



5 GIUGNO 2019

GIORNATA SCIENTIFICA DELLA FACOLTA DI MEDICINA E PSICOLOGIA

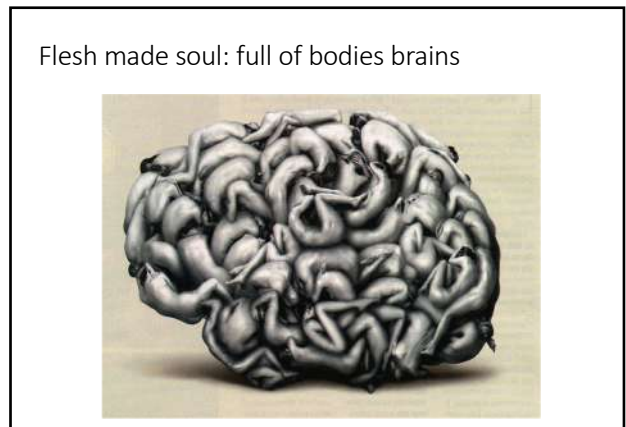
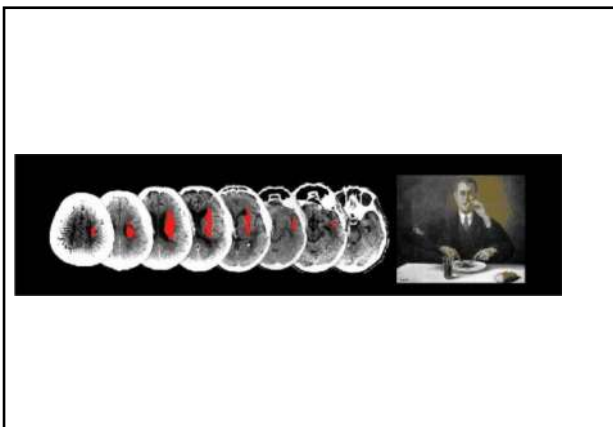
Aula Capozzi
Dip.to Scienze Odontostomatologiche,
Via Caserta, 6
Roma

