhattan showing ground zero (bottom left corner), the average location of the study's downtown group (circle 1), which had more vivid memories when recalling 9/11, and of the midtown group (circle 2).

CONGRUENT



INCONGRUENT

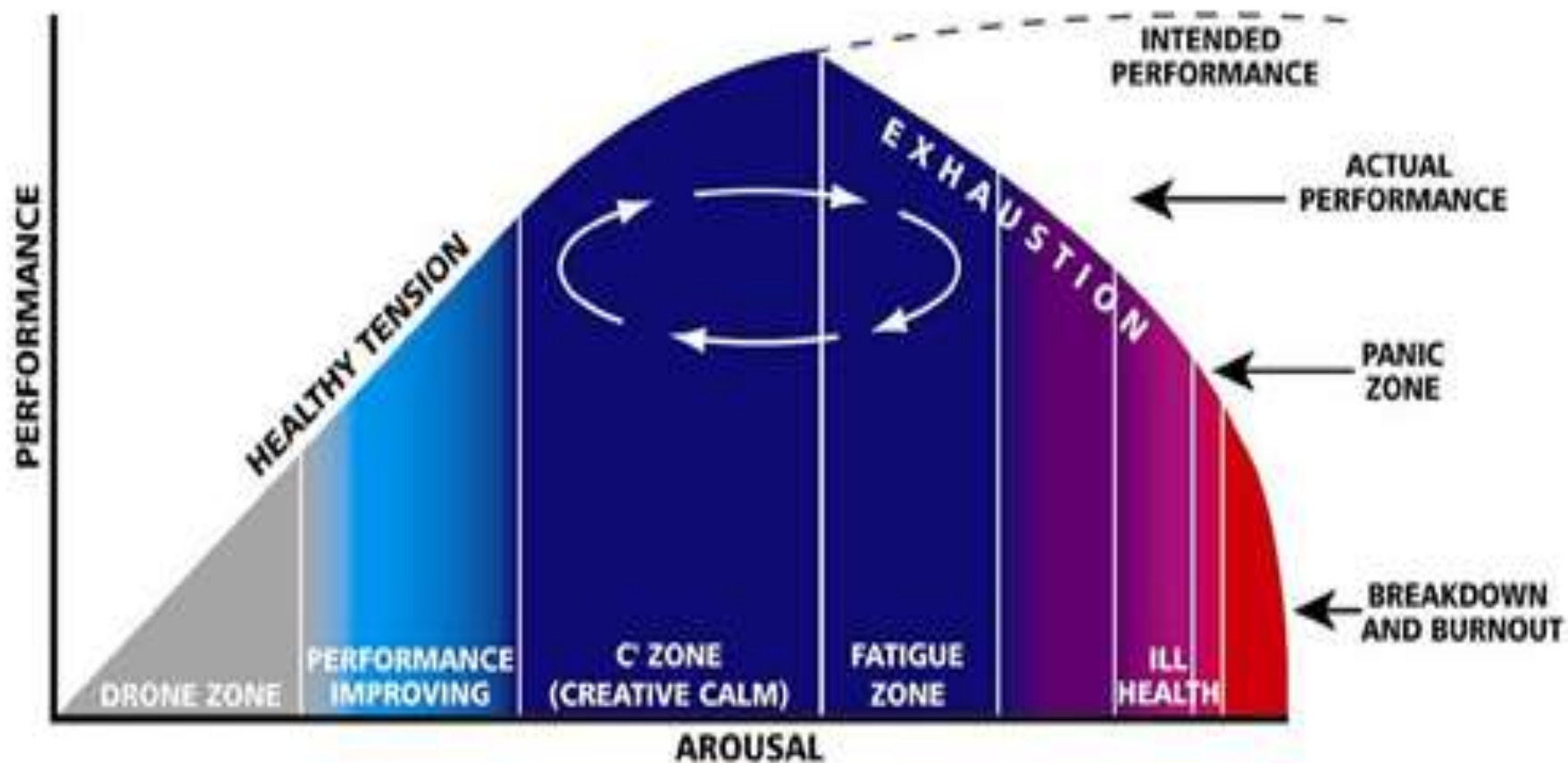




Emotion and Cognition

■ Yerkes-Dodson Law

- Subjective thresholds for arousal
- “Healthy” vs. “unhealthy” tension
- One of the most significant factors for entering into ‘flow’ state of immersion

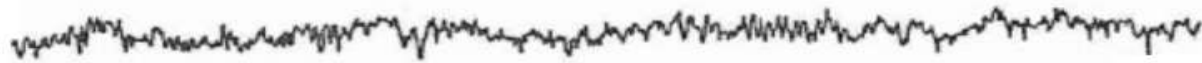




Emotion and Cognition

- **Flow state** (Csikszentmihalyi)
 - Flow is the product of profound changes in brain function and thinking
 - Produces “**transient hypofrontality**” in the prefrontal cortex
 - Dorsolateral frontal cortex also deactivates (quieting self-monitoring and impulsiveness)

