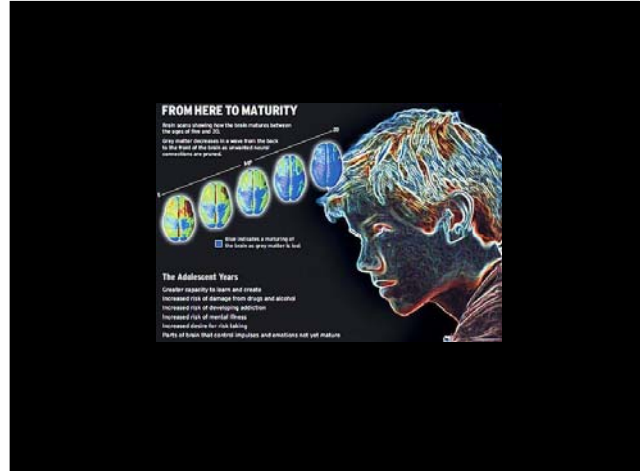




Music, cognitive reserve, aging, and emotion

Prof. dr. Erik Scherder



BRAIN RESEARCH REVIEWS 41 (2008) 221–239

available at www.sciencedirect.com



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BRAIN RESEARCH REVIEWS

Review

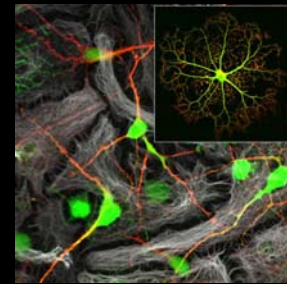
On whether the environmental enrichment may provide cognitive and brain reserves

Laura Petrosini^{a,b,*}, Paola De Bartolo^{a,b}, Francesca Foti^{a,b}, Francesca Gelfo^{c,b}, Debora Cutuli^{a,b}, Maria Giuseppa Leggio^{a,b}, Laura Mandolesi^{c,b}

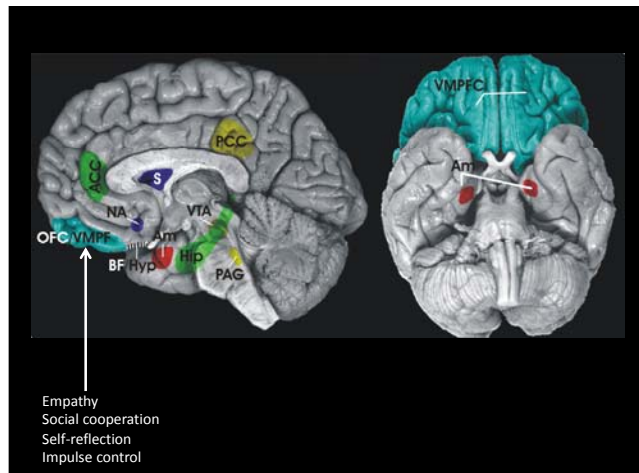
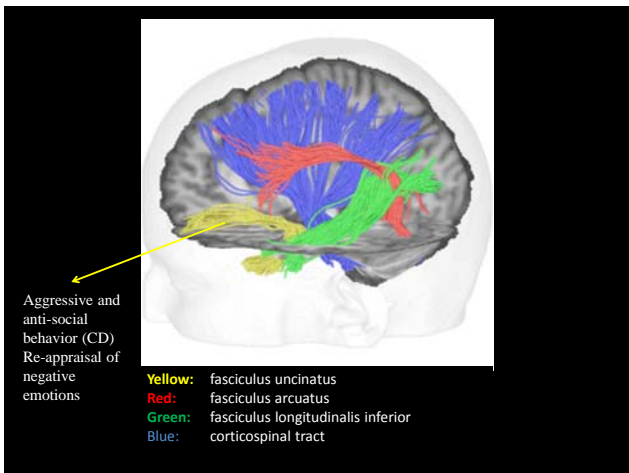
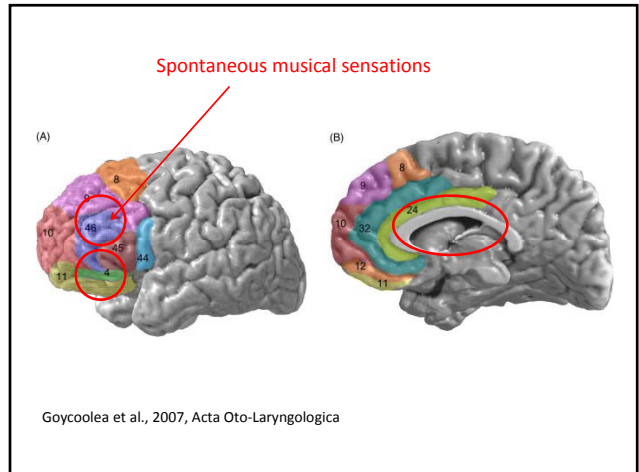
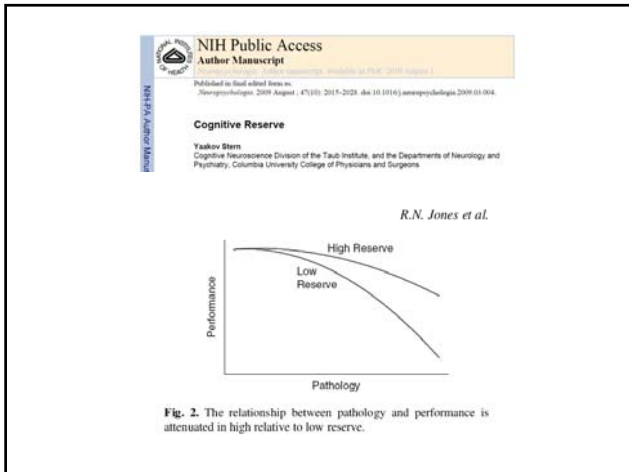
^aDepartment of Psychology, University "Sapienza" of Rome

