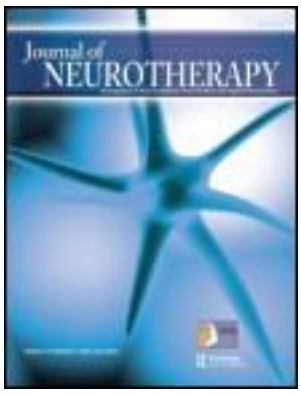

Journal of Neurotherapy: Investigations in Neuromodulation, Neurofeedback and Applied Neuroscience

News from Other Journals and Websites

David A. Kaiser PhD

Published online: 08 Sep 2008.

To cite this article: David A. Kaiser PhD (2003) NEWS FROM OTHER JOURNALS AND WEBSITES, Journal of Neurotherapy: Investigations in Neuromodulation, Neurofeedback and Applied Neuroscience, 7:2, 69-76, DOI: 10.1300/J184v07n02_05

To link to this article: http://dx.doi.org/10.1300/J184v07n02_05

NEWS FROM OTHER JOURNALS AND WEBSITES

David A. Kaiser, PhD, Editor

This month's plethora of articles reflects the growing need to evaluate patients with EEG and other neuroimaging techniques prior to and during treatment intervention.

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 PAPER

Marshall P. J., Bar-Haim, Y., & Fox, N. A. (2002). Development of the EEG from 5 months to 4 years of age. *Clinical Neurophysiology*, *113*, 1199-1208.

The authors examine the dominant frequency during infancy and early childhood in 29 children. This longitudinal study attempts to find the best frequency bins to capture both the dominant frequency activity over posterior sites and what appears to be a functionally independent dominant frequency over central sites–presumably, a precursor to the sensorimotor rhythm. Infants watched a spinning bingo wheel to standardize behavioral and attentional states; 4 year olds a Baby Einstein-like video. EEG was recording from all 29 children at 5, 10, 14, 24, and 51 months of age. Relative power using an average reference montage was calculated in order to assess where peak activity occurred between 3 and 12 Hz.

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10.1300/J184v07n02_05

The author's characterization of dominant frequency activity during this eyes-open attentive task is a bit confusing, given that significantly more relative power was exhibited in lower frequency bands (3-6 Hz) than the 6-9 Hz band which was identified as dominant. Determining an individual's dominant frequency during rest or low challenge conditions should probably best be handled without computation–merely wait until bursts appear in the EEG record and note the morphology and frequency of such bursts. The authors performed this general procedure in a second analysis and this confirmed what quantification did not: 6-9 Hz captures posterior alpha rhythms by 10 months of age. For children 4 years old (and presumably older), the 6-10 Hz band is recommended. Some evidence of functional dissociation between central and posterior rhythms is suggested, though not definitively. Unlike the posterior rhythm which continued to increase with age, the central rhythm peaked slightly in frequency in the second year of life when major changes are occurring in locomotor behavior. The mechanisms behind development changes in the dominant frequency, be they myelination, general neuronal maturation, density of neuronal assemblies, or other mechanisms, have yet to be determined.

ELECTROENCEPHALOGRAPHY

Clarke, A. R., Barry, R. J., McCarthy, R., Selikowitz, M., & Croft, R. J. (2002). EEG differences between good and poor responders to methylphenidate in boys with the inattentive type of attention-deficit/hyperactivity disorder. *Clinical Neurophysiology*, *113*, 1191-1198.

Good methylphenidate responders had EEG profiles of cortical hypoarousal compared to poor responders.

Hallschmid, M., Molle, M., Fischer, S., & Born, J. (2002). EEG synchronization upon reward in man. *Clinical Neurophysiology*, *113*, 1059-1065.

EEG synchronization (8-10 Hz) occurs in humans (cf. Clemente et al., 1964 for cats) after drinking and reflects the drive reducing and rewarding qualities of oral stimulation and consummatory behavior.

Knott, V., Mahoney, C., Kennedy, S., & Evans, K. (2002). EEG correlates of acute and chronic paroxetine treatment in depression. *Journal of Affective Disorders*, *69*, 241-249.

Chronic pharmaco-EEG response pattern reflects both sedating and activating actions in regional specific areas.

Matsuoka, H. (2001). Neuropsychology of epilepsy. *Epilepsia*, *42 (Suppl. 6)*, 42-46.

The authors recommend systematic cognitive tasking, termed "neuropsychological EEG activation," during standard EEG recordings to identify seizure-precipitating factors.

NEUROIMAGING

Anderson, A. K., & Phelps, E. A. (2002). Is the human amygdala critical for the subjective experience of emotion? Evidence of intact dispositional affect in patients with amygdala lesions. *Journal of Cognitive Neuroscience*, *14*, 709-720.

