

Brainwave Connections

Dedicated to communication and education in the emerging fields of neurofeedback, mental fitness, and brain modification

VOLUME 1, ISSUE 1

Winter 2005

MAKING THE CONNECTION

The purpose of this newsletter is twofold. First, we are interested in making a connection with you, the reader. You may be a clinician or other practitioner, a trainee, an educator, a parent or family member, or simply interested in this exciting new field. We hope to connect you with information and ideas that will help you to understand neurofeedback, its history, its uses and benefits, and its future.

Secondly, we are interested in helping you to make connections. There are important connections to be made in terms of understanding our environment, our society, our medicolegal system, our educational choices, and many other

areas of life. When connections are made, understanding can follow. We seek to educate and enlighten as many people as possible, so that they can appreciate the importance of the brain and mind, and how our inner world affects, indeed creates, our outer world.

It is by consensus that we operate and it is by consensus that we learn. Only when we can agree on simple things like the value of a recording parameter, or whether someone's behavior has changed in an objective way, that we can make progress in understanding and working together.

Neurofeedback provides a tremendous breakthrough, in that we can understand, measure, and work with



our inner worlds, as objectively as with our outer worlds. This opens the door to new ways of thinking, working, and communicating. And gives new meaning to the word "connections", which is the purpose of this newsletter.

That being said, let the connections begin!

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PLEASE CONNECT WITH US

If you have any experience, interest, or information that you would like to share with the neurofeedback community, please consider contacting us to submit an article, review, or other item.

We will be publishing and seeking book reviews, site reviews, workshop reviews,

commentary, opinions, and information from all of our readers, as well as any other interested parties.

One of our purposes is to foster connections between the members of the community, and to foster cooperation and education whenever possible. We will be covering as many

books, workshops, courses, meetings, and other opportunities that we can.

Please consider this an opportunity for you to share that idea, method, approach, or experience that you have found valuable over the years. Let us know what you would like to submit, and see what connects!

FLEXIBILITY AND APPROPRIATENESS —AN UNDERPINNING WE CAN ALL AGREE UPON



By classifying or labeling an object (or condition), we may lose as much information as we gain...

AT AN EXTREME, INFLEXIBLE OR INAPPROPRIATE BRAIN STATES MAY APPEAR IN THE DSM-III-R, BUT SUCH A DESIGNATION IS NOT FUNDAMENTAL...

As the field of neurofeedback continues to evolve and change, we continue to seek metaphors or guiding principles that can bring workers together. We are faced with many concepts that are intrinsically separatist or divisive, as they force us to choose one side or the other. These include clinical vs. nonclinical approaches, the "to Q or not to Q" controversy, debates regarding reward contingencies or philosophies, use of adjunct techniques, "should we use games," and other issues. We seek unifying principles that will allow practitioners to meet on common ground, and to build upon jointly, rather than to take sides across.

One of these principles is that of "flexibility and appropriateness," which to me permeates not only the nuts and bolts practice of neurofeedback, but also our approach to the field, as well as conduct both inside and outside the professional arena. In the context of EEG training, this paradigm provides an approach to rationalizing protocols and clinical methods, as well as conducting sessions, managing trainees, and interacting with trainees' family, professional, and support persons. In the broader sense, it can inform our interactions with other factions in the community, professionals, clients, educators, the press, and so on.

At its core, the concept of flexibility and appropriateness, when applied to the brain, simply means that the brain needs to be flexible, and that there are appropriate brain states and behaviors, for appropriate circumstances. It is a simple issue of fitting the brain's mode of operation to the current demands, to reduce stress, improve productivity, and, ultimately, to relieve suffering.

This is neither a medical nor a nonmedical approach, it is a "medical-neutral" approach. It provides a way of looking at normal function in a dynamical way, and a way of looking at any non-optimal functioning as something that can be improved upon. At an extreme, inflexible or inappropriate brain states may appear in the DSM-III-R, but such a designation is not fundamental to how we approach improving brain function. A great many maladies and disorders can be fit into this conceptual framework, in that the brain may be inflexible, and stuck in a particular way of working, leading to chronic disfunction and maladjustment. Similarly, if the brain is flexible but is unable to achieve appropriate states at desired times (math class, meetings, etc), then again there is the potential for a negative outcome. The primary challenge of neurofeedback is to teach the brain the proper flexibility, and to allow it to learn to suit ap-

propriate states to appropriate circumstances, and then allow the brain to take over, doing what it does best, automatically.

