DISTURBI DELLA COSCIENZA: UN CONCETTO IN EVOLUZIONE

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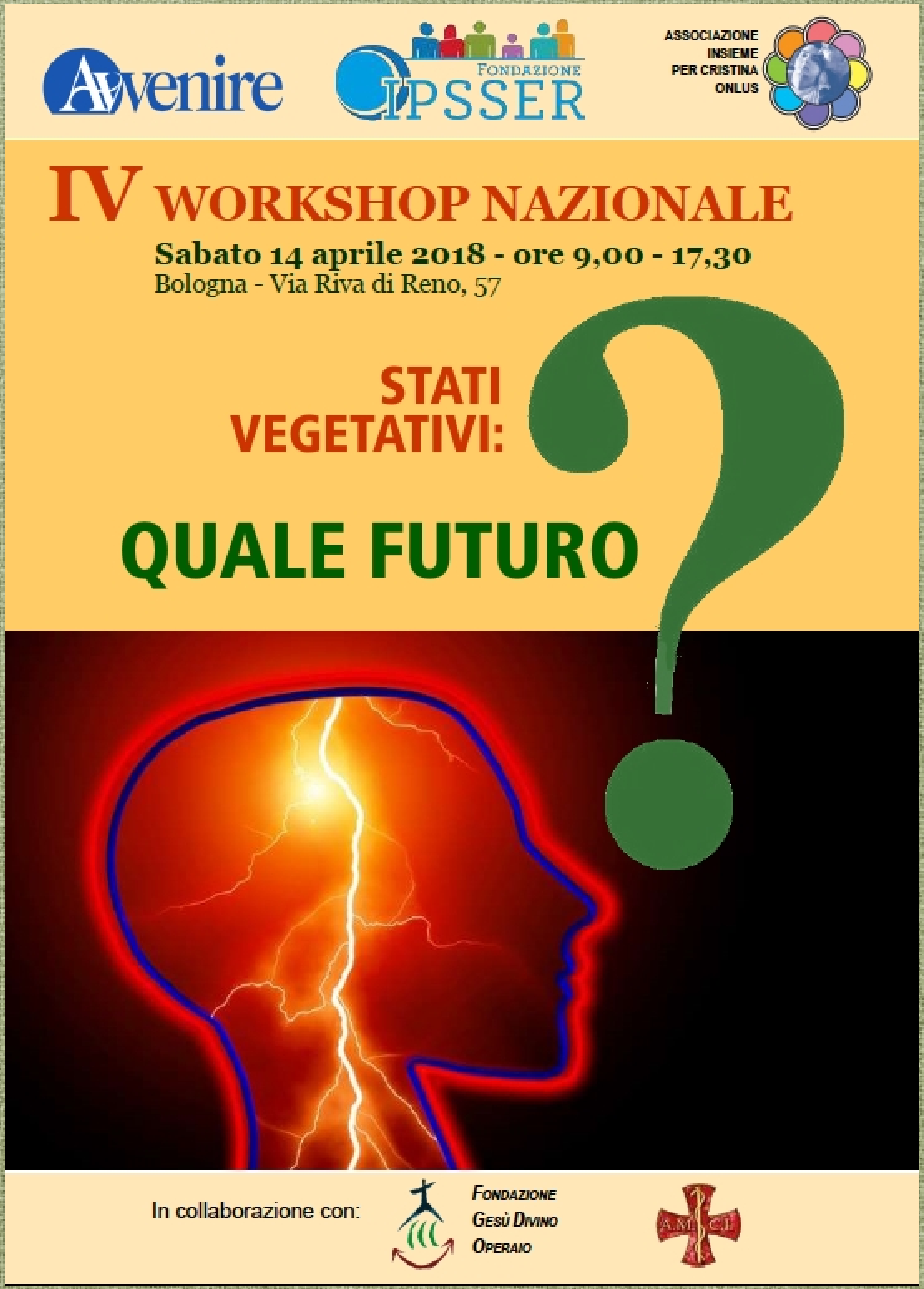
Dipartimento di Riabilitazione

USL UMBRIA 2



Avvenire

Fondazione IPSSER

ASSOCIAZIONE
INSIEME
PER CRISTINA
ONLUS

IV WORKSHOP NAZIONALE

Sabato 14 aprile 2018 - ore 9,00 - 17,30
Bologna - Via Riva di Reno, 57

STATI
VEGETATIVI:

QUALE FUTURO ?

In collaborazione con: Fondazione Gesù Divino Operaio

Biblioteca Scientifica 22

Antonio R. Damasio

L'ERRORE
DI CARTESIO

Emozione, ragione e cervello umano

il Giardino dei Libri.it

ADELPHI

Descrizione fenomenologica della coscienza

A. Damasio & K. Mayer 2009

Consapevolezza

Consapevolezza spesso usata come sinonimo di coscienza, o almeno come parte significativa di essa.

COSCIENZA

Essere consapevoli di sé e di ciò che ci circonda

La coscienza ci permette di essere a conoscenza della nostra stessa esistenza e dell’esistenza di oggetti ed eventi, all’interno e all’esterno del nostro organismo.

Descrizione fenomenologica della coscienza

A. Damasio & K. Mayer 2009

Prospettiva
TERZA PERSONA

Soggetto cosciente è:
- Vigile
- Manifesta emozioni
- Attento
- Comportamento finalizzato

Prospettiva
PRIMA PERSONA

Un individuo è cosciente quando il suo stato mentale rappresenta oggetti ed eventi in relazione a se stesso

L’organismo si sta percependo come agente

Descrizione fenomenologica della coscienza

A. Damasio Self Comes to Mind 2012

Proto Coscienza

La sensazione del proprio corpo

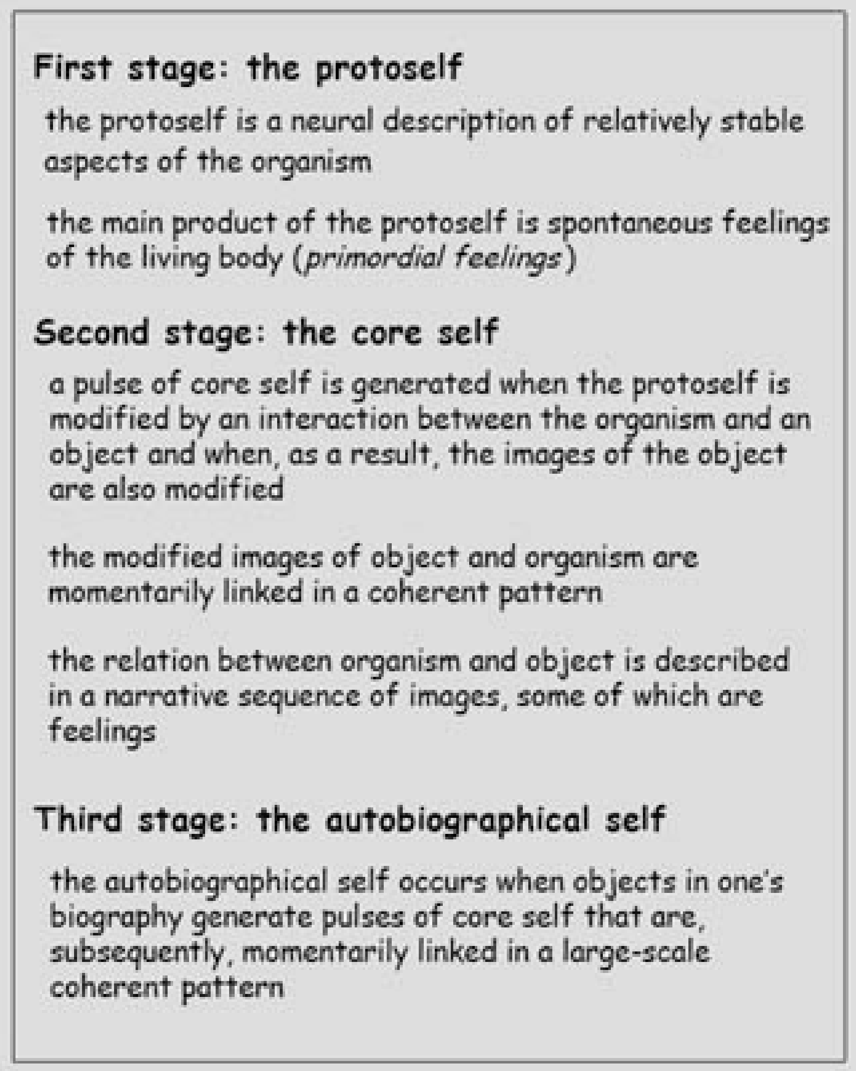
Coscienza Nucleare

forma più semplice della coscienza,
fornisce al soggetto il senso del **self QUI ed ORA**

Coscienza Estesa

forma più complessa che fornisce un senso del sé,
in una prospettiva sia del vissuto del passato
sia dell'anticipazione del futuro

Fenomeno biologico più complesso,
stratificato attraverso livelli di informazione



First stage: the protoself

the protoself is a neural description of relatively stable aspects of the organism

the main product of the protoself is spontaneous feelings of the living body (*primordial feelings*)

Second stage: the core self

a pulse of core self is generated when the protoself is modified by an interaction between the organism and an object and when, as a result, the images of the object are also modified