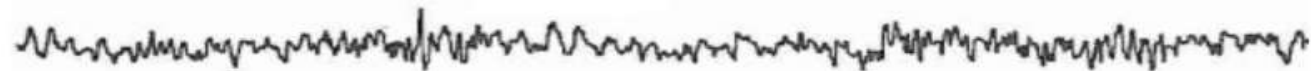
Awake



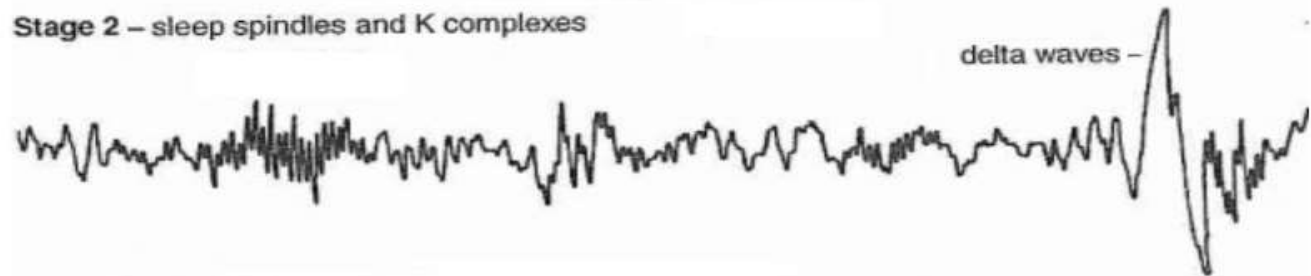
Drowsy – alpha waves



Stage 1 – theta waves



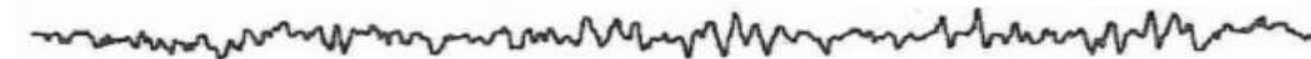
Stage 2 – sleep spindles and K complexes



Delta Sleep – delta waves



REM Sleep





Emotion and Cognition

- **Initiating flow state** (Csikszentmihalyi)
 1. Having concrete goals/rules
 2. Demands that fit within a person's capabilities
 3. Clear and timely feedback on goal achievement
 4. Eliminate distractions (as much as possible)

DELAYED GRATIFICATION RESEARCH





Emotion Regulation

- **Those who “delay gratification”:**
 - Show better overall concentration
 - Are better able to cope with stress and frustration
 - Report higher SAT/GRE test scores
 - Earn higher social competence ratings among peers



Emotion Regulation

- Defined
 - **Cognitive re-appraisal** and re-framing
 - Ability to maintain positive affect and initiate mood repair
 - Poor emotional regulation (i.e., **suppression**) strongly associated with increased stress reactivity