The human amygdala may be recruited during affective states, but is not necessary for the production of these states.

Cho, M. J., Lyoo, I. K., Lee, D. W., Kwon, J. S., Lee, J. S., Lee, D. S., et al. (2002). Brain single photon emission computed tomography findings in depressive pseudodementia patients. *Journal of Affective Disorders*, *69*, 159-166.

Depressive pseudodementia show decreased CBF in the temporo-parietal region, which differs from normal depression profiles.

Duncan, J. S. (2002). Neuroimaging methods to evaluate the etiology and consequences of epilepsy. *Epilepsy Research*, *50*, 131-140.

One-tenth of newly diagnosed patients and one-fourth with chronic active epilepsy develop cerebral, hippocampal or cerebellar atrophy over 3.5 years.

Hesslinger, B., Tebartz van Elst, L., Thiel, T., Haegele, K., Hennig, J., & Ebert, D. (2002). Frontoorbital volume reductions in adult patients with attention deficit hyperactivity disorder. *Neuroscience Letters, 328*, 319-321.

ADHD in adults exhibit reduction of the left orbitofrontal cortex. It's uncertain whether this reflects a residual deficit or a specific type of adult outcome of the disease.

Hull, A. M. (2002). Neuroimaging findings in post-traumatic stress disorder: Systematic review. *British Journal of Psychiatry*, *181*, 102-110.

PTSD neuroimaging studies commonly show hippocampal volume reduction, increased amygdala activation after symptom provocation, and decreased activity of Broca's area. All suggest the brain that may be damaged by psychological trauma.

Levine, B., Cabeza, R., McIntosh, A. R., Black, S. E., Grady, C. L., & Stuss, D. T. (2002). Functional reorganization of memory after traumatic brain injury: A study with $H_2{}^{15}O$ positron emission tomography. *Journal of Neurology, Neurosurgery, and Psychiatry*, *73*, 173-181.

During memory retrieval, brain-injured patients showed increased activity in frontal and occipital lobes, as well as the anterior cingulate. Hemispheric asymmetry was reduced in brain-injured patients compared to normal controls.

McAlonan, G. M., Daly, E., Kumari, V., Critchley, H. D., van Amelsvoort, T., Suckling, J., et al. (2002). Brain anatomy and sensorimotor gating in Asperger's syndrome. *Brain*, *125*, 1594-1606.

Asperger's syndrome is associated with abnormalities in frontostriatal pathways resulting in defective sensorimotor gating, and this may explain their difficulties inhibiting repetitive thoughts, speech and actions.

Miller, A., Fox, N. A., Cohn, J. F., Forbes, E. E., Sherrill, J. T., & Kovacs, M. (2002). Regional patterns of brain activity in adults with a history of childhood-onset depression: Gender differences and clinical variability. *American Journal of Psychiatry*, *159*, 934-940.

Women with childhood depression had higher right midfrontal alpha suppression, and men with childhood depression had higher left midfrontal alpha suppression.

Mitterschiffthaler, M. T., Kumari, V., & Sharma, T. (2002). Brain imaging: A key to understanding depression. *Hospital Medicine*, *63*, 332-336.

One third of people with a mental illness suffer from a depressive disorder, highlighting the need for early diagnosis and effective treatment.

Pizzagalli, D. A., Nitschke, J. B., Oakes, T. R., Hendrick, A. M., Horras, K. A., Larson, C. L., et al. (2002). Brain electrical tomography in depression: The importance of symptom severity, anxiety, and melancholic features. *Biological Psychiatry*, *52*, 73-85.

Right frontal and posterior cingulate regions are implicated in depression in current and past research. Depressed subjects showed more excitatory (21-30 Hz) activity in right superior and inferior frontal lobe (area 9/10/11).

Rosenberg, P. B., Mehndiratta, R. B., Mehndiratta, Y. P., Wamer, A., Rosse, R. B., & Balish, M. (2002). Repetitive transcranial magnetic stimulation treatment of comorbid posttraumatic stress disorder and major depression. *Journal of Neuropsychiatry and Clinical Neuroscience*, *14*, 270-276.

Repetitive transcranial magnetic stimulation to left frontal cortex produced significant antidepressant responses in 8 of 12 PTSD-plus-depressed patients. Comparable improvements were seen in anxiety, hostility, and insomnia, but not PTSD symptoms.

Rubinsztein, J. S., Michael, A., Paykel, E. S., & Sahakian, B. J. (2000). Cognitive impairment in remission in bipolar affective disorder. *Psychological Medicine*, *30*, 1025-1036.

Patients with mania and unipolar depression show greater residual impairment in more posterior cortical function (temporal lobe) than frontal lobe function in remission.