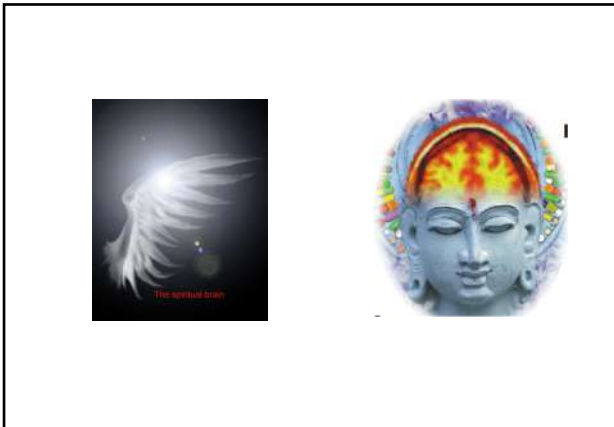
Anno Accademico 2018/2019




CoSAN (Cognitive, Social, Affective Neuroscience)
Laboratory

Contacts: salvatoremaria.aglioti@uniroma1.it
agliotilab.org






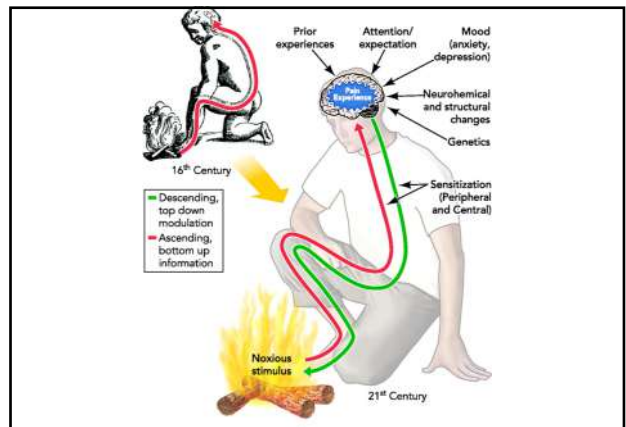
 **SAPIENZA**
UNIVERSITÀ DI ROMA

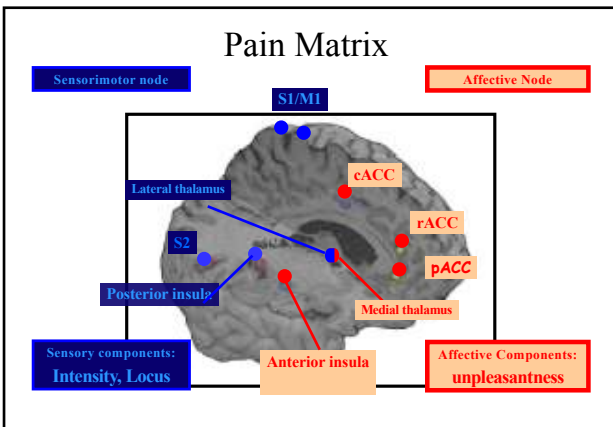
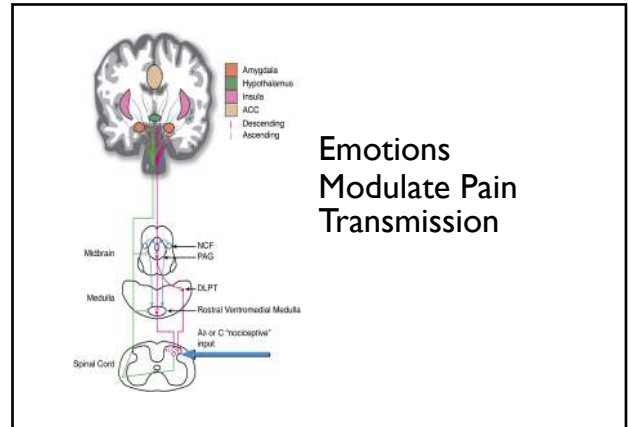
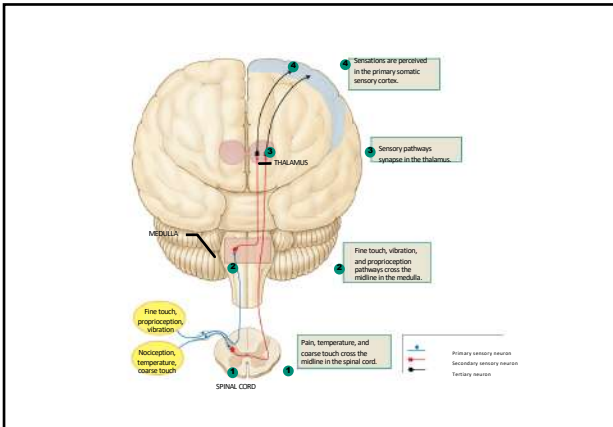
Salvatore Maria Aglioti
agliotilab.org

From pain perception & sharing ^{to}
existential neuroscience

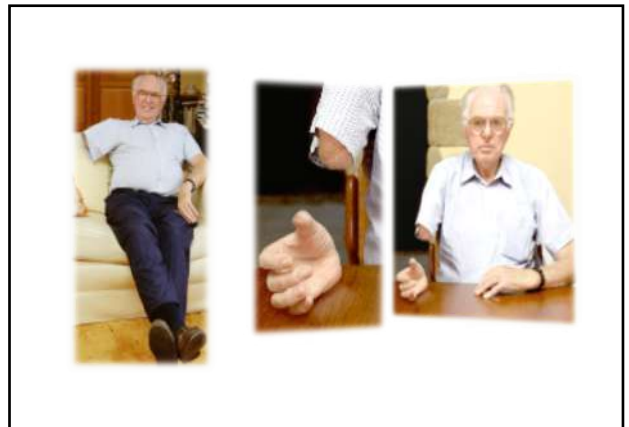
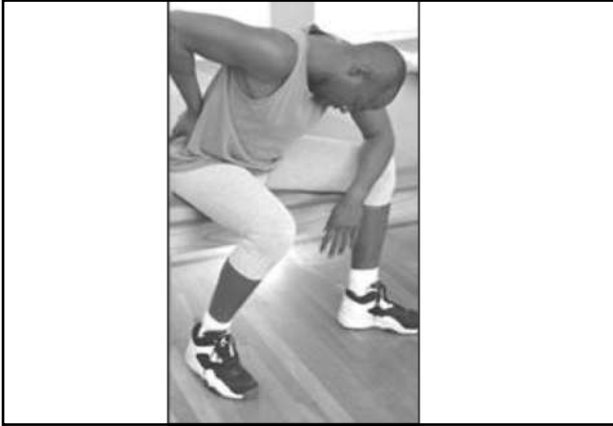


