REGIONE AUTONOMA FRIULI VENEZIA GIULIA

Costruire l'incontro
Corso ECM

REGIONE AUTONOMA FRIULI VENEZIA GIULIA
azienda per l'assistenza sanitaria 2 Bassa Friulana, Isontina

AREA WELFARE
AAS.2 Bassa Friulana - Isontina

Neuroscienze e Scienze cognitive del cambiamento

Stefano Canali

ma per seguir virtute e canoscenza
SISSA

SCUOLA INTERNAZIONALE SUPERIORE di STUDI AVANZATI
International School for Advanced Studies

Area Neuroscienze
Laboratorio Interdisciplinare per le Scienze Naturali e Umanistiche

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Il segno cardinale della dipendenza

- Perdita del controllo volontario del comportamento sull'oggetto della dipendenza
- Reiterazione del comportamento di ricerca e consumo a dispetto delle conseguenze negative
- La dipendenza come apprendimento

Comportamenti, abitudini, stili di vita, dipendenze

- Abitudini, stili di vita e dipendenze
- Condividono le basi psicobiologiche dei processi e delle dinamiche dell'apprendimento


PERCHÉ IL CAMBIAMENTO
È COSÌ DIFFICILE?

IL PARADIGMA DELLE ABITUDINI

Noi siamo quello che facciamo ripetutamente. L'eccellenza dunque, non è un atto ma un'abitudine.

Aristotele

L'abitudine ...
che non a torto
alcuni chiamano
seconda natura.

S. Agostino, (354-430)
Contra Julianum: IV, 103

Journal of Personality and Social Psychology
2002, Vol. 83, No. 6, 1281–1297

0022-3514/02/$5.00 DOI: 10.1037//0022-3514.83.6.1281

Habits in Everyday Life: Thought, Emotion, and Action

Wendy Wood and Jeffrey M. Quinn
Texas A&M University

Deborah A. Kashy
Michigan State University

To illustrate the differing thoughts and emotions involved in guiding habitual and nonhabitual behavior, 2 diary studies were conducted in which participants provided hourly reports of their ongoing experiences. When participants were engaged in habitual behavior, defined as behavior that had been performed almost daily in stable contexts, they were likely to think about issues unrelated to their behavior, presumably because they did not have to consciously guide their actions. When engaged in nonhabitual behavior, or actions performed less often or in shifting contexts, participants' thoughts tended to correspond to their behavior, suggesting that thought was necessary to guide action. Furthermore, the self-regulatory benefits of habits were apparent in the lesser feelings of stress associated with habitual than nonhabitual behavior.

Circa il 50% del tempo comportamenti abituali

1. Faccio frequentemente.
2. Faccio automaticamente.
3. Faccio senza dovermene coscientemente ricordare.
4. Mi fa sentire strano se non la faccio.
5. Faccio senza pensare.
6. Richiede sforzo per evitare di farla.
7. Appartiene alle mie routine giornaliere, settimanali, mensili.
8. Inizio a fare senza essere consapevole di iniziare a farla.
9. Trovo difficile non fare.
10. Non richiede che io debba pensare mentre la faccio.
11. È tipicamente una cosa mia.
12. Faccio da tanto tempo.

Journal of Applied Social Psychology

Reflections on Past Behavior: A Self-Report Index of Habit Strength[1]

Bas Verplanken[1,*] and Sheina Orbell[2]

Issue

Article first published online: 31 JUL 2006

DOI: 10.1111/j.1559-1816.2003.tb01951.x

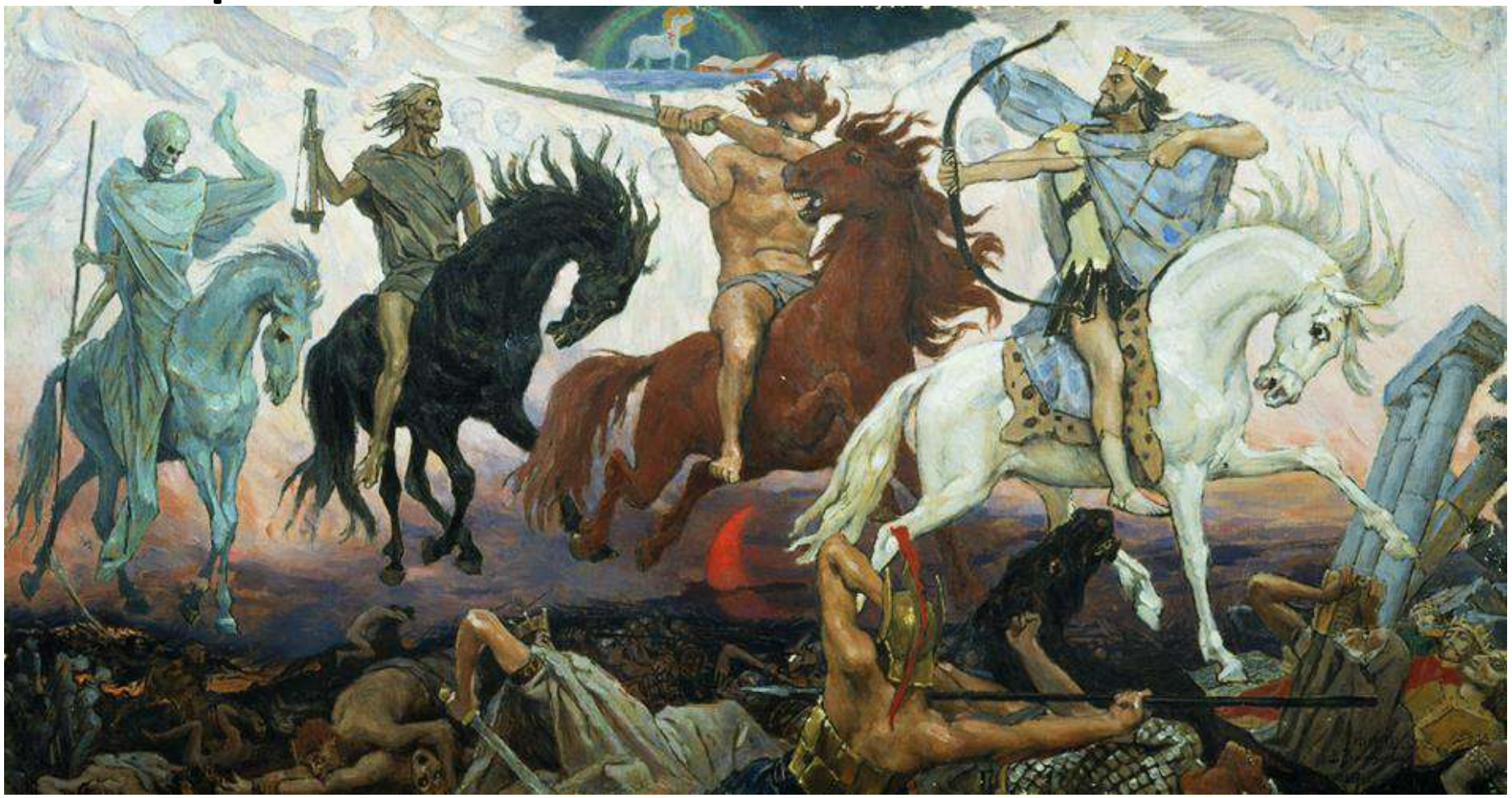
Journal of Applied Social Psychology

Volume 33, Issue 6, pages 1313–1330, June 2003

Abitudine è qualcosa che

Verplanken, B., and Orbell, S. (2003). Reflections on past behavior: a self-report index of habit strength. J Appl Soc Psychol, 33, 1313–1330

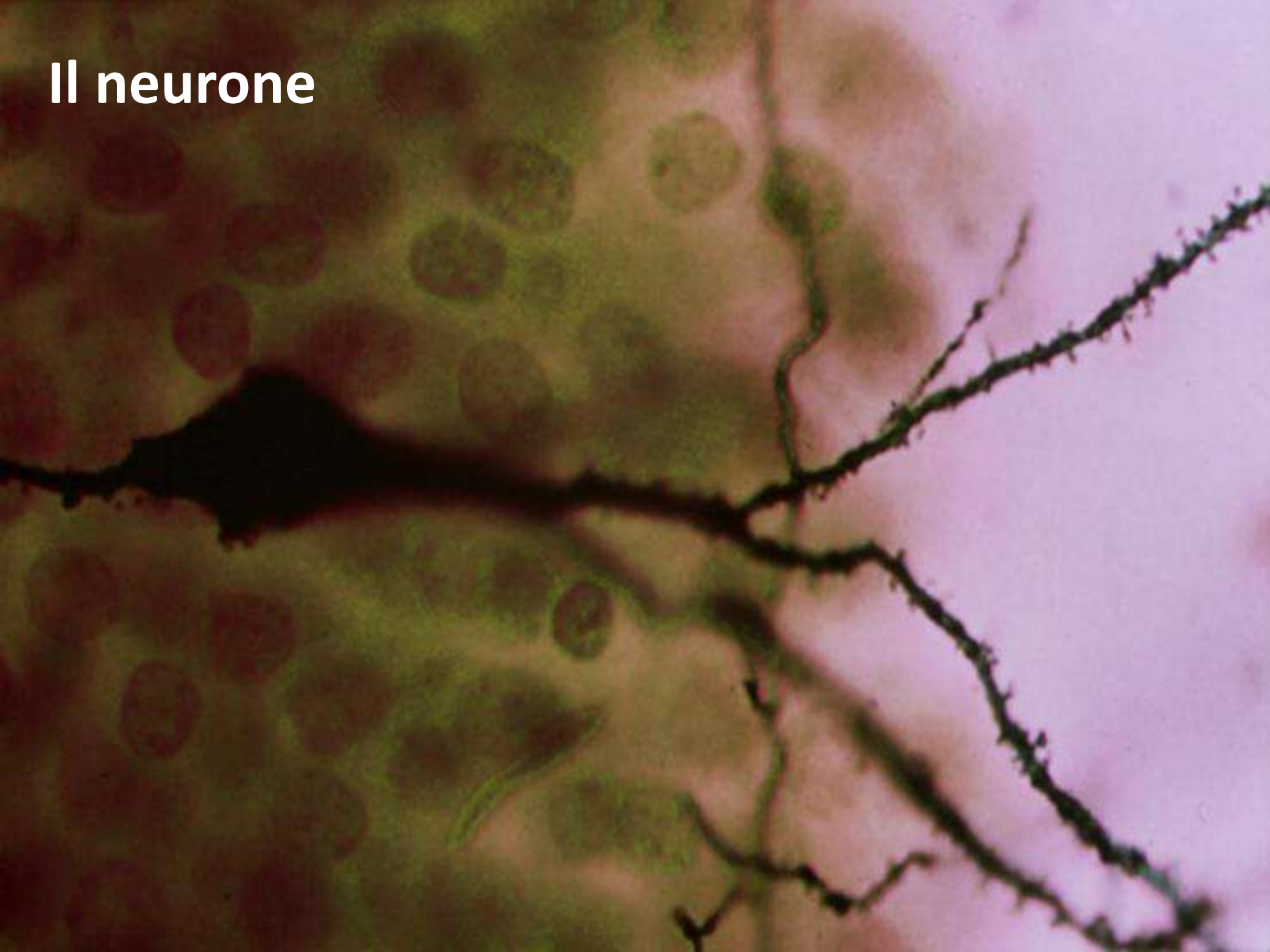
I quattro cavalieri dell'abitudine

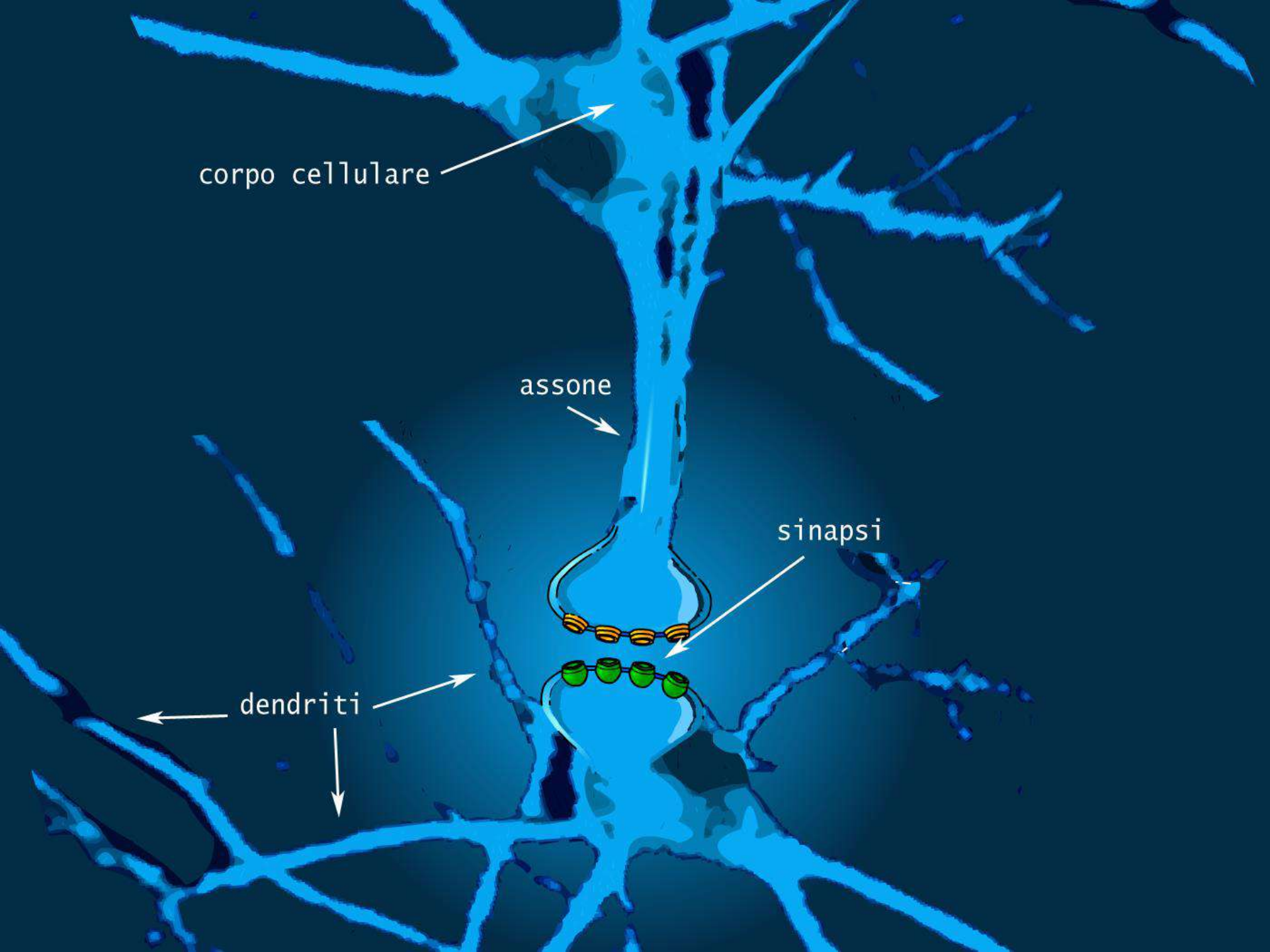


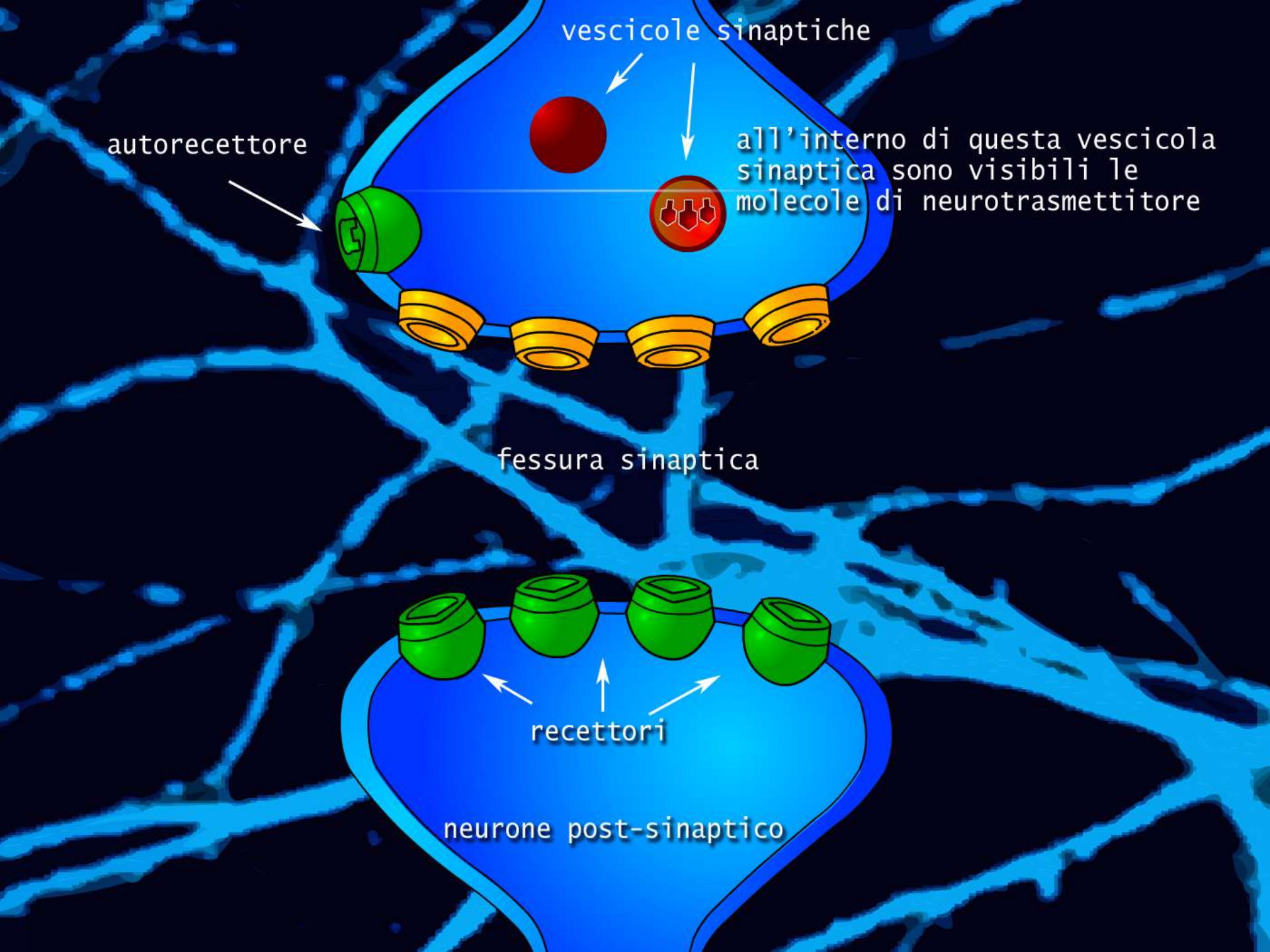
Incosapevolezza, efficienza, automaticità, controllo ambientale

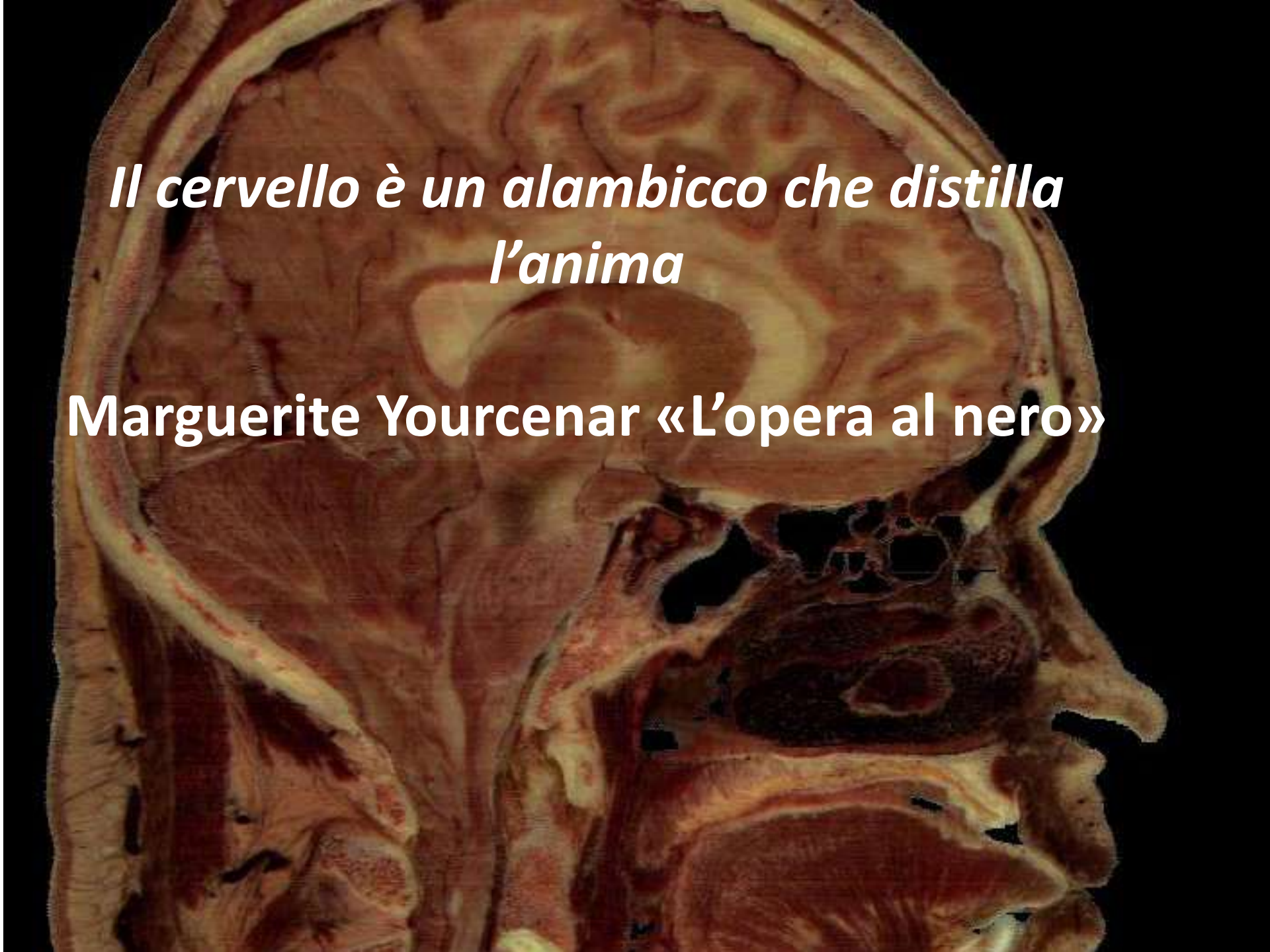
apprendimento

Il neurone



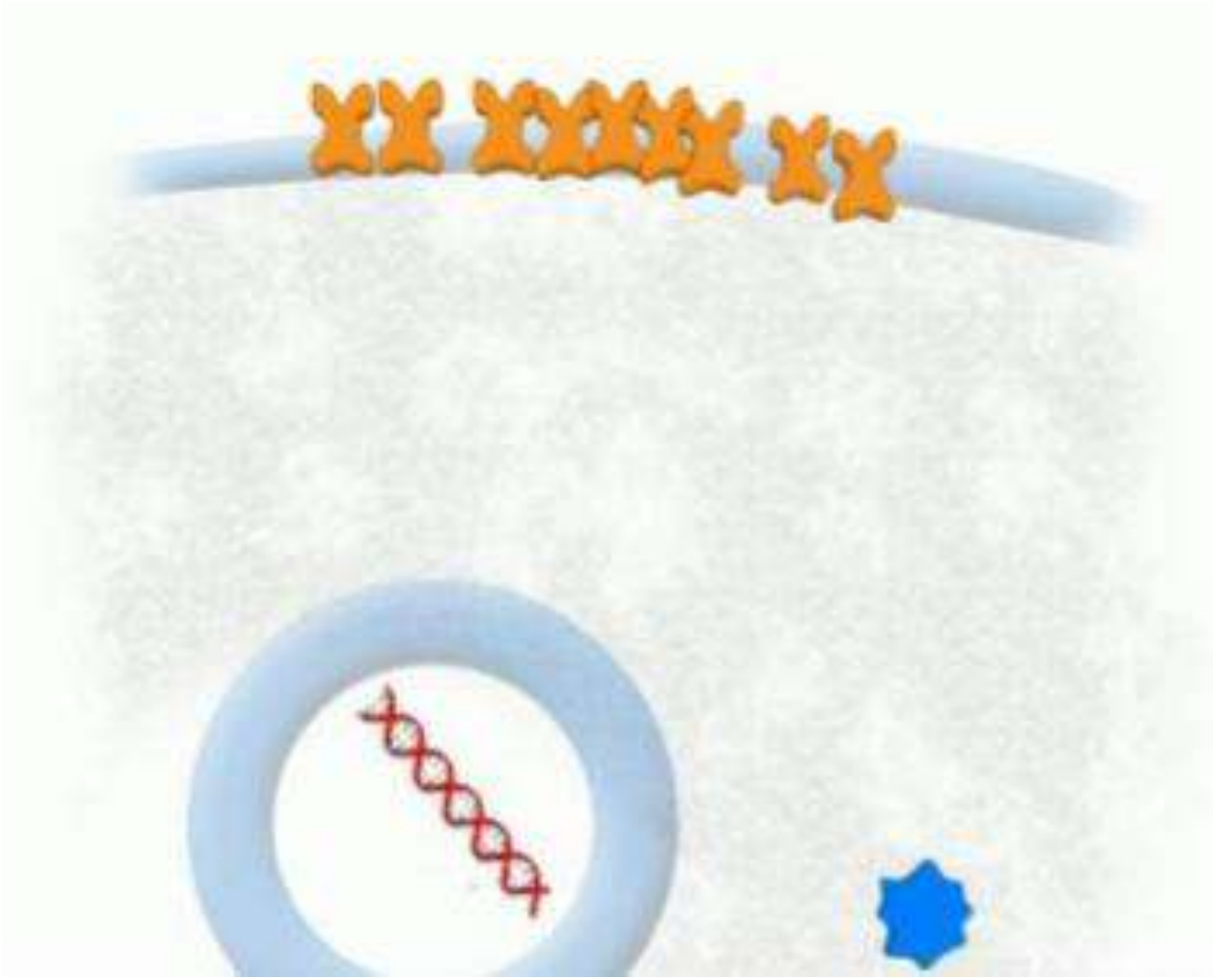

corpo cellulare
assone
sinapsi
dendriti


vescicole sinaptiche
autorecettore
all'interno di questa vescicola sinaptica sono visibili le molecole di neurotrasmettitore
fessura sinaptica
recettori
neurone post-sinaptico

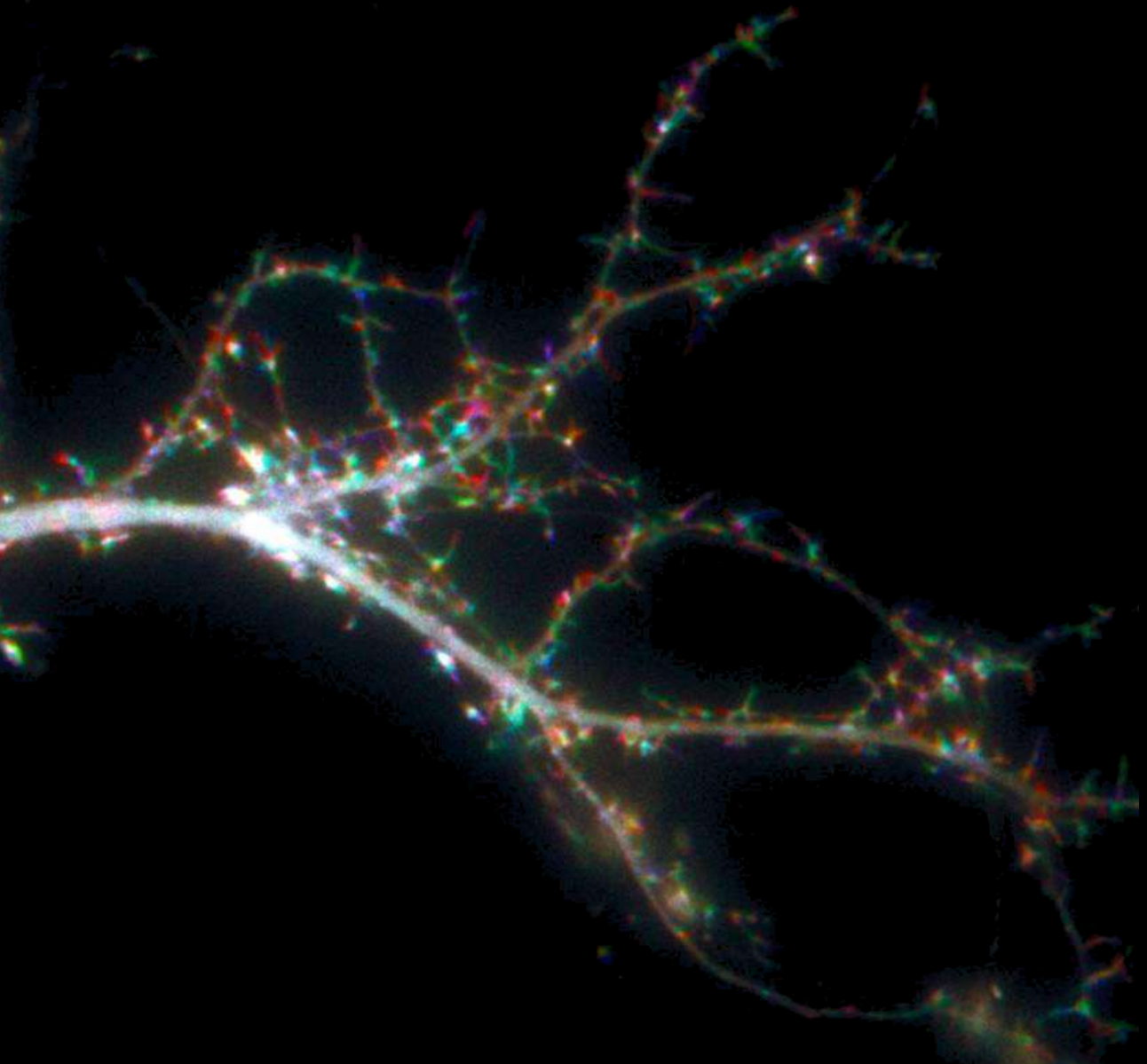


Il cervello è un alambicco che distilla l'anima

Marguerite Yourcenar «L'opera al nero»



Neuroplasticità



Il cervello è in perenne costruzione ed è plasmato dalle esperienze e dai comportamenti

L'attività principale del cervello è quella di cambiare se stesso

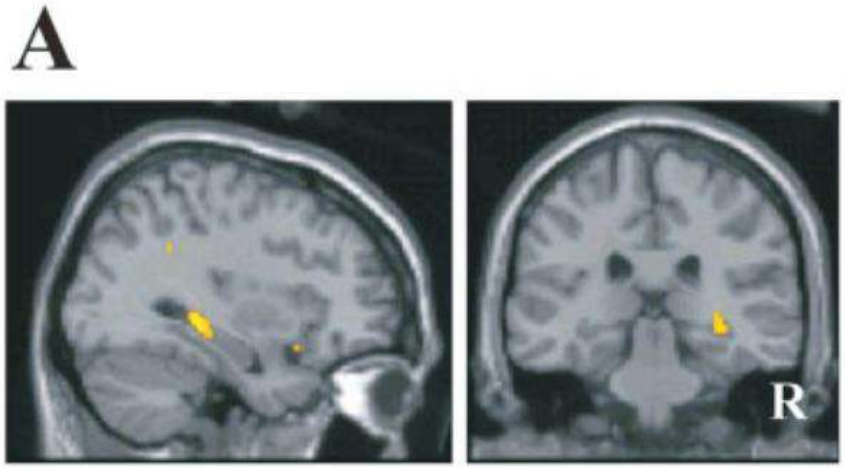
Marvin L. Minsky

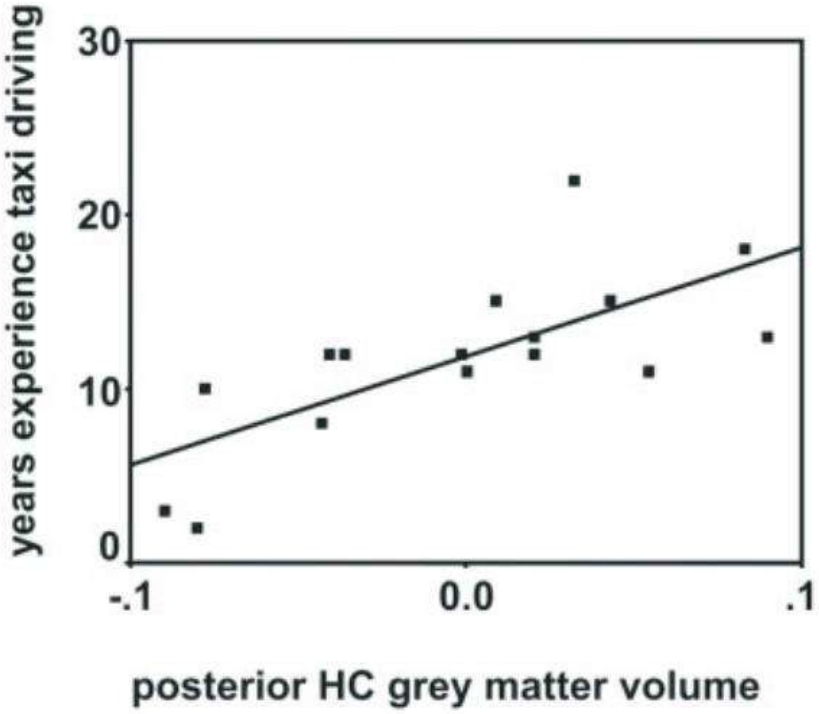
Diventiamo ciò che facciamo ripetutamente

Neuroplasticità

Scolpire il proprio cervello

HIPPOCAMPUS OF LONDON TAXI DRIVERS

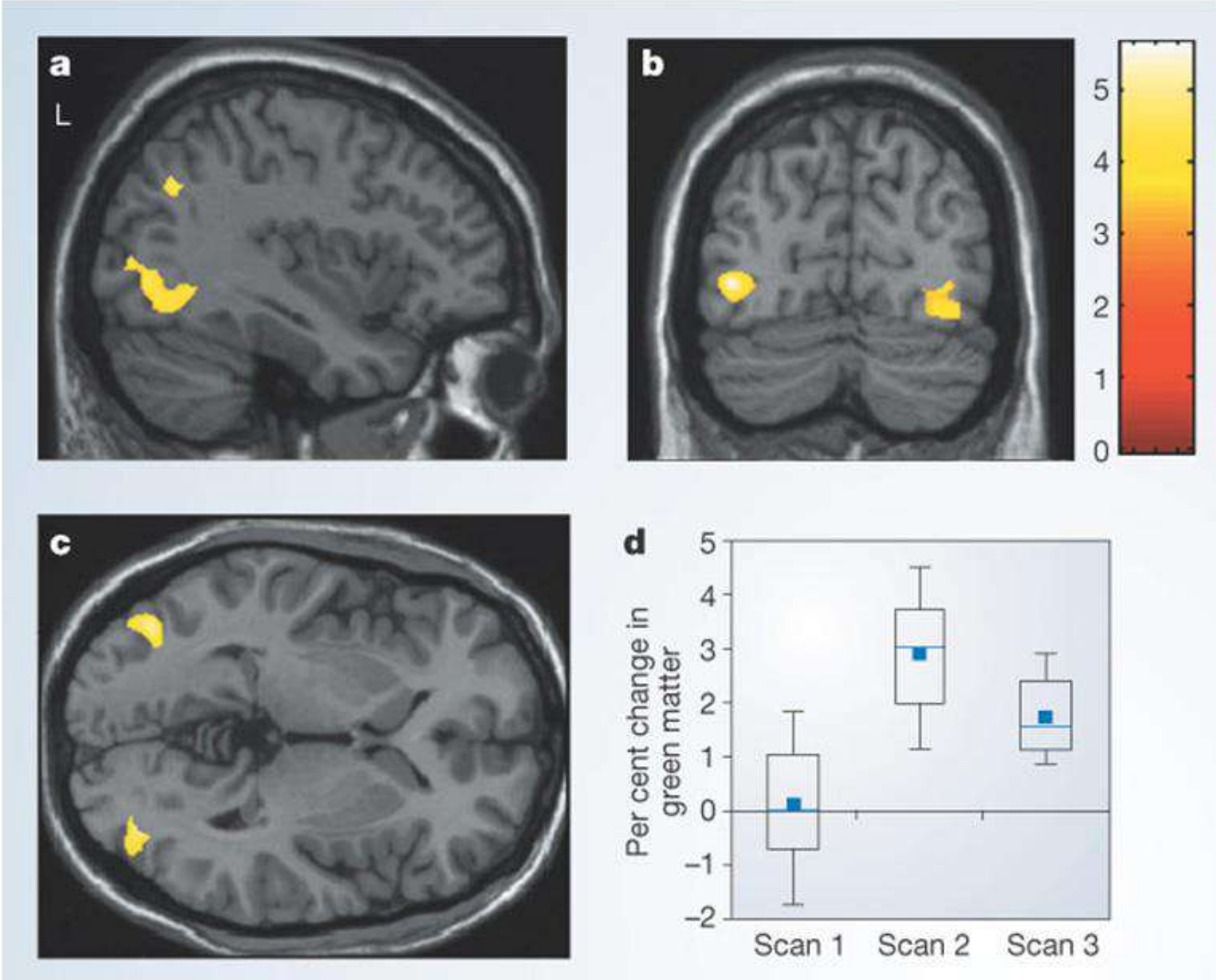




Eleanor A. Maguire, Katherine Woollett, Hugo J. Spiers, London taxi drivers and bus drivers: A structural MRI and neuropsychological analysis. *Hippocampus*, 16, 12, pp. 1091–1101, December 2006

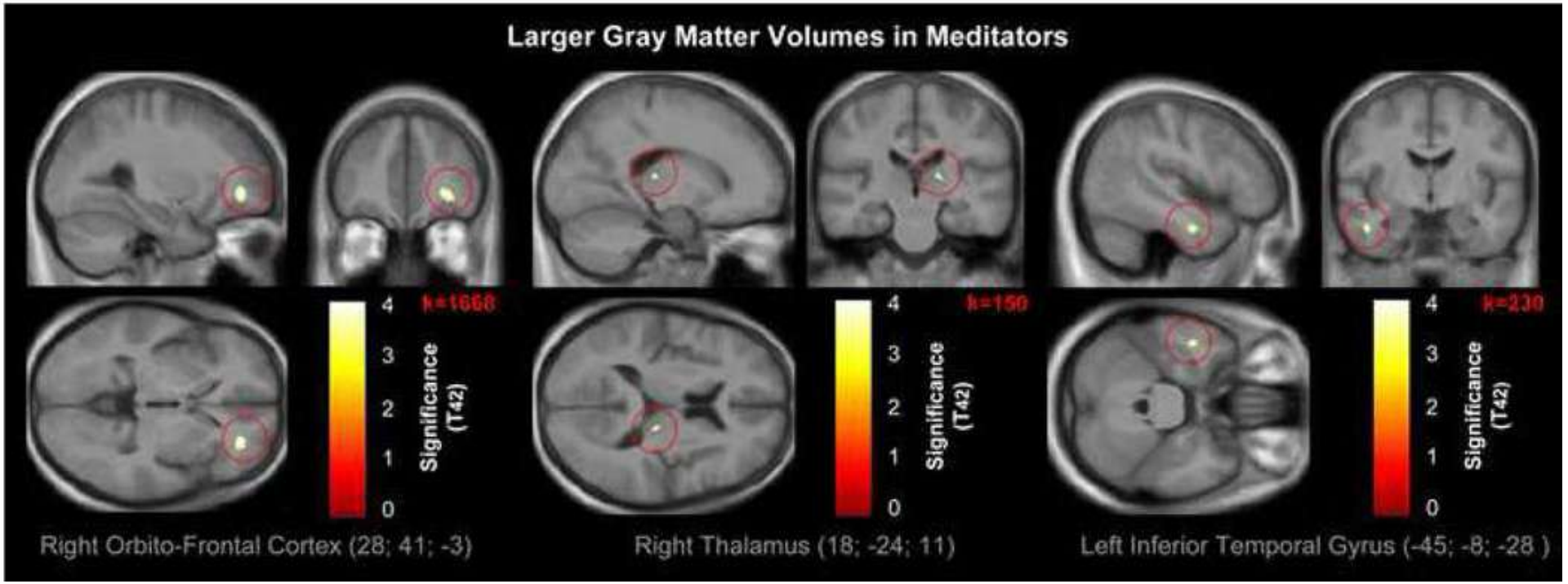
Neuroplasticity: Changes in grey matter induced by training

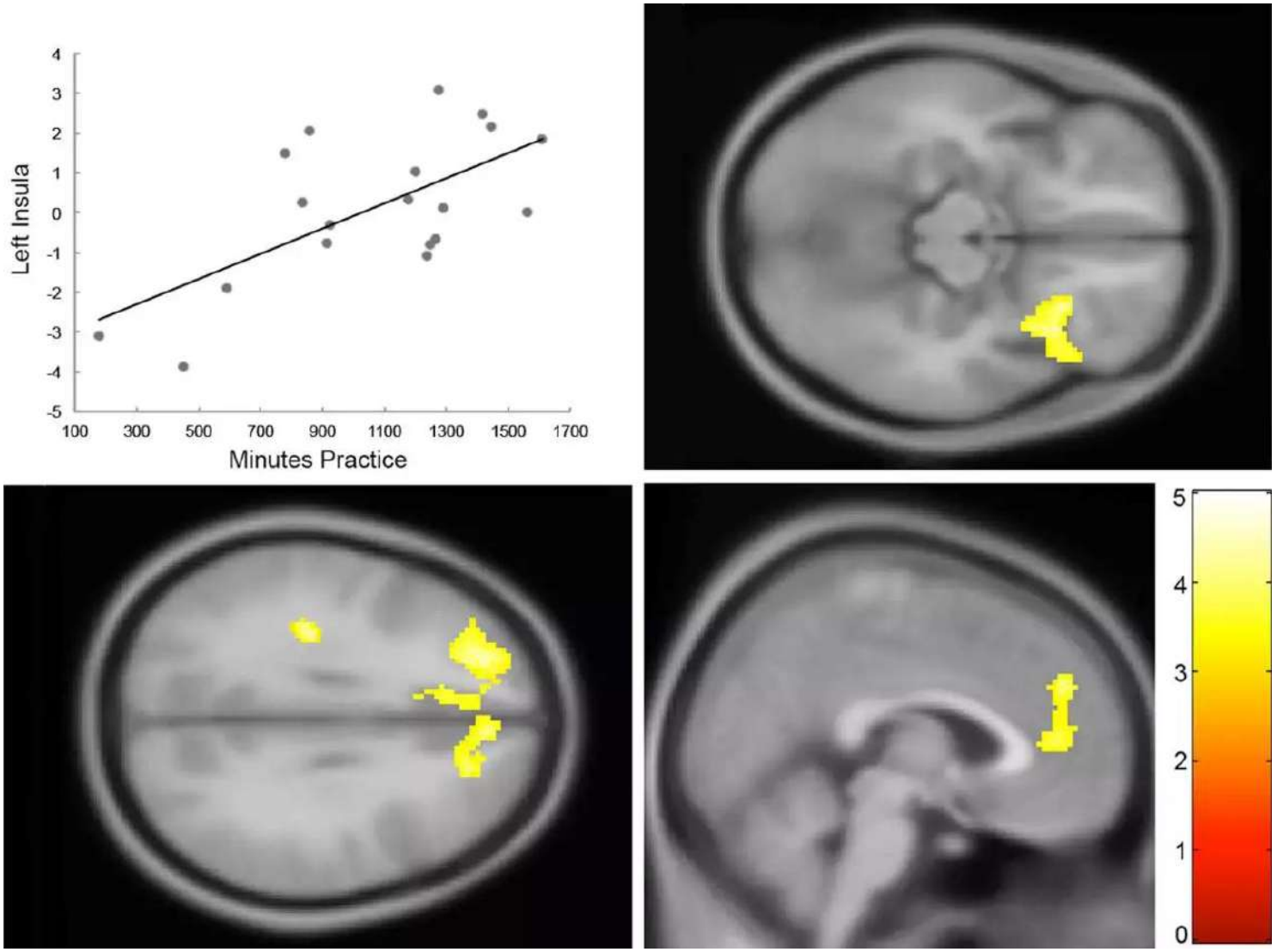
Newly honed juggling skills show up on a brain-imaging scan



Bogdan Draganski, Christian Gaser, Volker Busch, Gerhard Schuierer, Ulrich Bogdahn & Arne May
Nature 427, 311-312(22 January 2004)

Neuroplasticità attivata da funzioni puramente mentali





Allen M, Dietz M, Blair KS, van Beek M, Rees G, Vestergaard-Poulsen P, Lutz A, Roepstorff A.
Cognitive-affective neural plasticity following active-controlled mindfulness intervention. *J Neurosci*. 2012 Oct 31;32(44):15601-10.

