

Methods for Studying Emotion: Measurement and Manipulation

Psychology of Emotion

Day 3

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Getting our hands dirty...

- Studying emotions requires some quantitative measure of emotion.
- Quasi-experiments are often necessary due to practical constraints, so emotion is measured.
- Controlled experiments seek to manipulate emotions in the lab.
- Multi-method approach is ideal (but often not-practical.)
- Methods often related to theoretical approach of experimenter

I. Measuring Emotion

How do we measure emotions?

1. Physiology = ANS arousal
2. Brain Activation
3. Facial Expression = observation/FACS coding
4. Phenomenology = self-report ratings

I. Autonomic Nervous System Activation (“Fight/Flight Response”)

- Rapid and forceful contractions of the heart
- Rapid and deep breathing
- Increased blood pressure
- Sweating

Physiological Measures of Arousal

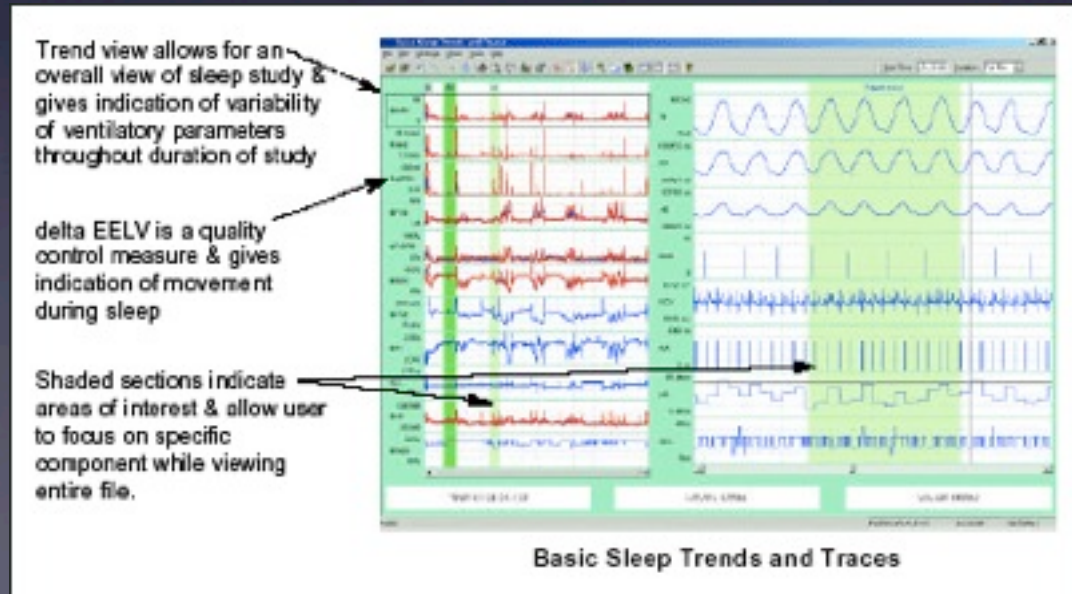
- Heart rate (interbeat interval)
- Finger and ear pulse transmission time (time it takes blood to go from heart to finger/ear = how hard the heart is beating)
- Respiration rate/breath intake
- Blood pressure
- Skin conductance level (GSR)
- General somatic activity (electromechanical transducer under chair detects motion)



Not just for the lab: Ambulatory Measures



Electrocardiogram
Respiration
Physical activity and posture
Sleep
Electronic diary