Shidara, M., & Richmond, B. J. (2002). Anterior cingulate: Single neuronal signals related to degree of reward expectancy. *Science*, *296*, 1709-1711.

Specific neurons in the anterior cingulate cortex are responsive to reward expectancy, a possible animal model for obsessive-compulsive disorder and drug abuse.

Strakowski, S. M., Adler, C. M., & DelBello, M. P. (2002). Volumetric MRI studies of mood disorders: Do they distinguish unipolar and bipolar disorder? *Bipolar Disorders*, *4*, 80-88.

Affective illnesses may reflect an underdeveloped (or atrophied) prefrontal region, leading to loss of cortical modulation of limbic emotional networks.

MENTAL HEALTH AND NEUROLOGICAL DISORDERS

Bannon, S., Gonsalvez, C. J., Croft, R. J., & Boyce, P. M. (2002). Response inhibition deficits in obsessive-compulsive disorder. *Psychiatry Research*, *110*, 165-174.

OCD subjects exhibit deficits in behavioral and cognitive inhibition, which may underlie the repetitive symptomatic behaviors of the disorder.

Baron-Cohen, S. (2002). The extreme male brain theory of autism. *Trends in Cognitive Sciences*, *6*, 248-254.

Two neglected dimensions for understanding human sex differences are 'empathizing' (female) and 'systemizing' (male). Autism may be considered as an extreme of the normal male profile.

Burt, T., Lisanby, S. H., & Sackeim, H. A. (2002). Neuropsychiatric applications of transcranial magnetic stimulation: A meta analysis. *International Journal of Neuropsychopharmacology*, *5*, 73-103.

Most studies indicate that slow-frequency repetitive TMS (rTMS) and higher frequency rTMS have antidepressant properties; however, effect sizes are heterogeneous and the durability of antidepressant effects is largely unknown.

Castellanos, F. X., & Tannock, R. (2002). Neuroscience of attention-deficit/hyperactivity disorder: The search for endophenotypes. *Nature Reviews Neuroscience*, *3*, 617-628.

Authors report three ADHD endophenotypes: a specific abnormality in reward-related circuitry that leads to shortened delay gradients, deficits in temporal processing, and deficits in working memory.

Daskalakis, Z. J., Christensen, B. K., Fitzgerald, P. B., Roshan, L., & Chen, R. (2002). The mechanisms of interhemispheric inhibition in the human motor cortex. *Journal of Physiology*, *543*, 317-326.

Mechanisms mediating short interval intracortical inhibition probably differ from those mediating long interval intracortical inhibition and interhemispheric inhibition.

Holmes, G. L., Khazipov, R., & Ben-Ari, Y. (2002). Seizure-induced damage in the developing human: Relevance of experimental models. *Progress in Brain Research*, *135*, 321-334.

While the majority of children with epilepsy have normal cognitive development, a few with frequent, recurrent seizures show progressive cognitive impairment. Animal models have yet to be developed that mimic human epileptic syndromes.

Horner, M. D., & Hamner, M. B. (2002). Neurocognitive functioning in posttraumatic stress disorder. *Neuropsychology Review*, *12*, 15-30.

Most recent PTSD research finds impairment of attention or immediate memory or both.

Kucharska-Pietura, K., David, A. S., Dropko, P., & Klimkowski, M. (2002). The perception of emotional chimeric faces in schizophrenia: Further evidence of right hemisphere dysfunction. *Neuropsychiatry, Neuropsychology, and Behavioral Neurology*, *15*, 72-78.

Right hemisphere attentional deficits are implicated in schizophrenia.

ONLINE RESOURCES

The Web is the best resource we have to depict the nature of humanity in its entirety. As such, much of it is specialized, unexplored, and unknown. I'm grateful for the *JNT* readers who have directed me toward relevant websites of which I was not aware.

Kulkosky's Bookmarks for History of Psychology
www.uscolo.edu/kulkosky/main.htm

The Biofeedback Center
www.drbiofeedback.com

Psychology books online in their entirety:
The Interpretation of Dreams by Sigmund Freud
The Varieties of Religious Experience by William James
www.psywww.com/books/index.htm

Careers in Psychology
www.psywww.com/careers/index.htm

Searchable Psych Jobs Listings
www.apa.org/
www.psychologicalscience.org/

Psychology Ph.D. program rankings
www.socialpsychology.org/ranking.htm
(UCLA, my alma mater, tied for second overall and first in clinical, and I thought they were only good at basketball.)

Psychology Journals online
www.psywww.com/resource/journals.htm

Luscher Color Test-Personality profiles in 5 minutes
www.supervert.com/shockwave/colortest