California Biofeedback

THE NEWSLETTER OF THE
BIOFEEDBACK SOCIETY OF CALIFORNIA

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An Interview with Bill Scott

Tiff Thompson

My first neurofeedback experience was with feedback called BrainPaint; I was taken, if not mesmerized with Bill Scott's beautiful software, as it danced to the ripples of my brain. And the direction of my life changed toward neurofeedback, as a consequence. So, it was good fortune that I had the chance to interview Bill Scott, owner and developer of the neurofeedback system, BrainPaint, as well as keynote speaker for the BSC's upcoming conference in Los Angeles on April 26, 2014 for this issue of the BSC newsletter.

Scott is a multi-faceted human. That's likely an understatement. But in the course of an hour with him, I learned that he is a scientist, an academician, a researcher, once program director for addiction centers, a teacher and trainer, a therapist, a programmer and digital signal processing whiz, an inventor and an entrepreneur.

On top of that, he's humble. Go figure.

Scott's system is arguably the most beautiful feedback on the market. So, naturally, I had to inquire about the aesthetics of his work. In asking, I learned that Bill has always believed our brains are fractal in nature. In the creation of BrainPaint, he built his system on the hunch that there was a lot more information in our brainwaves than you can see in frequency and amplitude, coherence and phase relationships. He wanted to see if he could somehow show these complexities visually. When asked what compelled the creation of BrainPaint, he noted: "I wanted to cover the fractal dimension of the brainwaves that we were training."

In his academic pursuits, Scott found that brain stimulation in complicated signals was more effective in bringing rats out of a coma than a linear signal pulse. This is because fractals are a language in nature that have superior qualities than do linear or binary formulae. He mused, "the formulas that nature uses to create everything are fractals in every sense of the word. This is a superior methodology."

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INSIDE

BSC 39th Annual Conference

BSC's Annual SoCal Regional Conference

+ *Save the Date!*

When: Sat., April 26
Time: 8:00am-5pm
Where: Biofeedback Center of Los Angeles
6542 Hayes Drive
Los Angeles, CA 90048

David Bresler, PhD, L.Ac. Will discuss guided imagery in pain management.

Keynote Speaker Bill Scott of Brain Paint
"Alpha Theta Methods and Mechanisms"

Jennifer Stephens (left) will discuss Marketing and social media for your practice, Tiff Thompson (right) will discuss Clinical QEEGs (also known as Quick Q's) and reliable neuromarkers.

Featuring

8:30-10:15 **Bill Scott of BrainPaint** will cover what we've learned over the past 20 years in research

10:30 – 12: 15 **Tiff Thompson, BSC's Executive Director,** will give a demonstration of the Clinical QEEG process, including hook up, client instructions, & interpretation of the results.

Lunch will be served

1:15-3:00 **Jennifer Stephens** Will discuss Social Media Syndication Made Easy

3:15-5pm **David Bressler** Guided Imagery and Pain Management

"Complimenting Your Biofeedback Practice: Easy to Apply Tools & Methods"

+ COST

- Members: $100 or $115 at the door
- Non Members: $105
- Students: $25.00
- CEs: add $35.00

- CEUs available for Psychologists, Nurses, and Therapists
- Lunch Provided
- Network with other professionals
- Enhance your skillset
- Learn new techniques

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From the President

It is amazing how fast time has flown by since the BSC 2013 annual meeting, where students and members networked so well while enjoying the conference offerings. It means the Holidays and New Year have faded into recent memories, and it is time to refocus on 2014!

One of the issues that is always begging to be addressed is societal growth. Growth/membership has been an issue for all the smaller state groups for decades. Recently the trend to solving the issue has been towards integrating smaller state societies into larger regional societies with enough membership to actually continue to exist and provide local networking and educational services to the memberships.

Examples of the regionalization include: The North Eastern Regional; The Mid-Atlantic; The South-Eastern, and recently Michigan has expanded its state society into the Midwestern Regional Society. This regionalization trend is being supported by larger societies such as AAPB, since regionalizing strengthens the state/local networking and offers a state society experience to those states where their society has either failed, or may never have been formed.

BSC has had members from Arizona and Oregon, which has no state society, and we have a current Board member and past-president, John Lemay, from Nevada. We are now being approached by people in Hawaii inquiring about possible "affiliation."

Becoming a regional society could potentially dilute the very local state "identity" of the state society as the region expands the definition of membership, but this small potential loss is potentially made up for with increased stability of the larger organization. The BSC is one of the few remaining state societies, with Florida and Texas being the other two remaining groups I am aware of. We are for-

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From the Executive Director

Hey there fellow BSC member,

The BSC has got some changes coming down the pike. I am honored to be joining as your Executive Director in such an exciting and transitory time for the organization.

While the BSC is turning 40, it is anticipating a potential name change, possible regional expansion to include neighboring and nearby Western states, and an increased membership base. We're currently recruiting members for a handful of our committees, including the Education Committee, the Student Committee, Legal and Ethics, and the Conference committee. If you're interested in serving on any of these, please email me.

In other news, we've got some exciting events going on this year. Firstly, on Saturday April 26th, 2014, we have our annual regional conference, this year at the Biofeedback Institute of Los Angeles, the former home of Herschel Toomim. The title of the conference is: "Complimenting your Biofeedback Practice with Easy to Apply Tools and Methods" and will be featuring Bill Scott from Brain Paint, yours truly on Clinical QEEGS (also known as Quick Qs), Jennifer Stephens on Marketing your Practice with Social Media, and David Bresler on Using Guided Imagery and Visualization in Pain Management. It's a great way to earn continuing education units, network, and learn new skill sets.

Our 40th birthday party in November 6-9 in Oakland California promises to be memorable. We are rallying all the past presidents of the BSC and honoring them at this celebration. In addition, we will be hosting top notch presenters, not to mention a little evening fun with some birthday hijinks. It's a party not to be missed. Hope to see you there. In the meantime, feel free to reach out to me. I would love to hear from you!