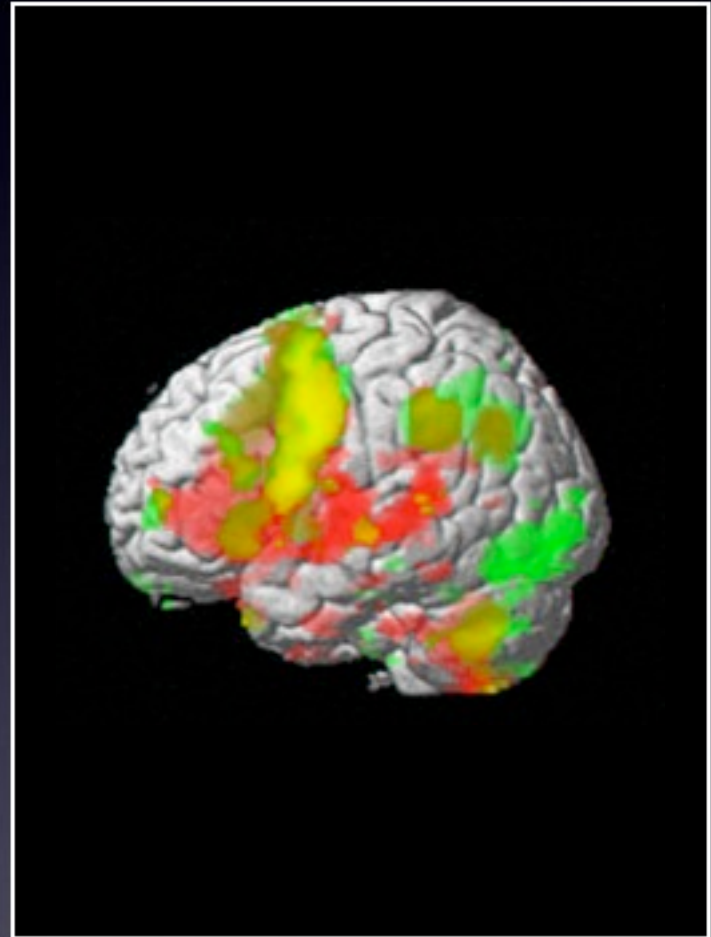


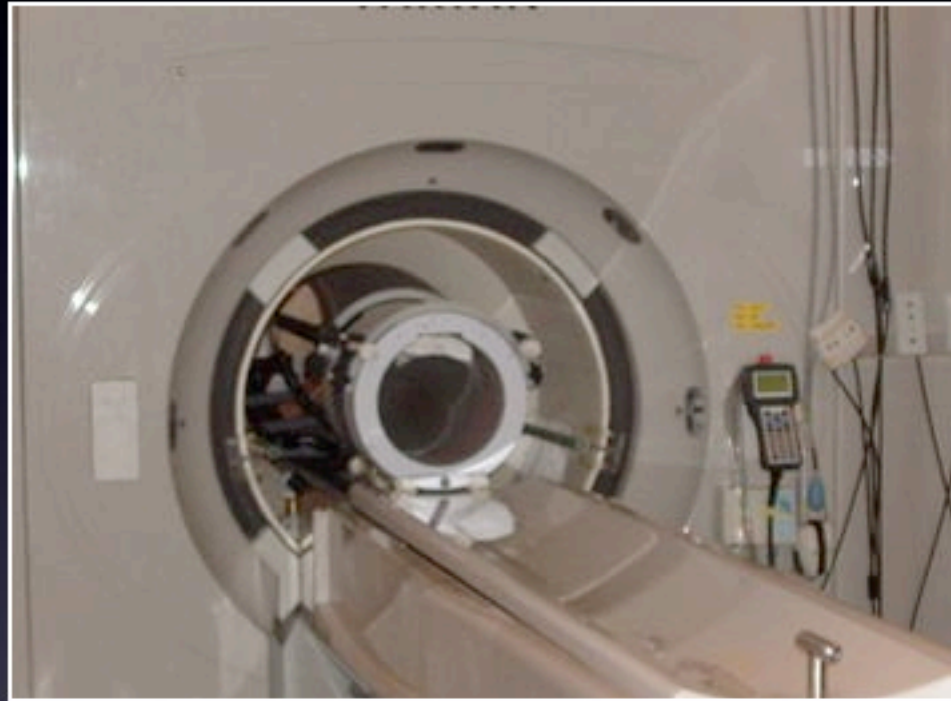
But...does each emotion have a distinct physiological pattern?

- Not in an absolute sense
- But within an individual...
 - Heart rate acceleration
 - ▶ Anger, fear, sadness > disgust
 - ▶ Anger, fear > happiness

2. Brain Activation

- Areas of the brain implicated in emotion?