PAIN IS
“AN UNPLEASANT SENSORY AND EMOTIONAL
EXPERIENCE ASSOCIATED WITH ACTUAL OR
POTENTIAL TISSUE DAMAGE”
(IASP TASK FORCE ON TAXONOMY)





The multifarious pain





Body and soul pain

Rejection hurts:
social pain

Does Rejection Hurt? An fMRI Study of Social Exclusion

Naomi I. Eisenberger,^{1*} Matthew D. Lieberman,¹
Kipling D. Williams²

A neuroimaging study examined the neural correlates of social exclusion and tested the hypothesis that the brain bases of social pain are similar to those of physical pain. Participants were scanned while playing a virtual ball-tossing game in which they were ultimately excluded. Paralleling results from physical pain studies, the anterior cingulate cortex (ACC) was more active during exclusion than during inclusion and correlated positively with self-reported distress. Right ventral prefrontal cortex (RVFPFC) was active during exclusion and correlated negatively with self-reported distress. ACC changes mediated the RVFPFC-distress correlation, suggesting that RVFPFC regulates the distress of social exclusion by disrupting ACC activity.

Inclusion



Ostracism

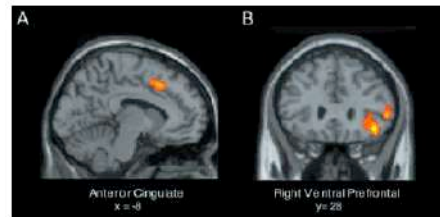


Fig. 1. (A) Increased activity in anterior cingulate cortex (ACC) during exclusion relative to inclusion. (B) Increased activity in right ventral prefrontal cortex (RVFPFC) during exclusion relative to inclusion.

C. Nathan DeWall,
Geoff MacDonald,
Gregory D. Webster,
Carrie L. Masten, Roy
F. Baumeister, Caitlin
Powell, David
Combs, David R.
Schurtz, Tyler F.
Stillman, Dianne M.
Tice, and Naomi I.
Eisenberger.
**Acetaminophen
Reduces Social Pain:
Behavioral and
Neural Evidence.**
*Psychological
Science*, 2010; 21:
931-937 DOI:
[10.1177/0956797610374741](https://doi.org/10.1177/0956797610374741)

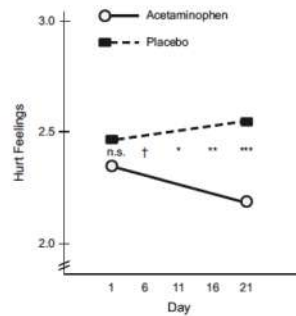


Fig. 1. Participants' hurt feelings (according to the Hurt Feelings Scale; Leary & Springer, 2001) in Experiment 1 as a function of the time of assessment (Day 1 through Day 21), for both the placebo group and the acetaminophen group. The statistical result for the between-groups comparison is given for each day ($^{\dagger}p < .10$, $^*p < .05$, $^{**}p < .01$, $^{***}p < .005$).

C. Nathan DeWall,
Geoff MacDonald,
Gregory D. Webster,
Carrie L. Masten,
Roy F. Baumeister, Caitlin
Powell, David
Combs, David R.
Schurtz, Tyler F.
Stillman, Dianne M.
Tice, and Naomi I.
Eisenberger.
**Acetaminophen
Reduces Social Pain
Behavioral and
Neural Evidence.**
*Psychological
Science*, 2010; 21:
931-937 DOI:
[10.1177/0956797610374741](https://doi.org/10.1177/0956797610374741)

