ISNR 2009 Conference Workshops
Thursday, September 3, 2009

WS 1: QEEG Interpretation: Review of Models and the 2-Dimensional EEGVigilance-(Lecture, Interactive Discussion)

Martijn Arns, M.Sc., Brainclinics Diagnostics, martijn@brainclinics.com

Credits: 3.00

Level of Difficulty: Advanced

Abstract

This workshop will review the different approaches to QEEG interpretation such as 'Technology driven approaches', the EEG Vigilance model (Bente, 1964), the EEG Phenotype model (Johnstone, Gunkelman & Lunt, 2005) and will also touch upon sleep-wake stages as reflected in the EEG. Data from a series of scientific studies aiming at validating these models will be presented and an overview from the current literature will be presented demonstrating the strengths and weaknesses of these models, resulting in a proposed new model incorporating and extending the previous models, which are also consistent with the data and the literature. The workshop will address QEEG interpretation for Personalized Medicine applications such as predicting medication outcome, neurofeedback and rTMS treatment.

Furthermore, this workshop will critically review and demonstrate how averaged group data (such as theta/beta ratio; frontal alpha asymmetry) provide misrepresentations and do not relate to individual data.

This workshop requires an intermediate to advanced level of QEEG knowledge and experience. The objective is to review the available literature and models for QEEG interpretation and teach attendants to be critical and objective about many published studies and new methods and understand the methods they use.

References

Johnstone, J., Gunkelman, & J. Lunt, J. (2005) Clinical database development: Characterization of EEG Phenotypes. Clinical EEG and Neuroscience, 36(2); 99-107.
Bente D. Die Insuffizienz des Vigilitätstonus. Habilitation: Universität Erlangen, 1964.
Arns, M., Gunkelman, J. Breteler, M. & Spronk, D. EEG Phenotypes predict treatment outcome to stimulants in children with ADHD (2008) Journal of Integrative Neuroscience.
Spronk, D., Arns, M., Bootsma, A., van Ruth, R. & Fitzgerald, P. Long term effects of left frontal rTMS on EEG and ERP's in patients with Depression (2008) EEG and Clinical Neuroscience, 39(3), 118-124.
Loomis AL, Harvey EN, Hobart GA (1938) Distribution of disturbance-patterns in the human electroencephalogram, with special reference to sleep. J Neurophysiol 1:413– 430.
Rechtschaffen A, Kales A (1968) A manual of standardized terminology, techniques and scoring system for sleep states of human subjects. Public Health Service, U.S. Government Printing Office, Washington DC.
Hegerl U, Stein M, Mulert C, Mergl R, Olbrich S, Dichgans E, Rujescu D, Pogarell O. EEG-vigilance differences between patients with borderline personality disorder, patients with obsessive-compulsive disorder and healthy controls. Eur Arch Psychiatry Clin Neurosci 2008; 258: 137-143.

Goals/Objectives

Explain how the Vigilance model from Bente (1964) works.
Differentiate between individual and group-average data.
Summarize the ideas behind the two dimensional Vigilance-Brain Rate model and how the EEG-Phenotype model fits into this.

Outline

First the history of QEEG and current models to interpret EEG will be discussed. This is followed by an explanation of the Vigilance model and some studies which have been performed to further investigate the

EEG Phenotype model. Finally the 2-dimensional EEG Vigilance-Brainrate model will be explained and how this model fits the available data.

Financial Interest: There are no conflicts of interest.

WS 2: The Valsalva Wave -The Changing Landscape of Heart Rate Variability Biofeedback (Lecture)

Stephen Elliott, B.S., Coherence L.L.C., steve.elliott@coherence.com
Dee Edmonson, R.N., Plano Neurotherapy Center, dee.edmonson@sbcglobal.net

Credits: 3.00

Level of Difficulty: Beginner

Abstract
The Valsalva Wave (vascular respiratory pressure wave) is a fundamental physiological phenomenon underlying cardiac function and relates strongly to both heart rate variability and blood volume pulse. The Valsalva Wave can be observed with a DC coupled plethysmograph and employed as a fundamentally new form of biofeedback that is indicative of breathing efficacy and autonomic status. This workshop provides an update on the theory, instrumentation, and emerging protocol for Valsalva Wave biofeedback as well as the bigger picture of resonant cardiopulmonary operation. Using a new instrument that facilitates monitoring of both Valsalva Wave and heart rate variability, an emerging protocol for training the Valsalva Wave alone and in combination with heart rate variability will be presented and discussed.

References
Elliott, S., Edmonson, D., The New Science of Breath – 2nd Edition, Coherence Press, 2006.
Elliott, S., Edmonson, D., Coherent Breathing – The Definitive Method, Coherence Press, 2008.
Vaschillo, E., Lehrer, P. Rishe, N., Konstantinov, M., Heart Rate Variability Biofeedback As A Method For Assessing Baroreflex Function: A Preliminary Study of Resonance In The Cardiovascular System, Applied Psychophysiology and Biofeedback, Vol.27, No. 1, 1-27 (2002).

Goals/Objectives
Discuss the "Valsalva Wave" (respiratory vascular pressure wave), its origin and significance.
Describe the means of detecting and monitoring the Valsalva Wave
Describe the Valsalva Wave's relationship to heart rate variability
Discuss the characteristics of the Valsalva Wave
Describe the method and protocol for cultivating Valsalva Wave amplitude and coherence
Discuss experimental application of Valsalva Wave biofeedback in a clinical practice.

Outline
Experiential segment (15 mins.)
Breathing, Valsalva Wave, heart rate variability, and circulation, the big picture (30 mins.)
Discussion of the technology required for detecting and monitoring the Valsalva Wave. What's new, what's the same. [No sales pitch.] (15 mins.)
Simultaneous Valsalva Wave and HRV monitoring, the relationship between these biometrics. (15 mins.)
A proposed protocol for cultivating Valsalva Wave amplitude and coherence.
(15 mins.)
A present protocol for cultivating Valsalva Wave amplitude and coherence employing heart rate variability.
(15 mins.)
Case observations employing Valsalva Wave biofeedback. (60 mins.)
Review & questions and answers (15 mins.)

Financial Interest: Stephen Elliott is the President of COHERENCE LLC, Allen, Texas, and a practitioner/facilitator of the method of Coherent Breathing method. COHERENCE LLC sells informational materials and products to promote Coherent Breathing.

WS 3: EEG, QEEG and Symptom-Guided NeuroRehabilitation Programs - Various Cases Presented (Lecture, Experiential)

Victoria Ibric, M.D., Ph.D., Neurofeedback and NeuroRehab Institute, Inc., dribric@yahoo.com

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
In order to achieve a successful outcome, in a NeuroRehabilitation program, a detailed planning process is essential. The clinician must learn about the client's biological markers, such as hormones, neurotransmitters as well as the composition of his/her body chemistry (trace elements in hair or urine) in addition to their symptoms and brain electrical activity (EEG).

EEG activity has been found to be correlated to certain clinical conditions. Furthermore, the Quantitative EEG (QEEG) findings will add to the clinician's decision making process; most importantly to be considered in TBI, in very complex pain syndromes, in emotional dysfunctions and in the Autistic Spectrum.

A number of case studies and their progress will be discussed.

References
Schwartz, E., Bhan, S. (2008) The need for biomarker analysis to treat psychiatric disorders is rampant. British Journal of Pharmacology, 153, S133-S136
Lambert GW, et al. (1995) Central nervous noradrenergic and dopaminergic turnover in response to acute neuroleptic challenge. Life Sci; 56: 1545-1555
Plizka SR, et al. (1994) Urinary catecholamines in attention-deficit hyperactivity disorder with and without comorbid anxiety. J Am Acad Chil Adolesc Psychiat: 33:1165-1173
Kakuda T, Yanase H, Utsunomiya K, et al. (2000) Protective effect of gammaglutamylethylamide (theanine) on ischemic delayed neuronal death in gerbils. Neurosci Lett; 289:189-92.
Iosifescu DV, Renshaw PF, Lyoo IK, Lee HK, Perlis RH, Papakostas GI, Nierenberg AA, Fava M (2006) Brain white-matter hyperintensities and treatment outcome in major depressive disorder. Br J Psychiatry. Feb: 188:180-5.
Iosifescu DV, Greenwald S, Devlin P, Perlis RH, Denninger JW, Alpert JE, Fava M (2008) Pretreatment frontal EEG and changes in suicidal ideation during SSRI treatment in major depressive disorder Acta Psychiatr Scand. Apr;117(4):271-6. Epub 2008 Feb.
Ibric, VL and McCourt, JL (2002) Neurofeedback Training: Integration with Diet and Detoxification Programs. Journal of Neurotherapy, Vol. 6, No 4, pp 25-38.
Ibric, VL (2004) "Bipolar Depression and Addictions -Seven Year Success", California Biofeedback, Newsletter of the Biofeedback Society of California.
Spring of 2004, Vol. 20, No 1, p.6-7. Hudspeth, WJ and Ibric, VL (2004) "qEEG and Behavioral Indices for Neurofeedback Effectiveness". (Symposia). Clinical EEG and Neuroscience, October 2004, Vol.35, Number 4, p213-214.
Ibric, VL, Dragomirescu, LG, & Hudspeth, WJ (2008-9) Real-time changes in connectivity during Neurofeedback, paper accepted for publication in the Journal of Neurotherapy.
Huff, K.R., and Ibric, L.L.V. Growth factor and Cytokine signals modulate astrocyte proliferation and immune mediation. Chapter IN: Differentiation and Functions of Glial Cells, Levi, G. (Ed. Alan R. Liss, Inc., N.Y.) 393-394, 1990.

Goals/Objectives

Explain why the success of the Neurotherapy (NFT) depends on the client's specific biological, chemical and neurological make up
State the importance of the neurotransmitters in keeping the autonomic nervous system in balance, and how to assess the biological markers
Interpret and integrate the biological markers to symptoms and EEG correlates

Outline
Biological markers and chemical make up studies using non-invasive techniques: hair, for the mineral analysis, and urine/ saliva tests, for hormones and neurotransmitters evaluation. Case studies presented. (50 mins.)
EEG correlates to symptoms using Quantitative EEG evaluations. Case studies presented. (50 mins.)
Final integration of all the data accumulated and conclusions. (30 mins.)
Question and Answer (30 mins.)

Financial Interest: No financial interests.

WS 4: Fundamentals of EEG and Processing Methods As They Apply To the Practice of Neurofeedback (Lecture, Demonstration, Hands-On)

Marc Saab, M.Eng., Thought Technology Ltd., marc@thoughttechnology.com

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
The practice of neurofeedback requires knowledge in such varied areas as psychology, neurophysiology, electroencephalography (EEG) and signal processing. Where EEG and signal processing are concerned, often an understanding of complex concepts is required to use the many tools available. This workshop will present the fundamental concepts of both EEG and commonly-used software methods in a simple, clear manner for the non-technical practitioner to appreciate, retain and apply, with the intention of improving clinical outcomes. This workshop is of interest to anyone recording EEG and performing neurofeedback using computer software. Topics will include (among others, and as time permits): a physiological basis of EEG, electrode placement and measurement fundamentals, surface QEEG characteristics, clinical recommendations, digital filtering, an explanation of time and frequency, DC recording and evoked and slow cortical potentials (EP and SCP).