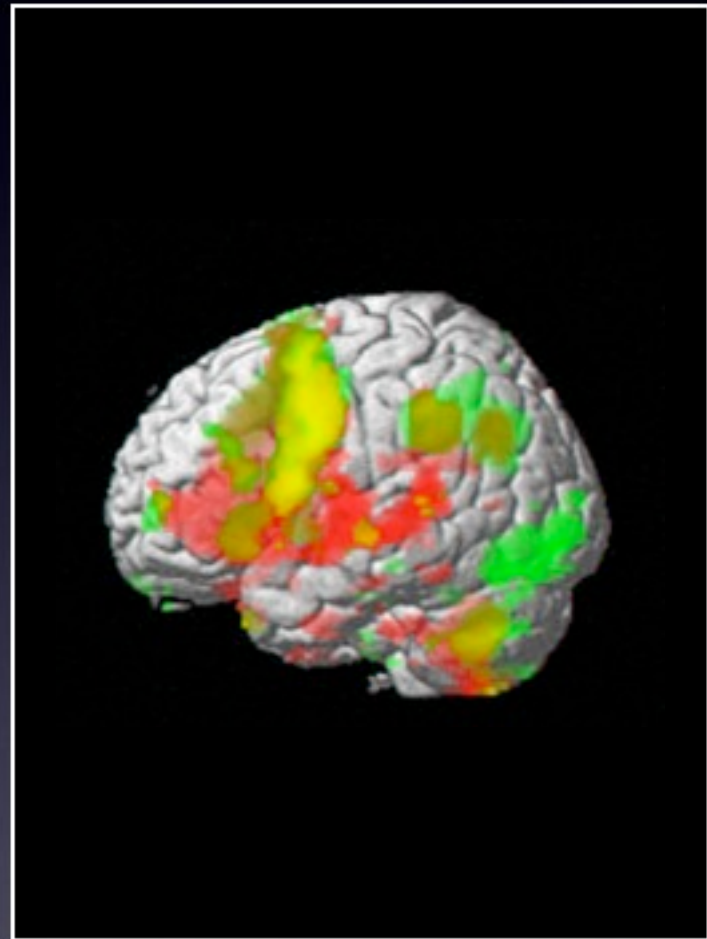




fMRI

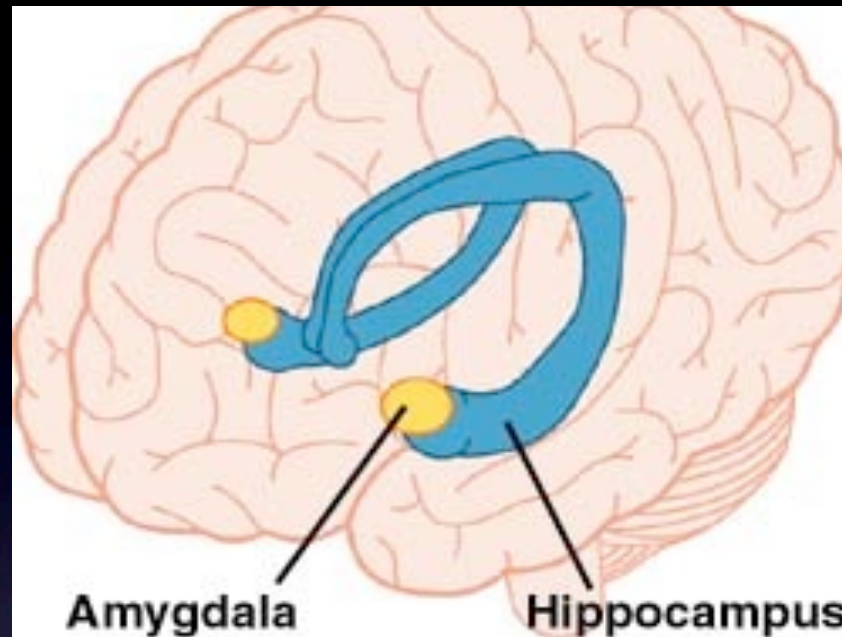
2. Brain Activation

- Areas of the brain implicated in emotion?
- Arousing stimuli minus control stimuli
- Difference = where emotion lies.



