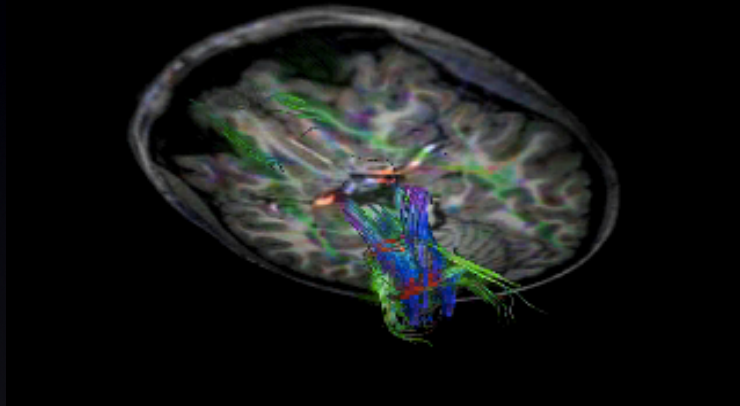
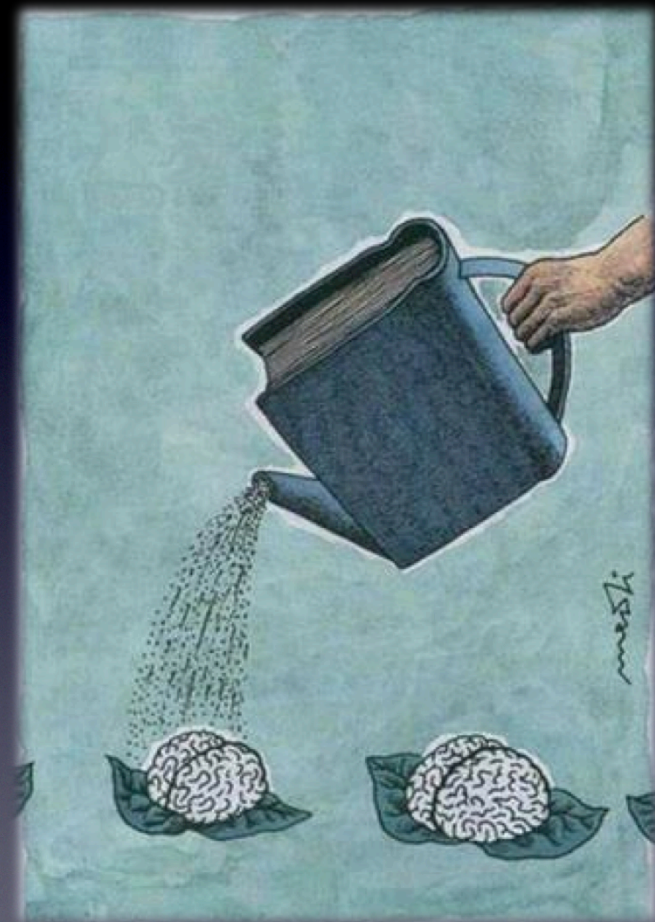
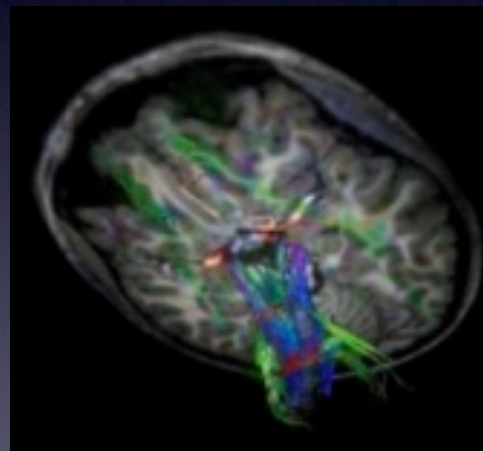
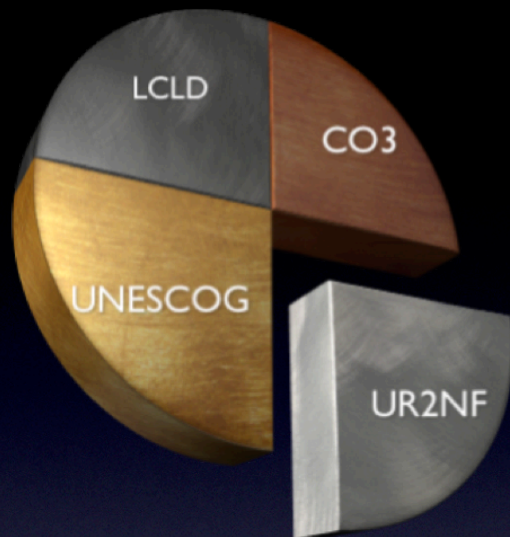


UR2NF



Neuropsychology and Functional Neuroimaging
<http://dev.ulb.ac.be/ur2nf/>





@ CRCN - CENTRE DE RECHERCHE COGNITION ET NEUROSCIENCES

@ UNI – ULB NEUROSCIENCES INSTITUTE

Neuropsychologie et Imagerie Fonctionnelle

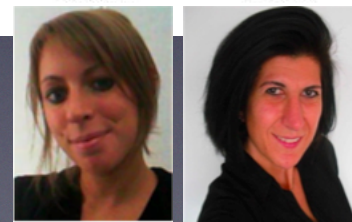
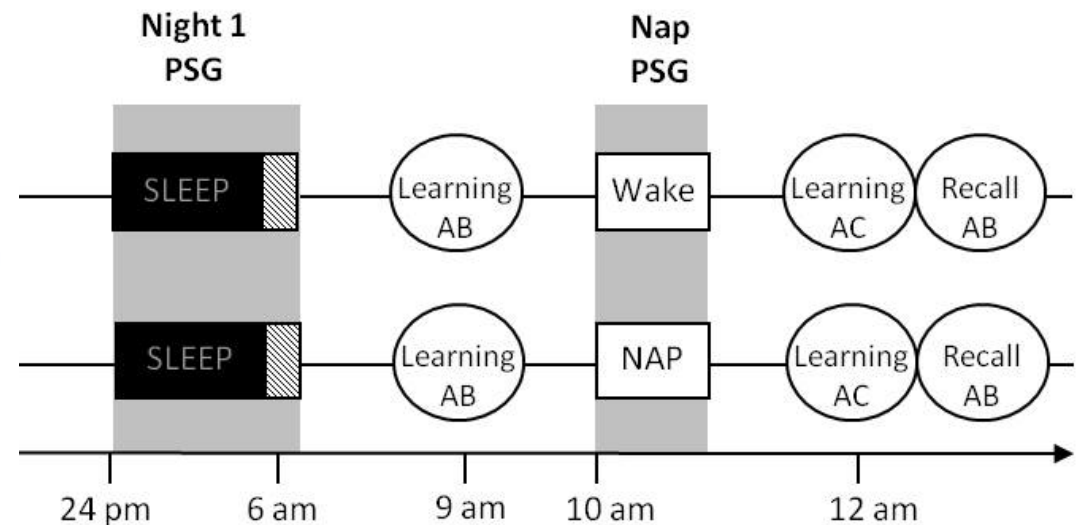
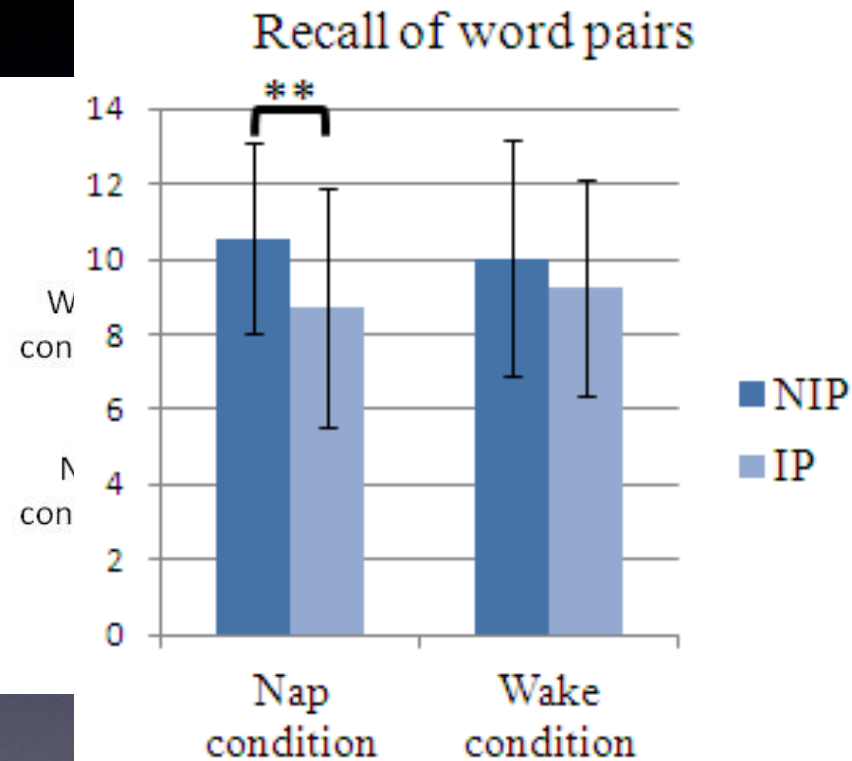


