



# Journal of Neurotherapy: Investigations in Neuromodulation, Neurofeedback and Applied Neuroscience

## News from Other Journals and Websites

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## NEWS FROM OTHER JOURNALS AND WEBSITES

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David A. Kaiser, PhD, Editor

*The “EEG and Neuroimaging” segment of News from Other Journals and Websites has undergone mitosis and now exists as two separate entities, appropriately titled, reflecting the ongoing torrent of available neuroimaging papers. It probably won’t be much longer before all psychiatric and neurological journal editors require some functional neuroimaging data as a prerequisite for publication.*

*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**

Koenig, T., Prichep, L., Lehmann, D., Sosa, P. V., Braeker, E., Kleinlogel, H., Isenhardt, R., & John, E. R. (2002). Millisecond by millisecond, year by year: Normative EEG microstates and developmental stages. *Neuroimage*, 16, 41-48.

Lack of signal stationarity in EEG probably reflects a fundamental characteristic of brain activity: functional neural transactions are performed rapidly, at subsecond durations. In other words, information processing of the mammalian brain takes place in the millisecond time range. Modeling and quantifying distinct microstates, around the range

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of percept generation (80 to 120 ms) would be the first step in an accurate electrophysiological model of human information processing. The authors describe a normative database for resting EEG for children and adults of four microstate profiles (stable field topography of subsecond duration of transient EEG events). Frustratingly, they fail to describe any specifics of the classes of microstate being inventoried, merely citing previous research for these helpful details.

Motomura, E., Inui, K., Nakase, S., Hamanaka, K., & Okazaki, Y. (2002). Late-onset depression: Can EEG abnormalities help in clinical sub-typing? *Journal of Affective Disorders*, *68*, 73-79.

Temporal slow waves (i.e., irregular delta) are probably associated with subtle cerebrovascular lesions and might reflect vulnerability to late-onset depression. Patients with these abnormal EEGs scored significantly higher on "general somatic symptoms" and "hypochondriasis" and lower on "feeling of guilt" on the Hamilton Rating Scale for Depression.

Schore, A. N. (2002). Dysregulation of the right brain: A fundamental mechanism of traumatic attachment and the psychopathogenesis of posttraumatic stress disorder. *The Australian and New Zealand Journal of Psychiatry*, *36*, 9-30.

Early abuse impairs the developmental trajectory of the right brain, dominant for attachment, affect regulation, and stress modulation, possibly making one vulnerable to PTSD symptomatology.

### **ELECTROENCEPHALOGRAPHY**

Baving, L., Laucht, M., & Schmidt, M. H. (2002). Frontal brain activation in anxious school children. *Journal of Child Psychology and Psychiatry*, *43*, 265-274.

Eight- and 11-year-old anxious girls exhibit greater right frontal activation in baseline EEG measures (possible evidence of internalizing), whereas healthy girls showed no frontal asymmetry at 8 and greater left frontal brain activation at 11 years.

Brock, J., Brown, C. C., Boucher, J., & Rippon, G. (2002). The temporal binding deficit hypothesis of autism. *Developmental Psychopathology*, *14*, 209-224.

Autism may involve reduction in synchronization of high-frequency gamma activity between local networks processing local features.

Clarke, A. R., Barry, R. J., McCarthy, R., & Selikowitz, M. (2002). EEG differences between good and poor responders to methylphenidate and dexamphetamine in children with attention-deficit/hyperactivity disorder. *Clinical Neurophysiology*, *113*, 194-205.

Good responders to methylphenidate had cortically hypoaroused EEG profiles compared to poor responders. Good responders to dexamphetamine appeared more maturationally lagged than poor responders.

Hagemann, D., Naumann, E., Thayer, J. F., & Bartussek, D. (2002). Does resting electroencephalograph asymmetry reflect a trait? An application of latent state-trait theory. *Journal of Personality and Social Psychology*, *82*, 619-641.

Resting EEG asymmetries appear to reflect trait factors more than state factors, though just barely so. Sixty percent of asymmetry variance was due to individual differences on a temporally stable latent trait, whereas 40% was due to occasion-specific fluctuations.

Ille, N., Berg, P., & Scherg, M. (2002). Artifact correction of the ongoing EEG using spatial filters based on artifact and brain signal topographies. *Journal of Clinical Neurophysiology*, *19*, 113-124.

Authors describe a basic principle of artifact correction by spatial filtering and they review different approaches to estimate artifact and brain signal topographies.

Kotchoubey, B., Kubler, A., Strehl, U., Flor, H., & Birbaumer, N. (2002). Can humans perceive their brain states? *Consciousness and Cognition*, *11*, 98-113.