Your mom is ugly

Your mom is not ugly

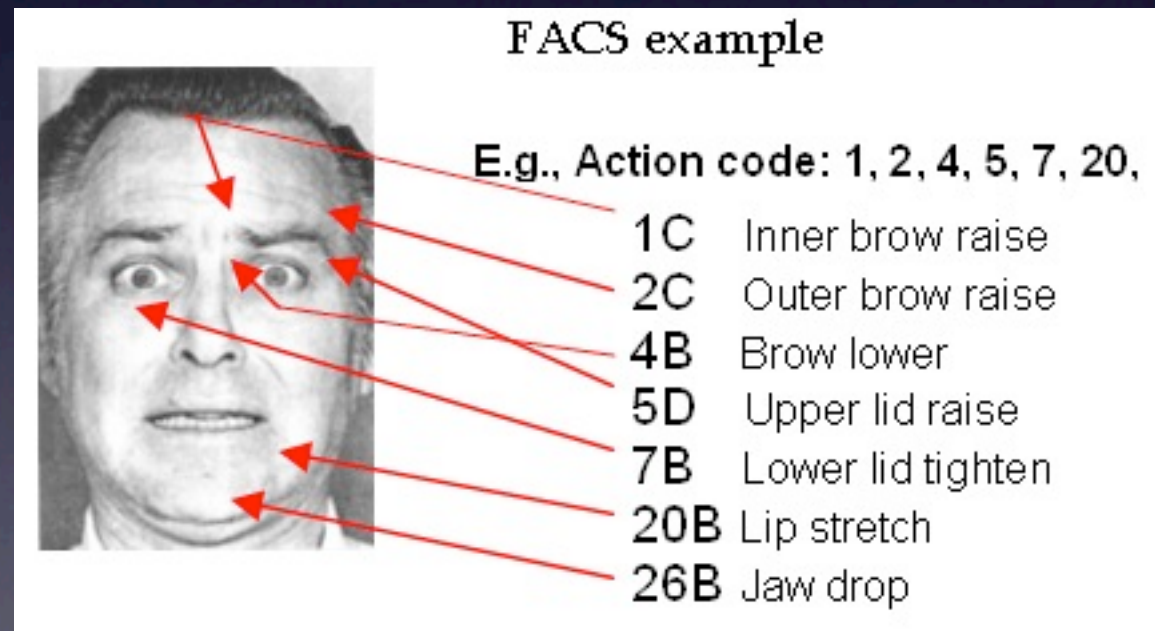


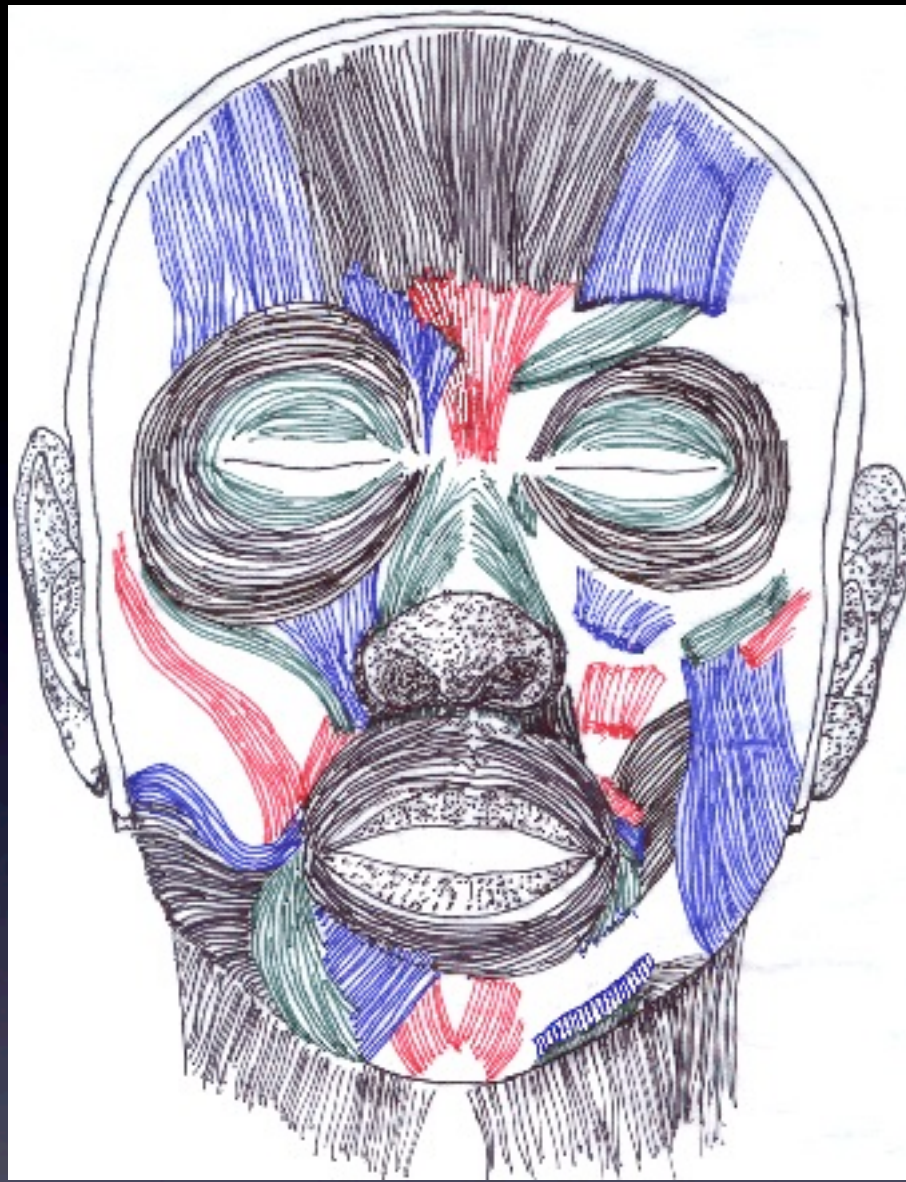
Emotional Experience

-Fear, Anger, Surprise?

3. Observing Emotions

- Subjective Impressions
 - Train judges
- Facial Action Coding System (FACS)