References
Baillet S, Mosher JC, Leahy RM. Electromagnetic Brain Mapping. IEEE Signal Processing Magazine, November 2001: 14-30.
Birbaumer N, Elbert T, Canavan GM, Rockstroh B. Slow potentials of the cerebral cortex and behaviour. Physiol. Rev. 70, 1-41, 1990.
Fehmi LG, Sundor MA. The Effects of Electrode Placement Upon EEG Biofeedback Training: The Monopolar-Bipolar Controversy. Int. J. PsychoSom; 36(1-4): 2333, 1989.
Gloor P. Neuronal generators and the problem of localization in electroencephalography: Application of volume conductor theory to electroencephalography. J. Clin. Neurophysiol., vol. 2, pp. 327-354, 1985.
Marieb EN, Mallat J. Human Anatomy. 2nd ed. New York: Benjamin Cummings, 1997.
Neidermeyer E, Lopes da Silva F, eds. Electroencephalography: Basic principles, Clinical Applications and Related Fields. 4th ed. Baltimore: Lippincott Williams and Wilkens, 1999.
Nunez PL. Electric Fields of the Brain. New York: Oxford, 1981.
Strehl U, Leins U, Goth G, Klinger C, Hinterberger T, Birbaumer N. Self-regulation of Slow Cortical Potentials: A New Treatment for Children With Attention Deficit/Hyperactivity Disorder. Pediatrics. 118: 1530-1540, 2006.
Talgren P. DC-EEG for routine clinical use: methods and clinical impact. Doctoral dissertation -Applied Electronics Lab., Helsinki University of Technology – Helsinki. 2006 (ISBN 951-22-6955-4)

Vander AJ, Sherman JH, Luciano DS. Human Physiology: The Mechanisms of Body Function. 6th ed. New York: McGraw Hill, 1994.
Webster JG, ed. Medical Instrumentation: Application and Design. 3rd ed. New York: John Wiley and Sons, 1998.

Goals/Objectives
State the physiological origins of the EEG signal
Discuss the fundamental concepts associated with surface EEG acquisition and analysis
Compare advanced methods of EEG analysis and understand the underlying concepts
Apply, remove and clean EEG electrodes quickly and reliably to minimize technical problems, maximize efficiency and maintain electrode integrity.

Outline
PART I: Physiological basis of EEG, electrode and measurement fundamentals, amplifier characteristics, electrode locations and surface EEG characteristics (60 mins.)
PART II: Basics of signal processing: analog to digital (A/D) conversion, digital filtering, time vs. frequency domain, and important recommendations for clinical usage (60 mins.)
PART III: Advanced methods: DC recording and evoked and slow cortical potentials (EP and SCP) (30 mins.)
PART IV: hands-on demonstration of EEG electrode placement, impedance checking, and electrode removal and cleaning (30 mins.)

Financial Interest: I am currently EEG Product Manager at Thought Technology Ltd. This presentation is not equipment specific.

WS 5: Intermediate/Advanced Z Score Training (Lecture)

Mark Smith, M.S.W, Private Practice, marksmith50@verizon.net

Credits: 3.00

Level of Difficulty: Intermediate to Advanced

Abstract
This workshop will demonstrate and explain the advanced technique of the use of z-scores for neurofeedback. Intermediate and advanced techniques for z-score training will be introduced and discussed. Clinical outcome data consisting of whole-head pre and post-QEEGs illustrating the normalization of Z scores, along with clinical improvement, will be presented. This will be a hands-on workshop with the opportunity for direct experience. The use of NeuroGuide for assessments and treatment planning will be discussed. Participants are encouraged to bring their equipment and computers for practical demonstrations.

References
Collura, T.F., Thatcher, R.W., Smith, M.L., Stark, C.R., and Lambos, W.A. (2008) Real-Time EEG Z-Score Training – Realities and Prospects, in: Evans, J., Arbanel, and Budzynski T., and Budzynski, H., Quantitative EEG and Neurofeedback, 2nd Edition, Elsevier.
Collura, T.F. (2008) Whole-Head Normalization using Live Z-Scores for Connectivity Training, NeuroConnections, April 2008.
Smith, M.L., (2008) Case Study – Jack, NeuroConnections, April 2008
Stark, C. R. (2008) Consistent Dynamic Z-Score Patterns Observed During Z-Score Training Sessions---Robust Among Several Clients And Through Time For Each Client, NeuroConnections, April 2008.
Walker, J.E., Kozlowski, G.P., and Lawson, R. (2007) A Modular Activation/Coherence Approach to Evaluating Clinical/QEEG Correlation and for Guiding Neurofeedback Training: Modular Insufficiencies, Modular Excesses, Disconnections, and Hyperconnections, Journal of Neurotherapy, 11(1) 25-44.

Goals/Objectives

Perform advanced Live Z-score training with up to 4 channels
Design advanced live Z-score protocols
Design protocols that combine live Z Score training and traditional neurofeedback
Utilize live Z score monitoring to enhance clinical decisions

Outline
Use of Live Z-scores in neurofeedback planning, monitoring, and training (45 mins.)
Design and demonstration of advanced LZT training protocols (45 mins.)
Clinical use of QEEG and advanced LZT training (45 mins.)
Practicum – advanced LZT EEG training (45 mins.)

Financial Interest: I am an instructor for Stress Therapy Solutions, Inc.

WS 6: Metacognition - How To Use Strategies With Children & Adults To Increase The Effectiveness And Generalization of NFB and BFB Interventions (Lecture, Experiential)

Michael Thompson, M.D., ADD Centre, lyndamichaelthompson@gmail.com
Lynda Thompson, Ph.D., ADD Centre, lyndamichaelthompson@gmail.com

Credits: 3.00

Level of Difficulty: Advanced

Abstract
Introduction:
This workshop emphasizes the incorporation of cognitive strategies for learning (reading, writing, listening, mathematics, memory, recall) without habitual bracing using SMIRB strategy for eliminating ruminations and the habit-to-a-habit technique to assist generalizing the NFB + BFB learning from sessions to the client every-day living. It will demonstrate how to integrate these strategies while reducing habitual bracing and optimizing mental performance using NFB + BFB.

Method:
Participants will be involved in the development and integration of strategies into typical neurofeedback + Biofeedback adult and child sessions in the role of both trainer and client.

Result:
Participants will be able to introduce Metacognitive strategies in their day-to-day work with clients.

Conclusion:
Distinct EEG patterns are found in different clinical conditions and even in clients who come purely for optimizing their performance. Appropriate EEG and psychophysiological stress assessment allows the trainer to set up an effective NFB + BFB program to help the client recognize and eliminate their habitual "bracing" patterns with stress in academics, work and athletics. While using the BFB +NFB to sustain a mental state that is calm, relaxed yet alert, with appropriately flexible focus and concentration the participants will learn to incorporate learning strategies into their work.

References
Sears, W. & Thompson, L. (1998) The ADD Book, New Understandings, New Approaches to Parenting Your Child. New York: Little, Brown & Co.
Thompson, M. & Thompson, L., 2003, The Neurofeedback Book: An Introduction to Basic Concepts in Applied Psychophysiology, Association for Applied Psychophysiology, Wheat Ridge, Colorado.

Goals/Objectives
List key metacognitive strategies for different age groups

State methods for using biofeedback and neurofeedback to decrease habitual 'bracing' and increase attention and concentration
Cite relaxed quick-questions to use while putting on electrodes to ascertain client's usage of metacognitive strategies.
Develop a rational intervention based on this assessment data

Outline
Presenters: The entire presentation is carried out by both the Thompsons together.
Time Frames: ¾ of the time is spent on case examples leading to accurate assessment and integration of appropriate strategies into training sessions. ¼ of the time is focused on demonstration and practice.

Method:
Introduction:
This workshop will begin using a case study method. First one of the participants will be asked to play the role of a disinterested grade 9 student. Dr T. will demonstrate how to use techniques to catch the students' interest – demonstrate a strategy for organizing a typical class presentation and write-up. They will ask the "student" to observe how they habitually brace when given a problem – a performance challenge and then discuss with the class how this 'bracing' affects their physiology and brain wave patterns. How taking control of these factors and using a strategy wastes none of their valuable time for fun social activities but could result in A+ report cards. The teaching method models the use of Socratic questioning which is essential for work with most clients. The presenters will lead the participants through different strategies and show how they can logically derive strategies with the students that really work.
Presentation:
These cases will lead into a presentation – again with group discussion about other strategies for reading, listing, memory recall, organization and mathematics. Each assessment example will lead to a discussion of how the EEG (and psychophysiological) assessment, our knowledge of neuroanatomy and neurophysiology and the clients difficulties and goals lead to an intervention program.

The practical demonstration may then evolve into doing a quick EEG and stress assessment to demonstrate how we all 'brace' when challenged intellectually and how this effects our physiology and EEG and how we can learn to control this while carrying out Metacognitive strategies.

Financial Interest: Lynda Thompson is co-author of THE A.D.D. BOOK. Michael and Lynda are co-authors of SETTING UP FOR CLINICAL SUCCESS and THE NEUROFEEDBACK BOOK. It is likely that these books will be on sale at the meeting. The authors will state their relationship to these books at the workshop.

Friday, September 4, 2009

WS 7: Learning to use the Asymmetry Protocol for Treatment of Depression: A workshop Designed to Present Theory and Applications of the Asymmetry Protocol to Use in Clinical Practice (Lecture, Demonstration, Experiential)

Elsa Baehr, Ph.D., NeuroQuest, Inc., neuroquest@gmail.com
Tom Collura, PhD BrainMaster Technologies tomc1@brainm.com
Cory Feinberg

Credits: 3.00

Level of Difficulty: Intermediate

Abstract

The word is out and every day NeuroQuest, Ltd. receives calls from all over the country from clients looking for therapists who have been trained to treat depression with the asymmetry protocol. We have been licensed to use this protocol for close to 17 years. We have published a study showed lasting effects 1 to 5 years after the termini nation of treatment. (Baehr, Rosenfeld, Baehr , 2001). Patients who have remained in contact 15 to 16 years after treatment have reported that they have had no major depressive episodes.

This workshop is designed to provide training for clinicians who wish to use this protocol in their practice. After a brief introduction which will include a discussion of the theoretical concepts underlying the development of this ratio-based training protocol, a review of the literature and a discussion of other neurofeedback protocols to treat depression, we will spend the remainder of time learning how to use the asymmetry protocol in clinical practice. We will cover the evaluation of the client and review screening techniques to look for co-morbid factors to depression. We will review the techniques used to prepare the client for use of this protocol, where to apply the electrodes, how to adjust the threshold for maintaining feedback, and when to use adjunctive applications for the treatment resistant client. We will discuss how to record daily sessions and how to evaluate progress. Information on the computer set-up and a demonstration will be included.