created 2007

Main research themes

- Sleep, cognition and memory
- Learning and memory consolidation dynamics
- Neurocognitive disorders (ADHD, ...)
- Vigilance states and DOCs (VS, MCS)

Memory consolidation and resistance to retroactive interference for verbal material in morning naps: a case of reconsolidation and prediction error ?



Deliens, Leproult, Neu and Peigneux (submitted)

Memory consolidation, sleep and contextual emotional interference

Control

Learning



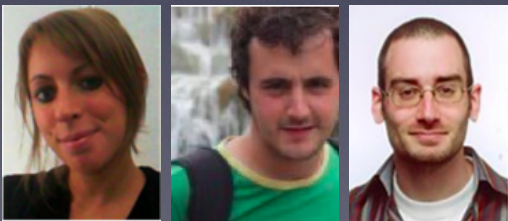
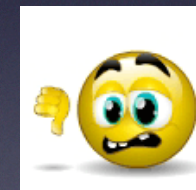
Recall



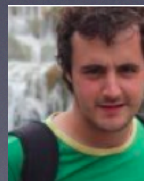
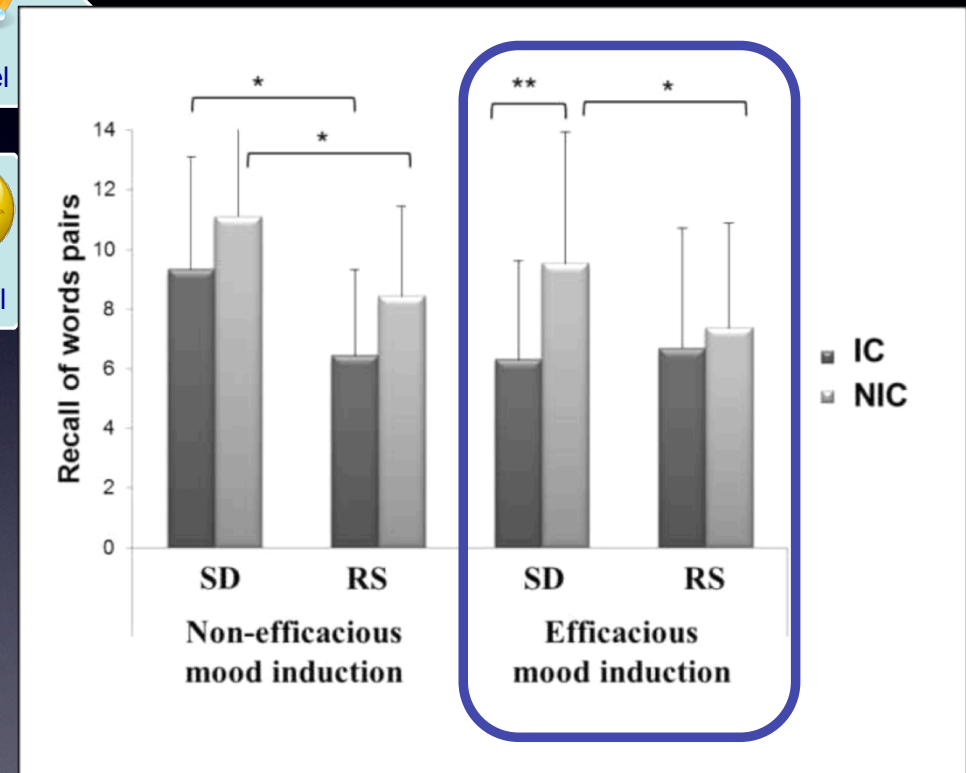
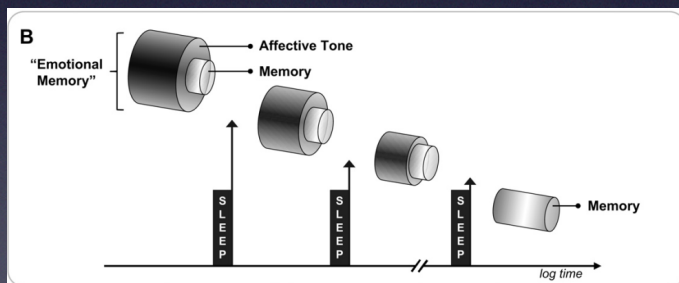
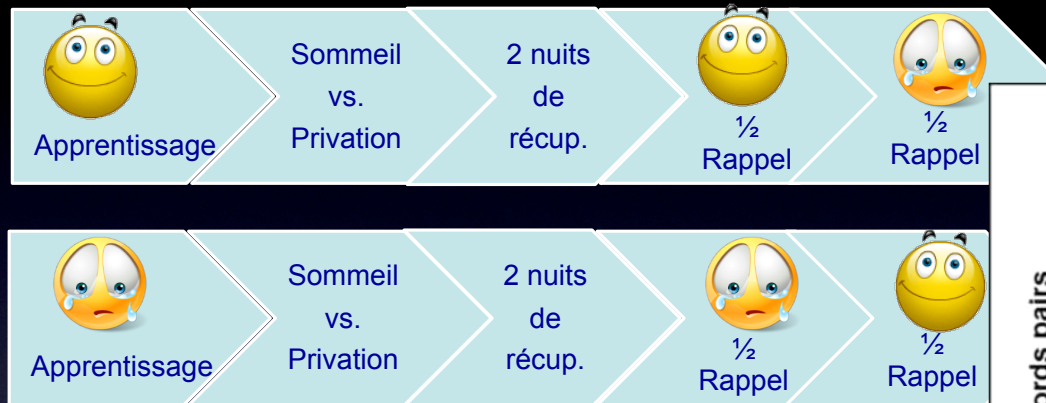
Performance