 - Identify facial muscle movement
 - Specific combinations known to reflect a particular emotion





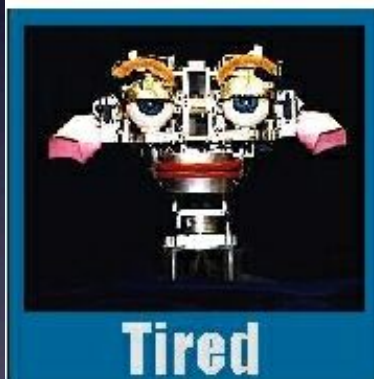
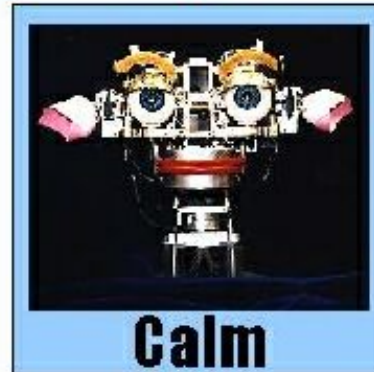
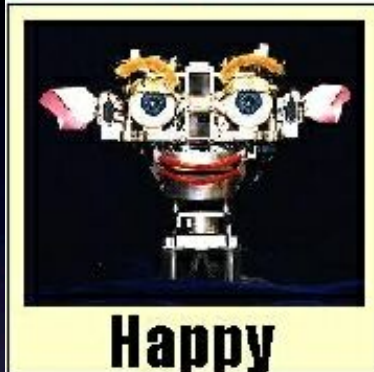
Facial Muscles