(To obtain a license to use this protocol please contacts Dr. Peter Rosenfeld. His e-mail address is: jp-rosenfeld@northwestern.edu).

References

Baehr, E., Riss, R.(2004) Hemispheric amplitude asymmetries across the frequency spectrum: the depression protocol revisited. AAPB Neurofeedback Newsletter Fall vol.1, #1.

Baehr, E., Baehr, R., Rosenfeld, J.P. (1995). A Report of Ongoing Research of EEG Frontal Alpha Asymmetry in Depressed and in Dysfluent Individuals. Proc. Of 3rd Ann. Meeting of Society for the Study of Neuronal Regulation. Scottsdale, AZ.

Baehr, E., Baehr, R. (1997). The Use of Brainwave Biofeedback as an Adjunctive Therapeutic Treatment for Depression: Three Case Studies. Biofeedback Vol. 25, #1 10-11.

Baehr, E., Rosenfeld, J. Peter, Baehr, R., Earnest, Carolyn (1998). Comparison of two EEG asymmetry indices in depressed patients vs. normal controls. International Journal of Psychophysiology 31 89-92.

Baehr, E., Rosenfeld, J. Peter, Baehr, r., Earnest, Carolyn (1999, in press). Neurotherapy for Mood Disorders. In Evans & Abarbanel (eds) Introduction to Quantitative EEG and Neurofeedback. The Academic Press 181-200.

Baehr, E., Rosenfeld, P., Miller, L., Baehr, R. (2004). Premenstrual dysphoric disorder and changes in frontal alpha asymmetry. International Journal of Psychophysiology 52, 159-167

Davidson, R. J., Schwartz, G.E., Saron, C., Bennett, J., Goleman, D.J. (1979). Frontal versus parietal EEG asymmetry during positive and negative affect. Psychophysiology 16, 202-203.

Davidson, R.J. (1984). Hemispheric asymmetry and emotion. In K. Scherer & P. Ekman (Eds.), Approaches to emotion (pp.39-57). Hillsdale, NJ: Erlbaum.

Davidson, R.J., & Tomarken, A. J.(1989). Laterality and emotion: An electrophysiological approach. In F. Boller & J. Grafman(Eds.) Handbook of Neuropsychology (pp.419-441). Amsterdam: Elsevier.

Davidson, R.J.(1992). Emotion and affective style: hemispheric substrates. Psychological Science 3, 39-43.

Davidson, R. J.(1994). Asymmetric brain function, affective style and psychopathology: The role of early experience and plasticity. Development and Psychopathology 6, 741-758.

Davidson, R.J. (1995). Cerebral Asymmetry, Emotion and Affective Style. In Davidson, R.J. & Hugdahl (eds). Brain Asymmetry Cambridge, Mass,: MIT Press, 369-388.

Davidson, R.J.(1998). Anterior electrophysiological asymmetries, emotion and depression; conceptual and methodological conundrums. Psychophysiology 35, 607-614.

Henriques, J. B., Davidson, R. J.(1991). Left frontal hypoactivation in depression. J. Abnormal Psychol. 100, 535-545.

Irwin, W., Anderle, M.J., Abercrombie, H.C., Schaefer, S.M., Kalin, N.H., Davidson, R.J.(2004) Amygdalar interhemispheric functional connectivity differs between the non-depressed and depressed human brain. NeuroImage 21 674-686.

Rosenfeld, J. P., Cha, G., Blair, T. and Gotlib, I. (1995). Operant Biofeedback Control of Left-Right Frontal Alpha Power Differences. Biofeedback and Self-Regulation 20, 241-25.
Rosenfeld, J. P., Baehr, E., Baehr, R., Gotlib, I., & Ranganath, C. (1996).Preliminary evidence that daily changes in frontal alpha asymmetry correlate with changes in affect in therapy sessions. Int. J. Psychophysiol. 23, 241-258.

Goals/Objectives
Discuss the theoretical basis for the asymmetry protocol
Summarize the research literature as it pertains to the clinical use of the protocol
Demonstrate how to use the protocol, how to record the data and when and how to use adjunctive means to achieve appropriate levels of feedback

Outline
Detailed review of the literature
Outcome studies and research studies regarding clinical use of the protocol
How and where to apply electrodes, recording keeping, when to adjust the threshold, adjunctive techniques
Supervised practice

Financial Interest: No financial interest.

WS 8: Coherence Assessment and Training (Lecture, Demonstration)

Robert Coben, Ph.D., Private Practice, drcoben@gmail.com

Credits: 3.00

Level of Difficulty: Intermediate to Advanced

Abstract
Normal brain functioning depends on synchronization within distributed brain networks (He, Shulman, Snyder, & Corbetta, 2007). Breakdown of such connectivity correlates with behavioral and cognitive deficits (Wolters & Raffone, 2008). EEG coherence is the clearest indicator of this synchronization and coherence anomalies have been associated with such diverse conditions as autism, traumatic brain injury and childhood sexual abuse (Coben & Hudspeth, 2008). The clinician, however, faces a challenge in that there are different methods for assessing coherence and these appear to produce varying results. Kus, Kaminski, & Blinowska, 2004 were the first to compare pair-wise and multivariate measures of coherence which showed them to not be equivalent and suggested that multivariate views were more accurate. Presented will be preliminary data showing the relationship between coherence (pair-wise, multivariate, source coherence) and MRI-Diffusion Tensor Imaging data collected on a series of autistic patients demonstrating the relationship between coherence and more 3-dimensional views of neural connectivity. Based on these data, these methods will be presented and explained with an emphasis on multivariate views of coherence as a preferred method.

Once the assessment of coherence is understood, coherence training protocols may be used as a form of neurofeedback training to effectively enhance patient functioning. The efficacy of coherence training has been demonstrated in such conditions as autism (Coben & Padolsky, 2007), learning disability (Thornton & Carmody, 2005), traumatic brain injury (Walker, Norman, & Weber, 2002), epilepsy (Walker & Kozlowski, 2005) and others. In the second part of this workshop, neurofeedback applications that can therapeutically alter coherence will be presented. A series of cases will demonstrate the application and efficacy of this approach. Both two channel and multi-channel case presentations will be included. Also presented will be a clinician-scientist approach to objectively examining changes on a case by case basis including the demonstration of EEG changes as a result of neurofeedback/coherence training applications.

References
Coben, R. & Hudspeth, W.J. (2008). Introduction to advances in EEG connectivity. Journal of Neurotherapy, 12(2-3), 93-98.

Coben, R. & Padolsky, I. (2007). Assessment-guided neurofeedback for autistic spectrum disorder. Journal of Neurotherapy, 11(1), 5-23.
He, B.J., Shulman, G.L., Snyder, A.Z., & Corbetta, M. (2007). The role of impaired neuronal communication in neurological disorders. Current Opinion in Neurology, 20(6), 655-660.
Kus, R., Kaminski, M., & Blinowska, K.J. (2004). Determination of EEG activity propagation: Pair-wise versus multichannel estimate. IEEE Transactions on Biomedical Engineering, 51(9), 1501-1510.
Thornton, K. & Carmody, D. (2005). Electroencephalogram biofeedback for reading disability and traumatic brain injury. Child and Adolescent Psychiatric Clinics of North America, 14(1), 137-162.
Walker, J.E. & Kozlowski, G.P. (2005). Neurofeedback treatment of epilepsy. Child and Adolescent Psychiatric Clinics of North America, 14, 163-176.
Walker, J.E., Norman, C.A., & Weber, R.K. (2002). Impact of qEEG-guided coherence training for patients with a mild closed head injury. Journal of Neurotherapy, 6(2), 31-43.
Wolters, G., & Raffone, A. (2008). Coherence and recurrency: Maintenance, control and integration in working memory. Cognitive Processes, 9(1), 1-17.

Goals/Objectives
Compare different methods of assessing EEG coherence.
Discuss the significance of EEG coherence findings in their patients.
Explain how modification of EEG coherence may benefit their patients.

Outline
Introduction to brain connectivity concepts (15 mins.)
Review of EEG coherence techniques (45 mins.)
Data demonstration relating EEG coherence findings to MRI-diffusion tensor imaging results in autistic children (45 mins.)
Demonstration of EEG coherence neurofeedback approaches (45 mins.)
Case reviews demonstrating protocol setup and efficacy analysis (30 mins.)

Financial Interest: No financial conflicts.

WS 9: QEEG Subtype Based Assessment for ADD & Autistic Spectrum Disorder – Part I (Lecture, Demonstration)

Michael Linden, Ph.D., ADD Treatment Centers, drmike49@aol.com

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
This is Part 1 of a two-part series workshop, but it can be taken independently. This workshop will present the advances in the diagnosis of Autism, Asperger's and ADD using interviews, behavior rating scales, continuous performance tests and QEEG. The use of QEEG to discover which subtype of Autistic/Asperger's (8) and ADD (4) will be explained. We will discuss the similarities and differences in symptoms and QEEG patterns. We will present the use of QEEG and continuous performance tests to guide neurofeedback protocol selection.

References
Amen, Daniel. Healing ADD. (2001).
Chabot, R., & Serfontein, G. (1996). QEEG profiles of children with ADHD. Biological Psychiatry, 40, 951-963.
Coben, Robert & Linden, Michael. Neurofeedback for Autistic Spectrum Disorder: A Review of the Literature. Journal of Applied Psychophysiology and Biofeedback, (In Press, 2009).
Linden, M. (2005). QEEG Patterns of Students with Autistic Spectrum Disorder. Presented at the AAPB Meeting, Austin, TX.
Thompson, L., & Thompson, M. (2003). Helping Autistic Spectrum Disorders.

Goals/Objectives
Compare methods available to diagnosis Autism, Asperger's and ADD and differentiate them from other similar conditions.
Discuss the QEEG subtypes of Autism, Asperger's and ADD and how they differ and overlap.
Explain how to use behavior rating scales, CPT tests and QEEG to monitor treatment effects of medications and neurofeedback.

Outline
Background/Etiology of ADD & ASD (30 mins.)
Behavior rating scales & IQ tests (20 mins.)
CPT tests (25 mins.)
QEEG scan & QEEG mapping (70 mins.)
Neurofeedback & medication treatment monitoring (35 mins.)

Financial Interest: I have no financial interests or relationships.