Warmly,

Tiff Thompson, Executive Director, biofeedbackcalifornia@gmail.com

Interview with Bill Scott
Continued from page 1

And this is a methodology in BrainPaint.

Whereas traditional neurofeedback systems have used video games and other visuals to train the brain, BrainPaint uses fractals plus the traditional rewards, inhibits on amplitudes with thresholds and frequency training criteria. BrainPaint is also an assessment and protocol suggesting tool. The fractals seem to speak to people in a different way. Fractals, in part, encompass what might otherwise seem to be "noise" in the EEG. In the past, effort was spent to eliminate noise from EEG projects and studies. But what Bill is finding with a team of Harvard scientists, is that noise actually has something to say. HAAR wavelet and multifractal detrended fluctuation analysis (a sequence of rescaled "square-shaped" functions similar to the fast Fourier analysis) shows us complexities and significance in the actual language of fractal data like EEG.

Fractals are everywhere and in everything. They are of nature, of science, some would say of divinity. On an empirical level, fractals have superior information. Fractals are waiting to communicate to us. In BrainPaint, your brain's fractals are literally communicating feedback to you. To determine whether there is any therapeutic consequence to this, Scott tested the results of watching your own brain fractals, versus another's. What he found was a significant positive effect in looking at your own unique feedback. How do you explain that?

According to Scott:

"When it comes to fractal information it's not just noise, its intelligence. It's not just random, it's in infinite possible order. There is actual intelligence in [fractals] that is beyond our current capacity to understand."

And it is unpredictable.

Scott is interested in how humankind can use this type of information in real world applications. He is interested in "how these formulas can have a robotic platform so that they create output into the external realm." And that's exactly what he's doing in his spare time. His believes that someday, in the near future, there will be an entire field of complex placement where we use fractals to place electronic components, place proteins in the construction of DNA instead of engineers relying on traditional skills.

This means a big future for us practitioners.

The potential for helping mankind via the ever-advancing modalities of neurofeedback is powerful. And it is growing. And Scott's vision and product are both succinct and elegant. His future work will no doubt be just as artful. ◆

Letter from the President
Continued from page 3

tunate here in California that we have had good societal direction and planning for the last four decades.

We will be sending out a members polling, looking for input from members on what is working for them, what is needed to optimize the society, and to ask for opinions about the regionalization issue. We want to hear from you!!

The BSC has been blessed with dedicated Board and Staff for the last 40 years, and this year is our turn to shine, as we plan a wonderful Regional meeting in Southern CA for April 26th, an then this Fall we will have a great 40th Birthday Party at our annual meeting at the Hilton in Oakland.

There are plenty of things you can do to involve yourself with the BSC's invigorated structure, as we have committees and subcommittees that are being re-activated, and our internet presence to manage. Feel free to pitch in if you have an area you are interested in... check out our website, speak with Tiff Thompson, our Executive Director, and I am sure you will find a way to get active in our society.

I look forward to hearing from you, and to seeing you at the regional meeting in LA and our conference in Oakland this year! ◆

Jay Gunkelman, QEEGD

Student Reviews of the 39th Annual BSC Conference Presentations

Richard Gevirtz: Keynote Address— "The Evolution of Heart Rate Variability Biofeedback"

Reviewed by Taryn Lilliston Gammon

On the Friday evening of the 39th annual BSC conference, Dr. Richard Gevirtz gave a keynote address on the history, mechanisms, and applications of Heart Rate Variability (HRV) Biofeedback to an audience ranging from students to long-time biofeedback practitioners. Filled with anecdotes from over thirty years of research and clinical experience with biofeedback, Dr. Gevirtz's lecture was both personal and comprehensive. He began by taking the audience back to the 1980s, when early clinical work with biofeedback prompted his colleagues and him to start looking at the parasympathetic nervous system, in addition to the sympathetic nervous system, as an important factor in the stress response. Around the same time, scientists were beginning to look at heart rate variability, or the beat-to-beat differences in heart rate, as a physiological measure.

Today, as a result of decades of research, HRV has become a watchword of health, and is known as a physiological marker that can be strengthened by increased parasympathetic or vagal tone. Citing a study from Dwain Eckberg (1997), Dr. Gevirtz explained how HRV biofeedback impacts these processes. "When people get into specific breathing frequencies," he stated, "something happens to the heart rate that's almost miraculous, unbelievable." While ordinary breathing produces several heart rate frequencies, breathing at 6–7.5 breaths per minute produces a large, single frequency peak known as resonant frequency, which maximizes HRV. Dr. Gevirtz encouraged audience members to download a free program called Kubios HRV, which can analyze HRV data exported from the majority of commonly used HRV Biofeedback training tools (eg. emWave, Inner Balance).

Dr. Gevirtz continued by discussing two mechanisms that may be responsible for the effects seen with HRV Biofeedback. First, resonant frequency breathing appears to strengthen the baroreceptor reflex, which provides feedback into the heart to stabilize blood pressure, and thereby promotes autonomic homeostasis. "What we really need to do," Dr. Gevirtz emphasized, "is teach people how to recover from stressors, not to not be stressed." This important distinction switches the emphasis from relaxation training to improving homeostasis and adaptability—a goal that, if achieved, has benefits for a number of disorders.

The second mechanism appears to be central effects that occur through strengthening the vagal afferent pathway. Studies on depression, anxiety, phobias, stress, sleep, and musical and athletic performance have shown superior outcomes for individuals in an HRV biofeedback condition when compared to controls or other treatment groups. Dr. Gevirtz explained that these studies give reason to believe that HRV biofeedback might be affecting some central processes that influence negative affect, although further research is warranted to elucidate how this occurs.