Example: Genuine
(Duchenne) Smile



Fake (non-Duchenne)
Smile



Kismet the Robot

4. Phenomenology: Self-Report Measures of Emotion

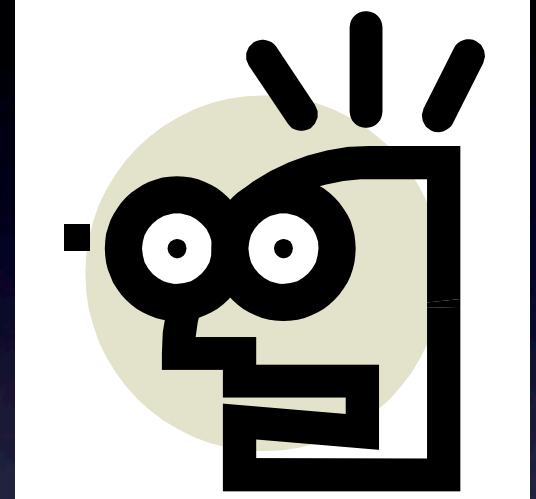
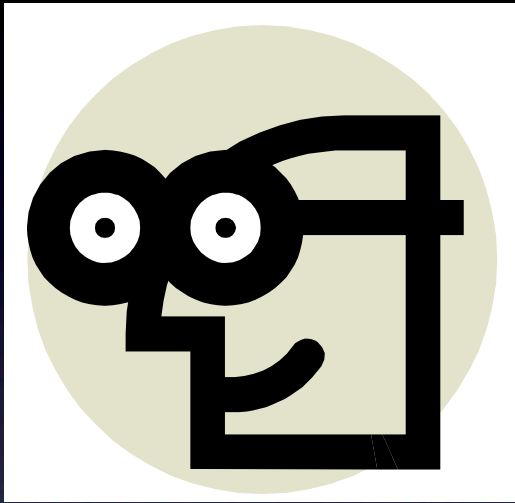
- Emotion rating dial
- Depiction of arousal (Stress Appraisal Measure; SAM)
- Emotion scales
- Ecological Momentary Assessment (EMA)

Emotion Rating Dial

Use dial to indicate
on-line changes in
positive to negative
emotion



Stress Appraisal Measure (SAM)



Rate where you fall on the scale

Emotion Rating Scales

Below are a number of words that describe different feelings and emotions. Consider to what extent you generally feel this way, that is, how you feel on average over time.

1-----2-----3-----4-----5
very slightly a little moderately quite a bit extremely
or not at all

Positive Emotion

Interested	Alert
Excited	Inspired
Strong	Determined
Attentive	Active
Proud	Enthusiastic

Negative Emotion

Irritable	Distressed
Ashamed	Upset
Nervous	Guilty
Scared	Hostile
Jittery	Afraid

Ecological Momentary Assessment (EMA)

- Quasi-naturalistic method
- Signaling participants at random times throughout the day
- Self-reports about nature and quality of emotional experience as it happens



Measuring Emotions: Conclusions

- Provide fairly non-obtrusive way to study emotions.
- Can document “real life” emotional experiences.
- But...significant method variance. Unknown how all measures relate to each other.
- Also difficult to make causal claims-- correlational by nature.

II. Manipulating Feelings: Elicitation of Emotion

Why manipulate?

- Manipulations of emotion offer cleaner designs (no confounds)
- Provide causal evidence
- Are simply more fun
- But--threat of ecological invalidity
- Are these really the same things as our daily experiences of emotions?

Eliciting Emotions

1. Manipulating “arousal”
2. Emotional Pictures/Video Clips
3. Relived Emotions Task
4. Interactive lab manipulations
5. Directed Facial Action Task

I. Manipulating “Arousal”

- Many experiments interested in simply “emotional arousal”
- Illustrated vs. Non-illustrated stories (e.g., car accident)
- Direct manipulations of arousal (e.g., epinephrine shot, cold pressor task)



Cold Pressor Task

Example: Presence of pets... (Allen, 2001)

- Caregivers of patients with traumatic brain injuries were assigned to dogs for 6 months
- No-dog control group
- Pre- and Post- measures of emotional reactivity during cold pressor task.
- Having a dog significantly lowered emotional reactivity...