Interference



Memory consolidation, sleep and contextual emotional interference





SLEEP, EEG and tDCS PROJECT

Effects of within-sleep, non-awakening auditory stimulations on the memory consolidation of emotional and neutral declarative memories

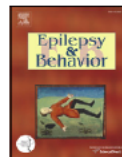




Contents lists available at ScienceDirect

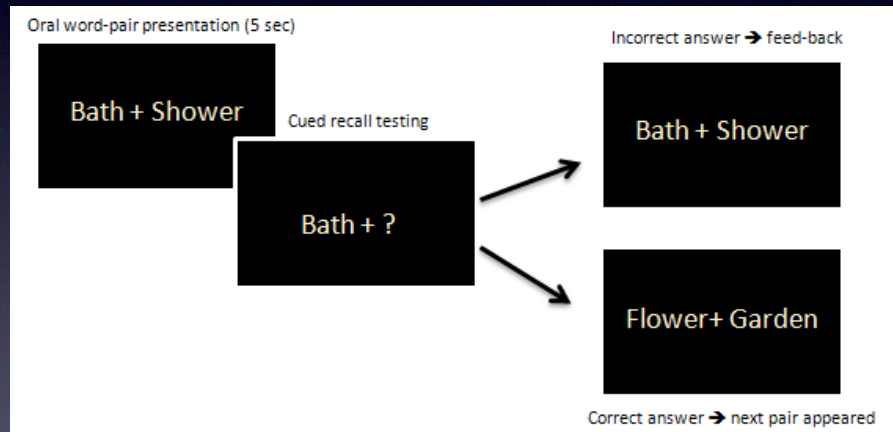
Epilepsy & Behavior

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



Is sleep-related consolidation impaired in focal idiopathic epilepsies of childhood? A pilot study

Charline Urbain ^{a,b,*}, Tiziana Di Vincenzo ^a, Philippe Peigneux ^a, Patrick Van Bogaert ^{b,c}

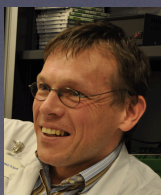
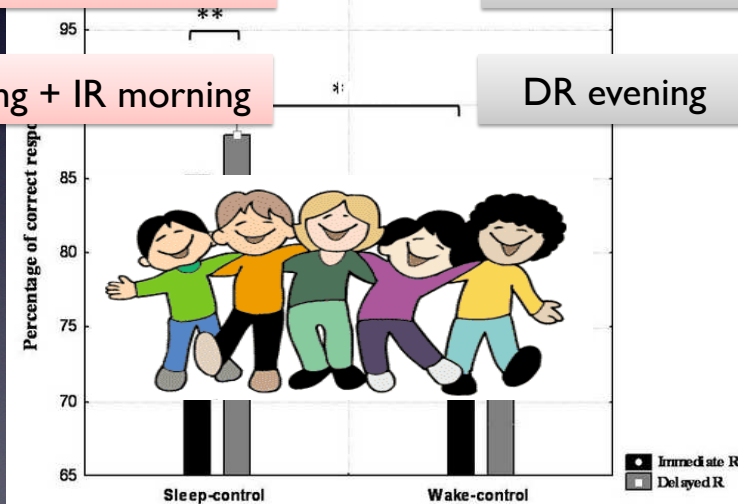


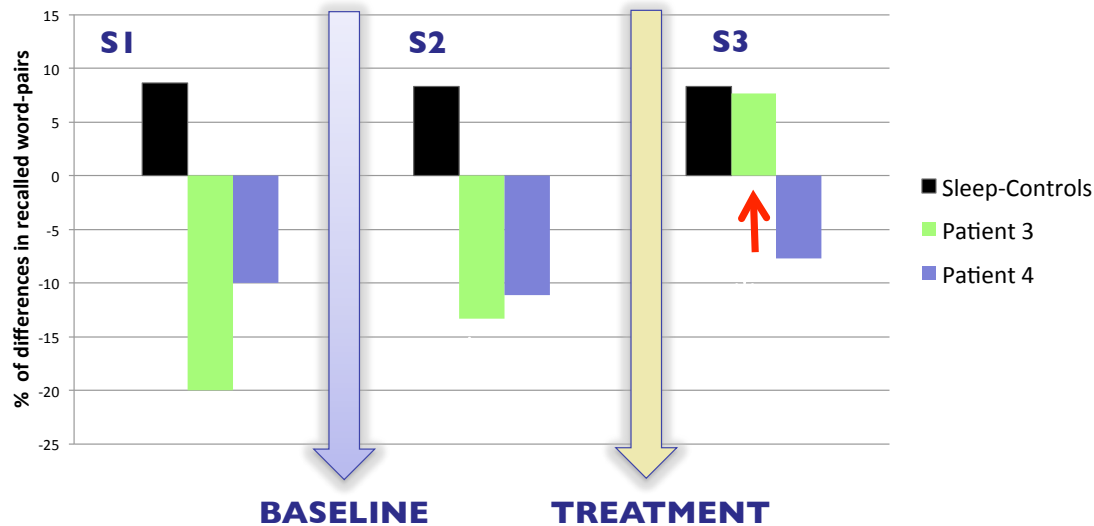
Learning + IR evening

DR morning

Learning + IR morning

DR evening



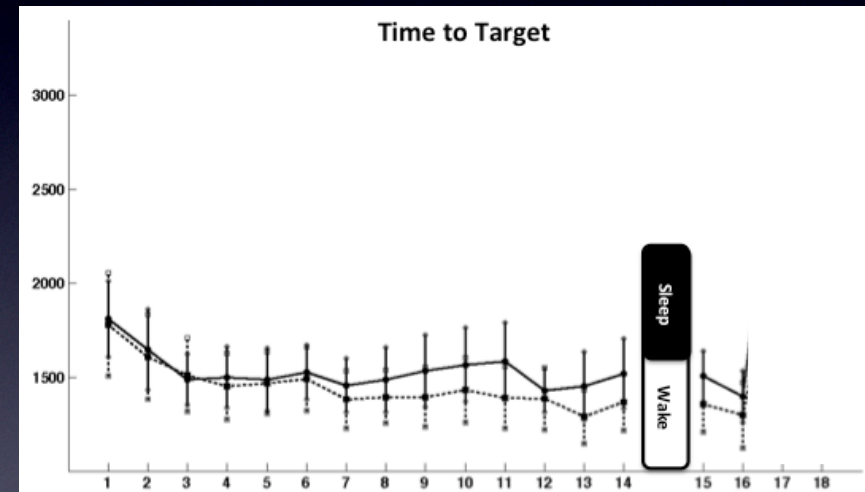
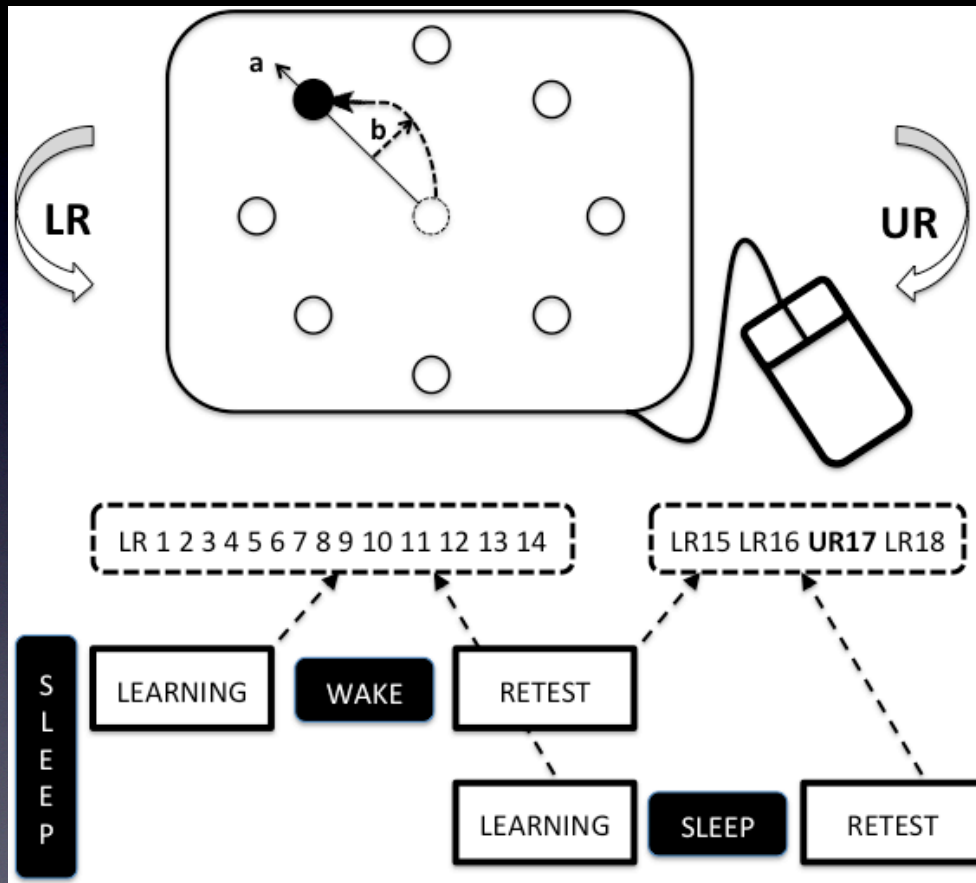