Humans can learn (or be trained) to perceive the neural activity of their brain, including the slow cortical potentials. The ability to perceive these potentials was related to the ability to control them and was not mediated by peripheral variables such as muscle tone changes.

Matsuoka, H. (2001). Neuropsychology of epilepsy. *Epilepsia*, *42*, 42-46.

“Neuropsychological EEG activation” (cognitive tasking during standard EEG recordings) is a useful tool for examining the relationship between cognitive function and epileptic seizures.

Overtom, C. C., Kenemans, J. L., Verbaten, M. N., Kemner, C., van der Molen, M. W., van Engeland, H., Buitelaar, J. K., & Koelega, H. S. (2002). Inhibition in children with attention-deficit/hyperactivity disorder.

der: A psychophysiological study of the stop task. *Biological Psychiatry*, 51, 668-676.

ERP data suggest abnormalities in brain processes in motor inhibition and error-detection in ADHD children.

### NEUROIMAGING

Bartzokis, G., Beckson, M., Lu, P. H., Edwards, N., Bridge, P., & Mintz, J. (2002). Brain maturation may be arrested in chronic cocaine addicts. *Biological Psychiatry*, 51, 605-611.

Cocaine dependence may arrest normal white matter maturation in frontal and temporal lobes.

Bremner, J. D. (2002). Neuroimaging of childhood trauma. *Seminars in Clinical Neuropsychiatry*, 7, 104-112.

Functional neuroimaging studies suggest function and structure changes of medial prefrontal cortex and hippocampus in response to childhood sexual trauma and PTSD.

Bremner, J. D., Vythilingam, M., Vermetten, E., Nazeer, A., Adil, J., Khan, S., Staib, L. H., & Charney, D. S. (2002). Reduced volume of orbitofrontal cortex in major depression. *Biological Psychiatry*, 51, 273-279.

Depressed patients have a one-third smaller medial orbitofrontal cortical volume, without smaller volumes of other frontal regions.

Grady, C. L., & Keightley, M. L. (2002). Studies of altered social cognition in neuropsychiatric disorders using functional neuroimaging. *Canadian Journal of Psychiatry*, 47, 327-336.

Autism, depression, schizophrenia, and PTSD all exhibit deficits in social behavior and all are associated with dysfunction in the amygdala and dorsal cingulate gyrus.

Lim, K. O., Choi, S. J., Pomara, N., Wolkin, A., & Rotrosen, J. P. (2002). Reduced frontal white matter integrity in cocaine dependence: A controlled diffusion tensor imaging study. *Biological Psychiatry*, 51, 890-895.

Cocaine dependence appears to involve alterations in orbitofrontal connectivity, circuitry critical to decision-making.

Malhi, G. S., Valenzuela, M., Wen, W., & Sachdev, P. (2002). Magnetic resonance spectroscopy and its applications in psychiatry. *The Australian and New Zealand Journal of Psychiatry*, *36*, 31-43.

Magnetic resonance spectroscopy, a non-invasive neuroimaging technique, reveals biochemical basis of many neuropsychiatric disorders, measures medication levels directly and tracks neurochemical changes in response to treatment, disease, or aging.

McAllister, T. W., Sparling, M. B., Flashman, L. A., & Saykin, A. J. (2001). Neuroimaging findings in mild traumatic brain injury. *Journal of Clinical and Experimental Neuropsychology*, *23*, 775-791.

Functional imaging techniques help clarify pathophysiology, symptom genesis, and mechanisms of recovery in traumatic brain injury.

Miguel-Hidalgo, J. J., & Rajkowska, G. (2002). Morphological brain changes in depression: Can antidepressants reverse them? *CNS Drugs*, *16*, 361-372.

Treatment with psychotropic drugs is believed to produce structural changes that are consistent with reversion towards normality. However, as yet, neither structural neuroimaging nor postmortem histopathology studies have tracked morphological changes in cortical and subcortical regions in individuals diagnosed with depression.

Weiss, F., & Porrino, L. J. (2002). Behavioral neurobiology of alcohol addiction: Recent advances and challenges. *Journal of Neuroscience*, *22*, 3332-3337.

Current addiction research has taken up functional neuroimaging in order to identify brain areas involved in susceptibility to relapse.

### **MENTAL HEALTH AND NEUROLOGICAL DISORDERS**

Blumer, D. (2002). Psychiatric aspects of intractable epilepsy. *Advances in Experimental Medicine and Biology*, *497*, 133-147.

Intractable temporal lobe epilepsy may be accompanied by a psychiatric syndrome, which may be responsive to antidepressant medications.