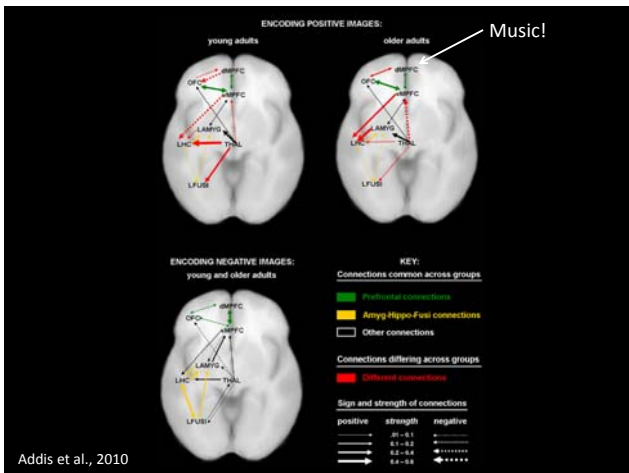
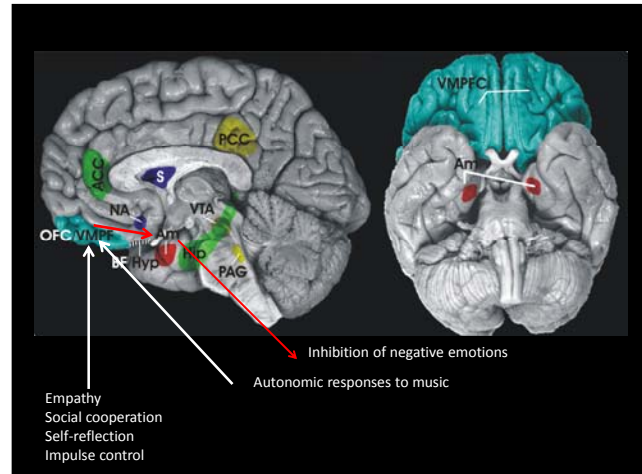
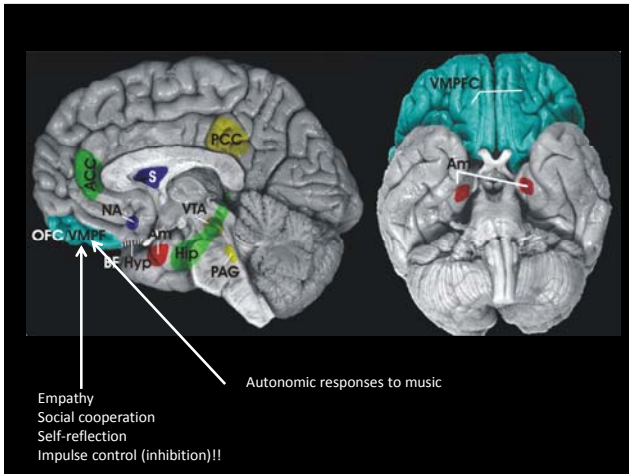
^bFondazione Santa Lucia, Rome