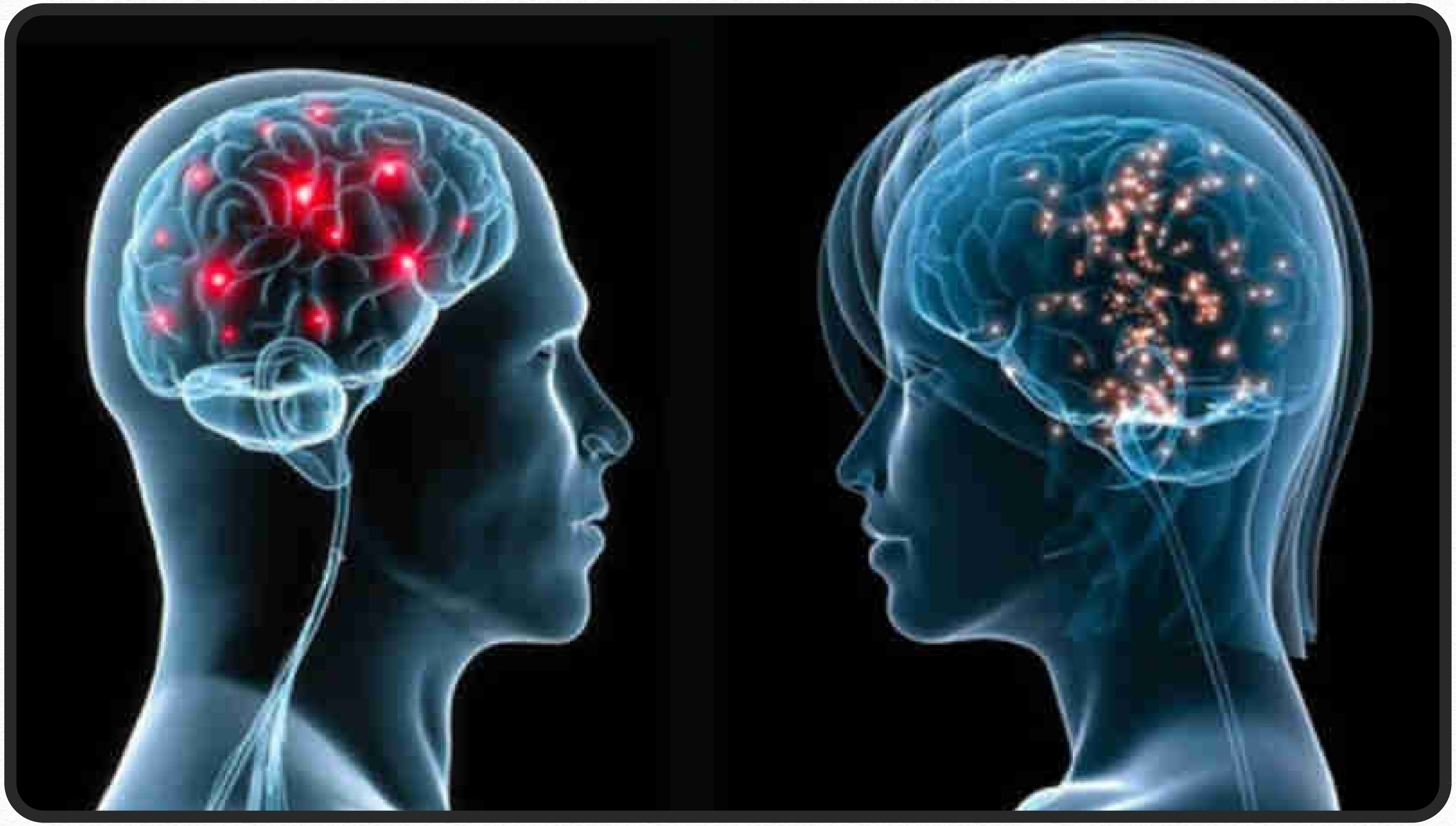
the modified images of object and organism are momentarily linked in a coherent pattern

the relation between organism and object is described in a narrative sequence of images, some of which are feelings

Third stage: the autobiographical self

the autobiographical self occurs when objects in one's biography generate pulses of core self that are, subsequently, momentarily linked in a large-scale coherent pattern

Connessioni sempre attive



Due distinte aree neuronali mediano la consapevolezza dell’ambiente e del sé

Journal of Cognitive Neuroscience X:Y, pp. 1–9, 2010

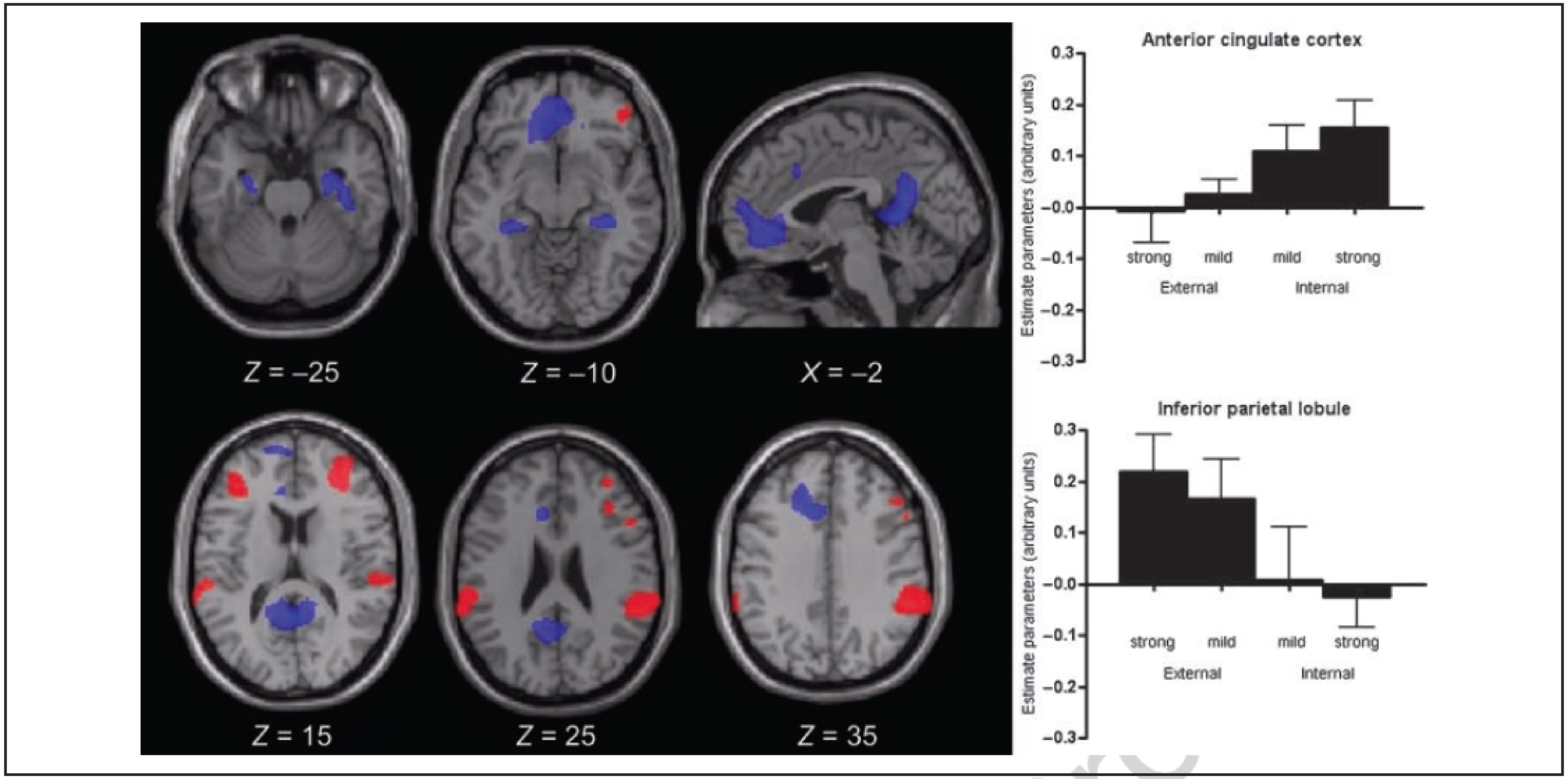
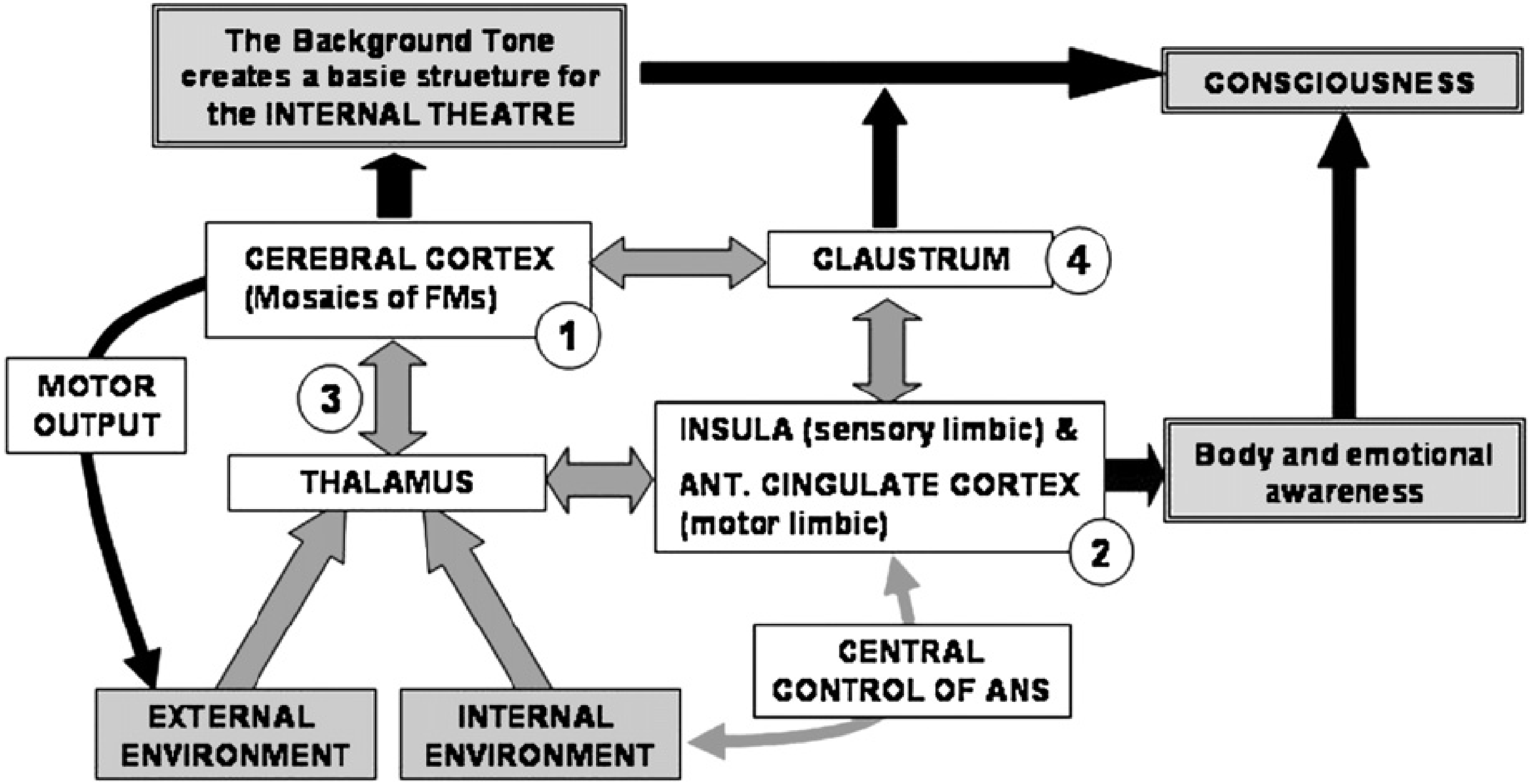
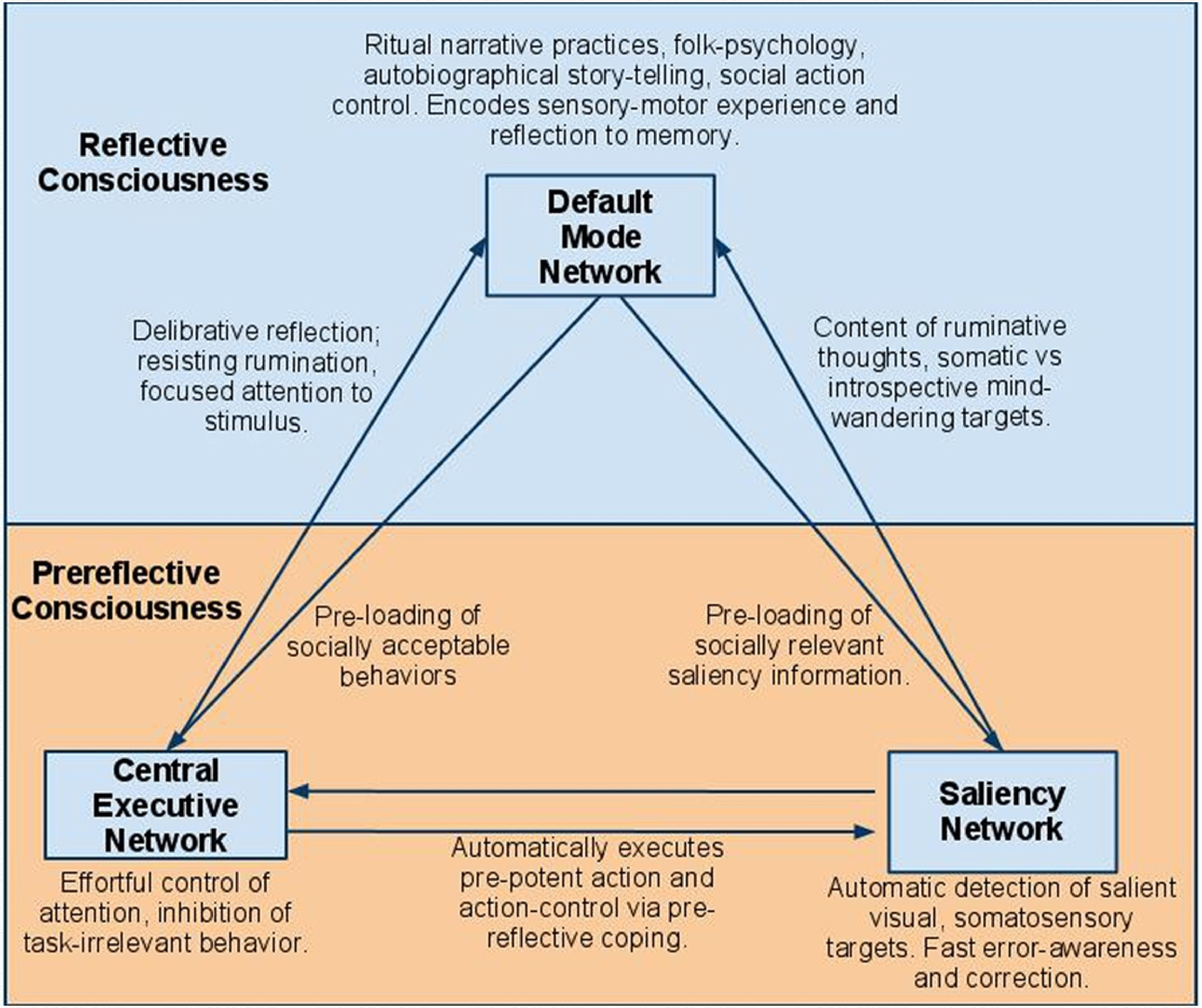

