

Joining forces for practical, brain-based counseling applications

Since the first American Counseling Association Conference presentation on neuroscience 10 years ago, the conference has witnessed a gradual increase in the number of sessions incorporating knowledge of brain functioning and development, neurophysiology and genetics. This year's conference offered a record number of presentations in that area — nearly 15 in total — including both Learning Institutes and education sessions.

As the 2015 ACA Conference got underway early on a humid Wednesday morning in Orlando, Florida, some of the contributors to the Neurocounseling: Bridging Brain and Behavior column — Lori Russell-Chapin, Allen Ivey, Laura K. Jones, Ted Chapin and Carlos Zalaquett — presented a full-day Learning Institute on practical brain-based counseling applications. With this month's column, we wanted to provide readers with an opportunity to join in the discussions and benefit from the many insightful questions offered at our workshop.

The Learning Institute began with an overview of neurocounseling, including a definition of the term and the rationale for the benefits of such practices to our work with clients and students. In essence, neurocounseling broadly represents the recognition and application of the neurophysiological underpinnings of behaviors and psychological symptoms with integration into our daily counseling practice. From this broad base, we spent the morning hours of the institute covering content instrumental to understanding the brain and its applications to counseling. We

followed that up in the afternoon by presenting hands-on interventions that demonstrated these key components in action.

Overall, presenters discussed seven core content areas:

- Social justice and the National Institute of Mental Health's (NIMH's) new research domain criteria
- Neurological risk assessment
- Structural and functional brain anatomy and physiology
- Polyvagal theory
- Therapeutic lifestyle changes
- Biofeedback applications
- Neurofeedback applications

What follows are brief responses to some of the impressive questions we received during the Learning Institute.

Social justice

Presenter: Allen Ivey
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Can you explain the distinction between long versus short alleles in responding to antidepressants?

How does this question relate to social justice? Specifically, gene mutations can result from poverty, harassment, abuse and trauma of many types. So, first, let us define *allele* as a mutation in a gene whose DNA codes may be transferred to the next generation. There are two on each chromosome, one of which is dominant, but not always. Think of a pink tulip, which exemplifies equal dominance.

The short answer is that genes and allele changes are becoming an important part of personalized medicine — *pharmacokinetics*. Individual response to

antidepressants varies. The hope is that genetic testing will eventually predict which clients respond best to which antidepressant.

Research results so far have been slightly promising, but most have found little of practical implication. However, a study this year at Thomas Jefferson University did find, for example, that 87.5 percent of one gene had a genetic variation (random mutation) that affected metabolism. Understanding variations before administering antidepressants could eventually lead to more effective therapy.

A closely related topic of more relevance to counseling practice is telomeres. Telomeres affect how quickly cells age. They are combinations of DNA and protein that protect the ends of chromosomes and help them remain stable. As they become shorter, and as their structural integrity weakens, the cells age and die quicker (see ucsf.edu/news/2013/09/108886/lifestyle-changes-may-lengthen-telomeres-measure-cell-aging).

Both genes and life experience have an impact on telomeres. Effective counseling with an emphasis on wellness can lengthen telomeres. Studies are beginning to show that exercise also lengthens telomeres. As early as 2008, Lynn Cherkas and her group studied 2,400 British twins and found that exercise slowed telomere shortening. A 2013 University of California study found that stress management and therapeutic lifestyle changes (TLC) that include diet, meditation, exercise and social support resulted in longer telomeres.

Structural and functional brain anatomy

Presenter: Laura K. Jones
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Can you explain the connection between one's sense of smell and the limbic system?

The olfactory bulbs are the only sensory organ directly connected to and part of the limbic system, which is the more evolutionarily primitive region of our brain. It is responsible for such things as our emotional experiences of the world, reward and motivation, and our ability to build long-term memories.

The bulbs, which resemble long slim tubes projecting out from underneath the bottom of the frontal cortex, are key structures in the processing of odors or smells in one's environment. Their direct physical connection to the limbic system — they are the only sensory organ with such connections — suggests that our sense of smell may play an especially important role in our emotions and motivation and may even influence memory formation. This might be one reason why olfactory triggers (smells) are especially potent in survivors of

trauma and individuals with posttraumatic stress disorder.