Dr. Gevirtz concluded his keynote with the message that the opportunities for further research and clinical applications of HRV Biofeedback are vast. Since the early days of biofeedback, when data was analyzed from a strip recorder, technological advances such as ambulatory measurement, high-powered scanning techniques, and low cost EEG dry electrodes have broadened the range of applicability of this treatment. "Advances in research and technology," Dr. Gevirtz concluded, "will help us continue to realize gains that will not only help our clients but also impact public health." ◆

Stephen Sideroff: "Establishing Self-Regulation Track within Drug Treatment"

Reviewed by Leanna Marquez

Individuals with substance abuse disorders can benefit from neurofeedback and biofeedback. Bodily systems such as Immune, GI and reproductive systems, and many more are all effected by the stress response generated by substance abuse.

When the body is stressed, the Polyvagal involvement (primitive response) activates, which triggers psychological effects related to past trauma, such as learned helplessness etc. The common responses of freeze or fight, could develop into healthier responses, (e.g. to grow, develop, heal and maintain). While having a "freeze or flight" response is not inherently counterproductive, in the case of addicts, they typically want to "protect" themselves and thus the physiological response takes a negative impact on the body.

The addict's system becomes challenged due to imbalances of stimuli and

Student Reviews of the 39th Annual BSC Conference Presentations

stress triggers. This can be due to environmental mismatches, psychological needs of seeking approval, or fear of rejection. Childhood experiences may have reinforced that their life is unsafe; consequentially, the damage to their body and mind can be permanent. Therefore, neurofeedback and biofeedback aims to assist in stress management, which facilitates regeneration and neurogenesis. Neurogenesis is the birth and maturation of new functional nerve cells in the brain. By strengthening the brain, neurogenesis creates healing, recovery and relapse prevention. This process occurs mainly in the hippocampus. Unfortunately, excessive alcohol and drug use decreases hippocampal neurogenesis; which then inhibits the neural stem cell proliferation and newborn cell survival. Decreased hippocampus activity is involved in the pain response because it inhibits dopamine. When dopamine is released from the hippocampus, it modulates the endogenous opiate action. This cortisol action increases dopamine because of stress. ◆

William Rickles: "Things that Matter in Biofeedback Training"

Reviewed by Leanna Marquez

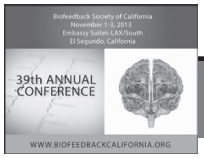
Biofeedback is a tool that helps the client learn self-regulation and self-control. Many people feel misplaced or awkward when seeing a psychotherapist because they don't think that they can help with the "real issue." Some find it easier to have a relationship with a computer device than an actual person. But the role of the therapist cannot be undervalued. According to research, psychotherapy and biofeedback success is highly correlated with good rapport between client and professional. The patients care about the experience.

According to Dr. Rickles, the technical aspects of treating a patient with biofeedback matter, as well. Skin conductance and temperature are physiological responses to stress that are highly correlated to psychological issues. Biofeedback practitioners are strongly encouraged to use these in assessing a clients stress response patterns. In combinations to these tools, it is also beneficial to teach the client how to control their stress patterns by using deep abdominal breathing. Rickles favors biofeedback with complimentary modalities, such as dynamic therapy, cognitive behavioral therapy, reality therapy and, in some cases, medication. ◆

Frank DeGregorio: One-Day Biograph Infiniti 6.0

Reviewed by Molly Schardt

In this workshop, participants reviewed their experiences with Biograph Infiniti 6.0 software as well as equipment used in practices. The first half of the daylong workshop included an overview by Frank Degregorio, in which features of the newest software were covered. Frank provided a closer look at both the company in which this software and equipment comes from, as well as instances of its use in settings around the world. One particular instance of use discussed is the implementation of this equipment by sports psychologists toward performance optimization. Recently, the Canadian Olympic team used biofeedback to train athletes. In addition, the Milan Mind room in Italy offers a new technique to review gameplay in soccer.



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In the workshop, participants were able to demonstrate and share experiences from the field in using the software and hardware. This offered an opportunity to cross-reference experiences and expand knowledge among practitioners. Participants were also able to troubleshoot in conference with Frank DeGregorio, the representative from Biograph Infiniti. This was an opportunity for psychologists, technicians, and students to speak directly to a computer engineer and software designer about the program in clinical application. ◆

Gary Schummer: Integrating qEEG in Clinical Practice

Reviewed by Molly Schardt

Gary Schummer, PhD, presented this workshop on the use of qualitative electroencephaography (qEEG) in clinical practice. qEEG differs from other forms of biofeedback in that more errors are reduced in the guesswork of treatment and diagnosis. qEEG is creating visual maps of the brain of the subject based on norms. It is especially useful for forensics such as traumatic brain injury and can aid in differential diagnosis.

In addition to discussing the benefits of qEEG, Dr. Schummer dedicated a portion of his lecture to confounding variables which may distort the interpretation of EEG data via qEEG. For instance, the companies which filter EEG data do not disclose the parameters by which they filter, gender is not typically normed separately, definitions of EEG bands are inconsistent, and often the normed data is not representative of the population that is being studied. For these and other reasons, Dr. Schummer offers that qEEG can be useful, but that clinicians should be aware of limitations when providing interpretations for clinical diagnosis and treatment planning. In short, he stated that there are three phases of qEEG: 1.) Recording the data which can be done easily by a trained technician, 2.) analyzing the data by separating artifact using databases, and 3.) interpreting results for diagnosis and treatment planning. The take-home message is that the first two phases must go well for the third to be valid. ◆

Deborah Kaufman: "Biofeedback Treatment for Addiction and Trauma"

Reviewed by Molly Schardt

Deborah Anne Kaufman spoke on using neurofeedback in the treatment of addiction and trauma. In trauma therapy, one pitfall is the risk of dissociation when engaging in systematic desensitization. By using neurofeedback, clients can be taught to increase alpha before trauma exposure. This is done to increase the client's ability to remain in a focused state. Neurofeedback is used to regain physiologic regulation from a state where the person could not previously stay engaged. Similar to clients with trauma, biofeedback and neurofeedback are used to expand tolerance of emotions and avoid dissociation in clients with addiction. Ms. Kaufman spoke about the importance of "backing off" when a client's physiologic readings approach their threshold of dissociation. With the aid of live readings, the clinician providing therapy can monitor the expression of dissociation before it may be detectable in a traditional therapy session. ◆

Jeff La Marca: Neurofeedback in a Public School Setting: Effect on Oral Reading Fluency and Comprehension in Children with ADHD, Inattentive Subtype

Reviewed by Debórah Anne Kaufman

While I provide neurofeedback (NFB) with several patients addressing ADD/ADHD, I have not had the experience of working with in the Public School System. Therefore, I was excited and intrigued to hear the knowledge and experience Jeff La Marca had to share on the utilization of NFB in the Public School Setting.