Z = –25
Z = –10
X = –2
Z = 15
Z = 25
Z = 35
Anterior cingulate cortex
Estimate parameters (arbitrary units)
0.3
0.2
0.1
–0.0
–0.1
–0.2
–0.3
strong
mild
mild
strong
External
Internal
Inferior parietal lobule
Estimate parameters (arbitrary units)
0.3
0.2
0.1
–0.0
–0.1
–0.2
–0.3
strong
mild
mild
strong
External
Internal

Figure 2. Brain regions showing a correlation between BOLD signal and the intensity of internal and external awareness scores in 22 healthy volunteers. Stronger internal awareness scores correlate with increased activity in anterior cingulate/mesiofrontal, posterior cingulate/precuneal, and parahippocampal cortices (areas in blue). External awareness scores correlate with increased activity in bilateral inferior parietal lobule and dorsolateral prefrontal cortices (in red).

Una visione integrata del problema della coscienza


The Background Tone creates a basic structure for the INTERNAL THEATRE
CONSCIOUSNESS
CEREBRAL CORTEX (Mosaics of FMs)
1
CLAUSTRUM
4
MOTOR OUTPUT
3
THALAMUS
INSULA (sensory limbic) & ANT. CINGULATE CORTEX (motor limbic)
2
Body and emotional awareness
CENTRAL CONTROL OF ANS
EXTERNAL ENVIRONMENT
INTERNAL ENVIRONMENT



Ritual narrative practices, folk-psychology, autobiographical story-telling, social action control. Encodes sensory-motor experience and reflection to memory.

Reflective Consciousness

Default Mode Network

Delibrative reflection; resisting rumination, focused attention to stimulus.

Content of ruminative thoughts, somatic vs introspective mind-wandering targets.

Prereflective Consciousness

Pre-loading of socially acceptable behaviors

Pre-loading of socially relevant saliency information.

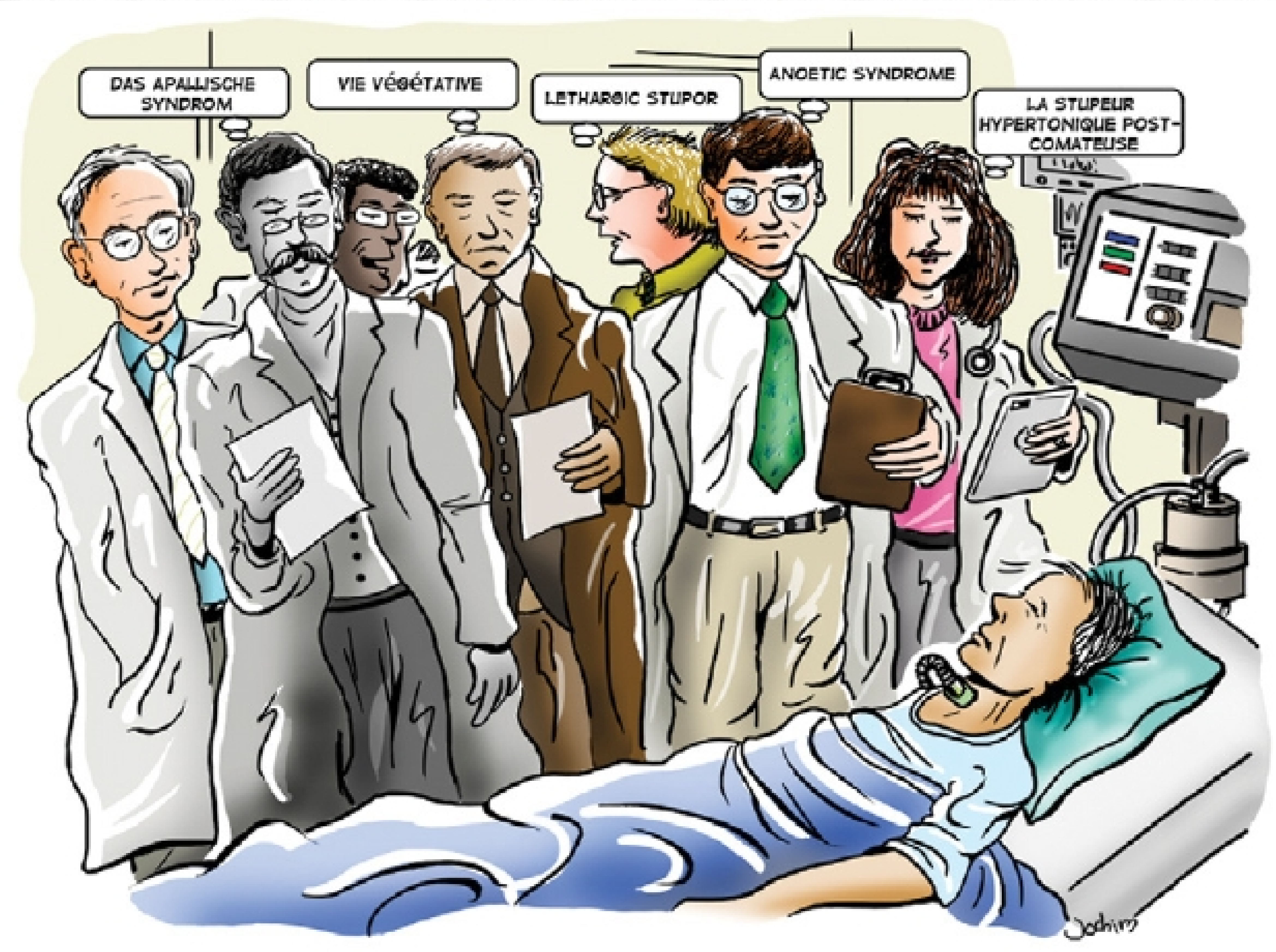
Central Executive Network

Saliency Network

Effortful control of attention, inhibition of task-irrelevant behavior.