WS 10: An Empirical Phenomenological Approach to Quantifying Consciousness and Its Relevance to the QEEG (Lecture, Experiential, Demonstration)

Ronald Pekala, Ph.D., Biofeedback Clinic Coatesville VAMC, pekalar@voicenet.com

Credits: 3.00

Level of Difficulty: Beginner

Abstract
Most all workshops at this conference are focused on quantifying consciousness from a neurophysiological/neurobiological perspective. This workshop presents a complementary empirical phenomenological approach (Pekala, 1991, Pekala & Kumar, 2007) to quantifying and statistically assessing consciousness. By being able to correlate reliable and valid phenomenological data to neurophysiological data, the researcher and clinician may have a more comprehensive methodology to better understand consciousness and its various states.

This workshop will present a reliable and valid methodology (retrospective phenomenological assessment, RPA) to map consciousness and its processes in terms of both intensity and pattern parameters. The methodology uses the Phenemenology of Consciousness Inventory (Pekala, 1982, 1991) and the Dimensions of Attention Questionnaire (Pekala, 1985, 1991) to quantify the (sub)dimensions of consciousness and attention, respectively, in a reliable and valid manner.

This workshop will first review this methodology, its development, and its usefulness in mapping states like hypnotism, fire-walking, and baseline states (eyes open and closed sitting quietly). The methodological and statistical limits for using RPA will also be discussed.

Participants will be able to evaluate this methodology by experientially participating in a hypnotic induction protocol, the PCI-HAP (Phenomenology of Consciousness Inventory – Hypnotic Assessment Procedure, Pekala, 1995a, 1995b). Subjective experience during hypnotism will be subsequently quantified for this protocol, and participants will receive a 5-page report reviewing their hypnotic responsivity from this psychophenomenological perspective.

The workshop will end by highlighting the possible usefulness of wedding this empirical phenomenological approach to consciousness with the already established neurophysiological approach, as espoused by ISNR and its many researchers and clinicians, to hopefully generate a more comprehensive methodology to quantify and statistically assess consciousness from this neurophenomenological perspective.

[Note: This abstract is partially based on research supported by grants received from the Veterans Administration Stars and Stripes (VISN4) Healthcare Network; grants which were reviewed by the IRB and R&D committees of the hospital where the research took place. The content of this presentation does not represent the views of the Department of Veterans Affairs nor the United States Government.]

References

Pekala, R. J. (1982/1991). The Phenomenology of Consciousness Inventory. West Chester, PA: Mid-Atlantic Educational Institute.
Pekala, R. J. (1985/1991). The Dimensions of Attention Questionnaire. West Chester, PA: Mid-Atlantic Educational Institute.
Pekala, R. J. (1991). Quantifying consciousness: An empirical approach. New York: Plenum Press.
Pekala, R.J. (1995a). A short unobtrusive hypnotic induction for assessing hypnotizability level: I. Development and research. American Journal of Clinical Hypnosis, 37, 271-283.
Pekala, R. J. (1995b). A short unobtrusive hypnotic induction for assessing hypnotizability: II. Clinical case reports. American Journal of Clinical Hypnosis, 37, 284-293.
Pekala, R. J., & Kumar, V. K. (2007). An empirical-phenomenological approach to quantifying consciousness and states of consciousness: With particular reference to understanding the nature of hypnosis. In G. Jamieson (Ed.). Towards a cognitive-neuroscience of hypnosis and conscious states: A resource for researchers, students, and clinicians. (pp. 167-194). London: Oxford University Press.

Goals/Objectives

Describe a phenomenological methodology to quantify consciousness in reference to short stimulus conditions via retrospective phenomenological assessment (RPA).
Describe the methodological and statistical limits for using RPA to assess the intensities and patterns of consciousness.
Determine his or her own hypnotic responsivity index

Outline

Rationale for a phenomenological approach to quantifying consciousness and states of consciousness (30 mins.)
Review of the phenomenological methodology (retrospective phenomenological assessment) to quantify consciousness using the Phenomenology of Consciousness Inventory (PCI) and the Dimensions of Attention Questionnaire (DAQ), reliable and valid self-report inventories for measuring subjective experience (30 mins.)
Review of research in using RPA to quantify subjective experience in reference to hypnotism, fire-walking, and baseline states of consciousness (30 mins.)
Illustrating the methodology by demonstrating (experientially) how the approach can be used to quantify and measure the subjective experience of hypnotism (participants will experience a hypnotic induction and complete the PCI-HAP, Phenomenology of Consciousness Inventory – Hypnotic Assessment Procedure, to quantify their own subjective experience of hypnotism) (60 mins.)
How this approach may be used to a) measure subjective experiences in reference to QEEG/EEG recordings, b) correlate the subjective experience of consciousness (as obtained via RPA) to quantitative EEG data, and c) discuss the possible usefulness of this approach in helping to better understand consciousness via an integration of reliable and valid phenomenological data with QEEG data (30 mins.)

Financial Interest: I will be talking about two inventories that I developed, the Phenomenology of Consciousness Inventory (PCI) and the Dimensions of Attention Questionnaire (DAQ). Both inventories are available from me via email or post, without charge.

WS 12: Title: Activation Analysis In qEEG: Linking Symptoms To Network Activation Patterns (Lecture)

Richard Soutar, Ph.D., New Mind Neurofeedback Center, drs@newmindcenter.com

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
Activation Analysis In qEEG: Linking Symptoms To Network Activation Patterns In evaluating qEEG, linking symptoms and abnormal behaviors to locations is a critical step in the process. This step involves thinking theoretically about functions as they relate to location but additionally how various locations relate to each other in terms of network efficiency. This workshop will review the steps of qEEG analysis, protocol development and report writing but with an emphasis on reviewing what is known about networks, how they are distributed throughout the brain, and how their levels of functional activation can be assessed through EEG analysis.

References
Crosson, Bruce (1992). Subcortical Functions in Language and Memory. The Guilford Press, NY.
Chow, T. W. & Cummings, J.L. (1998). Frontal-Subcortical Circuits. In: Bruce L. Miller & Jeffrey L. Cummings, (eds), The Human Frontal Lobes (pp3-44). New York: The Guilford Press.
Kaplan, G. B., and Hammer, R.P. (2002). Brain Circuitry and Signaling in Psychiatry: Nunez, Paul L. (Ed.) (1995). Neocortical Dynamics and Human EEG Rhythms. New York: Oxford University Press.
Posner, Michael I., & Raichle, Marcus E. (1997) Images of Mind. New York: Scientific American Library.
Lubar, Joel (2004). Quantitative Electroencephalographic Analysis for Neurotherapy: Description, Validation, and Application. Binghamton, NY: The Haworth Medical Press.
Cohen, Gillian (2000). Exploring Cognition: Damaged Brains and Neural Networks; Readings in Cognitive Neuropsychology and Connectionist Modeling. Philadelphia, PA: Taylor & Francis.
Rolls, Edmund & Treves, Alessandro (1998). Neural Networks and Brain Function. Oxford University Press.

Goals/Objectives
Create a logical and consistent strategy to interpret each qEEG they process.
Artifact raw EEG and evaluate it for artifacts and abnormal variants.
Evaluate each dimension of analysis including magnitude, power, phase, coherence, comodulation, dominant frequency, and asymmetry.
Link symptoms and abnormal function to brain location.
Identify an appropriate protocol for each qEEG.
Write a brief & concise report.

Outline
Understanding Artifacts (30 mins.)
Common Artifacts
Uncommon Artifacts
Abnormal Variants

Strategic Analysis (30 min.)
Magnitude, Power and database limitations
Low Power Considerations
High Power considerations
Laplacian Analysis
Dominant Frequency
High & Low Frequency Alpha
High & Low Frequency Beta
Asymmetry
Anterior to Posterior analysis
Bilateral analysis
Coherence & Phase
Strengths & Limitations: Multivariate Connectivity Issues
Clinical Relevance: Coherence, Comodulation & Concordance
Interpretation by Component Band

Linking Symptoms to location (120 mins.)
Networks & Neural Pathways
Activation Patterns and Network Analysis
Connectivity & Neural Pathways
Brodmann Locations, Functions, and the 10/20 System
Linking Function to Multiple Locations
Linking Behavior To Multiple Locations
What To Enter In The Report
Protocol Selection: Monopolar, Bipolar, and Z score Considerations

Financial Interest: Some QEEG maps from our New Mind Expert Map System will be shown.

WS 13: Neurofeedback Advanced (BCIA Review Course) (Lecture, Demonstration)

Michael Thompson, M.D., ADD Centre, lyndamichaelthompson@gmail.com
Lynda Thompson, Ph.D., ADD Centre, lyndamichaelthompson@gmail.com

Credits: 3.00

Level of Difficulty: Advanced

Abstract
This workshop covers areas from the BCIA blueprint of knowledge and skills, information relevant to all neurofeedback practitioners. Basic definitions and descriptions will be discussed. It will review highlights concerning the history of neurofeedback, research criteria for determining efficacy, neurophysiology, neuroanatomy, source of the electroencephalogram (EEG), instrumentation, procedures for assessment and intervention and comment on adjunctive techniques including biofeedback.

Method

This course is a didactic presentation that provides a brief review of basic knowledge and will cover selected topics from the areas that comprise the Blueprint of Knowledge for specialty certification in EEG biofeedback developed by the BCIA. Goals are that participants will be able to answer questions on material that could legitimately be covered in a BCIA examination on EEG Biofeedback (that is, material that has been published, as contrasted to ideas based on clinical impressions). For example, they will be able to answer questions regarding EEG data collection and instrumentation including: impedance versus resistance, differential amplifier, sampling rates, filters and so on and understand EEG assessment (one, two and 19 channels, brain maps, LORETA, EEG artifacts, normal and abnormal waveforms, findings in disorders where neurofeedback is used), methods for obtaining accurate data and interpreting this information.

Additionally, they will be ale to demonstrate an understanding of how learning theory (especially operant conditioning) applies to EEG biofeedback, discuss basic neurophysiology relevant to interventions that use the EEG and briefly relate basic information on other related topics including: ERPs, ethics, statistics, and so on. Blueprint areas are:

Section I Overview of Biofeedback, Neurofeedback and Learning
Section II Physiological Basis of the Electroencephalogram and basic neuroanatomy.
Section III Measuring The EEG: Instruments & Electronics
Section IV Brief Overview of Statistics and Research Design with an emphasis on criteria for evaluating efficacy
Section V Psychopharmacology Overview as it relates to assessment and training.
Section VI Fundamentals of Intervention: Choice of Electrode Placement, Channels, Bandwidths and Adjunctive Techniques

Section VII Professional conduct: brief review

Results & Conclusions
Feedback concerning the workshop has been that it increases the confidence level of practitioners and the success rate for people taking the BCIA examination.

References

Thompson, M. & Thompson, L. (2007) Neurofeedback for Stress Management. Chapter in Lehrer, Woolfolk and Sime (Eds.) Principles and Practice of Stress Management, 3rd Edition. New York: Guilford Publications).
Thompson, M. & Thompson, L. (2003) The Neurofeedback Book: An Introduction to Basic Concepts in Applied Psychophysiology, Association for Applied Psychophysiology, Wheat Ridge, Colorado.
Sterman, M. Barry (2000) Basic concepts and clinical findings in treatment of seizure disorders with EEG operant conditioning, Clinical Electroencephalography, 31(1), 45-55.