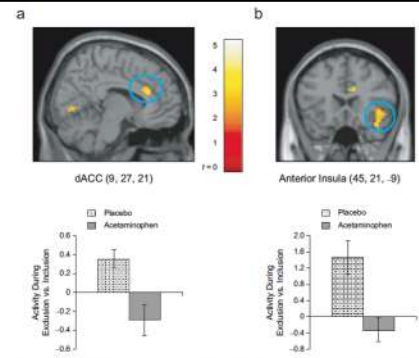
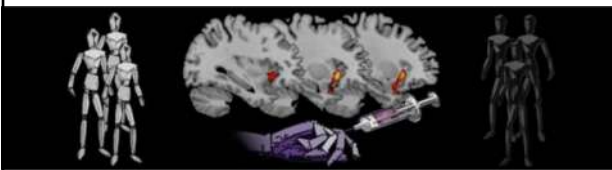


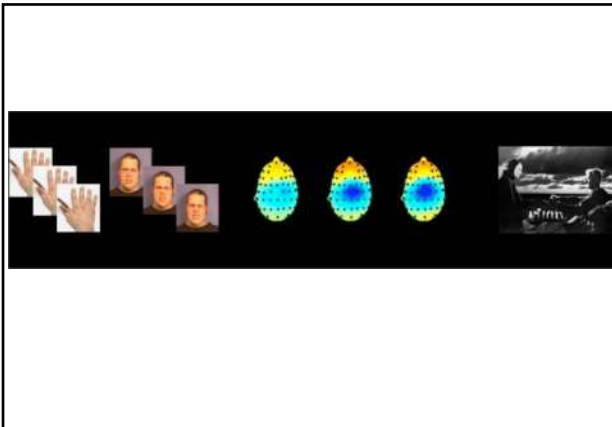
Fig. 3. Results from the whole-brain, between-groups analysis in Experiment 2: change in neural activity (parameter estimates during exclusion vs. inclusion) in (a) dorsal anterior cingulate cortex (dACC) and (b) right anterior insula in participants who took acetaminophen and those who took placebo. Error bars represent standard errors. Comparisons were calculated using a significance level of $p < .005$, with a 25-voxel extent threshold. The illustrations above and graphs show change in intensity of neural activity that was greater for participants who took placebo than for those who took acetaminophen (see the color bar); results are averaged across the entire cluster and both conditions. The colored regions are those for which results are given in this bar graph.

Empathic pain sharing



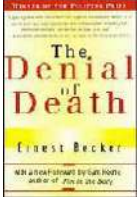
Salvatore Maria Aglioti
agliotilab.org

From pain perception & sharing to existential
neuroscience



Terror Management Theory

- Ernest Becker
- DENIAL OF DEATH (1974)
- Multidisciplinary approach to humanity




THE PROBLEM

Instinct for self-preservation
(all animals)
+
Awareness of mortality
(humans only)
=
TERROR or anxiety!


Existential Neuroscience

Human beings are explicitly aware of the inevitability of death, a thought that creates the potential for overwhelming terror


This terror is reduced by two psychological phenomena: Cultural Worldviews and Self-Esteem



Jeff Greenberg



Sheldon Solomon



Tom Pyszczynski

Terror Management Theory (TMT) : asserts that our knowledge of our mortality is the primary motivating force that guides everyday human behavior

Consequently, when a person is primed to think about death, they become observably hostile to people with different beliefs and observably more fond of people with similar beliefs.

Cultural worldview & Self-esteem

Cultural worldview :

Humanly constructed beliefs about the nature of reality shared by individuals in a group

Provides a conception of the universe

Imbues the world with order, meaning, and permanence.

Sets standards of valued behavior

Minimizes death anxiety by promises of immortality (symbolic and/or literal) to those who live up to these standards

Cultural worldview & Self-esteem

Self-esteem: the perception that one is a person of value in a world of meaning

Obtained if standards of valued behavior are satisfied

Self-esteem buffers death anxiety, by making you feel like a person of value within your cultural worldview. You feel a part of something bigger than yourself; something that will last long after you are gone.

Mortality Salience Hypothesis: when primed to think about death, one's cultural worldview, religious belief system, or self-esteem, serve a death-denying function. Threatening these constructs produce defenses aimed at restoring psychological equanimity (i.e. returning the individual to a state of feeling invulnerable).