Automatically executes pre-potent action and action-control via pre-reflective coping.

Automatic detection of salient visual, somatosensory targets. Fast error-awareness and correction.


DAS APALLISCHE SYNDROM
VIE VÉGÉTATIVE
LETHARGIC STUPOR
ANOETIC SYNDROME
LA STUPEUR HYPERTONIQUE POST-COMATEUSE
Jochims

Lo stato vegetativo come fase del processo di recupero

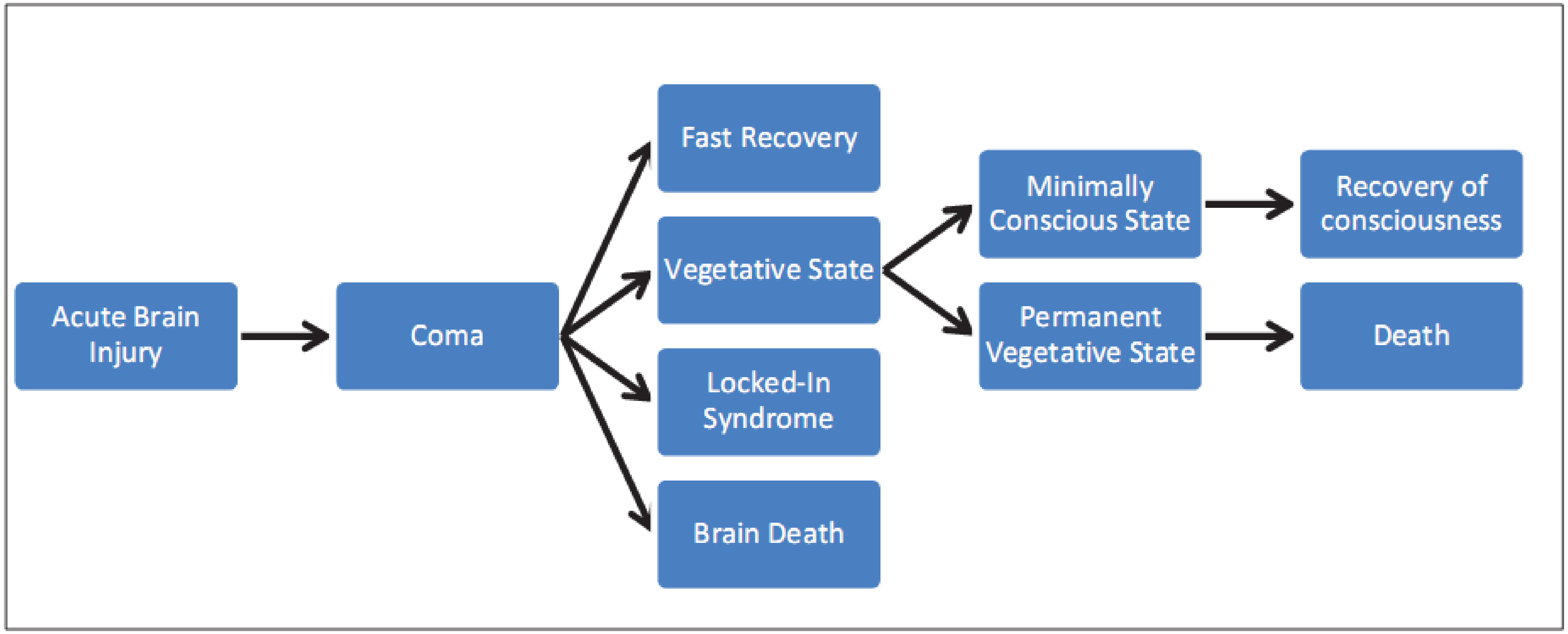
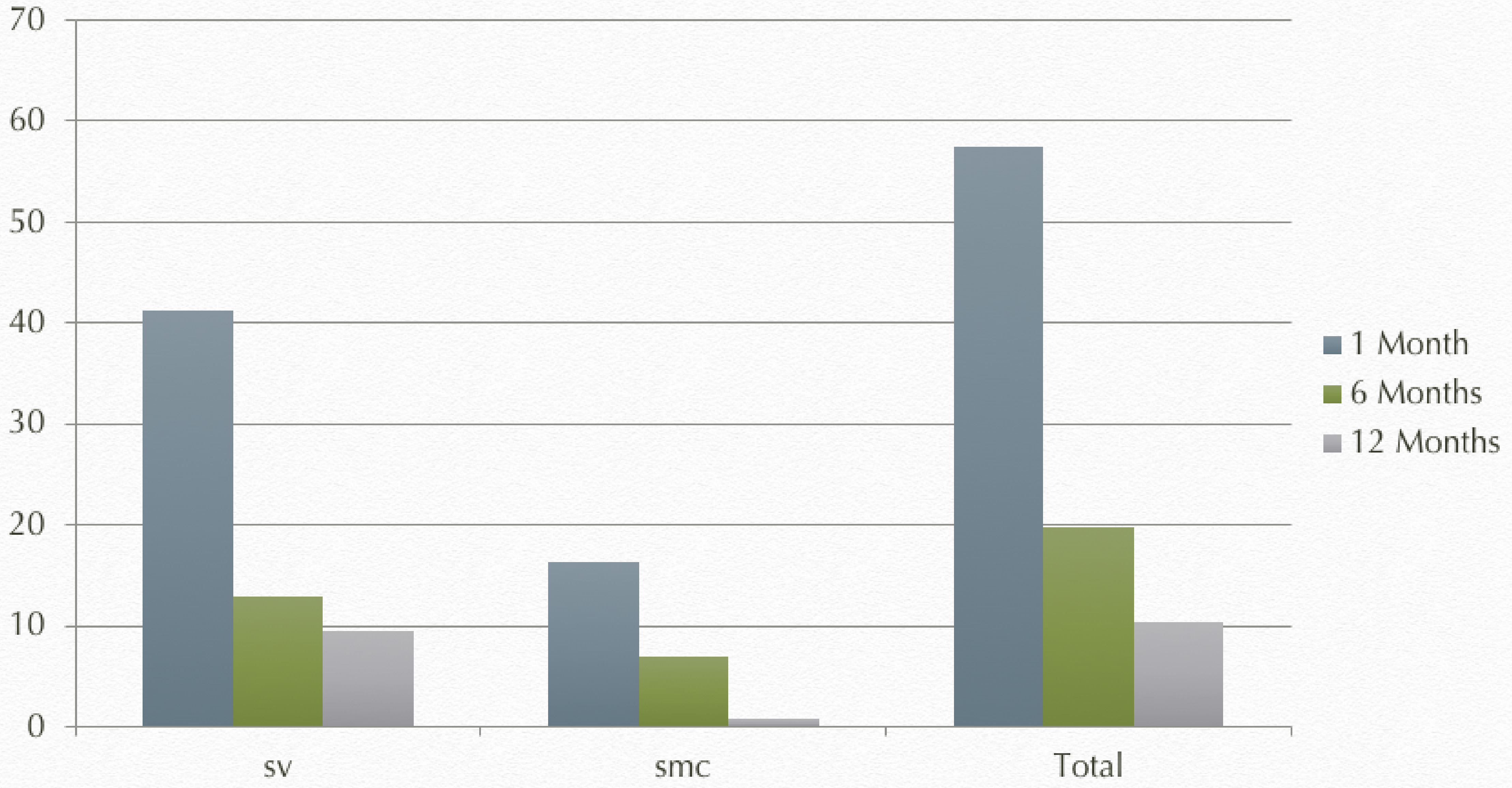

Acute Brain Injury
Coma
Fast Recovery
Vegetative State
Locked-In Syndrome
Brain Death
Minimally Conscious State
Permanent Vegetative State
Recovery of consciousness
Death

Fig. 1. Pathways of consciousness. (Modified from Laureys S. Eyes open, brain shut. Sci Am *2007; 296(5): 68 - 69.*[9]*)*

