

Physical Pain & Mental Pain

How are they related?

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Everyday Language

- Painful experience
- It hurt me to the bottom of my heart
- By saying so he hit a sore spot
- Grief is a painful process
- Etc.....

International **A**ssociation for the **S**tudy of **P**ain

- “Pain is an unpleasant sensory *and* emotional experience associated with actual or potential tissue damage, or described in terms of such damage”

IASP Definition

- This definition implies that pain is a subjective experience with both sensory and affective dimensions, that are usually but *not necessarily* associated with tissue damage (nociception)

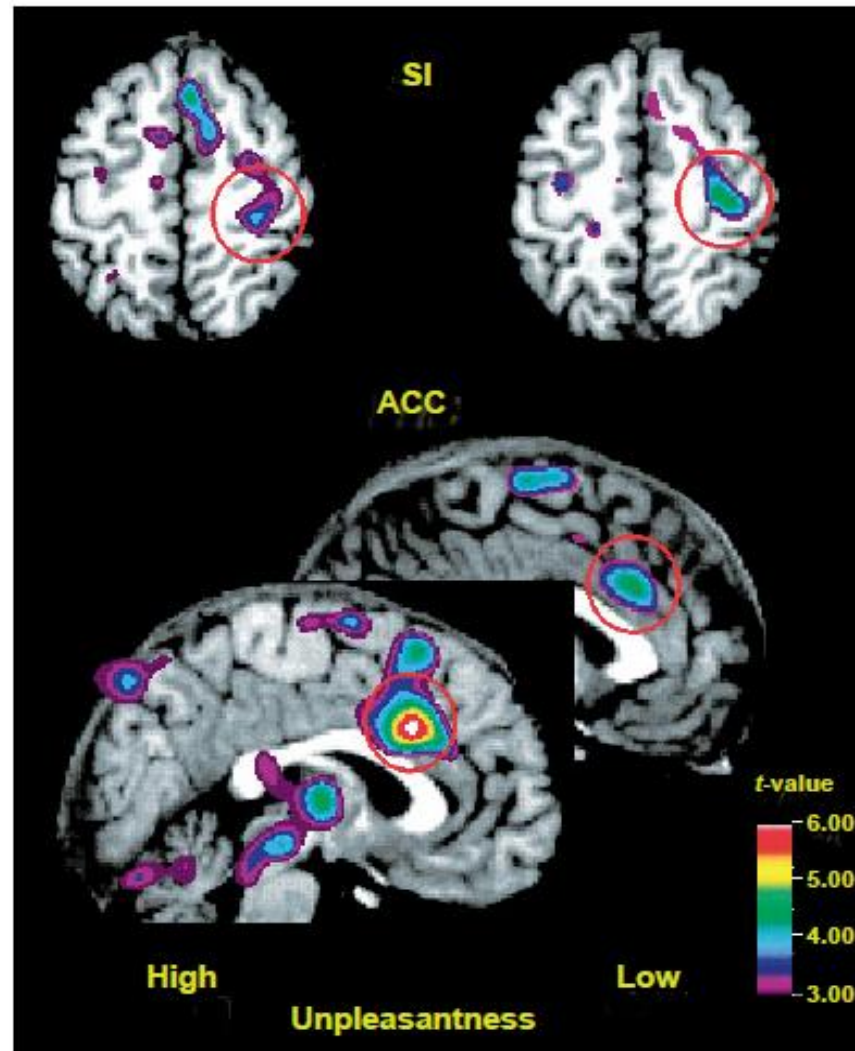
Dimensions of pain (Melzack and Casey 1968)

- Sensory-discriminative:
 - Pain Sensation: Intensity (rational)
 - *How intense is the pain?*
 - Somatosensory Cortex 1 & 2 (S1; S2)

Dimensions of pain (Melzack and Casey 1968)

- Emotional-motivational:
 - Pain Affect: Unpleasantness (**emotional/suffering**)
 - *How much does the pain bother you?*
 - Anterior Cingular Cortex (ACC), Insular Cortex (IC)

