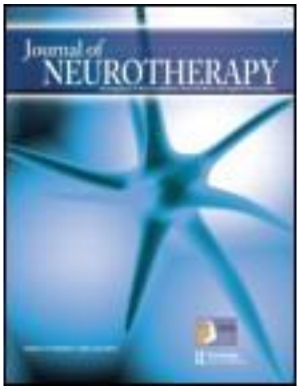

Journal of Neurotherapy: Investigations in Neuromodulation, Neurofeedback and Applied Neuroscience

Editorial

Adam Clarke Senior Editor

Published online: 02 Mar 2012.

To cite this article: Adam Clarke Senior Editor (2012) , Journal of Neurotherapy: Investigations in Neuromodulation, Neurofeedback and Applied Neuroscience, 16:1, 1-3, DOI: 10.1080/10874208.2012.650107

To link to this article: http://dx.doi.org/10.1080/10874208.2012.650107

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Journal of Neurotherapy, 16:1–3, 2012

ISSN: 1087-4208 print/1530-017X online
DOI: 10.1080/10874208.2012.650107

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EDITORIAL

Welcome to Volume 16 of *Journal of Neurotherapy*. Looking back over the past years, both the research field and journal have gone from strength to strength. As one of the incoming editors I wish to acknowledge the tremendous contributions that Randall Lyle and Martijn Arns have made to the journal over the past 2 years. They have worked hard to lift the research profile of the field and keep members of the profession informed on the latest techniques and research. Thank you for your hard work and dedication.

My interest in electrophysiology started 18 years ago with my first job working as a neurotechnician in a pediatric practice that specialized in the treatment of Attention-Deficit/Hyperactivity Disorder (AD/HD). At the time, this practice was the only one in Australia using QEEG as part of the diagnostic assessment, and there was no formal training available in this technology. Fortunately for me, the senior specialist in the practice was a pediatric neurologist, and I received the best existing in-house training. However, what was more important than the training I received was his passion for the technology and the process of bringing "science" to the diagnostic procedures and treatment of AD/HD. Through his encouragement to understand the significance of the results, not just the mechanics of producing a *z*-score table, I began to realize just how much there was to know and learn. This inspired me to enroll in a PhD program where I investigated QEEG abnormalities in children with AD/HD. With increased knowledge more questions than answers have been raised, sustaining the electrophysiology of children with behavioral disorders at the core of my research program throughout my academic career.

What I did not know at the time, and it took a while for me to understand, was how controversial the use and interpretation of QEEGs were among clinicians and the broader scientific community. The most telling encounter I had was when discussing my PhD with a senior psychiatrist. He told me that a more accurate test for AD/HD would be to toss a coin, and walked away shaking his head. This I found surprising, as this person had no experience with QEEGs and his scepticism was based on a single review article. In the early days of my career, this mentality made it impossible for me to obtain research funds through medical funding bodies. Furthermore the National Health and Medical Research Council (1997) of Australia guidelines for the treatment of AD/HD specifically stated that EEG tests are experimental and should not be used as part of the assessment for AD/HD. From these experiences I learned that there are two sides to research: the science of research and the politics. If there is a bias against an emerging field, there will be opposition no matter how sound the science supporting the practice.