Fenomeni neuroplastici con attività puramente mentali

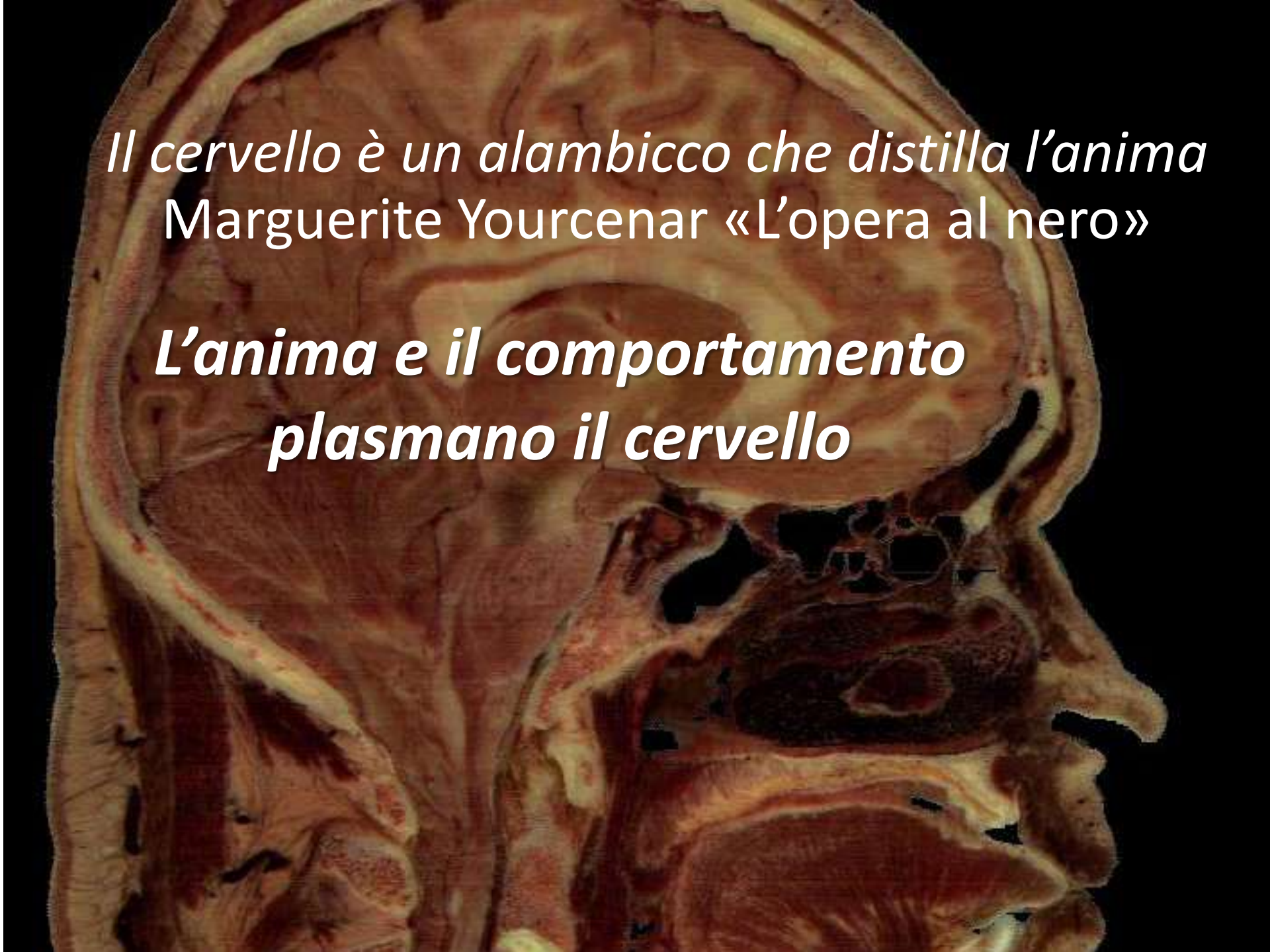
- Imparare un movimento simulandolo mentalmente

American Physiological Society
Journal of Neurophysiology
a multidisciplinary neuroscience journal

Motor Learning Without Doing: Trial-by-Trial Improvement in Motor Performance During Mental Training

Rodolphe Gentili, Cheol E. Han, Nicolas Schweighofer, Charalambos Papaxanthis

Journal of Neurophysiology Published 1 August 2010 **Vol.** 104 **no.** 2, 774-783 **DOI:** 10.1152/jn.00257.2010



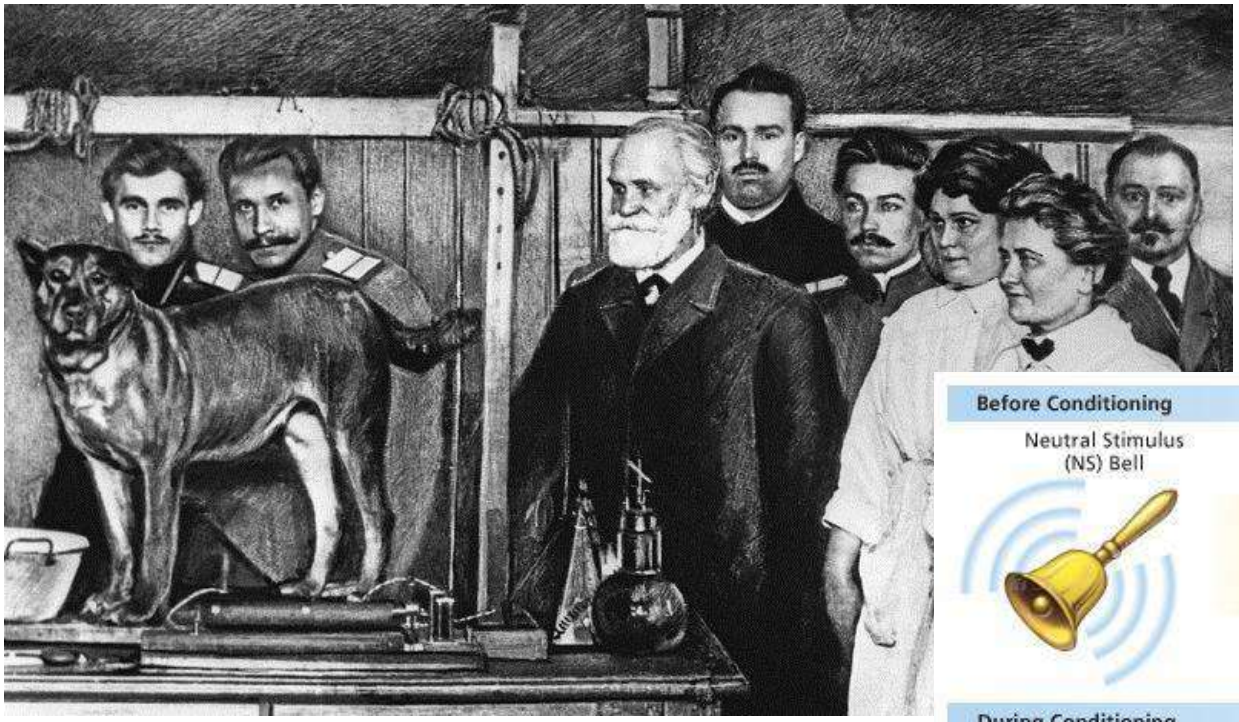
Il cervello è un alambicco che distilla l'anima
Marguerite Yourcenar «L'opera al nero»

L'anima e il comportamento plasmano il cervello

Usare la neuroplasticità per il cambiamento

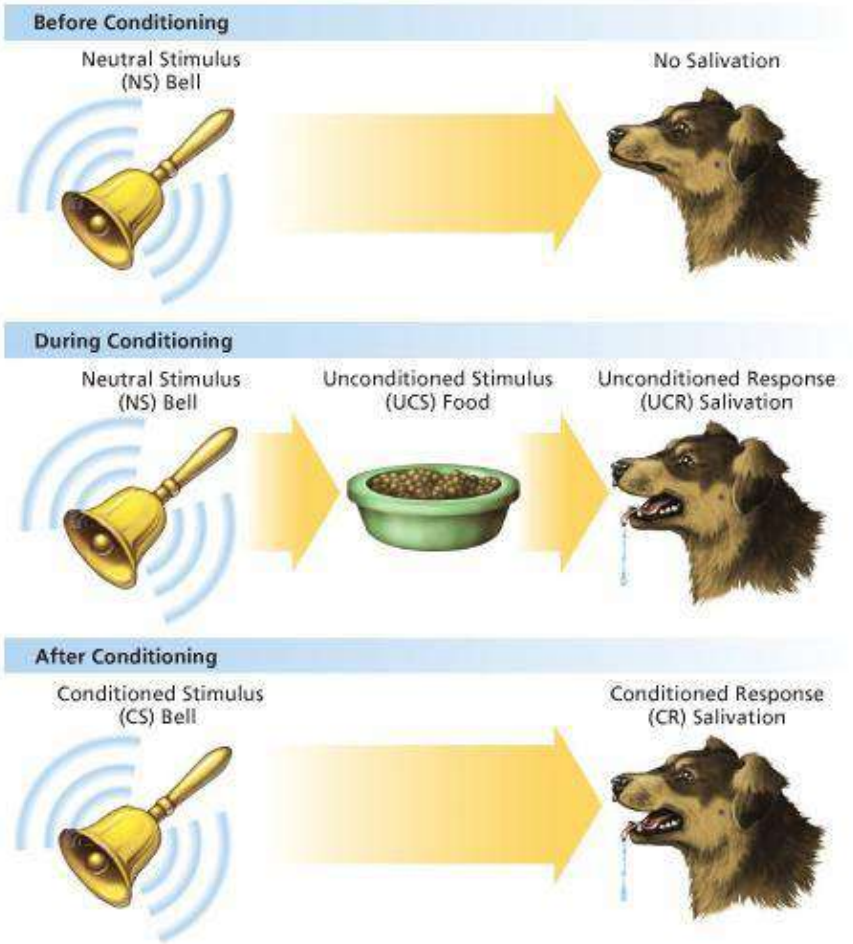
COME SI COSTRUISCE UN'ABITUDINE?

Apprendimenti associativi

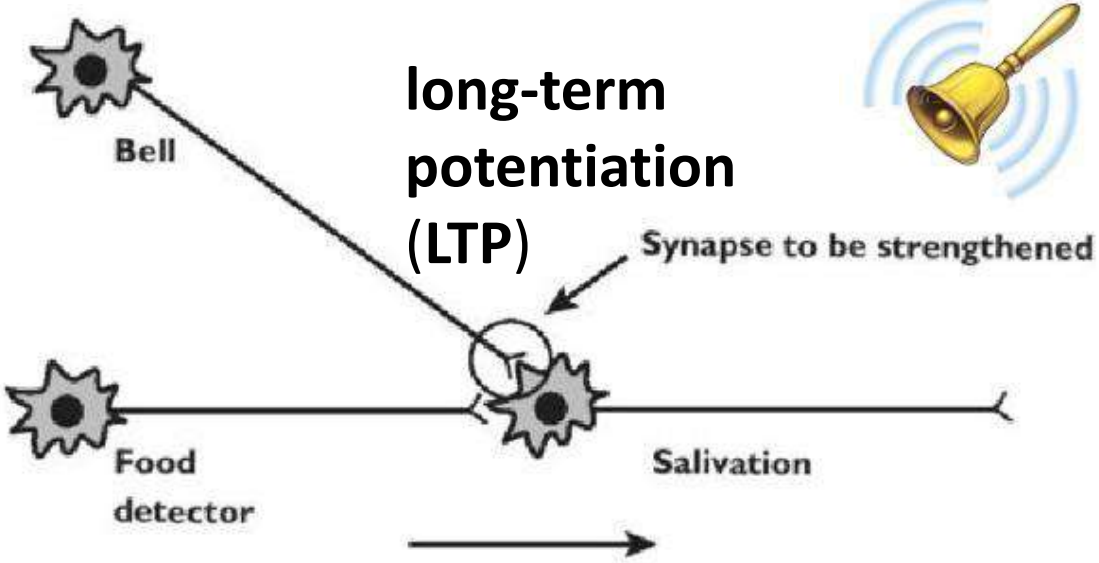


Condizionamento classico

I neuroni che scaricano assieme si associano – Legge di Hebb



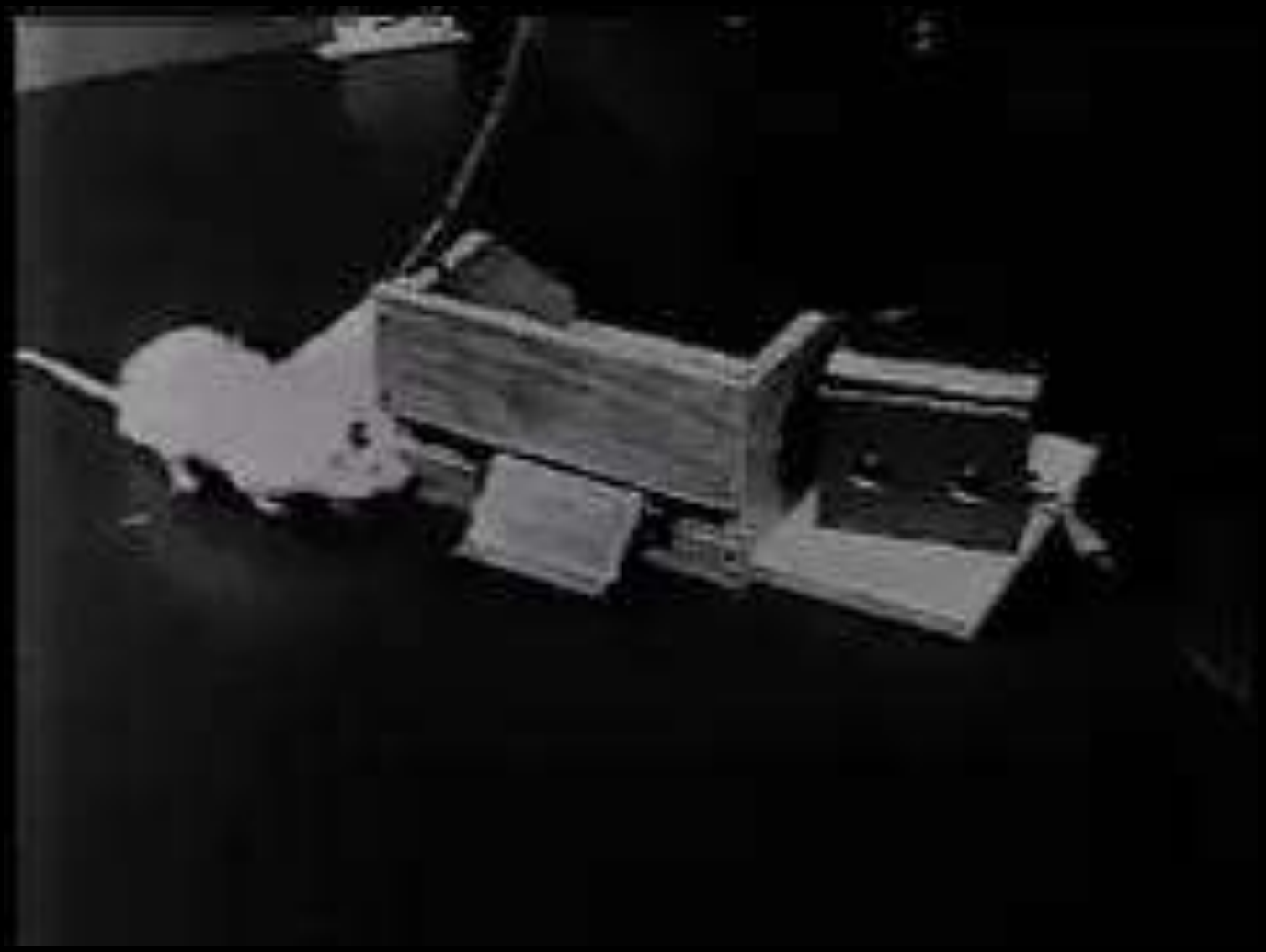
long-term potentiation (LTP)



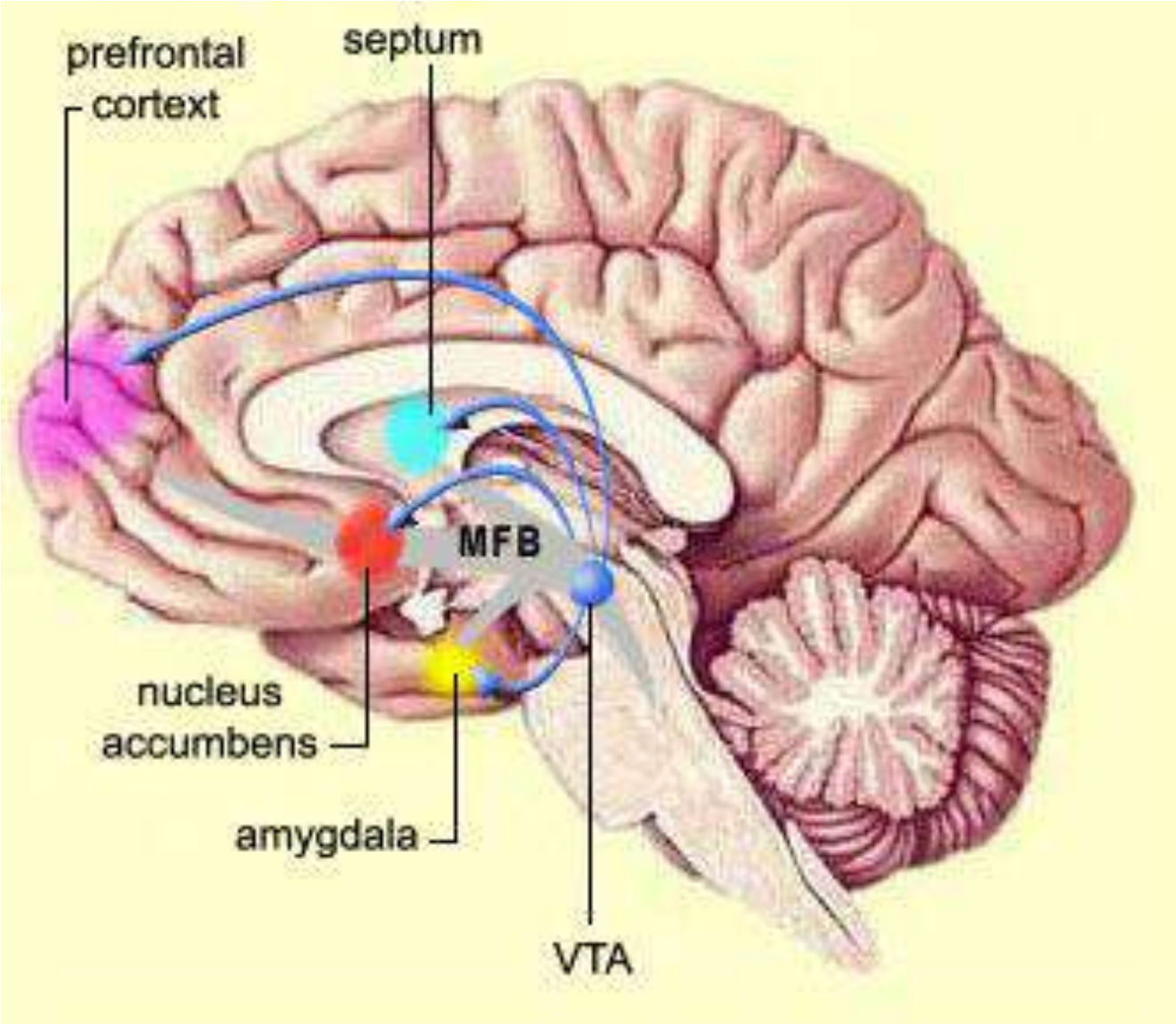
*Wolf ME (August 2003). "LTP may trigger addiction". Molecular interventions **3** (5): 248–52.*

Apprendimento strumentale

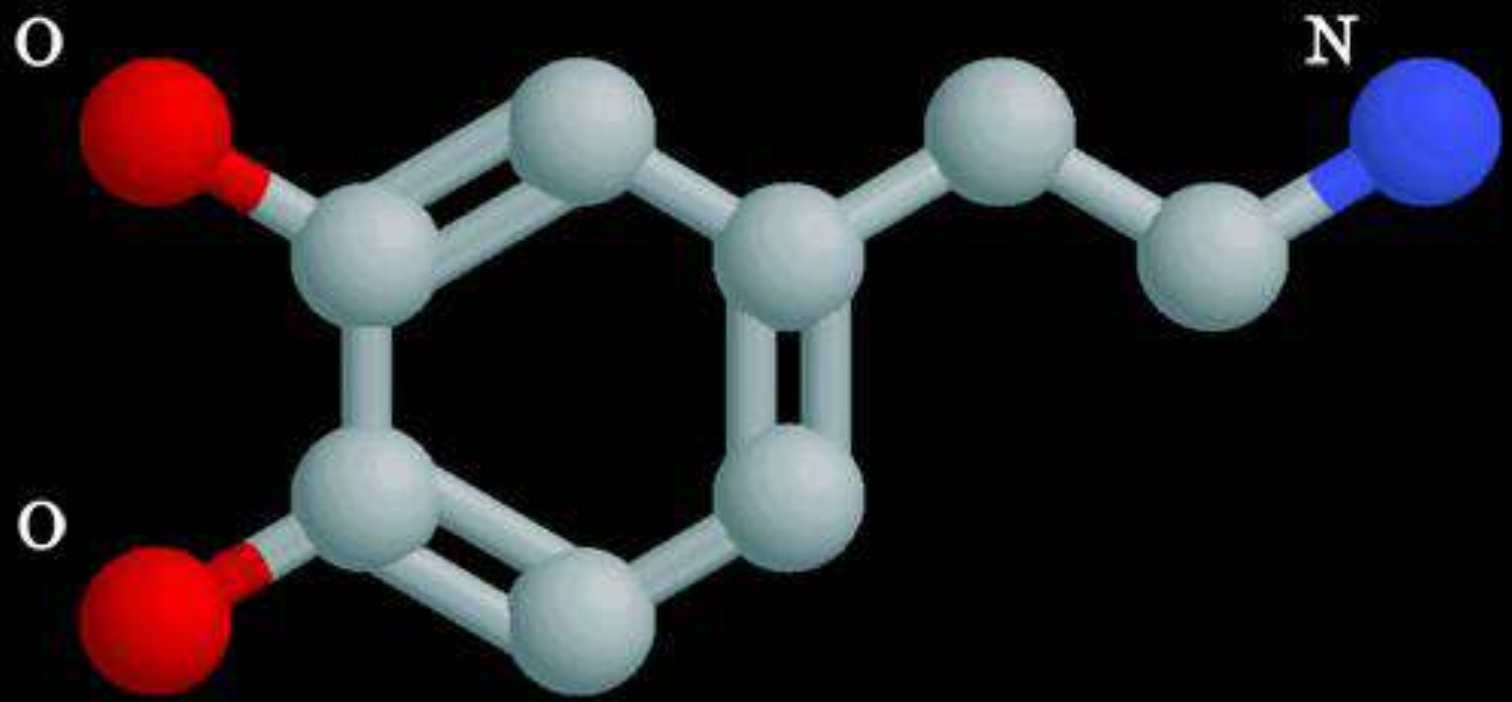
Piacere, ricompensa e cervello



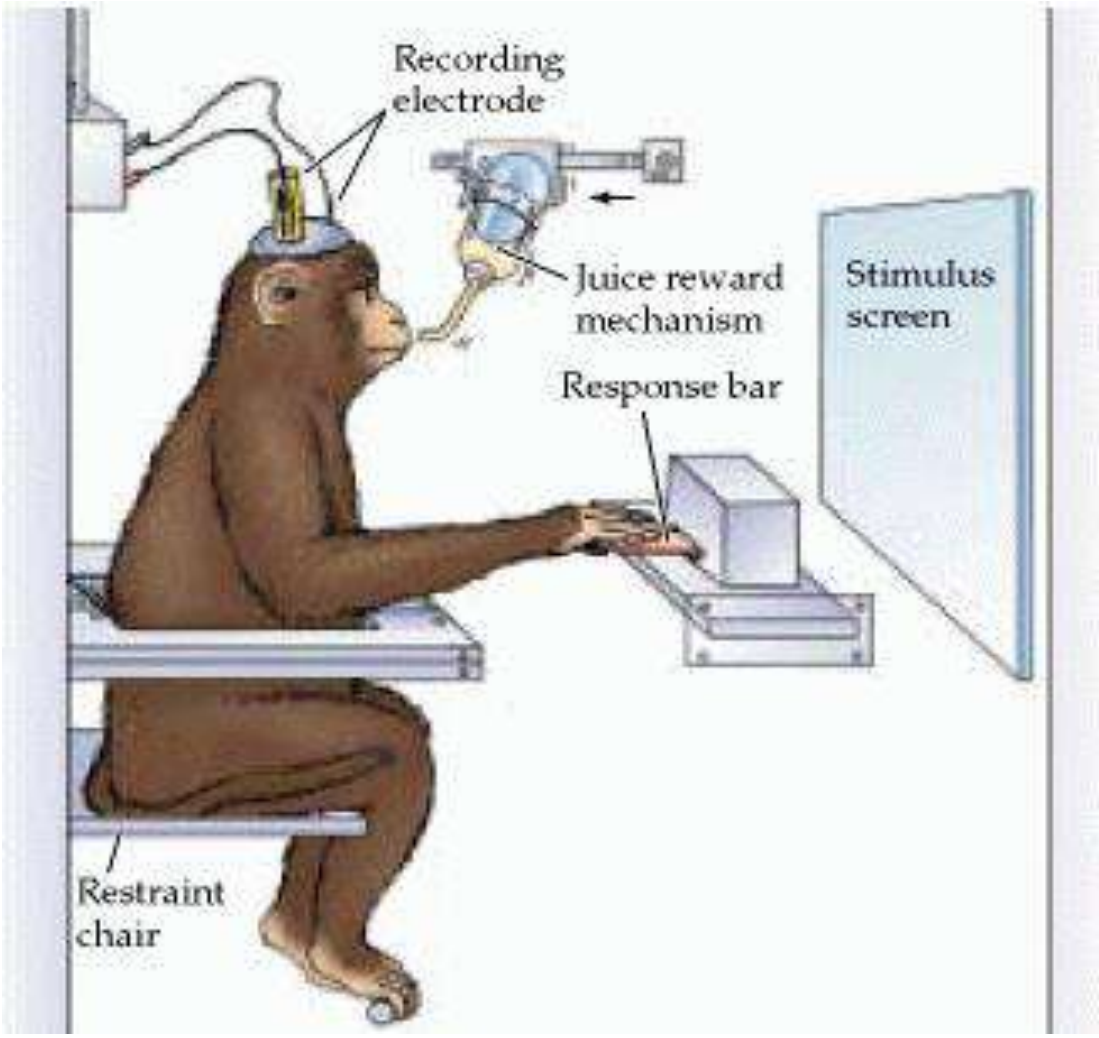
Sistema di ricompensa cerebrale



dopamina

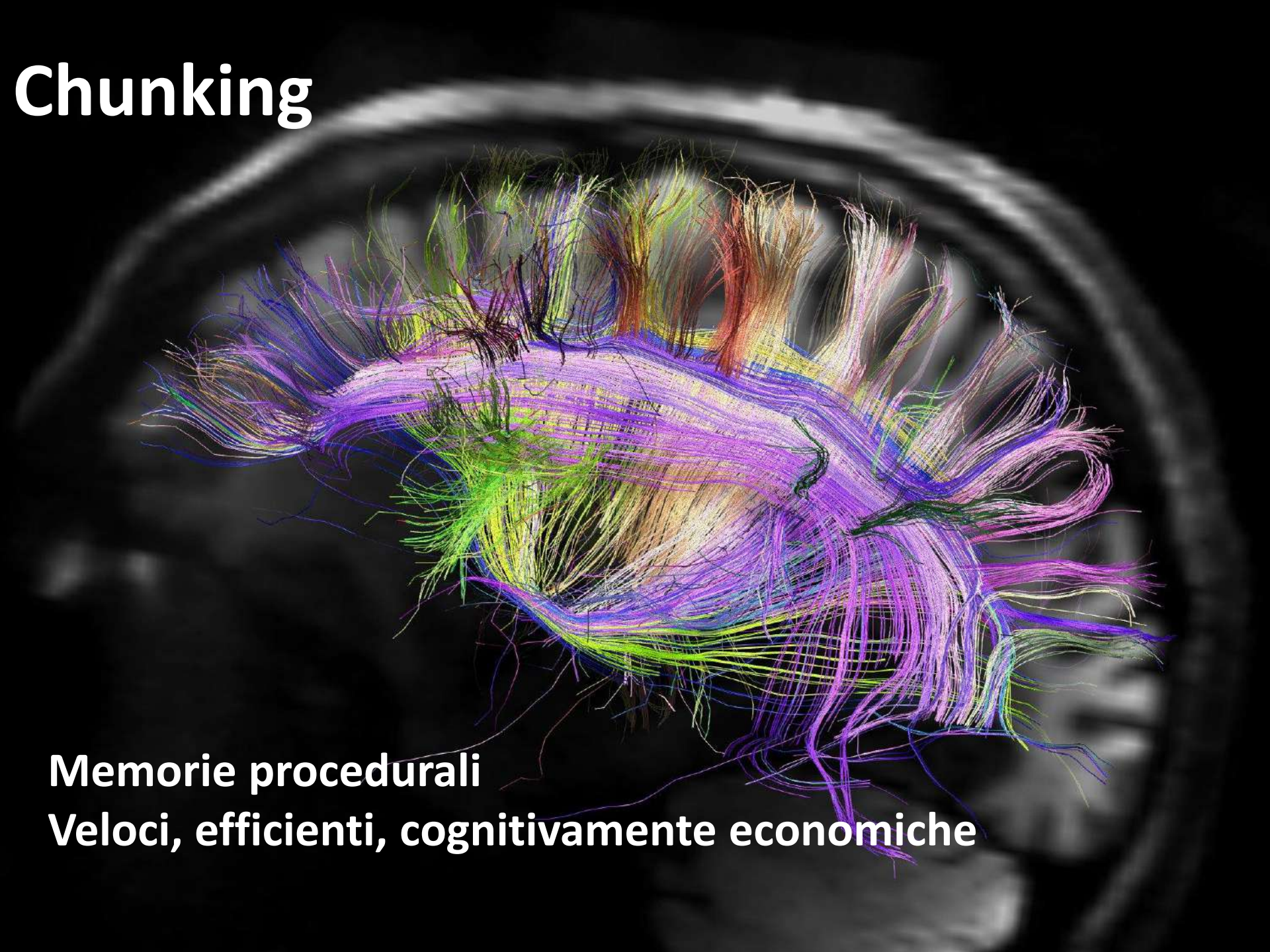


Le funzioni della dopamina




Stimolo/Innesco
Azione
External
Internal
Desiderio/
Lavoro
Eventuale
ricompensa

Chunking

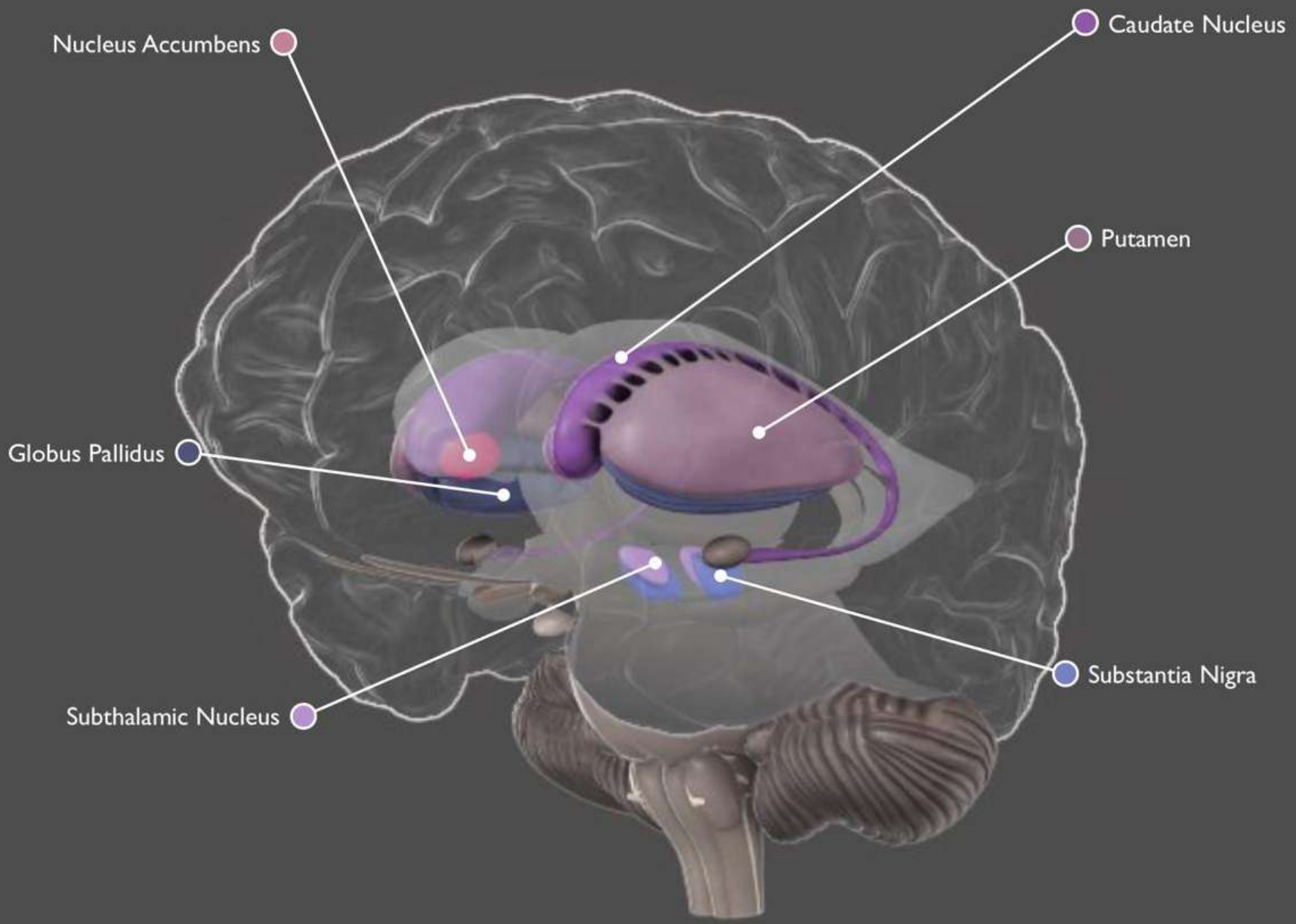


Memorie procedurali
Veloci, efficienti, cognitivamente economiche

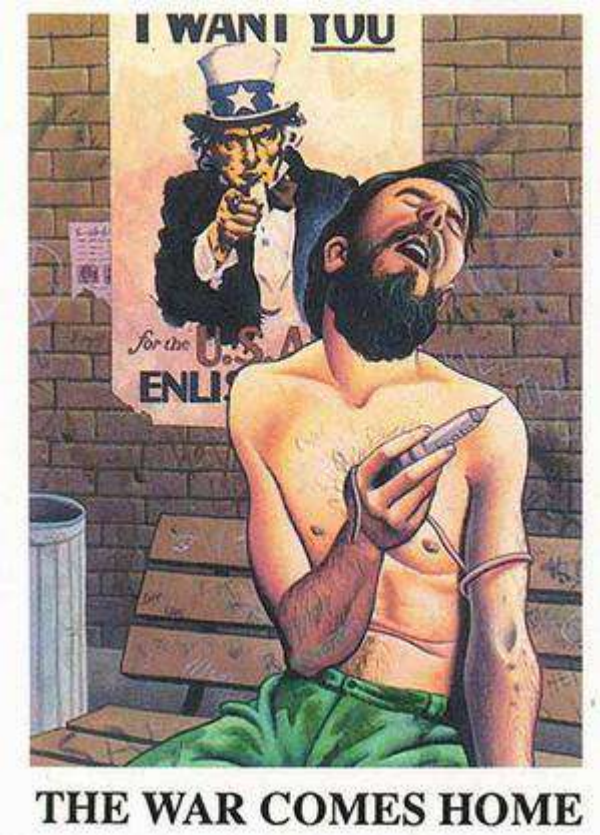
Structures

Basal Ganglia

Labels Info



Errore fondamentale di attribuzione



ESISTE UN'ALTRA RAGIONE PER CUI ABBIAMO DIFFICOLTÀ A CONTROLLARE I COMPORTAMENTI ABITUALI O COMPULSIVI CHE HANNO CONSEGUENZE NEGATIVA

UNA QUESTIONE DI PROSPETTIVA

Decidere oggi per il nostro io di domani

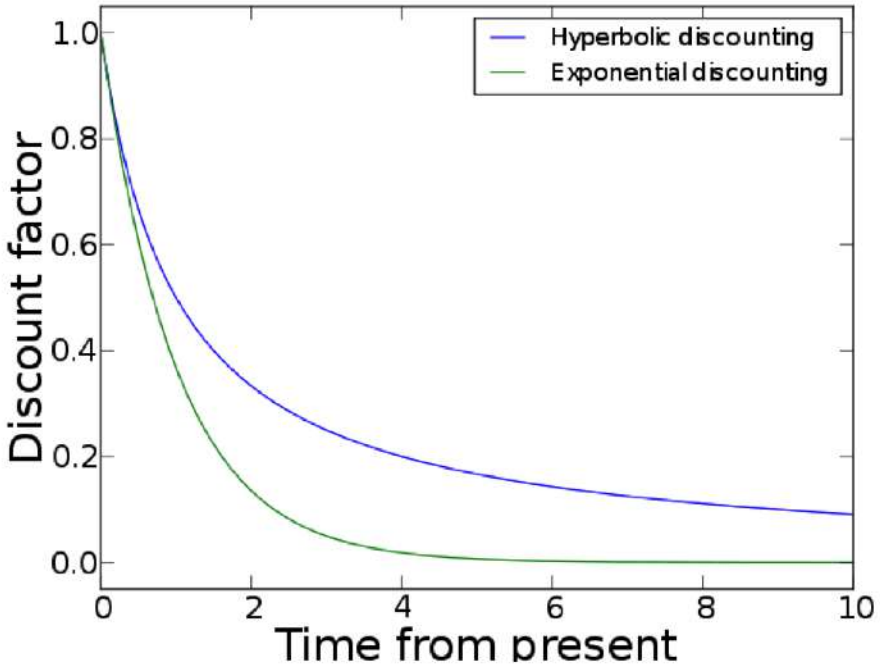
le decisioni intertemporali

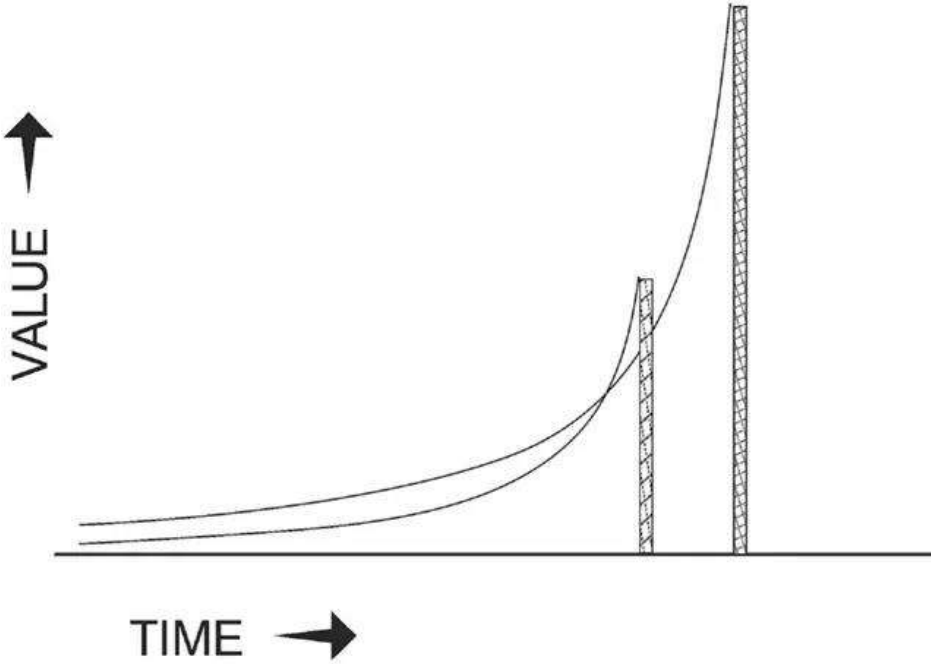
Miopia per il futuro

Ipersensibilità verso le ricompense presenti

Le decisioni intertemporali

- Lo sconto iperbolico del futuro
- L'ipersensibilità verso le ricompense prossime





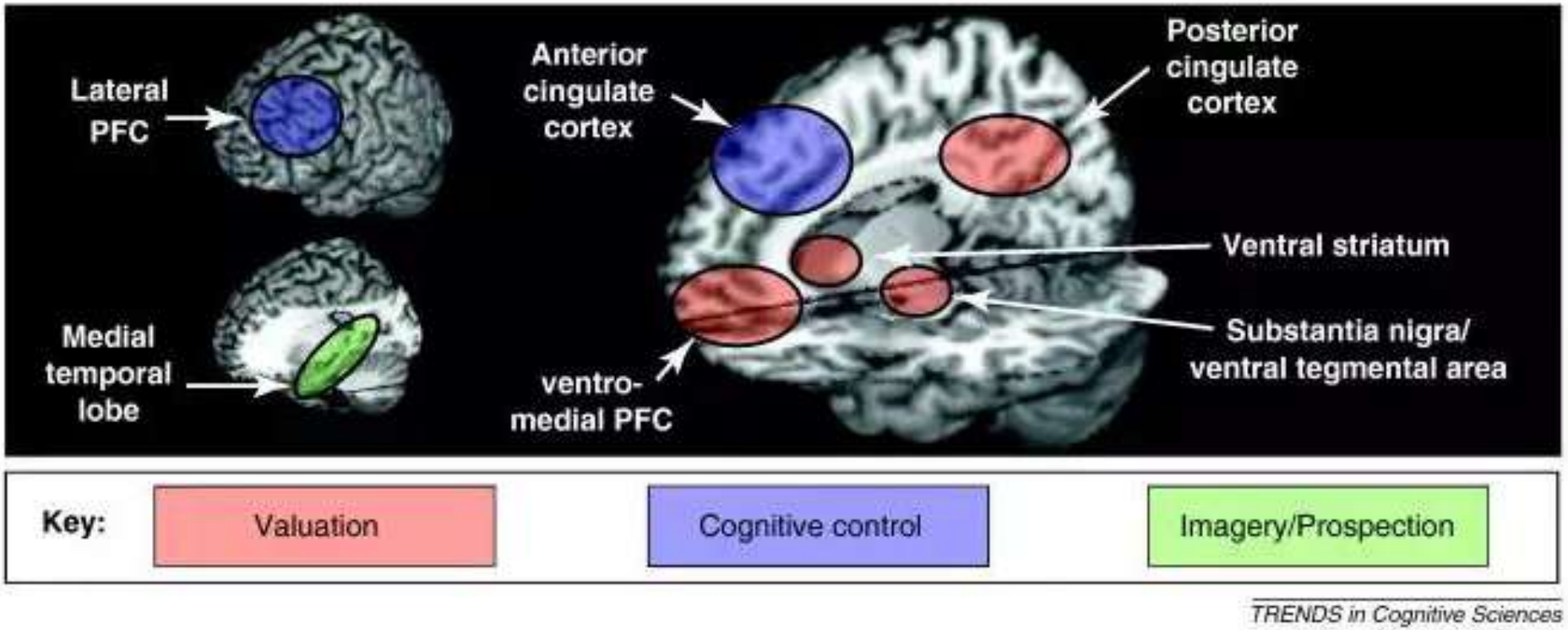
uno, due, tre o molti?

sé multipli?

i nostri
sé futuri sembrano
altri

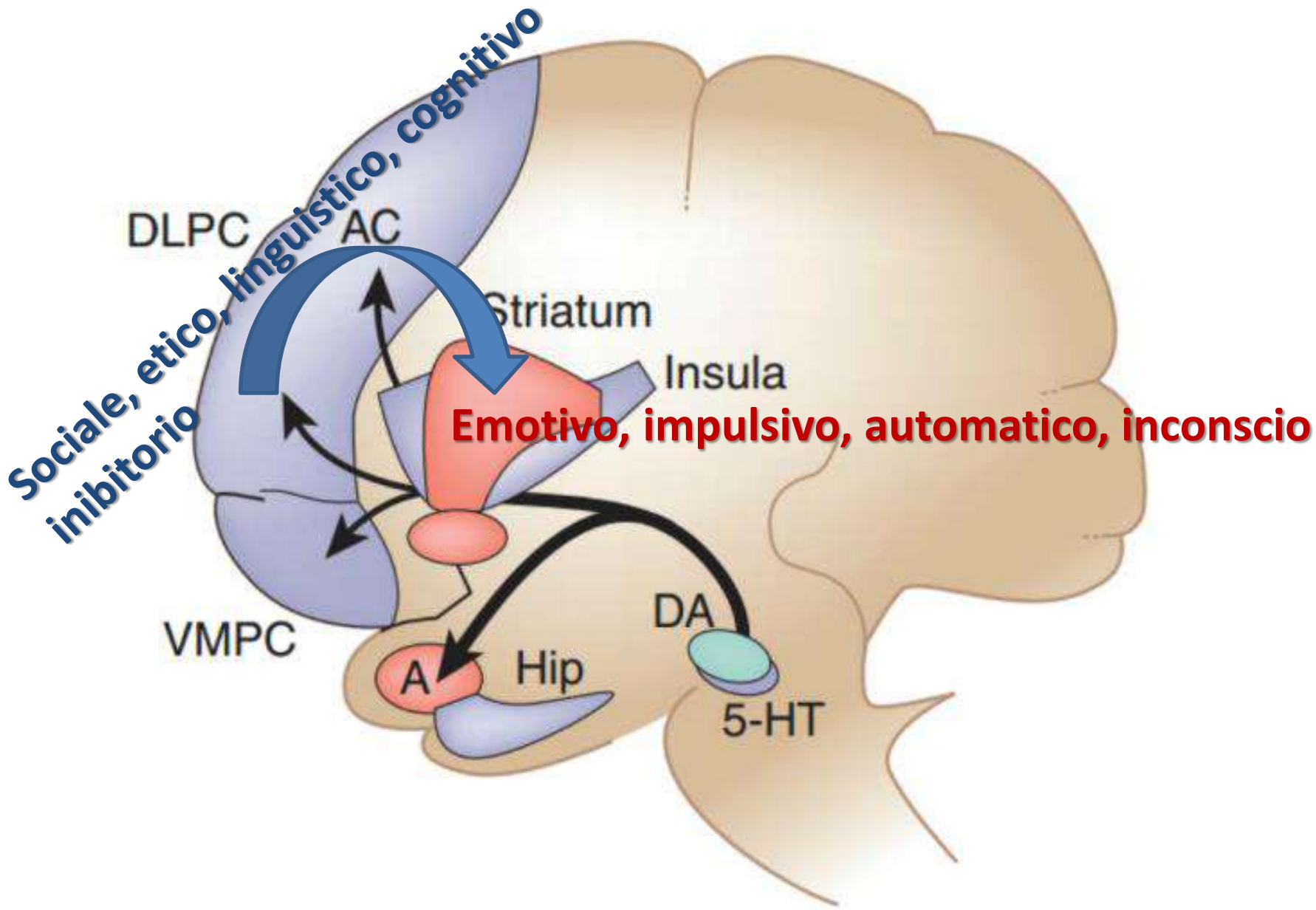
siamo uno per
ogni presente?

Neuroscienze cognitive delle decisioni intertemporali



Aspetti principali

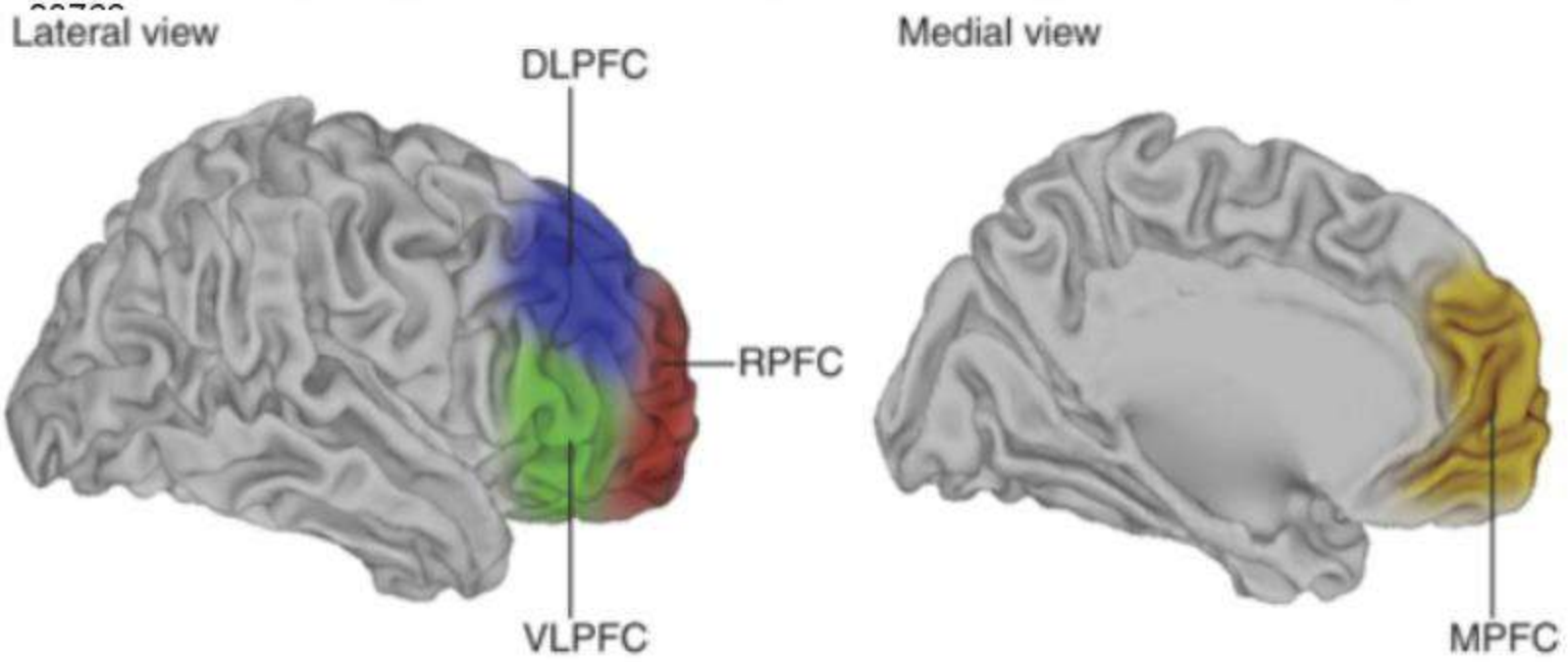
L’AUTOCONTROLLO


Sociale, etico, linguistico, cognitivo
inibitorio
DLPC
AC
Striatum
Insula
Emotivo, impulsivo, automatico, inconscio
VMPC
DA
A
Hip
5-HT

Published in final edited form as:
Annu Rev Psychol 2011 ; 62: 363–390. doi:10.1146/annurev.psych.121208.131616.