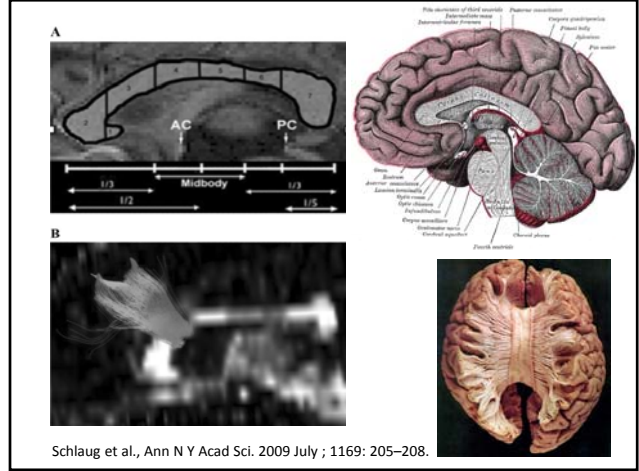
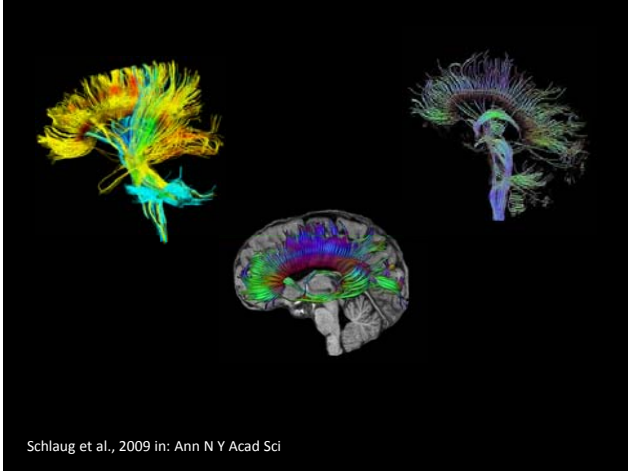
^cUniversity "Parthenope", Naples



Adult neural stem cells neurogenesis







BRIEF COMMUNICATIONS

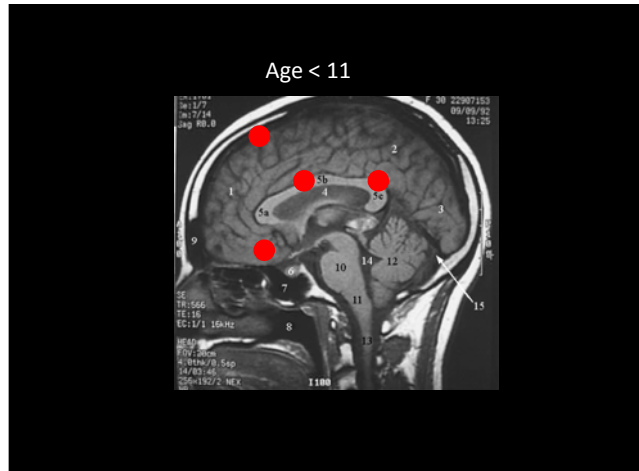
nature neuroscience

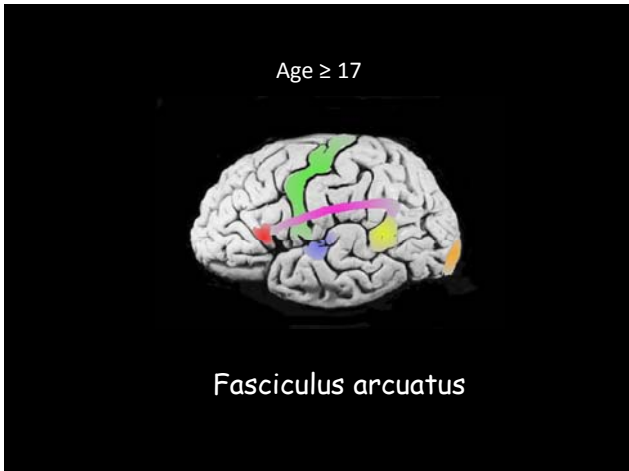
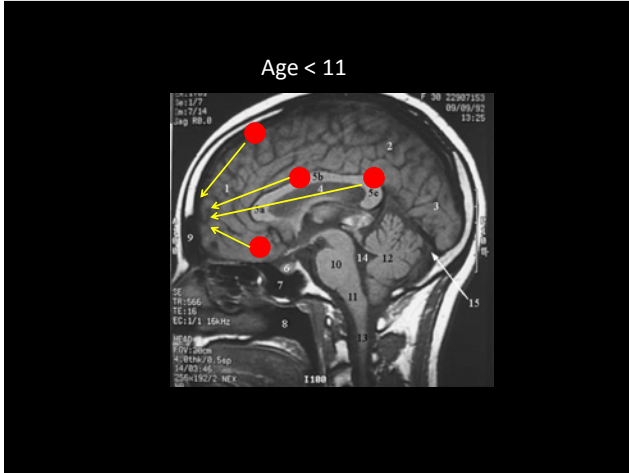
Extensive piano practicing has regionally specific effects on white matter development