One example I give is to look at a typical athlete, for example a basketball player. We do not train a basketball player to run around the court with their hand up in the air at all times, because the basket is up there, and the hand will need to be there some time. This is clearly not a productive approach. However, there are those who look upon neurofeedback training as doing just that, pushing the brain into the "good" brainwaves, and pushing the "bad" ones down. Rather than appreciating the dynamics and importance of changing brain states, some trainers view the neurofeedback as a way to mold or bend the brain back into a "good" shape, as if it were made of clay.

What is being provided is guided exploration. It is paradoxical but true that, when control and guidance are provided, then exploration can proceed to yield results. When a system is running "open loop," then it may traverse many possible modes, but there is no insight regarding what the modes mean, or even that they exist.

When appropriate feedback is provided, the system can identify its modes, and thereby gain some decision-making power over these options.

FLEXIBILITY AND APPROPRIATENESS—FROM PAGE 2

The issue is not so much that of "rewarding" or "punishing" specific states, as it is of allowing the system to know that these states exist, and thereby providing the simple power of decision, hence control.

These considerations apply equally well over a broad range of designated "disorders" or "conditions", and their typical interventions. Whether the training variable is amplitude, asymmetry, coherence, or any other derived parameter, overall, the brain is asked to explore the dimensional possibilities of the feedback signal, and to learn to develop the flexibility to enter and exit those conditions, and to recognize when conditions are being met. Whether the result is a change in designated symptoms, general focus, overall activation, mood, or other neuropsychological variables, the basic mechanism behind neurofeedback training remains one of providing sufficient neuronal flexibility to produce desired states, at appropriate times.

Another value of the F&A point of view is that it helps to understand the connection between the "relaxation" training that is purportedly being provided through neurofeedback, and the overarching benefits such as improvements in concentration, performance, creativity, and so on. When we view the entire brain/mind process as one of dynamical changes and

adaptations to demands of input and processing, the importance of flexibility and appropriateness to function and performance becomes clear. It is not so much a case of whether a brain is "good" or "bad," or whether it is well suited to a particular task. It is more a matter of any particular brain being "in the right place" and "at the right time" so that the best outcome is forthcoming. It is interesting to note that even the greatest poets or physicists or musicians still have the same basic machinery as the rest of us. Their limbs, bodies, and brains are not qualitatively different from anyone else's in any fundamental way. But when a physicist sits in front of a problem, there is simply that extra taking of time, of relaxing certain judgements and plans, and of allowing their brain to take in the information, in a manner that is appropriate to the task.

The question has been asked, "Is this good for ADD", or "Will this help with my depression?". Specific answers are available to these questions. However, an overarching answer is "This is good for anyone". That is, we should not specifically care whether a trainee presents with any particular constellation of parameters. The primary assumption is that the use of neurofeedback can be beneficial and of value, and that the protocols and methods will be adapted to a full range of

issues, of which clinical presentation is but one.

Beyond the realm of practicing and interpreting neurofeedback work, we can further apply these concepts in our interactions with professionals, clients, educators, the general public, and other groups. It is evident that the applicability of neurofeedback extends well beyond the naive concept of "relaxation training" as it has been historically understood. We must look toward considerable work, research, publication, and clinical studies, before the full acceptance of neurofeedback in all of its potential, will be realized. Our ability to exercise flexibility and appropriateness in all such interactions will be key to the gradual, but certain, acceptance of the field in a form well beyond what it is today.

About the author: Dr. Thomas F. Collura is a biomedical engineer, neurophysiologist, and educator. He has over 30 years of professional experience in the areas of EEG, evoked potentials, brain mapping for epilepsy, computer systems, and neurofeedback. He has held senior staff and faculty positions with AT&T Bell Laboratories, the Cleveland Clinic, and Case Western Reserve University. He received undergraduate degrees in philosophy and biology from Brown University, and the Ph.D. in biomedical engineering from Case Western Reserve University.



