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Article 28

Wellness and the Neuroscience of Learning: Implications for Counselor Education

Michelle Flaum Hall and Scott E. Hall

Flaum Hall, Michelle, is an assistant professor in the Department of Counseling at Xavier University. Dr. Hall teaches graduate students in the Clinical Mental Health Counseling program, focusing on mindfulness-based approaches, neuroscience, and trauma. Dr. Hall also sees clients in private practice in Dayton, Ohio.

Hall, Scott E., is an associate professor in the Department of Counselor Education and Human Services at the University of Dayton. Dr. Hall's teaching and research interests include Positive Psychology, neuroscience, and trauma. Dr. Hall also works with clients in private practice in Dayton, Ohio.

Abstract

The Scholarship of Teaching and Learning has emphasized the importance of applying neuroscience research to pedagogy, thus creating the concept Brain-Based Learning. As our understanding of the brain increases, ideas about the best ways to enhance memory and learning certainly follow. This article summarizes key elements of the neuroscience of learning, including a short review of relevant neurochemicals and definitions of concepts vital to a foundational understanding of brain-based learning. In addition, the article applies brain-based learning concepts to the counselor education classroom and training of counselor educators, offering solutions to three common problems graduate students face: information overload, exhaustion, and lack of engagement.
Keywords: brain-based learning, counselor education, engagement, wellness

Brain-based learning is at the forefront of the Scholarship of Teaching and Learning (SoTL), and it has become crucial that counselor educators be knowledgeable about adult learning. With the 2009 Council for Accreditation of Counseling and Related Educational Program (CACREP) standards calling for more robust assessment of student learning outcomes (SLOs), it becomes critical that programs demonstrate that students are indeed *learning*. Of the SLOs for teaching, only two loosely address knowledge of pedagogy: IV.C.2, "Knows instructional theory and methods relevant to counselor education"; and IV.D.1, "Develops and demonstrates a personal philosophy of teaching and learning" (CACREP, 2009, p. 56). Neither of these standards directly addresses knowledge of the fundamentals of human (and specifically adult) learning, which should provide the foundation on which to build knowledge of pedagogy specific to counselor education.

Further, the American Counseling Association's Code of Ethics asserts that counselor educators are to be "skilled as teachers," and states this within the context of possessing knowledge "regarding the ethical, legal, and regulatory aspects of the profession [and] are skilled in applying that knowledge" (American Counseling Association [ACA], 2005, F.6.a.). Like many other standards in the Code, this assertion is open to interpretation, and it is left up to individuals to determine the definition of and path to becoming "skilled." It would behoove doctoral programs (whether accredited by CACREP or not) to adopt formal training in effective pedagogy, and counseling programs should ensure regular training for counselor educators on developments in the scholarship of teaching and learning. With the proliferation of research on brain-based learning and its links to overall wellness, it seems natural to ensure that counselor educators understand how to teach in ways that boost both learning and student wellness. A first step in this endeavor is to provide a basic understanding of key processes and neurochemicals involved in student learning, and how student wellness impacts their ability to learn.

We have organized this article into two main parts: The Neuroscience of Student Learning and Applications to the Counselor Education Classroom. It will be helpful to consider part one a literature review of key elements of brain-based learning and part two the implications for teaching in the counselor education classroom.

The Neuroscience of Student Learning

There has been a proliferation of research on the role of neuroscience in understanding human behavior, and this section will outline key concepts and foundational information regarding neurochemicals. These concepts include neurogenesis and neuroplasticity, as well as prominent neurochemicals such as brain-derived neurotropic factor (BDNF), dopamine, norepinephrine, serotonin, acetylcholine, and GABA.

Key Concepts in Brain-Based Learning

Neurogenesis and neuroplasticity. Perhaps the most critical findings about the human brain and learning are *neurogenesis*, or the generation of new neurons throughout life, and *neuroplasticity*, or the ability of neurons to connect in new ways in response to learning (Purves & Voyvodic, 1987). Before the discovery of neurogenesis, it was believed that humans were incapable of growing new neurons, until Altman (1962) discovered new neuron growth in the cerebral cortex. Neurogenesis can be enhanced by a healthful lifestyle, including proper nutrition and exercise (Stangl & Thuret, 2009). However, it is not enough to simply grow new neurons for learning to happen: Learning requires that those neurons be used.