→ interictal epileptiform discharges may disrupt the brain processes underlying sleep-related memory consolidation in children

Spike and Wave Index during NREM sleep

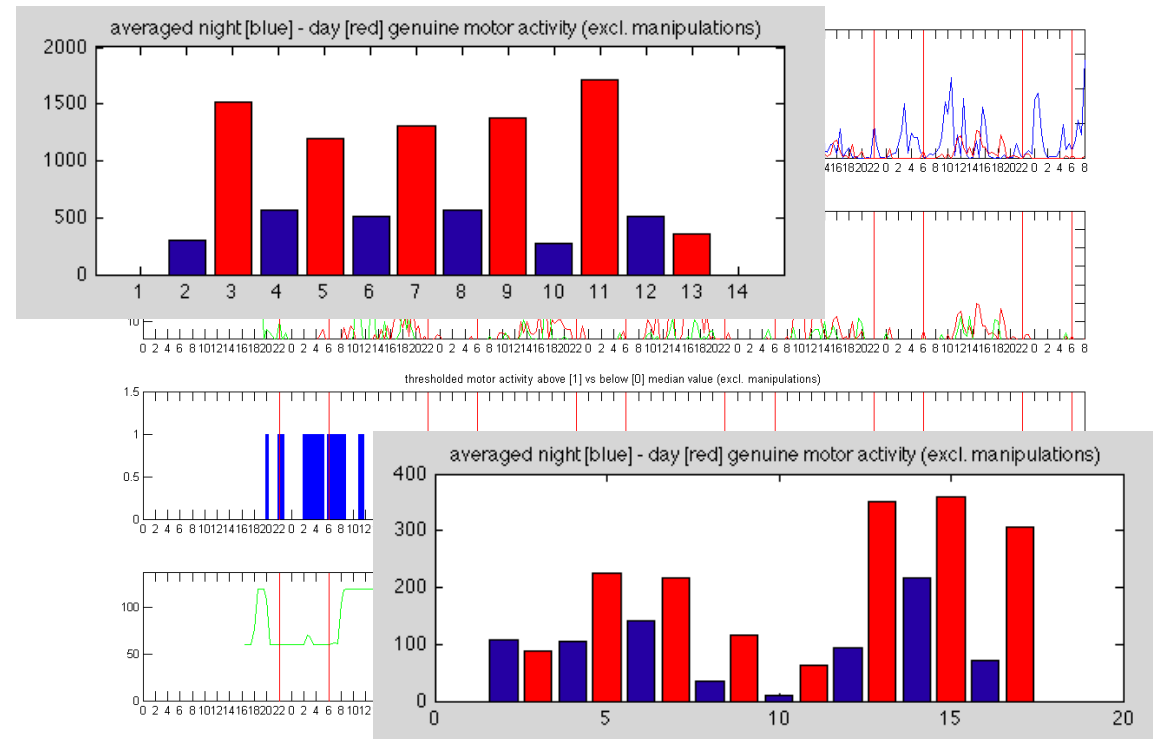
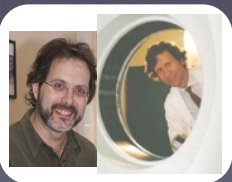
	EEG - session 1	EEG - session 2	EEG - session 3	
CSWS (3)	90%	90%	0%	NORMALIZATION
CSWS (4)	97%	97%	<50%	PARTIALLY IMPROVED
	BASELINE	TREATMENT		

Local (use-dependent) sleep and learning in adults, also in children ?

