NEWS FROM OTHER JOURNALS
AND WEBSITES

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Good news! Neurotherapy papers are appearing in more and more journals, increasing general awareness. Brain-computer interface papers using EEG training of various parameters are also on the rise, though only one is included below.

Authors are encouraged to submit recent preprints or reprints for this section and anyone can submit reviews or recommend websites. Contact David Kaiser at dakaiser@mail.rit.edu

RECENT MUST-READ PAPERS


Neurofeedback training to inhibit 4-8 Hz theta activity was conducted for 42 sessions from left hemisphere sites, producing significant reductions in theta amplitude at training sites and relative normalization of QEEG at the left posterior head region.


The authors investigated pedagogic relevance of neurofeedback for enhancing normal function. Conservatoire students improved their musical performances after theta-up training.

Ten learning-disabled children (high on a theta/alpha ratio baseline) improved on the WISC and showed evidence of greater EEG maturation after training.


Twenty-two ADHD children underwent neurofeedback and 12 underwent stimulant therapy, according to parental preference. Variables of attention improved in both groups, as did behaviors related to the disorder.


The author recommends a combination of psychotherapeutic, neurologic and neurofeedback treatment be used for treating antisocial personality disorders in juveniles.


In eight sessions of neurofeedback the SMR-group were able to selectively enhance their SMR activity whereas theta trainers failed to exhibit any changes in their EEG. The SMR-group also improved on cued recall performance and focused attentional processing.


The year 2002 saw the first report of fMRI neurofeedback; in 2003 an optical technique is added to the growing family of neurotherapeutic techniques.

**ELECTROENCEPHALOGRAPHY**


Another new QEEG method to quantify periodicity—period specific average—indicates that EEGs are mostly aperiodic, generally and locally (peaks).

During early abstinence, marijuana abusers show reduced theta and lower alpha rhythm activity during eyes closed compared to controls. These reductions persisted for the entire month of monitoring.


Cellular phones may reversibly influence the human brain, inducing abnormal slow waves in EEG.


Alpha oscillations signal a neural baseline with “inattention” whereas beta rhythms index spontaneous cognitive operations during conscious rest.


A specific genetic factor relevant to ADHD which mediates medication-related changes in cortical activity is associated with specific EEG profiles.


Left and right hemisphere stroke patients could be differentiated in their EEG by comparing the changes from rest to challenge task conditions.


Continual online gain adaptation could increase the speed and accuracy of EEG-based cursor control.

P300a amplitudes are lower in non-medicated ADHD patients than in healthy children during a continuous performance task, but not for methylphenidate-treated hyperactive children.


Infant sleep EEGs reflect changes in activation levels prior to waking. If we could just condition them to suppress these changes, parents of newborns could get a good night’s sleep.

**MENTAL HEALTH**


OCD patients are impaired on delayed memory, response inhibition, impulsivity, and temporolimbic functions, but they are not impaired on executive function or verbal fluency.


Deficits in sustained performance problems among ADHD children appear when long interstimulus intervals are used, possibly reflecting poor regulation of effort.


The authors conclude that autism is a heterogeneous disorder, likely to have multiple etiologies often associated with developmental growth and pruning of neural tissue. (Editor’s note: A single mechanism could produce the multifarious effects we observe throughout the patient’s lifespan as cognitive and sensorimotor development proceeds, say, without proper inhibitory action. Autism could be a relatively simple neuroendocrine disorder, one of too little estrogen and too much testosterone, perhaps.)


Individual differences may be responsible for inconsistent research findings in affective neuroscience.

Neuroleptics and other central dopamine receptor antagonists, benzodiazepines and some anti-convulsants may be detrimental to brain injury recovery.


The frequency of rolandic spikes in children with ADHD is significantly higher than expected from epidemiologic studies. How ADHD symptoms are related to this feature is unclear.


MPH enhances both intracortical inhibition and facilitation, which suggests it acts on the motor cortex using a neurotransmitter in addition to dopamine.


Magnetic seizure therapy, a novel means of performing convulsive therapy using rapidly alternating strong magnetic fields, may be just as effective as ECT and reduce side effects.


Height differences between treated children and sibling controls after two years of treatment across broad range of doses (10-80 mg per day) suggest grow-suppressive effects of methylphenidate are greater than suspected.


Mutually-inhibitory interactions between sleep-promoting and arousal-promoting systems, focused in and near the hypothalamus, are hypothesized to form a sleep-wake switch.

Michael, N., Gosling, M., Reutemann, M., Kersting, A., Heindel, W., Arolt, V., et al. (2003). Metabolic changes after repetitive transcranial magnetic stimulation (rTMS) of the left prefrontal cortex: A sham-controlled pro-
ton magnetic resonance spectroscopy (1H MRS) study of healthy brain. European Journal of Neuroscience, 17, 2462-2468.

Rapid transcranial magnetic stimulation may act via stimulation of glutamatergic prefrontal neurons.


An association between maternal alcoholism and regressive onset autism (language loss, primarily) is reported.


Even elevated levels of estrogens and corticosteroids in the pregnant mother can act as neuroteratogens.


Authors argue for using hypnosis in the study of brain mechanisms of conscious experience.

NEUROIMAGING


MZ twins with ADHD have smaller caudate volumes than their unaffected co-twins, which provides further support for striatal models of ADHD pathophysiology.


Anxiety disorders are heterogeneous, both symptomatically and neuroanatomically. The current descriptive nosologies are outdated and require genetic, neuroimaging and neurochemical approaches to refine anxiety disorder phenotypes and facilitate selection and development of anti-anxiety therapies.

Gross-Isseroff, R., Hermesh, H., Zohar, J., & Weizman, A. (2003). Neuroimaging communality between schizophrenia and obsessive compuls-
The caudate nucleus, orbitofrontal cortex, anterior cingulate gyrus and mediodorsal thalamic nucleus may be implicated in both schizophrenia and OCD, though the jury is still out on this.


OCD symptom severity correlated positively with inferior frontal lobe and right basal ganglia activity. Compulsive behavior was inversely correlated with right thalamus activity.


Neuroanatomy and neurochemistry of ADHD are reviewed with reference to metallic and organic environment and genes. The role of apoptosis and cellular plasticity are highlighted.