Tempo

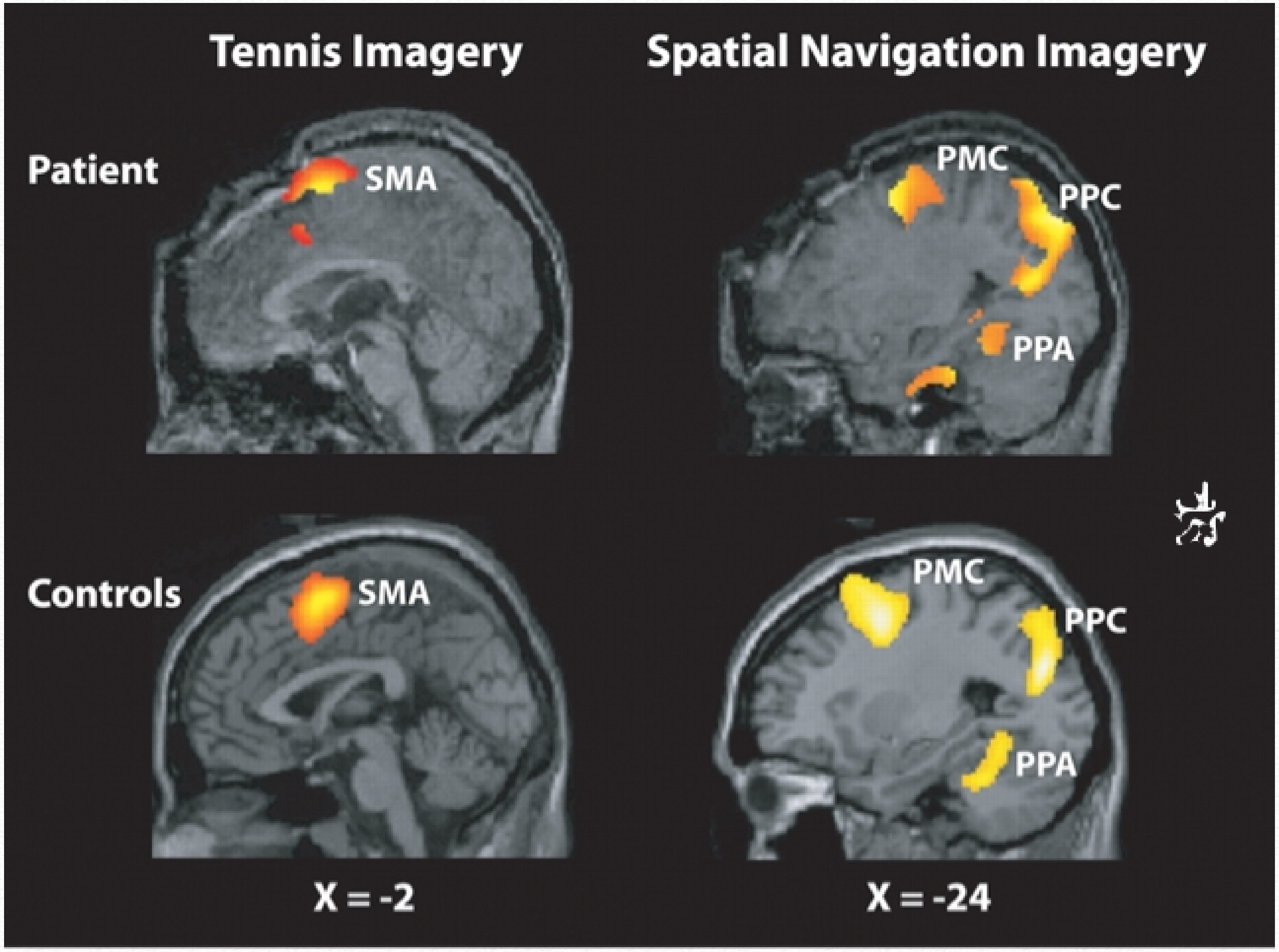
Trend di recupero dello stato vegetativo e stato minimamente cosciente

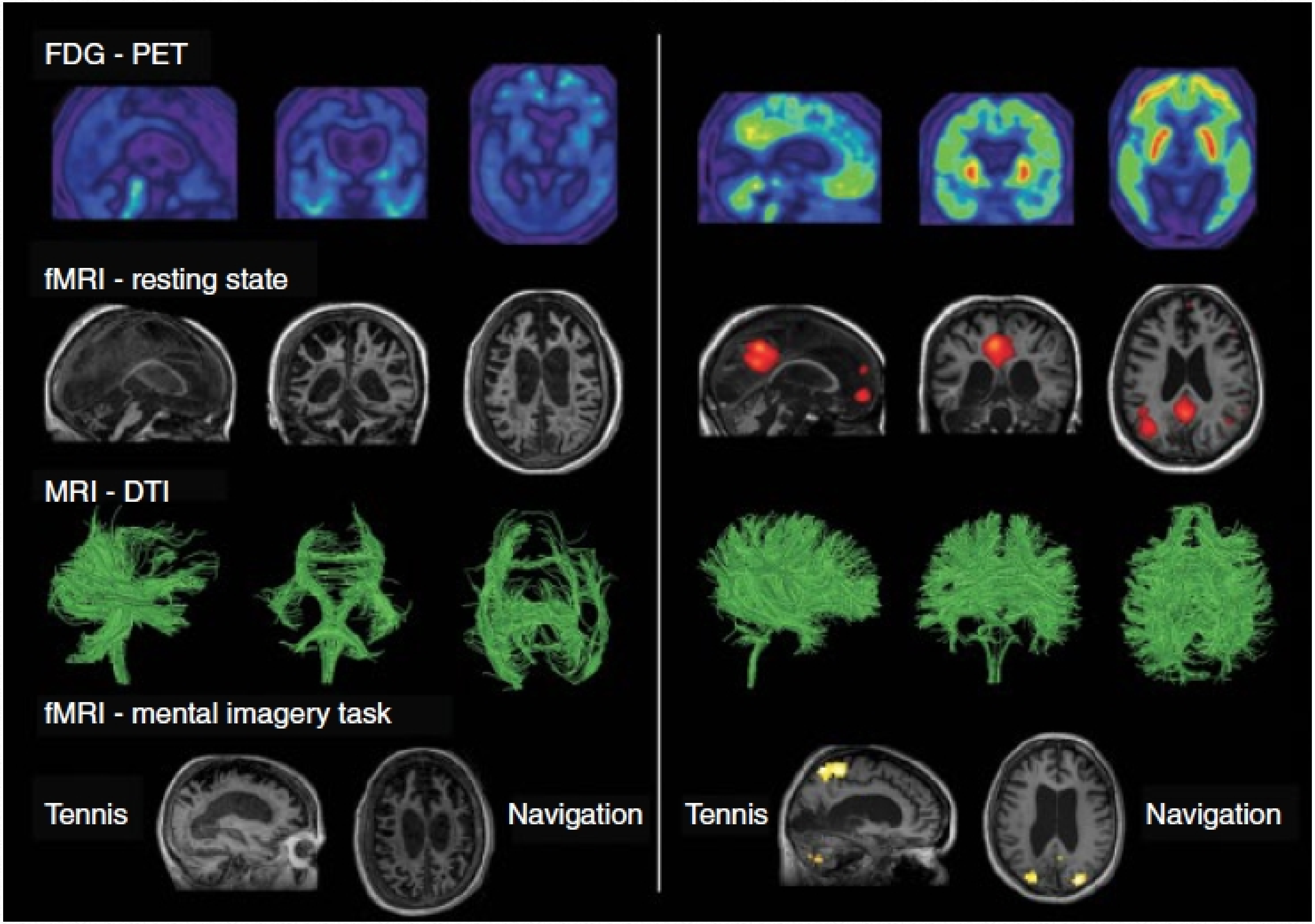


Studio Sabiur , Zampolini M., Cantisani T., Celani Mg et al. in corso di pubblicazione

We observed supplementary motor area (SMA) activity during tennis imagery in the patient and a group of 12 healthy volunteers (controls)

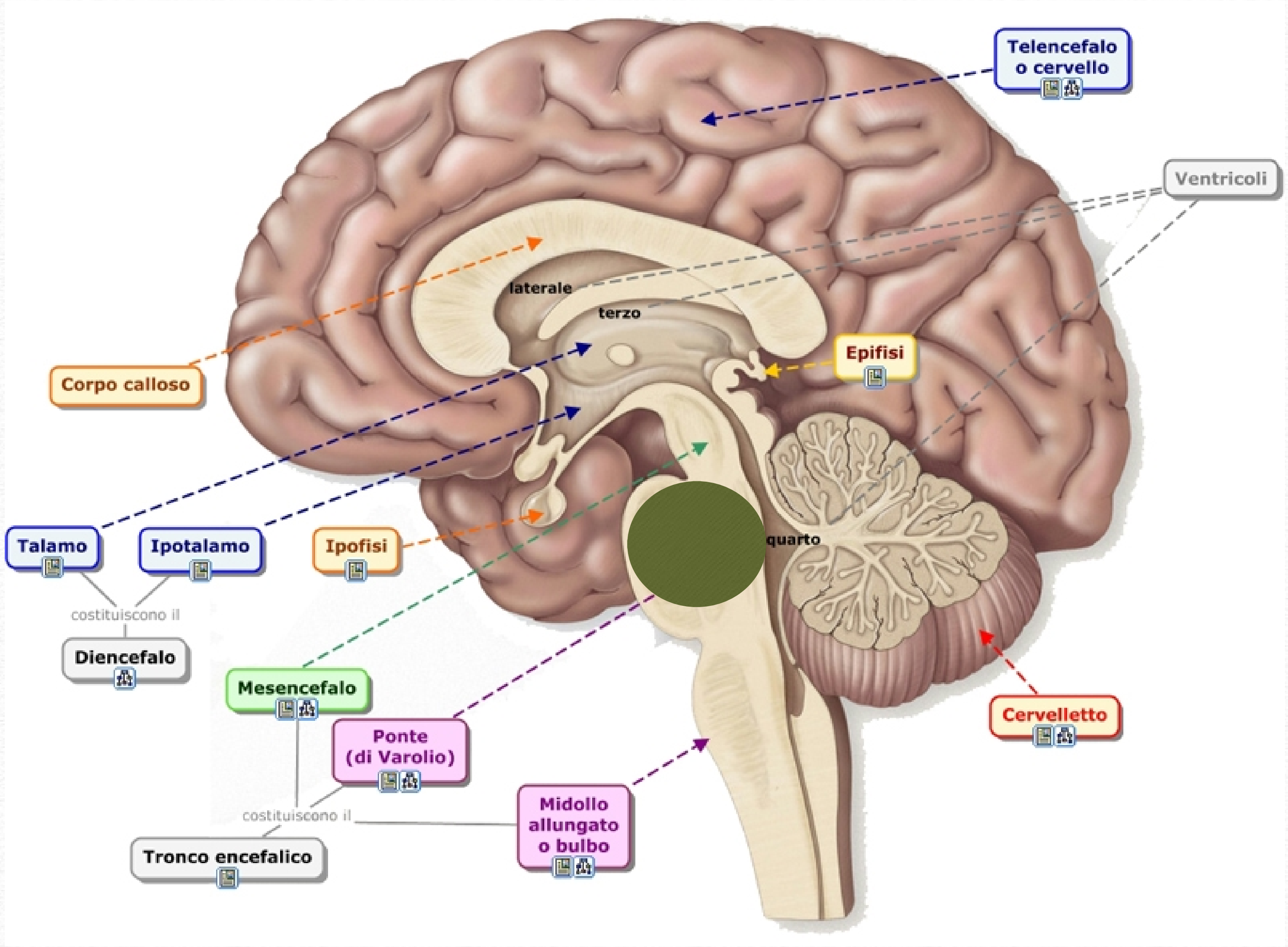
A. M. Owen et al., Science 313, 1402 (2006)