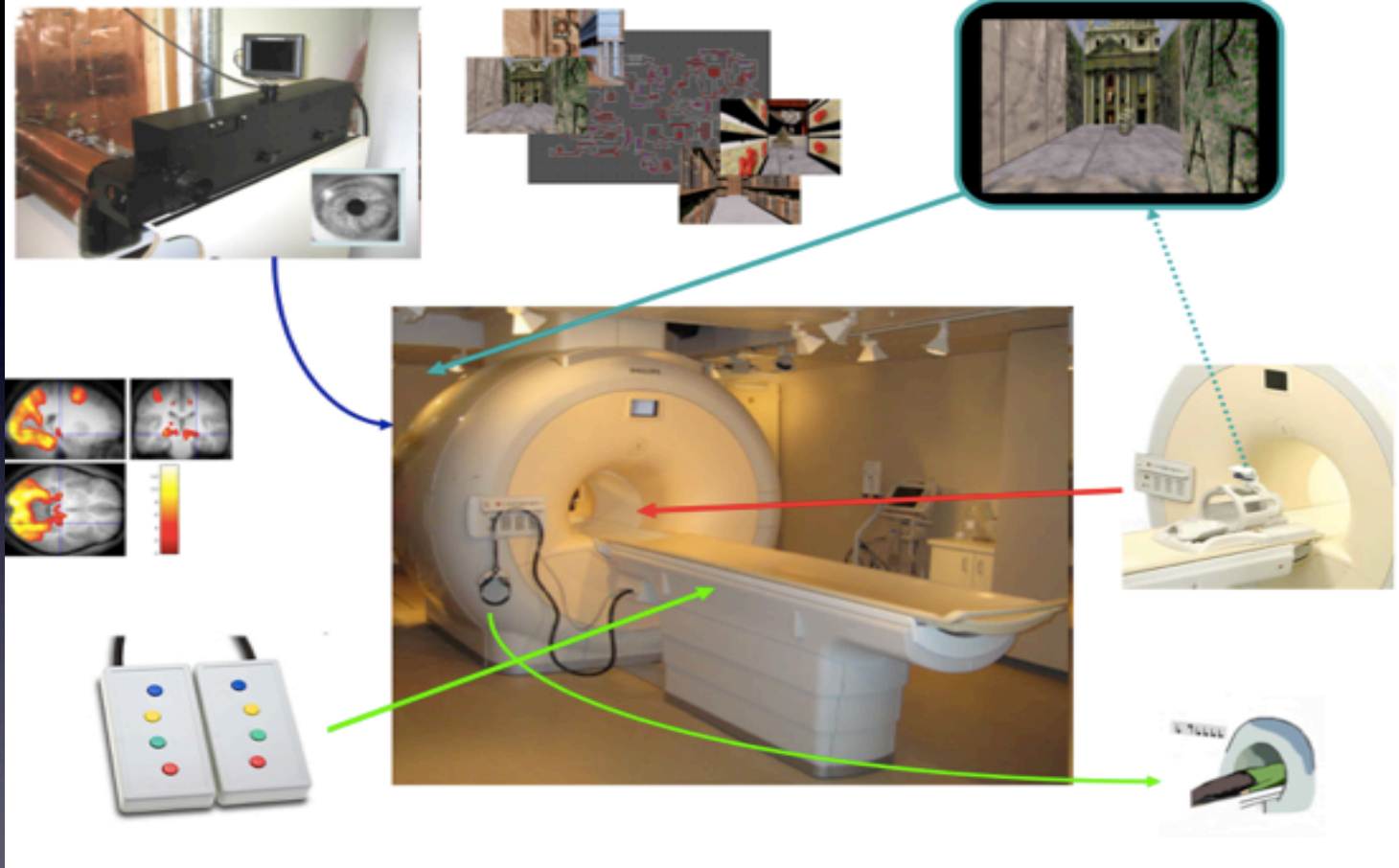


Urbain, Houyoux, Albouy and Peigneux (submitted)

Environmental and circadian influences on activity patterns in altered states of consciousness

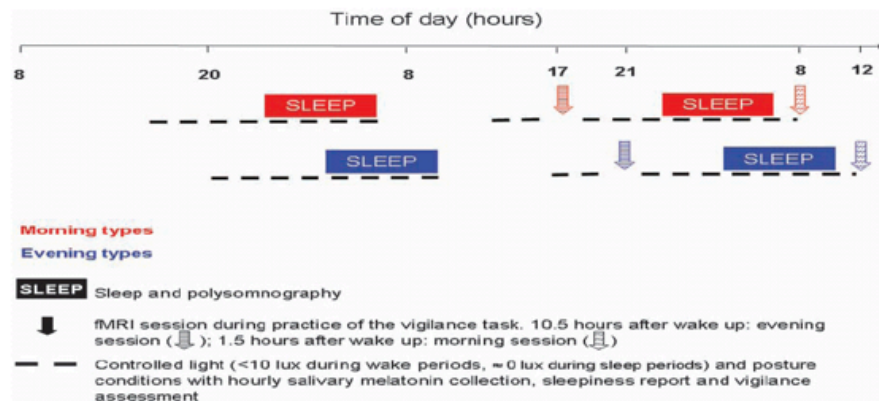


A-S. De Weer, M. Da Ros, J. Berré, C. Mélot, S. Goldman, P. Peigneux
European Journal of Neurology (2011)