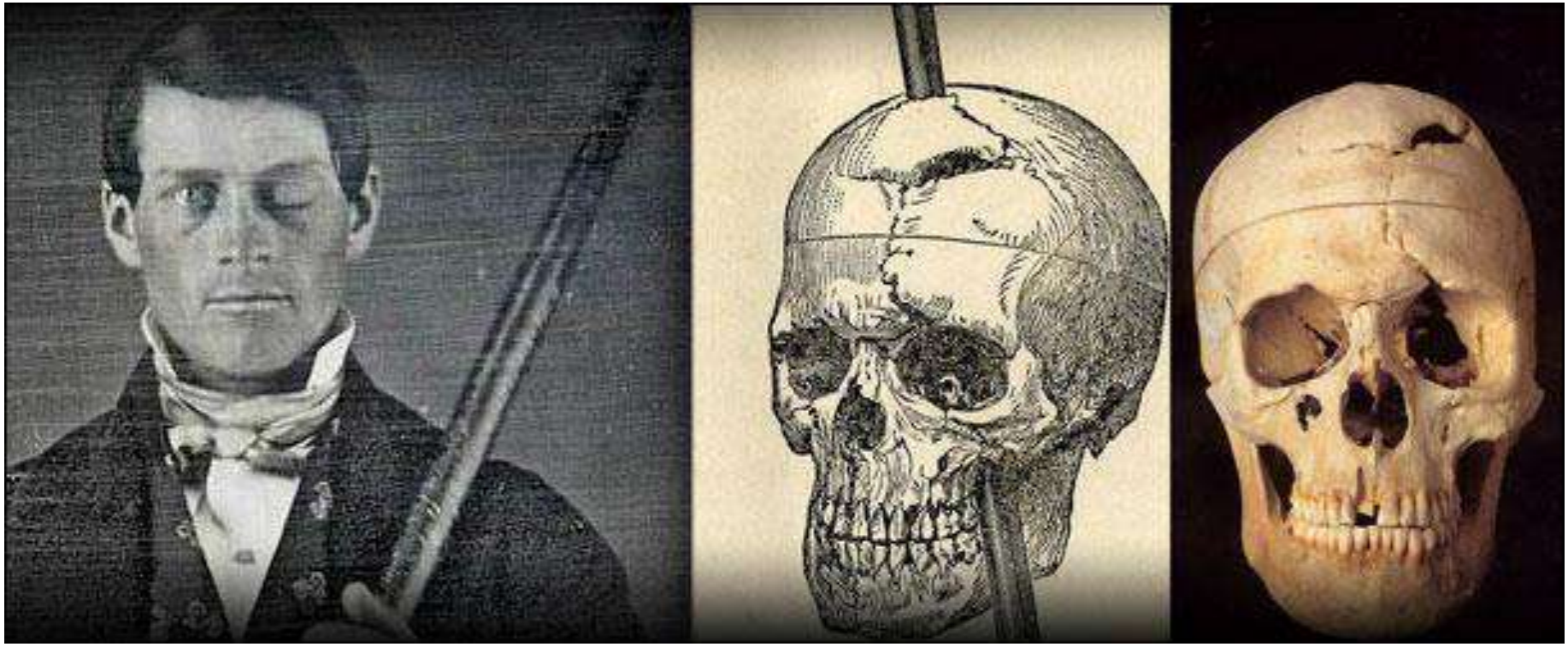
Neuroscience of Self and Self-Regulation

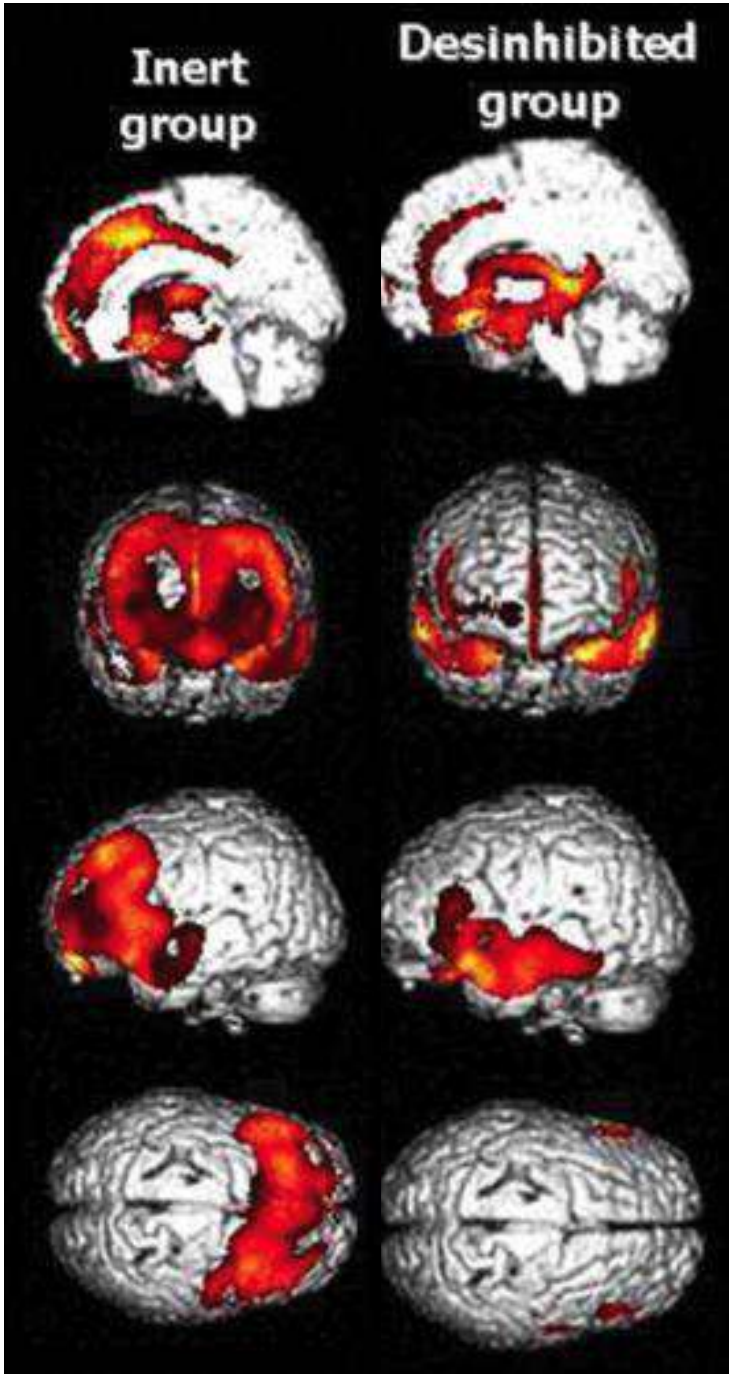
Todd F. Heatherton
Department of Psychological and Brain Sciences, Dartmouth College, Hanover, New Hampshire

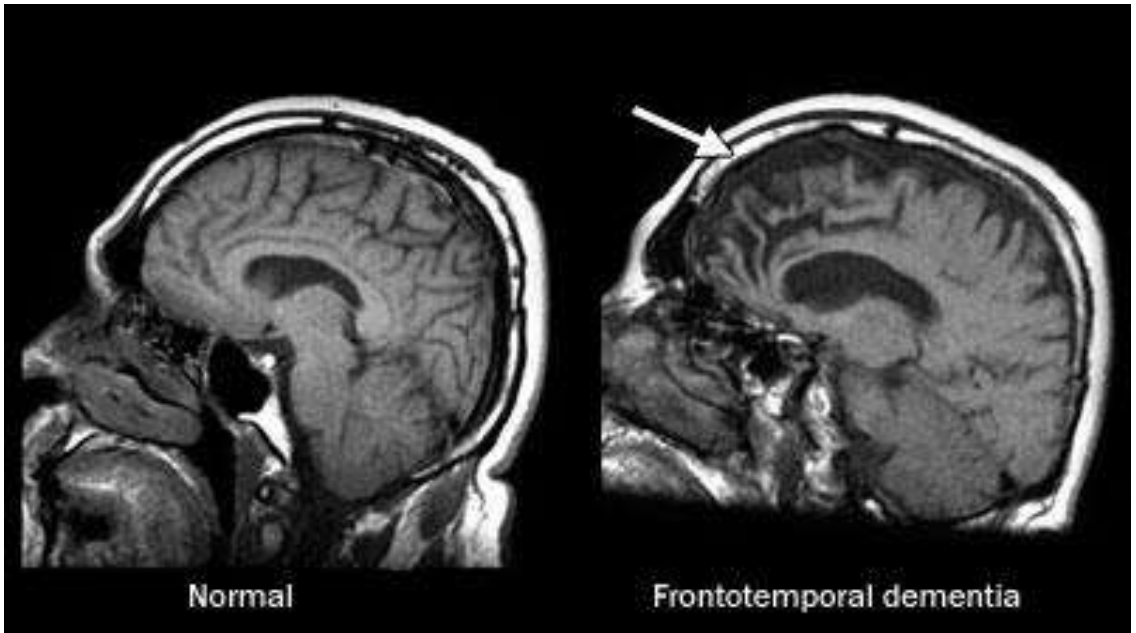


Basi neurali dell’autocontrollo

- Il caso Phineas Gage




Inert group
Desinhibited group


Normal
Frontotemporal dementia

Pensieri lenti, pensieri veloci
Daniel Kahneman

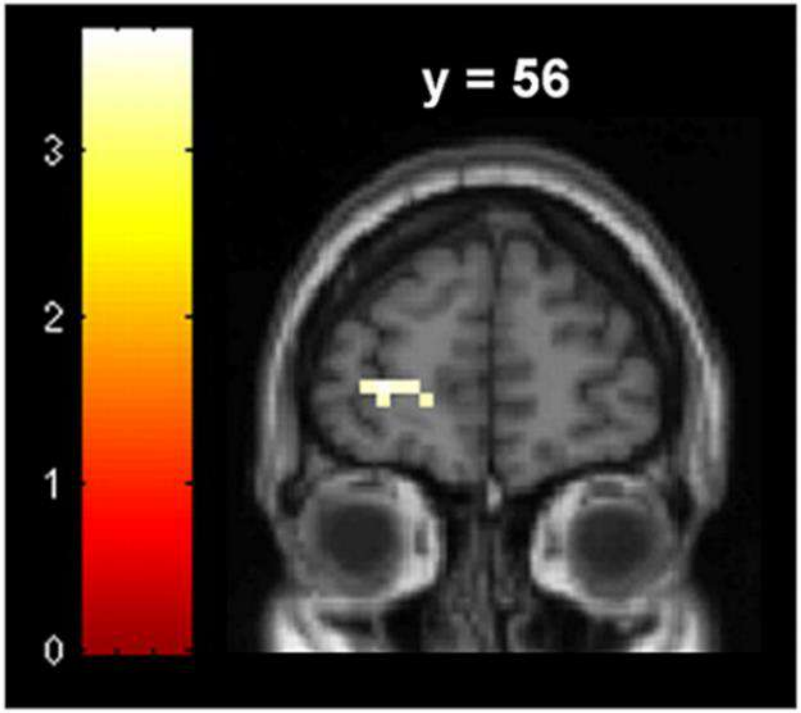
- **Sistema 1 – automatico**
- Non-controllato
- Senza sforzo
- Associativo
- Veloce
- Inconscio
- Competente

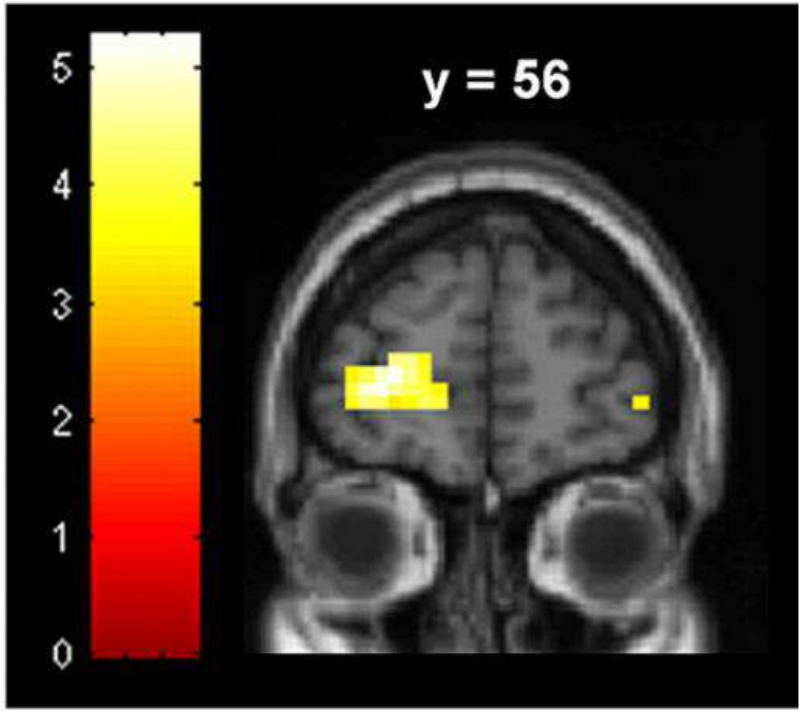
- **Sistema 2 – Riflessivo**
- Controllato
- Con sforzo
- Deduttivo
- Lento
- Autocosciente
- Dipendente da regole

Tre problemi per il sistema 1

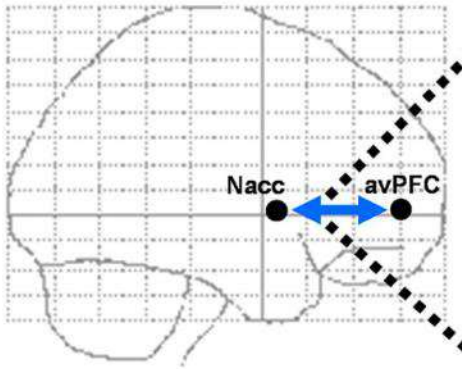
1. Un caffè e un cioccolatino costano insieme 1 euro e 10. Il caffè costa 1 euro più del cioccolatino. Quanto costa il cioccolatino?
2. Se 5 macchine fanno 5 viti in 5 minuti, quanto tempo impiegheranno 100 macchine per fare 100 viti?
3. Rifacendo il pavimento a una piazza, gli operai raddoppiano ogni giorno l'area delle nuove mattonelle posate. Se servono 48 giorni per coprire tutta la piazza con nuove mattonelle, quanti giorni servono per coprire metà della piazza?

Correlati neurali del controllo degli impulsi



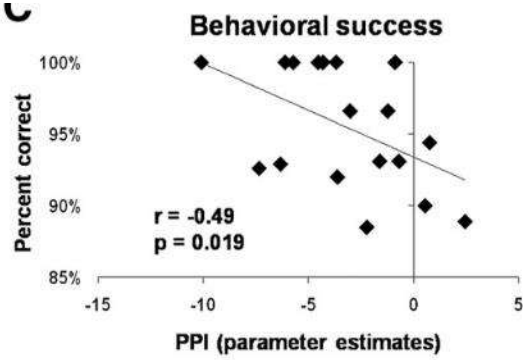


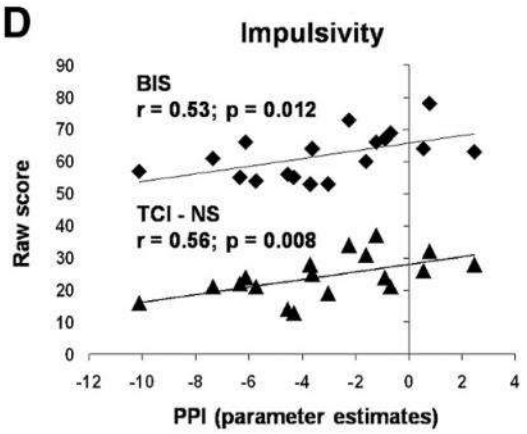
'Desire-reason dilemma'



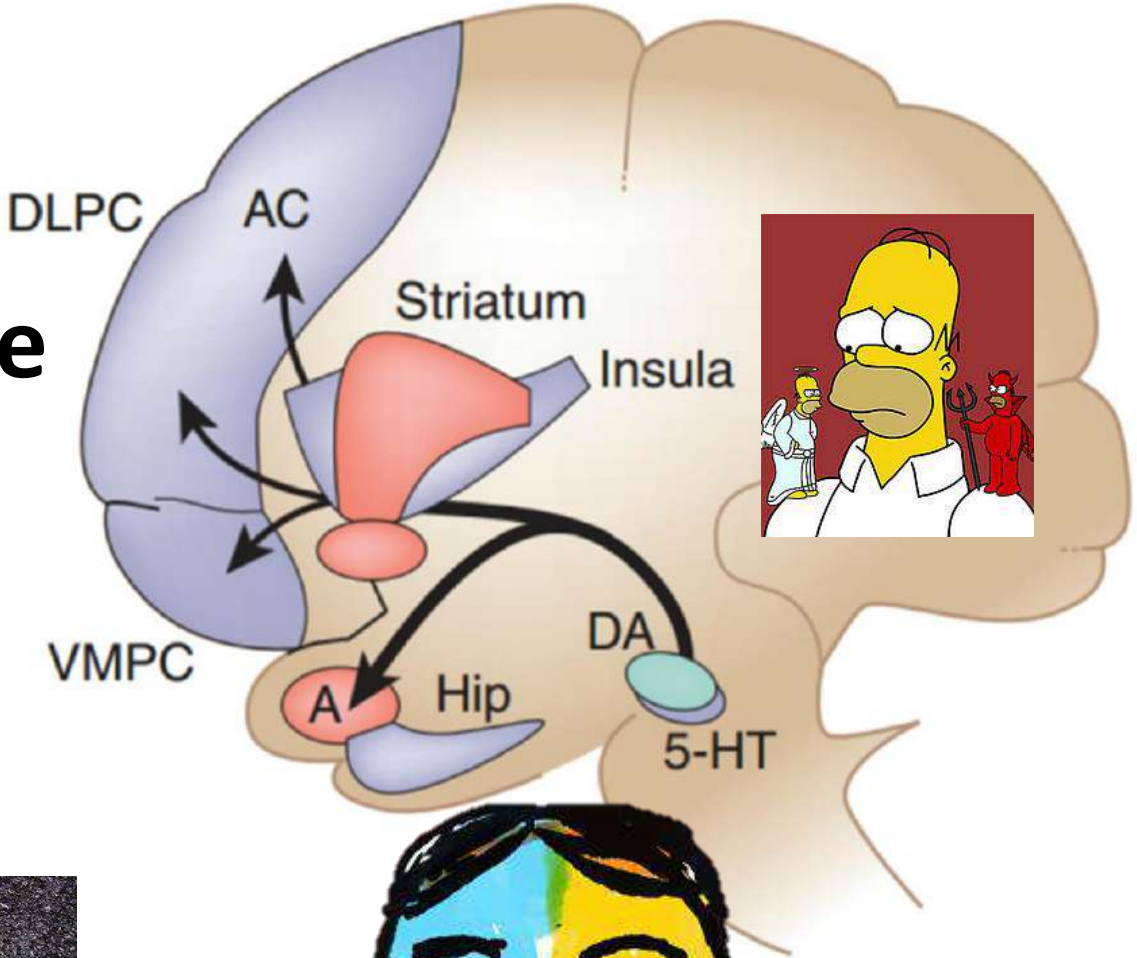
Negative functional interaction between right Nacc and left avPFC

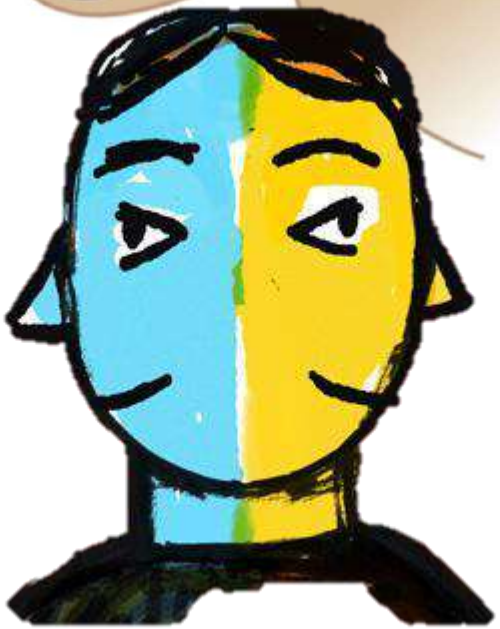
Diekhof EK, Gruber O, When Desire Collides with Reason: Functional Interactions between Anteroventral Prefrontal Cortex and Nucleus Accumbens Underlie the Human Ability to Resist Impulsive Desires. The Journal of Neuroscience, 2010, 30, 4, pp. 1488-1493.





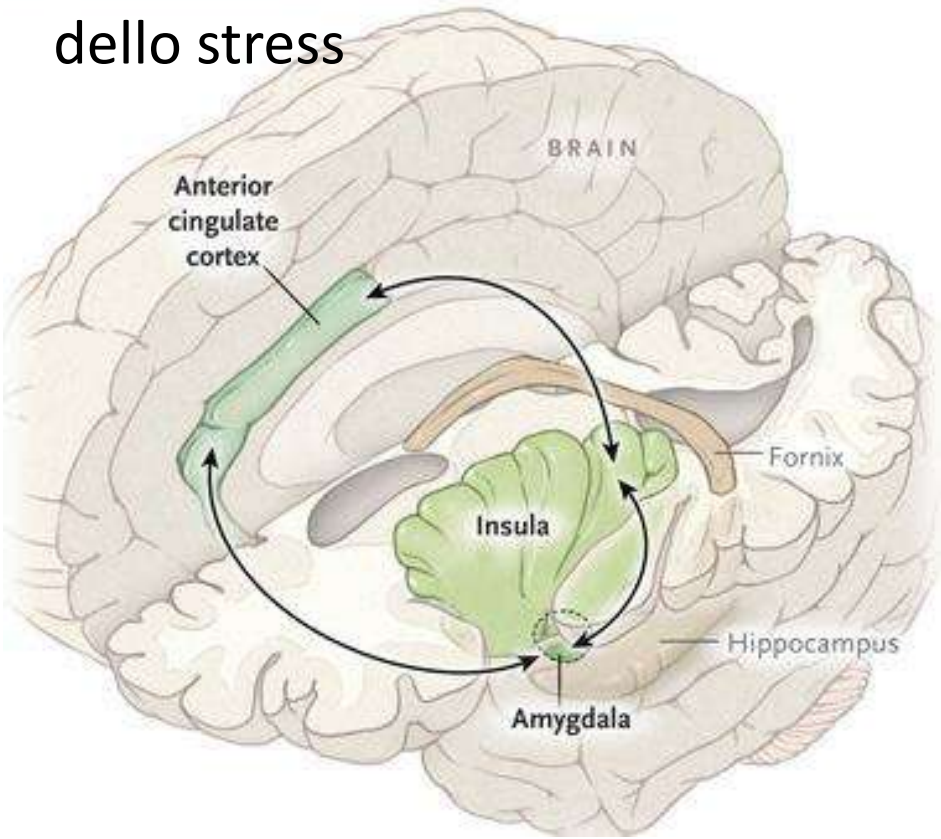
Ambivalenza e oscillazione delle preferenze

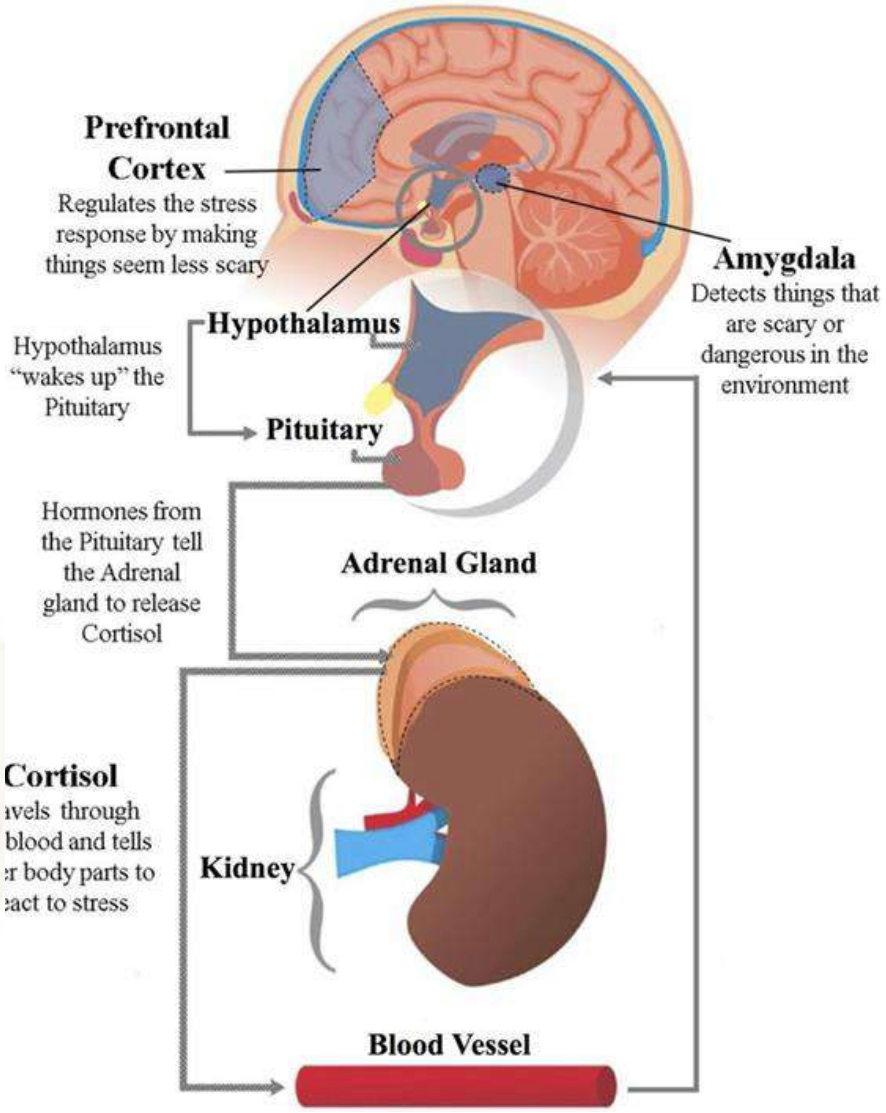




Normalizzare l'ambivalenza acuta

Ambivalenza acuta attiva ACC e questa a sua volta attiva l'amigdala, che «accende» l'asse dello stress

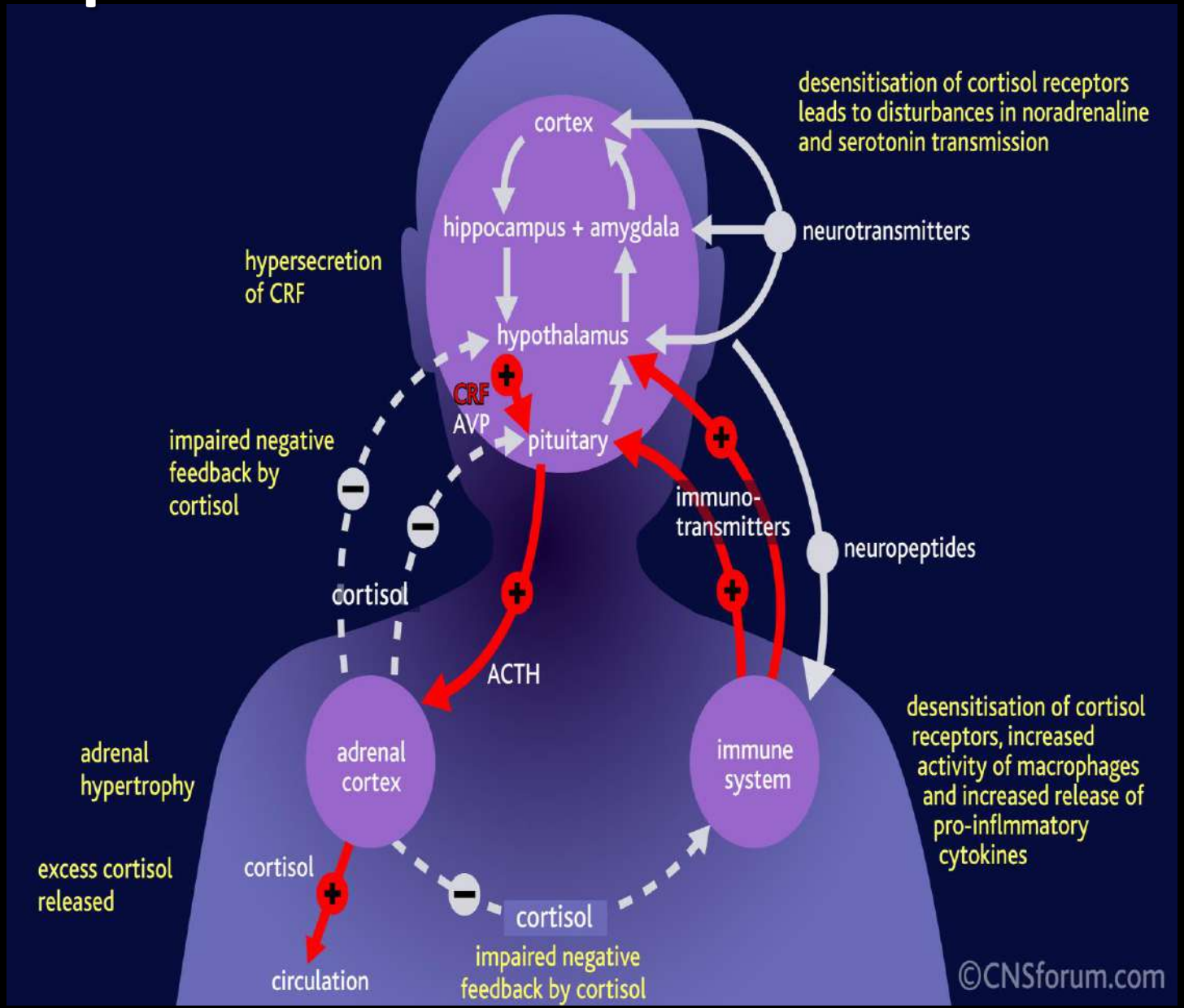




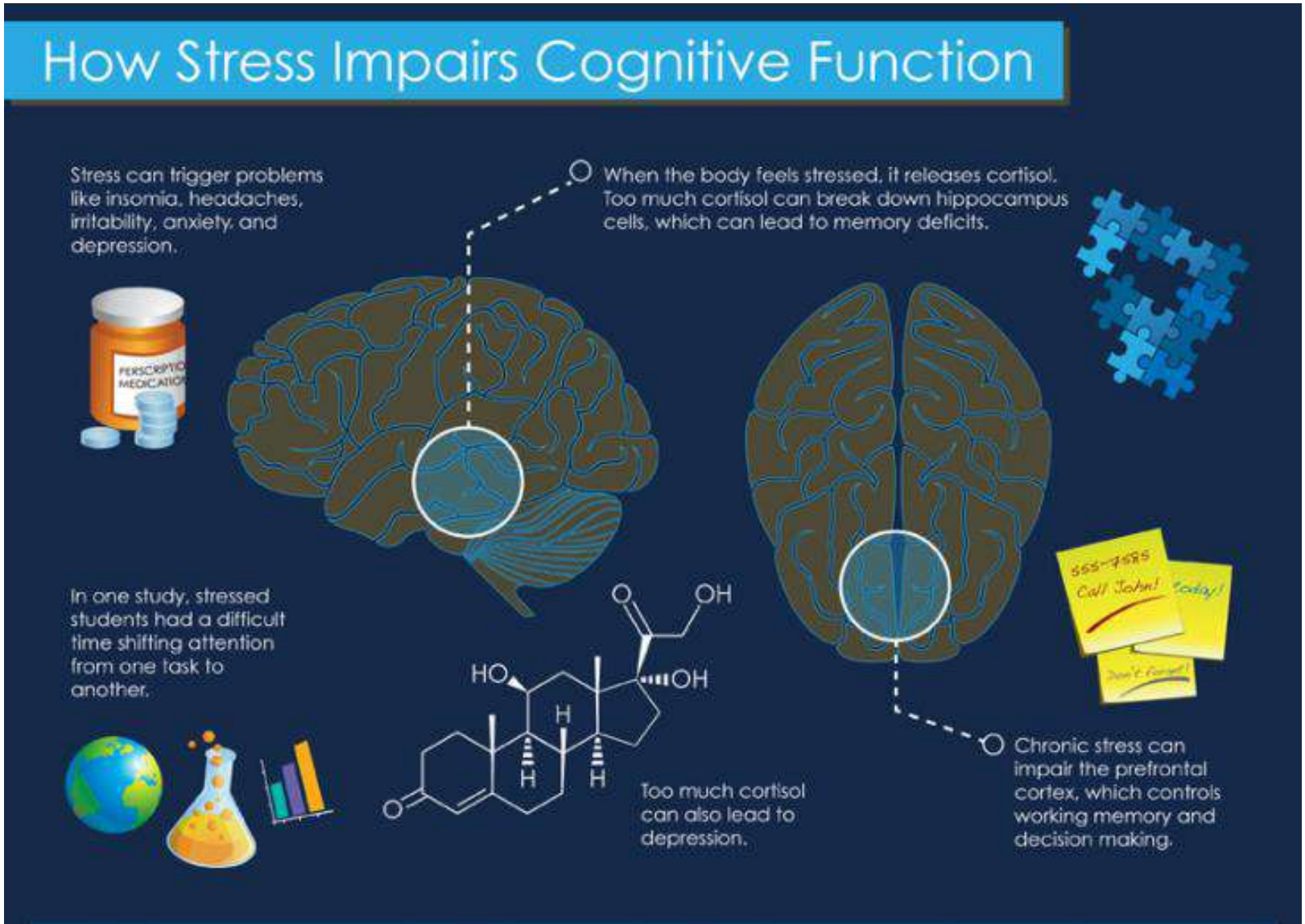
STRESS, CERVELLO, E CAMBIAMENTO

IL CAMBIAMENTO GENERA STRESS

Risposte neuroendocrine dello stress



Stress, funzioni cognitive ed esecutive

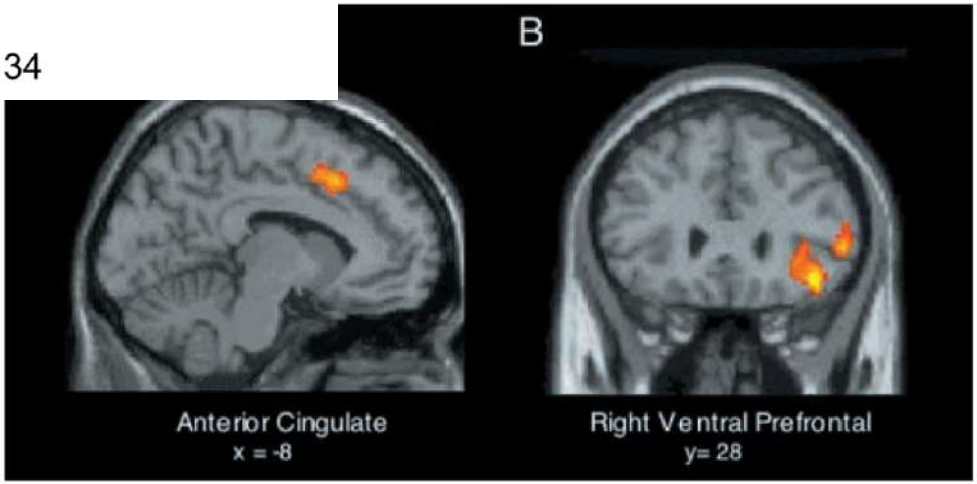


Effetti collaterali dello stress sul cervello e sui processi cognitivi

- sovrapprendimento: fissazione delle risposte impulsive ed automatiche per il rinforzo delle associazioni tra inneschi e comportamento
- Rigidità del pensiero
- Soppressione delle funzioni della corteccia prefontale
- Neurotossicità pfc per iperattivazione
- Neurotossicità pfc per presenza cortisolo e altri ormoni dello stress

Evitare la confrontazione, i giudizi che suscitano vergogna o sensi di colpa acuti

Does Rejection Hurt? An fMRI Study of Social Exclusion
Naomi I. Eisenberger, *et al.*
Science **302**, 290 (2003);
DOI: 10.1126/science.1089134



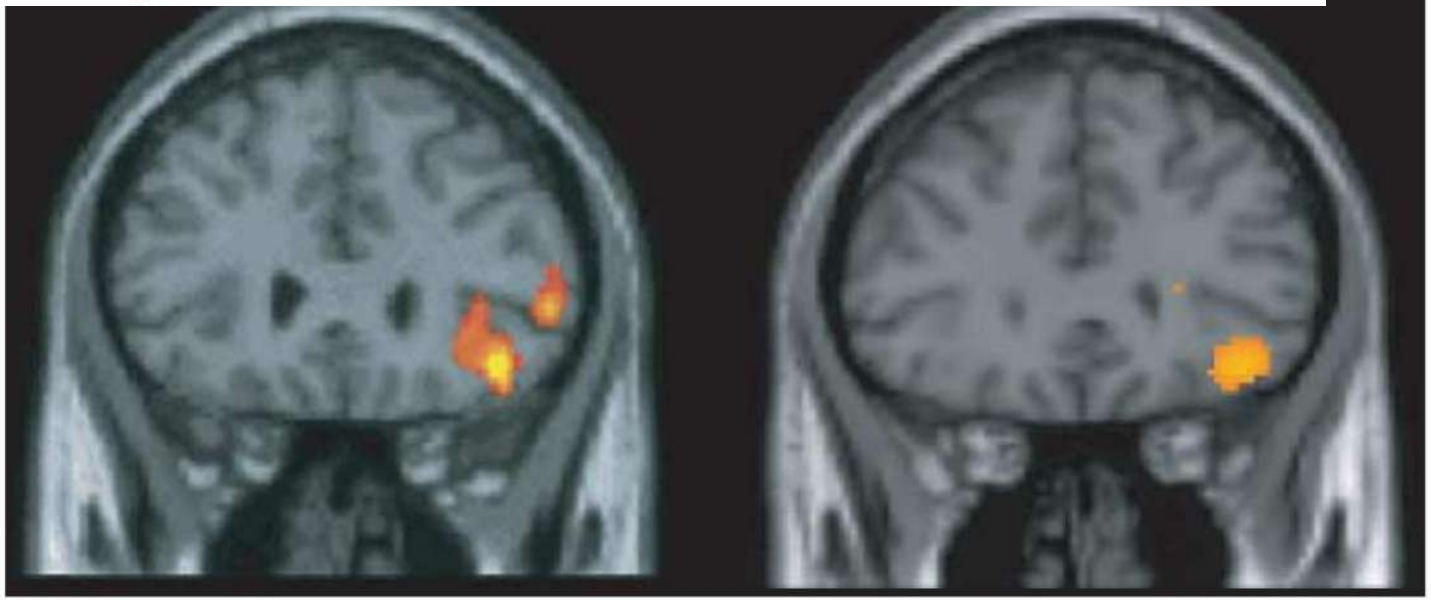
- Confrontazione, biasimo = rigetto sociale
- Attivazione aree che codificano cognitivamente il dolore fisico
- Innesco della risposta dello stress (lotta e ritiro)
- Pensiero rigido, stereotipato

Opinion TRENDS in Cognitive Sciences Vol.8 No.7 July 2004

ELSEVIER

Why rejection hurts: a common neural alarm system for physical and social pain

Naomi I. Eisenberger and Matthew D. Lieberman



Social pain regulation
RVPFC (y = 27)

Physical pain regulation
RVPFC (y = 30)

Molecular Psychiatry

Original Article | Published: 20 August 2013

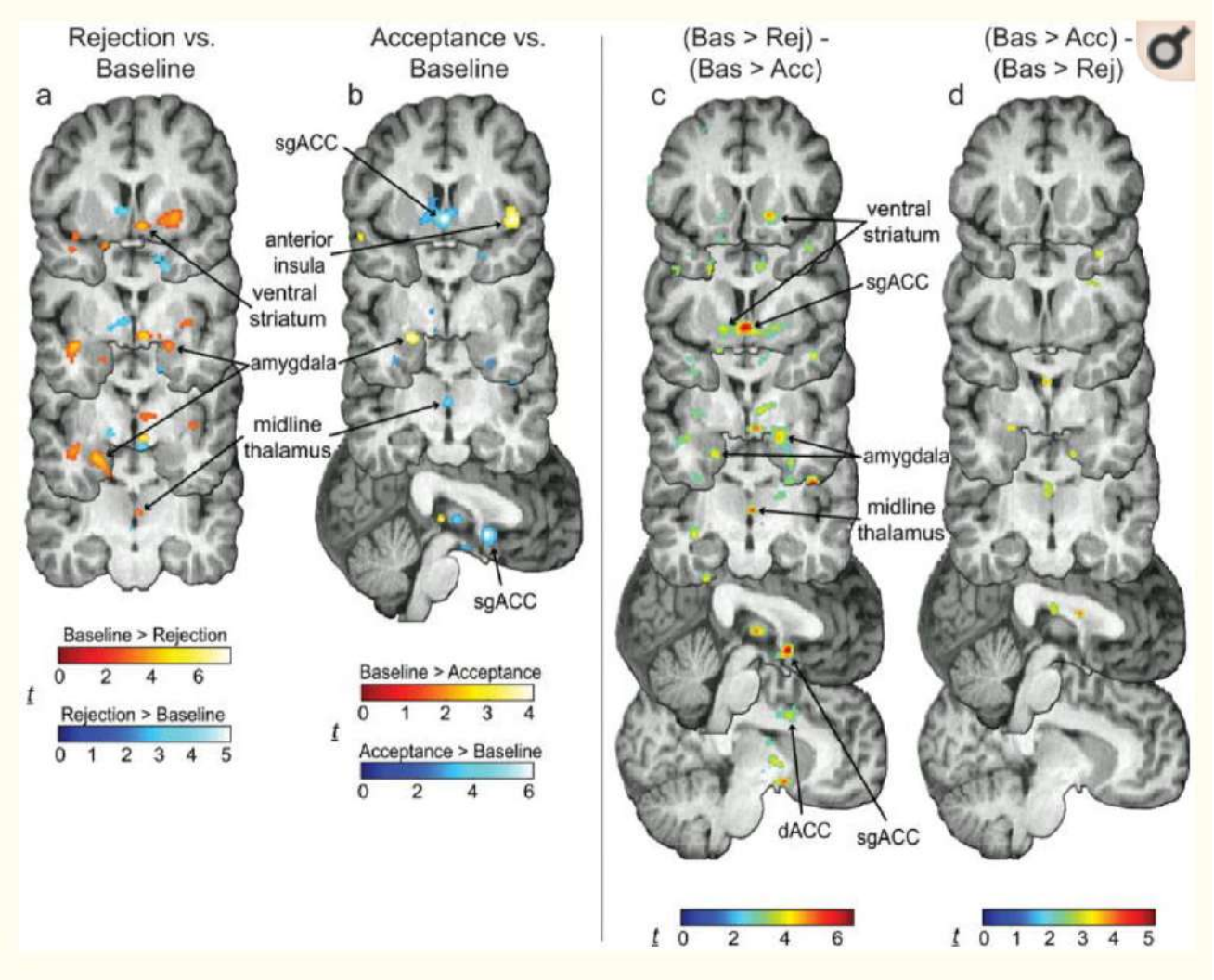
Response of the μ-opioid system to social rejection and acceptance

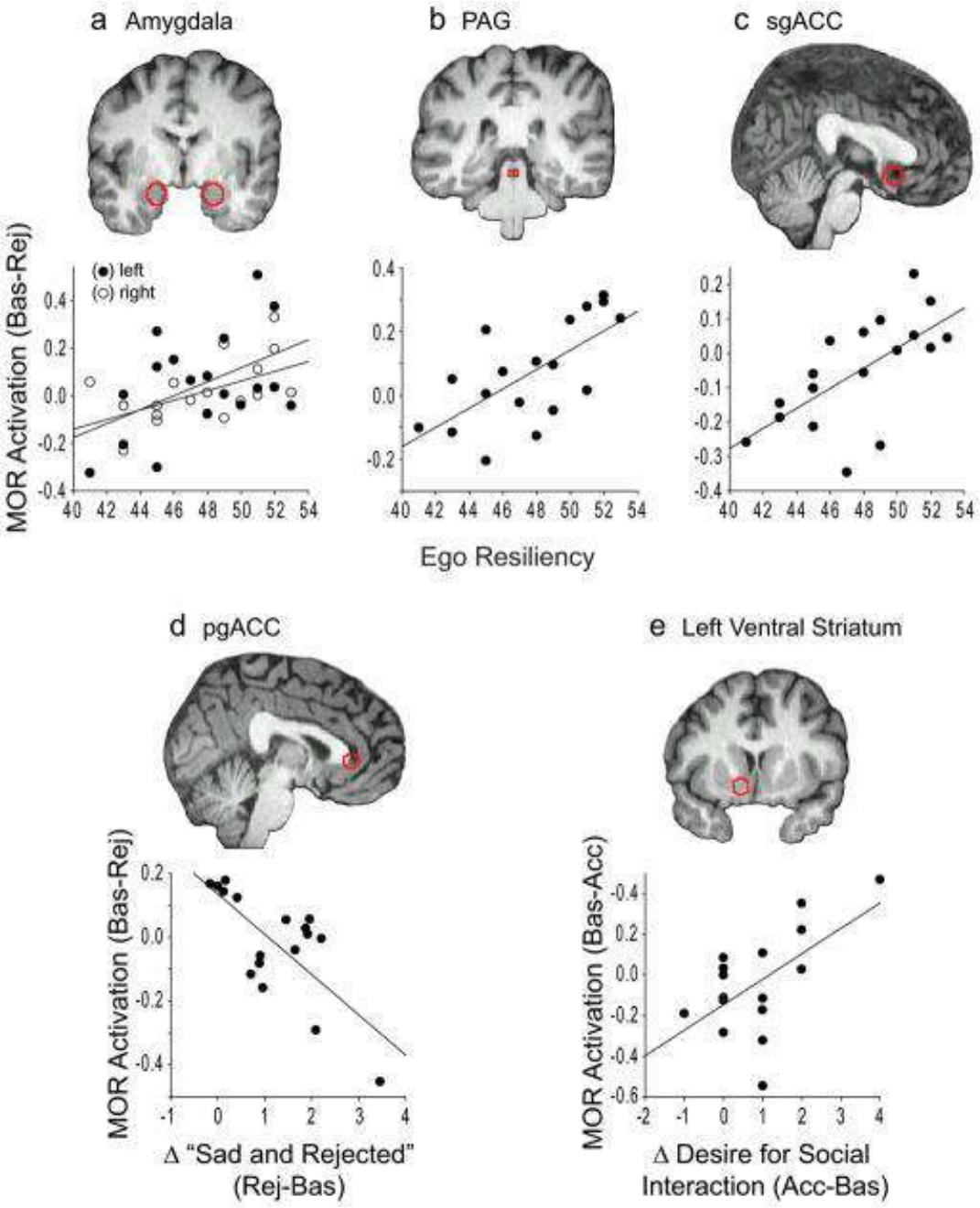
D T Hsu ✉, B J Sanford, K K Meyers, T M Love, K E Hazlett, H Wang, L Ni, S J Walker, B J Mickey, S T Korycinski, R A Koeppe, J K Crocker, S A Langenecker & J-K Zubieta

Molecular Psychiatry **18**, 1211–1217 (2013) | Download Citation ⬇

Attivazioni recettori oppioidi M (MOR)

maggiore attivazione durante l'accettazione nell'insula anteriore e amigdala sinistra, disattivazione sgACC





Attivazione MOR nello striato durante accettazione e aumento del desiderio dell'interazione sociale

La dissonanza cognitiva

Leon Festinger, ***A Theory of Cognitive Dissonance***, 1957

- Forma di stress psicologico vissuto da una persona che detiene due o più credenze, idee o valori contraddittori
- Si manifesta nelle situazioni in cui la persona constata che la sua azione contraddice le sue intenzioni e le sue credenze
- La percezione di questa frattura tende a innescare la motivazione ad agire per ridurre la dissonanza (ripristinare il controllo volontario) e quindi il disagio percepito.
- È legata al bisogno di coerenza

POSTDECISION CHANGES IN THE DESIRABILITY OF ALTERNATIVES[1]

JACK W. BREHM[2]

University of Minnesota

THE importance of the choice situation is reflected in the considerable amount of theory and research on conflict. Conflict theory has generally dealt, however, with the phenomena that lead up to the choice. What happens after the choice has received little attention. The present paper is concerned with some of the consequences of making a choice.

consequent pressure to reduce it are greater the more closely the alternatives approach equal desirability.