Tennis Imagery
Spatial Navigation Imagery
Patient
SMA
PMC
PPC
PPA
Controls
SMA
PMC
PPC
PPA
X = -2
X = -24

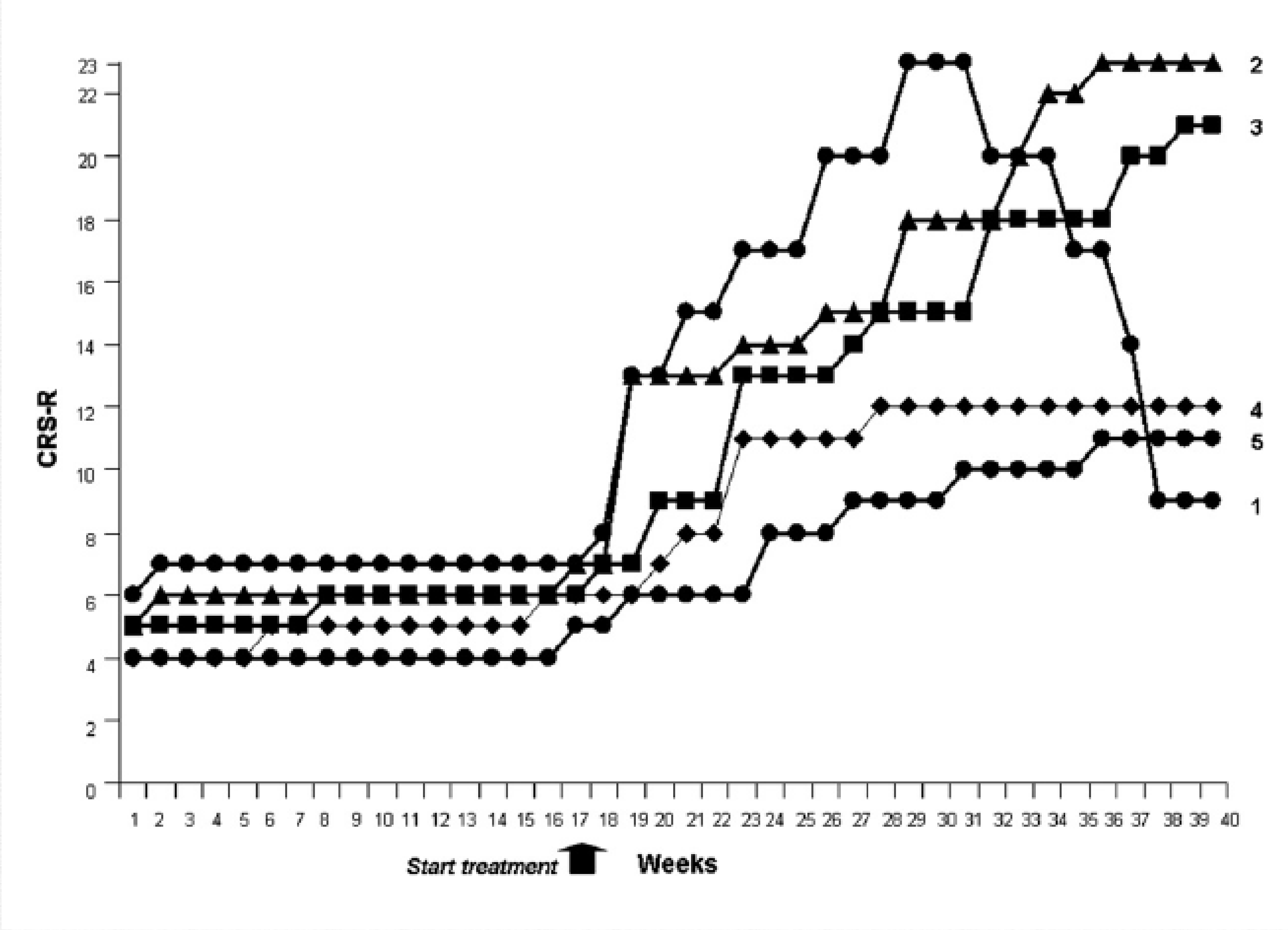

FDG - PET
fMRI - resting state
MRI - DTI
fMRI - mental imagery task
Tennis
Navigation
Tennis
Navigation

The Blackwell Companion to Consciousness, Second Edition. Edited by Susan Schneider and Max Velmans. © 2017

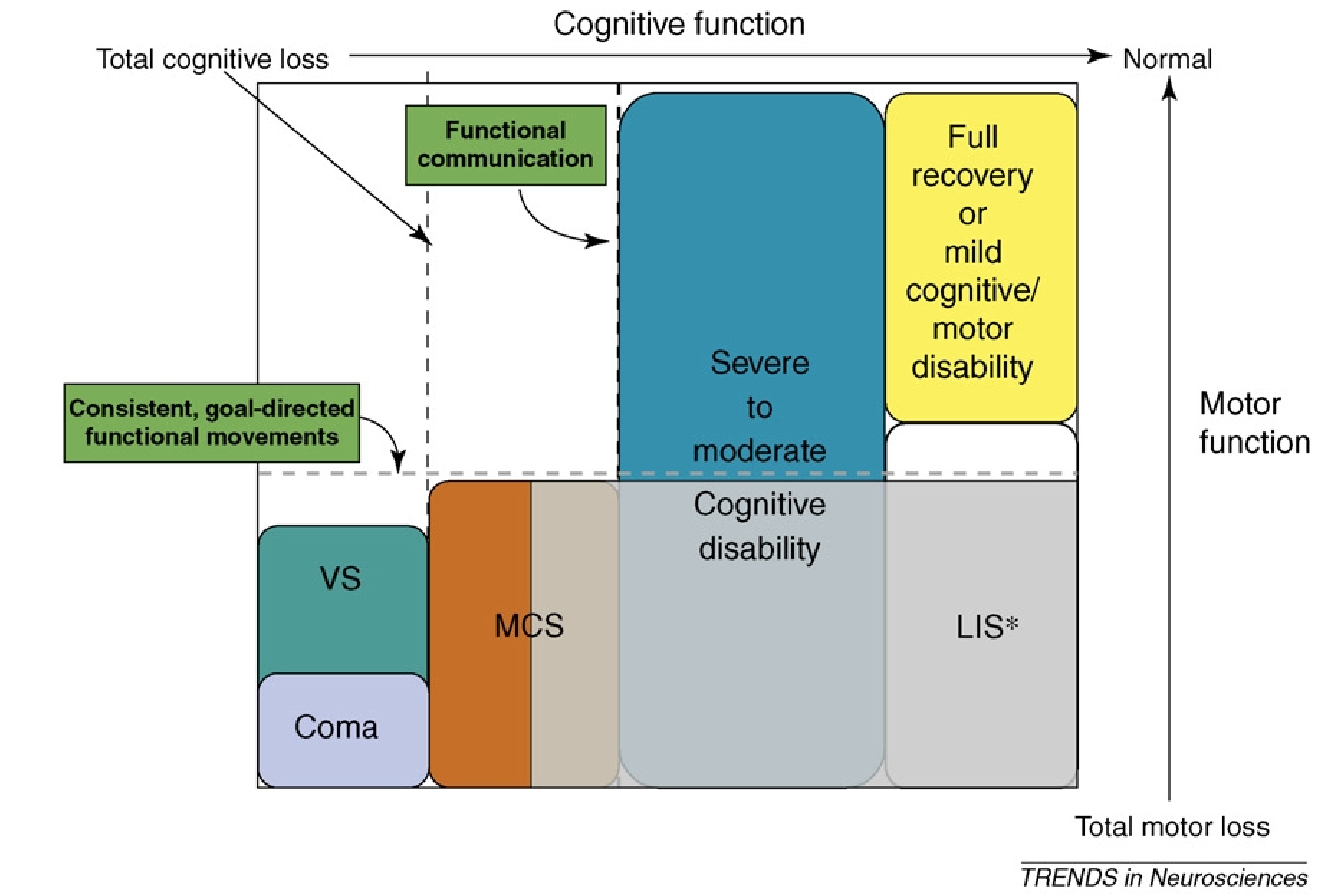
La sindrome del "Chiuso dentro"


Telencefalo o cervello
Ventricoli
laterale
terzo
Epifisi
Corpo calloso
quarto
Talamo
Ipotalamo
Ipofisi
costituiscono il
Diencefalo
Mesencefalo
Ponte (di Varolio)
Cervelletto
costituiscono il
Tronco encefalico
Midollo allungato o bulbo

Baclofen e Ripresa contatto con ambiente ("Risveglio")