Why does a young child have more neural connections than an adult does?

A 3-year-old has nearly twice as many neural connections as adults do. As our brains begin to develop following conception and into infancy, they produce an overabundance of connections between the neurons (i.e., synapses) in the brain. According to Bryan Kolb and Bryan Fantie in their chapter in the *Handbook of Clinical Child Neuropsychology*, primates can develop roughly 40,000 new synapses a second.

Basically, our brains are setting us up to learn as much as possible in our early life. We are full of potential, and through learning we reinforce and strengthen some of these connections. What and how much we are learning, the conditions of our environments and our connections to our primary caregivers determine which connections are reinforced and which are "pruned," meaning the elimination of synapses that are not being used. This increases the efficiency of our brains.

The polyvagal theory

Presenter: Ted Chapin
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What is the relationship between the polyvagal theory and counseling?

The polyvagal theory, developed by Stephen Porges, suggests that there is more than one parasympathetic branch of the autonomic nervous system and that this myelinated branch permits mammals to use what he called the social engagement system to create a sense of safety for emotional attachment and nurturance. Previously, the autonomic nervous system (ANS) was thought to regulate the sympathetic fight-or-flight response to danger and a parasympathetic recovery to a state of homeostasis when the danger passed. Robert Sapolsky later replaced this notion of homeostasis with the idea of allostasis, more accurately reflecting the adaptive nature of the parasympathetic response. Porges further delineated three ANS responses: fight or flight, freeze and safety. He suggested that safety was the primary evolutionary adaptation for mammalian survival.



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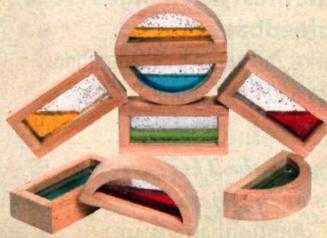
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The experience of safety occurs when the social engagement system is activated by several interactional behaviors, including prosodic speech, head tilt, eye gaze and soft facial muscle tone. These behaviors allow a mother and infant to bond and attach; people to feel safe in one another's company; and recovery from otherwise stressful states.

In counseling, we are trained to create a soothing, calming and nurturing or therapeutic experience and to attend to our clients in a very similar fashion. Counselors lean forward, and we often tilt our heads in an empathetic manner. We speak softly and rhythmically, calming and focusing our clients' expressions. We offer caring eye contact and display positive regard and understanding in our facial expressions.

We also teach our clients interpersonal, listening and communication skills. For those who are alone and isolated, we encourage the development and strengthening of their interpersonal support systems, family support systems, community support systems and love relationships. These experiences cannot occur when clients are predominantly overaroused, in a fight-or-flight response, or predominantly underaroused, in a freeze, immobilized or dissociative state. Polyvagal theory can help guide our assessment, point to interventional strategies and reaffirm the essential therapeutic value of the counseling relationship.

What role do inflammation and its remediation play in neurofeedback?

Inflammation is the body's natural response to injury, disease and stress. It is an indication that the immune system is trying to do its job and repair the body. Inflammation also occurs in the brain where, left unchecked, it can interfere with brain functioning. Neurofeedback can also cause inflammation. Anytime the brain is nudged or pushed to do something different, as is done in neurofeedback, the resulting strain can cause some inflammation that may interfere with neurofeedback's effectiveness.

Too much inflammation from extended periods of stress, emotional trauma, high fever, infection or head injury can cause extensive inflammation and result in significant damage to cells, neurons,

the brain and the body. This results in neurological dysregulation, a variety of emotional, cognitive and behavioral symptoms that can contribute to premature aging, cardiovascular disease and neurodegenerative diseases such as ALS (amyotrophic lateral sclerosis), Parkinson's and Alzheimer's. Research has further indicated that the stress cascade and its resulting inflammation can even damage DNA and cause epigenetic change. The bottom line is that excessive inflammation is not a good thing.