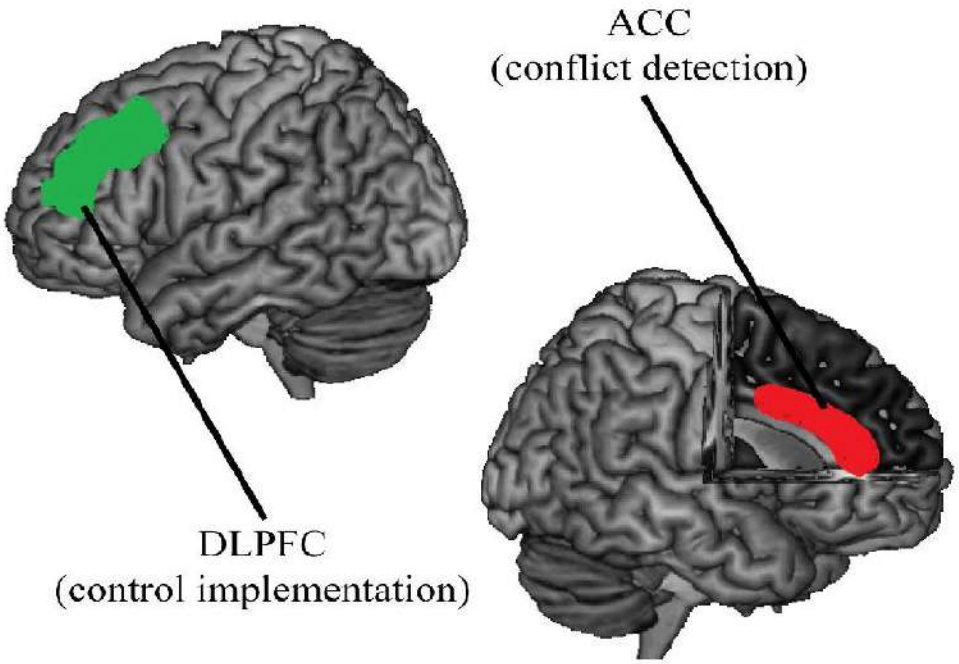
3. Exposing a person to new relevant cognitive elements, at least some of which are consonant, facilitates the reduction of dissonance.

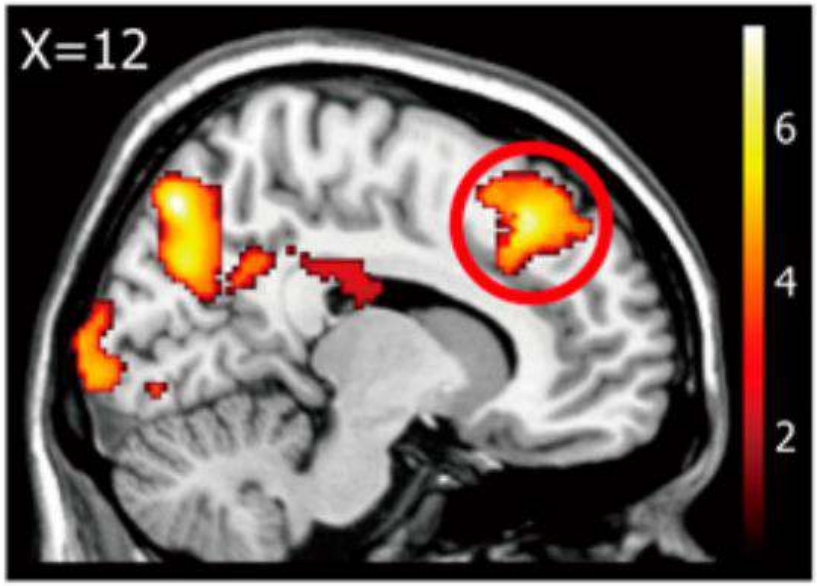
METHOD

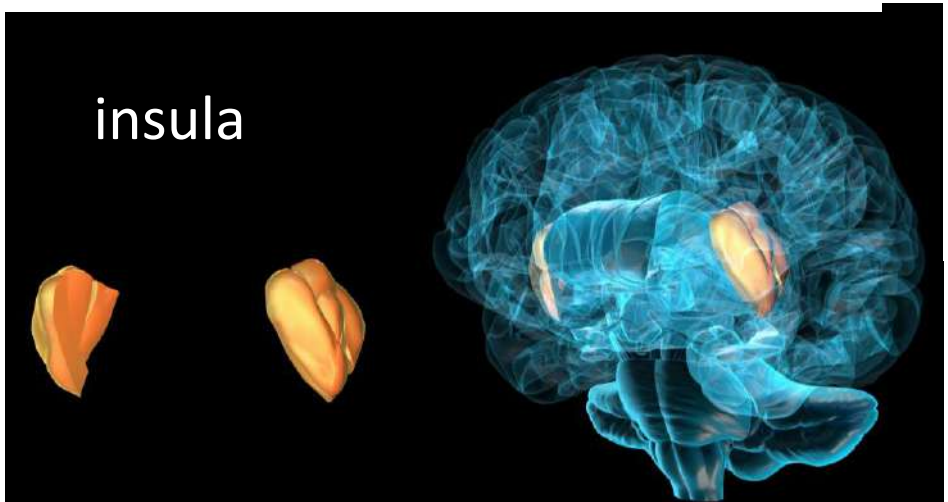
In order to test these hypotheses, a procedure was

Brehm, J. W. (1956). Postdecision changes in the desirability of alternatives. The Journal of Abnormal and Social Psychology, 52(3), 384-389.
http://dx.doi.org/10.1037/h0041006

Correlati neurali dissonanza cognitiva: attivazione dACC DLPFC insula







Dalla dissonanza cognitiva alla decisione di cambiare

Il primo passo non ti porta dove vuoi, ma ti toglie da dove sei

- Superare l'*effetto Zeigarnik*

*(*Zeigarnik, B. Das Behalten erledigter und unerledigter Handlungen. *Psychologische Forschung*, 1927, 9; Zeigarnik, B. (1938), "On Finished and Unfinished Tasks", pp.300-314 in W. D. Ellis (Ed.), *A Sourcebook of Gestalt Psychology*, London: Kegan Paul, Trench, Trubner & Co.*)*

- Effetti postdecisionali sulla motivazione al cambiamento
- Si accresce la preferenza per la cosa scelta, si diminuisce il valore per quella rigettata
- **Anche l'affermazione orientata al cambiamento rappresenta una formza di azione**

Trends in Cognitive Sciences
Volume 12, Issue 1, January 2008, Pages 13-16
CellPress

Opinion

Neuroeconomics

How actions create – not just reveal – preferences

Dan Ariely [1] ✉, Michael I. Norton [2] ✉

Effetti postdecisionali

- Attivazione PFC – soprattutto OFC (autocontrollo, pianificazione)
- Insula (valutazione afferenze somatiche-viscerali, marker fisiologici delle emozioni)
- Striato (motivazione, energia per azione)
- Sistema della ricompensa (valenza e salienza incentivante)

JNeurosci
THE JOURNAL OF NEUROSCIENCE
An Official Journal of SfN SOCIETY for NEUROSCIENCE
1969-2019 50 CELEBRATING 50 YEARS

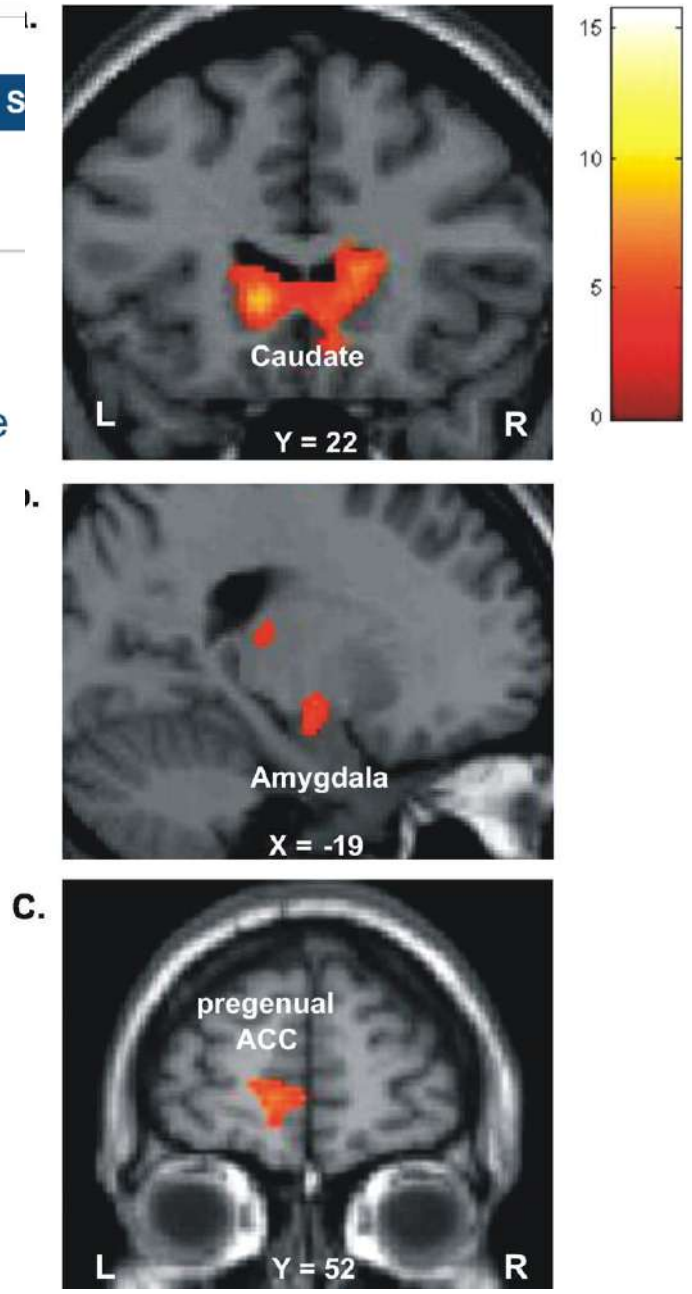
How Choice Reveals and Shapes Expected Hedonic Outcome

Tali Sharot, Benedetto De Martino, and Raymond J. Dolan

Journal of Neuroscience 25 March 2009, 29 (12) 3760-3765; DOI: https://doi.org/10.1523/JNEUROSCI.4972-08.2009

Fare una scelta, anche solo immaginarla, modula l'esperienza edonica attesa delle sue conseguenze

Sono coinvolti i centri che mediano l'esperienza emotiva, la valenza, i processi motivazionali, il passaggio all'azione



L’attività nel nucleo caudato media la relazione tra scelta ed esperienza edonica stimata

JNeurosci
THE JOURNAL OF NEUROSCIENCE
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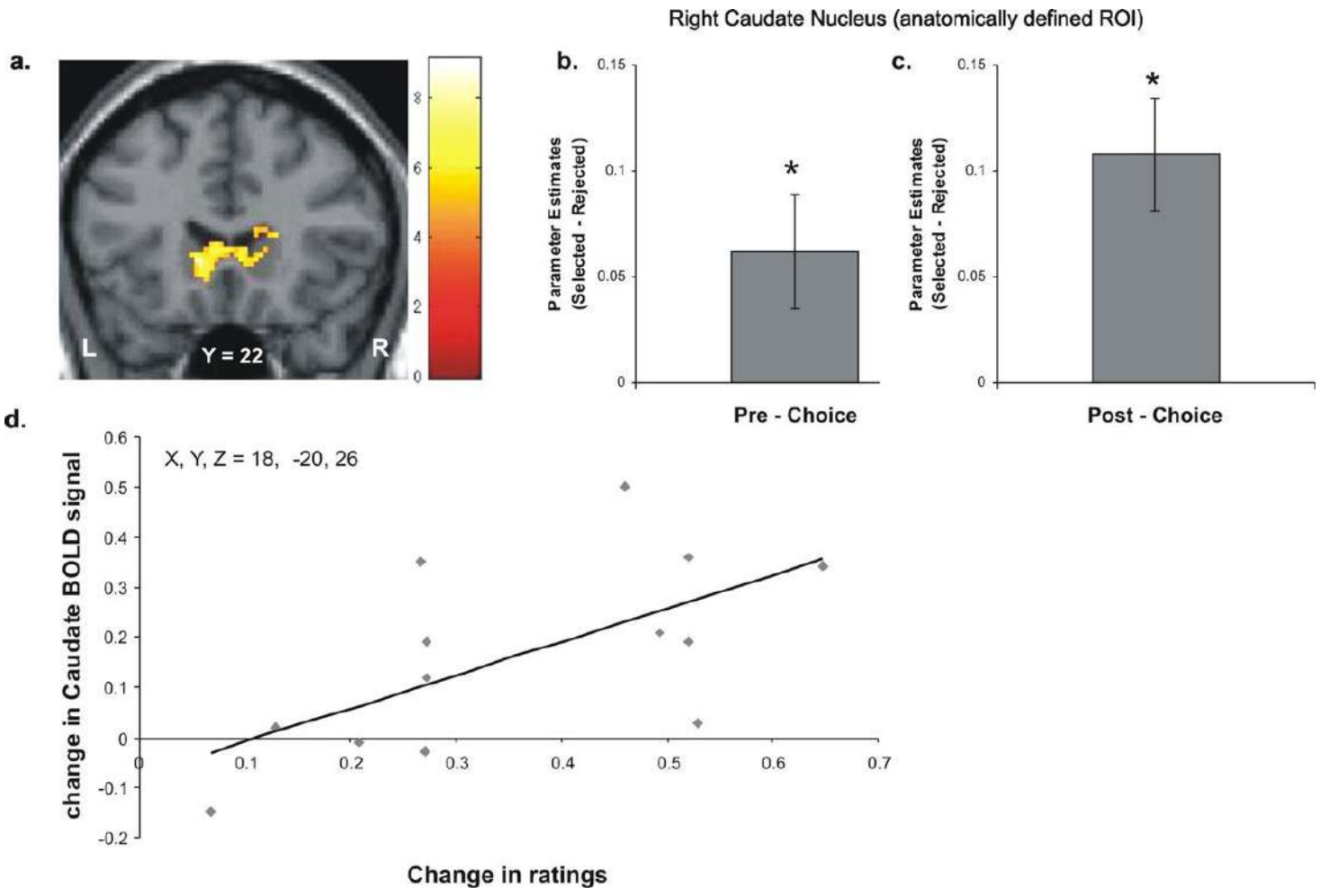
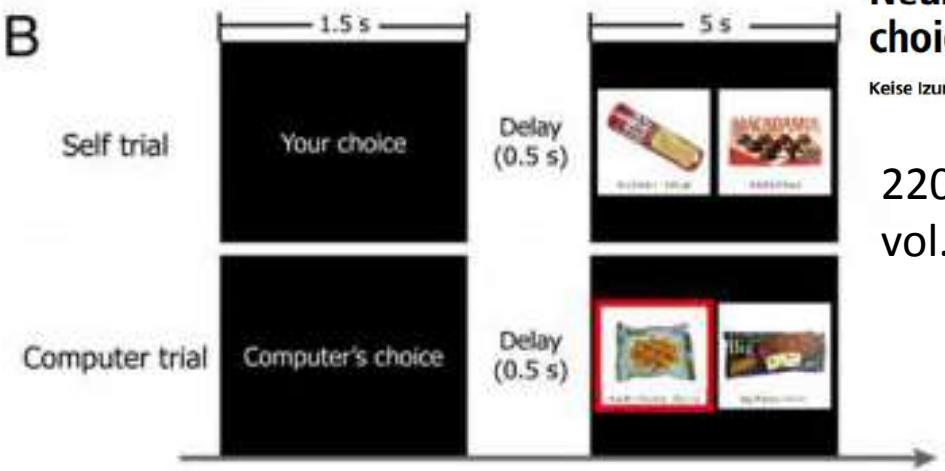
HOME CONTENT ALERTS FOR AUTHORS EDITORIAL BOARD ABOUT
Previous
Articles, Behavioral/Systems/Cognitive

How Choice Reveals and Shapes Expected Hedonic Outcome

Tali Sharot, Benedetto De Martino, and Raymond J. Dolan
Journal of Neuroscience 25 March 2009, 29 (12) 3760-3765; DOI: https://doi.org/10.1523/JNEUROSCI.4972-08.2009

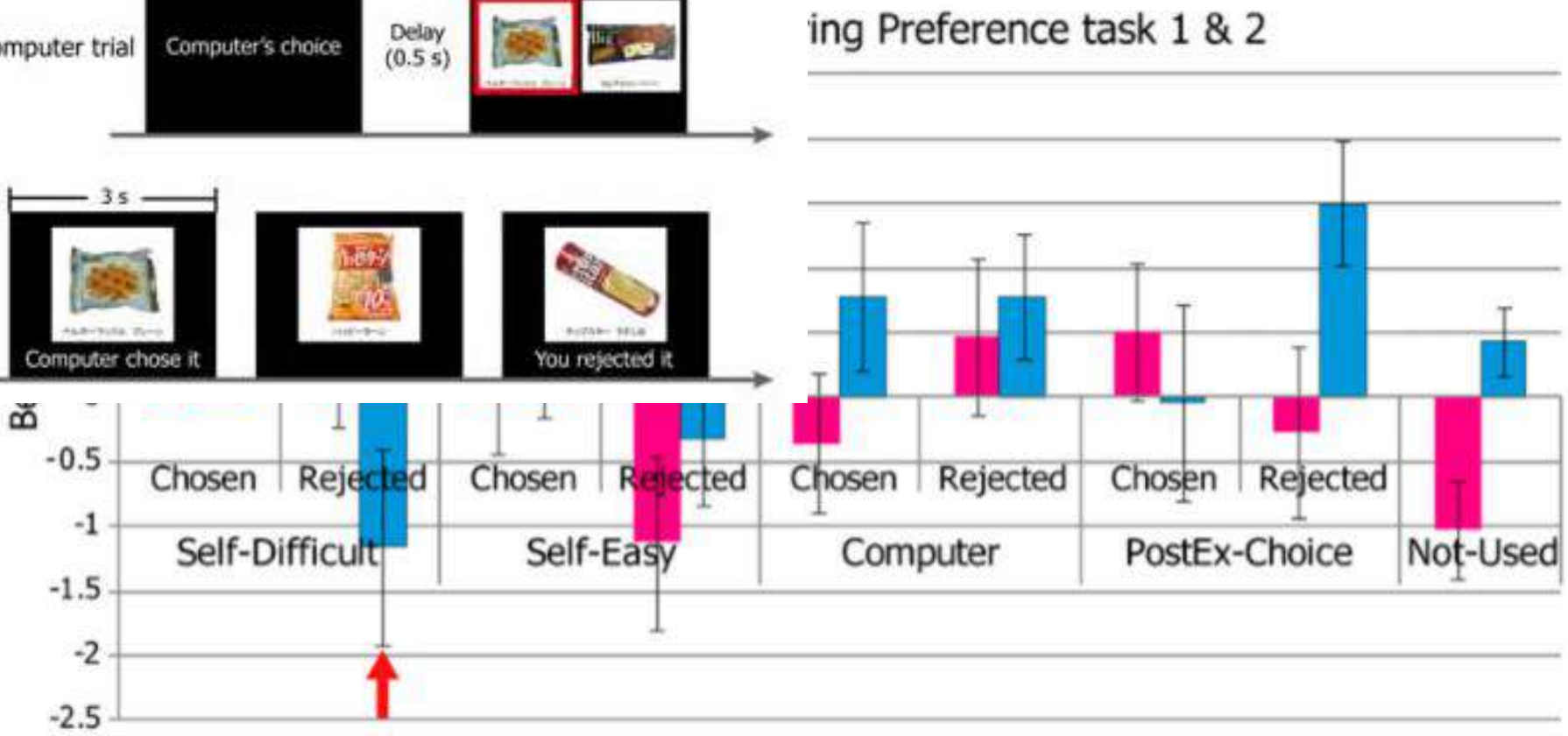




Neural correlates of cognitive dissonance and choice-induced preference change

Keise Izuma[a,1,2], Madoka Matsumoto[a], Kou Murayama[b], Kazuyuki Samejima[a], Norihiro Sadato[c], and Kenji Matsumoto[a]

22014–22019 | PNAS | December 21, 2010 | vol. 107 | no. 51



Jarcho, Berkman, Lieberman, ***The neural basis of rationalization: cognitive dissonance reduction during decision-making***

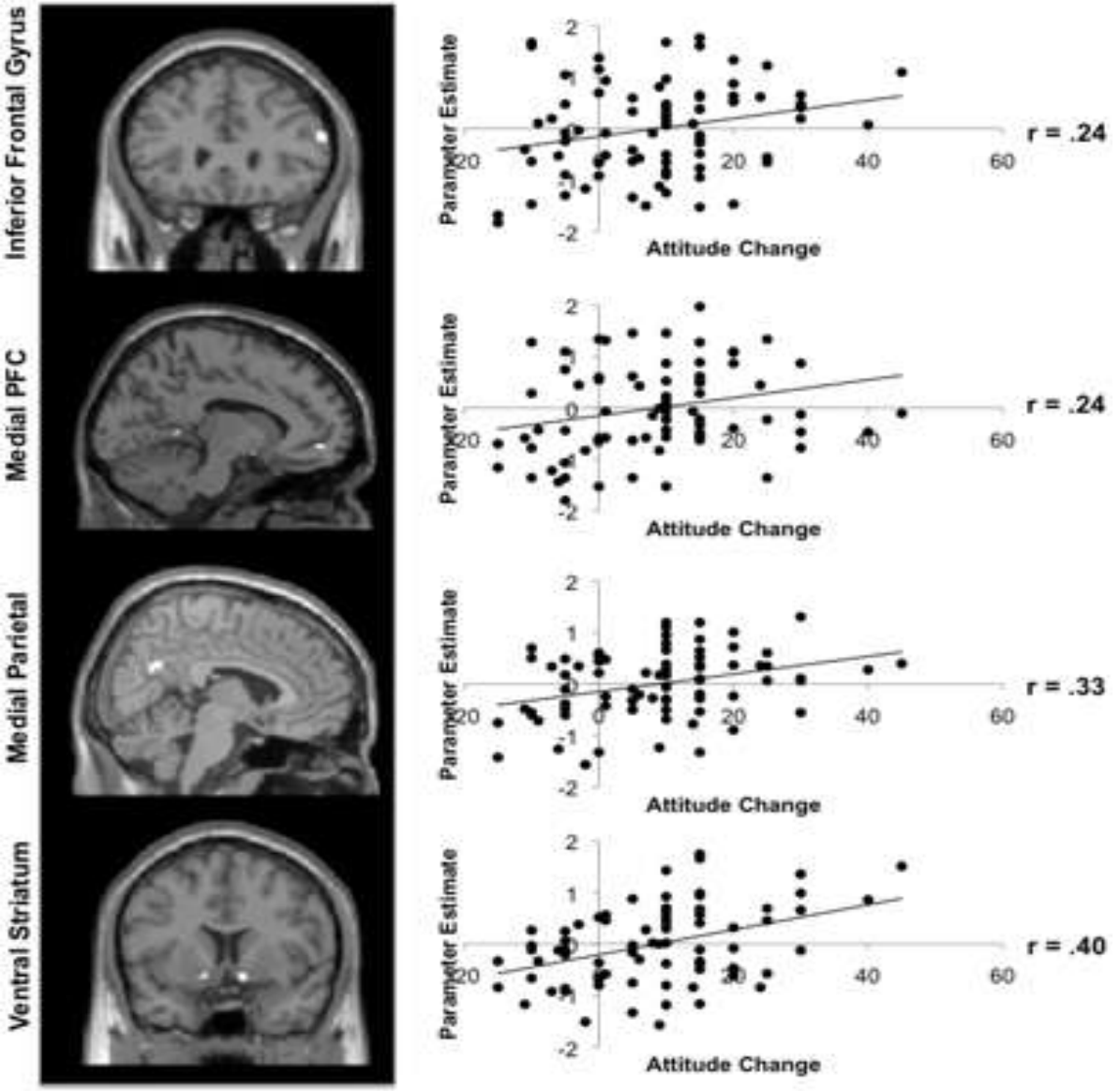
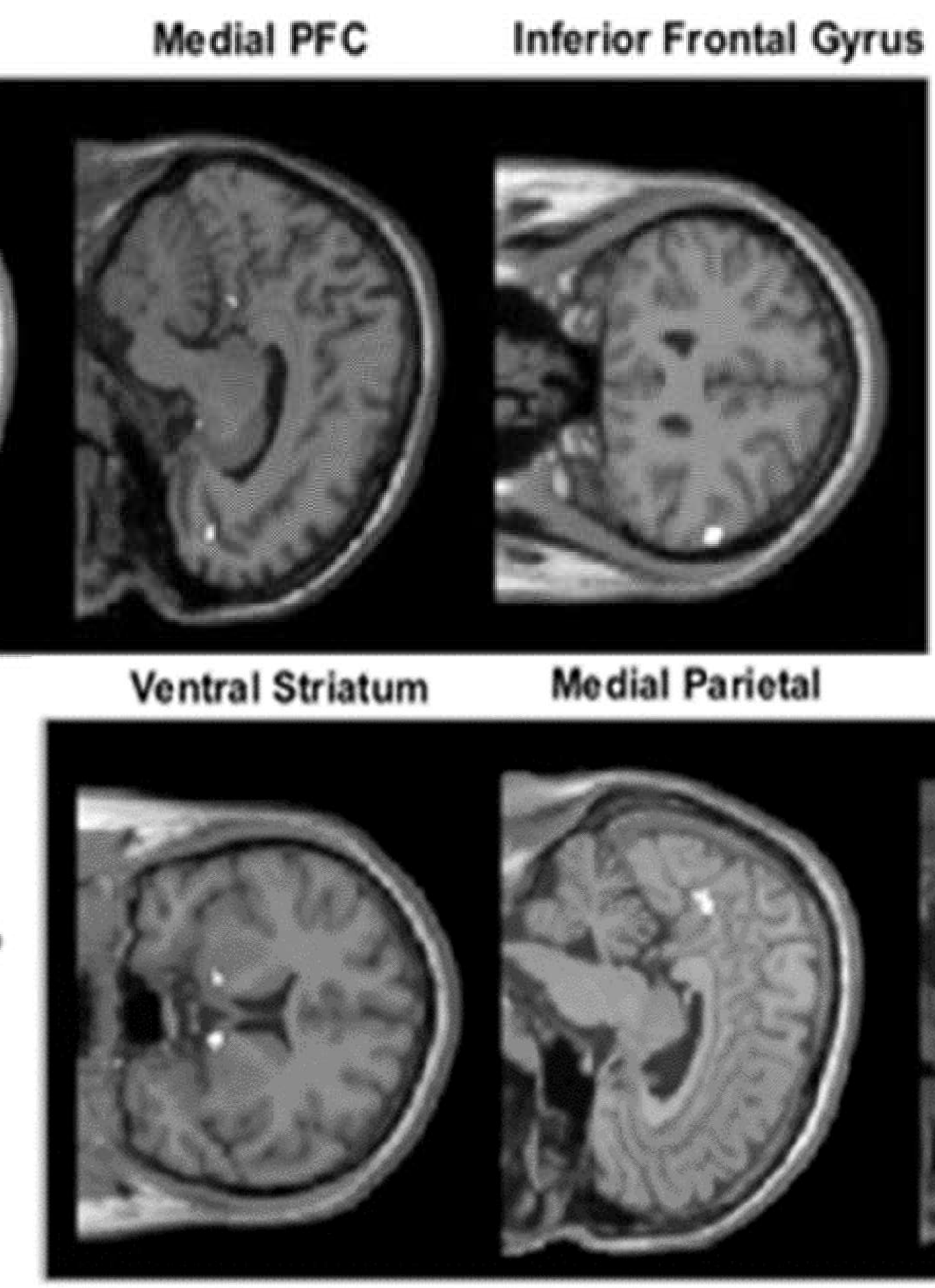


Fig. 2 Neural correlates of post-decision attitude change. The left column shows clusters of activation identified ...

Social Cognitive and Affective Neuroscience, Volume 6, Issue 4, September 2011, Pages 460–467, https://doi.org/10.1093/scan/nsq054


Medial PFC
Inferior Frontal Gyrus
Ventral Striatum
Medial Parietal

Contents lists available at ScienceDirect

NeuroImage

journal homepage: www.elsevier.com/locate/ynimg

How choice modifies preference: Neural correlates of choice justification

Jungang Qin [a], Sasha Kimel [b], Shinobu Kitayama [b,*], Xiaoying Wang [c], Xuedong Yang [c], Shihui Han [a,*]

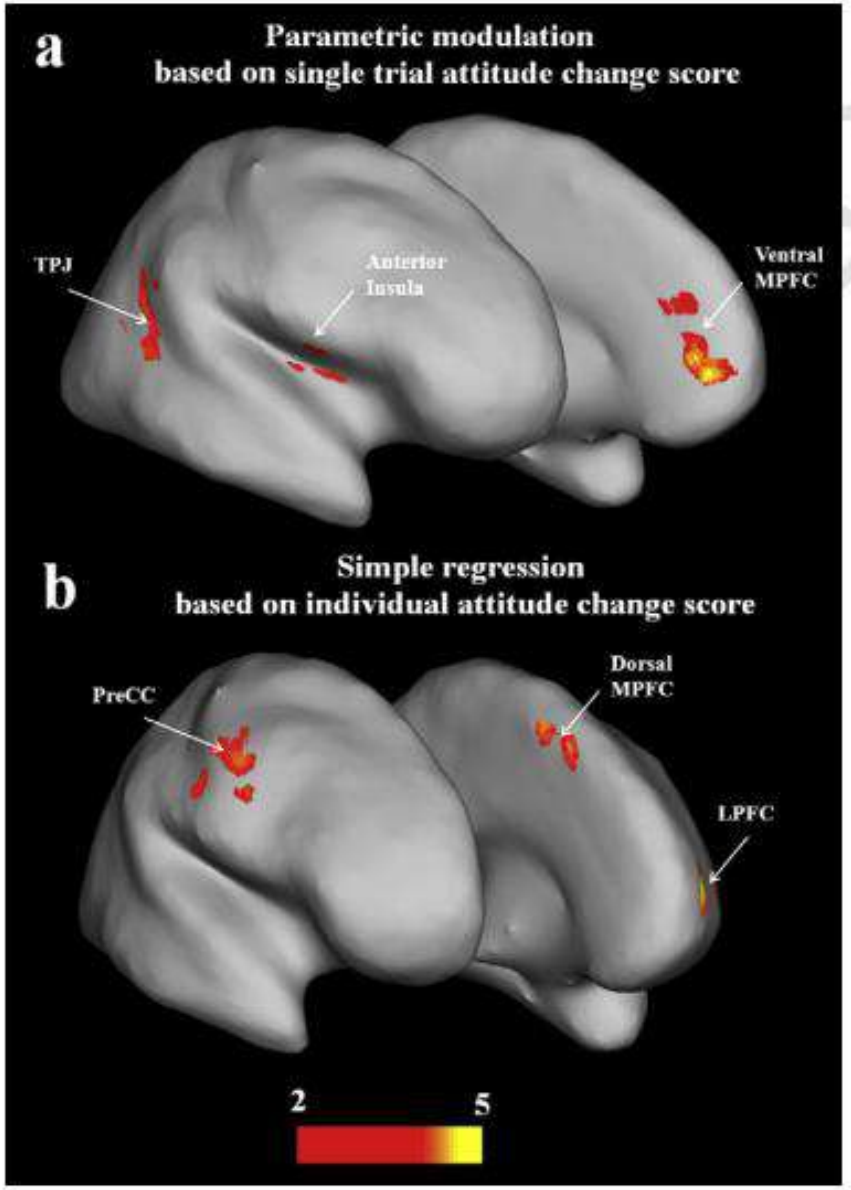
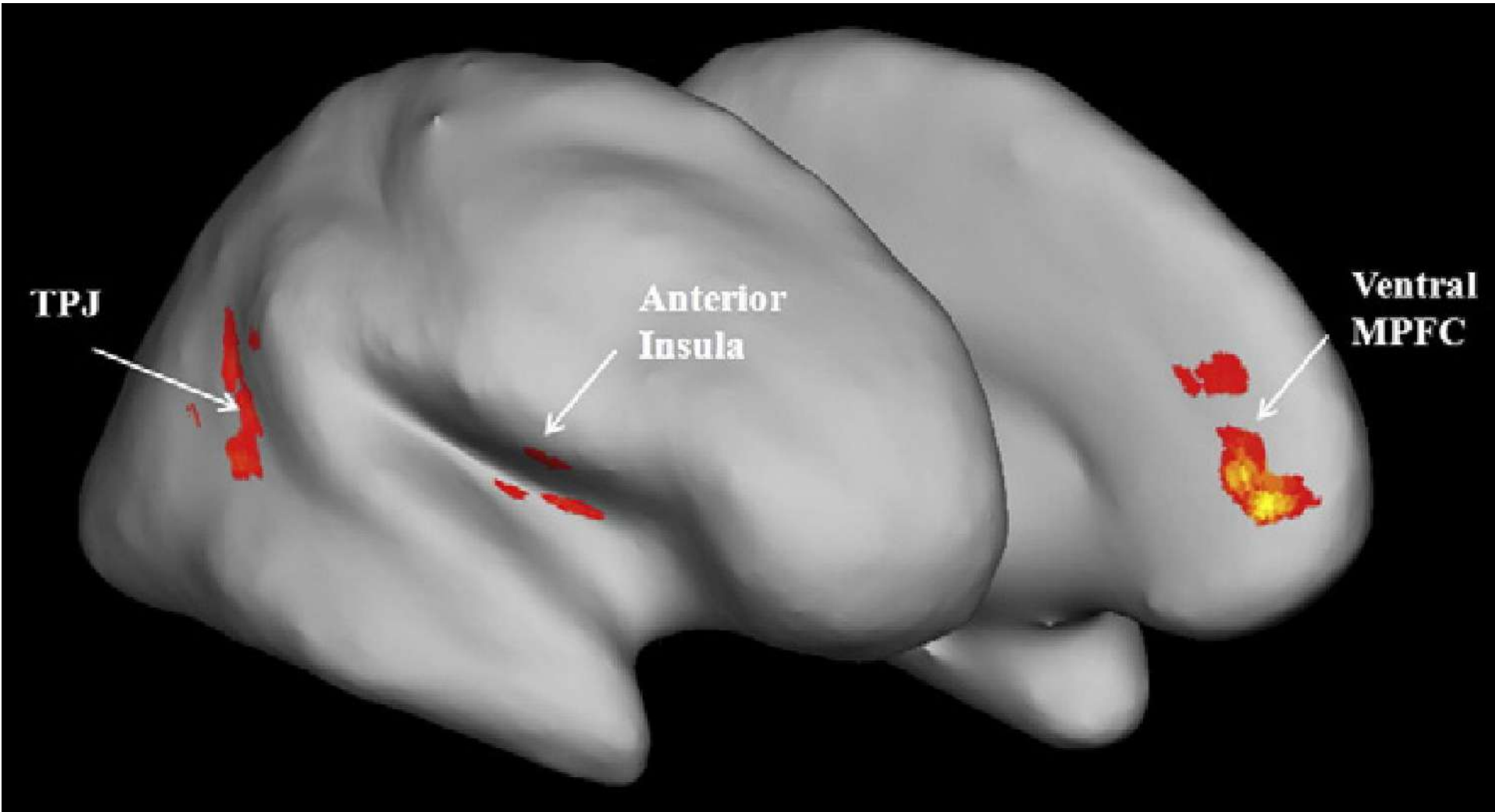


Fig. 2. (a) Parametric analysis revealed neural activities related to subjects' attitude change. (b) Simple regression analysis revealed neural activities positively correlated with individual attitude change score. Ventral MPFC = ventral medial prefrontal cortex; TPJ = temporal–parietal junction; dorsal LPFC = dorsal lateral prefrontal cortex; dorsal MPFC = dorsal medial prefrontal cortex; PreCC = precentral cortex.

La decisione, soprattutto se verbalizzata o scritta tende a suscitare una assunzione di prospettiva. Il soggetto scioglie il conflitto e lo trasforma in qualcosa di oggettivabile e osservabile nell'azione e nei comportamenti

infatti si attiva la TPJ – area principale della ToM



Teoria dell'autopercezione Daryl Bem

Mi percepisco per come agisco
le persone sviluppano atteggiamenti, orientamenti credenze e preferenze osservando il loro comportamento

Concezione tradizionale
Preferenze e orientamenti determinano il comportamento

Preferenze, orientamenti
«non mi piace fare sport»

→

comportamento
«passo il tempo libero a casa, leggendo»

Teoria dell'autopercezione
Il comportamento auto-osservato determina preferenze, orientamenti

comportamento
«ultimamente mi son reso conto che passo il tempo libero a casa, leggendo»

→

Preferenze, orientamenti
«credo ormai non mi piaccia più fare sport»

Meccanismi e processi implicati nelle dipendenze

IL CONTROLLO VOLONTARIO DEL COMPORTAMENTO

L’autocontrollo è come un muscolo, si affatica e si scarica con l’esercizio

WILLPOWER

EGO DEPLETION

Cosa scarica l'Io

- Compiti cognitivi
- Decisioni
- Fatica
- Esposizione alle emozioni
- Stress

giallo	blu	arancione
nero	rosso	verde
viola	giallo	rosso
arancione	verde	nero
blu	rosso	viola
verde	blu	arancione

autoaffermazione e autocontrollo

Schmeichel, B. J, and K. Vohs. “Self-affirmation and Self-Control: Affirming Core Values Counteracts Ego Depletion.” Journal of Personality and Social Psychology 96, no. 4 (2009): 770

frontiers in
PSYCHOLOGY

Personality and Social Psychology

Archive

ORIGINAL RESEARCH ARTICLE

Front. Psychol., 12 May 2014 | doi: 10.3389/fpsyg.2014.00421

Helping the self help others: self-affirmation increases self-compassion and pro-social behaviors

Emily K. Lindsay and J. David Creswell*

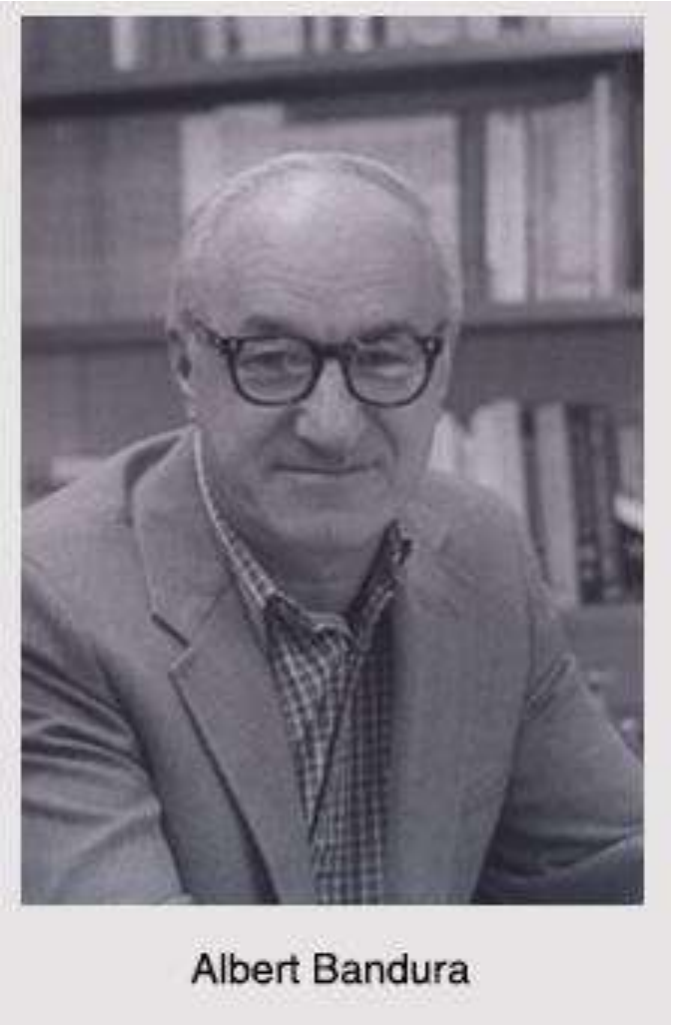
Department of Psychology, Carnegie Mellon University, Pittsburgh, PA, US

Aiutare se stessi
aiuta gli altri

Autoefficacia

- Valutazione personale sulla capacità di svolgere compiti particolari.
- L'autoefficacia aumenta la motivazione e la persistenza verso compiti impegnativi; aumentando la probabilità che siano completati

Albert Bandura, ***Social Learning Theory***, Alexandria, VA: Prentice Hall, 1977

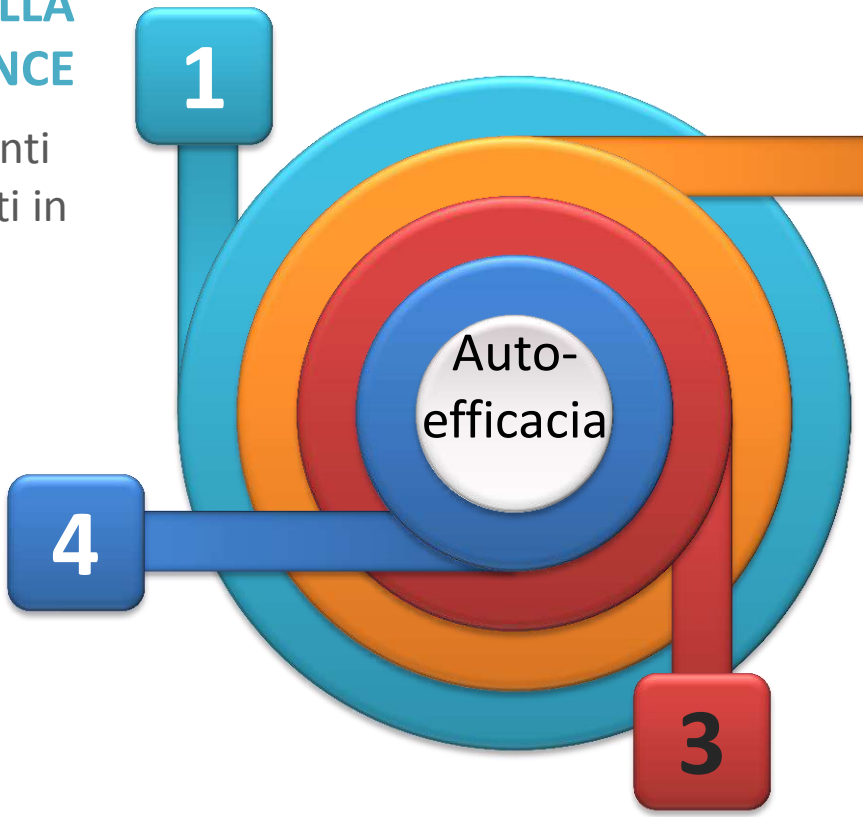


Albert Bandura

Autoefficacia percepita

MEMORIA DELLA PERFORMANCE

Ricordo di precedenti successi o fallimenti in comportamenti analoghi



APPRENDIMENTO OSSERVAZIONALE

Esperienza vicaria, osservazione del comportamento e delle conseguenze di azioni analoghe negli altri

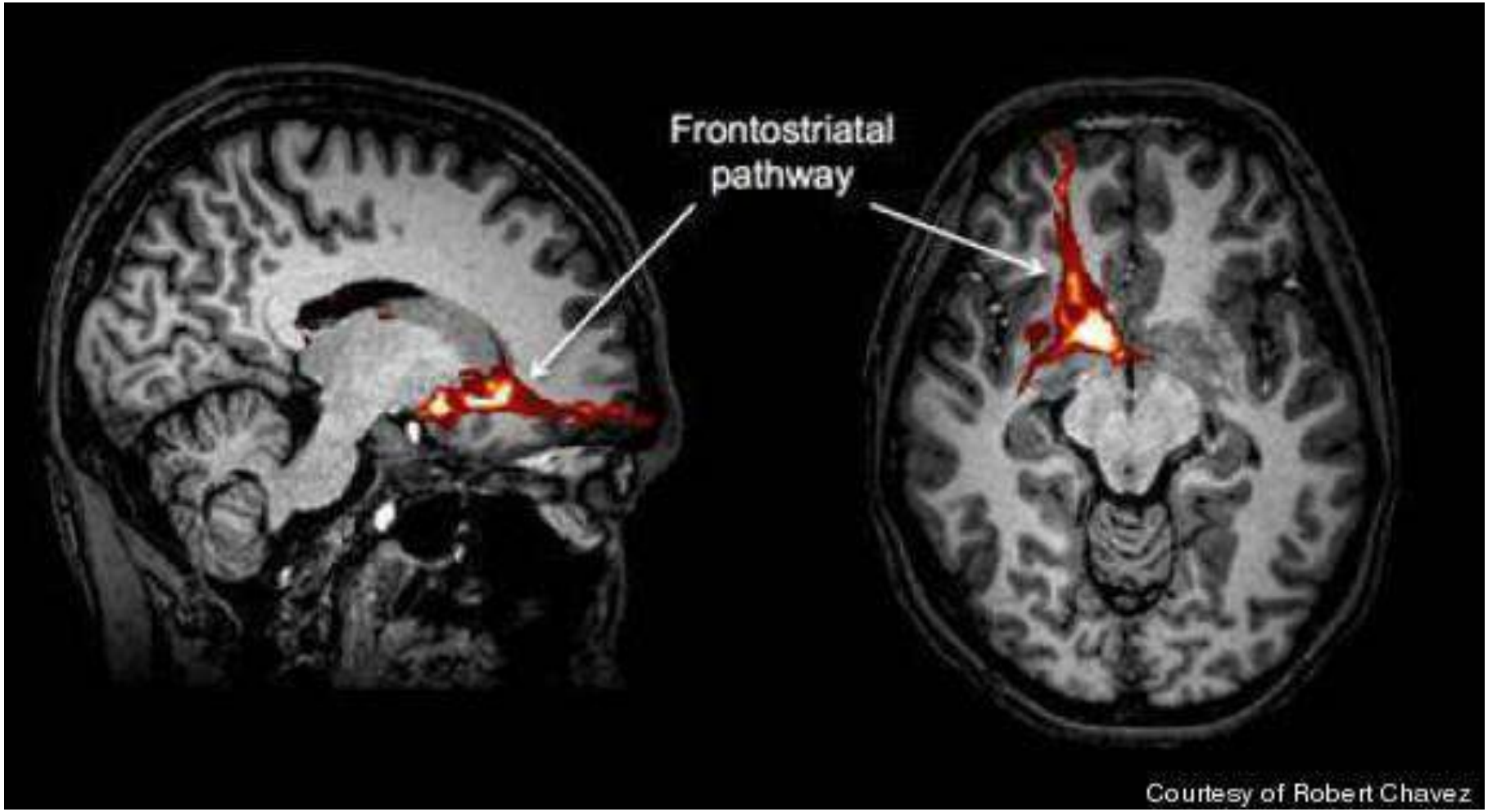
PERSUASIONE VERBALE

Messaggi incoraggianti o scoraggianti da parte degli altri

AROUSAL EMOTIVO

Interpretazione delle attivazioni fisiologiche, dei marcatori somatici

Brain imaging auto-efficacia e autostima

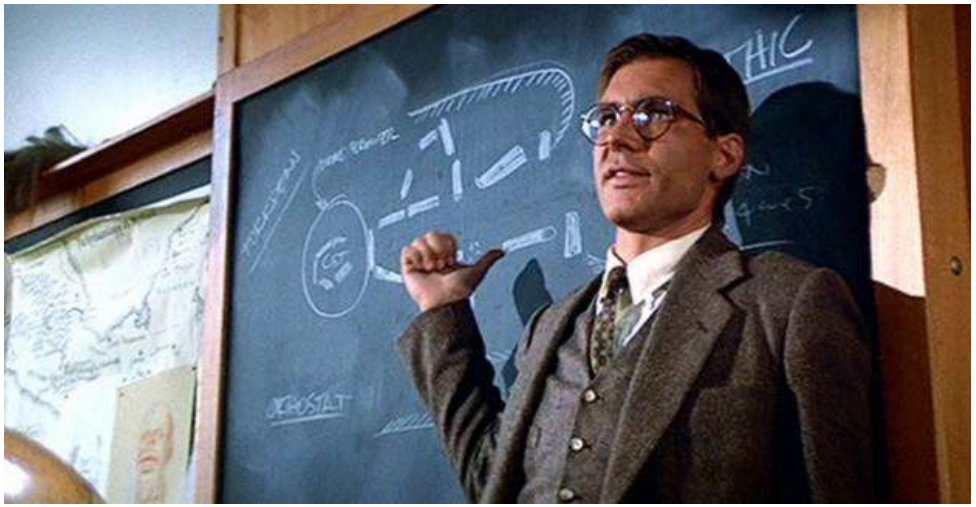


Journal of Personality and Social Psychology
1998, Vol. 74, No. 4, 865–877

0022-3514/98/$3.00

The Relation Between Perception and Behavior, or How to Win a Game of Trivial Pursuit

Ap Dijksterhuis and Ad van Knippenberg
University of Nijmegen



60%

49,9%

46,6%

Journal of Personality and Social Psychology
1996, Vol. 71, No. 2, 230–244

0022-3514/96/$3.00

Automaticity of Social Behavior: Direct Effects of Trait Construct and Stereotype Activation on Action

John A. Bargh, Mark Chen, and Lara Burrows
New York University

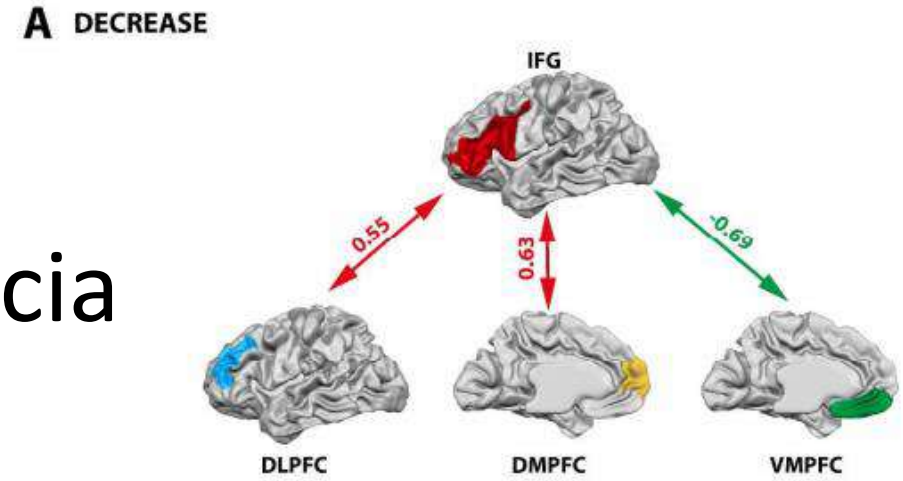
Mario via istantaneamente ha la trov

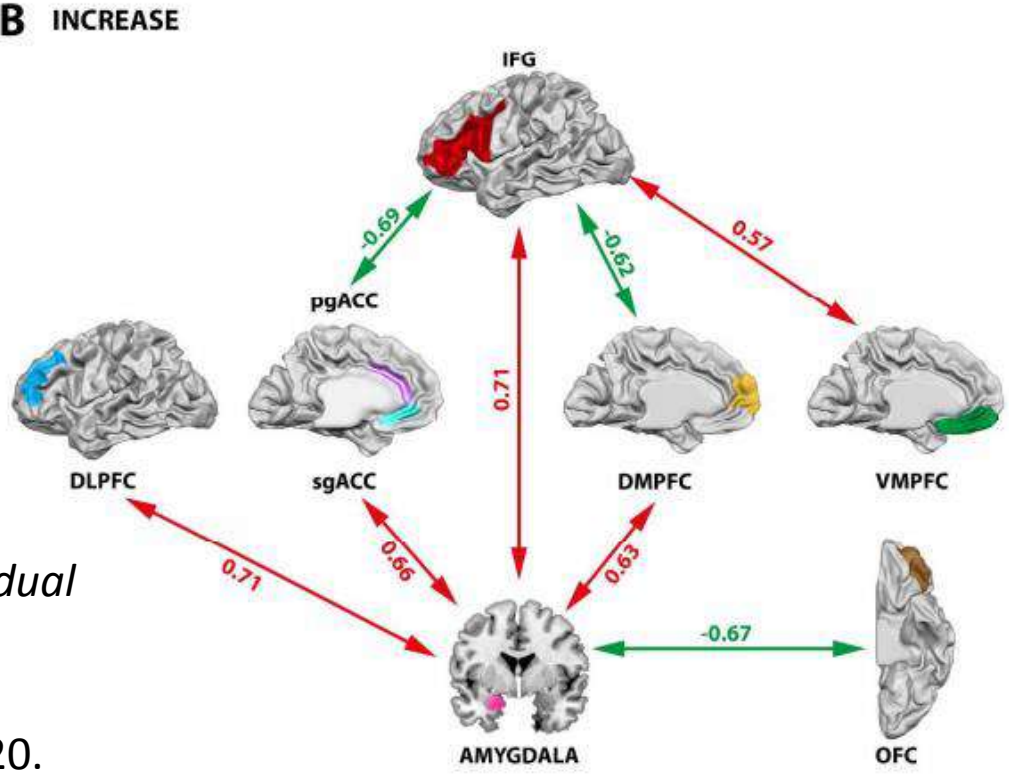
Mario ha istantaneamente trovato la

Anziano, malato, claudicante,
attento, cauto, stanco, riflessivo,
saggio

EMOZIONI, LINGUAGGIO, AUTOCONTROLLO

Connettività amigdala corteccia prefrontale





Morawetz C, Bode S, Baudewig J, Heekeren HR, *Effective amygdala-prefrontal connectivity predicts individual differences in successful emotion regulation*.
Soc Cogn Affect Neurosci. 2016 Dec 20.