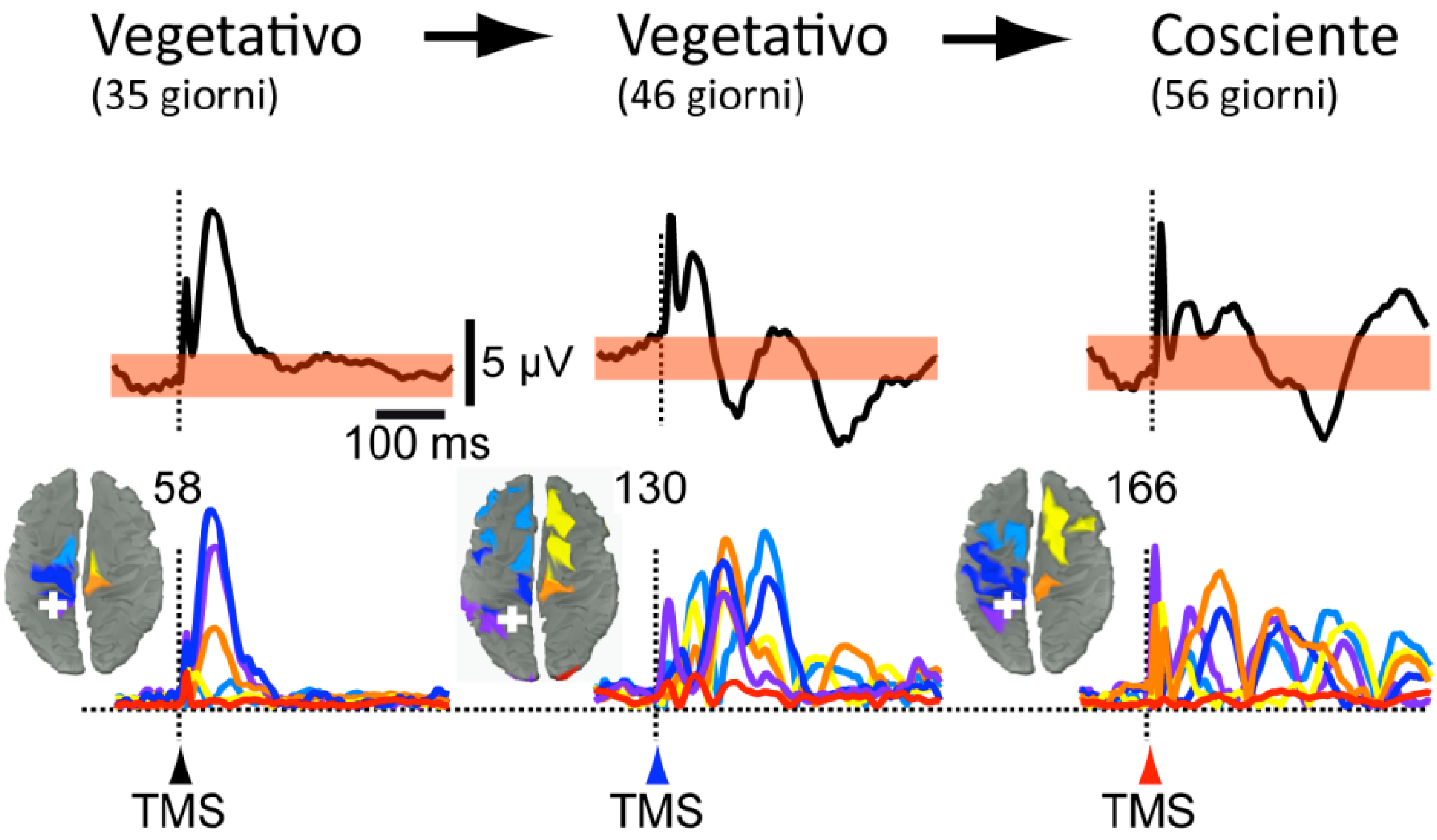
Sarà M, Pistoia F, Mura E,
Onorati P, Govoni S
Arch Phys Med Rehabil 2009


Cognitive function
Total cognitive loss
Normal
Functional communication
Full recovery or mild cognitive/ motor disability
Severe to moderate Cognitive disability
Consistent, goal-directed functional movements
Motor function
VS
Coma
MCS
LIS*
Total motor loss