Goals/Objectives
Discuss EEG data collection, instrumentation, and interpreting this information.
Discuss how learning theory applies to EEG biofeedback
Discuss basic neurophysiology relevant to interventions that use the EEG and briefly relate basic information on other related topics including: ERPs, ethics and statistics

Outline
Dr. Lynda Thompson presents this review assisted by Dr. Michael Thompson. It is a lecture format with the participants actively involved in questioning the presenters. It covers a selection of areas which are important to candidates writing the BCIA examinations. Basic definitions and descriptions will be discussed. The workshop is divided into sections: Approximately 1/3 of the time is spent on each section. There are 296 multiple choice questions in The Neurofeedback Book. These are arranged in the same order as the sections of this workshop. A selection of these questions may be used to assist the participants to evaluate their understanding of each section (approx 25 mins. each).

Section I Overview of Biofeedback, Neurofeedback and Learning.
Section II Physiological Basis of the Electroencephalogram and basic neuroanatomy.
Section III Measuring The EEG: Instruments & Electronics
Section IV Brief Overview of Statistics and Research Design with an emphasis on criteria for evaluating efficacy
Section V Psychopharmacology Overview as it relates to assessment and training.
Section VI Fundamentals of Intervention: Choice of Electrode Placement, Channels, Bandwidths and Adjunctive Techniques
Section VII Professional conduct: brief review

Financial Interest: Lynda Thompson is co-author of THE A.D.D. BOOK. Michael and Lynda are co-authors of SETTING UP FOR CLINICAL SUCCESS and THE NEUROFEEDBACK BOOK. It is likely that these books will be on sale at the meeting. The authors will state their relationship to these books at the workshop.

Saturday, September 5, 2009

WS 14: LORETA Neurofeedback: Clinical Applications and Functional Neuroanatomy for Region of Training Selection (Lecture, Experiential, Demonstration)

Rex Cannon, M.A., .D., SUNY, Stone Mountain

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
This workshop will focus primarily on the implementation of LORETA Neurofeedback in the clinical setting. We will discuss functional neuroanatomy and broad implications of region of interest selection. Alternative to past workshops, we will take the attendees through the LNFB setup, including ROI and inhibit selection and provide practical experience with setup and real time training sessions. We will provide brief examples of data extraction and LORETA imaging results. The attendees will be able to setup and perform LNFB with adequate knowledge of the functional regions of training. LORETA Neurofeedback is gaining interest from researchers, clinicians and government agencies, thus it is an important methodology for increasing our knowledge base as well as treatment for numerous clinical syndromes.

References
Cannon, R., Congedo, M., Lubar, J., Hutchens, T. (2009). Differentiating at network of executive attention: LORETA Neurofeedback in anterior cingulate and dorsolateral prefrontal cortices. International Journal of Neuroscience, 119 (3), 401 -440.
Cannon, R., Lubar, J. (2008). Spectral Power and Coherence: Differentiating effects of Spatial-Specific Neuro-Operant Learning (SSNOL) Utilizing LORETA Neurofeedback Training in the anterior cingulate and bilateral dorsolateral prefrontal cortices. Journal of Neurotherapy, 11 (3), 25 -44.
Cannon, R., Lubar, J., Sokhadze, E., Baldwin, D., (2008). LORETA Neurofeedback for addiction and the possible neurophysiology of psychological processes influenced: A Case Study and region of interest (ROI) analysis of LNFB in right anterior cingulate cortex (ACC). Journal of Neurotherapy, 12 (4), 227 – 241.
Cannon, R, Joel Lubar, Marco Congedo, Keri Thornton, Teresa Hutchens, Kerry Towler (2007). The effects of Neurofeedback training in the cognitive division of anterior cingulate gyrus. International Journal of Neuroscience. 117 (3) 337 – 357.
Cannon, R, Joel Lubar, Aric Gerke, Keri Thornton (2006) Topographical coherence and absolute power changes resulting from LORETA Neurofeedback in the anterior cingulate gyrus. Journal of Neurotherapy, Vol. 10 (1) 5 – 46.
Congedo, M. (2003). Tomographic Neurofeedback: A new technique for the Self-Regulation of brain electrical activity. An unpublished dissertation. University of Tennessee, Knoxville, 2003.
Congedo, M., Lubar, J., & Joffe, D. (2004). Low-resolution electromagnetic tomography neurofeedback. IEEE Trans. On Neuronal Systems and Rehabilitation Engineering, 12 (4) 387 – 397.

Goals/Objectives
Match clinical syndromes with functional neuroanatomy
Perform a LORETA Neurofeedback training
Discuss functional connectivity and clinical implications

Outline
Functional Neuroanatomy/Clinical Syndromes (45 mins.)
ROT selection and connectivity and frequency considerations (30 mins.)
LNFB detailed setup (30 mins.)
Head measurement
LCC inhibits
ROI setting
LNFB session in real time (30 mins.)
EEG evaluation, data extraction and pre – post assessment for reporting to clients (30 mins.)
Questions/Discussion (15 mins.)

Financial Interest: No financial interests.

WS 15: The Science and Art of Artifacting, QEEG Analysis, Protocol Development and Z-Score Training (Lecture, Demonstration)

Joel Lubar, Ph.D., University of Tennessee, jlubar@utk.edu

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
This workshop is for participants at all levels of proficiency. In order to understand QEEG and be able to develop accurate protocols for neurofeedback(NFB) training one has to be able to distinguish "normal" from abnormal EEG patterns. The first part of the workshop will be presentations of illustrations of coma, epileptiform and other abnormal signatures. Non-EEG artifacts will be illustrated and techniques for separating these from background EEG will be demonstrated. Using NeuroGuide there are several methods for distinguishing EEG from EMG and LORETA can also be very helpful. This can be very challenging but I have found several ways to do this quite accurately and will demonstrate these. Once very clean EEG has been processed I will demonstrate how training protocols are established and ordered in terms of the QEEG and the presenting clinical history and extant problems for the patient. Next I will use actual equipment to record and process the scalp EEG for Z-Score coherence or magnitude training. Finally I will discuss the concept of event related potential and slow cortical potential feedback, their advantages and applications.

References

Lubar, J. F. (2001). Rationale for choosing bipolar versus referential training. [In D. C. Hammond (Ed.), Clinical Corner] Journal of Neurotherapy, 4(3), 94-97.
Lubar, J. F., & Lubar, J. O. (2001). Neurofeedback intervention for treatment of attention deficit/hyperactivity disorder [Abstract]. Molecular Psychiatry, 6(Suppl. 1), S7.
Monastra, V. J., Lubar, J. F., & Linden, M. K. (2001). The development of a quantitative electroencephalographic scanning process for attention deficit-hyperactivity disorder: Reliability and validity studies. Neuropsychology, 15(1), 136-144.
Lubar, J. F. (2003). Reply to Kline, Brann, and Loney (2002), A Cacophony in the Brainwaves. The Scientific Review of Mental Health Practice, 2.
Lubar, J. F., Congedo, M., & Askew, J. (2003). Low-resolution electromagnetic tomography (LORETA) of cerebral activity in chronic depressive disorder. International Journal of Psychophysiology, 49, 175-185.
Angelakis, E., Lubar, J. F., Stathopoulou, S., & Kounios, J. (2004). Peak alpha frequency: An electroencephalographic measure of cognitive preparedness. Clinical Neurophysiology, 115, 887-897.
Congedo, M., Lubar, J. F., & Joffe, D. (2004). Low-resolution electromagnetic tomography neurofeedback. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 12(4), 387-397.
Hammond, D. C., Walker, J., Hoffman, D., Lubar, J. F., Trudeau, D., Gurnee, R., & Horvat, J. (2004). Standards for the use of quantitative electroencephalography (QEEG) in neurofeedback: A position paper of the International Society for Neuronal Regulation. Journal of Neurotherapy, 8(1), 5-28.
Monastra, V. J., Lynn, S., Linden, M., Lubar, J. F., Gruzelier, J., & LaVaque, T. J. (2005). Electroencephalographic biofeedback in the treatment of attention-deficit/hyperactivity disorder. Applied Psychophysiology and Biofeedback, 30(2), 95-114.
Cannon, R, Lubar, J. F., Gerke, A, Thornton, K, Hutchens, T,& McCammon, V. (2006) EEG Spectral-Power and Coherence: LORETA Neurofeedback training in the Anterior Cingulate Gyrus. Journal of Neurotherapy 10 (1) 5-32.
Cannon, R. Lubar, J.F., Congedo, M &Thornton, K. (2007) The Effects of Neurofeedback Training in the Cognitive Division of The Anterior Cingulate Gyrus. International Journal of Neuroscience 337-357.
Cannon, R., Lubar, J., Baldwin, D. (2008). Self-perception and Experiential Schemata in the addicted brain. Addiction Research and Theory. Applied Psychophysiology and Biofeedback 33, 223-238.
Cannon, R., Lubar, J., Clements, J.G., Harvey, E., Baldwin, D. (2008). Practical Joking and cingulate cortex: A Neurophysiological examination of practical joking in the cerebral volume using LORETA. Applied Psychophysiology and Biofeedback (In Press).

Goals/Objectives
Cite differences between normal and abnormal EEG patterns.
Explain how to separate EEG from EMG using raw signal and NeuroGuide components including LORETA.

Describe how protocols are developed based on the QEEG and raw signal analysis
Evaluate a demonstration of z-score neurofeedback for coherence or magnitude
Record slow cortical potentials

Outline
Presentation of EEG patterns normal and abnormal, Brodmann area functions (45 mins.)
Artifacting and separating EEG from EMG, EOG and other non EEG artifacts (45 mins.)
Development of Neurofeedback Protocols based on QEEG and raw signal analysis (45 mins.)
Live demonstration of z-score neurofeedback (45 mins.)

Financial Interest: I will discuss the recording of slow cortical potentials and how ERP feedback can be done. I use Deymed equipment in my workshops. I do not receive any commissions from the company. However, they do help support by advertising these workshops.

WS 16: QEEG Subtype Based Assessment for ADD & Autistic Spectrum Disorder – Part II (Lecture, Demonstration)

Michael Linden, Ph.D., ADD Treatment Centers, drmike49@aol.com

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
This is Part 2 of a two-part series workshop, but it can be taken independently. This workshop will cover a multimodality treatment approach for patients with Autism, Asperger's and ADD. Neurofeedback candidate selection, protocol development and treatment decisions will be explained. Medication management will be reviewed. Pre-and post-neurofeedback QEEG and CPT data will be presented for Autistic, Asperger's and ADD patients. Social skills groups and parenting/behavior modification techniques will be presented.
Psychotherapeutic treatments (individual, marital and family) will be reviewed. School-based modifications for students will be discussed.