“Dai parole al dolore; il dolore che non parla, sussurra al cuore oppresso e gli ordina di spezzarsi”

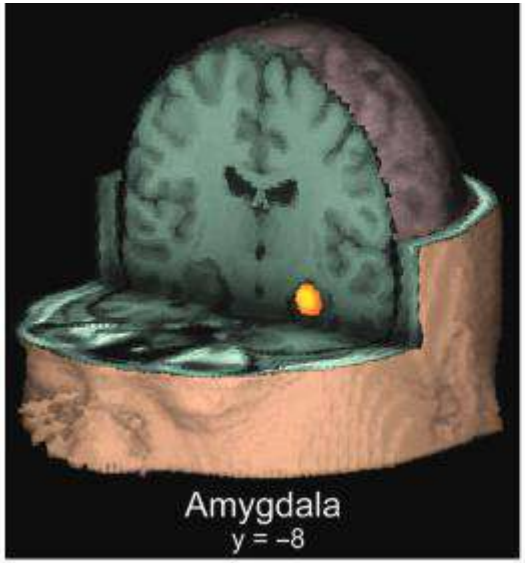
Research Article

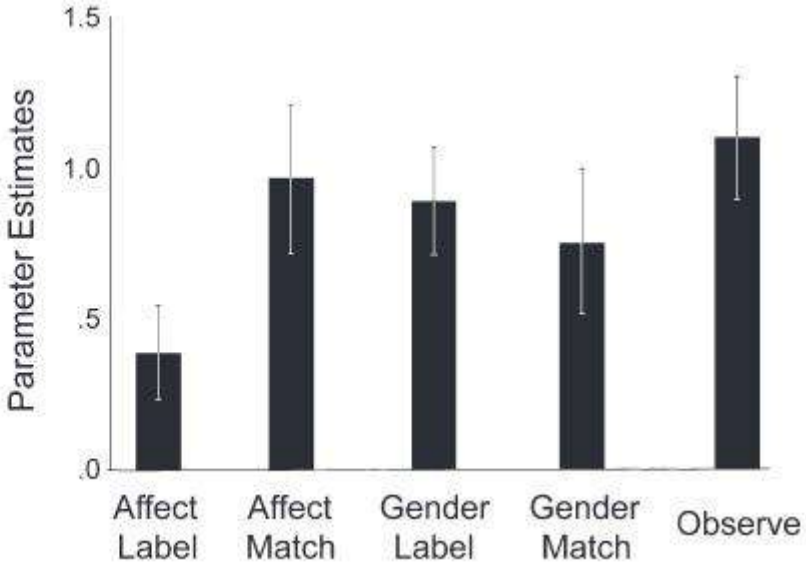
Putting Feelings Into Words

Affect Labeling Disrupts Amygdala Activity in Response to Affective Stimuli

Matthew D. Lieberman, Naomi I. Eisenberger, Molly J. Crockett, Sabrina M. Tom, Jennifer H. Pfeifer, and Baldwin M. Way

University of California, Los Angeles





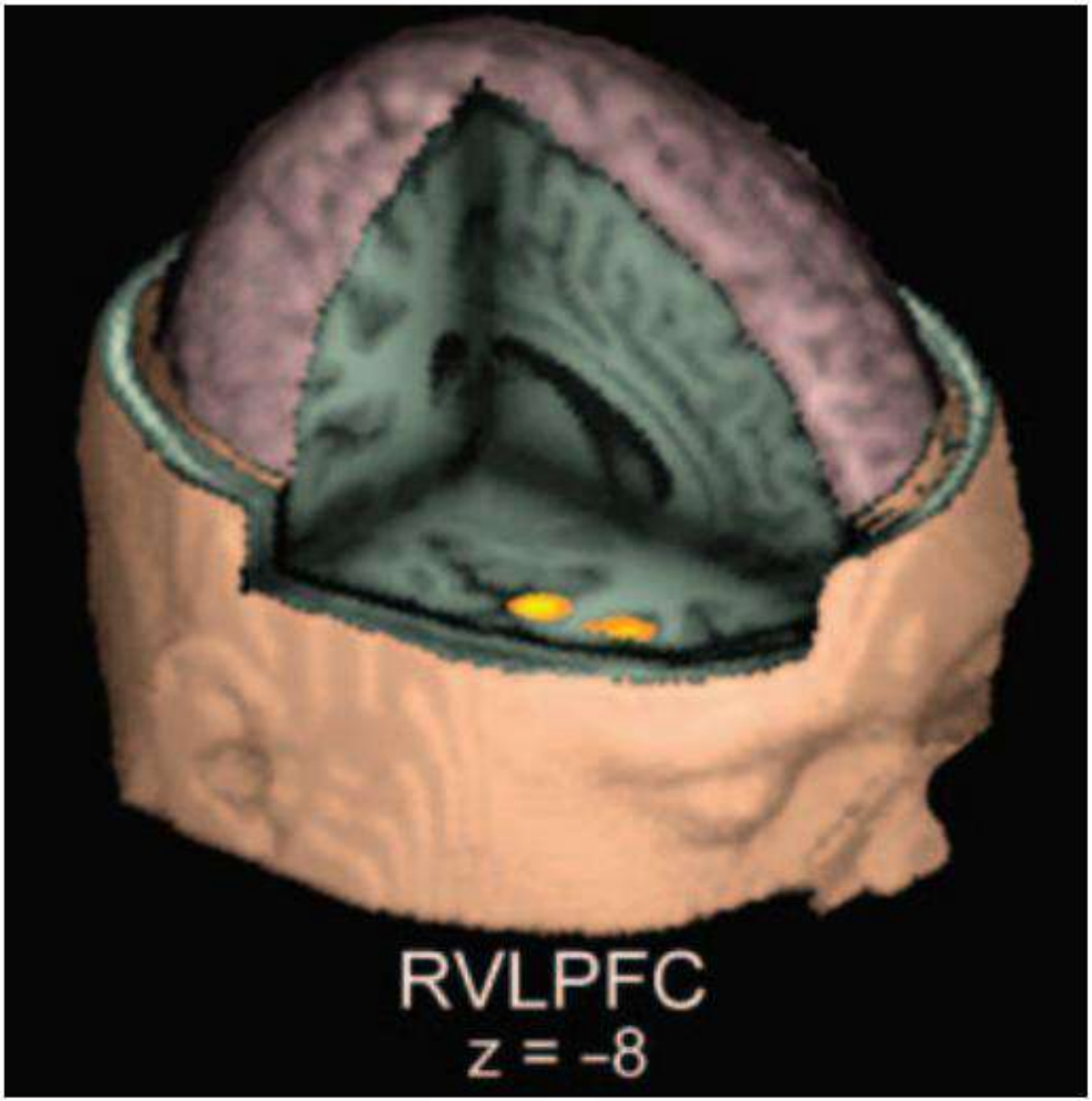


Fig. 3. Illustration of a canonical brain showing two clusters in right ventrolateral prefrontal cortex (RVLPFC) where activity was greater during affect labeling than during gender labeling.

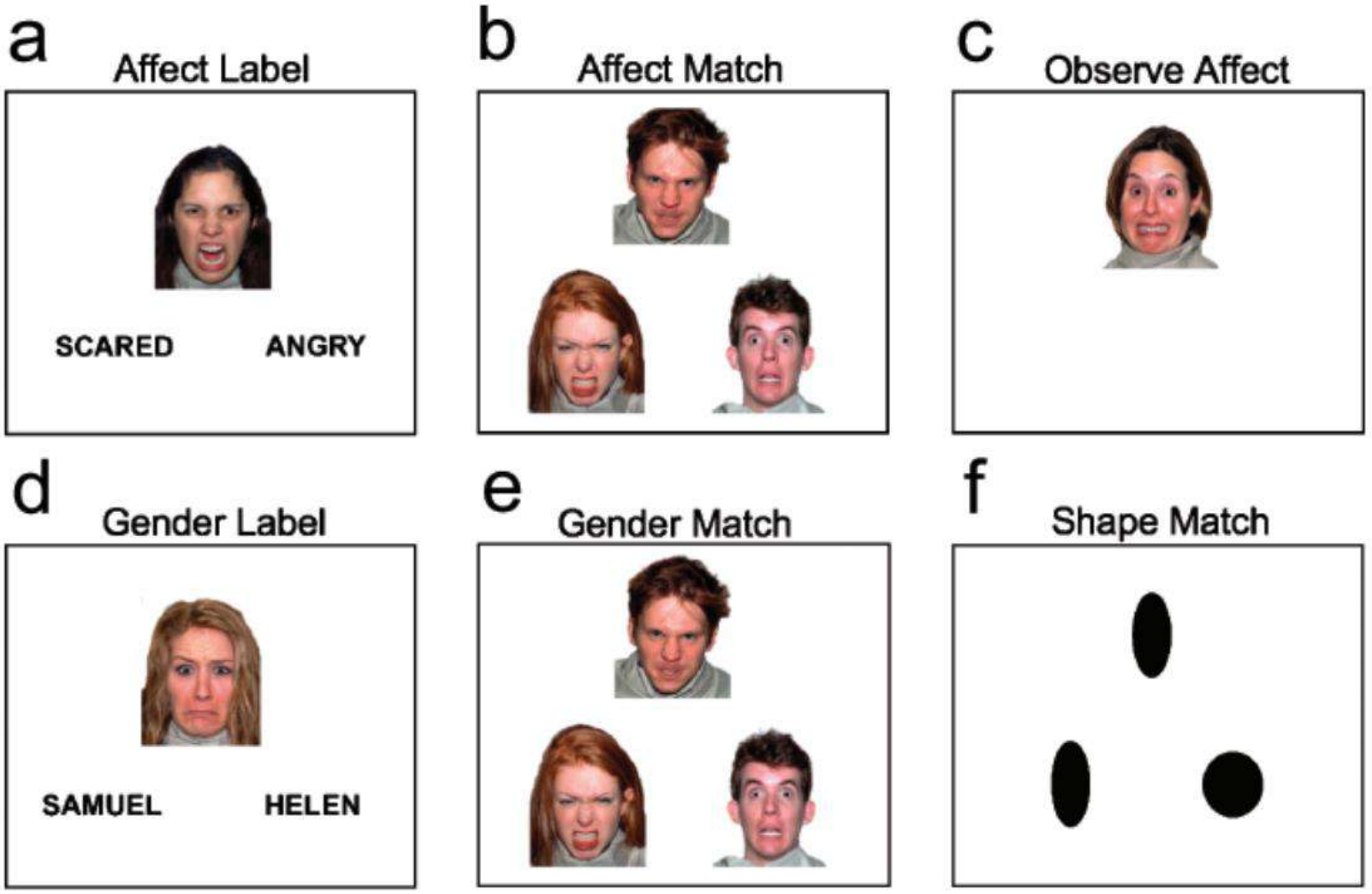


Fig. 1. A sample display from each of the six types of experimental trials.

Nell'etichettamento verbale delle emozioni l'attività dell'amigdala è inversamente proporzionale a quella della corteccia frontale ventrolaterale

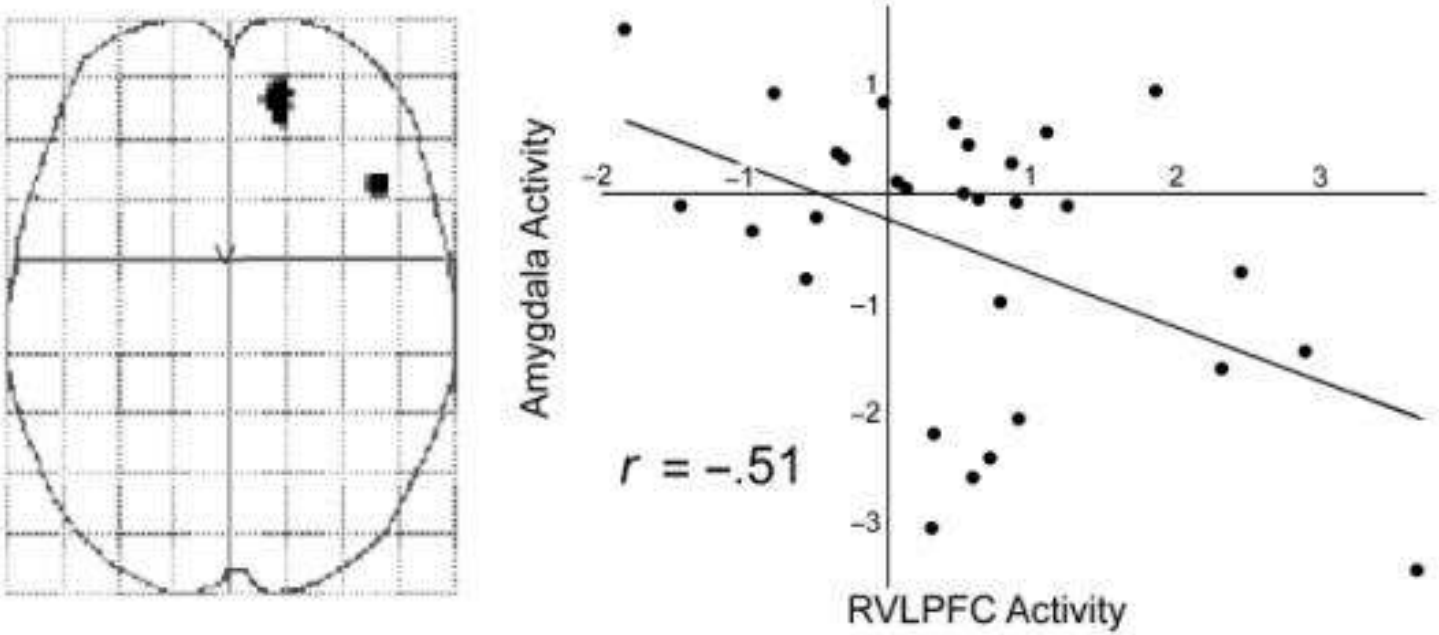


Fig. 4. Correlation between right ventrolateral prefrontal cortex (RVLPFC) and amygdala activity. Each plotted point represents the parameter estimates for a single subject's activity in RVLPFC and the amygdala during affect labeling, relative to gender labeling. The view of the glass brain on the left shows all brain regions (RVLPFC and medial prefrontal cortex) for which activity was inversely correlated with amygdala activity during affect labeling, relative to gender labeling.

Lavorare sul lessico affettivo

- Educare alla consapevolezza emotiva
- Favorire il riconoscimento delle emozioni
- **Rispecchiare** in parole gli stati d'animo espressi dal paziente (favorire l'etichettamento e la consapevolezza degli stati emotivi)
- Ascolto riflessivo
- mindfulness

SOCIAL NEUROSCIENCE
Taylor & Francis

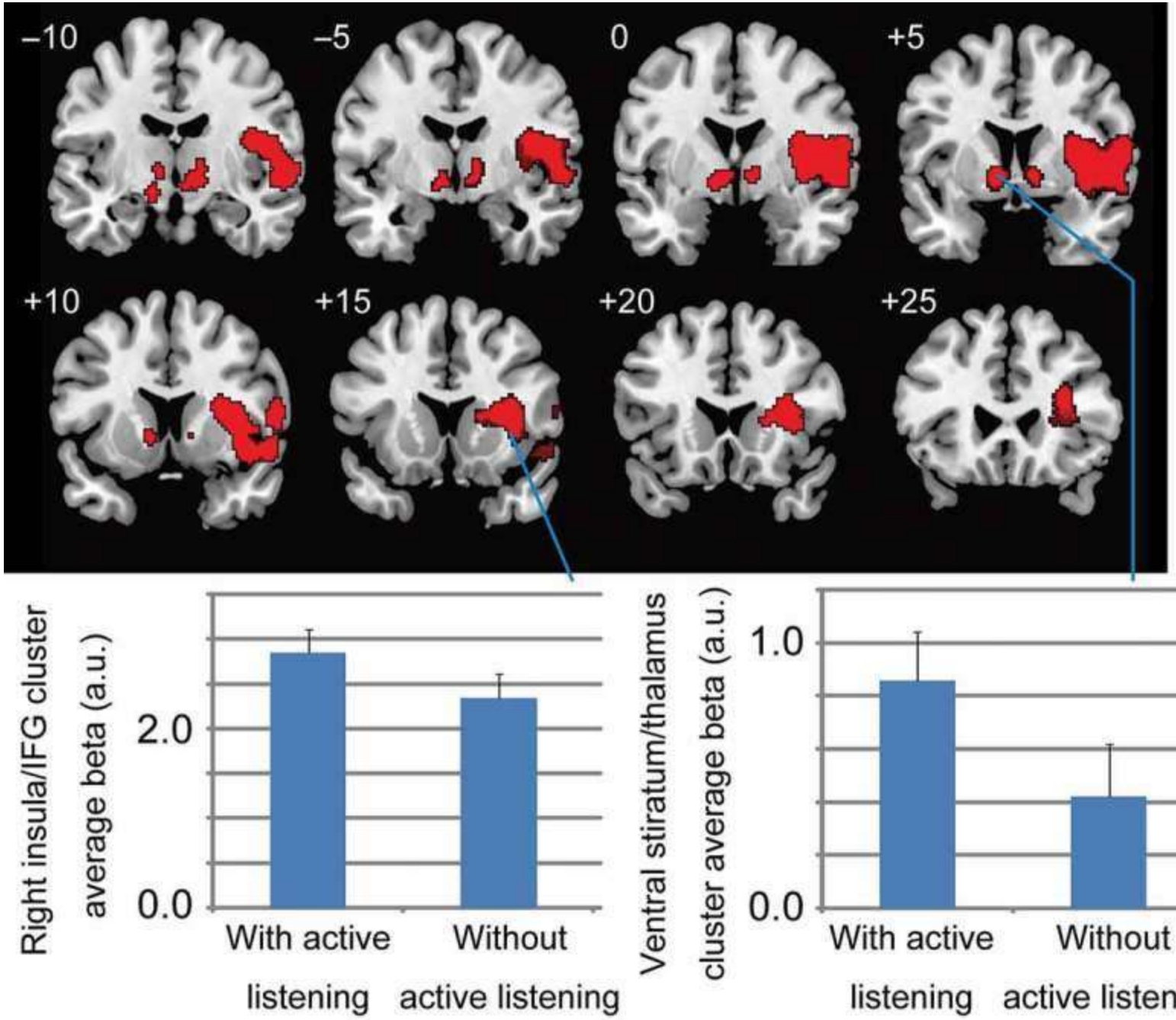
Soc Neurosci. 2015 Jan 2; 10(1): 16–26.
Published online 2014 Sep 4. doi: 10.1080/17470919.2014.954732
PMCID: PMC4270393
PMID: 25188354

Perceiving active listening activates the reward system and improves the impression of relevant experiences

Hiroaki Kawamichi, [a,*] Kazufumi Yoshihara, [b] Akihiro T. Sasaki, [a] Sho K. Sugawara, [a] Hiroki C. Tanabe, [a,c] Ryoji Shinohara, [d] Yuka Sugisawa, [d] Kentaro Tokutake, [d] Yukiko Mochizuki, [d] Tokie Anme, [d] and Norihiro Sadato [a]

L'ascolto attivo e l'ascolto riflessivo attivano:

- il sistema della ricompensa
- Aree corticali della consapevolezza somatica (insula)
- Aree prefrontali della regolazione emotiva e dell'autocontrollo
- Aree che hanno a che fare con la motivazione ad agire (striato)
- Aree della mentalizzazione
- Circuiti dell'empatia


−10
−5
0
+5
+10
+15
+20
+25
Right insula/IFG cluster average beta (a.u.)
2.0
0.0
With active listening
Without active listening
Ventral striatum/thalamus cluster average beta (a.u.)
1.0
0.0
With active listening
Without active listening

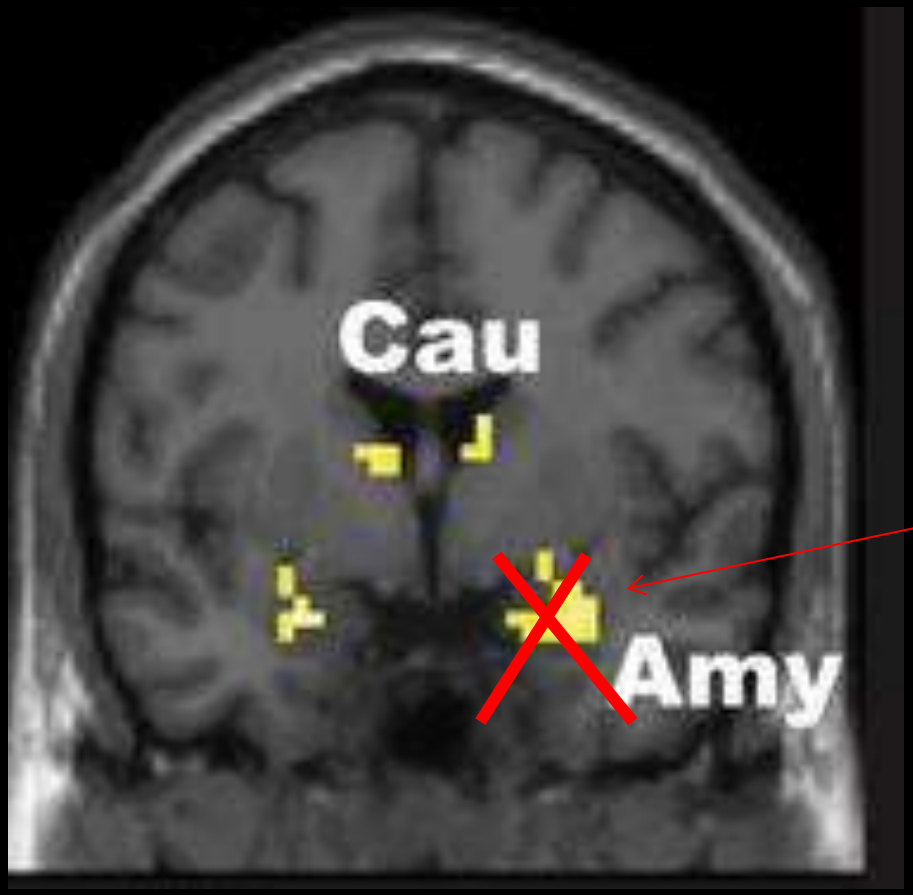
Regolazioni cognitive nell'ascolto riflessivo

- Rispecchiamento
- Empatia
- Perspective taking
- Attivazione circuiti che mediano il pensiero e le componenti cognitive dei processi decisionali
- Attivazione circuiti dell'autocontrollo e della pianificazione

Ascolto riflessivo: ingaggio emotivo ed empatico dell'operatore

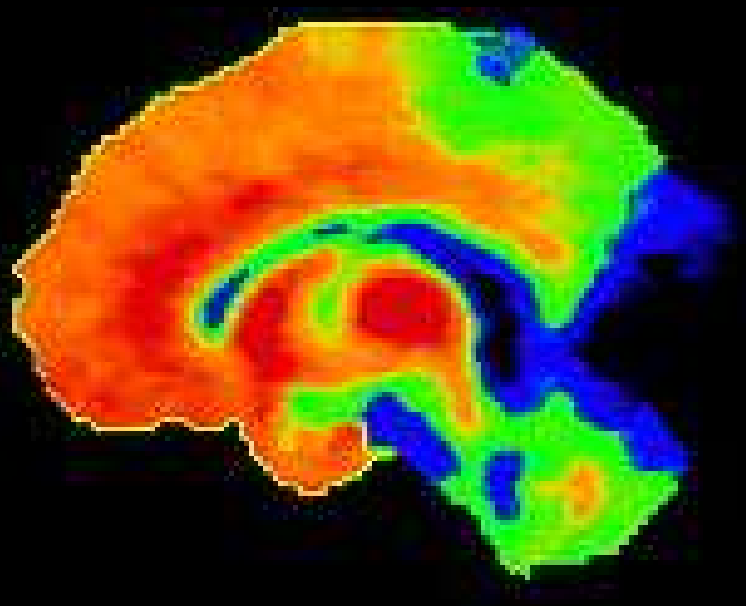
- Imitazione = attivazione circuiti sistema dei neuroni specchio
- Facilitazione dell'ingaggio empatico e dell'intenzione e della messa in moto per l'aiuto

La fiducia del paziente

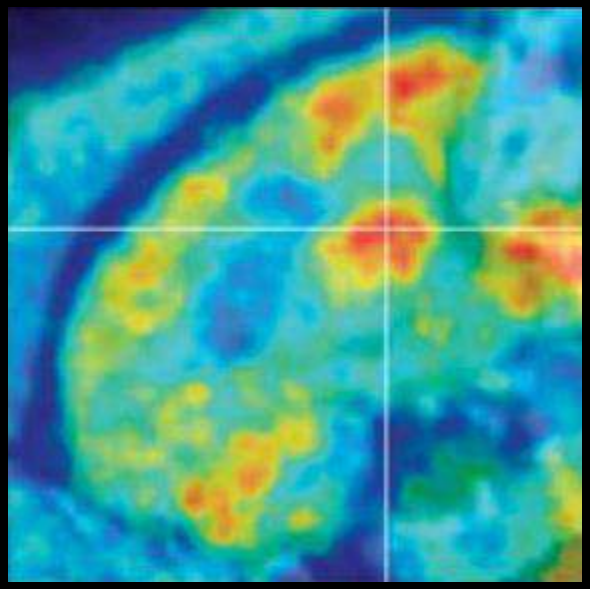


Baumgartner, ***Neuron 2008***

Suggestioni di analgesia

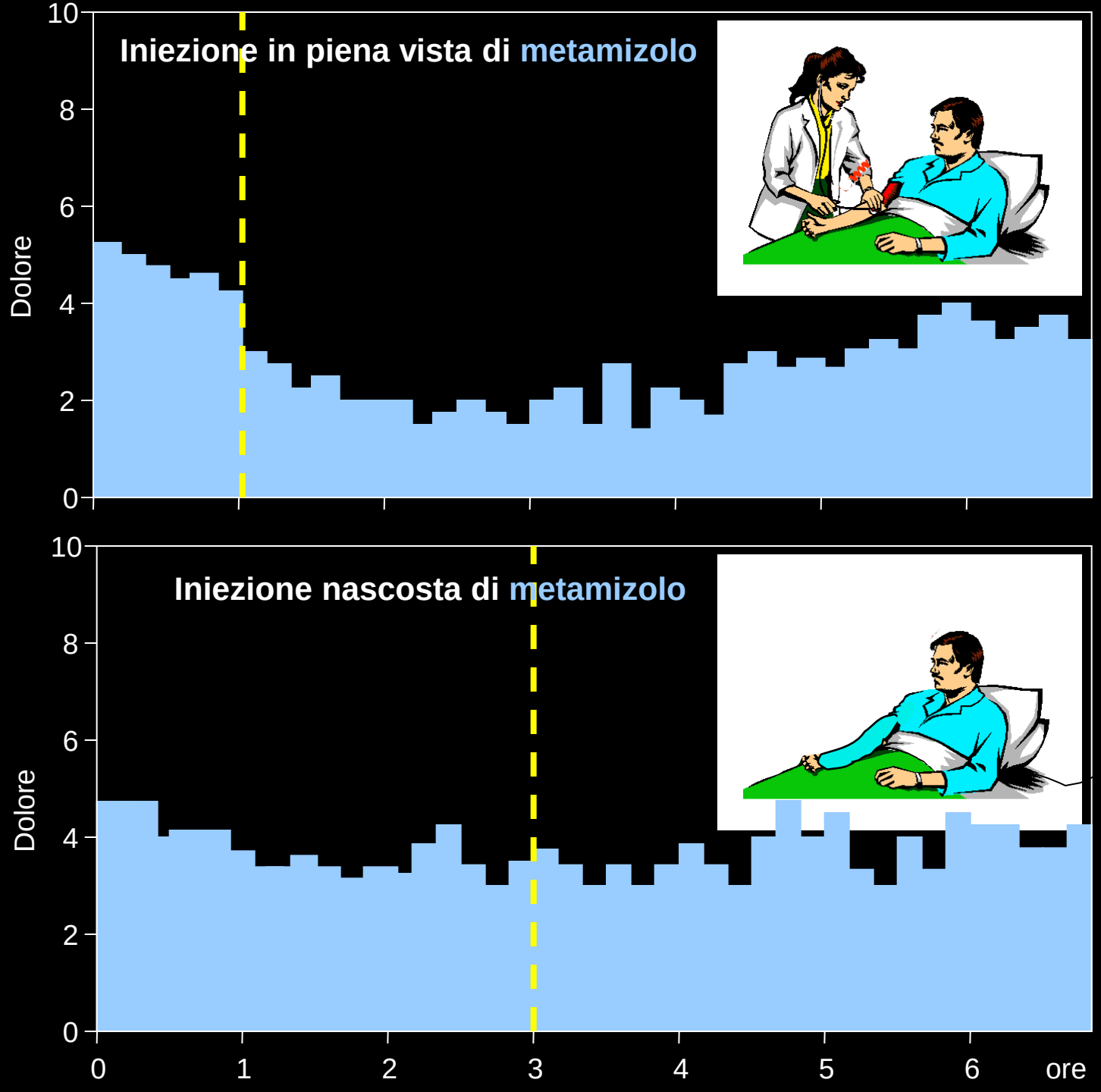


Oppioidi

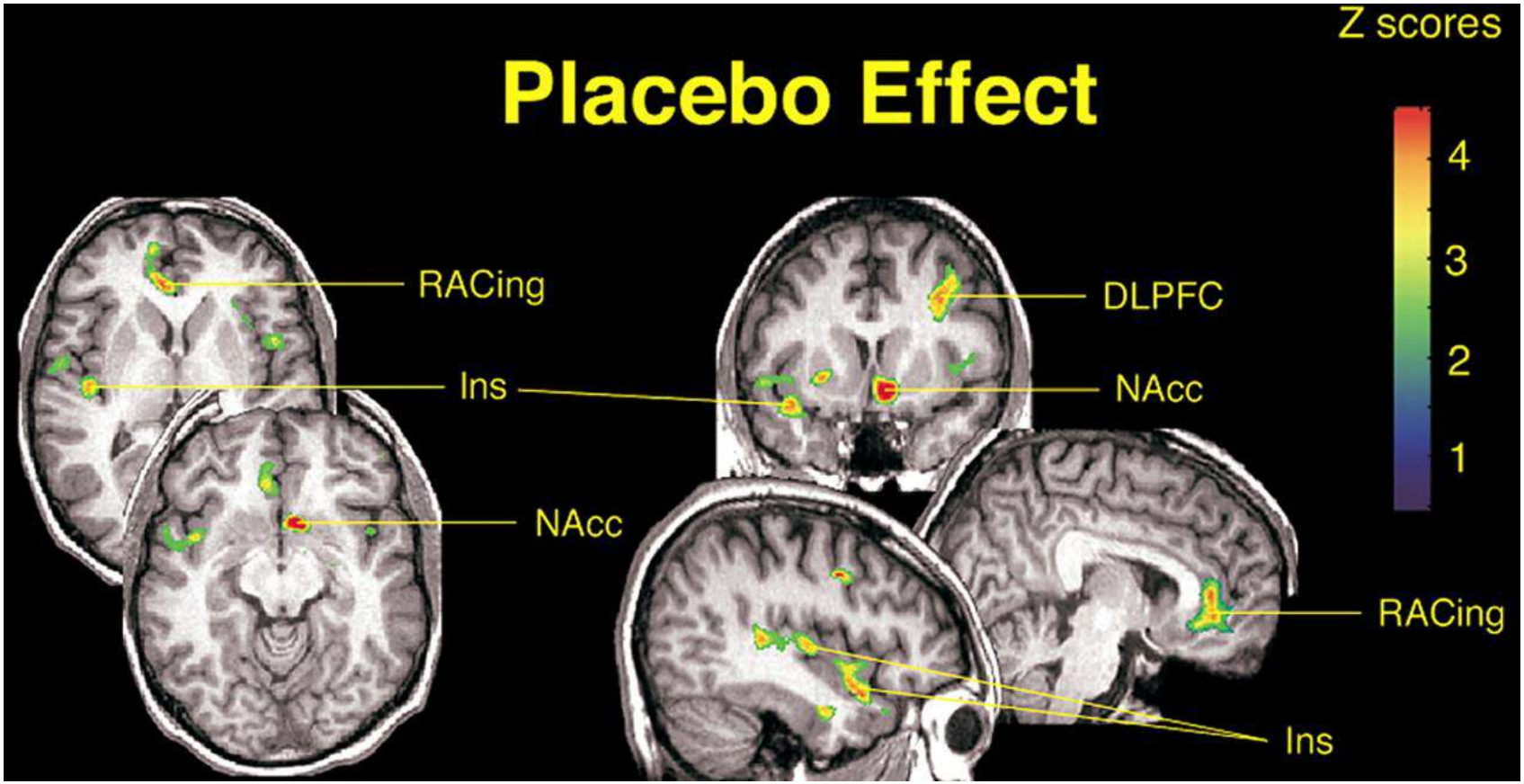


Cannabinoidi

Benedetti, *Nature Med 2011*

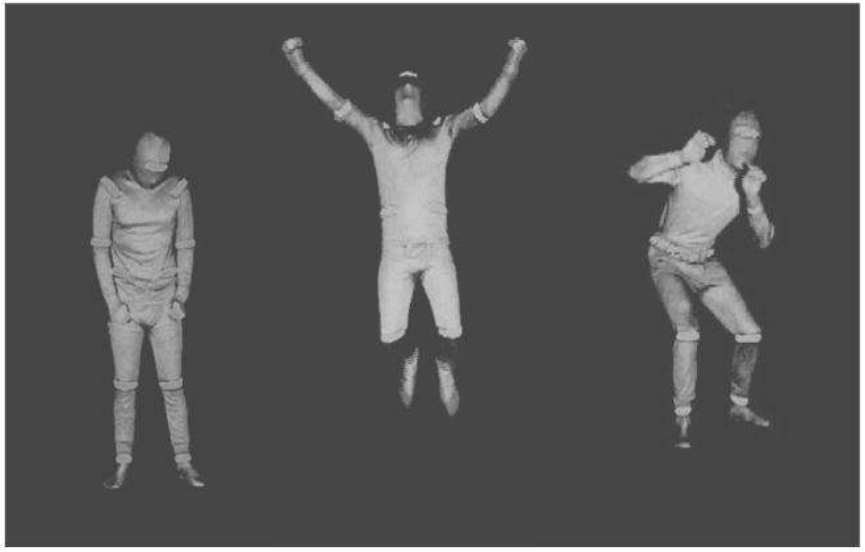

Iniezione in piena vista di metamizolo
Dolore
10
8
6
4
2
0
Iniezione nascosta di metamizolo
Dolore
10
8
6
4
2
0
0
1
2
3
4
5
6
ore

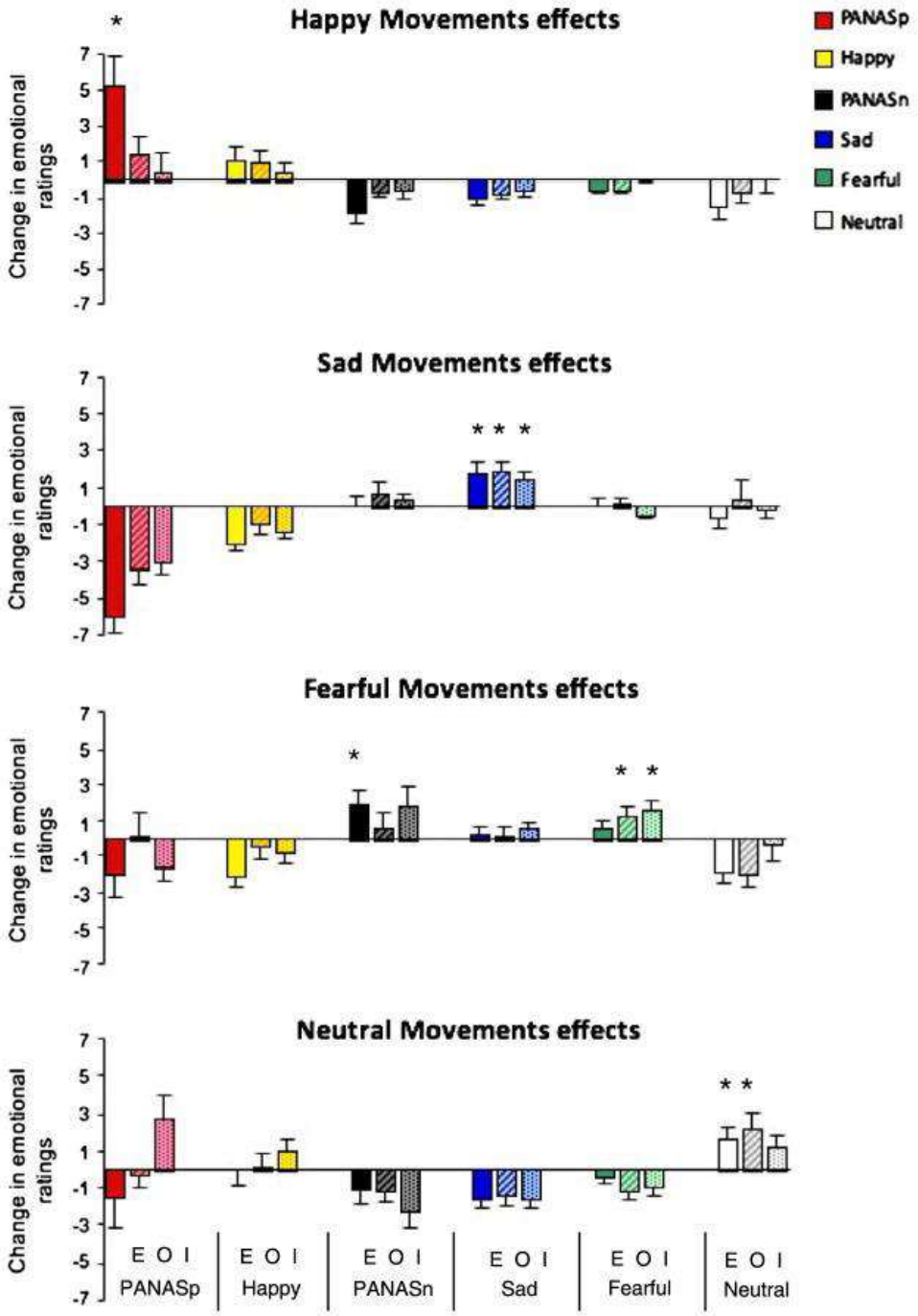
La cura come ricompensa
la gratificazione e l'empatia come cura



Emotion regulation through execution, observation, and imagery of emotional movements.

Shafir T[1], Taylor SF, Atkinson AP, Langenecker SA, Zubieta JK. Brain Cogn. 2013 Jul;82(2):219-27



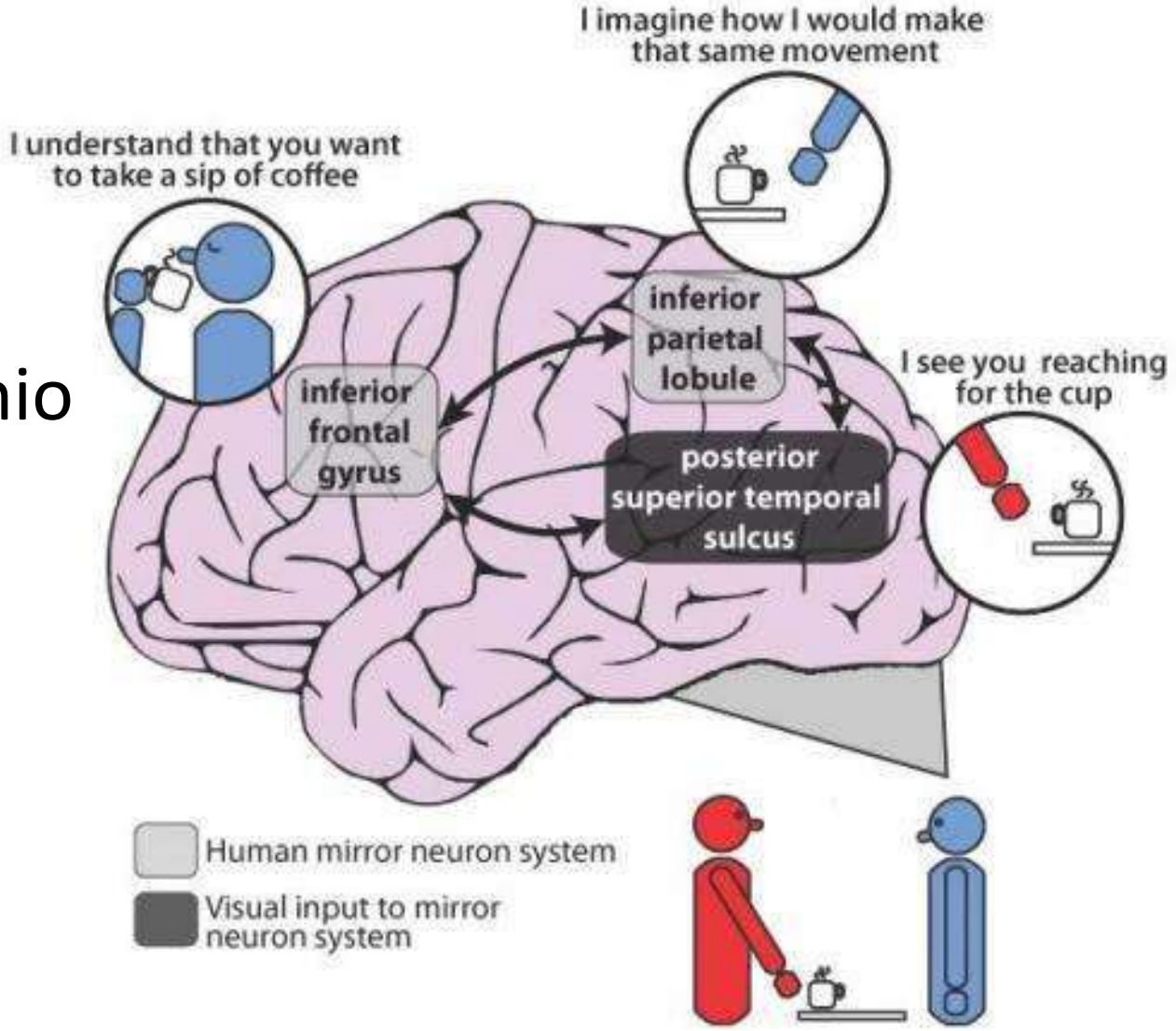


Implicazioni nel contesto terapeutico

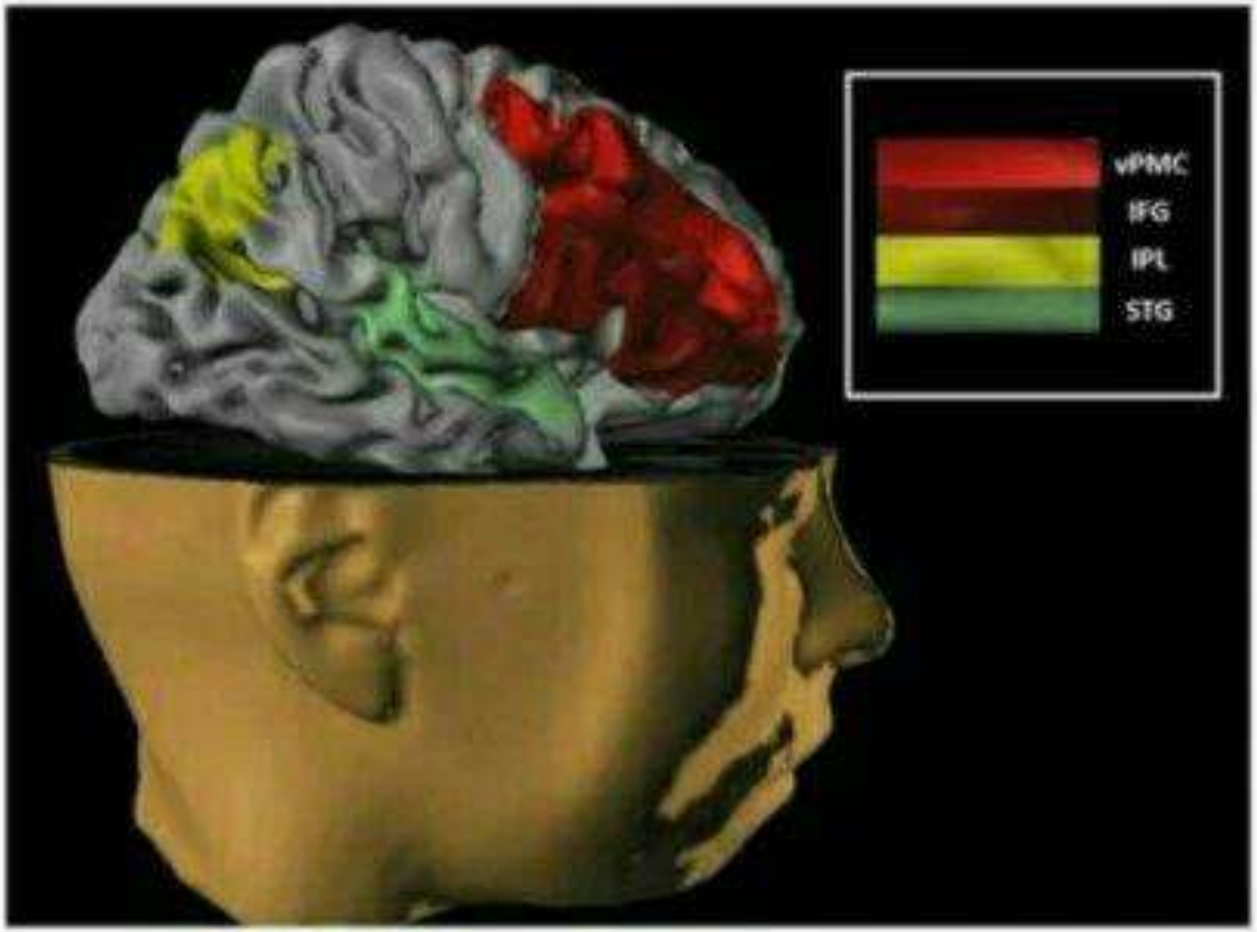
- Attenzione alle espressioni facciali
- Attenzione alle espressioni posturali delle emozioni

Riflettere, comprendere, motivare

Il sistema dei neuroni specchio



‘Location’ of mirror neurons



vPMC = ventral premotor cortex; **IFG** = inferior frontal gyrus; **IPL** = inferior parietal lobe; **STG** = superior temporal gyrus.