Death Anxiety Buffering: positive exposure to one's cultural worldview, religious belief system, or experiencing self-esteem enhancement can buffer the anxiety that would have been experienced when primed to think about death (mortality salience).

First empirical studies...

Rosenblatt et al. (1989): Hypotheses: If Moral Values represent Cultural Worldviews and prostitution is a violation of moral values then, under the mortality salience paradigm Judges should be more punitive as a way to bolster their Worldview Defense Mechanism

Twenty-two municipal court judges from Tucson, Arizona completed a series of personality questionnaires. Half were randomly assigned to the MS condition and answered two open-ended questions about death.

The judges were then given a hypothetical case in which they were asked to set bond for accused prostitutes. Judges read case brief and then allotted bail to the alleged prostitute. \$ amount ranged from \$100 - \$999

Those judges in the mortality salience group set bond at an average of \$455
Those judges in the control group set bond at an average of \$50

The judges who had been reminded of their death were much harsher in their punishment of a person who had violated rules of social worldview than were judges for whom death had not been made salient.

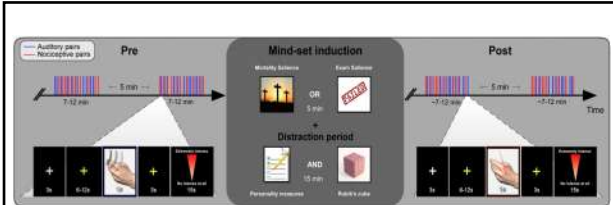


Fig. 1. Experimental design. EEG activity and subjective ratings of intensity and threat of sensory stimulation were collected in two separate experimental sessions during which participants underwent a 'mortality salience' (MS) or an 'exam salience' (ES) mind-set induction (central panel, top). ERPs elicited by either nociceptive somatosensory stimuli delivered to the hand dorsum (red) or by auditory stimuli delivered from the same area (blue) were recorded in four blocks.

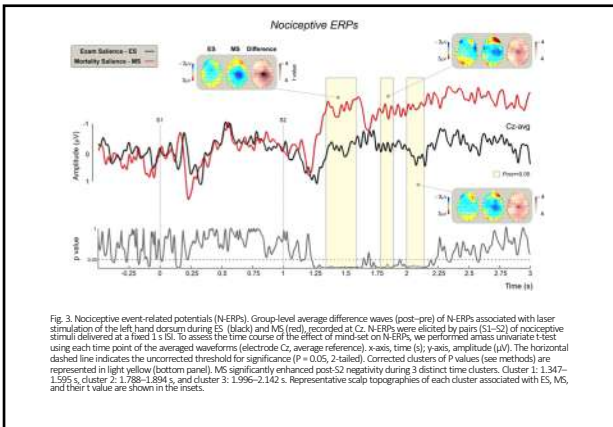
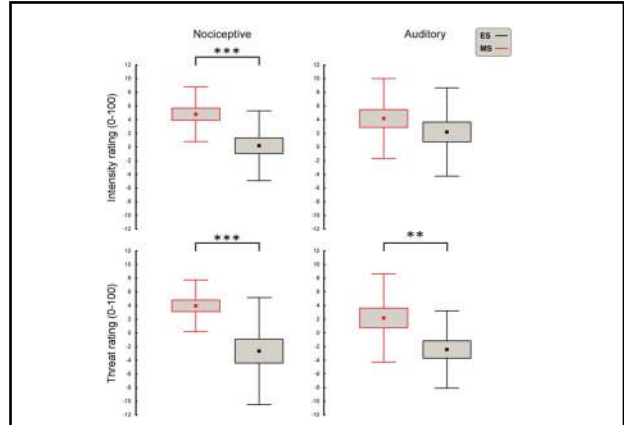


Fig. 3. Nociceptive event-related potentials (N-ERPs). Group-level average difference waves (post-pre) of N-ERPs associated with laser stimulation of the left hand dorsum during ES (black) and MS (red), recorded at Cz. N-ERPs were elicited by pairs (S1-S2) of nociceptive stimuli delivered at a fixed 1 s ISI. To assess the time course of the effect of mind-set on N-ERPs, we performed a mass univariate t-test using each time point of the averaged waveforms (electrode Cz, average reference). x-axis, time (s); y-axis, amplitude (µV). The horizontal dashed line indicates the uncorrected threshold for significance (P=0.05, 2-tailed). Corrected clusters of P-values (see methods) are represented in light yellow (bottom panel). MS significantly enhanced post-S2 negativity during 3 distinct time clusters. Cluster 1: 1.347-1.595 s, cluster 2: 1.788-1.894 s, and cluster 3: 1.996-2.142 s. Representative scalp topographies of each cluster associated with ES, MS, and their t values are shown in the insets.