IT IS NOT SO MUCH AN ISSUE OF "REWARDING" OR "PUNISHING" SPECIFIC STATES, AS IT IS ONE OF ALLOWING THE SYSTEM TO KNOW THAT THESE STATES EXIST, AND THEREBY GAIN THE SIMPLE POWER OF DECISION, HENCE CONTROL.



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Published by: Stress Therapy Solutions, Inc.
Publishing Editor: Terri Mrklas Collura
Subscription: \$50/year; Provided to all Active Affiliates of BrainMaster Technologies, Inc.
Website: www.stresstherapysolutions.com
Publication: minimum of 4 issues/year

Editorial Guidelines: Articles 250 to 2000 words, PC format ASCII or Word. Submit via email to info@stresstherapysolutions.com or send disk or hardcopy to Stress Therapy Solutions, 25825 Science Park #100, Beachwood OH 44122. FAX: 216-439-3015. Phone: 216-766-5707.

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Book Review:

Getting Started with Neurofeedback

By John Demos, W.W. Norton & Co., 2005

Getting Started with Neurofeedback is an unusually thorough, concise, informative, and practical book on the practice of neurofeedback. This is one of the most succinct introductions to the field that I have seen, and it also includes a wealth of practical information. Ultimately, Demos provides sufficient background and applications information to allow anyone with sufficient qualifications to begin working in this area. It would be an excellent text resource for a formal training program, as well.



Covering a wide range of approaches and philosophies, Getting Started with Neurofeedback is unique in that it does not espouse one approach. Rather, it puts many approaches in perspective, and allows the reader to make intelligent decisions regarding when, how, and in what manner one wants to apply neurofeedback therapy. It includes basic neurophysiology and anatomy, the value of brain maps and mini-assessments, and practical considerations for formulating treatment plans, configuring and using equipment, and interpreting results. Really a "must have" for anyone in the field of neurofeedback, considering entering the field, or any seriously curious student who wants to understand this emerging and changing area.

Review by: Thomas F. Collura

SITE REVIEW—TOM BOONE, PH.D. AND ASSOCIATES

One of the benefits of working in the field of neurofeedback is discovering the many and varied ways in which practitioners approach their work. One shining example is Dr. Tom Boone, who has converted a former Picayune, Mississippi newspaper office into a clinic, walk-in lab, and healing center for the community. Dr. Boone remodeled the 7,000 square foot facility to provide 15 professional offices plus an 8-station walk-in laboratory equipped for EEG, HEG, and auditory and photic stimulation.

While the focus of Dr. Boone's work is psychotherapy, he employs a host of adjunct methods including hypnotherapy, counseling, EEG and HEG neurofeedback, photic stimulation, and the use of audio cassette tapes.

The walk-in center employs a model that is somewhere between conventional clinical neurofeedback and home training. It can

run 8 people at a time, and trainees sign up on time-share basis to use the equipment, which is technically on lease to them.

Trainees and family members are taught how to use the equipment, and are supervised during their labwork to ensure quality and results.

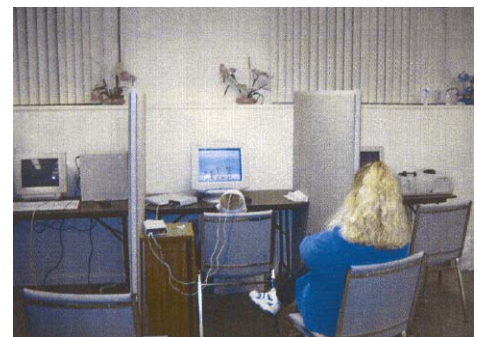
Dr. Boone is now combining neurofeedback with audio tapes, to provide custom-recorded tapes to each trainee that they can take home for further work. This allows home users to replicate the sound environment from the lab, providing "classical" conditioning to reinforce the neurofeedback therapy.

As a result of his work, Dr. Boone is kept very busy, even in this town of less than 30,000 people. For better or worse, his is the office where people go when "problem" cases arise, that no one else seems to be able to manage. If other practitioners can learn and adopt from his

models, we will surely see growth in the field, and benefits for greater numbers of those seeking help.

For more information, contact:

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Mother and son "doing" neurofeedback at Dr. Tom Boone's walk-in clinic