Int Arch Med. 2013;

PsycARTICLES: Journal Article

Through a glass darkly: Some insights on change talk via magnetoencephalography.

Houck, Jon M.,Moyers, Theresa B.,Tesche, Claudia D.

Psychology of Addictive Behaviors, Vol 27(2), Jun 2013, 489-500

Motivational interviewing (MI) is a directive, client-centered therapeutic method employed

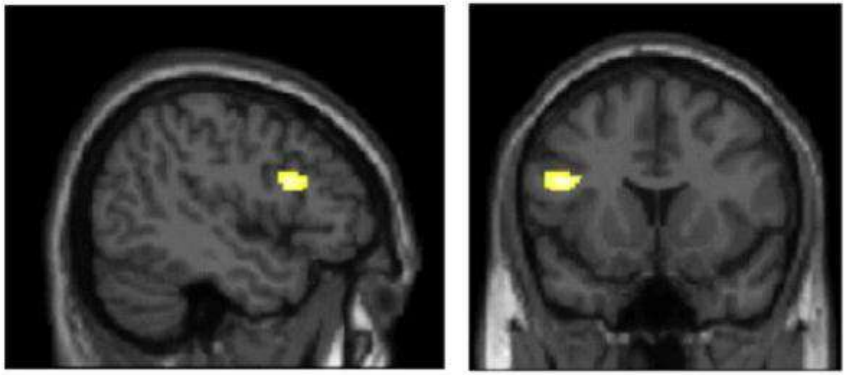
Le affermazioni orientate al cambiamento attivano il giro frontale inferiore, l'insula, la corteccia temporale superiore

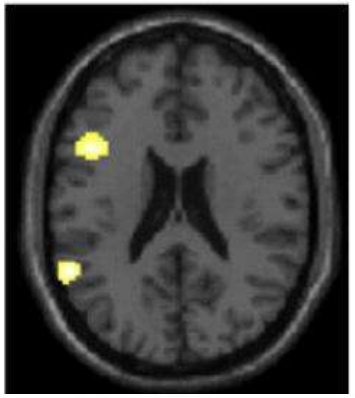
Addictive Behaviors
Volume 39, Issue 12, December 2014, Pages 1904-1910

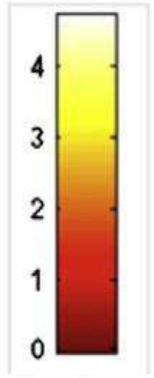
Brain-based origins of change language: A beginning

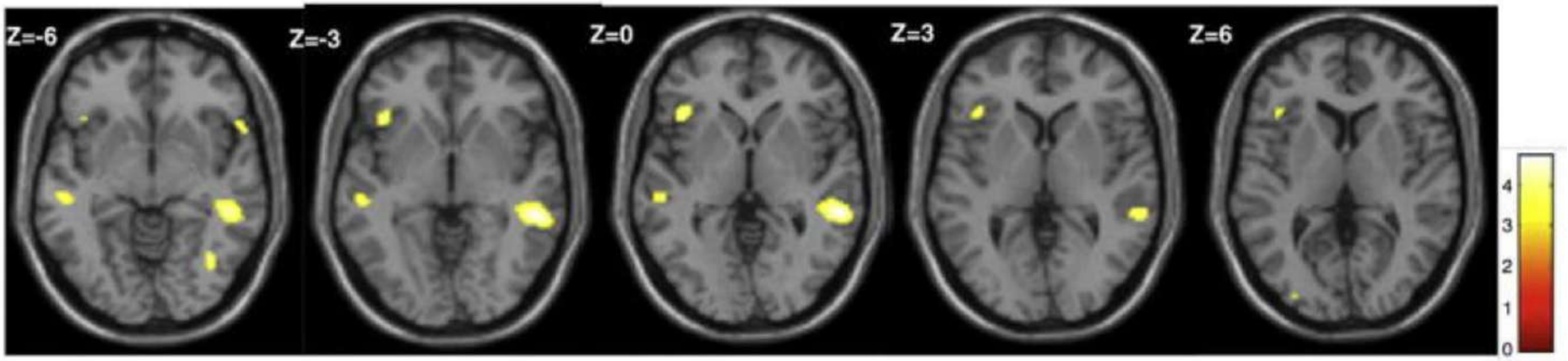
Sarah W. Feldstein Ewing [a], Uma Yezhuvath [b], Jon M. Houck [c], Francesca M. Filbey [d]

Affermare di essere orientati e decisi al cambiamento attiva le aree cerebrali della consapevolezza somatica, della cognizione e del controllo volontario







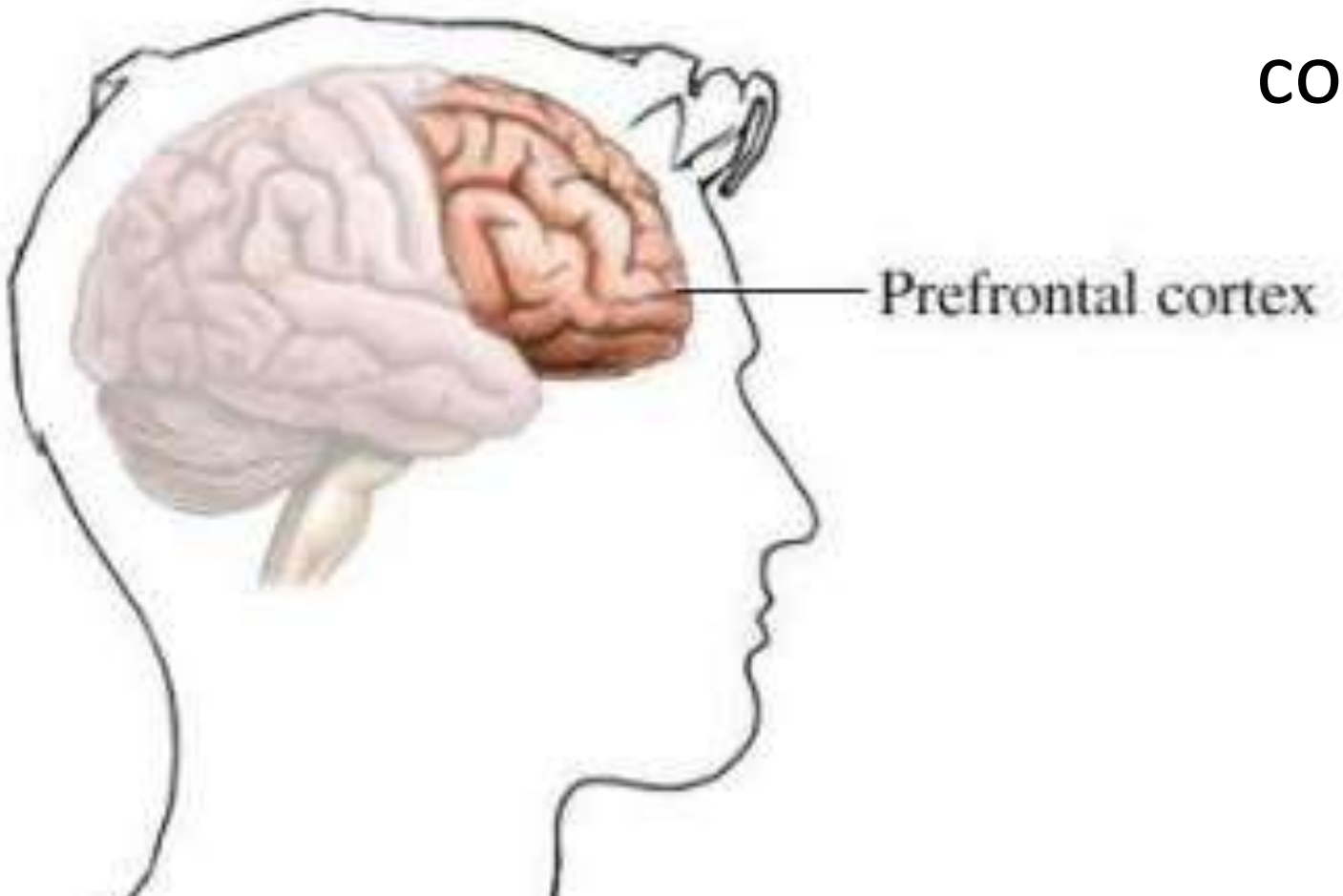


IMPLICAZIONI PER L'INCONTRO TERAPEUTICO

Autocontrollo, Empatia, altruismo, compassione

I TRATTI FONDANTI DI UNA SPECIE SOCIALE

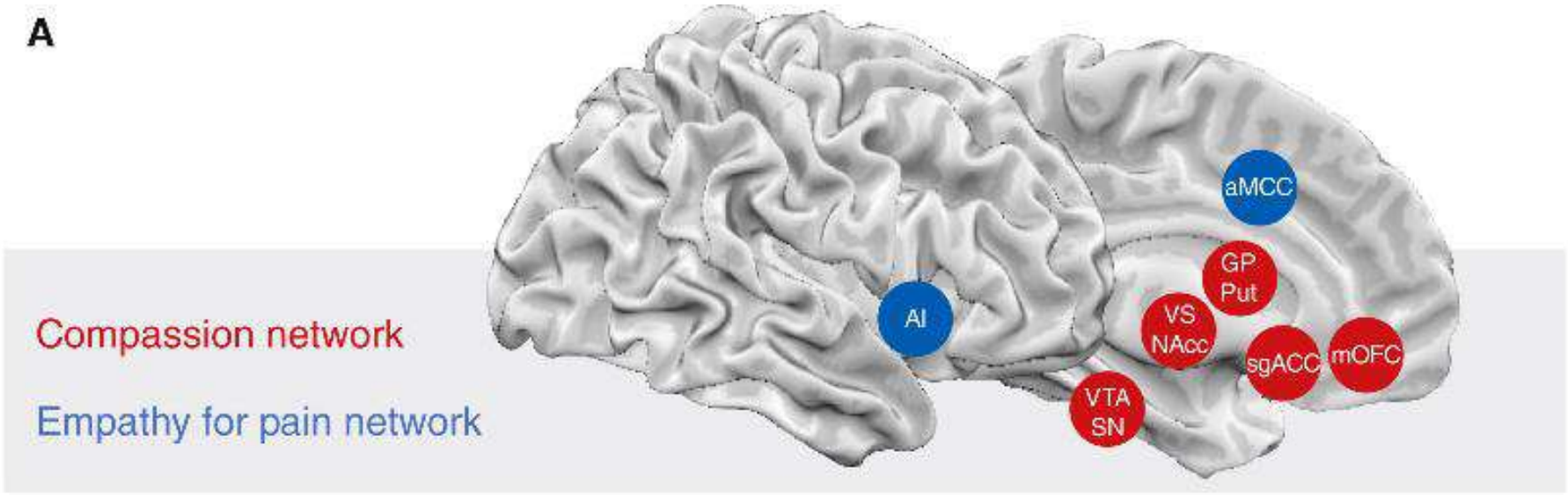
Evoluzione, corteccia frontale, comunicazione, autocontrollo, regolazione sociale, empatia, compassione, competenze morali



Componenti psicologici dell'emaptia e della compassione

1. **Consapevolezza della sofferenza**
   (componente cognitiva)
2. **Coinvolgimento simpatetico, essere commossi dalla sofferenza**
   (componente emotiva)
3. **Desiderio di vedere il sollievo da quella sofferenza**
   (componente intenzionale)
4. **Attivazione finalizzata ad aiutare verso il sollievo di quella sofferenza**
   (componente motivazionale)

Compassione ed empatia: due funzioni, due sistemi cerebrali



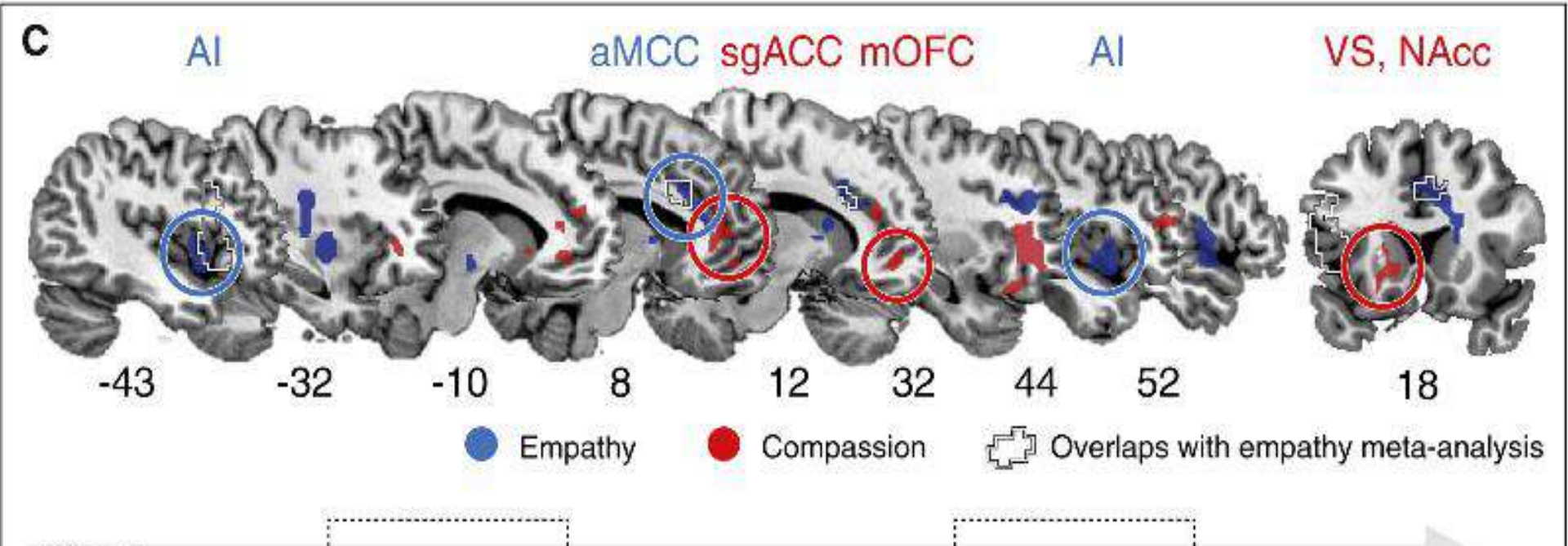
Current Biology

Volume 24, Issue 18, 22 September 2014, Pages R875–R878

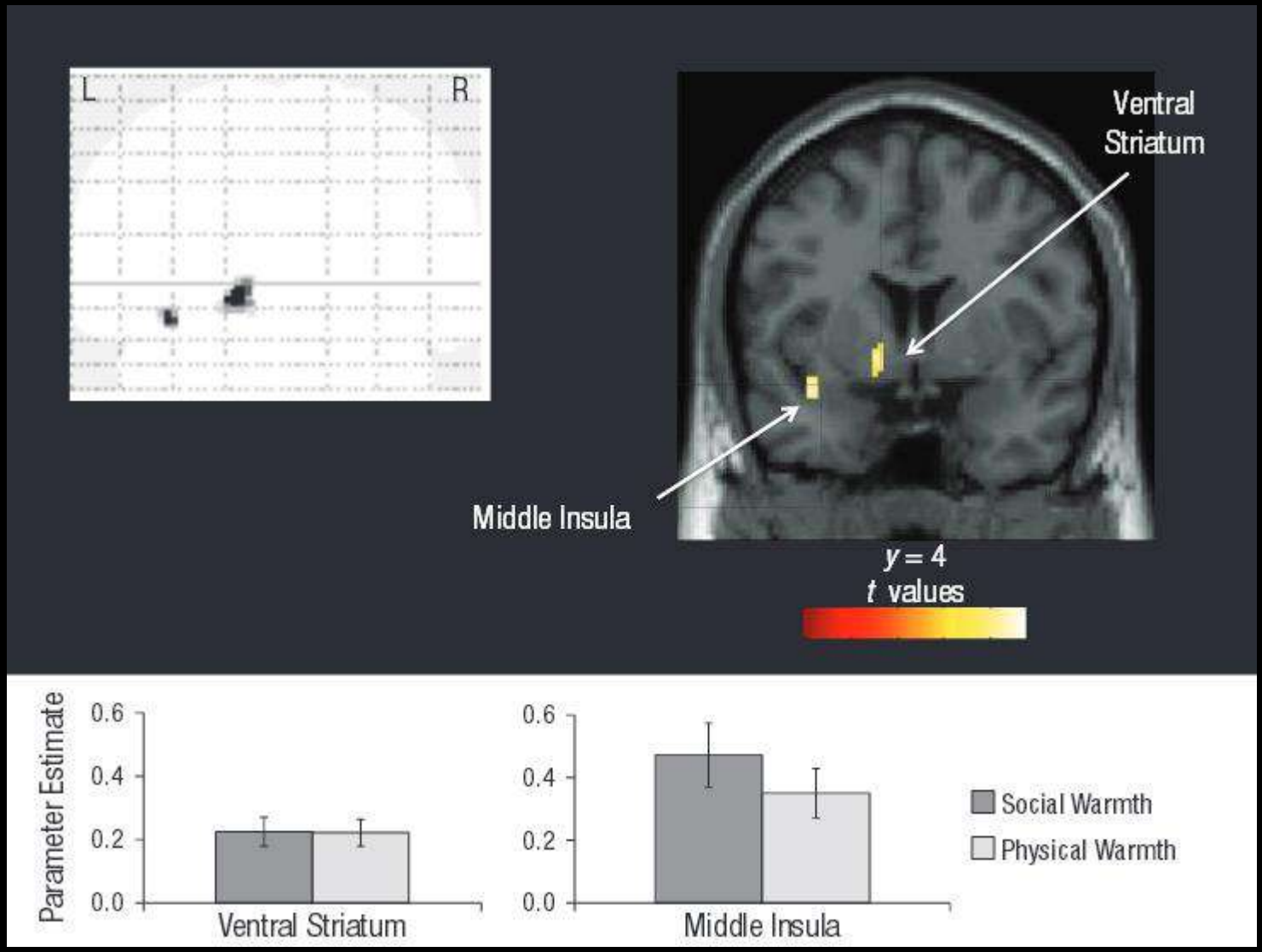
Primer

Empathy and compassion

Tania Singer[1], , , Olga M. Klimecki[2, 3, 4]



Calore fisico e calore sociale



Reciprocità e cooperazione sono ricompensanti

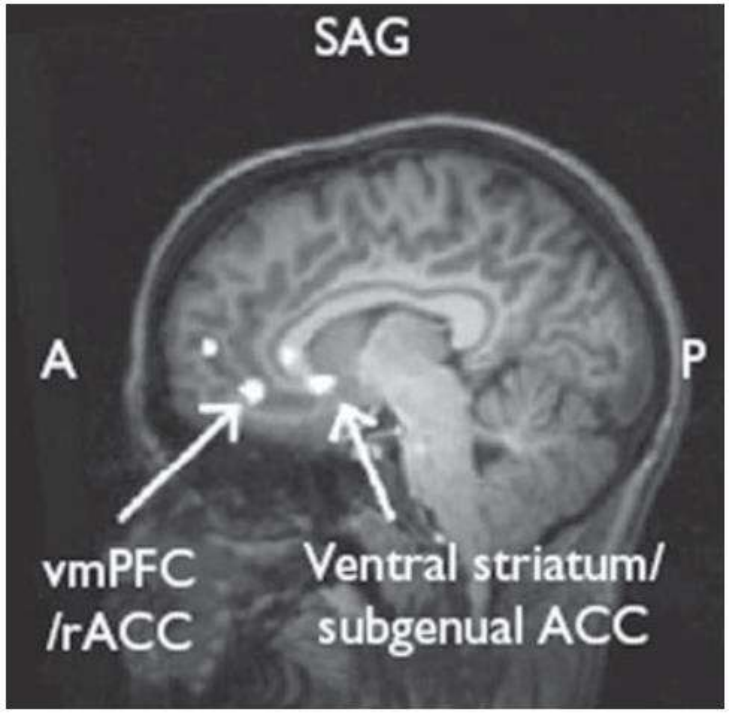


Fig. 15–4 Areas that activate in response to reciprocated cooperation and deactivate in response to unreciprocated cooperation in a single-shot PD game. From Rilling JK, Sanfey AG, Aronson JA, Nystrom LE, & Cohen JD. (2004). Opposing BOLD responses to reciprocated and unreciprocted altruism in putative reward pathways, *NeuroReport 15*, 2539–2543.

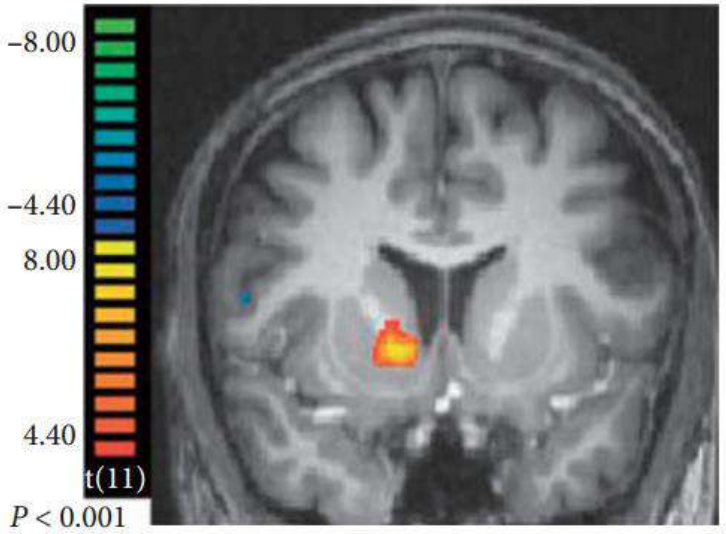
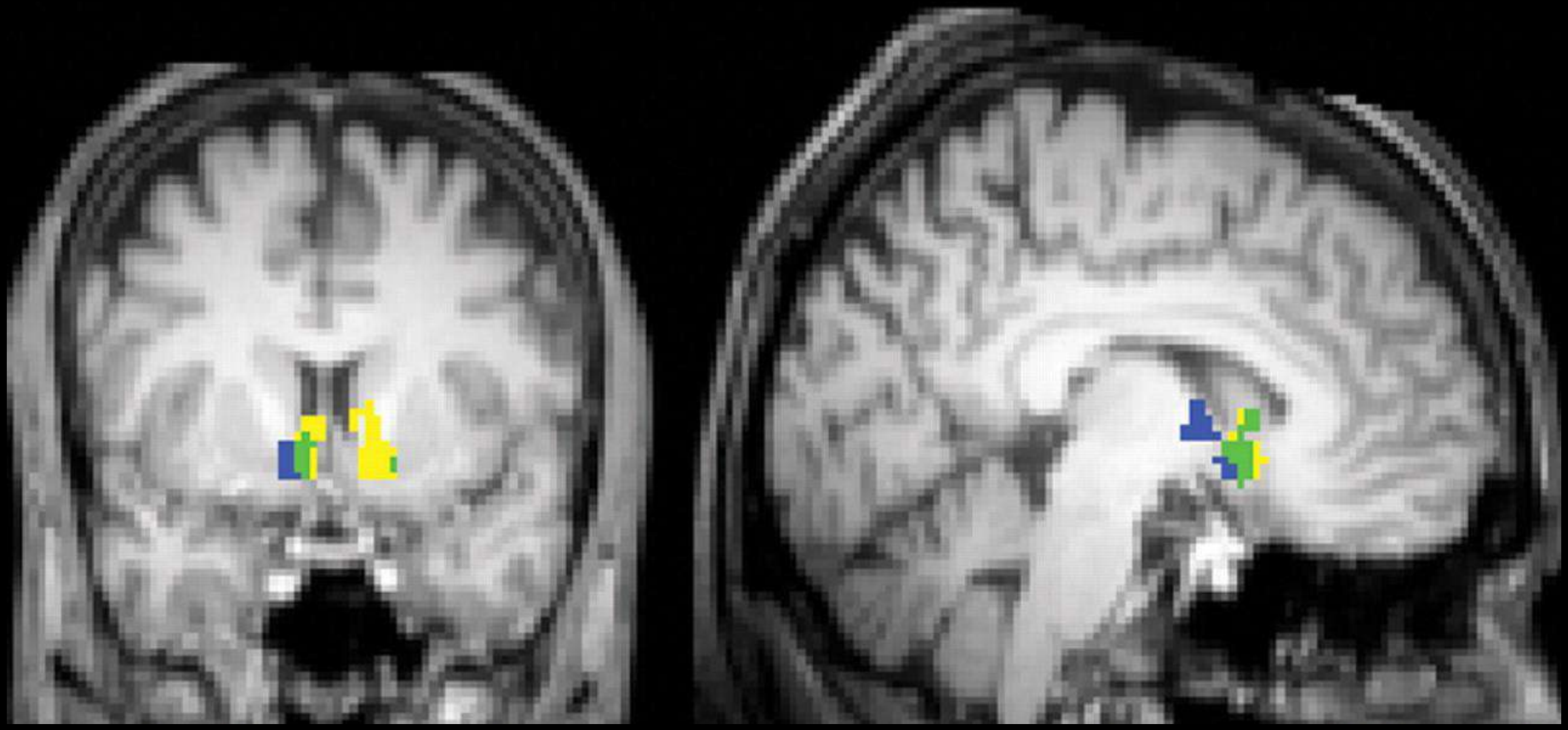


Fig. 15–5 Ventral caudate activation for the contrast between partner reciprocation and non-reciprocation in an iterated trust game. Reprinted by permission from Delgado MR, Frank RH, & Phelps EA. (2005). Perceptions of moral character modulate the neural systems of reward during the trust game. *Nature Neuroscience 8*, 1611–1618.

Delgado et al. added an interesting manipulation in which subjects played the game with each

Donare è ricompensante



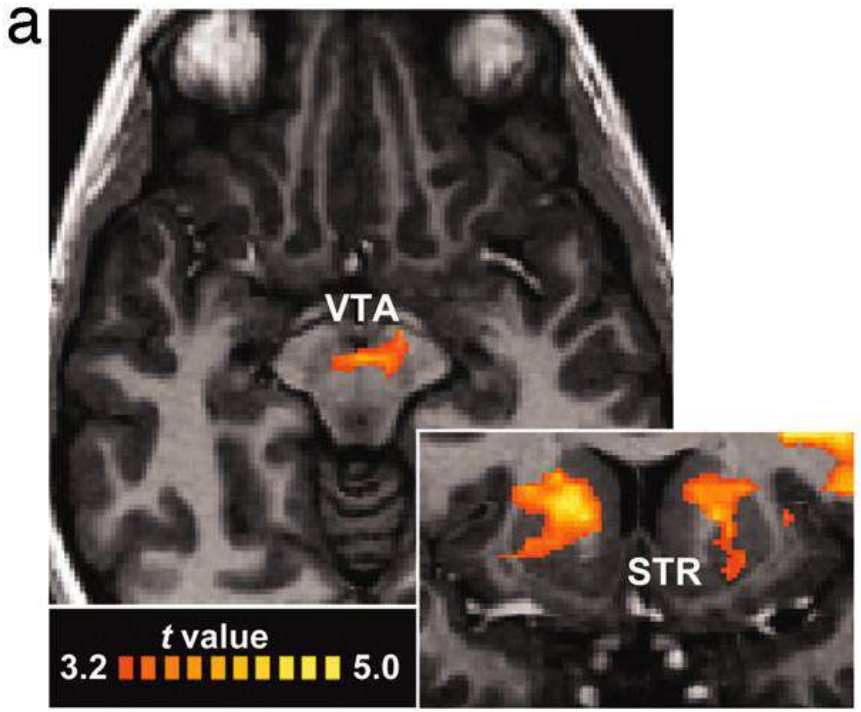
Proceedings of the National Academy of Sciences of the United States of America

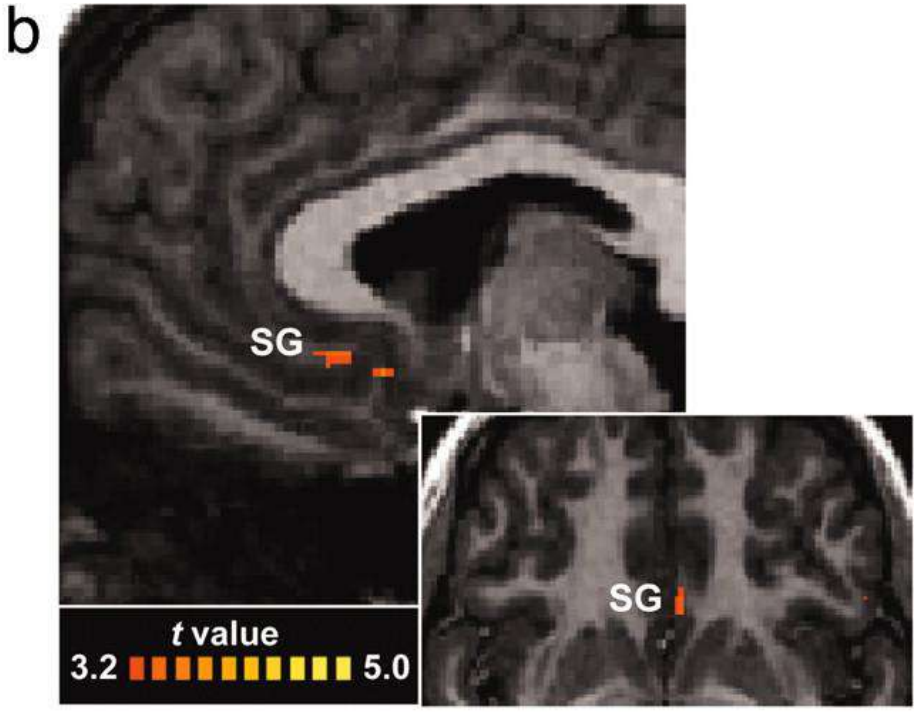
vol. 103 no. 42 > Jorge Moll, 15623–15628, doi: 10.1073/pnas.0604475103

Human fronto–mesolimbic networks guide decisions about charitable donation

Jorge Moll[*,†], Frank Krueger[*], Roland Zahn[*], Matteo Pardini[*,‡], Ricardo de Oliveira-Souza[†§], and Jordan Grafman[*,¶]

Donare è ricompensante





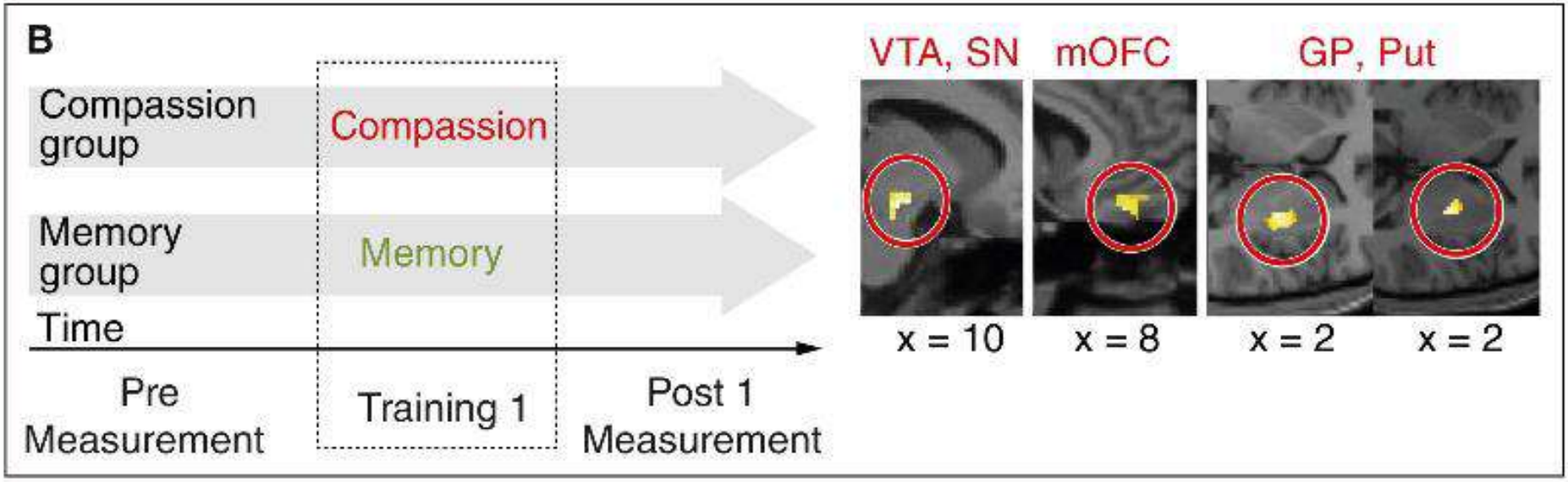
Current Biology

Volume 24, Issue 18, 22 September 2014, Pages R875–R878

Primer

Empathy and compassion

Tania Singer[1], , , Olga M. Klimecki[2, 3, 4]



Current Biology

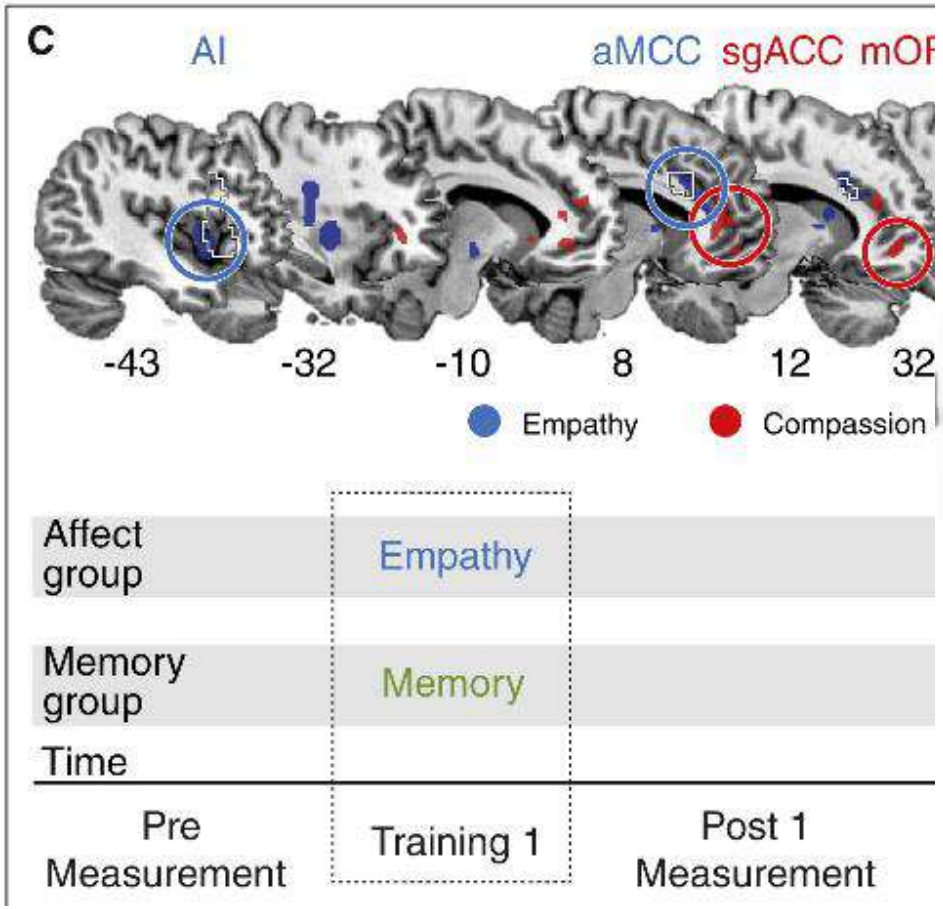
Volume 24, Issue 18, 22 September 2014, Pages R875–R878

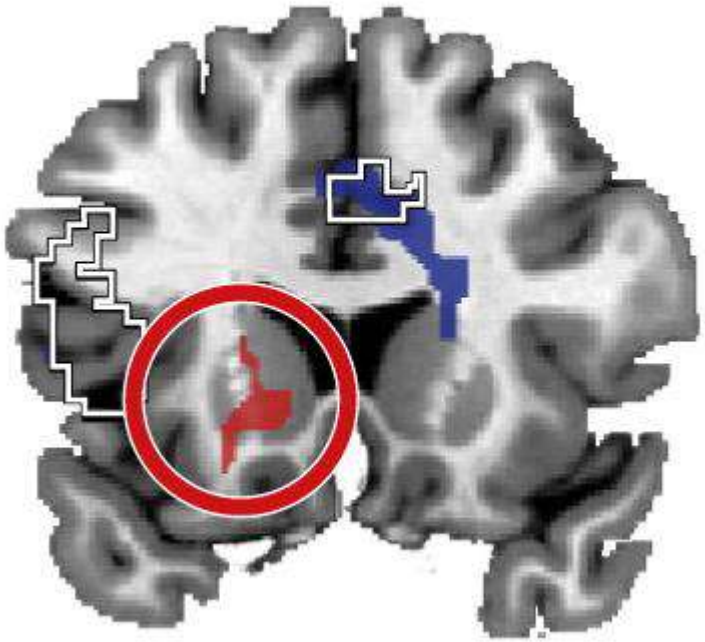
Primer

Empathy and compassion

Tania Singer[1], , , Olga M. Klimecki[2, 3, 4]

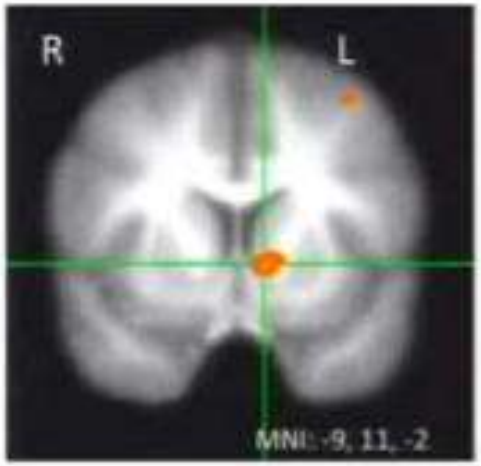
VS, NAcc





Increases in activation in the nucleus accumbens predicts donation rank

L Nucleus Accumbens



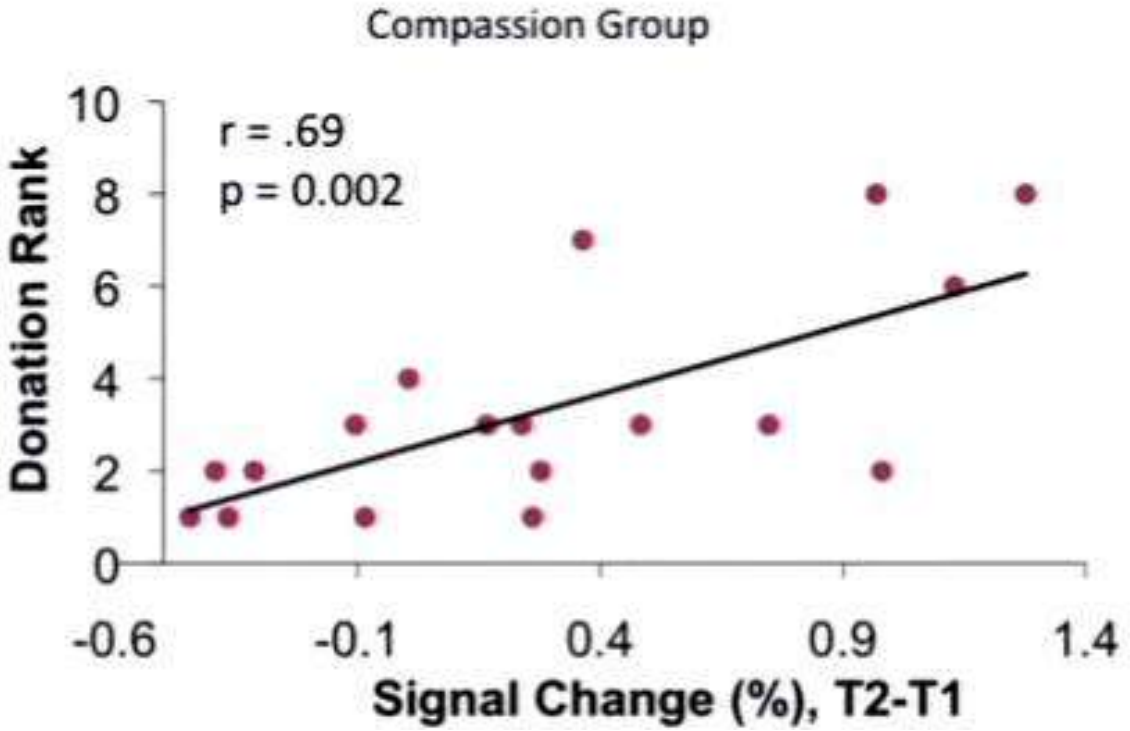
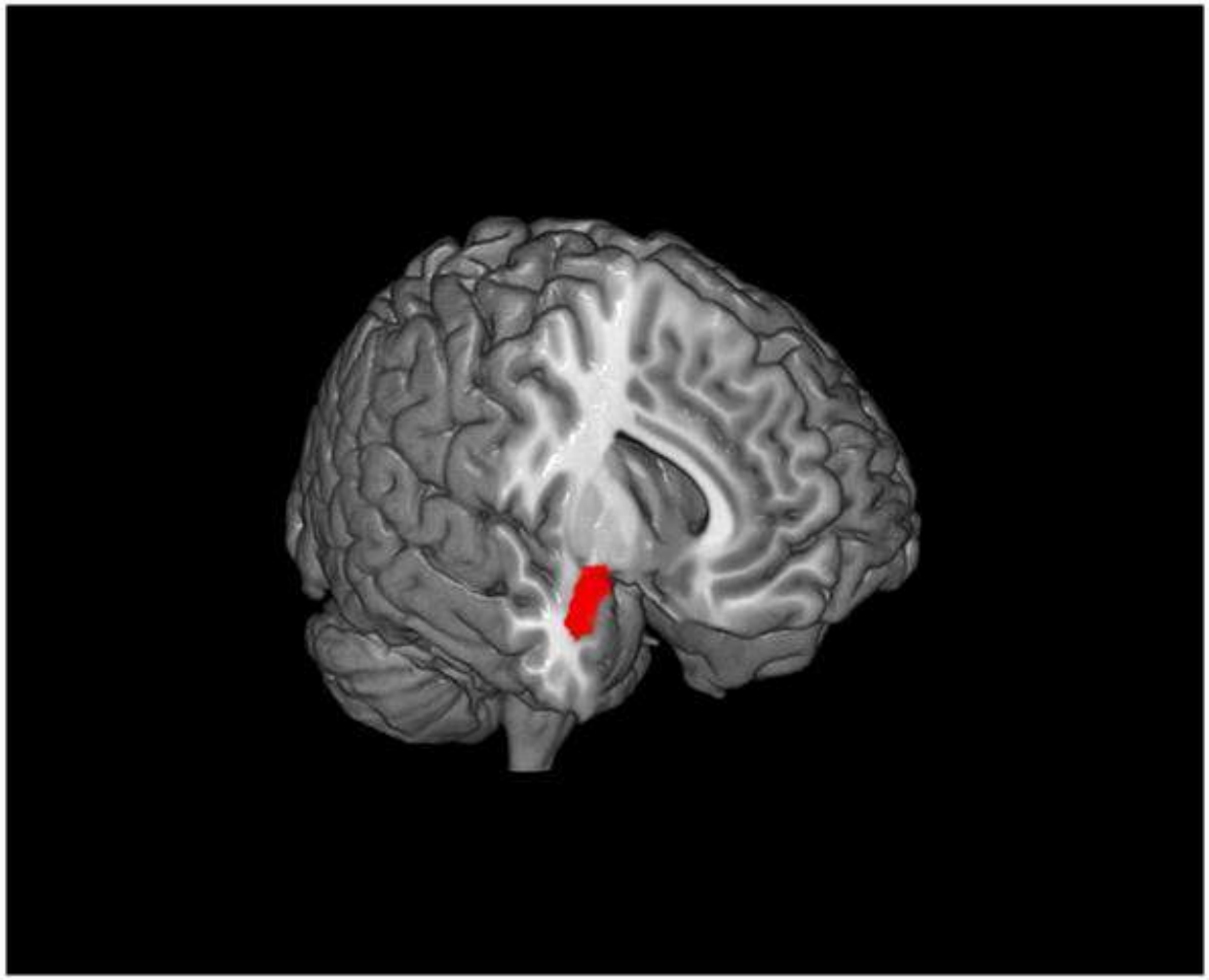
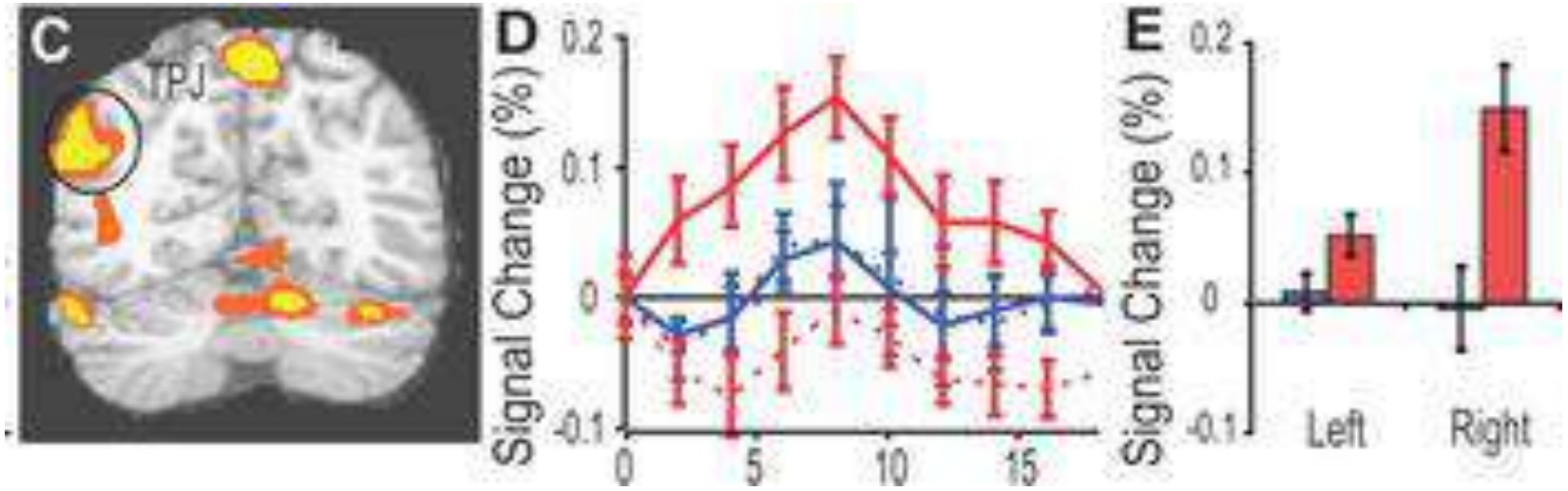


Figure 1. Greater dispositional mindfulness is associated with decreased grey matter volume in the right amygdala.