References
Coben, Robert & Linden, Michael. Neurofeedback for Autistic Spectrum Disorder: A Review of the Literature. Journal of Applied Psychophysiology and Biofeedback, (In Press, 2009).
Jarusiewicz, B. (2002). Efficacy of neurofeedback for children in the Autistic Spectrum. Journal of Neurotherapy, 6(4), 39-49.
Linden, Habib, & Radojevic (1996). A controlled study of the effects of EEG biofeedback on cognition & behavior of children with ADD. Biofeedback & Self-Regulation, 21, 35-49.
Sears, W. & Thompson, L. (1995). The ADD Book.
Thompson, L., & Thompson, M. (2003). Helping Autistic Spectrum Disorders

Goals/Objectives
Utilize QEEG and computerized testing to guide Neurofeedback selection and protocol development.
Explain how to apply Neurofeedback strategies and techniques for Autism, Asperger's and ADD.
List psychological interventions and medications to treat patients with Autism, Asperger's and ADD.

Outline
Review QEEG & CPT assessment and subtypes of ADD & ASD (30 mins.)
Medications for ADD & ASD (20 mins.)
Neurofeedback for ADD & ASD (90 mins.)
Parenting/behavior modification -Social skills groups (25 mins.)
School modifications-Psychotherapy (Individual, Marital, Family) (15 mins.)

Financial Interest: No financial interests or relationships.

WS 17: Introduction to ERP Method: Research, Clinical, and Forensic Applications (Lecture, Demonstration)

Elena Labkovsky, Ph.D., Northwestern University, elenalabkovsky@yahoo.com

Credits: 3.00

Level of Difficulty: Beginner

Abstract
This workshop is designed to provide participants with a basic understanding of ERP method.

Event-related potentials (ERPs) have a large application in the evaluation of cognitive processes. ERP method is being widely used as a tool in psychophysiological research as well as clinical and forensic practice.

Introductory information on ERP theoretical background will cover ERP origins, physiology, modalities, and major ERP components.

Emphasis will be placed on practical application of the ERP Method. The topics will include: ERP Task Construction; Principles of ERP Recordings; Data pre-processing: Artifacting and Filtering; ERP Averaging, ERP Data Analysis; Interpreting ERP Results and Writing a Report. A result of completion of the workshop, participants will be able to:
Design and conduct ERP – based investigation.
Analyze ERP data and understand ERP-based research and clinical reports.
Use commercial ERP databases and develop ERP databases for clinical and forensic assessment/evaluation.

References

Bennys, K., Portet, P., Touchon, J,. and Rondouin, G. (2007). Diagnostic Value of Event-Related Evoked Potentials N200 and P300 Subcomponents in Early Diagnosis of Alzheimer's Disease and Mild Cognitive Impairment. Journal of Clinical Neurophysiology , 24, 405-412.
Chapman, R., Nowlis, G., McCrary, J., Chapman, J., Sandoval, T., Guillily, M., Gardner, M., and Reilly, L. (2007). Brain event-related potentials: Diagnosing early-stage Alzheimer's disease. Neurobiology of Aging, 28, 194-201.
Heather M. Gray, Nalini Ambady , William T. Lowenthal and Patricia Deldin. (1979). P300 as an index of attention to self-relevant stimuli. Biological Psychology 9, 177-188.
Juckel, G., Clotz, F., Frodl, T., Kawohl, W., Hampel, H., Pogarell, O., and Heger, U.(2008). Diagnostic Usefulness of Cognitive Auditory Event-Related P300 Subcomponents in Patients With Alzheimer's Disease? Journal of Clinical Neurophysiology , 25, 147-152.
Keage, H., Clark, C.R., Hermens, D., Williams L., Kohn, M., Clarke, S., Lamb, C., Crewther, D., and Gordon, E. (2008).ERP Indices of Working Memory Updating in AD/HD: Differential Aspects of Development, Subtype, and Medication. Journal of Clinical Neurophysiology , 25, 32-41.
Lew, H., Thomander, D., Gray M., and Poole, J. (2007). The Effects of Increasing Stimulus Complexity in Event-Related Potentials and Reaction Time Testing: Clinical Applications in Evaluating Patients with Traumatic Brain Injury. Journal of Clinical Neurophysiology , 24,398-404.
Labkovsky, E., Rosenfeld, J.P. (2008). "Detecting simulated amnesia for self-referred information with enhanced ERP(P300)-based protocol." Archives of Clinical Neuropsychology 23, 664.
Luck ,Steven J. (2005) An Introduction to the Event-Related Potential Technique. The MIT Press.
Mager, R., Bullinger, A, Brand, S., Schmidlin, M., Schärli, H., Müller-Spahn, F., Störmer, R., and Falkenstein, M. (2007). Age-related changes in cognitive conflict processing: An event-related potential study Neurobiology of Aging,28, 1925-1935.
Martin, F.H., and Garfield, J. (2006). Combined effects of alcohol and caffeine on the late components of the event-related potential and on reaction time. Biological Psychology, 71, 63-73.
McGarry-Roberts, P., Stelmack, R., and Campbell, K. (1992). Intelligence, reaction time, and event-related potentials. Intelligence, 16, 289-313.

Polich, J. (1986). Normal variation of P300 from auditory stimuli. Electroencephalography and Clinical Neurophysiology/Evoked Potentials Section 65, 236-240.
Polich, J., Kokb, A. (1995) Cognitive and biological determinants of P300: an integrative review. Biological Psychology 41, 103-146.
Pritchard, W. (1989). P300 and EPQ/STPI personality traits. Personality and Individual Differences, 10, 15-24.
Rosenfeld, J.P., Labkovsky, E., Winograd ,M., Lui , M., Vandenboom, C., and Chedid, E. (2008). The Complex Trial Protocol (CTP): A new, countermeasure-resistant, accurate P300-based method for detection of concealed information. Psychophysiology, 45, 906-919.
Sami Schiff, Pietro Valenti, Pellegrini Andrea, Maria Lot, Patrizia Bisiacchi, Angelo Gatta, M and Piero Amodio.(2008). The effect of aging on auditory components of event-related brain potentials. Clinical Neurophysiology, 119, 1795-1802.
Soskins, M., Rosenfeld, J. P., & Niendam, T. (2001). The case for peak-to-peak measurement of P300 recorded at .3 Hz high pass filter settings in detection of deception. International Journal of Psychophysiology, 40, 173–180.
Zarkowski, P., Esparza, B., and Russo, J. (2007) Validation of a Rational Malingering Test Using Evoked Potentials. Journal of Clinical Neurophysiology , 24, 413-418.
Neumann, N., Kotchoubey, B. (2004). Assessment of cognitive functions in severely paralyzed and severely brain-damaged patients: neuropsychological and electrophysiological methods. Brain Research Protocols,14, 25-36.

Goals/Objectives
Analyze ERP data and discuss ERP-based research and clinical reports.
Utilize existing (commercial) ERP databases and develop ERP databases for clinical and forensic assessment/evaluation.

Outline
ERP Background: Definition, origins, physiology, modalities, and major components (40 mins.)
ERP Method: Task Construction and Principles of ERP Recordings (60 mins.)
ERP Analysis: Artifacting, Filtering, and Averaging (60 mins.)
Interpreting ERP Results and Writing a Report (20 mins.)

Financial Interest: No financial interests or relationships.

WS 18: Improving Executive Functions in a Range of Disorders (Lecture, Demonstration)

Michael Thompson, M.D., ADD Centre, lyndamichaelthompson@gmail.com
Lynda Thompson, Ph.D., ADD Centre, lyndamichaelthompson@gmail.com

Credits: 3.00

Level of Difficulty: Intermediate to Advanced

Abstract

References

Goals/Objectives
List the key symptom patterns to assist in the differential diagnosis of various conditions where impaired executive functioning is central to assessment and intervention

Discuss the diverse connections of the anterior cingulate and its role in attending, executive functioning and in affect modulation.

Describe characteristic EEG patterns in the frequency range 2 to 61 Hz which may be observed in these conditions

Discuss rational interventions based on assessment data, which combines elements of neurofeedback, biofeedback and cognitive strategies for an individualized mind-body training program

Outline
1st 1 ½ Hours: Discussion of The Importance of Understanding how NFB + BFB can improve Executive Functioning difficulties which underlie many symptoms observed in a number of common disorders that are seen in the NFB practitioners office.

The course will begin with an overview of the Neuroanatomical areas that are necessary for understanding executive processing and affect modulation. Persons who present with problems relating to a number of disorders: TBI, LD, ADHD, Affect disorders, all have some degree of executive function impairments. We will briefly address aspects of both attention and concentration including evaluating what we can see with EEG and ERP and how patterns differ from normal, in people with executive dysfunction (such as ADD). The sequence of sites activated when we attend to a visual or an auditory stimulus can be seen using ERPs. Reviewing attention quite naturally leads to considering „concentration.. This is an executive process that will lead us to a discussion of the brain areas involved in defining relevant from irrelevant stimuli and the pathways for decision making and deciding on motor / cognitive action. ERP research allows us to trace pathways through the brain looking at the number of milliseconds it takes for a stimulus to reach different sites where different comparisons with memory can take place. This requires that we also review memory. We will discover that it is not just a simple Septal – Hippocampal phenomenon but rather that it is a circuit that includes nuclei in the limbic system and that Working memory involves so called „hippocampal. long term potentiation (LTP) which is reflected in 6 Hz frontal midline theta. LTP in turn helps us understand why NFB can have a lasting effect.

Comparisons between data base norms and people who have difficulty with attention, and with executive functions (engagement and monitoring) can be done using MRI, ERPs and the EEG. Examining these differences leads to an overview of the integration of frontal cognition with the Basal Ganglia – Thalamo – Cortical regulation which controls this cortical functioning. Measurements after NFB with individuals whose attention span is poor shows how these differences normalize.

These Neuroanatomical considerations lead the workshop into a discussion of the neurochemistry underlying what we see and the pathways and functions for dopamine, noradrenalin, serotonin and acetylcholine.

2nd Hour: Practical Demonstration with attendee participation
The underlying theory is the rationale for what we are doing and why we are doing it. However, the over-riding point of the workshop is to allow the participants an opportunity to do an EEG + psychophysiological assessment that leads to a NFB + BFB intervention. Both the NFB and the heart rate variability (HRV) training will affect, for example, the executive attention, engagement and monitoring operations while improving affect modulation through top-down and bottom-up connections to and from the anterior cingulate. The client learns to function at a more optimal level in both the cognitive and the affective spheres. They learn to make appropriate decisions while controlling stress.

3rd ½ Hour; Discussion and questions.

Financial Interest: Lynda Thompson is co-author of THE A.D.D. BOOK. Michael and Lynda are co-authors of SETTING UP FOR CLINICAL SUCCESS and THE NEUROFEEDBACK BOOK. It is likely that these books will be on sale at the meeting. The authors will state their relationship to these books at the workshop.