It makes sense, of course, to limit a person's exposure to stress, trauma, disease and injury. However, these things are not always in our control. Life inevitably presents us with challenges. So, what are we to do?

In neurofeedback, we try to manage inflammation by teaching clients self-regulation skills such as peripheral skin temperature control, diaphragmatic breathing and heart rate variability. These skills can help counter the effects of the stress cascade and have been found to facilitate neurofeedback's effectiveness.

We also advise clients to consult with their physicians and nutritionists to recommend certain food supplements that can help control inflammation. Two of these supplements are omega-3 and curcumin or turmeric, which have an antioxidative or anti-inflammatory effect. Of course, there is no substitute for a healthy diet, reasonable exercise and good sleep to help the body and brain function more efficiently and minimize the development of excessive inflammation.

Finally, inflammation from neurofeedback training is also managed by giving the brain some time to recover between neurofeedback sessions. This is the reason that neurofeedback training sessions are often scheduled at least a day apart.

Therapeutic lifestyle changes (TLCs) and neurofeedback

Presenter: Carlos Zalaquett in collaboration with Allen Ivey and Tom Collura
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How do you use the TLC survey with clients or in general?

The TLC questionnaire is an instrument designed to help users:

1) Examine where they are with a number of practices that research has

shown to improve physical and mental health

2) Get an overall quality assessment of current lifestyle

3) Report how ready they are to implement changes

Completing the questionnaire gives users an opportunity to identify the wellness and stress reduction activities they are currently using, while also considering those they are not using. The goal is not to promote all of these practices at once but rather to encourage users to begin adding those changes that could help them the most. In other words, to pick one area and start with a reachable goal.

The TLC questionnaire also gives counselor educators and practitioners an opportunity to learn about clients' current practices and suggest specific lifestyle changes. We side with John J. Ratey's assertion in *Spark: The Revolutionary New Science of Exercise and the Brain* that "it is unethical for a physician" or counselor "to work with a client and fail to prescribe exercise." The TLC questionnaire helps pinpoint main gaps in clients' stress management and wellness efforts. Special attention is given to the top seven TLCs: exercise, sleep, nutrition, meditation, social relationships, cognitive challenge and cultural health.

For more information about the survey, contact allenivey@gmail.com.

What decision-making program assists with better understanding of hemispheric divisions between positive and negative emotions?

With the leadership of Tom Collura and Ron Bonnsetter and based on the role of frontal lobe EEG (electroencephalogram) asymmetry, we have developed a model of decision-making. The model's more complex analysis supplements the simple left-brain/right-brain model by articulating the right hemisphere parallel and left hemisphere serial scanning as key in rendering decisions.

The model also proposes specific pathways that incorporate both past experiences and future implications into the decision-making process. An advanced use of the model applies to the realm of clinical mental health as a tool to understand specific human behavior and pathology. It also offers suggestions to facilitate positive functioning.

With the Muse brain-sensing headband, are you trying to get to a point where you are reading someone's mind?

As with any other technology or instrument, Muse, a neurofeedback application, should be used for the benefit and beneficence of the client and with utmost regard for our professional ethics and informed consent. The neurocounseling-based model has the capacity to provide an objective and scientific basis for mental health work that is technically sound and humanistically relevant.

This approach has the potential to empower both clients and counselors, allowing for additional understanding of the client's issues that can enhance the clinical intervention. It can help clients to understand that a weak or dysregulated brain function can produce an emotional or cognitive challenge. Furthermore, clients can observe the dysregulation and then work to change it. Clients can see the physical substrate of their challenges on a computer visual representation and then use counseling techniques to modify it and overcome the challenge. The counselor-client relationship and interactions now appear in the form of two brains, each responding to the other and deciding each new step. Introspection, awareness and self-regulation can reach new levels of depth and richness.

Training to use the Muse is minimal because it is intended for personal training. By using the device, clients can train their brains to relax and also calm their emotions. In addition, there is an advanced e-avatar Muse that is useful for counselors who want to provide neurofeedback training. This app uses the Muse's brain-sensing headband to provide training for mental fitness. It also has applications for both nonclinical and clinical uses.