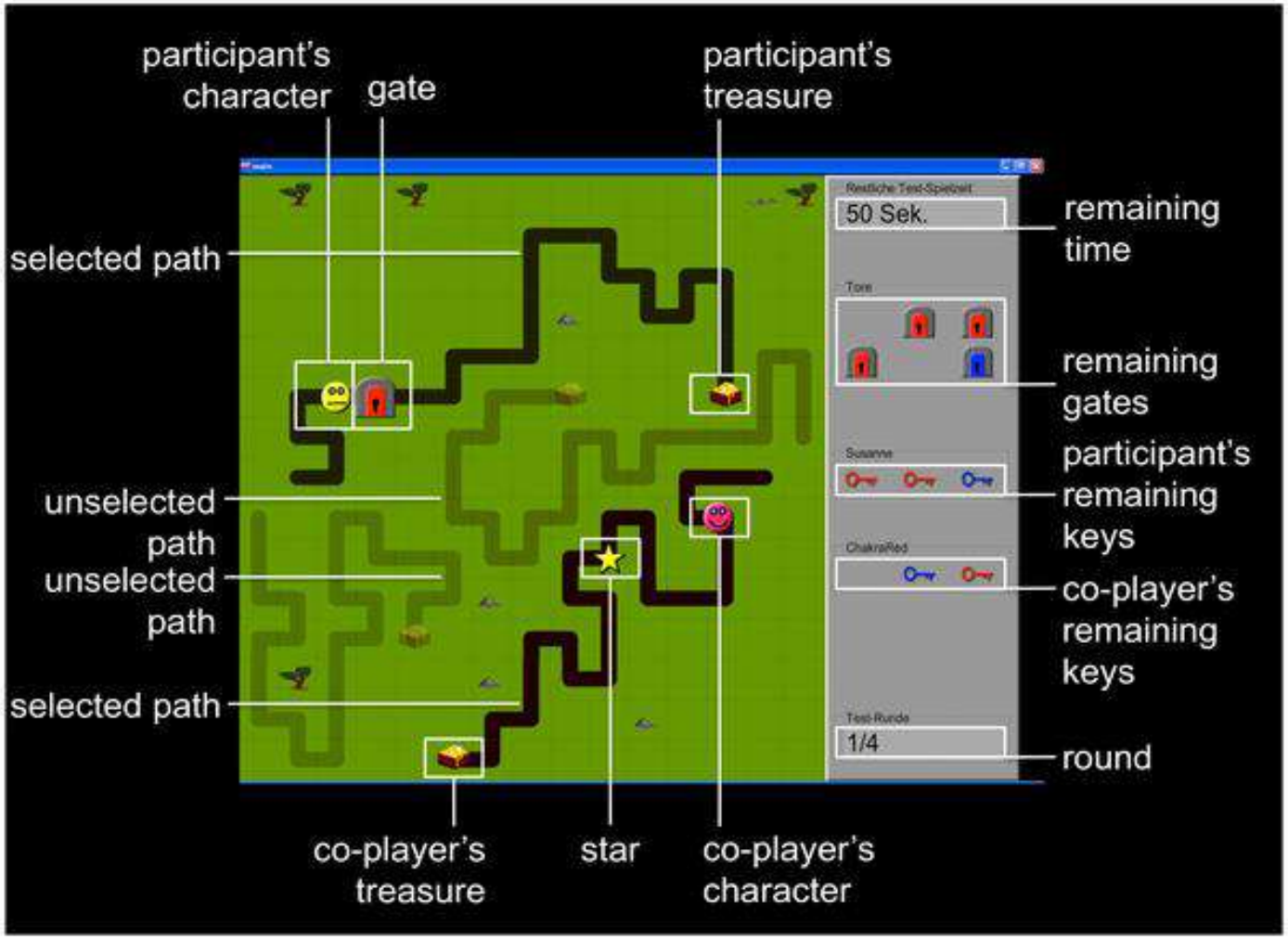
Taren AA, Creswell JD, Gianaros PJ (2013) Dispositional Mindfulness Co-Varies with Smaller Amygdala and Caudate Volumes in Community Adults. PLOS ONE 8(5): e64574. doi:10.1371/journal.pone.0064574
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0064574

La pratica Loving kindness meditation potenzia l'attività della TPJ, uno dei centri principali nella teoria della mente e nell'empatia



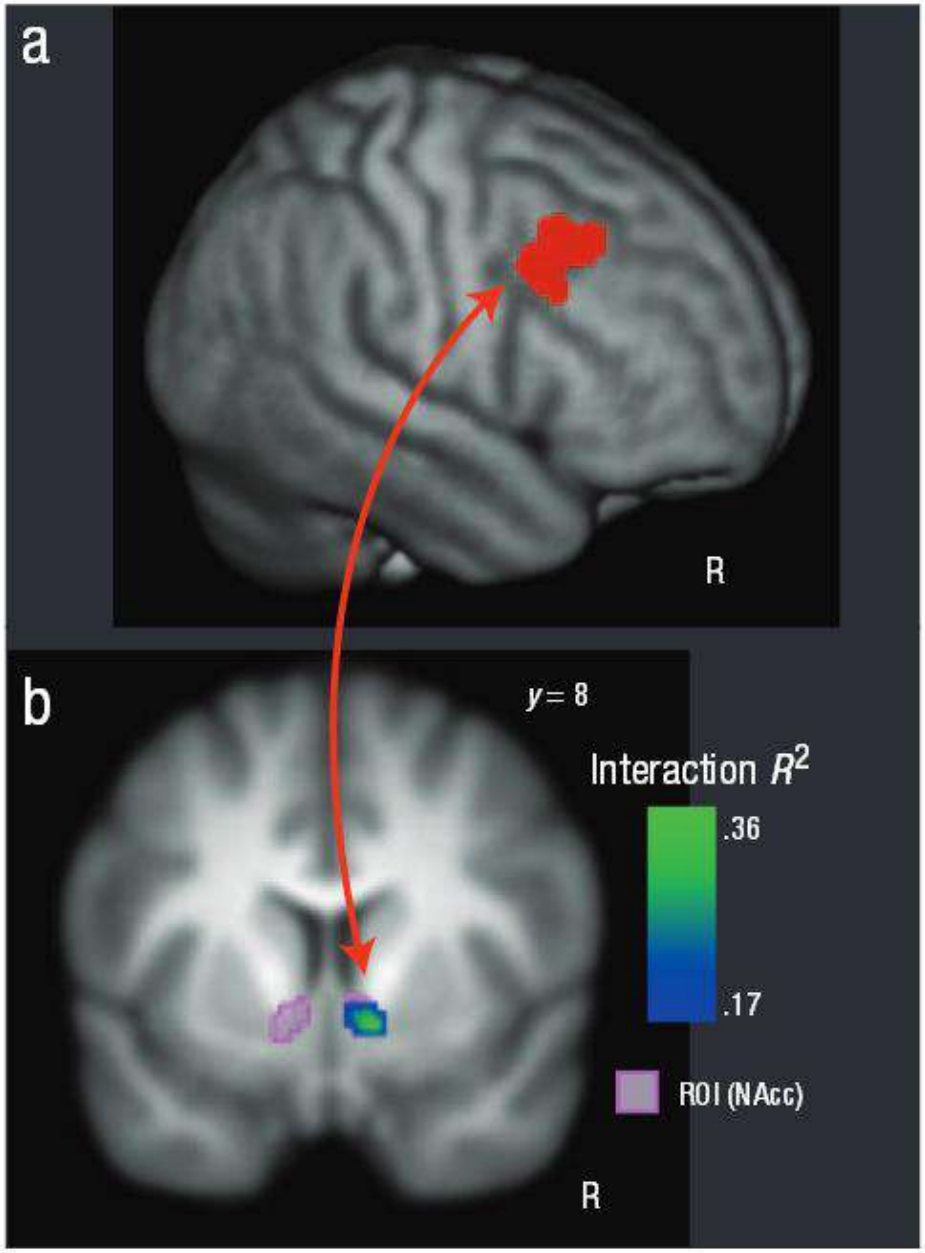
Lutz A, Brefczynski-Lewis J, Johnstone T, Davidson RJ (2008) Regulation of the Neural Circuitry of Emotion by Compassion Meditation: Effects of Meditative Expertise. PLOS ONE 3(3): e1897. doi:10.1371/journal.pone.0001897
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0001897

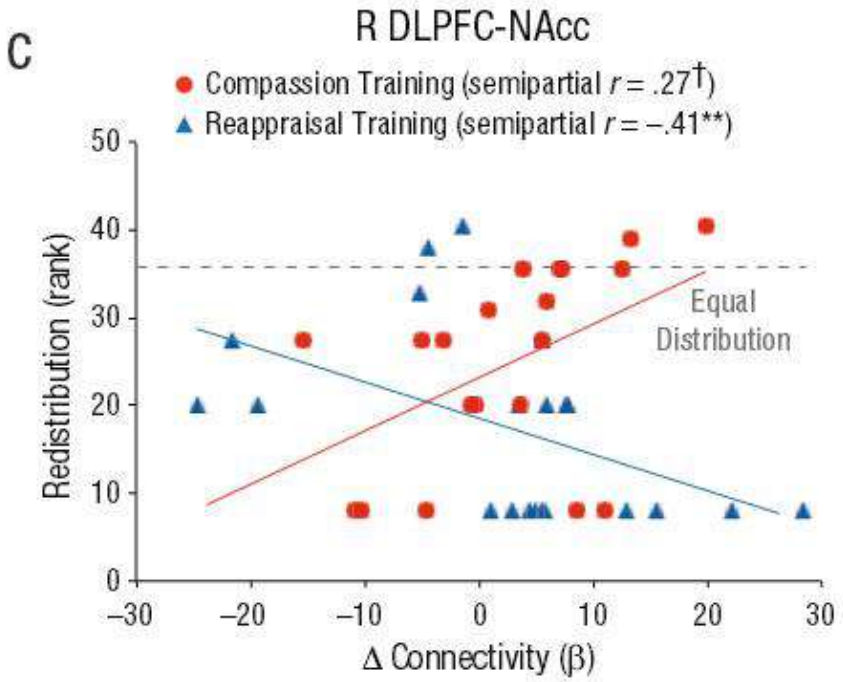
Labeled screenshot of the Zurich Prosocial Game.



Leiberg S, Klimecki O, Singer T (2011) Short-Term Compassion Training Increases Prosocial Behavior in a Newly Developed Prosocial Game. PLOS ONE 6(3): e17798. doi:10.1371/journal.pone.0017798
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0017798

PLOS ONE | TENTH ANNIVERSARY





Allenare la compassione aumenta le attivazioni legate al piacere della prosocialità e quindi alla motivazione verso i comportamenti prosociali

Research Article

aps ASSOCIATION FOR PSYCHOLOGICAL SCIENCE

Psychological Science
24(7) 1171–1180
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DOI: 10.1177/0956797612469537
pss.sagepub.com
SAGE

Compassion Training Alters Altruism and Neural Responses to Suffering

Helen Y. Weng[1,2,3], Andrew S. Fox[1,2,3,4], Alexander J. Shackman[4,5], Diane E. Stodola[2], Jessica Z. K. Caldwell[1,2,6,7], Matthew C. Olson[2], Gregory M. Rogers[5], and Richard J. Davidson[1,2,3,4,5]

[1]Department of Psychology, University of Wisconsin–Madison; [2]Waisman Laboratory for Brain Imaging and Behavior, University of Wisconsin–Madison; [3]Center for Investigating Healthy Minds at the Waisman Center, University of Wisconsin–Madison; [4]HealthEmotions Research Institute, University of Wisconsin–Madison; [5]Department of Psychiatry, University of Wisconsin–Madison; [6]Department of Psychiatry and Human Behavior, Brown University; and [7]Miriam Hospital, Brown University

La radice dell'autocontrollo è la consapevolezza

Ego depletion and meditation

ELSEVIER

Consciousness and Cognition

Volume 21, Issue 2, June 2012, Pages 1016–1022

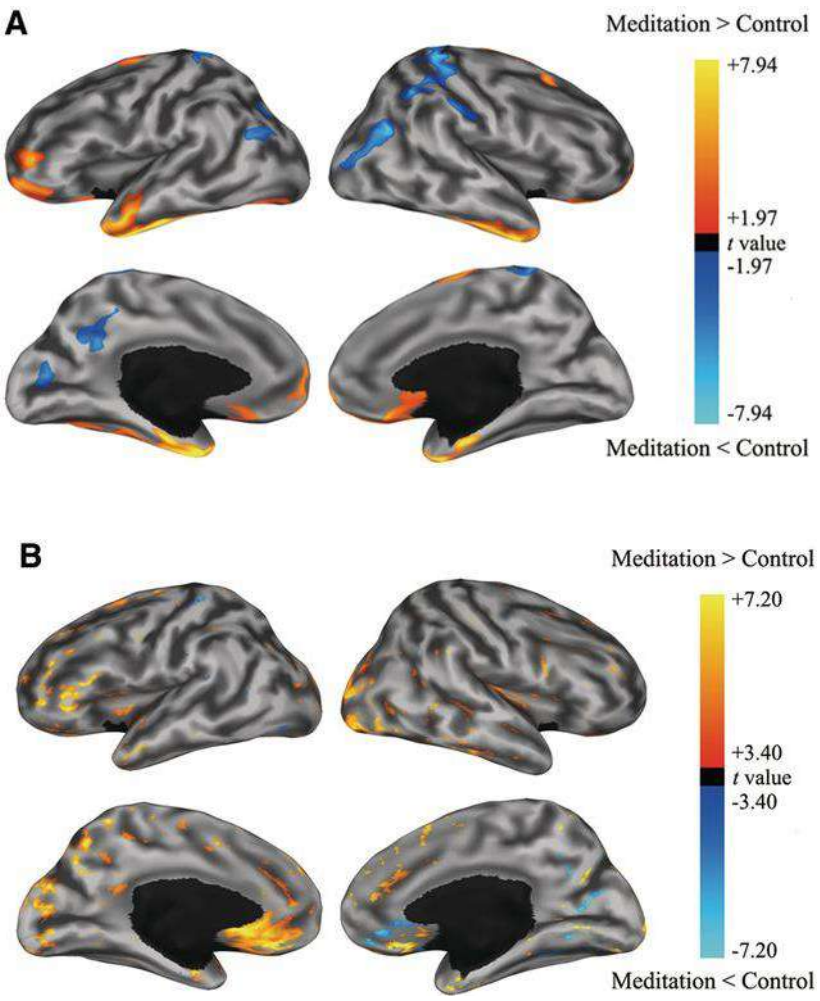
Standing on the Verge: Lessons and Limits from the Empirical Study of Consciousness

Short Communication

Mindfulness meditation counteracts self-control depletion

Malte Friese[a], Claude Messner[b], Yves Schaffner[a]

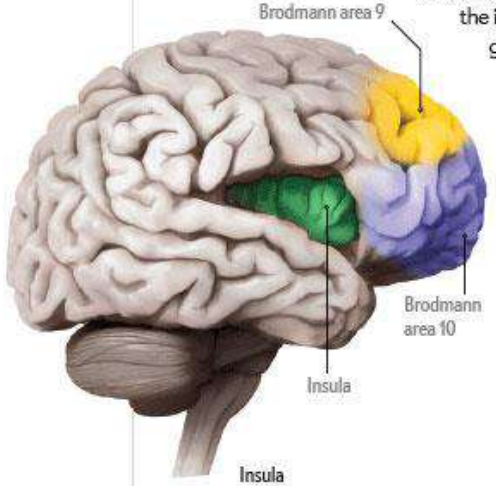
Ego depletion and meditation

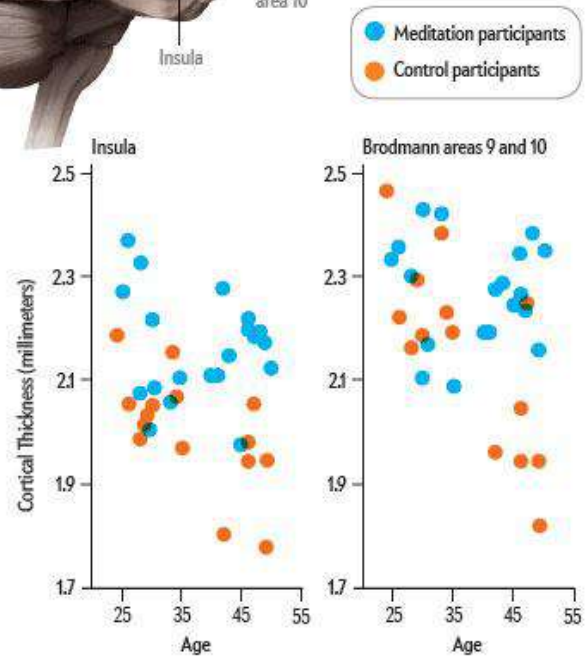


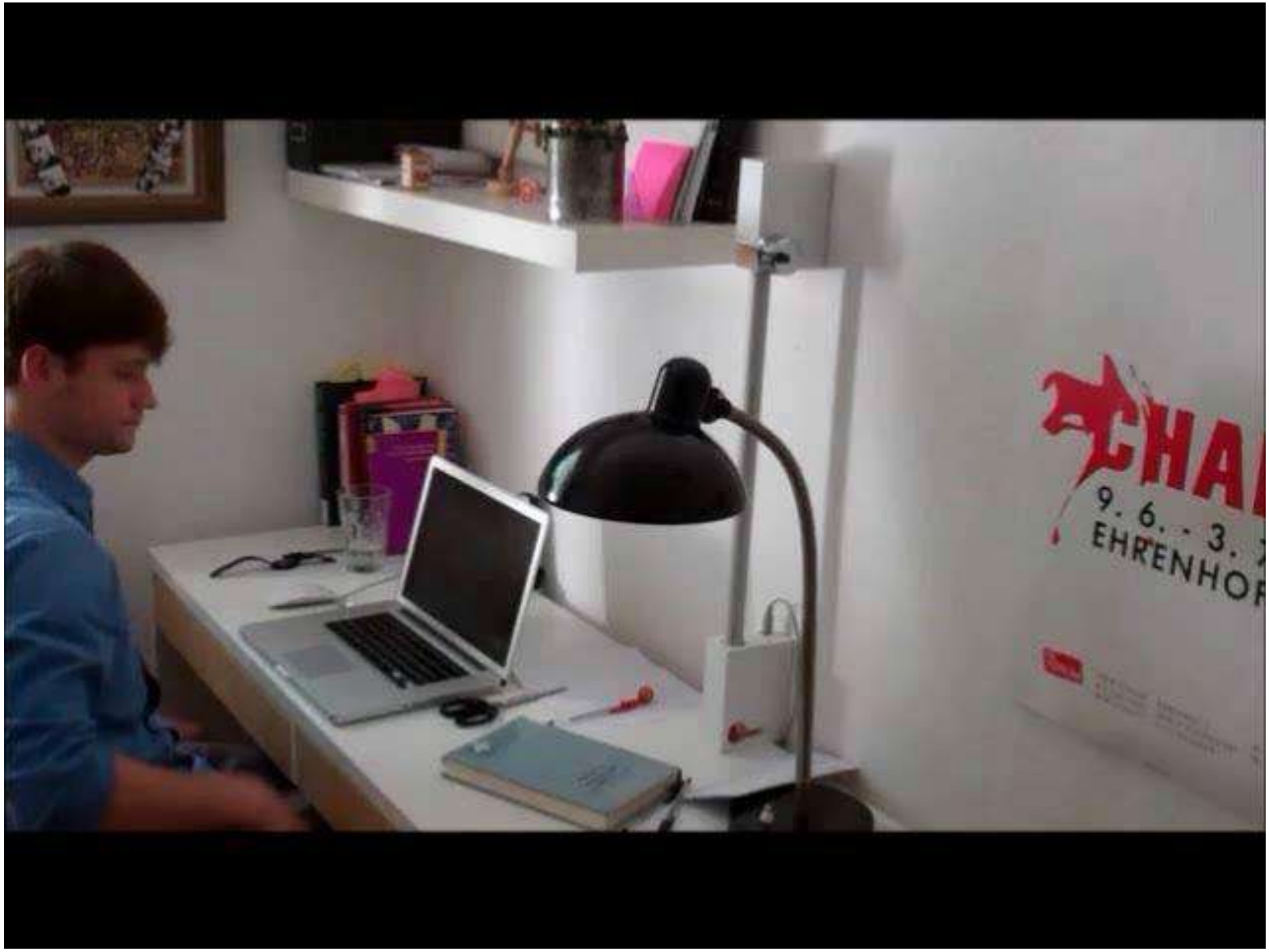
A MEDITATION BENEFIT

Grow More Brain

Researchers from several universities explored whether meditation might bring about structural changes in brain tissue. Using magnetic resonance imaging, they found that 20 experienced practitioners of one type of Buddhist meditation had a greater volume of brain tissue in the prefrontal cortex (Brodmann areas 9 and 10) and the insula than a control group did (*graphs*). These regions play a role in processing attention, sensory information and internal bodily sensations. Future long-term studies will be needed to confirm this finding.






9. 6. - 3.
EHRENHOF

Potenziare l’autocontrollo ricordando di correggere la postura

Allenare il Self-control riduce l'impulsività

Journal of Research in Personality 45 (2011) 252–256

Contents lists available at ScienceDirect

Journal of Research in Personality

journal homepage: www.elsevier.com/locate/jrp

Brief Report

Self-control training decreases aggression in response to provocation in aggressive individuals

Thomas F. Denson [a,*], Miriam M. Capper [a], Megan Oaten [b], Malte Friese [c], Timothy P. Schofield [a]

[a] School of Psychology, University of New South Wales, Sydney, Australia
[b] Department of Psychology, Macquarie University, Sydney, Australia
[c] Department of Psychology, University of Basel, Basel, Switzerland

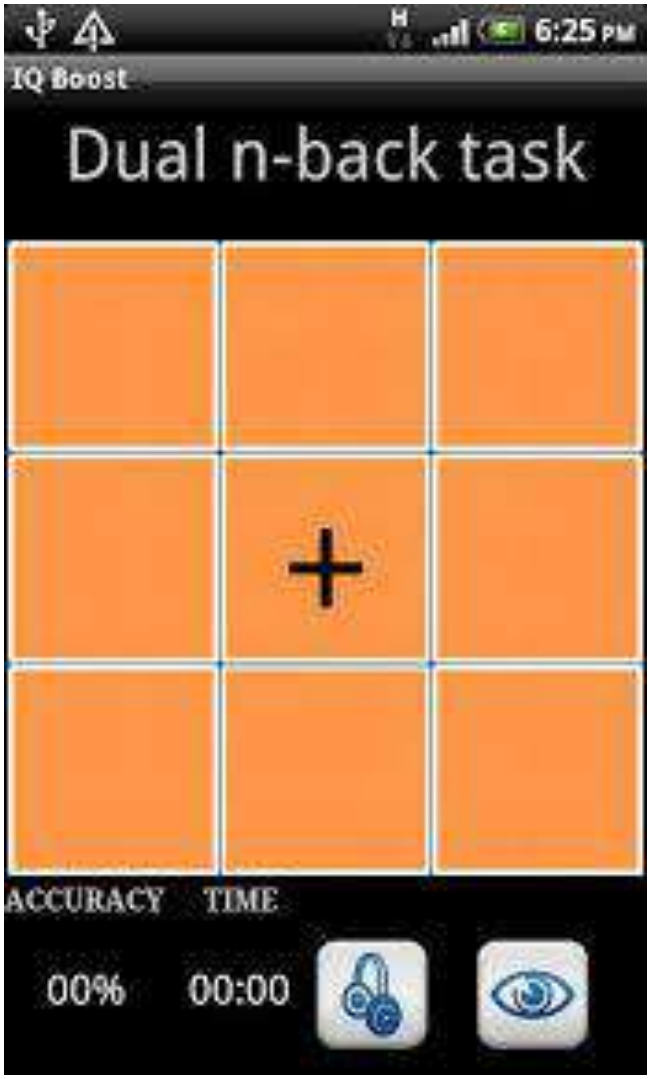
Usare la mano non dominante per aprire le porte come training dell'autocontrollo

Potenziare autocontrollo e consapevolezza

Allenare la memoria di lavoro potenzia il controllo delle decisioni intertemporali

Dual N-back

http://brainscale.net/dual-n-back/training

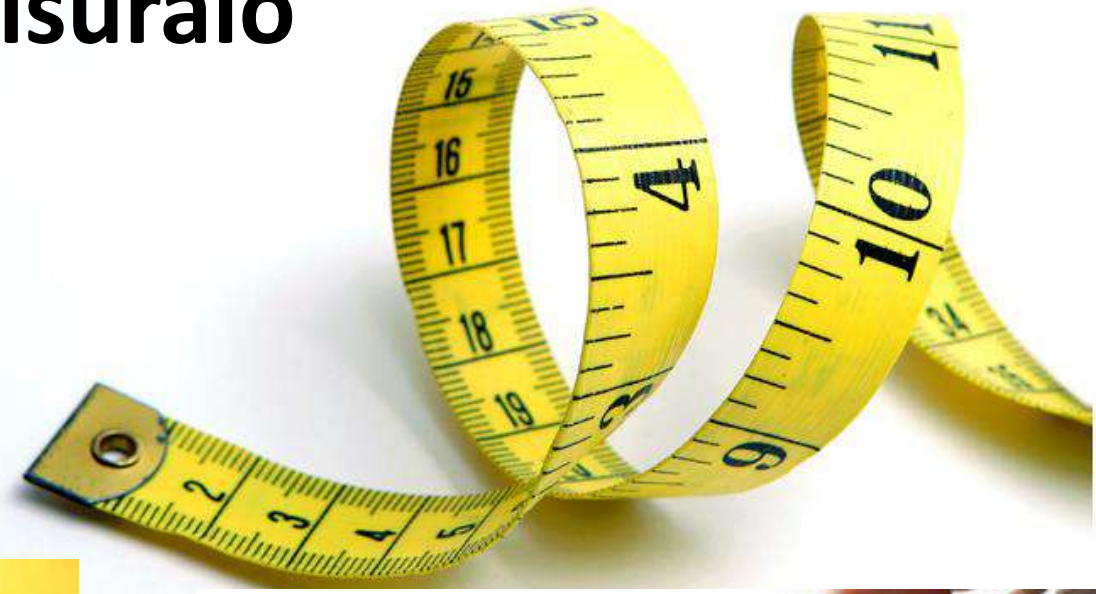


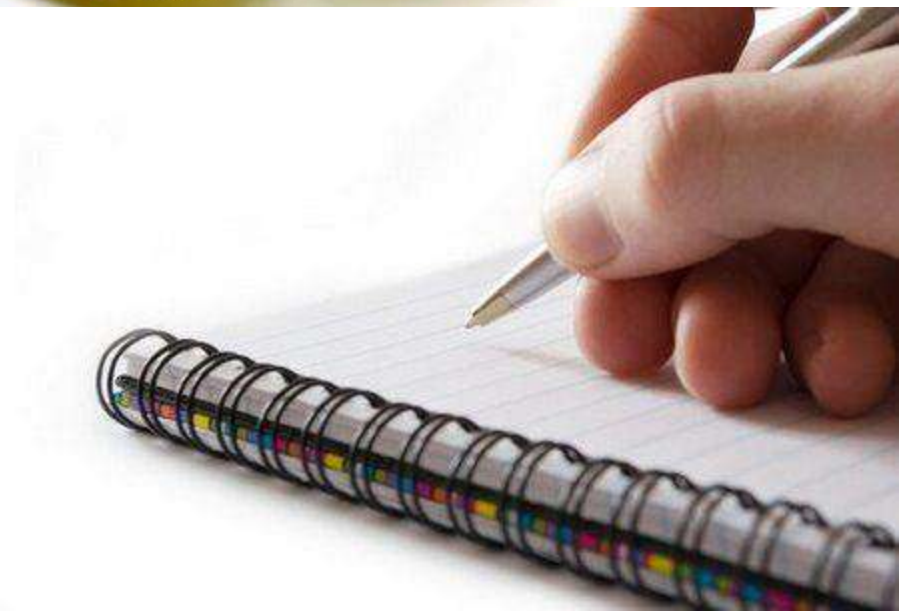
http://brainworkshop.sourceforge.net

Imparare e Ricordare il futuro che si preferirebbe

Scrivere e rileggere periodicamente il promemoria per un obiettivo futuro, un cambiamento, e in che modo contribuisce alla realizzazione di obiettivi più vasti o a una dimensione lavorativa, relazione o una vita più soddisfacenti

Nota il comportamento, se possibile misuralo





Misurare, rinforzare

Michie, S., C. Abraham, C. Whittington, J. McAteer, and S. Gupta. “Effective Techniques in Healthy Eating and Physical Activity Interventions: A Meta-regression.” Health Psychology 28, no. 6 (2009): 690.

Aumentare la consapevolezza degli stimoli che suscitano il comportamento indesiderato

Monitorare gli inneschi:

- Ambientali (cosa succedeva, dove, con chi, a che ora, esisteva uno stimolo particolare?)
- Fisici, fisiologici (, sensazioni generale – malessere/benessere – sonno, fame, sete, stanchezza, respirazione, cuore, tensioni muscolari, ecc)
- Comportamentali e motori (azione concominate, tensione muscolare, pugni chiusi, tono della voce, postura, sguardo)
- Emotivi (emozioni che occorrono immediatamente prima o contemporaneamente)
- Cognitivi (pensieri, eventuali ruminazioni, giudizi, piani di azione)

Diario delle «ricadute»

- Giorno, ora, luogo
- Cosa facevo, con chi?
- Come mi sentivo fisicamente? Ero stanco, affamato, riposato, avevo dolori, stavo poco bene, ecc….
- C’è stato un innesco in particolare? Reale o immaginato?
- Tono affettivo: come mi sentivo prima dell’episodio
- Quali altre emozioni ho sentito associate?
- C’è stato un eventuale pensiero immediatamente prima della o che ha determinato la «decisione»?
- Perché penso di essermi «lasciato andare»?
- Come mi sono sentito dopo?
- Quali conseguenze?
- Cosa penso ora delle cause di ricaduta? Era giustificata?
- Cosa avrei potuto fare per evitarla?
- Cosa posso fare in futuro per evitarla e non vederla riproporsi?

Scova un accenno di cambiamento

- esistono momenti in cui il comportamento non è problematico o va nella direzione giusta?
- cosa accade in quei momenti?
- cosa c'è nell'ambiente?
- cosa li differenzia dagli altri?
- cosa si prova in quei momenti?
- come possono essere replicati?

Oltre la volontà e la motivazione

Lavorare con e su inneschi e ambiente

Super size me

Per non mangiare in trance?
Mangiare con la mano sinistra

Modificare ambiente e circostanze per cambiare le abitudini

Journal of Personality and Social Psychology
2005, Vol. 88, No. 6, 918–933

0022-3514/05/$12.00 DOI: 10.1037/0022-3514.88.6.918

Changing Circumstances, Disrupting Habits

Wendy Wood
Duke University

Leona Tam
Texas A&M University

Melissa Guerrero Witt
Duke University

The present research investigated the mechanisms guiding habitual behavior, specifically, the stimulus cues that trigger habit performance. When usual contexts for performance change, habits cannot be cued by recurring stimuli, and performance should be disrupted. Thus, the exercising, newspaper reading, and TV watching habits of students transferring to a new university were found to survive the transfer only when aspects of the performance context did not change (e.g., participants continued to read the paper with others). In some cases, the disruption in habits also placed behavior under intentional control so that participants acted on their current intentions. Changes in circumstances also affected the favorability of intentions, but changes in intentions alone could not explain the disruption of habits. Furthermore, regardless of whether contexts changed, nonhabitual behavior was guided by intentions.

Nudge

- Lavorare sull’architettura delle scelte
- feedback


I WANT TO
CLIMB THE STAIRS
TO FITNESS
I WANT TO
CLIMB THE STAIRS
TO FITNESS
AIM FOR 150 MINUTES OF
PHYSICAL ACTIVITY A WEEK
I WANT TO CLIMB THE STAIRS TO FITNESS
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Home

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BUS TRI

Fai un piano specifico

- Far leva sul senso di autoefficacica chiedendo di formulare e scrivere piani dettagliati per il cambiamento

Es. esperimento su effetto formulazione scritta dell'impegno a vaccinarsi in una specifica data:

Incrementa 4.2% i vaccinati (Milkman et. Al, 2011)

Chiarezza, specificità dei risultati attesi e delle procedure per ottenerli

Priming

- Chiedere, rilevare, misurare l'intenzione su un comportamento e un cambiamento promuove quel comportamento e quel comportamento

Es. chiedere ai un campione di cittadini se l'indomani andrà a votare incrementa la probabilità del voto del 25%

(Greenwald, Anthony G., Catherine G. Carnot, Rebecca Beach, and Barbara Young. "Increasing Voting Behavior by Asking People if They Expect to Vote." Journal of Applied Psychology 2 (1987): 315–18)

Socializzare e normalizzare il cambiamento

- L'uomo è la specie più sociale
- La conformità è un potente motivatore del cambiamento
- Il comportamento normale percepito viene usato come scorciatoia cognitiva nelle scelte e nei comportamenti
- Socializzare il cambiamento (il caso della riduzione dei consumi elettrici + personalizzazione intestazione + uso emoticon)
- Conformità e aderenza a nuove regole e doveri (il caso delle tasse)

Non buone risoluzioni

Implementazione delle intenzioni

Se/ Quando accade X  Allora faccio Y

Semplici piani grandi effetti

Una decisione precaricata!!

Innesco affidato all'ambiente
e non alla volontà

Individuare gli ostacoli al cambiamento e prevenirli

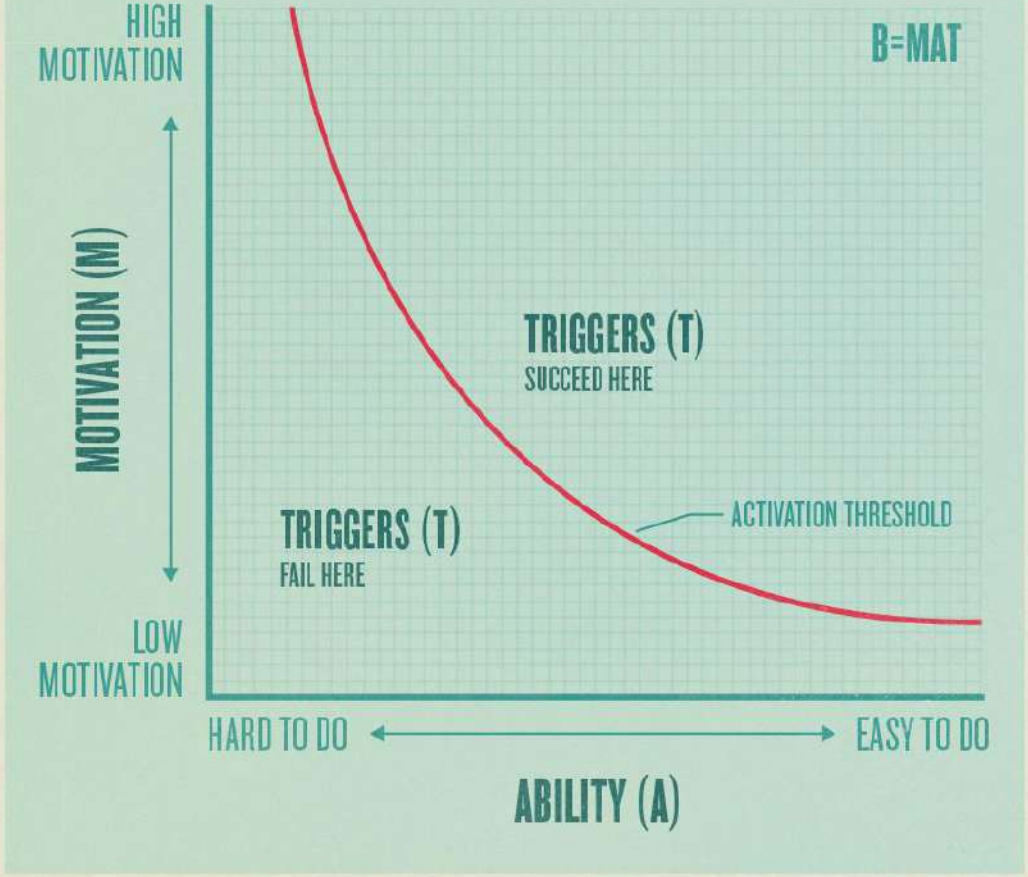
Prevedere gli errori e immaginare le soluzioni

Lavorare sulla tendenza a stare nel default

WHAT CAUSES BEHAVIOR CHANGE?

THE FOGG BEHAVIOR MODEL (FBM) SHOWS THAT THREE ELEMENTS MUST CONVERGE AT THE SAME MOMENT FOR A BEHAVIOR TO OCCUR: MOTIVATION, ABILITY, AND TRIGGER (MAT). WHEN A BEHAVIOR DOES NOT OCCUR, AT LEAST ONE OF THE THREE ELEMENTS IS MISSING.

THE FOGG BEHAVIOR MODEL



BEHAVIOR CHANGE ELEMENTS

CORE MOTIVATORS

SIMPLICITY FACTORS

BJ Fogg, PhD

Stanford University

Designing for behavior change is systematic. It's not guesswork.

BJ Fogg has created a universal method with three steps.

Step 1: Get specific

What behavior do you want?

Translate target outcomes and goals into behaviors.

And be specific.

Step 2: Make it easy

How can you make the behavior easy to do?

Simplicity changes behavior.

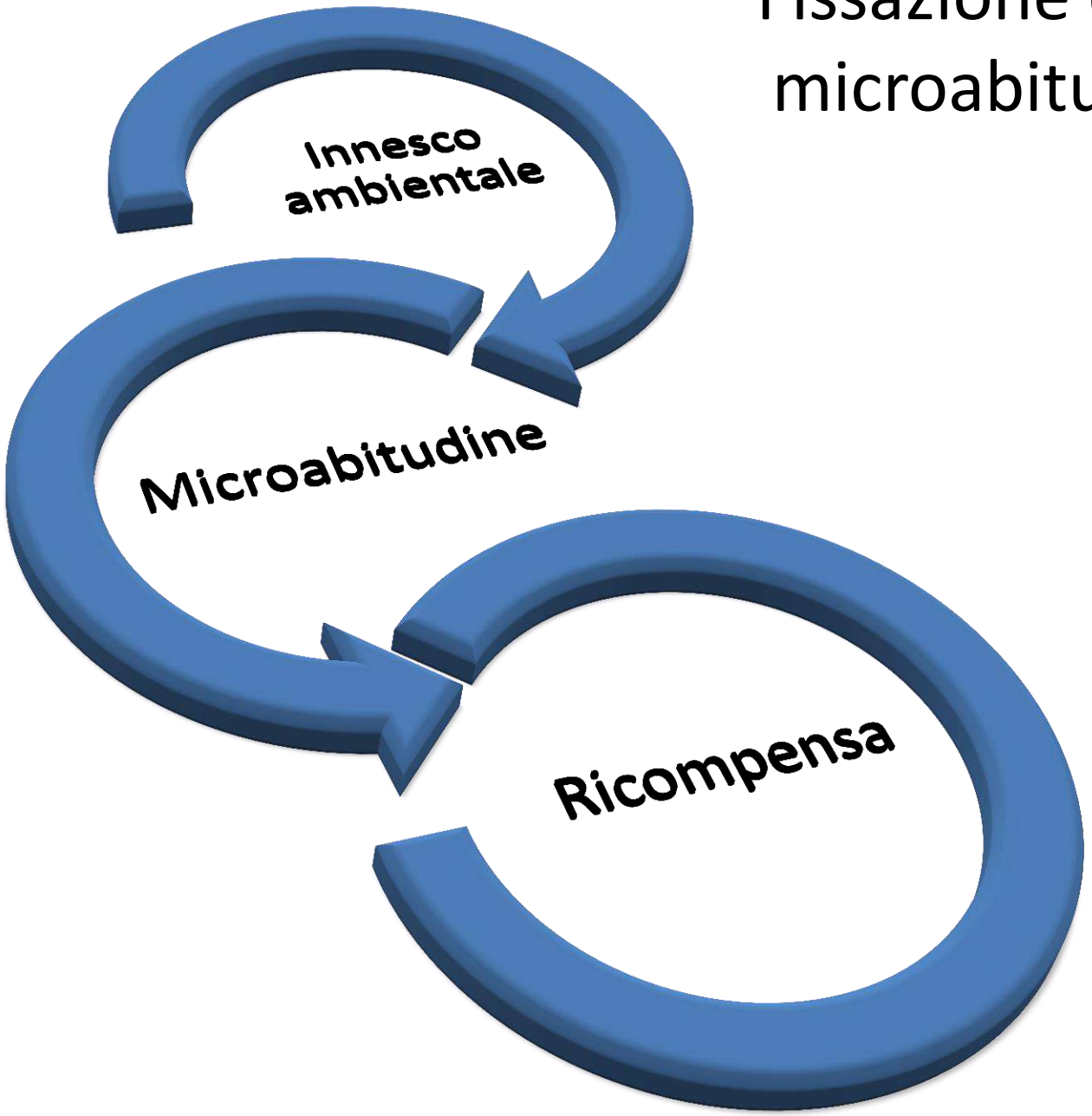
Step 3: Trigger the behavior

What will prompt the behavior?

Some triggers are natural. Others you must design.

No behavior happens w/o a trigger.

Fissazione delle microabitudini



Il principio dell'imitazione
il bisogno di riconoscimento e conformità

il cambiamento è contagioso

REGIONE AUTONOMA FRIULI VENEZIA GIULIA

Costruire l'incontro
Corso ECM

REGIONE AUTONOMA FRIULI VENEZIA GIULIA
azienda per l'assistenza sanitaria 2 Bassa Friulana, Isontina

AREA WELFARE
AAS.2 Bassa Friulana - Isontina

Neuroscienze e Scienze cognitive del cambiamento

Stefano Canali

ma per seguir virtute e canoscenza
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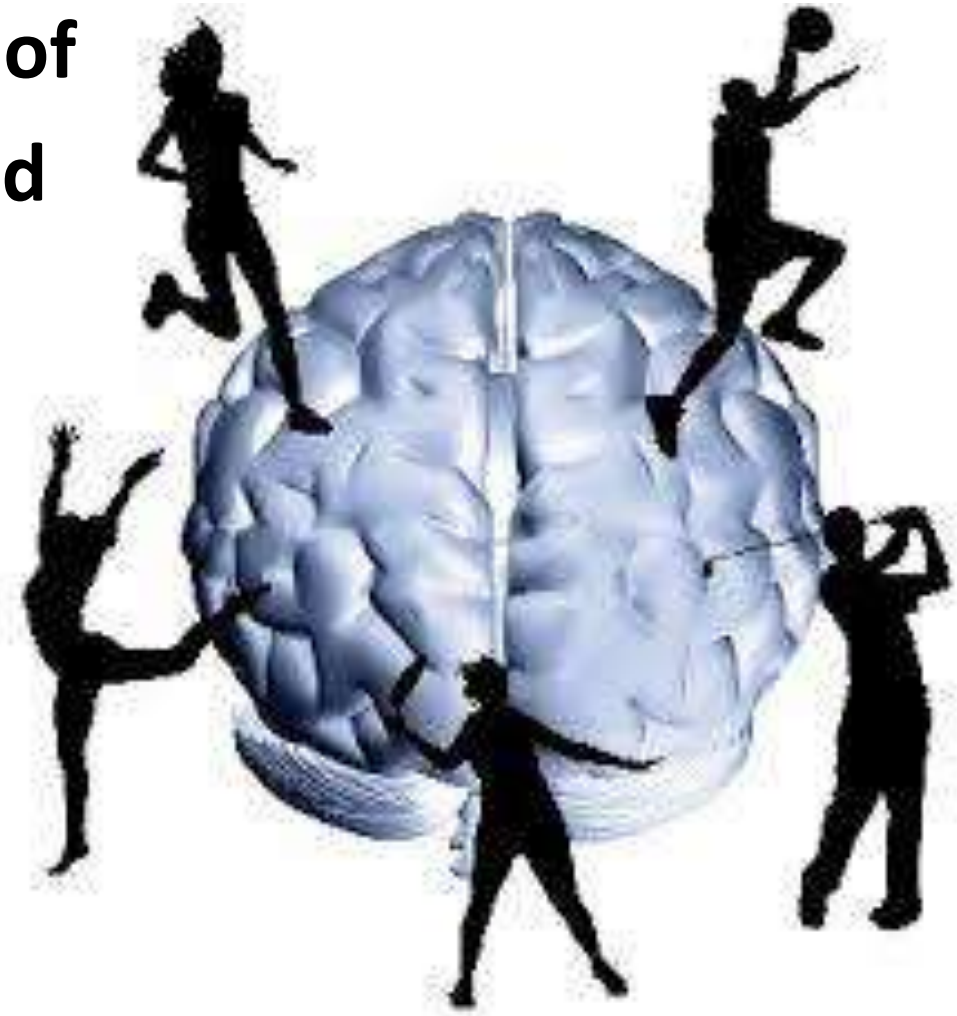
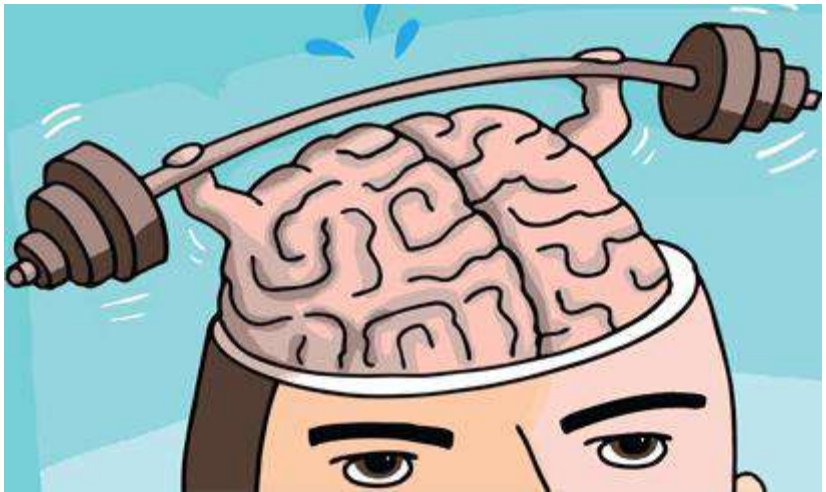
- **Physical exercise increases neuroplasticity**
- **Physical exercise activates the brain reward system and the system of endogenous opioids and cannabinoids**

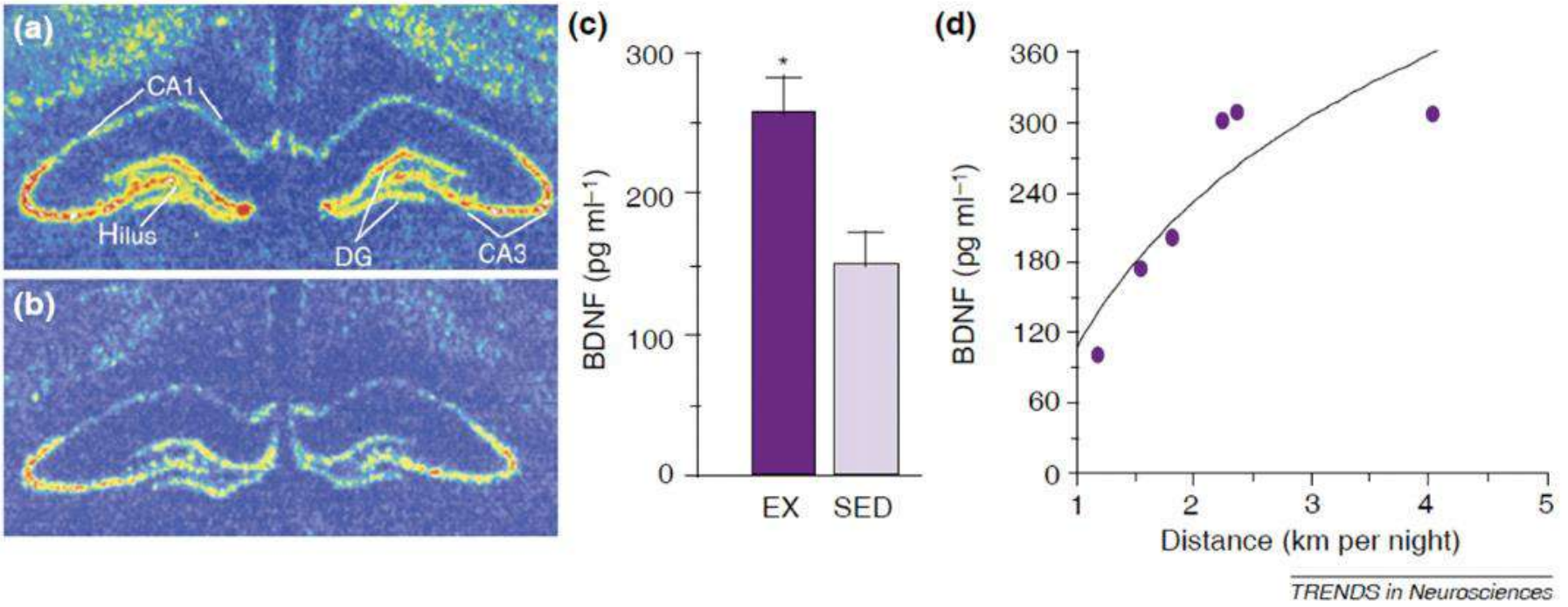


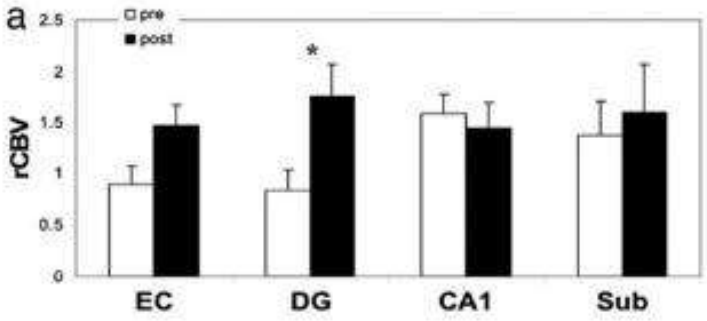
Sport and neuroplasticity

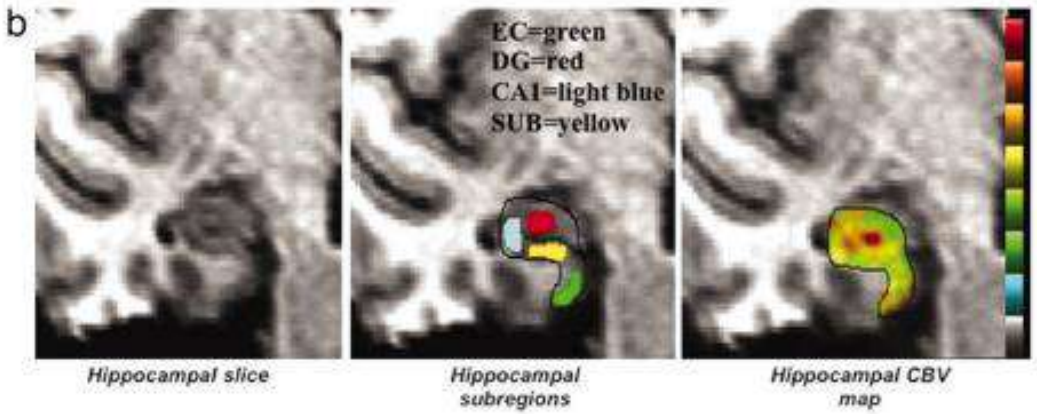
- Physical acticity stimulates the production of growth factors, the first promoters of neuroplastic phenomena