Biofeedback (BFB) and NFB facilitators should be aware of several laws and regulations affecting them. La Marca began his presentation with an overview of the education literature and laws regarding neurofeedback and ADD/ADHD. LaMarca addressed section (§) 504 of the Rehabilitation Act of 1973, which prohibits discrimination against individuals with disabilities.

LaMarca also covered PL94 142 & IDEA, regulations of the Education Act for the benefit of all handicapped children, enacted by Congress in 1975. The Act was reenacted in 1989 as the Individuals with Disabilities Act (IDEA) and reauthorized in 2004 as the Individuals with Disabilities Improvement Act (IDEIA).

The IDEIA applies to children, from the time they graduate from high school or reach the age of 22. Furthermore, IDEIA is an entitlement that "guarantee(s) a free, appropriate public education (FAPE) to each child with a disability in every state and locality across the country." This Act also requires children to receive an education in the "least restrictive environment (LRE)." This act mandates all children should be educated in settings with "typically-developing peers" to the greatest extent possible. School districts are obligated to proactively seek out and identify students with disabilities and refer them for services as early as possible; this mandate is referred to as "Child Find."

The reenactment of IDEA in 1989 included the language that "children with ADD/ADHD are eligible to receive services under the category of "other health impaired." In addition, the United States Department of Education (USDE) issued a memorandum to clarify "state and local responsibility under Federal Law for addressing the needs of children with ADD/ADHD in the schools."

Children are eligible for services when ADD/ADHD is a chronic or acute health problem that results in limited alertness adversely affecting educational performance. Following La Marca's comprehensive overview of educational law applicable to public school students with ADD/ADHD, he argued the interdisciplinary relationship between medical and educational frameworks cannot be ignored.

La Marca developed his intervention model "through the construct of ADD/ADHD as developed through the medical model, utilizing Cognitive Behavioral Therapy ("CBT"), Pharmacologic therapy and NFB."

To further elaborate on the complications involved between government agencies and medical/mental health, LaMarca noted that NIH was required by Congress (PL99-158; "Health Research Extension Act of 1985") to establish an Interagency Committee on

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Learning Disabilities (ICLD) to review and assess Federal research priorities, activities, and findings regarding learning disabilities (including central nervous system dysfunction in children. The report (1987) noted that management of ADD/ADHD is generally relegated to two domains: 1. nonpharmacologic approaches (i.e. education, psychological ,and psychiatric approaches) and 2. pharmacologic therapy.

The ILCD report emphasized the primacy of education with regard to interventions. Specifically, it states, "[e]ducational management represents an important priority and often forms the cornerstone of all other therapies, nonpharmacologic or pharmacologic." (Interagency Committee on Learning Disabilities, 1987, p. 201) and that "this model is still recognized as essential by both the educational and medical communities" (American Academy of Pediatrics, 2011, USDE, OSERS, OSEP, 2008).

In addition to providing comprehensive information on education law, La Marca presented a comprehensive history of literature on NFB & ADD/ADHD. He noted the literature on NFB and ADD/ADHD , highlighting Lubar and Shouse's seminal work on NFB as an intervention for ADHD (1976). Improved school performance and positive outcomes in cognitive and academic measures have been consistently reported by scholars such as Lubar, 1991; Thompson & Thompson, 1998; and Thompson & Carmody, 2005.

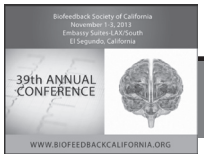
LaMarca noted that inattention, not hyperactivity or impulsivity, is most associated with learning difficulties and academic problems (Chhabildas, Pennington, & Willcutt, 2001). Children with ADHD inattentive subtype have considerable problems with processing speed in comparison to typically developing peers and students with other ADHD subtypes (Chhabildas, Pennington, & Willcutt, 2001; Ghelani et al., 2004). Individuals with the inattentive subtype process visual information slowly and exhibit impairments in allocating attention to information within their visual field (Barkley, Grodzinsky, & DuPaul, 1992; J.M. Swanson, Psner, Potkin, & Bonforte, 1991). Reading and math disorders, along with other learning disabilities, appear to be more prevalent in individuals with the inattentive subtype than disorders found in those with the predominantly hyperactive-impulsive type (Barkley et al., 1992; Bauemeister, Alegria, Bird, & Rubio-Stipec, 1992; Weller, Bernstein, Belinger, & Waber).

Following La Marca's foundational overview of educational law and literature on the efficacy of NFB with ADD/ADHD, he presented his research study. La Marca asked the following research questions: 1) Will neurofeedback enhance attention as measured by Continuous Performance Tests (CPTs)? 2) Will neurofeedback improve performance on measures of reading fluency? And 3) Will neurofeedback improve performance on measures of reading comprehension?

La Marca utilized a multiple-baseline-across-participants single-case design ("SCD"). Through the usage of a single case design, La Marca was able to establish causal relations between independent and dependent variables. Because single case designs requires a limited number participants (such as one to twelve) each individual functions as his or her own control.

The children in the study were between the ages of eight and ten (3rd to 5th grade level). These children were referred through school administrators, teachers and other students. Attention, motivation and willingness criteria were used to screen parents, teachers and student subjects. Attendance records were kept in order to assist in minimizing absences and attrition.

When the study began six participants were assigned to one of three cohorts. However, in the third cohort one participant dropped out of the study during the final stage of screening. The five remaining participants as of March 2013 were between nine and ten years old, in the 4th grade, four males and one female. Two began the study with an existing diagnosis, two had a family



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history of ADD/ADHD, and all participants were referred through teachers.