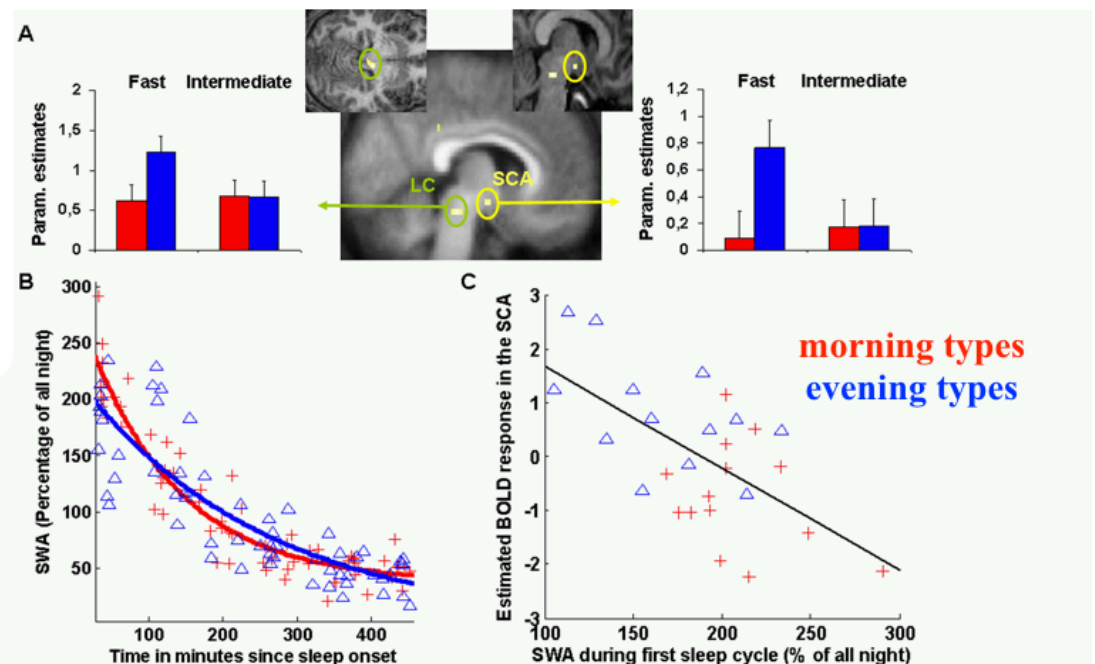


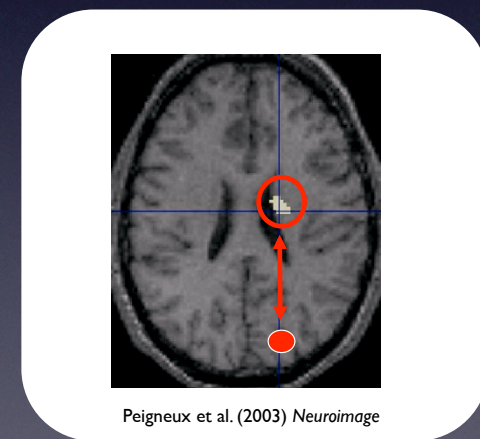
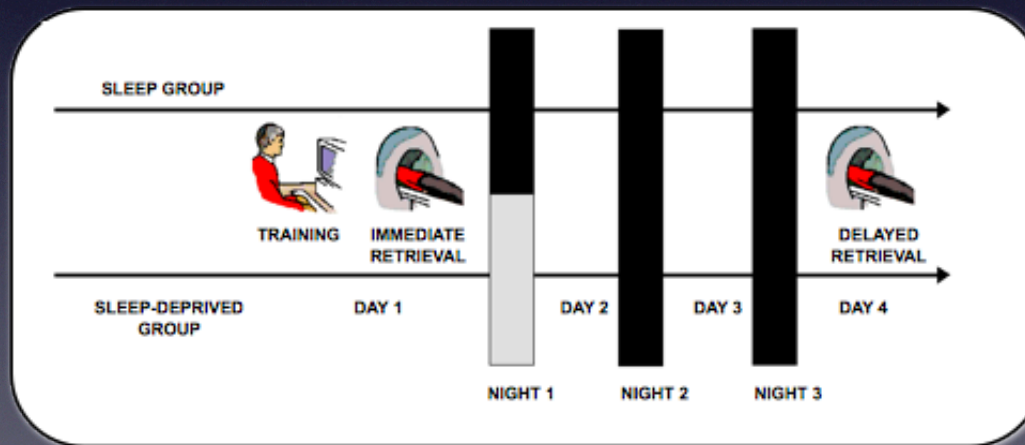
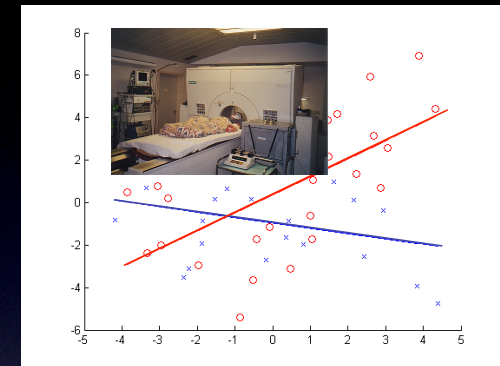
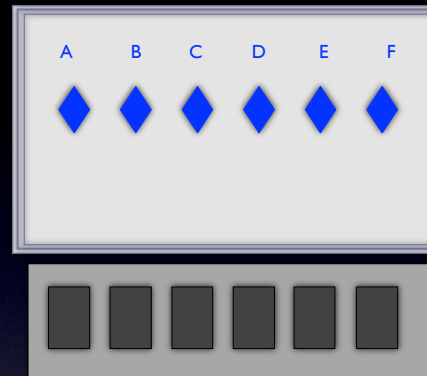
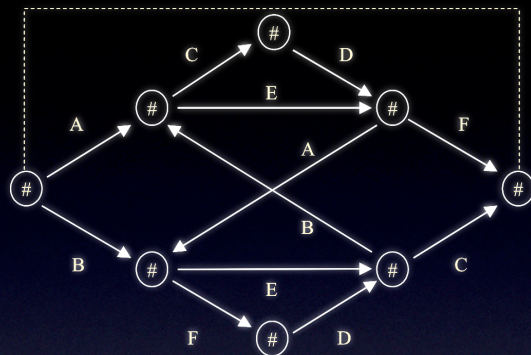
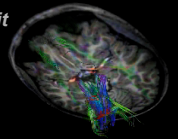
Homeostatic Sleep Pressure and Responses to Sustained Attention in the Suprachiasmatic Area

Christina Schmidt^{1,2*} Fabienne Collette,^{1,2} Yves Leclercq,¹ Virginie Sterpenich,¹ Gilles Vandewalle,¹ Pierre Berthomier,³ Christian Berthomier,³ Christophe Phillips,¹ Gilberte Tinguely,¹ Annabelle Darsaud,¹ Steffen Gais,¹ Manuel Schabus,¹ Martin Desseilles,¹ Thien Thanh Dang-Vu,¹ Eric Salmon,¹ Evelyne Balteau,¹ Christian Degueldre,¹ André Luxen,¹ Pierre Maquet,¹ Christian Cajochen,⁴ Philippe Peigneux^{1,5*}



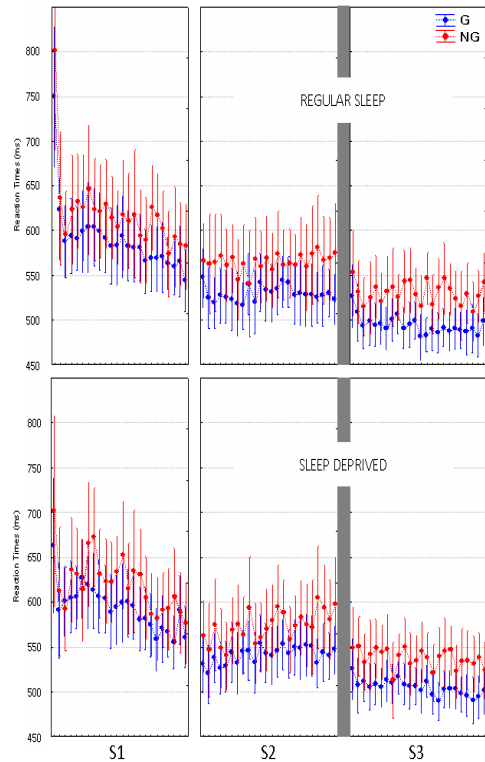
Schmidt et al. (2009) *Science*



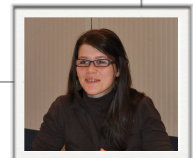
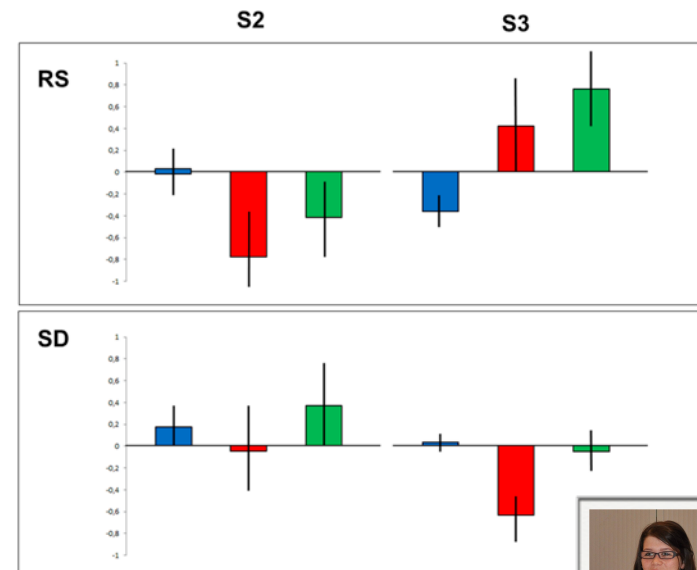
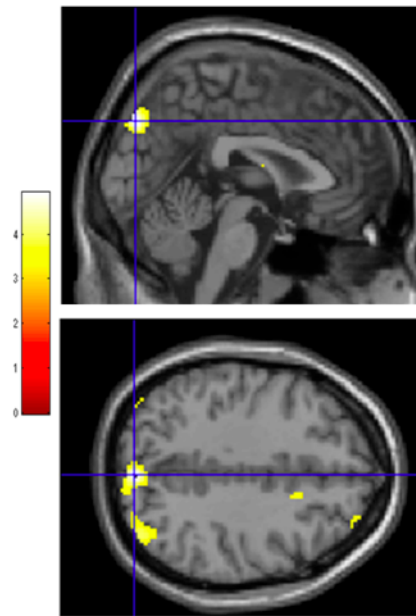


Peigneux et al. (2003) Neuroimage

Does sleep helps better *integrating* novel information ?