WS 19: QEEG-Guided Neurofeedback: Why and How (Lecture)

Jonathan Walker, M.D., Neurotherapy Center of Dallas, john@neurotherapydallas.com

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
The modular activation/coherence approach to neurofeedback training has become the gold standard for resolving most neurological and psychiatric disorders. The basis of this approach will be reviewed, along with results in ADD, brain injury, learning disabilities (including dyslexia), autism, PTSD, depression, epilepsy, migraine, alcoholism, and movement disorders.

References
Walker, Jonathan E., and Kozlowski, Gerald P. "Neurofeedback Treatment of Epilepsy". Child and Adolescent Psychiatric Clinics of North America. 14:163-176, 2005.
Walker, Jonathan E. "A Neurologist's Clinical Experience with QEEG Neurofeedback in Rehabilitation Following Brain Injury". In Handbook of Neurofeedback. Ed. By James R. Evans, PhD., doi: 10.1300/5889_15, 353-361, 2007.
Walker, Jonathan E. and Norman, Charles. " The Neurophysiology of Dyslexia: A Selective Review with Implications for Neurofeedback Remediation and Results of Treatment in Twelve Consecutive Patients" Journal of Neurotherapy, Vol. 10(1)2006, 45-55.
Walker, Jonathan E., Lawson, Robert, and Kozlowski, Gerald. "Current Status of QEEG and Neurofeedback in the Treatment of Clinical Depression." Handbook of Neurofeedback. Ed. By James R. Evans, PhD. The Haworth Press, Inc., 341-352, 2007.
Walker, Jonathan E., Kozlowski, PhD, and Lawson, Robert. "A Modular Activation/Coherence Approach to Evaluating Clinical/QEEG Correlations and for Guiding Neurofeedback Training: Modular Insufficiencies, Modular Excesses, Disconnections, and Hyperconnections." Journal of Neurotherapy, Vol. 11(1), 25-44, 2007.
Walker, Jonathan. "The Epidemics of Closed Head Injury: The Response of the Neurofeedback Community and How It needs to be Improved," NeuroConnections, 4-5, October 2007.
Walker, Jonathan. "QEEG as an Aid to Personalized Medicine," NeuroConnections, 5-6, January, 2008.
Walker, Jonathan. "The Case Against Drugs—and for Neurofeedback: The Superior Alternative for Attention Deficit/Hyperactivity Disorder (ADHD)," NeuroConnections, 4-5, April 2008.
Walker, Jonathan. "The Case Against Drug Treatment— and for Neurofeedback," NeuroConnections, 37-39, July, 2008.

Goals/Objectives
Discuss the modular activation/coherence approach to QEEG-guided neurofeedback training
Explain how to use neurofeedback to normalize the QEEG and relieve their patients' symptoms
Predict the likelihood of success in various disorders using QEEG-guided neurofeedback

Outline
The modular activation/coherence approach.
Specific abnormalities on QEEG that correlate with the patients symptoms.
Our results using QEEG-guided neurofeedback for various disorders.

Financial Interest: No financial interests.

Sunday, September 6, 2009

WS 21: Integration of EEG/Live Z-scores, DC/SCP, and Peripheral Measures in Biofeedback (Experiential, Demonstration)

Thomas Collura, Ph.D., BrainMaster Technologies, Inc., tomc1@brainm.com

Credits: 3.00

Level of Difficulty: Intermediate

Abstract

This talk will describe methods for combining EEG biofeedback with DC/SCP feedback, and peripheral biofeedback measures. Recording of DC/SCP potentials will be demonstrated, as well as methods for training DC/SCP simultaneously with conventional EEG recording. Peripheral measures including pulse oximetry, heart-rate variability, skin conductance, temperature, and EMG will also be described and demonstrated.

References

Collura, T.F., Thatcher, R.W., Smith, M.L., Stark, C.R., and Lambos, W.A. (2008) Real-Time EEG Z-Score Training – Realities and Prospects, in: Evans, J., Arbanel, and Budzynski, T., and Budzynski, H., Quantitative EEG and Neurofeedback, 2nd Edition, Elsevier, in press.
Collura, T.F. (2008) Whole-Head Normalization using Live Z-Scores for Connectivity Training, NeuroConnections, April 2008.
Smith, M.L., (2008) Case Study – Jack, NeuroConnections, April 2008.
Stark, C. R. (2008) Consistent Dynamic Z-Score Patterns Observed During Z-Score Training Sessions---Robust Among Several Clients And Through Time For Each Client, NeuroConnections, April 2008.
Walker, J.E., Kozlowski, G.P., and Lawson, R. (2007) A Modular Activation/Coherence Approach to Evaluating Clinical/QEEG Correlation and for Guiding Neurofeedback Training: Modular Insufficiencies, Modular Excesses, Disconnections, and Hyperconnections, Journal of Neurotherapy, 11(1) 25-44.

Goals/Objectives

Interpret HRV, skin conductance, and EMG data as basic biological signals
Evaluate the use of peripheral measures in conjunction with EEG
Design a biofeedback session combining EEG with peripheral measures

Outline

Review of biological signals
Mind/body interpretation of EEG and peripheral measures
Relationship between EEG and HRV, other measures
Practical use of combined EEG / peripheral biofeedback

Financial Interest: Dr. Collura has a financial interest in BrainMaster Technologies, Inc.

WS 22: Unraveling Gulf War Illness: Multivariate Issues, Implications for Practitioners, Implications, and Multi-Modality Interventions (Lecture)

Jaclyn Gisburne, Ph.D., Private Practice, Jaclyn@svquietly.com
Jana Harr, B.A., Private Practice

Credits: 3.00

Level of Difficulty: Intermediate to Advanced

Abstract

One in four and as many of one in three of the 697,000 serving in the military between 1991-1994 returned from the Middle East with a milieu of suspicious, yet debilitating, symptoms and onsets. To date, over 110 symptoms have been recorded with few solid answers as to causation. To date one of the only common factors has been that all of these vets served in the Middle East in the Desert Storm initiative. However, since that time other military personnel stationed over in the Middle East are developing similar symptoms and multivariate onset. The symptoms include, but are not limited to a

combination of PTSD, sense of helplessness/borderline traits, panic attacks, paranoia, anxiety-induced depression, insomnia, gastrointestinal disorders, cognitive impairments – brain fog, joint pain, chronic fatigue, fibromyalgia, nausea, headaches, and vertigo. Physiologically, both the sympathetic and parasympathetic systems appear to be fully engage without means for either to disengage as evidenced by the irregularities in the frequency distributions globally. We also found that the brain fog showed up in the processing speed on the IVA++ test.

The research indicated that no single intervention had been effective in mitigating symptoms in this population. As a result, we implemented a multiple modality approach for dealing with the complexity of this condition and its multivariate issues. Our early findings have indicated that this approach produces a higher than previously experienced number of desirable long lasting outcomes in relieving symptoms and getting these individuals off disability. These early results were accomplished by first using a neurofeedback protocol to quiet the amygdala while stabilizing the integration regions. This was followed by a "beta reset" protocol to bring down the high beta dysregulation and facilitate the trauma release. These neurofeedback strategies were used in conjunction with individualized nutritional and kinesthetic interventions to facilitate the physiological, emotional, and cognitive recovery. The outcomes experienced by veterans were consistent with those achieved with clients in the general population suffering from quinolone/antibiotic toxicity and other chronic conditions.

In this workshop we will take a multidisciplinary look at the conditions, history, symptoms, onset issues, and subsequent research as we attempt to unravel this syndrome. In addition, we will explore several factors inherent in Gulf War Illness, its similarity to conditions experienced in the general population, and the implications for practitioners. Finally, we will discuss some of the multi-modality interventions suggested in the research and explored in our practice.

References
Research Advisory Committee on Gulf War Veterans' Illness (2008) Gulf War Illness and the Health of Gulf War Veteran: Scientific Findings. Washington D.C.: U.S. Department of Veterans Affairs. Document URL: http://www.va.gov/RAC-GWVI
Bayer Pharmaceuticals Corporation (2004) Cipro Report: ND 19-537/S-053, S-054. New Haven, CT: Bayer Pharmaceuticals Corporation
Nicolson, G. (2001) "Gulf War Illness—Causes and Treatments," Armed forces Medical Developments 2001; 2:41-44.
Nicolson, G. "Antibiotics recommended when indicated for treatment of Gulf War Illness/CFS/FMS/Arthritis. Document URL: www.gulfwarvets.com/treatment.htm
Nicolson, G. L. & Berns, P. (2002). "Chronic Co-Infections in chronic fatigue syndrome, fibromyalgia syndrome, and other chronic illnesses," Chronic Fatigue Syndrome Newsletter. Document URL: www.immed.org
Additional materials based on the both 2005 and 2008 meta analysis above and similar reports from UK research.
Additional materials relevant based on effects of wide range of pre and post deployment inoculations, antibiotic treatments, intestinal permeability and implications.
Case studies of clients with GWI and those from general population with like multivariate symptom and onset issues such as quinolone toxicity

Goals/Objectives
Identify Gulf War Illness and describe its issues and scope
Summarize the leading research findings & meta-analytical reports on GWI over last 10 years
Cite the psychophysiological dynamics of GWI from the research
Discuss implications of three key areas from the research – pre-deployment factors, exposure factors, treatment factors
Identify multivariate symptoms and onset issues as a complex cluster along with holistic implications of symptoms
Compare GWI symptoms and onset issues with similar factors found in general population
Discuss contribution, importance, and significance of predeployment and post-deployment interventions on GWI

Discuss the importance of holistic/team approach for working with GWI
Apply multivariate holistic approach critical for alleviation of symptoms and issues

Outline
About us & our approach to GWI (5 mins.)
Review of research (30 mins.)
a. History & scope of problem
b. The research and meta-analytical reports on GWI from U.S. and U.K.
c. The multivariate symptoms and onset issues that have been associated with GWI
d. Review reported pre-deployment and post-deployment issues & treatment strategies
Three Investigative Questions (45 mins.)
1.) "Why multivariate symptoms and onset?"
2.) "Why is this important?"
3.) "Why 1 in 4, why not everyone?"
Part One – Pre-deployment factors –
Why multivariate symptoms and onset? (45 mins.)
a. Taking out the enemy or taking out the immune system: Inoculations, Vaccinations and Preparedness
b. A brief look at cause-and-effect – what we know about pre-and post deployment GWI issues based on the research and insights from what we know about similar conditions, treatments, and outcomes in the general population
Three Investigative Questions cont. (60 mins)
Part Two – Post-Deployment onset and treatment issues (30 mins.)
a. A brief look at the implications of war – trauma, toxic exposure (emotional and physical), general symptoms and onset, treatments both from research and a holistic perspective
Part Three – Why 1 in 4; why not everyone? – PTSD, CFS, BPD (30 mins.)
a. A look at physical and emotional issues identified in research and three conditions identified as being significant – PTSD, CFS, & BPD
b. Implications for NFB & BFB providers dealing consequences of Gulf War
6. Conclusions & Implications for future research, Q&A (30 mins.)