Dawson, G., Munson, J., Estes, A., Osterling, J., McPartland, J., Toth, K., Carver, L., & Abbott, R. (2002). Neurocognitive function and joint attention ability in young children with autism spectrum disorder versus developmental delay. *Child Development*, *73*, 345-358.

Autistic spectrum children performed similarly to comparison groups on all executive function tasks, indicating that at this early age, there is no autism-specific pattern of executive dysfunction.

Gershon, J. (2002). A meta-analytic review of gender differences in ADHD. *Journal of Attentional Disorders*, 5, 143-154.

Compared to ADHD boys, ADHD girls exhibit less hyperactivity, inattention, impulsivity, and externalizing problems but more intellectual impairments and internalizing problems.

Holtkamp, K., Peters-Wallraf, B., Wuller, S., Pfaaffle, R., & Herpertz-Dahlmann, B. (2002). Methylphenidate-related growth impairment. *Journal of Child and Adolescent Psychopharmacology*, 12, 55-61.

Influence of methylphenidate on growth hormone secretion with subsequent impaired growth is discussed. The case study of a 10-year-old boy who developed an almost complete growth arrest during MPH treatment is reported.

Kanner, A. M., & Balabanov, A. (2002). Depression and epilepsy: How closely related are they? *Neurology*, 58, S27-39.

Depressive disorders and epilepsy may share common pathogenic mechanisms that facilitate the occurrence of one in the presence of the other.

Marsh, L., & Rao, V. (2002). Psychiatric complications in patients with epilepsy: A review. *Epilepsy Research*, 49, 11-33.

Half of all epileptic patients develop psychiatric disturbances, particularly mood, anxiety, and psychotic disorders.

Rappport, L. J., Van Voorhis, A., Tzelepis, A., & Friedman, S. R. (2001). Executive functioning in adult attention-deficit hyperactivity disorder. *Clinical Neuropsychology*, 15, 479-491.

Adult ADHD exhibit specific deficits in response inhibition, with intact abilities in other cognitive domains, such as primary verbal and visuospatial skills.

Ratti, M. T., Bo, P., Giardini, A., & Soragna, D. (2002). Chronic alcoholism and the frontal lobe: Which executive functions are impaired? *Acta Neurologica Scandinavica*, 105, 276-281.

Alcoholic patients are often impaired on function tests related to the frontal lobe.



Reeve, W. V., & Schandler, S. L. (2001). Frontal lobe functioning in adolescents with attention deficit hyperactivity disorder. *Adolescence*, 36, 749-765.

In a rigorous design of frontal lobe function, ADHD teens performed worse on the standard two frontal lobe tasks—the Stroop and Wisconsin Card Sorting Tests.

Stierwalt, J. A., & Murray, L. L. (2002). Attention impairment following traumatic brain injury. *Seminars in Speech and Language*, 23, 129-138.

Summarizes attention impairments associated with traumatic brain injury and outlines assessment and treatment guidelines for clinicians serving these patients.

Zwanzger, P., Ella, R., Keck, M. E., Rupprecht, R., & Padberg, F. (2002). Occurrence of delusions during repetitive transcranial magnetic stimulation (rTMS) in major depression. *Biological Psychiatry*, 51, 602-603.

Repeated TMS treatment appears to increase dopaminergic activity and may lead to psychotic symptoms as a side effect.

### **ONLINE RESOURCES**

*Google Image Search Engine (images.google.com)*: Most people are aware of the remarkable and nearly exhaustive Google search engine which uses the Web's own interconnectivity to determine topic-site relevancy. Google's search engine ranks webpages based on how many other related sites are linked to it; this classification technique is powerful because it taps the self-organizing principles of information. (At least it taps the organizational abilities of webpage creators.) Recently, Google.com began the difficult task of indexing the Web's vast array of pictures. The specifics of the image search engine algorithms are a protected secret, but presumably an image's content is estimated by using its file name, nearby text, and page titles and descriptions. The current technology is primitive, but is still helpful. Try it the next time you need an image of the brain, EEG, or a friend's face (but of course request permission for public use of another's artwork).

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correct HTML coding errors in your webpages, ensure you're taking advantage of Meta tags, and assist in Search Engine rankings.

*Statistical Computations Online* ([faculty.vassar.edu/lowry/VassarStats.html](http://faculty.vassar.edu/lowry/VassarStats.html)): Whether you need to compute an ANOVA or multiple regressions, Vassar provides all comers with an easy-to-use web-based statistical package. It's free, making it very helpful for intro stat students and the budget-strapped clinician.

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