FROM THE EDITOR

Electroencephalography Signatures of Common Disorders and Phenotypic Patterns Contributing to Multiple Disorders

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Guest Editors: D. Cory Hammond, PhD, and Jay Gunkelman, QEEG-D

Professional Issues
The cover of this Fall 2006 issue of Biofeedback magazine shows an electroencephalography (EEG) electrode cap adorning a soccer ball. This cover photo introduces a brief article in the Professional Issues section occasioned by the July 9 victory of the Italian team in the World Cup. Newspaper reports highlighted the Italians’ secret weapon as the “Mind Room,” a program of training for optimal performance which included biofeedback and neurofeedback. This article by Vietta Wilson, Erik Peper, and Don Moss overviews widely used and well documented components in peak performance work, which are gaining acceptance in professional and amateur sports.

Sebastian Striefel presents an article on professional standards and ethical practices in the use of neurofeedback and quantitative EEG.

Special Issue
The theme of this special issue is “EEG Signatures of Common Disorders, and Phenotypic Patterns Contributing to Multiple Disorders.” Jay Gunkelman and Cory Hammond are guest editors for this special issue. We are grateful to them and to the contributing authors for this overview of current advances in the use of quantitative EEG for assessment in medical and behavioral health care.

Increasingly, the use of quantitative EEG allows practitioners to assess patterns in cortical activation, which are of practical diagnostic significance. The articles in this special issue identify some of the EEG signatures that we can expect to encounter in common medical and mental disorders, ranging from fibromyalgia to learning disabilities and attentional problems. Yet the diagnostic categories in the Diagnostic and Statistical Manual of Mental Disorders, fourth edition, rarely correspond in a clear and reliable way with patterns of neural activation. Therefore, the authors also address subtypes within disorders, which show differing EEG signatures and therefore require differing neurofeedback interventions. In addition, this special issue introduces the concept of phenotypic patterns, patterns of abnormal EEG activation that contribute to multiple disorders across diagnostic categories. A phenotype may unify and subsume subtypes of several different disorders.

Cory Hammond’s article reviews the growing body of emerging research identifying quantitative EEG patterns associated with common medical disorders. In many cases, the abnormal EEG patterns are accompanied by serious deficits in mental status, which can be addressed by neurofeedback training. This article lays the groundwork to show the health care system that neurofeedback can make a contribution in the care for many disabling and chronic medical conditions, from systemic lupus erythematosis (lupus), to irritable bowel syndrome, to fibromyalgia.

Jay Gunkelman introduces the idea of phenotypes, a concept from genetics. A phenotype is an intermediary between genetics and behavior. In this case, the phenotype is a patterned abnormality in the EEG, such as frontal slow-wave activity, which may be found in a wide variety of specific disorders. Gunkelman advocates for the use of the phenotype concept, as opposed to the subtype model, because the neurofeedback treatment protocol actually addresses the phenotypic EEG pattern and not the specific medical or psychiatric diagnosis.

Michael and Lynda Thompson review clinical data on 154 consecutive adult cases and 92 child cases of attention deficit hyperactivity disorder (ADHD). They identify two subtypes in the adults with ADHD. The two groups present with differing symptoms, display divergent EEG patterns, and require distinctly different neurofeedback training.

Kirtley Thornton addresses the growing problem of learning disabilities and proposes a functional classification of learning disabilities based on the use of modern neuroimaging, especially the quantitative EEG. He
describes EEG signatures for several learning disabilities and advocates for developing a more precise link between diagnostic classification and therapeutics.

Mary and Stuart Donaldson report on a recent study using quantitative EEG to identify dysfunctional electrocortical activity in fibromyalgia. This study of 40 patients fails to confirm previous findings of elevated slow-wave activity frontally and suggests a need for additional well-controlled research on fibromyalgia.

Editorial Board
The Biofeedback masthead now shows a much expanded editorial board, under the capable guidance of four associate editors: Randy Neblett, LPC, associate editor for surface electromyography (SEMG); Christopher Gilbert, PhD, associate editor for general biofeedback; Roger deBeus, PhD, associate editor for quantitative EEG and neurofeedback; and Louise Marks, PhD, associate editor for pelvic floor disorders. The new editorial board allows Biofeedback to undertake an expanded peer review of all feature articles, providing continued assurance of higher standards for knowledge in our publication.

AAPB News and Events Section
The News and Events section, which has long been a feature of this magazine, will now appear on the Association for Applied Psychophysiology and Biofeedback (AAPB) Web site. This will allow association news to reach the members of AAPB in a timely manner. Please go to www.aapb.org to view columns from AAPB President Richard Gevirtz, President-Elect Alan Glaros, and Executive Director Francine Butler.

Proposals and Abstracts
Proposals and Abstracts are now invited for future special issues of Biofeedback: “Integrative Approaches for Primary Care” for winter 2006 and “Advances in Neuromuscular Education” for summer 2007. The editor also welcomes proposals for future special issues of Biofeedback.