Simply defined, *neuroplasticity* is the shaping and reshaping of neural connections based on experiences and learning (Pascual-Leone, Amedi, Fregni, & Merabet, 2005). Our brains constantly form neural maps based on how our neurons are firing. Stimulating neuroplasticity and neurogenesis in the areas of the brain responsible for learning and memory, such as the hippocampus, amygdala, frontal lobe, and temporal lobe, is the goal when attempting to enhance learning throughout life. Gone is the idea that we are limited in our ability to learn as we age; in fact, evidence from research points

to the contrary in that we now know we are limitless in our capacity to form new neural connections (Doyle, 2011a). If we think of our neural connections as branches, then we effectively *prune* these *branches* when we add to our learning and experiences. We cut connections, reform connections, and make connections in our neural pathways as we learn, creating a sort of neural web within our brains; however, if we do not reinforce our learning in some way, we will likely lose the connection and therefore lose the learning. To avoid this, we must encourage long-term potentiation.

Long-term potentiation is the enhancement in signal transmission between two neurons in the hippocampus, enabling them to fire synchronously (Lynch, 2004). The hippocampus is known to be a hub for memory formation, and synchronous firing of neurons in this region can ensure that information commits to declarative memory (Bliss & Collingridge, 1993).

Before understanding neuroplasticity, neurogenesis, and long-term potentiation, scholars and practitioners believed that accelerated learning took place primarily during "sensitive periods" of development, such as in early childhood. Subsequent research has shown that accelerated learning can happen outside of sensitive periods (Knudsen, 2004), so it behooves us as educators to understand how to enhance this process with adults. One way to do so is to encourage graduate students to engage in behaviors that will boost production of chemicals responsible for cognitive enhancement.

Neurochemicals and Learning

Brain-derived neurotropic factor (BDNF). There are several neurochemicals involved in the growth and connection of neurons in the regions of the brain responsible for learning. One protein that has received increased attention in the neuroscience of learning is BDNF, or brain-derived neurotrophic factor. BDNF was found to aid the survival of existing neurons and stimulate growth and differentiation of new neurons in the areas of the brain responsible for memory and learning, namely the hippocampus and cerebral cortex.

Studies continue to explore the connection between BDNF levels, depression, and physical exercise in an attempt to understand the role of this neurotropic in memory and learning (Russo-Neustadt, Beard, Huang, & Cotman, 2000). Findings suggest that changes in depression and physical activity correspond to changes in BDNF (and vice-versa), thus supporting a link. BDNF has also been linked to long-term potentiation, or the neural signal transmission necessary for real learning to occur (Doyle, 2011a). In the many studies citing the effects of BDNF (Doyle states there have been over 6,000), one common catalyst for BDNF production exists: exercise. In addition to releasing BDNF, exercise prompts the release of serotonin, dopamine, and norepinephrine, hormones that aid our motivation, alertness, focus, and positive mood – all necessary ingredients for meaningful learning (Ratey, 2008). The hormones serotonin, dopamine, and norepinephrine are not unfamiliar to the counselor educator, given that we teach our students about the role of these chemicals in regulating mood; it is important to remember how emotions can impact learning and memory as well.

Dopamine. It is widely known that dopamine plays a central role in pleasure and motivation, and it behooves educators to recognize how both can impact learning. Zull (2002) named pleasure as a tool for learning enhancement, emphasizing the role of positive emotion and motivation in long-term learning. Moderated by dopamine in the

frontal cortex region of the brain, pleasure and motivation can be stimulated through specific actions requiring movement. Zull advocated movement as an efficient catalyst for pleasure and positive emotion, and exemplified movement as play, dance, music, talk, eating, or any other activities involving moving one's body. Flagel et al. (2011) considered another effect of dopamine: motivation. The authors found that reward cues can powerfully motivate behavior; thus, for the student who is motivated externally (e.g., with grades), the prospect of a graded assignment can shape behavior (e.g., studying).

Norepinephrine. A hormone and neurotransmitter, norepinephrine (or noradrenaline, as it is sometimes called) acts on the heart to help control the body's response to stimuli and stress. Acting on the amygdala and sympathetic nervous system, this chemical enables our response to stress by increasing heart rate and releasing our energy stores, while aiding our decision-making. In the short-term and in moderation, norepinephrine can activate our decision-making and memory systems, since the amygdala can help other parts of the brain commit learning to memory (Lynch, 2004). In more stressful environments, however, norepinephrine can trigger the fight or flight response, which utilizes our energy to handle the stress. Zull (2002) made an important point with regard to the amygdala and fear response (which can inhibit learning), which is that the amygdala becomes less active when people (1) see happy faces, and (2) engage in cognitive tasks. Zull challenged that "if we can learn how to get our students more involved in their work, they will feel less nervous and afraid. If we focus on the work itself rather than the extrinsic reward [i.e., the grade], the intrinsic reward systems can begin to engage" (p. 60).