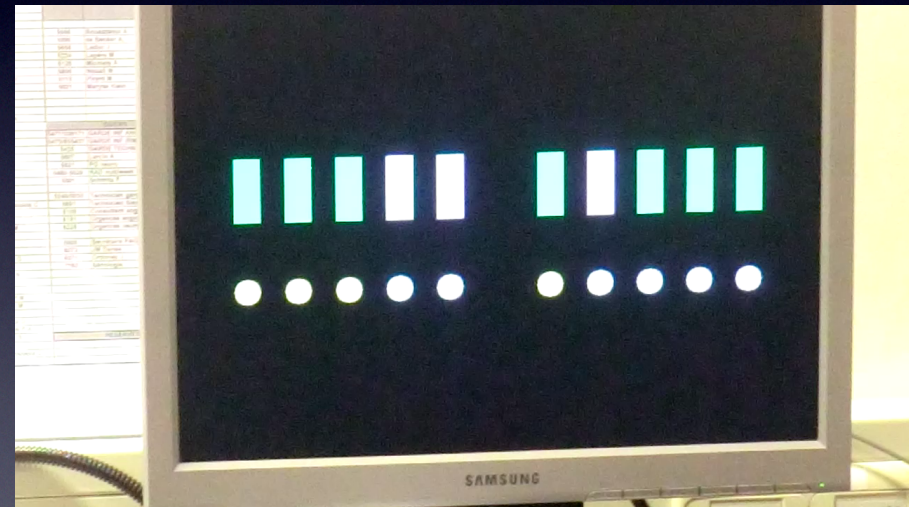
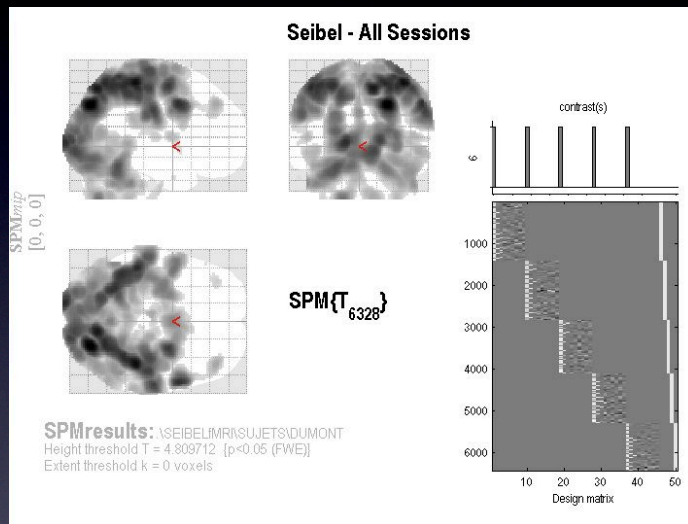


B. Sleep-dependent modulation of NG-related brain activity (S2 vs. S3) Cuneus [4, -82, 40 mm; $p^{\text{corr}} < .05$]

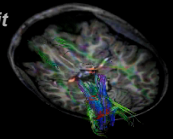


Urbain et al.
(under revision)

How are formed chunked representations of complex finger movements ?
How evolves the awareness of motor action ?

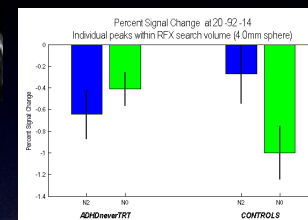
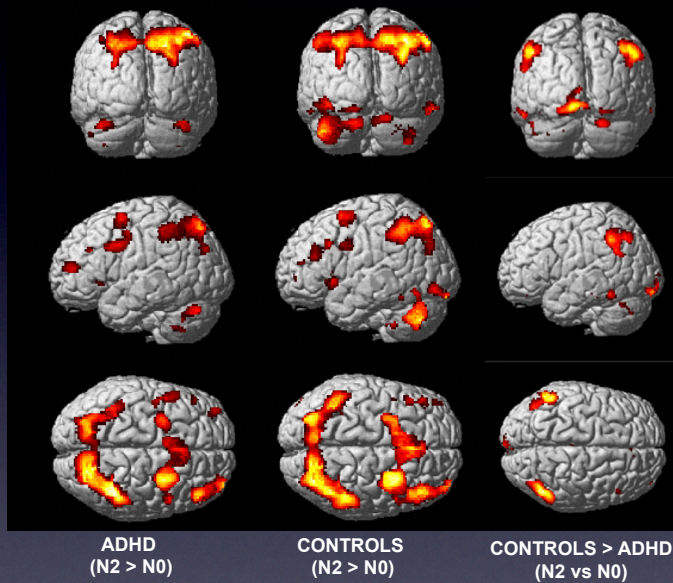


Seibel, R. (1963) Discrimination reaction time for a 1,023 alternative task. *Journal of Experimental Psychology* 66, 215-226

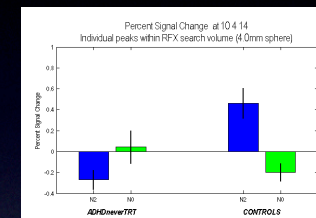


Neural bases of cognitive deficits in ADHD

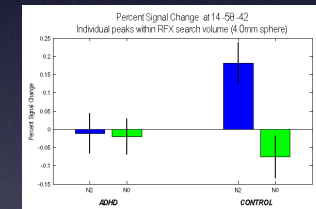
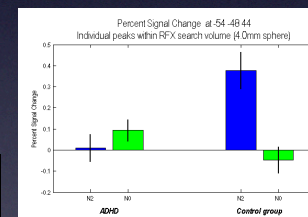
Functional Modulations During a Working Memory Task in Never Medicated ADHD Children



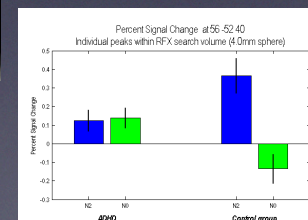
Occipital cortex



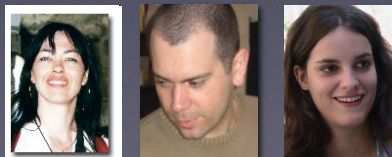
Caudate nucleus



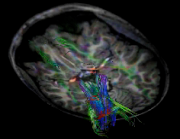
Cerebellum (dentate)



Inferior Parietal



Massat et al. (2012) PLoS One



MEG PROJECTS

Sleep-dependent language acquisition in children and dysphasia



Pathophysiology of brain plasticity processes in memory consolidation (ARC project)



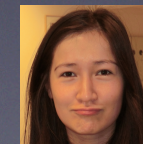
Effects of bedtime extension as an intervention to counteract the adverse effects of chronic sleep loss (Brains Back to Brussels)



Interictal activity in epilepsy and cognition



Can we learn during sleep ?



A.

Familiar
Objects



Non Objects

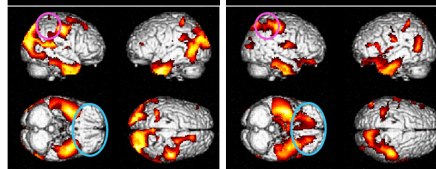


A.

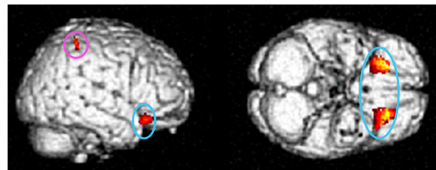
[530 - 690 ms]

LNO S1

LNO S2



Contrast LNO S1<S2

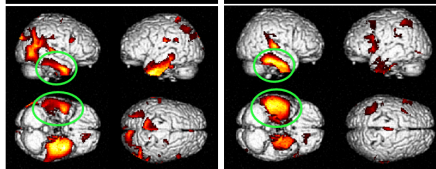


B.