Running and BDNF in hippocampus

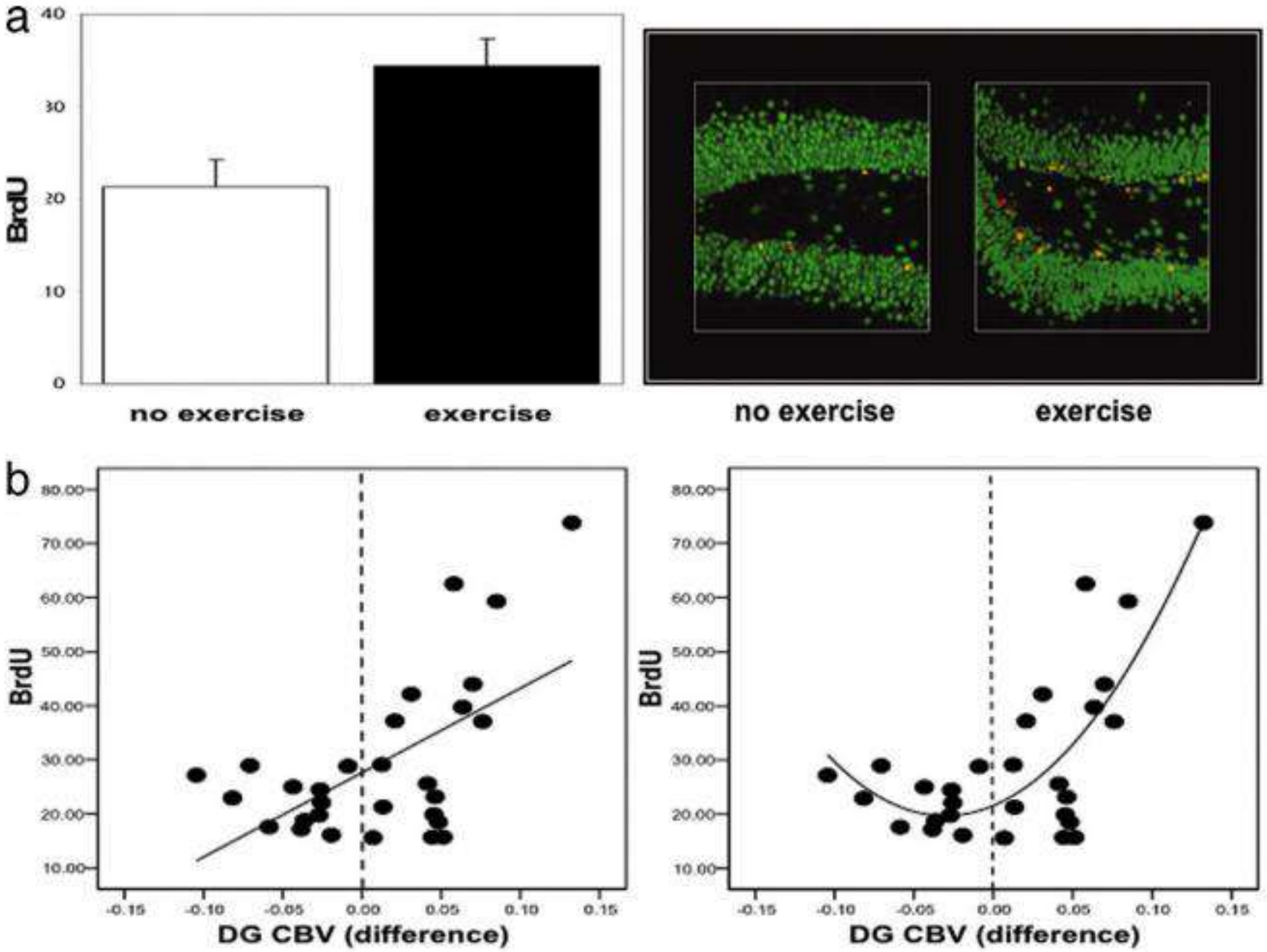






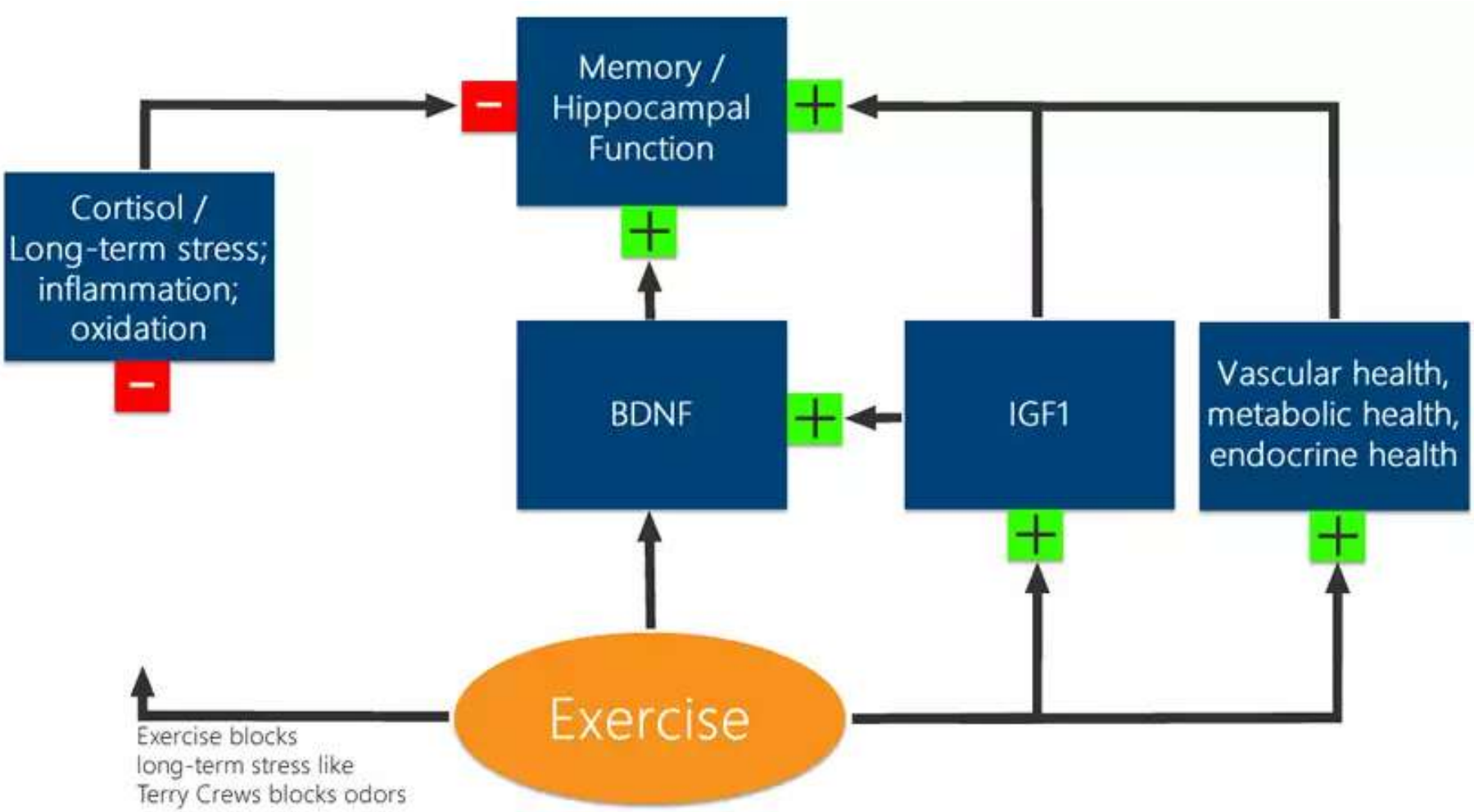
Exercise Selectively Increases Dentate Gyrus CBV in Humans and Correlates with Aerobic Fitness and Cognition

Pereira A C et al. PNAS 2007;104:5638-5643



Pereira A C et al. PNAS 2007;104:5638-5643

t guarantee repair from the
during physical exercise


Memory / Hippocampal Function
Cortisol / Long-term stress; inflammation; oxidation
BDNF
IGF1
Vascular health, metabolic health, endocrine health
Exercise
Exercise blocks long-term stress like Terry Crews blocks odors

Cell Transplantation, Vol. 20, pp. 99–111, 2011

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DOI: 10.3727/096368910X532846
E-ISSN 1555-3892
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Adult Hippocampal Neurogenesis: A Possible Way How Physical Exercise Counteracts Stress

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†The State Key Laboratory of Brain and Cognitive Sciences, The University of Hong Kong, Pokfulam, Hong Kong SAR, PR China
‡Research Centre of Heart, Brain, Hormone and Healthy Aging, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Pokfulam, Hong Kong SAR, PR China
§Joint laboratory for Brain function and Health (BFAH), Jinan University andThe University of Hong Kong, GuangZhou, PR China

It was considered that neurogenesis only occurred during the embryonic and developmental stage. This view has greatly changed since the discovery of adult neurogenesis in two brain regions: the hippocampus and the olfactory bulb. Recently, it is suggested that altered hippocampal neurogenesis is related to pathophysiology of mood disorders and mechanism of antidepressant treatments. Accumulating knowledge about the effects of physical exercise on brain function suggests a special role of adult hippocampal neurogenesis in cognitive and mental health, even though the functional significance of adult neurogenesis is still debated. The beneficial effects of running correlating with increased adult neurogenesis may provide a hint that newborn neurons may be involved, at least in part, in the counteractive mechanism of physical exercise on stress-related disorders, like depression. The present review provides an overview of recent findings to emphasize the possible involvement of hippocampal neurogenesis in mediating the beneficial effects of physical exercise on counteracting stress.

RESEARCH ARTICLE OPEN ACCESS

Hippocampal Neurogenesis and Dendritic Plasticity Support Running-Improved Spatial Learning and Depression-Like Behaviour in Stressed Rats

Suk-Yu Yau[1,2#], Benson Wui-Man Lau[1,2#], Jian-Bin Tong[1], Richard Wong[1,2], Yick-Pang Ching[1,2], Guang Qiu[1,2], Siu-Wa Tang[1], Tatia M. C. Lee[2,4,5*], Kwok-Fai So[1,2,3,6*]

1 Department of Anatomy, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China, **2** State Key Laboratory of Brain and Cognitive Science, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China, **3** Research Centre of Heart, Brain, Hormone and Health Aging, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China, **4** Laboratory of Neuropsychology, The University of Hong Kong, Hong Kong SAR, China, **5** Laboratory of Cognitive Affective Neuroscience, The University of Hong Kong, Hong Kong SAR, China, **6** Joint Laboratory for Brain Function and Health (BFAH), Jinan University and The University of Hong Kong, Guanzhou, China

Abstract Top

The International Journal of Neuropsychopharmacology

CINP

The International Journal of Neuropsychopharmacology

The International Journal of Neuropsychopharmacology (2005), 8: 357-368

DOI: 10.1017/S1461145705005122 (About DOI)
Published online: 15 March 2005

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The antidepressant effect of running is associated with increased hippocampal cell proliferation

Astrid Bjørnebekk [a1], Aleksander A. Mathé [a2] and Stefan Brené [a1a2c1]

[a1] Department of Neuroscience, Karolinska Institutet, Stockholm, Sweden

[a2] Division of Psychiatry, Neurotec Department, Karolinska University Hospital, Huddinge, Stockholm, Sweden

Abstract

Behav Brain Res. 2011 Mar 1;217(2):354-62. Epub 2010 Nov 9.

Long-term voluntary wheel running is rewarding and produces plasticity in the mesolimbic reward pathway.

Greenwood BN, Foley TE, Le TV, Strong PV, Loughridge AB, Day HE, Fleshner M.

Department of Integrative Physiology, Center for Neuroscience, University of Colorado, Boulder, CO, USA. Ben.Greenwood@Colorado.edu

Abstract

The mesolimbic reward pathway is implicated in stress-related psychiatric disorders and is a potential target of plasticity underlying the stress resistance produced by repeated voluntary exercise. It is unknown, however, whether rats find long-term access to running wheels rewarding, or if repeated voluntary exercise reward produces plastic changes in mesolimbic reward neurocircuitry. In the current studies, young adult, male Fischer 344 rats allowed voluntary access to running wheels for 6 weeks, but not 2 weeks, found wheel running rewarding, as measured by conditioned place preference (CPP). Consistent with prior reports and the behavioral data, 6 weeks of wheel running increased ΔFosB/FosB immunoreactivity in the nucleus accumbens (Acb). In addition, semi quantitative in situ hybridization revealed that 6 weeks of wheel running, compared to sedentary housing, increased tyrosine hydroxylase (TH) mRNA levels in the ventral tegmental area (VTA), increased delta opioid receptor (DOR) mRNA levels in the Acb shell, and reduced levels of dopamine receptor (DR)-D2 mRNA in the Acb core. Results indicate that repeated voluntary exercise is rewarding and alters gene transcription in mesolimbic reward neurocircuitry. The duration-dependent effects of wheel running on CPP suggest that as the weeks of wheel running progress, the rewarding effects of a night of voluntary wheel running might linger longer into the inactive cycle thus providing stronger support for CPP. The observed plasticity could contribute to the mechanisms by which exercise reduces the incidence and severity of substance abuse disorders, changes the rewarding properties of drugs of abuse, and facilitates successful coping with stress.

344 rats – libero accesso alla ruota per correre

- + transcrizione dopamina
- + D2 recettori
- + recettori oppioidi
- - D2 autorecettori

Esercizio fisico, endocannabinoidi e altri neurotrasmettitori

REVIEW

Endocannabinoids and exercise

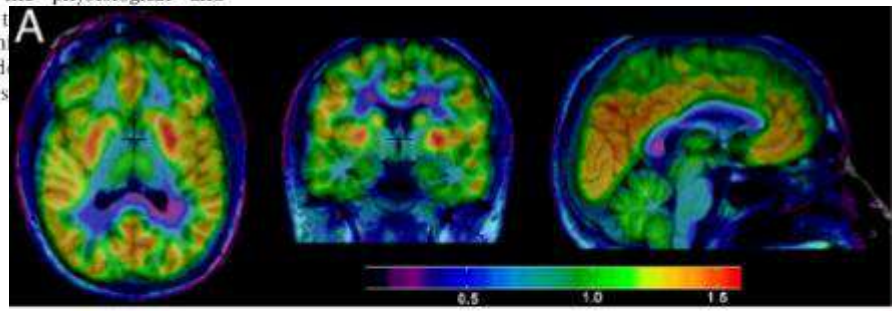
A Dietrich, W F McDaniel

Br J Sports Med 2004;38:536–541. doi: 10.1136/bjsm.2004.011718

Exercise induces changes in mental status, particularly analgesia, sedation, anxiolysis, and a sense of wellbeing. The mechanisms underlying these changes remain unknown. Recent findings show that exercise increases serum concentrations of endocannabinoids, suggesting a possible explanation for a number of these changes. This article provides an overview of this emerging field.

An exercise induced altered state of consciousness has long been appreciated by endurance athletes. The effect has been well documented in the popular literature and subjected to scientific investigation.[1–3] In the late 1960s, the psychological changes associated with prolonged physical activity were often described

However, there are a number of serious problems with the "endorphin hypothesis." Studies examining the exercise-endorphin connection produced equivocal results, and many of the studies were plagued by methodological confounds. For instance, β endorphin has almost the same amino acid sequence as other members of the pro-opiomelanocortin family such as adrenocorticotrophic hormone, making cross reactivity to the detecting antibody a serious confound. Also, adrenocorticotrophic hormone is a stress hormone that is known to increase with exercise, compounding the problem. There are also major inconsistencies between the endorphin hypothesis and the physiological and biochemical responses t
For instance, β endorph
opioid receptor, the end
that mediates the analges



H. Donald Burns et al.,
Positron emission tomography (PET) tracer for in vivo human PET brain imaging of the cannabinoid-1 receptor
PNAS June 5, 2007 vol. 104 no. 23 9800-9805

- + DA & 5-HT
- - glu + GABA
- - amygdala
- + opioids

MEDITAZIONE E MINDFULNESS

Molti tipi di meditazione

- Mindfulness
- Metta – loving kindness
- Meditazione analitica
- Meditazione di compassione
- Meditazione in piedi e camminata
- Meditazione di purificazione

Esistono però alcuni tratti fondamentali comuni….

Allenamento e sviluppo delle funzioni esecutive

Allenamento dell’attenzione e della consapevolezza, osservazioe non giudicante dei processi e dei contenuti mentali

Mindfulness

- Dal termine Pali (il linguaggio indiano dei primi scritti del Buddha) “sati”: consapevolezza, attenzione, memoria.

1) autoregolazione dell’attenzione (mantenuta sull’esperienza immediata);

2)orientamento attitudinale (curiosità, apertura, accettazione);

3)Intenzione: constantemente “ricordata" controllo volontario

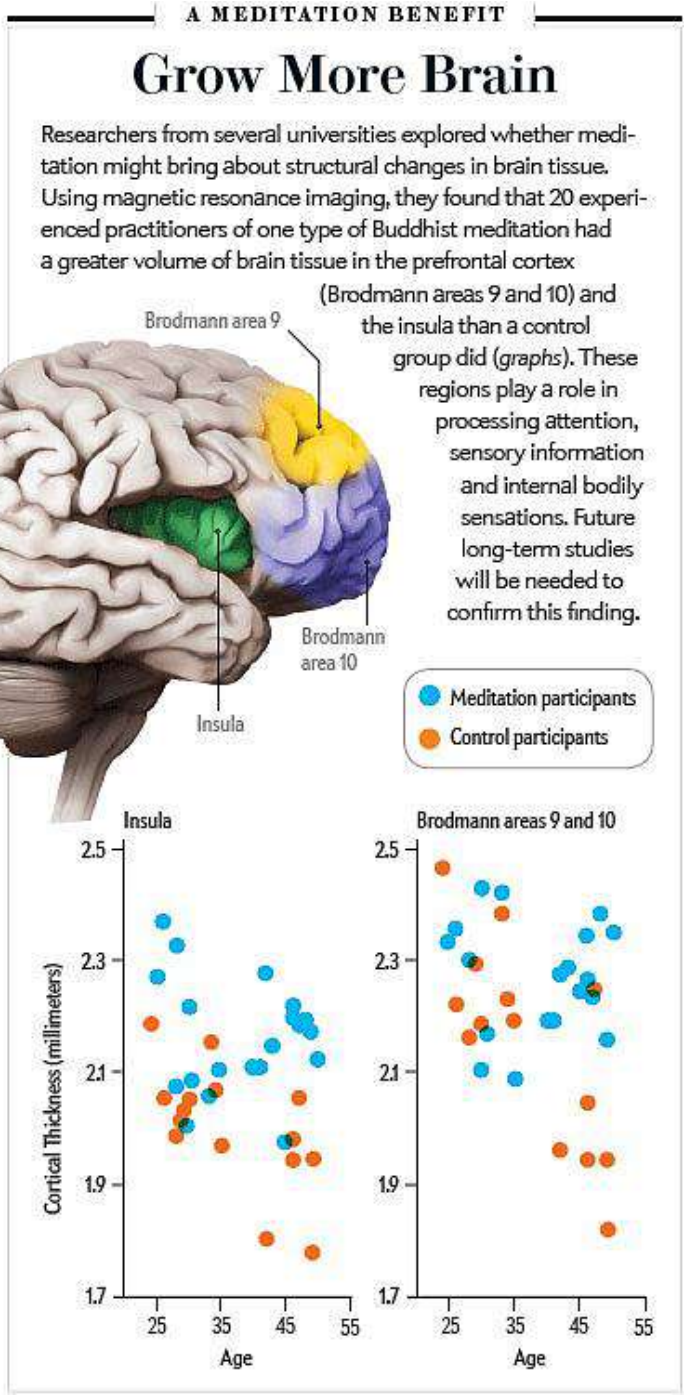
Mindfulness

- Allenamento mentale che tende a sviluppare metacognizione e consapevolezza,
- Metacognizione è l'osservazione dei contenuti mentali da una prospettiva, da una certa distanza.
- Questa è la precondizione per il controllo dei processi mentali, in particolare per le abitudini e le automaticità.
- **Mindfulness è un esercizio che allena la capacità di rispondere a uno stimolo in una maniera riflessiva piuttosto che riflessa.**

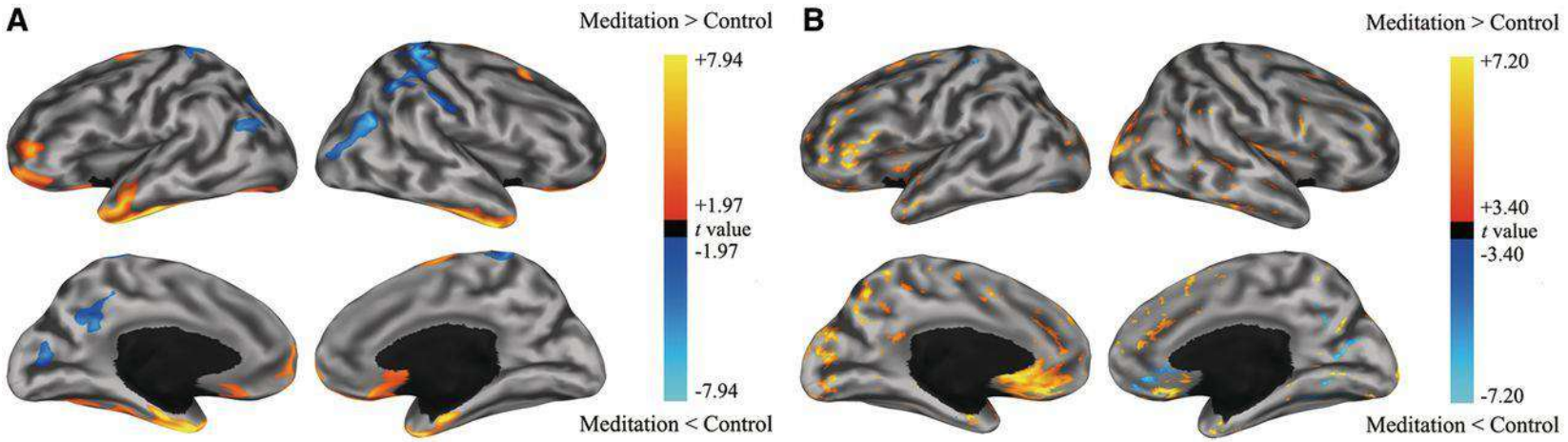
Mindfulness, meditazione e neuroplasticità

Ispessimento della corteccia prefrontale

Quindi potenziamento delle funzioni di controllo volontario del comportamento



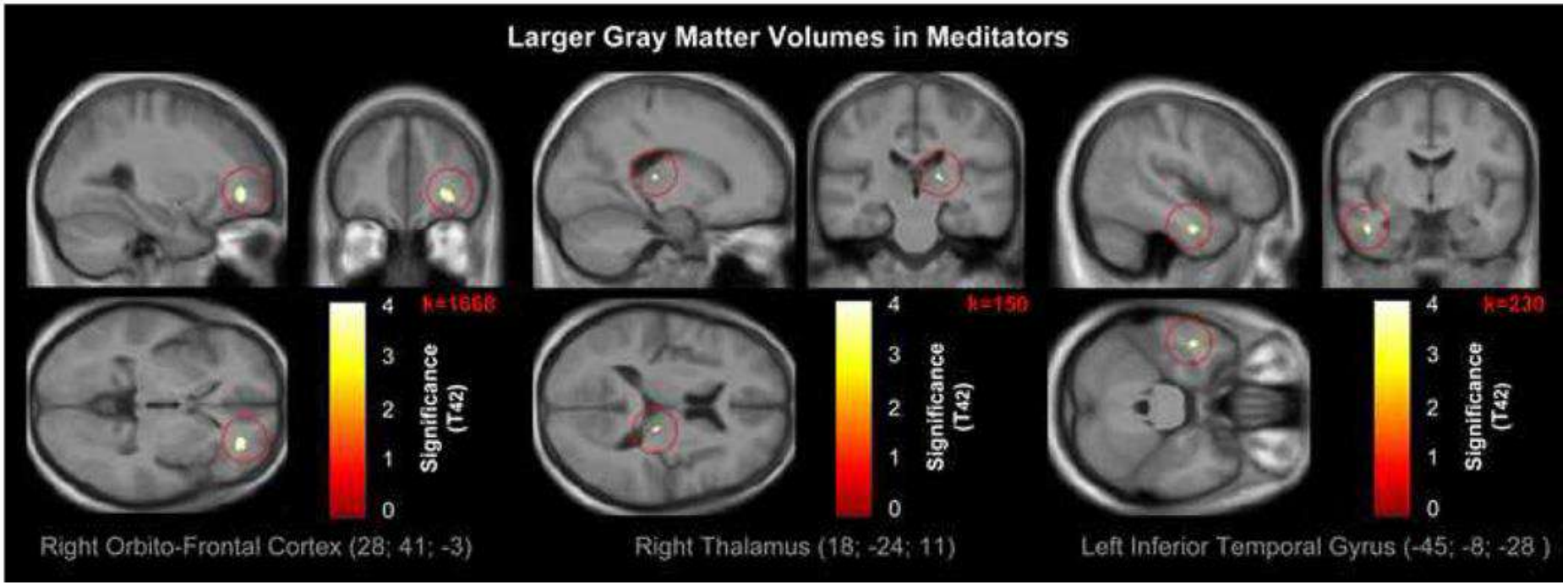
Regional maps showing the statistical differences (A) in cortical thickness and (B) in FA between meditation practitioners and control subjects.



Do-Hyung Kang et al. Soc Cogn Affect Neurosci 2013;8:27-33

Social Cognitive and Affective Neuroscience

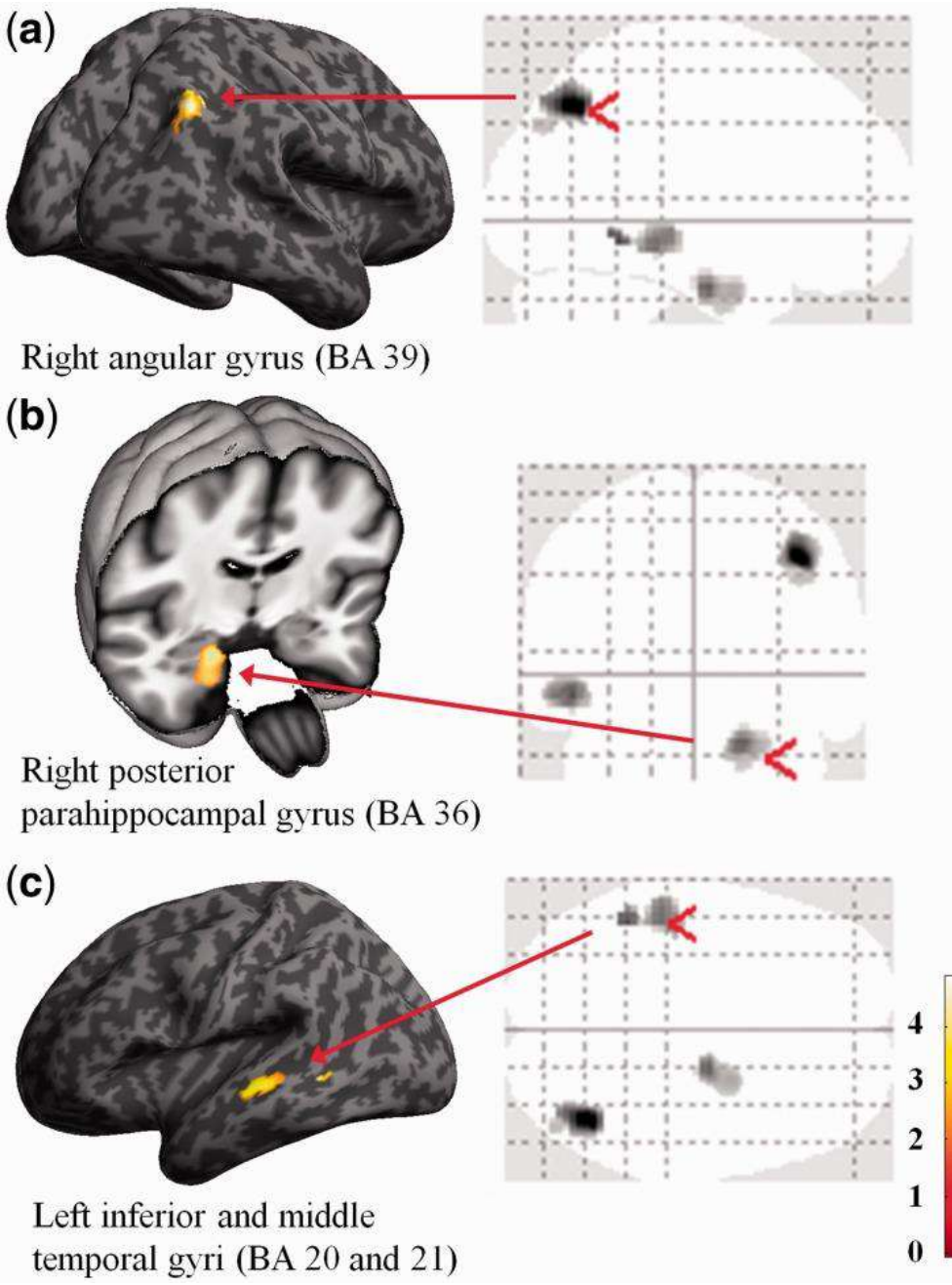
Larger gray matter volume in PFC and hippocampus



Leung MK[1], Chan CC, Yin J, Lee CF, So KF, Lee TM.

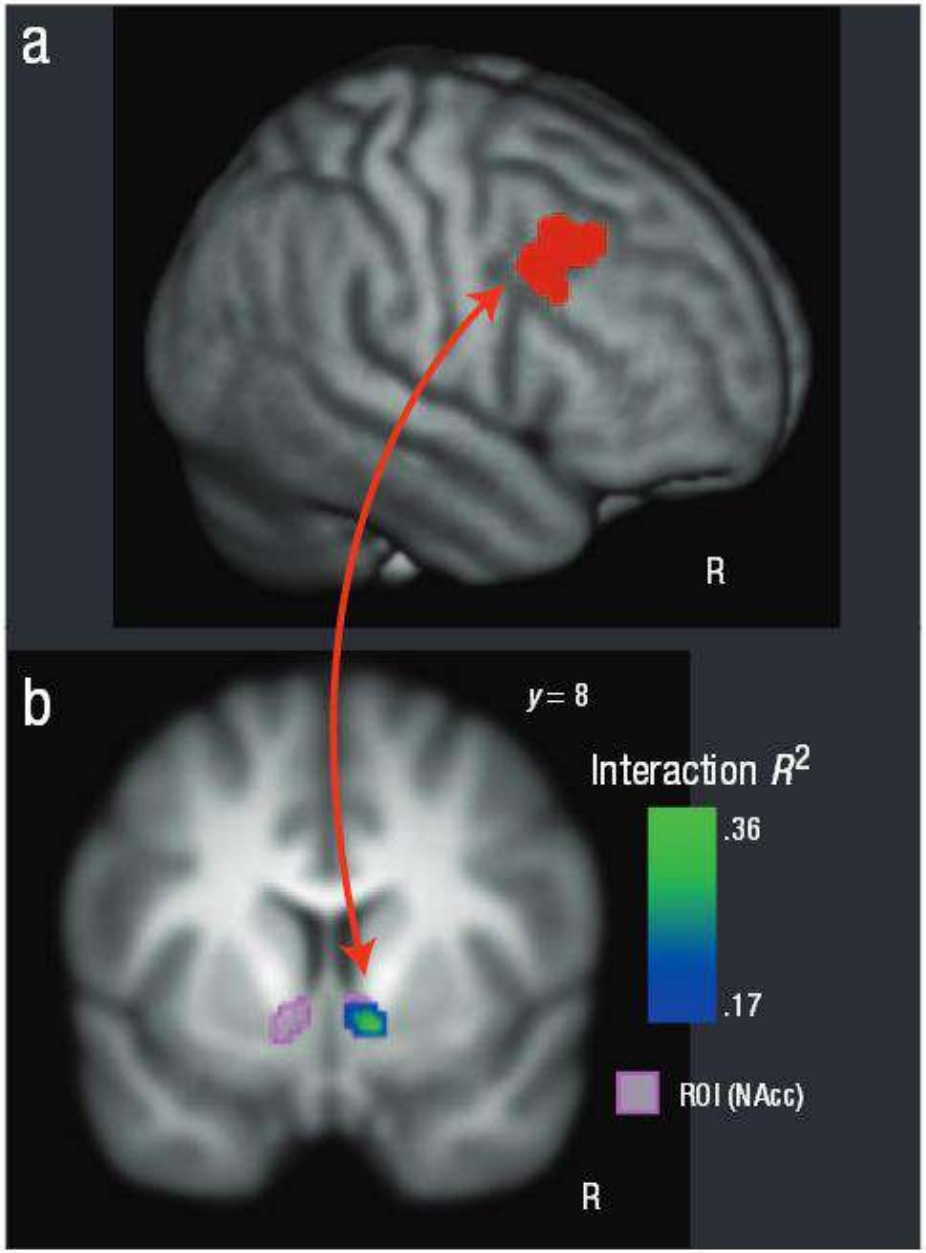
Increased gray matter volume in the right angular and posterior parahippocampal gyri in loving-kindness meditators.

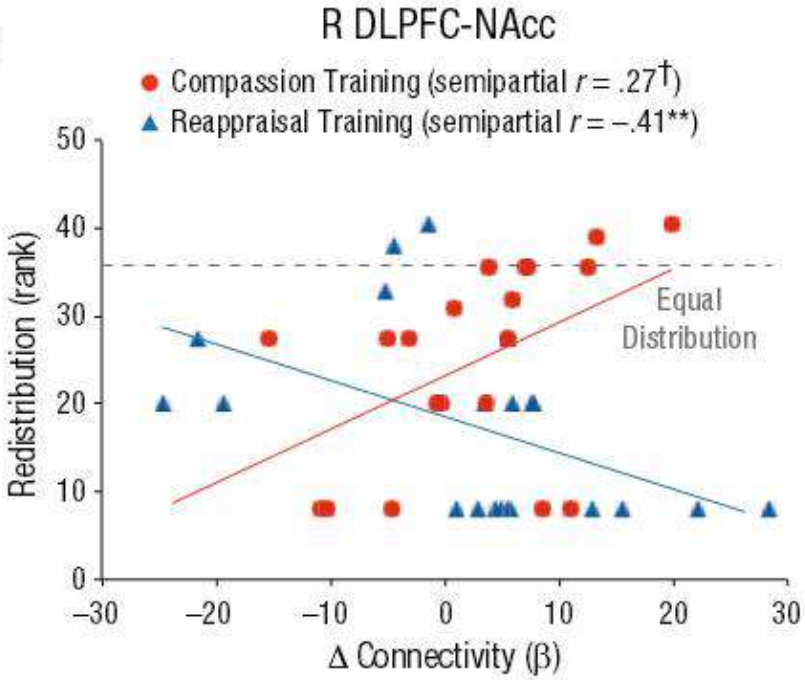
Soc Cogn Affect Neurosci. 2013 Jan;8(1):34-9.



Loving kindness meditation

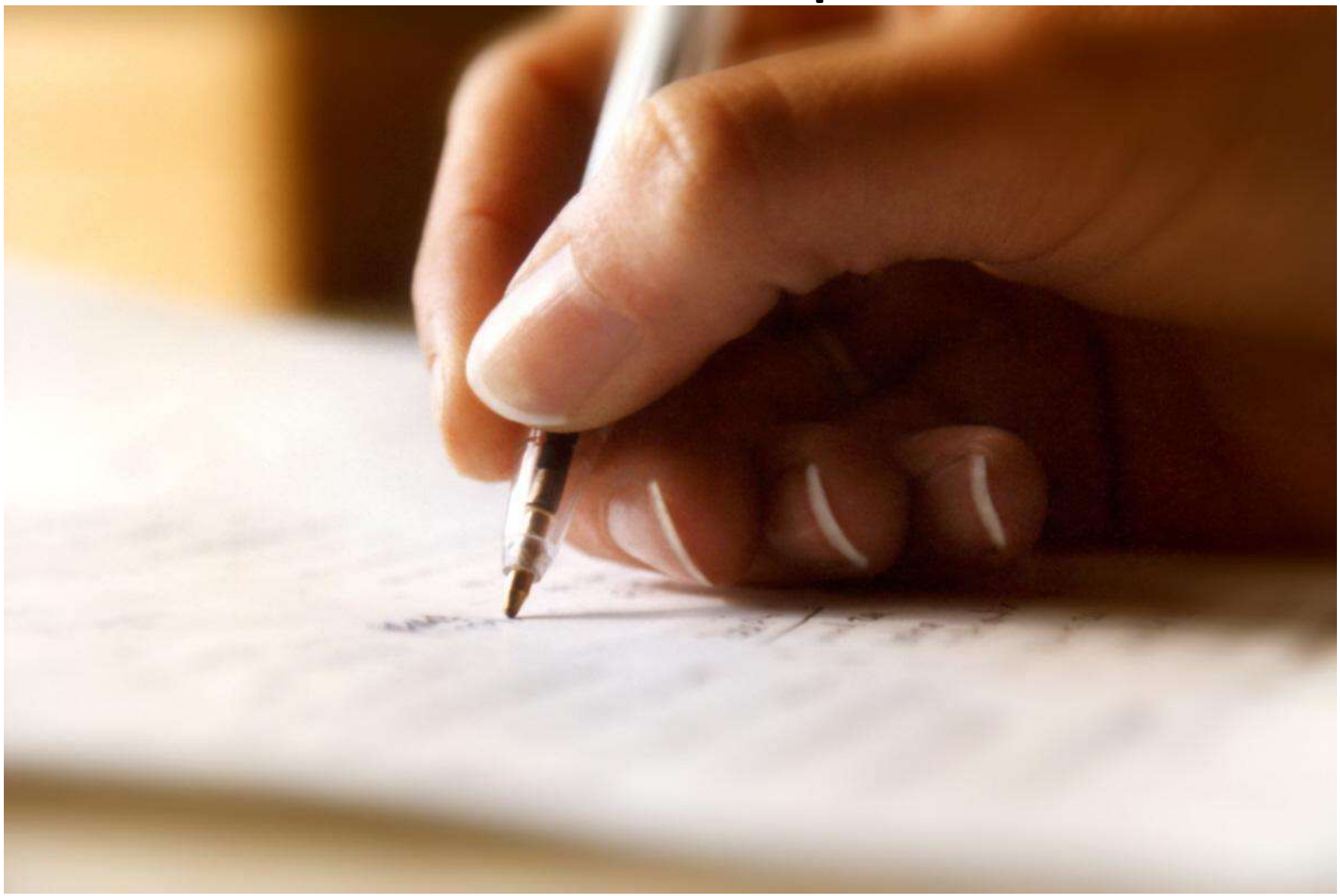
- **practice**





Meditazione di compassione e rafforzamento del sistema cerebrale del piacere

Lettera autocompassione

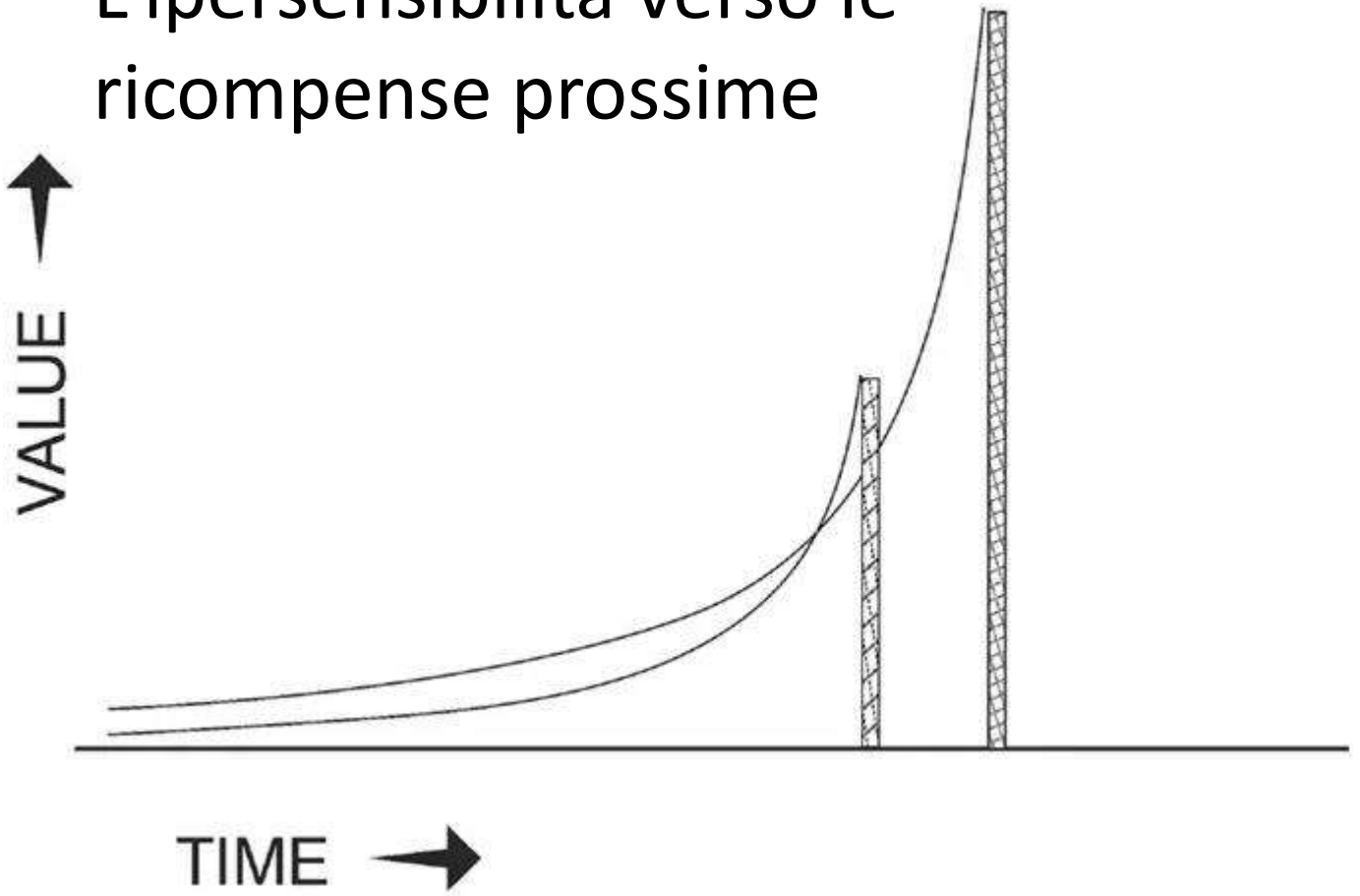


Miopia per il futuro

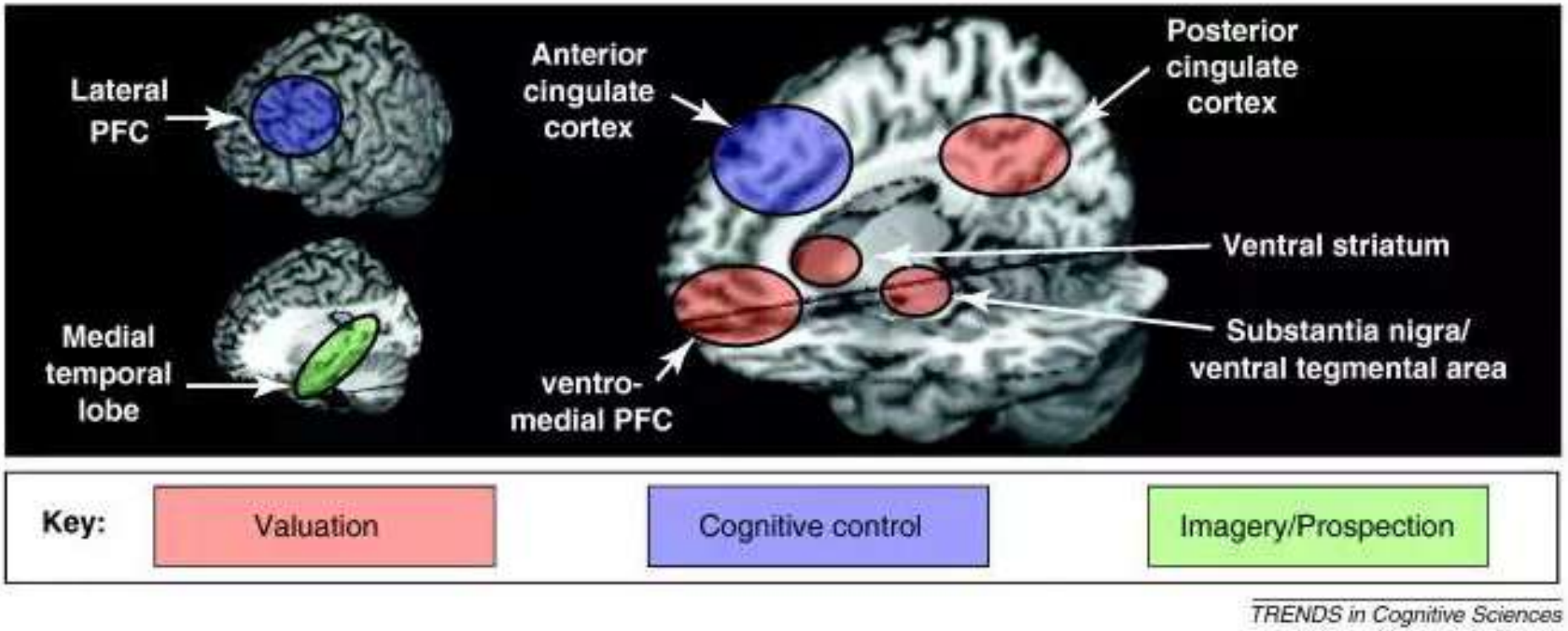
Ipersensibilità verso le ricompense presenti

Le decisioni intertemporali

- Lo sconto iperbolico del futuro
- L'ipersensibilità verso le ricompense prossime



Decidere oggi per il nostro io di domani
le decisioni intertemporali



uno, due, tre o molti?

sé multipli?

i nostri
sé futuri sembrano
altri

siamo uno per
ogni presente?