Financial Interest: No outside financial interests or funding.

WS 23: Demonstration of the SKIL EEG Operant Trainer (Demonstration)

David Kaiser, Ph.D., Sterman-Kaiser Imaging Laboratory, Inc., davidkaiser@yahoo.com

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
We have developed software to run on the Atlantis 4x4 and other hardware which will allow individual norm training of magnitude, comodulation, and other spectral parameters. Innovation includes the first Laplacian montage-based training system in existence, as well as Brodmann area training (with up to 60% accuracy) with only 4 EEG channels. The goal of this workshop is to introduce clinicians to this software and evaluate Laplacian montage training and other improvements in neurofeedback training. As development is ongoing, requests can be made by clinician to be incorporated into this evolving design. This workshop is hands-on and clinicians are advised to bring an Atlantis 4x4 and laptop computer; otherwise they will share the instructor's equipment.

References

Bailey P, & Von Bonin G. (1951). The isocortex of man. Urbana, IL: University of Illinois Press.
Ferster C B & Skinner B F. (1957). Schedules of Reinforcement. Englewood Cliffs, NJ: Prentice-Hall.
Jones EG (2008). Cortical maps and modern phrenology Brain, 131, 2227-2233.

Kaiser DA (2008). Functional connectivity and aging: Comodulation and coherence differences. Journal of Neurotherapy, 12 (2/3).
Kaiser DA (2008). The Periodicity Table. Presented at 7th Society for Advancement of Brain Analysis, Apr 30-May 3, Sarasota, FL.
Schleicher A, Palomero-Gallagher N, Morosan P, Eickhoff SB, Kowalski T, de Vos K, Amunts K,& Zilles K (2005). Quantitative architectural analysis: a new approach to cortical mapping Anatomy and Embryology, 210 (5-6), 373-386.
Skibo C, Young M, & Johnson B (2006). Working with Microsoft Visual Studio 2005. Redmond WA: Microsoft Press.
Triarhou LC (2007). The Economo-Koskinas Atlas Revisited: Cytoarchitectonics and Functional Context Stereotactic and Functional Neurosurgery, 85, 195-203.

Goals/Objectives
Explain how to set up reward and inhibit thresholds on the SKIL EEG operant trainer
Explain how to set up a Laplacian training session
Explain how to set up a Brodmann area training session

Outline
SKIL EEG Operant Trainer exercise setup (40 min)
Montage setup (40 min)
Threshold controls (60 min)
Laplacian and Brodmann area training (40 min)

Financial Interest: This is a commercial software demonstration. This software has not been demonstrated at any conference to date. I am partner in the company developing it and the developer of the commercial product.

WS 24: Application of Event Related Potentials for Defining Protocols of tDCS in Stroke Patients (Lecture, Demonstration)

Juri Kropotov, Ph.D., Institute of the Human Brain, jdkropotov@yahoo.com

Credits: 3.00

Level of Difficulty: Advanced

Abstract
The goal of workshop is describe a new methodology for assessment and treatment brain dysfunctions. This methodology was developed recently at the Human Brain Institute in St. Petersburg, Russia and applied at St. Olav’s Hospital of the Norwegian University of Science and Technology in Trondheim, Norway. The workshop starts with a short introduction to theoretical concepts. The main focus of this part of the workshop concentrates the HBI Reference Database. The normative data includes 19-channel EEG recordings in 1000 people of age from 7 to 89 years old. 19-channel EEG was recorded in two resting conditions with eyes open, eyes closed, and five different task conditions, including two stimulus GO/NOGO task, arithmetic, reading and two auditory tasks. Absolute amplitude and power spectra, averaged and two-channel coherences, wavelet-transformations and ERPs are computed in three different montages off-line and mapped into 2D representations or into 3D images using LORETA technology (including s-LORETA). Comparison with the data base consists of computing z-scores – standardized measures of deviation of individual EEG parameters from the normative data. ERPs are subjected to independent component analysis. Comparing amplitudes of ERPs independent components with the normative data gives the insights concerning different stages of information processing in the individual under assessment. In stroke the area adjacent to the lesion shows dys-inhibition and increase of excitatory postsynaptic potentials which results in an increased baseline neuronal firing and hype-excitability of this area. These stroke-induced changes are reflected in increased amplitude of cognitive event related potentials and can be easily observed by comparing individual ERPs with the normative data. The

workshop will present our experience in applying ERP-based protocols of transcranial Direct Current Stimulation for treatment stroke patients.

References

Kropotov J.D. Quantitative EEG, event-related potentials and neurotherapy, 2009, Academic Press, Elsevier, 600 p.

Goals/Objectives

Utilize the HBI reference database for constructing protocols of tDCS in stroke.

Outline

Basic theoretical concepts regarding brain functioning (20 mins.)
Conventional methods of ERPs recording and analysis (20 mins.)
Description of the HBI reference data base (30 mins.)
How to use the HBI database -demonstration (60 mins.)
What is tDCS? (30 mins.)
Results of application of the HBI reference database for constructing protocols of tDCS in stroke (45 mins.)

Financial Interest: I am co-owner of the HBI medical company, Switzerland.

WS 25: IVA Boot Camp: Basic Training in the Administration, Interpretation and Application of the IVA CPTs for Neurofeedback (Lecture, Demonstration)

Joseph Sandford, Ph.D., BrainTrain, jas@braintrain.com

Credits: 3.00

Level of Difficulty: Beginner

Abstract

The IVA+Plus and IVA-AE are combined auditory and visual continuous performance tests (CPTs). They are designed to help the clinician make and accurate diagnosis of ADHD and have also been found effective in evaluating any progress achieved through neurofeedback treatment. These tests work with wide age ranges (6-96) and the IVA-AE is specifically designed to assess attentional functioning and self-control in working age adults (18-50). There are 30 standard scales that provide detailed information for clinicians to better understand the attentional strengths and weaknesses of clients in respect to their functioning. These CPTs have built-in test-retest functions that can help a health professional to determine if their treatment is effective or not. This introductory workshop will present background research, test administration procedures, scale definitions and basic test interpretation guidelines focusing specifically on the needs of the neurofeedback practitioner.

References

Baerwald, J.P., Tryon, W.W. and Sandford, J. (2005). Bimodal response sensitivity and bias in a test of sustained attention contrasting patients with schizophrenia and bipolar disorder to normal comparison group. asymmetry in patients with schizophrenia and bipolar disorder. Archives of Clinical Neuropsychology, 20(1), 17-32.
Demos, J. (2005). Getting Started with Neurofeedback. NY: WW Norton & Company
Hammond, C. (2006). Comprehensive Neurofeedback Bibliography: www.isnr.org
Sandford, J. (2007). IVA-AE Plus Continuous Performance Test, Richmond: BrainTrain.
Sandford, J. (2004). IVA+Plus Continuous Performance Test, Richmond: BrainTrain.
Yucha, C. & Gilbert, C. (2004). Evidence-Based Practice in Biofeedback and Neurofeedback. Association for Applied Psychophysiology and Biofeedback.

Goals/Objectives

Discuss the theory and types of Continuous Performance Tests

Outline the correct procedures for administering the IVA+Plus and IVA-AE
Interpret the standard IVA+Plus and IVA-AE scales
Utilize the IVA+Plus and IVA-AE to evaluate neurofeedback progress

Outline
How and Why CPTs work (20 mins.)
Do's and Don'ts in the Procedures for Administering CPTs (10 mins.)
Differences Between Types of CPTs (30 mins.)
The Component Parts of the IVA+Plus and IVA-AE (20 mins.)
Determining the Validity of CPT Test Results (10 mins.)
Global Scales for Measuring Response Control and Attention (10 mins.)
A Review of the 30 Standard Scales and their interpretation (40 mins.)
How the IVA+Plus/IVA-AE data is used to help Clinicians in Diagnosing ADHD (20 mins.)
Utilizing the IVA+Plus and IVA-AE to evaluate neurofeedback training (20 mins.)

Financial Interest: I am the author of the IVA+Plus and IVA-AE CPTs and President of BrainTrain, Inc. which distributes these tests.

WS 26: Practical Tips and Helpful Hints for Neurofeedback Professionals Using the BrainMaster Platform (Lecture, Experiential, Demonstration)

Nancy Wigton, M.A., L.P.C., Private Practice, nwig@cox.net

Credits: 3.00

Level of Difficulty: Intermediate

Abstract
Many BrainMaster users have only accessed part of the potential of this very powerful and flexible platform, and this workshop is for those who want to get more out of the BrainMaster equipment/software they already own. Participants will have the opportunity to become a more efficient user of this platform. Practical tips will be presented on how to create more precise Neurofeedback protocols and practice better protocol management. Learn how a few simple steps can open up the world of Event Wizard, and discover a simple yet effective approach to Live Z-Score training. Practical tips for easier Electro-Cap hook ups and strategies for quality QEEG & Mini-Q data acquisition will also be presented. Various options with regard to educational resources, supplies sources, electrode & cap types, assessments, treatment models, and protocol development will be presented. Customized template (studies) files to simplify protocol development will be provided to all participants in digital format.

The workshop will be geared as between a Basic to Intermediate level. A prerequisite of the workshop should be a basic working knowledge in the operation of the BrainMaster software and hardware as entry-level material on its use and operation will not be covered. Also, while various treatment approaches will be discussed in the context of the protocol options of the software, the material will be heavily weighted toward a QEEG-approach to Neurofeedback with live Z-Score training as that is the background and orientation of the presenter.

References
Collura, Thomas. (2009) "BrainMaster Technologies Inc. - Knowledge Base", from http://www.brainmaster.com/kb
Collura, Thomas. (2008) "BrainMaster Technologies Inc. - Online Users Manual", from http://www.brainmaster.com/help
Thatcher, R.W., Biver, C. and North, D. (2007). Z-Score EEG Biofeedback: Technical Foundations, from http://www.appliedneuroscience.com/Z%20Score%20Biofeedback.pdf

Goals/Objectives
List ways to become a more efficient BrainMaster user
Describe how to conduct a more efficient setup and quality QEEG and Mini-Q recordings
List options for educational resources, supplies sources, electrodes/caps, assessments, treatment models, and protocol development

Outline
General practical tips, educational resources and supplies sources, various treatment models and assessments (45 mins.)
Practical tips for QEEG & Mini-Q recording (30 mins.)
Practical tips for BrainMaster hardware/software (75 mins.)
Question/Answer; experiential time for participants (30 mins.)

Financial Interest: Nancy Wigton, MA, LPC is first and foremost in private practice as a Board Certified Neurofeedback therapist. However she also provides consultation and education to fellow professionals regarding Neurofeedback and QEEGs, as well as BrainMaster, NeuroGuide, and Neuropulse hardware and software operation. She is also an authorized distributor for BrainMaster, NeuroGuide and Neuropulse products.