FROM THE EDITOR

Special Issue: Current Practice in Neurofeedback Assessment and Treatment

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The cover of this issue of Biofeedback shows Chicago, Illinois, the location of the March 15-18, 2017 AAPB 48th Annual Meeting. The theme for this year’s annual meeting is “The Science of Self-Regulation: Established and Emerging Evidence.” Mark your calendars now to attend AAPB’s 48th Annual Meeting.

Professional Issues

Judy Crawford and Fredric Shaffer, the executive director and the chair, respectively, of the Biofeedback Certification International Alliance (BCIA), have provided a tribute to Eugenia Bodenhamer-Davis. Dr. Bodenheimer-Davis built the neurofeedback laboratory at the University of North Texas, at Denton, and has trained students in neurofeedback there since 1994. She has also served the BCIA, leading efforts to revise and improve the knowledge blueprint and certification program in neurofeedback. This article honors Dr. Bodenheimer-Davis for her contributions to the field of neurofeedback, the University of North Texas, and the BCIA.

Introduction to the Special Issue

This special issue focuses on “Current Practice in Neurofeedback Assessment and Treatment.”

Michael and Lynda Thompson are two of the leading teachers worldwide in neurofeedback. For this special issue, they have contributed a review of 25 years of clinical practice at their ADD Centre in Toronto, Ontario. Their evolving work in neurofeedback, which spans attention deficit disorder, traumatic brain injury, and autistic spectrum disorders, applies complex assessments including single and two channel quantitative electroencephalograph (QEEG) and as well as 19-channel QEEG, combined with evoked potentials, heart rate variability, continuous performance testing, and neuropsychological assessment. Their article provides a wealth of practical guidelines and useful insights into the evidence-based clinical practice of neurofeedback and biofeedback.

A single case study by Shane Dutt, Andrea Reid-Chung, Lynda and Michael Thompson, and Eunha Lee applies LORETA-based neurofeedback and heart rate variability biofeedback to an unusual case of Agenesis of the corpus callosum (AgCC), that is inadequate development of the corpus callosum functionally linking the two hemispheres of the brain. AgCC is a congenital disorder that leads to a broad array of symptoms including cognitive, motor, and social difficulties. The 20-year old male describe in their narrative made dramatic improvements in motor skills, sleep, academics including mathematics, and social adjustment.

Thomas Collura provides a discussion of live “Z-score” neurofeedback. Statistically, a Z-score is the difference from the mean for any variable. The units for Z-scores are standard deviations. How many standard deviations is this variable currently from the mean? Today’s Z-score neurofeedback can sample any number of variables simultaneously, from one to hundreds, compare them to a normative database, and provide a single number showing how far this composite of many variables is from a mean. The therapist can present that Z-score in many forms to the trainee, in real time, and facilitate the brain as a dynamic self-regulating unit, to move toward more normal activation patterns in amplitude, symmetry, coherence, and phase at multiple cortical sites simultaneously. Collura presents live Z-score training as a natural extension of QEEG assessment into the training phase, and emphasizes creating the conditions in which a trainee’s brain can take on an active role in the training process.

Much of the emphasis in the early development of neurofeedback protocols for various disorders was on increasing the amplitudes of cortical firing in certain frequency ranges and decreasing amplitude in other frequency ranges. For example, Joel Lubar and others promoted the ADHD protocol involving uptraining of midline low Beta activity and downturning midline Theta activity. Kirtley Thornton contributes an article in this issue, highlighting the importance of work on the connectivity among brain areas, including coherence and phase issues. Which brain regions are communicating with each other and firing together, and to what degree? His article examines the communication problems and patterns in the brain in different clinical conditions: Autism, Aspergers, Schizophrenia, Bipolar, Alzheimer/Dementia, Depression, Traumatic Brain Injury, and cognitive performance.

Feature Article

One of the major themes in the early days of biofeedback was the possibility of extending voluntary control over physiolog-
ical processes previously considered to be involuntary. An early pioneer in biofeedback, Elmer Green, named his biofeedback unit at the Menninger Clinic the “Voluntary Controls Clinic.” One of Green’s landmark articles was titled: “Voluntary Control of Internal States” (Green, Green, & Walters, 1970). The popular writings of Barbara Brown (1974), Kenneth Pelletier, and others equated self-regulation and voluntary control. The emergence of the biofeedback movement was simultaneous with the humanistic movement and its emphasis on human freedom and extending human potentiality for personal control over life and health. Linda Thomson and others have popularized the concept of “becoming the boss of one’s own body” as a clinical tool in pediatric biofeedback and hypnosis practice (Moss, 2014). The recovery of control over one’s body and ultimately one’s life has been emphasized as a component in biofeedback therapy by many authors, including Eric Peper. Bandura’s (1977) concept of self-efficacy provided a social-cognitive articulation of this theme used widely in the biofeedback movement. Clinical biofeedback often enhances self-efficacy for patients who learn to regain confidence in initially managing their physiological processes and eventually their well-being and lives.

In this issue, Raymond C. Hawkins II presents a thought provoking article pointing out that complete voluntary control is an illusion at best, and that current clinical approaches often counsel acceptance over efforts at extreme self-control. Hawkins draws on the models and concepts of functional contextualism, acceptance and commitment therapy, and relational frame therapy. Although Hawkins acknowledges the enhancement of self-efficacy in clinical biofeedback, he ultimately characterizes the concept of self-control as a convenient fiction and illusion.

Technology Corner
Fredric Shaffer, Steven Shearman, and Zachary M. Meehan provide a useful review of emerging research on the use of ultra-short-term measurements for heart rate variability (HRV). The prevailing standards for HRV assessment were specified by the Task Force of the European Society of Cardiology and the North American Society of Pacing and Electrophysiology (1996), and call for a minimum of five minutes in measurements to obtain valid time domain and frequency domain measurements and 24 hours of HRV data to predict heart attack risk using the time domain metric called SDNN. The Shaffer et al. article suggests that resting baselines as brief as one minute should be sufficient to measure heart rate, SDNN, and RMSSD as part of clinical, optimal performance, and personal health assessments.

Book Review
Donald Moss provides a review of the fourth edition of Mark S. Schwartz and Frank Andrasik’s edited book, Biofeedback: A Practitioner’s Guide (Guilford, 2016). The Schwartz and Andrasik volume has become the “bible” of knowledge in biofeedback and neurofeedback. The 65 chapter authors are thought leaders, researchers, and practitioners from throughout the biofeedback world, from Herta Flor of Germany to Arnon Rolnick of Israel to Vietta Sue Wilson of Canada to Mark Schwartz and Frank Andrasik themselves.

References

Proposals and Abstracts
Contributions are invited for future issues of Biofeedback magazine. General articles on topics in biofeedback, neurofeedback, and applied psychophysiology are welcome, as are proposals for special issues. Feature articles should not exceed 2,500 words; department articles, 700 words; and letters to the editor, 250 words. Articles should be in American Psychological Association (6th Edition) format, and be submitted to: mcunningham@kellencompany.com.