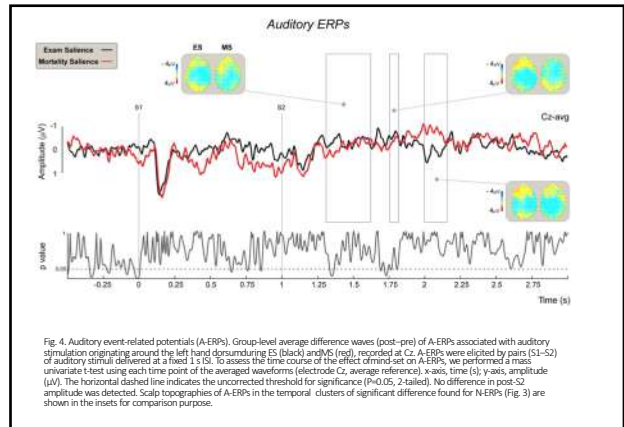


Fig. 4. Auditory event-related potentials (A-ERPs). Group-level average difference waves (post-pre) of A-ERPs associated with auditory stimulation originating around the left hand dorsum during ES (black) and MS (red), recorded at Cz. A-ERPs were elicited by pairs (S1-S2) of auditory stimuli delivered at a fixed 1 s ISI. To assess the time course of the effect of mind-set on A-ERPs, we performed a mass univariate t-test using each time point of the averaged waveforms (electrode Cz, average reference). x-axis, time (s); y-axis, amplitude (µV). The horizontal dashed line indicates the uncorrected threshold for significance (P=0.05, 2-tailed). No difference in post-S2 amplitude was detected. Scalp topographies of A-ERPs in the temporal clusters of significant difference found for N-ERPs (Fig. 3) are shown in the insets for comparison purpose.

Reminders of death and cortical representation of threatening somatosensory stimuli

1. MS exerts a tonic influence on cortical responses to somatosensory threatening stimuli

2. This effect is correlated to threat perception and personality variables

Grazie a:

COORDINAMENTO SCIENTIFICO
 Prof. Massimo Volpe
 Preside della Facoltà di Medicina e Psicologia
 tel. 0633775338
 E-mail: prosdenzanedeps@uniroma1.it

COORDINAMENTO ORGANIZZATIVO
 Prof.ssa Anna Maria Giareani
 Fac. di Medicina e Psicologia
 tel. 0633775338
 E-mail: annamaria.giareani@uniroma1.it

COMITATO SCIENTIFICO E ORGANIZZATIVO
 Prof. Massimo Barbara, Direttore Dip.to NESMOS
 Prof. Luigi Leone, Direttore Dip.to Psicologia dei
 Processi di Sviluppo e socializzazione
 Prof. Enrico Rendina, Direttore Dip.to Scienze
 Medico Chirurgiche e Medicina Tradizionale
 Prof.ssa Renata Ferritelli, Direttore Dip.to Psicologia
 dinamica e clinica
 Prof. Massimo Tassinio, Direttore Dip.to Medicina
 Clinica e Malattie
 Prof. Pierluigi Coccolini, Direttore Dip.to Psicologia
 Prof.ssa Gabriella Antonucci
 Prof.ssa Giuseppina Dalbardi
 Prof. Alessandro Cosmopoljan
 Prof. Fabio Lucidi
 Prof. Francesco Pontari
 Prof.ssa Alessandra Tassinio

Sapienza-Università di Roma
 Facoltà di Medicina e Psicologia
 Roma

**Prof.ssa Antonella
 Polimeni**

**Tutti voi per essere
 arrivati a questo punto**

**Dr. Elia Valentini,
 Valentina Nicolardi e
 Katharina Koch,
 protagonisti degli studi
 LEPs e MS**