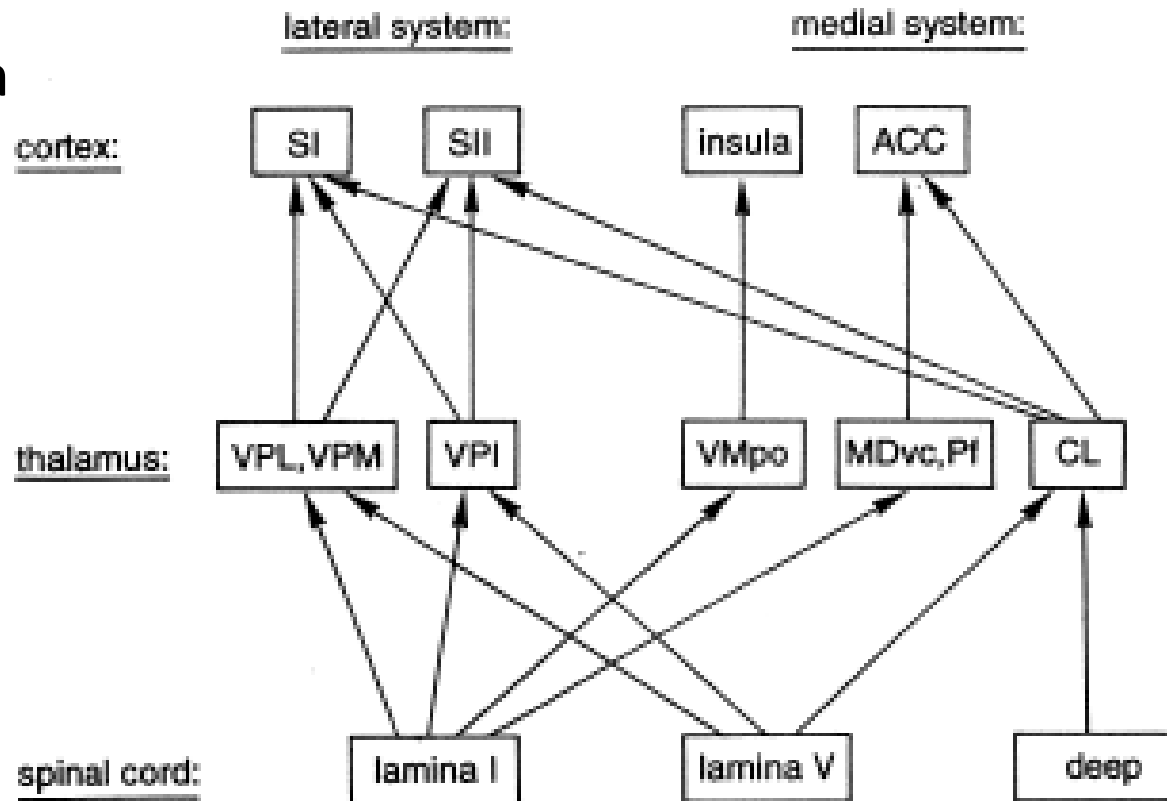
Pain Affect encoded in Anterior Cingulate But Not Somatosensory Cortex (Rainville 1997)



Pain Circuits in the Human Brain

(Treede 1999)

Sensation



Feeling

Social Exclusion: A Paradigm for Mental Pain

- Virtual ball tossing game
- Three players
- One of them is excluded with out forgoing information
- fMRI monitoring

Does rejection hurt? (Eisenberger 2003)

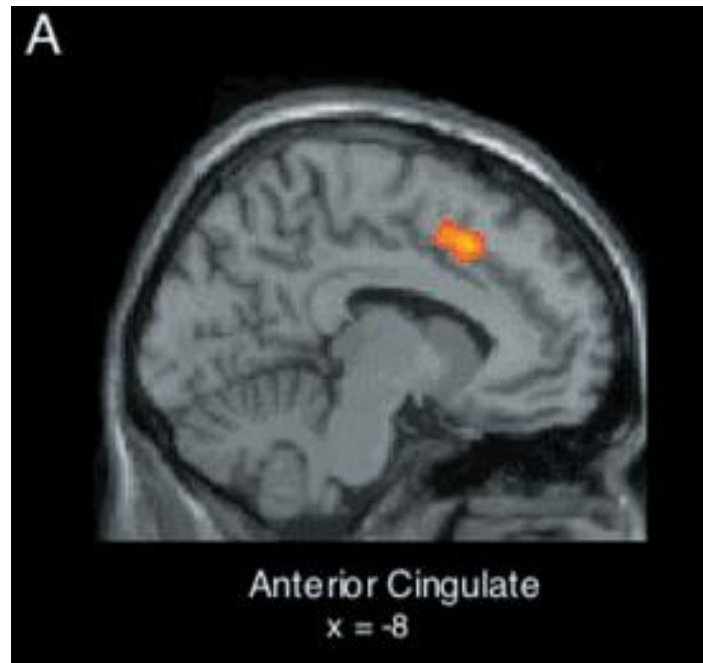


Fig. 1. (A) Increased activity in anterior cingulate cortex (ACC) during exclusion relative to inclusion.