La Marca utilized several screening measures including: Student health history, Conners 3 ADHD Index (Conners 3AI), Wechsler Abbreviated Scale of Intelligence (WASI-II), Integrated Visual and Auditory Performance Test (IVA+Plus), and Woodcock Reading Mastery Tests – 3rd Edition (WRMT-III). He then applied a few additional pre and post screening measures including: Gray Oral Reading Tests – 5th Edition, Fluency derived from Rate (reading Speed) and Accuracy (Total words read – errors), Reading Comprehension, Oral Reading Index (ORI) Derived from Fluency and Comprehension Scores.

La Marca examined and compared theta/beta ratios at Cz and performed a quantitative electroencephalogram. The intervention phase consisted of 40 neurofeedback sessions. Daily three-minute assessments of EEG were acquired in order to calibrate the SmartMindPro and 30-minutes of neurofeedback was administered. The protocols were in two blocks. The first block 10-session consisted of theta/beta reduction. The second block of 30 sessions consisted of qEEG guided intervention.

La Marca's presentation masterfully demonstrated evidence that neurofeedback improves reading comprehension and attention for children with ADD/ADHD. ◆

Jay Gunkelman and Ali Hashemian: "FDA and Theta/Beta Ratio"

Reviewed by John-Richard Pagan

In an informative session that was primarily given by Jay Gunkelman, with the support of his business partner Ali Hashemian, the discussion of neurophysiology and its impact in the modern era, concerning sleep and the many implications involving the lack of sleep were discussed. Mr. Hashemian opened with an introduction and a statement that he gives clients regularly. Stating, "… If you measure how much theta you have to how much beta you have, that tells how well you focus…" Thus, the importance of understanding Theta/Beta ratio began.

Gunkelman began the scientific discussion of this subject by defining the range of theta waves as it relates to neurofeedback. Unlike other similar areas of study, Gunkelman stressed that neurofeedback defines theta ratio as a frequency between 4-8 hertz, with alpha ratio being from 8-13Hz, and beta ratio being from 13-21 Hz. He gave credit for Theta/Beta ratio as assessment for ADD/ADHD approval by FDA to a report that demonstrated a 95 percent accuracy in distinguishing normal (non-clinical) participants from those suffering with ADD/ADHD. This study was supported in 1999 by another study, in which a blind-source sorting was done of non-clinical participants and those suffering from ADD/ADHD. In this study, experts were required to rate participants behaviors, as well as their theta/beta ratios into two distinct groups. Minimal differences were identified by the methods of sorting the participants' correct placement. That recent studies have not been able to duplicate these results exactly is believed to be due to an increased clinical population with an even larger growing non-clinical population.

Gunkelman discussed the effect solar intensity has on sleep, as it is often identified in Affective Depressive Disorder, and overlaid that data with the presentation of cases across the country for ADD/ADHD. He noted that in areas with increased solar intensity (desert areas in the southwestern part of the US); approximately 5-7% of the population suffering for reported ADD/ADHD, while in other, less sunny areas of the country the percentages rose to 14-15%. Using this correlation, the discussion went on to understanding the circadian rhythm, and its effect on mood and sleep. Specific relations were shared regarding different types of sleep disorders, their impact on memory and focus, and how these different disorders may present in consult as well as in neurophysiological measurements performed using sleep labs.

Future presentations will add new steps in understanding sleep disorders via EEG. Through acknowledgement by a formal approving agency, and close work with others within the field of medicine, we may someday resolve sleep related issues without the need for stimulants and/or sleep aids. ◆

Jay Gunkelman: Consciousness and EEG

Reviewed by Mark J Stern

It is always a great experience to learn from Jay Gunkelman. He has a unique ability to deliver dense packets of information in short periods of time as though his presentation was a casual conversation. By no means, however, is this a reflection of the complexity or difficulty of the content itself, but rather to the manner in which Jay comprehends and disseminates this material. EEG, like all other modalities, does not provide a complete picture of what consciousness is. However, understanding the neuro-electrophysiological processes involved in conscious attention and perception can aid in illuminating this mysterious latent construct.

There are structural networks involved in attention and inhibition. The level and type of dysfunction depends greatly on the area of the network that is impaired and the electrical components being affected. EEG subtypes in ADHD and Autism, for example, show that that variations in wave frequencies as well as location will alter the manifestation of perception and experience. This can create disparities in treating clients as single groups with narrow focused protocols.

Neuro-electrical mediation of consciousness must be able to bind an entire network in synchronized response and enable switching between networks. Evoked related potentials (ERP) have been proposed as a possible biomarker of a stimulus dependent conscious precept. ERP studies show that sensory input occurs at 100ms and awareness seems to happen at 200ms when the information hits the frontal lobe. Information then moves posterior at 300ms, followed by a second arrival to compare perception to memory. ERP evidence suggests that "consciousness is the remembered present." Though ERPs may reflect latter phases of sequencing during conscious awareness, stimulus dependent changes in waveform respond too late to be responsible for the initiation. The beginning phase of network propagation needs to stem from a unified system that responds immediately.