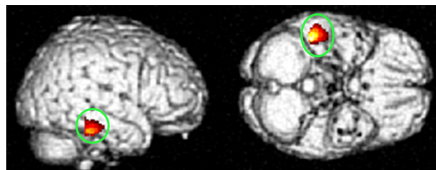
[700 - 760 ms]

LNO S1

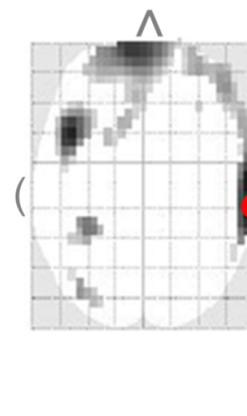
LNO S2



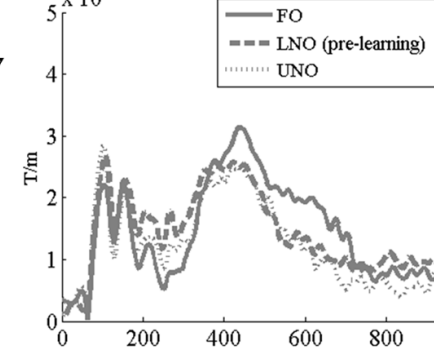
Contrast LNO S1<S2



B.

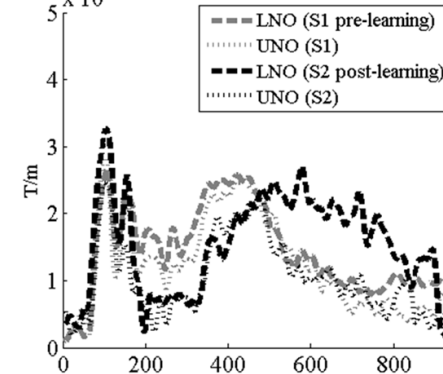


$\times 10^{-12}$



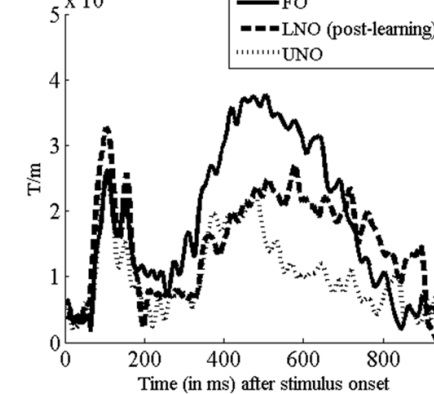
A.

$\times 10^{-12}$



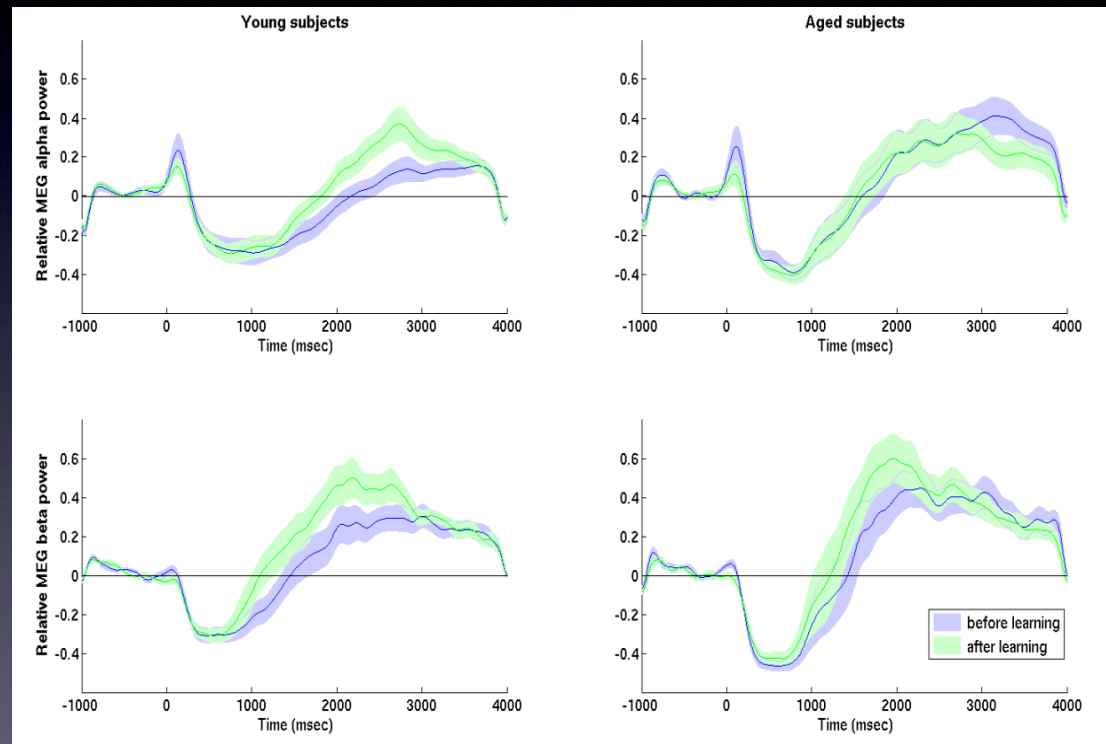
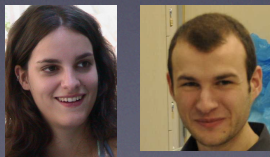
C.

$\times 10^{-12}$



Urbain et al. (submitted)

Age-related differences in post-movement mu rhythm rebound after motor sequence learning

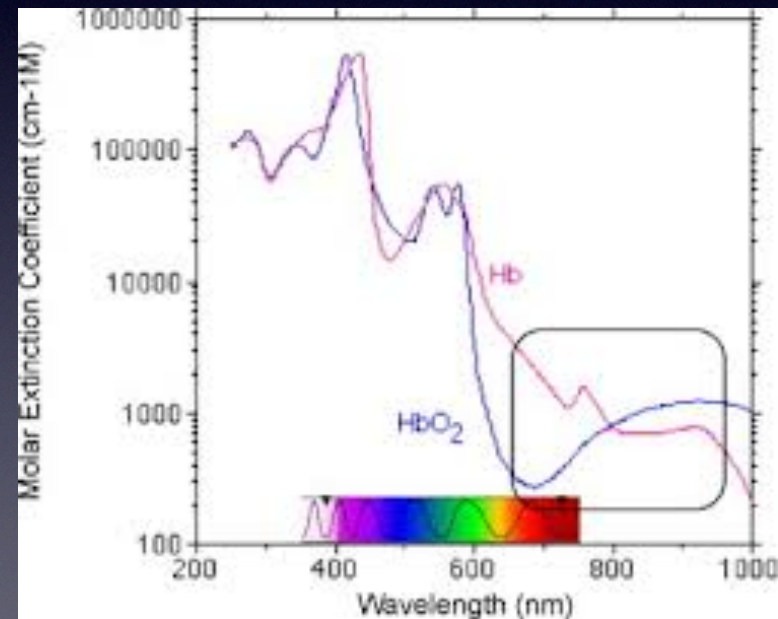
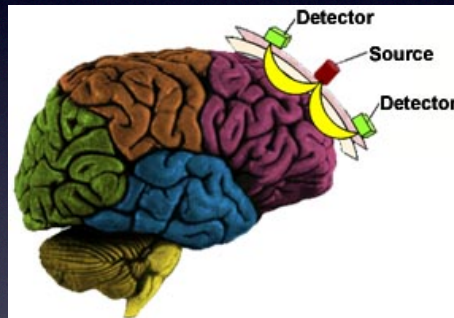
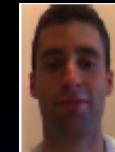


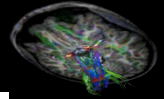
Mary et al. (in preparation)

Coming soon ... **NEAR INFRARED SPECTROSCOPY - NIRS**

Motor learning, fatigue, and cortical overactivation in multiple sclerosis

Pseudoneglect and laterality processes





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