A senior colleague at that time suggested that resistance to QEEGs resulted from the way it was introduced into the profession. Many clinicians were still treating AD/HD as a consequence of "bad parenting" and recommended family therapy. This new technology provided tangible evidence that the disorder was associated with a central nervous system dysfunction that counseling would not fix. This meant that clinicians were being asked to question both how they practiced and the efficacy of their work, a step many were not prepared to take. QEEGs were also seen as expensive and simply a way of extracting money from desperate parents, rather than adding to the diagnostic process. Many believed that all that was needed for a reliable diagnosis of AD/HD was knowledge of the clinical criteria and a sound understanding of how to perform a clinical interview. Although this is true, experience dictates that this is not always the case. In psychiatric meetings I have been asked what added value QEEGs actually gives to the diagnostic process. In answer I propose two questions. First, how many people think AD/HD is overdiagnosed? Almost unanimously, people believe that overdiagnosis is rampant in the Western world, with some suggesting 50% of all cases are falsely diagnosed. The second question is, How many clinicians believe they accurately diagnose AD/HD? To this, I almost always get everyone saying they diagnose the disorder accurately. It is rare that anyone will say they have concerns about their diagnoses. However, the two answers cannot be simultaneously correct: It is not possible that everyone is an accurate diagnostician *and* there is massive overdiagnosis of the disorder. When the problem is discussed in these terms, it becomes obvious that we need an objective and independent diagnostic test for AD/HD. A QEEG protocol is one such technology that shows real potential for providing this test.

It is important to note that this resistance to change is not just limited to our discipline but common in many areas of medicine. In 1982, Dr. Barry Marshall and Dr. Robin Warren proposed that stomach ulcers were the result of bacteria in the stomach and not associated with stress or spicy food, which was the standard medical opinion of the time (Marshall & Warren, 1984). This explanation received considerable criticism, as it was believed that bacteria could not live in the acidic environment of the stomach. To prove this theory Marshall went to the extreme lengths of drinking a beaker of Helicobacter pylori culture and developed signs of gastritis. This was subsequently treated with antibiotics. Although this new theory and treatment were strongly resisted by some, it is heartening to know that antibiotics are now used as part of the standard treatment for duodenal and gastric ulcers. Marshall and Warren received a Nobel Prize in Medicine in 2005.

So how do we counter these criticisms of our discipline? Unfortunately, there are some who will never be convinced no matter what the evidence. However, these people are becoming fewer in number all the time. Once I used to dread presenting at clinical meetings, I don't anymore. Today most clinicians want to know the benefits and uses of EEG and neurofeedback, and come to meetings with an open mind. This is due to the high standard of work being conducted. Randomized placebo control trials are being conducted in ever-increasing numbers, and the necessary basic science is being done to inform the profession. To aid this process, we need to foster an open, innovative, and rigorous research culture with high standards. We need to ask the hard questions and look for answers. We need to address what is an acceptable level of evidence, the ideal placebo condition, the optimal protocol, a reliable sample size and composition for a clinical trial, and what to do with nonresponsive clients. We need to foster partnerships between the academic and clinical arms of the discipline. The successes and answers I have achieved have come about only through my long-term collaboration with my clinical partners. They have provided me with the participants needed to address many of the questions I could not interrogate in a purely research environment. This relationship has been beneficial to all parties.

As a group we also need to become political. We need to get neurofeedback firmly positioned as a funding priority within as many arenas as possible. For AD/HD, as for many other psychiatric conditions, the treatment of choice for most is medication. These are maintenance programs, not a cure. We engage in symptom management because we do not as yet fully appreciate how the biological mechanisms of disease translate into the clinical features and behaviors manifested. For AD/HD there are some who believe we should be medicating a child with the disorder for the rest of their lives. This is not a cure. On the other hand, neurofeedback has the potential to cure many of these disorders and save our clients a lifetime of medication. Surely, this outcome is worthy of investigation.

Finally, for the next step in the evolution of our field we need to publish our findings, both the positive and negative findings, and debate them in a public forum. All too often studies are left unpublished or opinions not penned among the pressures of other commitments. Since its inception, the *Journal of Neurotherapy* has been a source for discussion of neuromodulation of the human brain, targeting both clinical and scientific communities. Initially, the journal was primarily concerned with EEG biofeedback. However, as our understanding of the brain continues to grow, so do the different approaches to treatment. The *Journal of Neurotherapy* publishes articles on many of these emerging treatments. I want to take this opportunity to encourage members of our community to become active researchers and publish their work, which can only be to the benefit of our profession.

Adam Clarke
Senior Editor

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