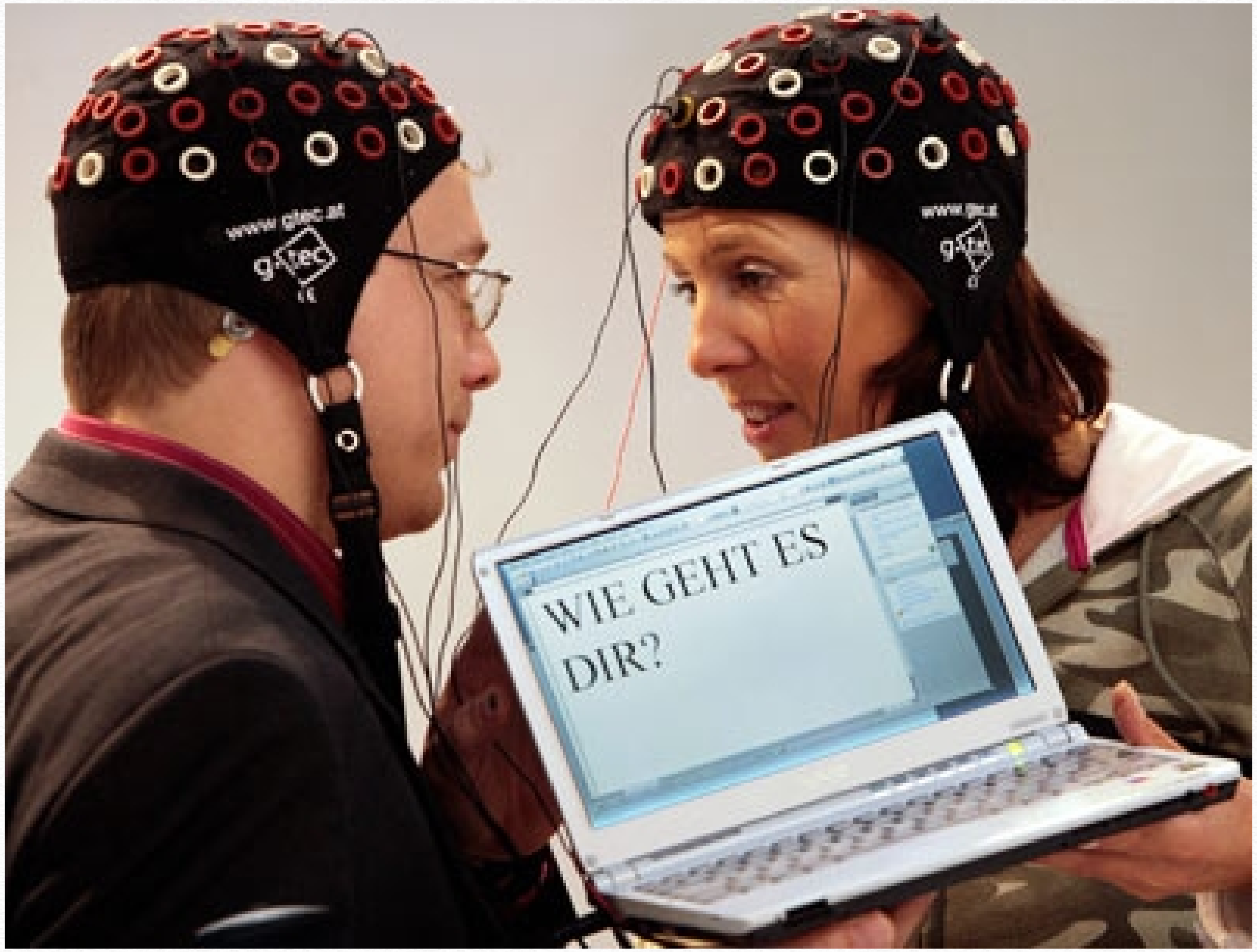
TRENDS in Neurosciences

Nicholas D. Schiff

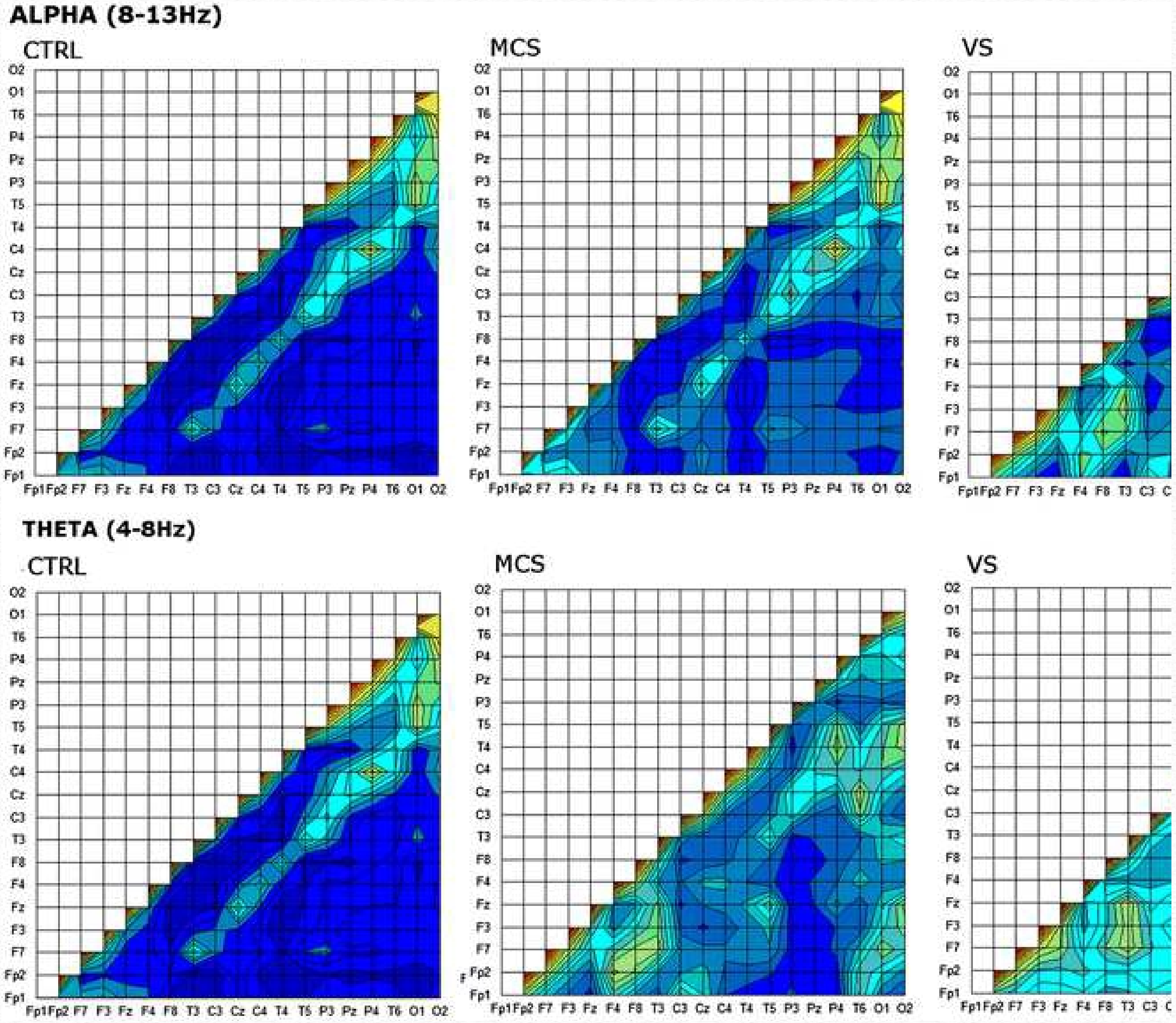
Sentire la materia della coscienza



Catturare il pensiero

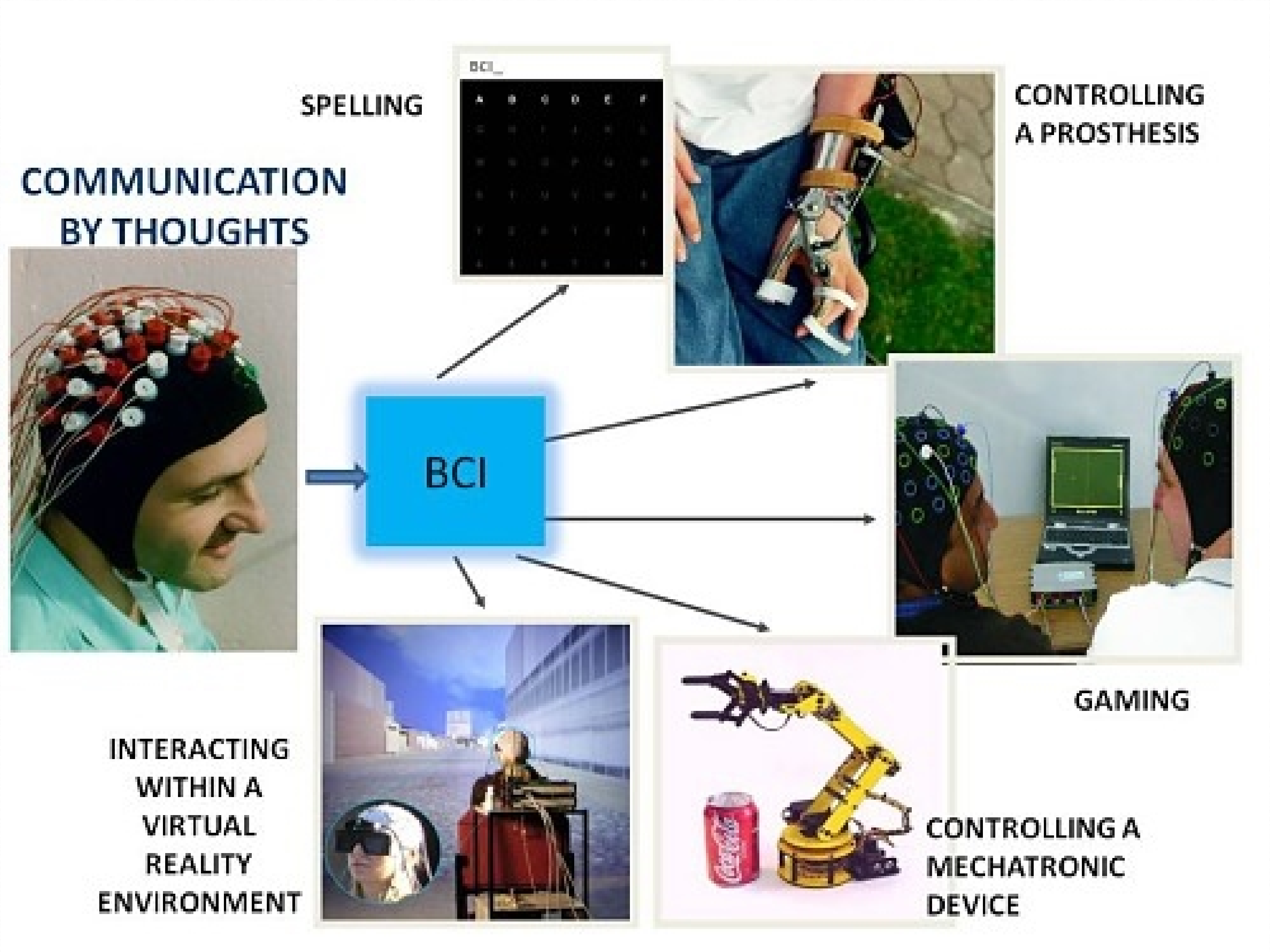

www.gtec.at
g.tec
WIE GEHT ES DIR?

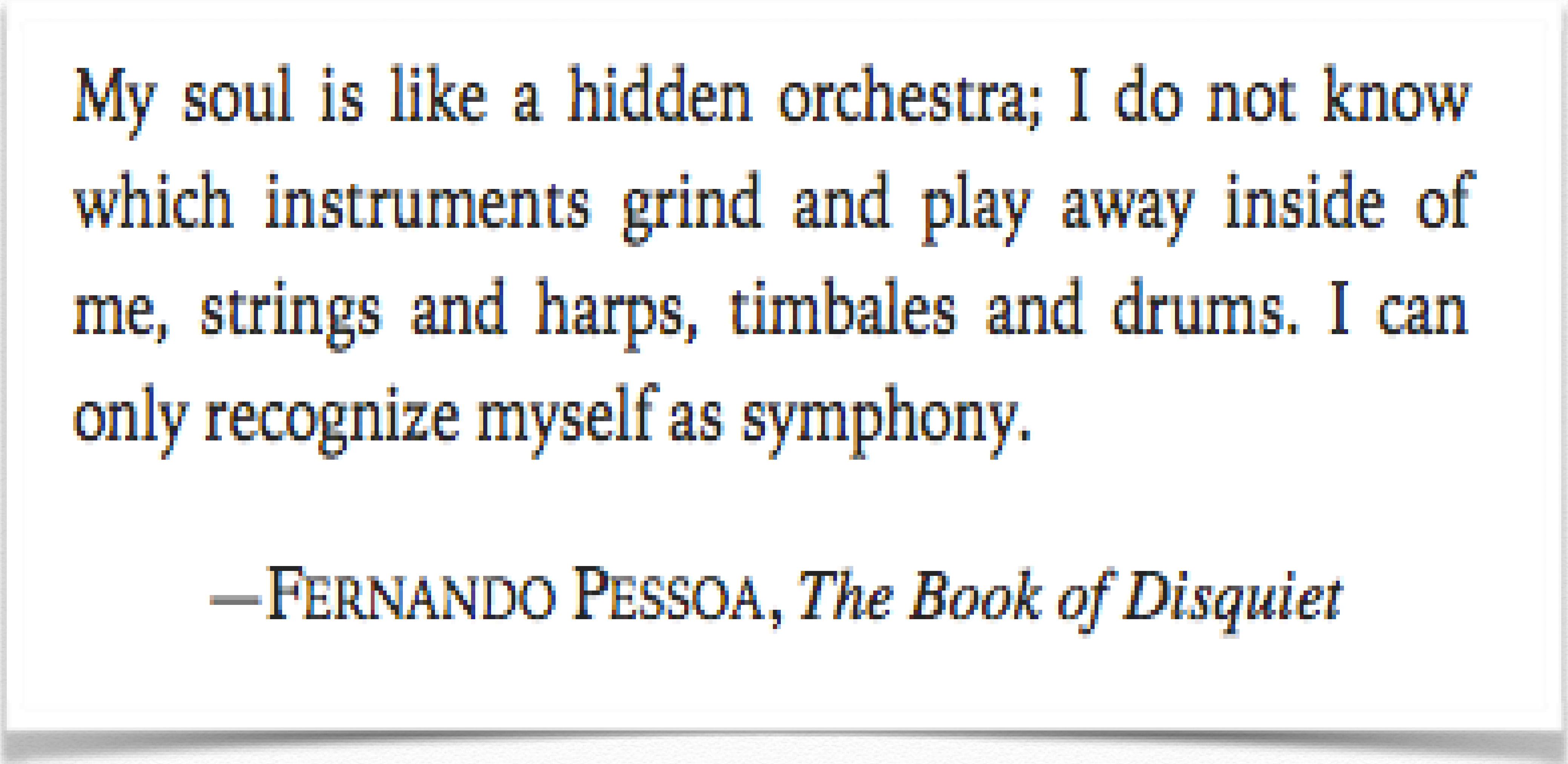
Coerenza elettrica e coscienza



Cavinato M. …… Piperno R.

Comunicare con il pensiero


SPELLING
BCI_
CONTROLLING A PROSTHESIS
COMMUNICATION BY THOUGHTS
BCI
GAMING
INTERACTING WITHIN A VIRTUAL REALITY ENVIRONMENT
CONTROLLING A MECHATRONIC DEVICE



My soul is like a hidden orchestra; I do not know which instruments grind and play away inside of me, strings and harps, timbales and drums. I can only recognize myself as symphony.

—Fernando Pessoa, *The Book of Disquiet*