Self-regulation and neurofeedback applications

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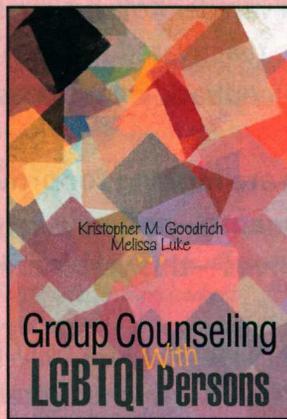
What training do you need to conduct neurofeedback?

If becoming board certified in neurofeedback is your goal, the main accrediting body is the Biofeedback Certification International Alliance

New!

Group Counseling With LGBTQI Persons

Kristopher M. Goodrich and Melissa Luke



“Through engaging case vignettes, exercises, and clinical examples, Drs. Goodrich and Luke provide a much-needed resource for planning, executing, and assessing the effectiveness of group work with the LGBTQI community. This comprehensive book will be a welcome addition to the library of any group worker who needs cutting-edge information on affectional orientation and gender issues for a wide range of groups and populations.”

—Michael M. Kocet, PhD
Bridgewater State University
Past President, ALGBTIC

This unique resource provides strengths-based group counseling strategies designed to meet the needs of LGBTQI clients in a variety of settings. Drs. Goodrich and Luke capture the developmental concerns of LGBTQI individuals throughout the life cycle as they establish and maintain intimate relationships, create families, encounter career concerns, and navigate other milestones and transitions. Illustrative case examples and interventions throughout the text, as well as cautions and recommendations, make this an ideal resource for practice and group work courses.

After a discussion of the history of group work with the LGBTQI community, the planning and process issues that group leaders should consider in their work, and relevant ethical and legal concerns, the authors explore a range of group types and pertinent issues. Individual chapters focus on the following types of counseling: child and adolescent; same gender adult; intersex and transgender; coming out/disclosure; school, community outpatient, and residential; couples and family; substance abuse; grief and loss; and advocacy. Chapters on group work supervision and the importance of allies round out the book.

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(BCIA). The Association for Applied Psychophysiology and Biofeedback, the Biofeedback Federation of Europe and the International Society for Neurofeedback and Research recognize BCIA as the certification body for the clinical practice of biofeedback.

The process for board certification in neurofeedback is:

- 1) A college-level human anatomy/physiology course
- 2) Thirty-six hours of didactic training through an approved BCIA professional organization
- 3) Twenty-five contact hours of mentoring to include 10 personal neurofeedback sessions, 100 patient/client sessions and 10 case conference presentations
- 4) A three-hour objective written examination

Other organizations offering certifications are the Natural Therapies Certification Board and EEG Info's Othmer method certification.

What is the next step for the newly approved ACA Neurocounseling Interest Network?

The ACA Governing Council approved creation of an ACA Neurocounseling Interest Network at the 2015 conference in Orlando. As of this writing, 157 members have joined the network from 25 states and three countries. The future of the Neurocounseling Interest Network will be determined by its members, but collaborative talks with other divisions and interest networks to direct neurocounseling into our profession have already begun. If anyone reading this column would like to become part of our Neurocounseling Interest Network, please email Lori Russell-Chapin. It is an exciting time to be in the counseling profession.

Now that you are doing neurocounseling, how much of your time is allocated to neurofeedback in particular?

I have integrated neurocounseling, including self-regulation and biofeedback skills, into my counseling 100 percent of the time. Neurocounseling pays special

attention to establishing a positive working relationship with the client. A warm and empathic relationship augments outcome.

My colleagues and I use neurofeedback for clinical, performance improvement and research purposes most of the time. Approximately 60 percent of my caseload is now neurofeedback. Often, neurofeedback is used with those chronic clients who have more brain dysregulation than usual. ♦

Lori Russell-Chapin and Laura K. Jones serve as co-editors of the Neurocounseling: Bridging Brain and Behavior column.

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