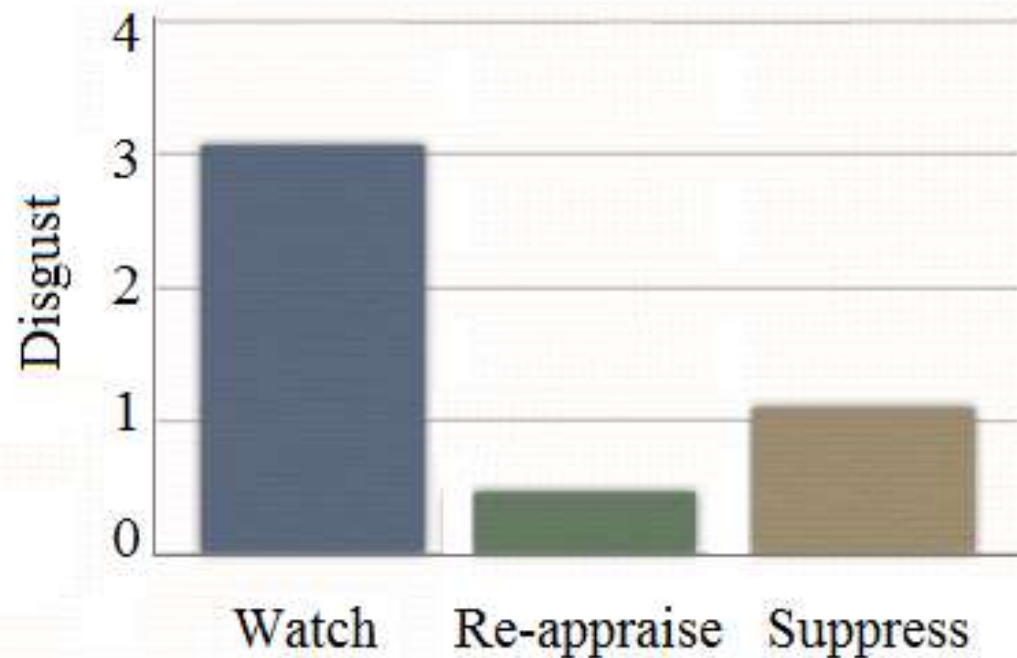


Emotion Regulation

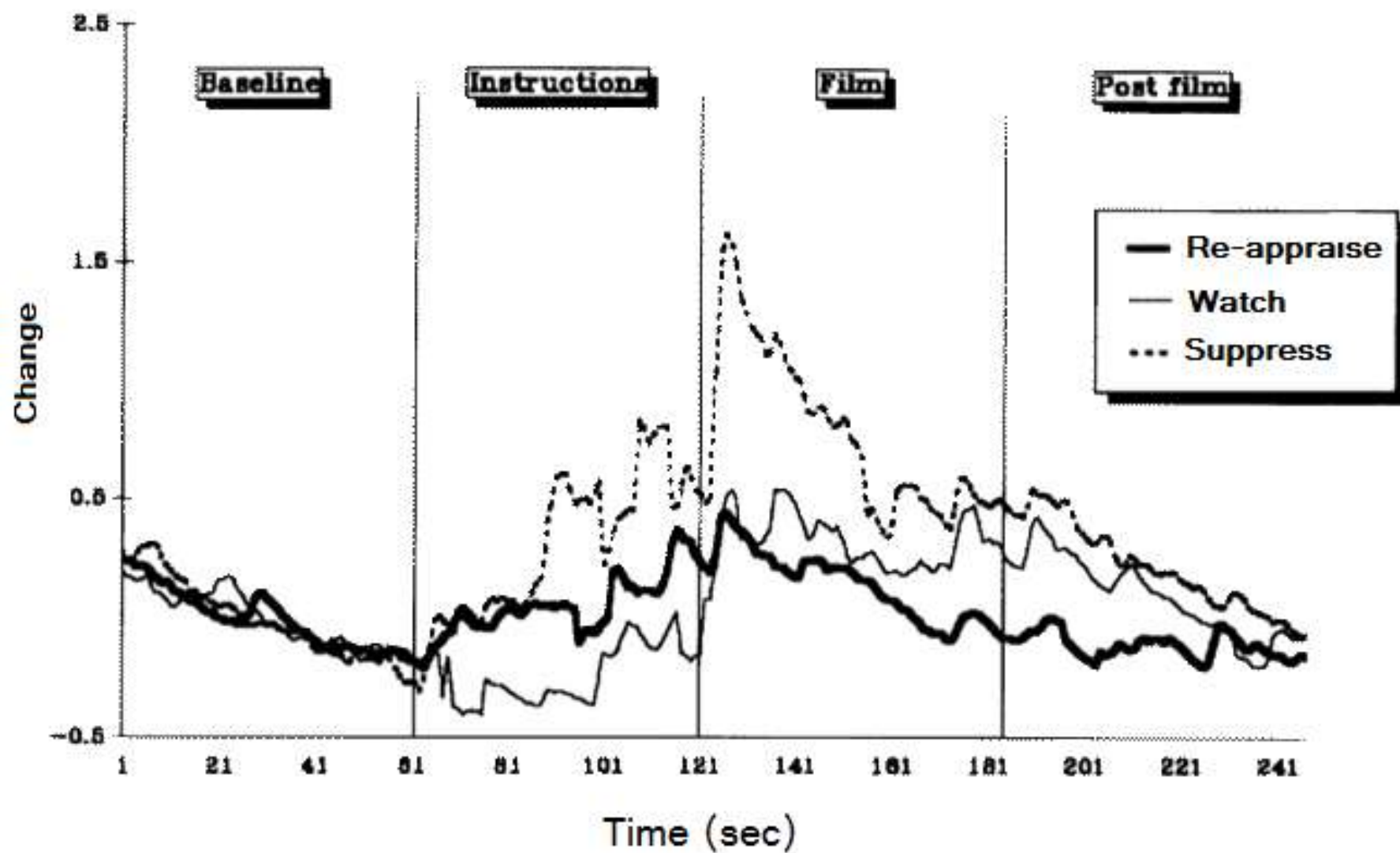
- Disgust and regulation study – Stanford University
 1. Subjects in fMRIs shown graphic video footage (surgical procedures, people vomiting, etc.)
 2. Re-appraisal subjects showed reduced amygdala activity after initial onset
 3. Suppression subjects showed higher and more continuous amygdala activity after onset

Re-appraisal and Suppression

- Goldin and Gross (1998)

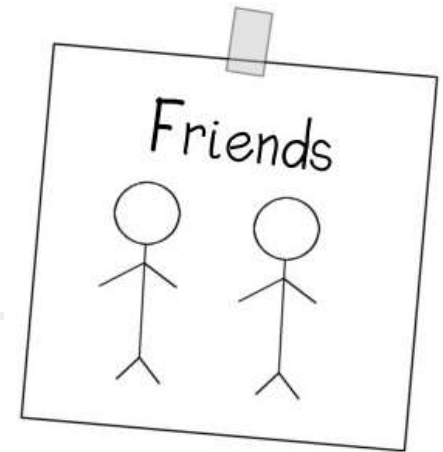


Goldin and Gross (1998) – Skin conductance levels





Emotion Regulation



- **Situation selection**

- Seek environmental “distractions”





Emotion Regulation

I DIDN'T SAY IT
WOULD BE EASY.
I SAID IT WOULD BE
WORTH IT.

- **Situation modification**

- Change the situation or behavior to alter outcomes or importance



FAIL

FASTER