Direct Current (DC) fields may prove to be a viable candidate for the binding of conscious processing. Electrical field effects can reach distant locations instantaneously, while propagated rhythms, such as wave frequencies, do not. Wave frequencies appear to be nested as packets of electrical information concomitant with cognitive, affective and perceptual changes. Slow cortical potentials (SCPs), reflective of DC fields, have been shown to control the excitation and delivery of these packets. DC fields can mediate neuronal synchronization on a time scale of 1 ms with the

Student Reviews of the 39th Annual BSC Conference Presentations

ability to phase reset. When comparing two stimuli, there is always a mismatch in negativity, holding the first stimuli in a memory buffer, while analyzing the next. Consciousness is not a single event, but rather the experience is a product of cycles. Most neurofeedback focuses on either waveform or SCP training. It is imperative for practitioners to understand the sources of electrical connectivity and how they differ in respect to wakefulness and awareness. DC fields are suggested to be generated by glial cells, while wave patterns are generated by neurons. The real question is how this relates to the behavioral, affective and cognitive perceptions of conscious experience. My understanding based on his lecture, is that DC field voltage determines the initiation and complexity of the conscious experience, while waveforms are reflective of the individual variations within the perceptions of stimuli. Training DC field potentials through SCP neurofeedback potentially alters the initiation and intensity that modulate activity. Training wave frequencies and amplitudes potentially optimizes neuronal networks. It seems to me that research may support that understanding and training both EEG waveform and SCPs can optimize training and clinical outcomes for any given network. ◆

Dr. Amir Ramezani:

"Neuropsychological and Psychophysiological Aspects of Surgical Candidates: The Role of Intervention and Assessment in Spinal Stimulator and Bariatric Surgeries"

Reviewed by Robert Guiles

The 39th annual BSC conference ended with an intriguing presentation delineating the various interventions that are being utilized in the Behavioral Medicine department at the UC Davis Medical Center. Dr. Amir Ramezani gave a detailed explanation outlining the neuropsychological and psychophysiological aspects of surgical candidates in both bariatric and spinal stimulator patients. He began his presentation with a focus on the health ramifications of obesity and the role of interventions and assessment in current bariatric procedures. Dr. Ramezani discussed how psychologists play a crucial role in determining presenting psychopathology, risk factors, and ultimately candidacy for bariatric surgery patients. Psychologists can assist presurgical candidates by paying special attention to common medical and psychological risk factors that are associated with poor outcomes. From a neuroimaging perspective, he displayed the neuropsychological components of obesity, further examining recent fMRI research of successful verses unsuccessful weight loss patients.

Dr. Ramezani wrapped up his bariatric discussion with an emphasis on pre-surgical psychological evaluation and the importance of the preparation stage for surgical candidates. A biofeedback enthusiast, he encouraged our field to take advantage of this treatment option in preparing bariatric candidates for surgery. He reported that recent biofeedback research supports reduction in food craving, less eating and less weight concerns following surgery.

Ramezani also discussed the role of intervention and assessment using a spinal cord stimulator in chronic pain patients. He defined key medical and behavioral risks factors that could result in poor outcome of spinal surgery and followed with an emphasis on the neuropsychological and psychophysiological comparison of patients with chronic pain to those with a normal response. Dr. Ramezani emphasized the future implications of psychophysiological assessment and the role biofeedback will have in providing real-time imaging to the localized pain centers in the brain. This form of MRI conditioning has been reproduced by other researchers and appears promising for the field of biofeedback.

He concluded his presentation with a discussion on the importance of providing a thorough psychological evaluation pre spinal cord stimulator. One of the factors that accounts for a majority of success and is often disregarded is successful preparation before surgery. The preparation stage is more effective when incorporating psychophysiological assessment through biofeedback modalities. Heart-rate variability biofeedback proves to be a useful tool in restoring autonomic function before surgery. Dr. Ramezani concluded that the process of surgery, either bariatric or spinal cord stimulator, can be ameliorated through psychoeducation and daily implementation of psychophysiological assessment in the preparation stage. ◆

2014 SoCal Regional Meeting

www.biofeedbackcalifornia.org

Date: Saturday, April 26, 2014
Location: Biofeedback Institute of Los Angeles
6542 Hayes Drive
Los Angeles, CA 90048

Time: 8:00 A.M. Registration - 5:00 P.M. END

6 CEs for: Psychologists, MFTs, LCSWs, RNs & BCIA

SCHEDULE 8:30

8:30 to 10:15 am	**Bill Scott, Alpha Theta & Brain Paint**
10:15 to 10:30 am	**Break**
10:30 am to 12:15 pm	**Tiff Thompson and the Clinical QEEG using Thought Technology software**
12:15 to 1:15 pm	**Lunch is served**
1:15 to 3:00 pm	**Jennifer Stephens and Social Media Marketing for your Practice**
3:00 to -3:15 pm	**Break**
3:15 to 5:00 pm	**David Bresler, Guided Visualization and Pain Management**

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◊ **Full Day: Non-Members: . . . $105** pre-registration ~ or **$115** at the door **$** _____

◊ **Half Day: BSC members: . . . $ 70** Please circle: **morning or afternoon** **$** _____

◊ **Half Day: Non-members: . . . $ 80** Please circle: **morning or afternoon** **$** _____

◊ **Students: (ID required): . . . . $ 5** **$** _____

◊ **CEs: ..$ 35:** Please circle the appropriate agency: **BOP BBS RN** **$** _____

Total: $ _____

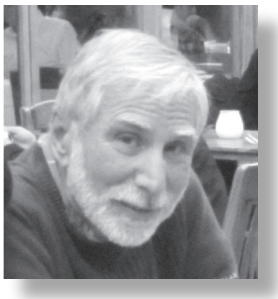
The Biofeedback Society of California is approved by the California Psychological Association to provide continuing professional education for psychologists. The BSC maintains responsibility for this program and its content.

BSC Past Presidents: Part I

Steve Kassel

With the approaching 40-year anniversary of BSC, we thought it was a good to put our detective hats on and find some of the past presidents of BSC to whom we are much indebted. Sadly a few have passed. We are pleased that many are regular attendees to conferences. We hope to see many of them at our next conference in Oakland, November 6-9, 2014.

1977—Melvyn Werbach, MD



While serving as president of BSC from 1977 to 1978, I joined the UCLA staff as Director of Clinical Biofeedback and Psychological Services of the Pain Control Unit in the Department of Anesthesiology. This unit, a forerunner of the integrative medicine units now found in major medical centers, broadened my perspective further and led me to increasingly concentrate on studying additional aspects of clinical medicine and integrating them into my repertoire, ones which, like biofeedback, had been largely neglected by mainstream medicine.