2. Emotion-Eliciting Pictures and Video



International Affective Picture Set (IAPS)



Video Library

Example: Valdesolo & Desteno (2006)

- Manipulated good mood by showing SNL skit (vs. neutral control film)
- Asked participants to make judgments of moral permissibility for killing one person to save 3
- People in good moods more likely to judge killing 1 to save 3 as morally permissible





3. Relived Emotions Task

“Think back and tell me about a time...”



4. Interactive Lab Manipulations

- Attempt to approximate real-life situations
- Make for compelling stories...
- Also difficult--time-consuming and involving (e.g, often require confederates with special training)

Pissing people off in the lab

Dov Cohen's "Slick" Procedure

1. Subject and confederate both work on experiment
2. Confederate instructed to:
 - refer to subject as "slick"
 - wad paper up and throw at subject
 - talk loudly on cellphone



Similar lab techniques...

- Bump into you in the hallway and mutter “asshole”
- Fill out a questionnaire that asks you offensive questions
- Happy/Angry confederate
- Interactive games- e.g., Ostracism and “Cyberball”

5. Directed Facial Action (Facial Feedback Hypothesis)

Explicit: Instructed facial muscle movement in
an Emotional Configuration



At rest



Coached Movement

Implicit: Move facial muscles for a different task



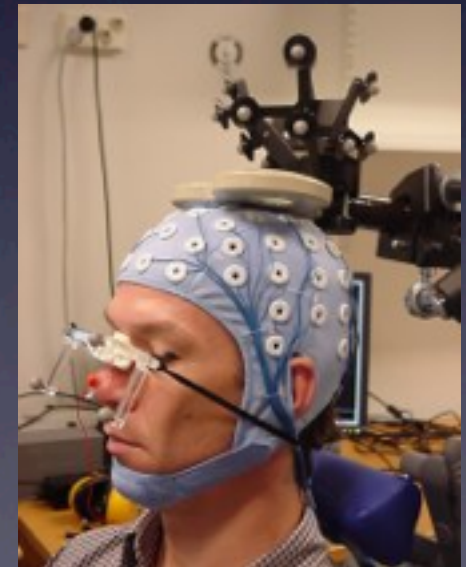
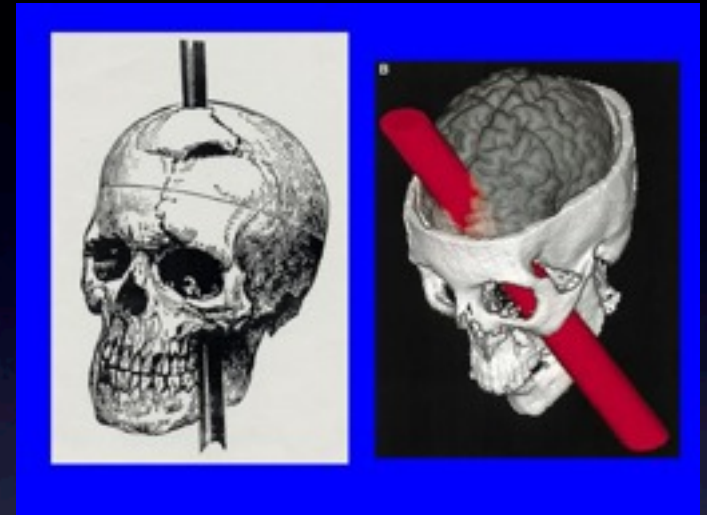


Example: Facial Feedback Hypothesis

(Strack, Martin, & Stepper, 1988)

6. Brain Lesions

- Naturally occurring lesions
 - Damage
 - Disease (e.g., amygdala patients)
- Trans Cranial Magnetic Stimulation (TMS)



Conclusion: The science of emotion is only as good as its techniques

- The effectiveness of measurement and manipulation is what our results rest on.
- Use of empirical techniques often varies with:
 - Goals of study
 - Realistic constraints (funding, time, equipment)
 - Theoretical background of experimenters
- Multi-method approaches becoming more common



Wednesday: The Function and Evolution of Emotion