Sara L. Bengtsson¹, Zoltán Nagy^{1,2}, Stefan Skare², Lea Forsman¹, Hans Fjorberg¹ & Fredrik Ullén¹

32.6 ± 5.7 (s.d.) years, using the magnetic resonance technique diffusion tensor imaging (DTI). A group of eight male, age-matched non-musicians served as controls. Fractional anisotropy (FA) in each voxel was used as a measure of the degree of water diffusion anisotropy. FA can be used for inferences about the microstructural properties of white matter; as diffusion is faster along axons than in the perpendicular direction (see Supplementary Methods online). We regressed FA on the estimated total number of hours practiced

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**Autism and genius: is there a link?
The involvement of central brain loops and hypotheses for functional testing**

Marianna Boso, MD^{1*}
Enzo Emanuele, MD²
Francesca Prestori, PhD^{3*}
Pierluigi Politi, MD, PhD⁴
Francesco Barale, MD, PhD⁵
Egidio D'Angelo, MD, PhD⁶

¹ Department of Applied Health and Behavioral Sciences, Section of Psychiatry, University of Pavia, Pavia, Italy
² Department of Physiology, University of Pavia, Pavia, Italy
³ Consorzio Nazionale Interuniversitario per le Scienze Fisiche della Materia (CNISM), Pavia Unit, Pavia, Italy
⁴ Brain Connectivity Center (BCC), IRCCS "C. Mondino National Institute of Neurology" Foundation, Pavia, Italy

Corresponding author: Marianna Boso
DSSAP, Section of Psychiatry
University of Pavia
Via Bassi 21, 27100 Pavia, Italy
E-mail: marianna.boso@unipv.it

Mental functions, autism and genius

The neurophysiological context

The processing of brain cognitive functions depends on a continuous crosstalk between analysis and synthesis: signals are analyzed in detail in all their biophysically discernible components and then the results of this analysis are synthesized into high-level percepts or concepts (1). One leading hypothesis on how this system might work is that multiple local computations are dynamically synchronized: at neurophysiological level, this would be reflected in the ability of the brain to generate a complex system of rhythms that can entrain the network modules into coherent oscillations (2). While local processing in small modules would be responsible for detailed analysis, dynamic binding of several such modules would determine a coherent multi-factorial representation of the ensemble. This continuous activity, by exploiting brain internal memories and representations, is thought to generate a virtual reality that is then compared with the actual world (3). This comparison is assisted by subcortical loops involving the cerebellum, which acts as a comparator for sensorimotor

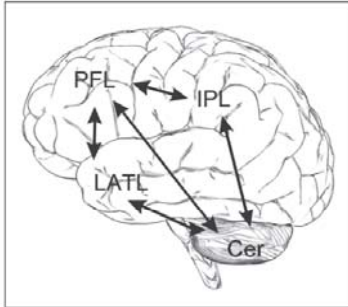


Figure 1 - Altered functional connectivity between the prefrontal lobe (PFL), inferior parietal lobe (IPL), left anterior temporal lobe (LATL) and cerebellum is considered to be at the basis of the autistic pathology.

Boso et al., 2010

The World Journal of Biological Psychiatry, 2012; 13: 269-280

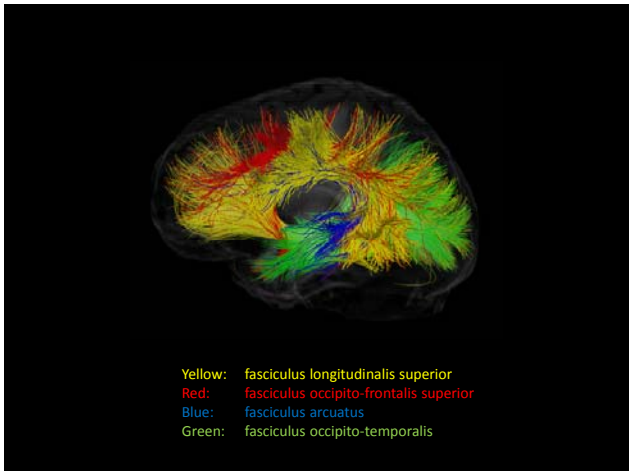


ORIGINAL INVESTIGATION

Fronto-temporal disconnectivity and symptom severity in children with autism spectrum disorder

LUISE POUSTKA¹, CHRISTINE JENNEN-STEINMETZ², ROMY HENZE^{3,4}, KILIAN VOMSTEIN^{1,3}, JOHANN HAFNER⁴ & BRAM SIELTJES⁵

corpus callosum (CC), superior longitudinal fasciculus (SLF), uncinate fasciculus (UF), fasciculus arcuatus (FA)



Thank you for your attention!