My first book, *Third Line Medicine: Modern Treatment for Persistent Symptoms* (Penguin Press), was published following the closing of the UCLA Pain Control Unit in 1980. While continuing my interest in biofeedback, I focused increasingly on nutritional medicine, writing several books on the subject.

Over the years, I gradually moved away from private practice to devote myself to writing. In addition to writing books, for sixteen years I wrote a monthly column on nutritional medicine in the Townsend Letter.

I fully retired several years ago. Now I split my time between homes in Los Angeles and in Camp Nelson, a community of 200 people at 5,000 feet in the Giant Sequoia National Monument.

David French—1979

I have been in private practice for thirty-five years and I deeply love using my gifts to contribute and create. I have authored two books: In Search of the Real Me and You Can't Trust Your Own Mind. (Humanics Publishing Group). My 1974 Doctoral Dissertation was in Biofeedback (addressing how redirection of blood flow human males leads to temporary infertilility.

I have fond memories meeting at Ed Wortz's home with Eric Pepper, George Fuller, and Chuck Leeb, as the BSC was born. I signed my own biofeedback certificate (#005) as I was President at that time. We also wrote and administered the first certification exam. I can still warm my own hands to 95 degrees in minutes!

Biofeedback opened the door to the "power" of our mind, will and the possibilities of authentic intention. At the core of self-regulation is the seed of how to crystalize thought into reality. The trick is how to get out of your own way, to allow the manifestation. drfrench.office@gmail.com, (562) 945-6471

1981—Archibald D Hart, PhD

I have a PhD in Clinical Psychology from South Africa (my home of birth.) In 1971 I was invited to be a "post doctoral student" (and later faculty member) at the newly formed Graduate School of Psychology, of Fuller Theological Seminary, Pasadena. The founding Dean was Lee Travis (famous for being the first researcher in the USA to record brain waves (1929). We teamed up in Alpha brain wave recording. Because of my electronic

background I developed a few portable instruments for EEG, EMG and GSR—so that we could "feedback" to patents. I was also collaborating with a couple (husband and wife) psychiatrists where we set up a biofeedback lab. By the way, Lee Travis was the first person to use biological feedback for training purposes. He did it in 1936 when he used an oscilloscope to display speech muscle tension to stutterers to help them control speech. Travis (then at USC) later went on to found the American Speech Association.

In the early 80s, a group of us and a group from San Francisco met at Los Encinas psychiatric hospital to found the California Biofeedback Society. I believe I was the second president. Since very few were manufacturing biofeedback instruments, I started a small company making EEG, EMG GSR and Skin temperature instruments. A couple of years later several companies went into the business, so I closed mine down.

I became the Dean of the Fuller Theological Seminary graduate school of Psychology (succeeding Travis) but continued mainly in research. About 20 years ago I started to focus mainly on Heart Rate Variability (HRV). HRV is where my main interest still lies (treating Panic Anxiety disorder by feeding back Sympathetic/Parasympathetic ratios). I retired from faculty 10 years ago but still teach Psychopharmacology to our MFT and Clinical Psych students.

I stopped being active in Biofeedback circles quite some time ago, although I am still a strong advocate of stress reduction Biofeedback strategies. I have also published 31 books on a variety of topics; the latest is "The Digital Invasion" written with my youngest of three daughters, Dr. Sylvia Hart Frejd. I have also published with my two other daughters, Dr. Catherine Hart Weber "Secrets of Eve," "Depression in Women" and Dr. Sharon Hart Morris "Safe Haven Marriage" and "How to Argue so your Spouse will Listen."

1991—Eleanor Criswell, PsyD

Eleanor Criswell, EdD, is emeritus professor of psychology and former chair of the psychology department, Sonoma State University. She is founding director of the Humanistic Psychology Institute (now Saybrook University, San Francisco), editor of *Somatics Magazine* (the magazine-journal of the mind-body arts and sciences), editor of *Cram's Introduction to Surface Electromyography*, and director of the Novato Institute for Somatic Research and Training. Her books include "Biofeedback and Somatics: Toward Personal Evolution,"and "How Yoga Works: An Introduction to Somatic Yoga." She is past president of the International Association of Yoga Therapists, the Somatics Society, and of Division 32 (the Humanistic Psychology of the American Psychological Association). In addition, she has also served as past President for the Association for Humanistic Psychology, and the Biofeedback Society of California. She is on the board of the Association for Hanna Somatic Education. She is the originator of Somatic Yoga and Equine Hanna Somatics.

Prior to her BSC presidency in the 1980s she served on the BSC board and was program chair for the annual convention. Since her presidency, she taught many more years at Sonoma State University. During those years, she conducted the Biofeedback professional training sequence along with Steve Wall and Katee Wynia in a program that trained a number of students who went on to become biofeedback practitioners. During that time she also ran the biofeedback program at the Novato Institute for Somatic Research and Training. With the death of Thomas Hanna in 1990, she became the editor of *Somatics Magazine* and director of the Novato Institute. She also continued the Hanna Somatic Education training programs, which continue to this day. Subsequently, she added the Equine Hanna Somatics and Somatic Yoga training programs. All of these programs either refer to biofeedback or include a demonstration of biofeedback to help students understand the psychophysiological foundations of their work. Biofeedback and applied psychophysiology are the foundations for all her work. Criswell feels that biofeedback is a very important field—still ahead of its time. She highly values her pioneering colleagues who are helping this field maintain and prepare for the future. ecriswel@ix.netcom.com

Peter Behel—1992

I am currently in private practice, where I am mostly involved with chronic pain management, anxiety, post traumatic stress, migraine, post-concussive headache disorders and blood pressure management.

It has been my privilege to have witnessed the development of BSC from some of its earlier days up to the present. I first began attending BSC conventions in 1978 as an undergrad student at Sonoma State University, taking courses on biofeedback from Eleanor Criswell. The DoubleTree at San Jose comes to mind as one of the earlier convention venues, and I seem to recall George Fuller and Erik Peper serving as early presidents.

Arch Hart may have been president at the San Jose convention, though I also remember Dick Disraeli. Memorable speakers included John Leibskind, Marion Diamond, Art Gladman, Tim Scully, Ira Rosenberg, and Todd Mikurya.

When I was on the BSC Board of Directors I was lucky enough to serve with Karen Naifeh, Margey Pappas, Suzanne Sampson, DeLee Lantz, Don Nadler, Dennis Ettare, Jack Sandweiss, Bill Barton, Bill Coby, Katie Twinum, Maureen McKenna and Evie Ginzberg.

Evie's legendary presidential party aboard her yacht as we cruised Marina Del Rey harbor definitely stands out as one of the high points of those days.

1993—Dennis Ettare, MA

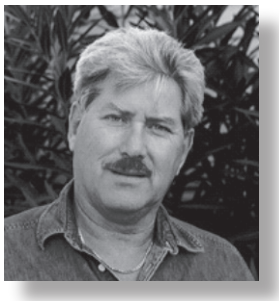
Dennis Ettare, MA, BCIAC, MLTC passed away in 2001. He was trained in physiology at the University of Florence School of Medicine, Italy, and he had completed his Masters in Clinical Psychology. He co-founded Biofeedback Associates of California (BAC) in 1978 along with Dr. Violetta Ettare. They developed Muscle Learning Therapy© (MLT©), a new way of using sEMG with an operant conditioning model of learning. Mr. Ettare held positions as President of the Biofeedback Society of California (BSC) and was on the

Continued on page 14

Past Presidents
Continued from page 13

Board of Directors for nine years with the same organization. Mr. Ettare was also the director of the Biofeedback International Associates (BIA), a group specializing in the prevention and treatment of soft tissue injuries of the back, neck, arms and hands. Mr. Ettare was active internationally in workshop presentations on the subject matters of active reduction of muscle loading during work, using surface EMG biofeedback for the successful treatment and prevention of upper extremity repetitive strain, back and neck injuries: an operant conditioning model. Mr. Ettare's latest publications included the Journal of Applied Ergonomics and the Journal of Occupational Rehabilitation. He has been interviewed and subsequently published in Forbes, The New York Times, Advance (for physical therapists), PC World magazine, and the online magazine Salon.com. He contributed a chapter in Clinical EMG for Surface Recordings Volume 2 (Clinical Resources) and is quoted by peer journals and researchers throughout the field.

2004—Douglas W Matheson, PhD



Professor Emeritus Douglas W. Matheson passed away on July 8, 2013 in Columbia, California. Born in 1939, Doug earned an AB degree from Whitman College in 1961 and an M.A. (1966) and PhD (1967) in Experimental Psychology from the Claremont Graduate University. After teaching one year as a visiting professor at the University of Southern California, Doug was hired by Pacific in the fall of 1968 to chair the Department of Psychology in the College of the Pacific. Under his leadership both the undergraduate and graduate programs were completely redesigned, enrollment increased and five additional professors were hired in rapid succession. Doug's hiring expertise brought together a team of faculty who shared a common purpose and vision. The highly successful programs that they developed encouraged undergraduate and graduate students to become active participants in research and clinical programs, providing them with the skills to become successful professionals.

Doug authored or coauthored seven books and served as principal investigator for several research and equipment grants. He focused his course and research efforts on the then new field of biofeedback, and served as editor of the Newsletter of the Biofeedback Society for three years and president of the Biofeedback Society of California.

Victoria Ibric—2007

Dr. Victoria Luminita Ibric, BCN, President of Neurofeedback & NeuroRehab Institute, Inc., is a medical professional, trained in the psychology of how emotional and mental conditions can adversely affect the physical body and brain-mind connections. Research oriented, she has produced numerous papers and book chapters; delivered peer-oriented workshops and lectures at BSC, AAPB, ISNR meetings. Her career covers more than 40 years in health care: oncology, neurology, infectious diseases, and Neurofeedback. She was active on the BSC Board of Directors from 2003-2013, successfully organized BSC conferences in Pasadena, California, and was BSC President, 2006-2007. Dr. Ibric has applied QEEG testing and Neurofeedback techniques in training children, adults, and elders with a variety of conditions: attention deficit disorders, memory problems, autism, pain and sleep disorders, traumatic brain injuries and post-traumatic stress disorder. She also works with individuals striving for peak performance. Dr. Ibric, while continuing to apply QEEG tests and conducting Neurofeedback sessions with clients, persists in her research studies and speaking engagements, offering noteworthy education opportunities for novice and mid-level students, professionals seeking to integrate Neurofeedback techniques into their fields; providing mentorship and internship training for Neurofeedback professionals in specialized areas; regularly markets and promotes Biofeedback and Neurofeedback in the community and abroad.

2008 and 2014—Jay Gunkleman, QEEGD

I am the current president of the BSC Board for 2013-2014. Currently focused on the 40th annual meeting planning, I have been on the board for many years. I started in biofeedback in 1972, starting the nation's first biofeedback laboratory at the North Dakota State Hospital in Jamestown, ND. I was involved in the BRS prior to the BSC forming in 1974. I specialize in EEG/qEEG/ERP, with current publications on EEG endophenotypes predicting therapy with medication and Neurofeedback. I was the first professional to achieve certification in qEEG, and currently lecture internationally on EEG/qEEG. qeegjay@sbcglobal.net

Julie Madsen—2013

It was an honor for me to serve as president for BSC at a difficult transitional time. As many of you know, I am a psychologist in Indio, California. Biofeedback created an invaluable transformation not only in my practice, but the way I view psychology, and the people who seek help from me. Now, I always look at the physiology of the people who come into my office. I am much more aware of even subtle aspects of the physical signs of stress, depression, and other "psychological" issues that plague my clients. It has made my practice much more interesting, and treatment outcomes much more successful. And I can even objectively measure those successes with the tools biofeedback has provided me. I thank all of the pioneers who have spearheaded this field and caused me to pay attention. drjmadsen@gmail.com (760) 342-3330

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