Serotonin. Serotonin plays a role in the modulation of mood, especially in depression and anxiety. Healthy levels and neural transmission of this chemical can contribute to an individual's ability to accept negative feedback without serious emotional consequences and allow positive feedback to reinforce behavior. Bari et al. (2010) tested this in a study with rats. The researchers gave one group of rats a single low dose SSRI, one group a single high dose SSRI, and a third group a high dose SSRI for one week while engaging them in learning tasks with reinforcement. The study found that the single low dose group completed the fewest tasks while giving up easily without returning when they didn't complete them, while the highest dose group (for one week) completed the most number of tasks and stayed longer with positive reinforcement. In sum, more serotonin in the system can contribute to the learning process by enabling people to keep a positive perspective.

People can facilitate serotonin production by ensuring they get enough tryptophan in their diets (Schaechter & Wurtman, 1990). Tryptophan is an amino acid found in many dietary proteins, including meats, dairy, nuts, seeds, and chocolate.

Acetylcholine. Emotions play another role in learning: through meaning-making. People tend to remember things that are meaningful to them. Zull (2002) described this as "selling importance" to learners (p. 225). The neurochemical responsible for "selling" the importance of material is acetylcholine. Acetylcholine sends a signal to our neurons basically saying, "You need to pay attention and remember this!" When our emotion centers are stimulated (e.g., pleasure through movement) and we have been actively engaged in cognitive work, the slower-acting neurotransmitter acetylcholine enhances long-term potentiation, or a prolonged excitation between neurons that leads to synchronization and thus longer-term retention (Cozolino, 2010). In other words,

acetylcholine enhances learning. Because the emotional aspect of learning is complex, this can take time, which underscores the importance of reflection as a key activity.

Like serotonin, acetylcholine can be found in most proteins, although the largest of concentrations can be found in the fattier proteins (e.g., egg yolks, and meats).

GABA. GABA, or gamma-aminobutyric acid, is a neurotransmitter that enables the flow of cells between neurons (Petroff, 2002). GABA is critical in neural transmission, playing a role in neurogenesis and neuroplasticity, along with BDNF. Like serotonin and acetylcholine, GABA can be found in foods such as proteins and complex carbohydrates, but also in its precursor glutamate. People typically have the GABA they need in their systems.

It is evident that learning requires a complex combination of neurochemicals, many of which can be found through a healthy lifestyle including nutrition and exercise. Although wellness remains the responsibility of the students, educators can empower them by sharing information about the building blocks of learning. Educators can also structure their courses and classroom activities to enhance brain-based learning in order to counteract three common graduate student issues: information overload, exhaustion/burnout, and disengagement.

Applications to the Counselor Education Classroom

The following section outlines three problems commonly experienced in the counselor education classroom, followed by suggested solutions bolstered by our understanding of neuroscience and learning.

Problem One: Information Overload

The technical term is *educated incapacity,* which basically means inundating students with too much information at once. Doyle notes that there is a transition from a "teller of knowledge to a facilitator of learning" (2011b, p.4). When we are stuck in the mode of "teller of knowledge," we can easily overwhelm students with content.

Information overload inhibits learning, since the brain is not designed to hold large amounts of new information at one time. In fact, our short term memory can hold an average of seven "items," and if we do not immediately begin to apply the information in a meaningful way, we will lose it (Miller, 1956). We overload students when we give them large amounts of information that has not been filtered or "chunked" into meaningful units by us, and we decrease the likelihood that they will retain information when we do not require them to use it in some way.

Solution: Become a Facilitator of Learning

In order to avoid overwhelming students with information, we must be judicious in how we present information. If we use power point presentations as part of a lecture, we should include only a few words along with a graphic that illustrates the concept, which in effect "chunks" important information for students. By helping students chunk the information, we increase the likelihood of long-term learning (Gobet et al., 2001). We should only use lecture to clarify topics that may be confusing to students, or to "bring to life" material from textbooks with stories from our own counseling experiences.

In light of the ever-growing CACREP content standards, it becomes important for us to balance meeting the requirements of short-term learning while at the same time promoting student learning for the long term. In addition, being educators in a professional field puts us at risk of "teaching to the test," thereby overwhelming students in the short term to help ensure passage of counseling licensure exams. We can avoid this problem by being mindful of our purpose as counselor educators: to educate effective counselors. This purpose, taken in conjunction with accreditation standards, should become the framework of each course within our programs. Any content that falls outside of this frame becomes the student's responsibility when preparing for licensure exams.

One method counselor educators can use to increase student retention of material is to create classroom experiences that stimulate emotion. Because learning requires memory, and memory is state dependent, it could be argued that learning is state dependent. Jensen (2008) explained that emotional states, such as anxiety, joy, curiosity, depression, and confidence, "bind up" information, aiding in retention. Activities such as role playing, analyzing case studies, and viewing dramatic performances (e.g., movie clips) can elicit such emotional states. When tied directly to specific learning objectives, these experiences can boost retention of important material by stimulating acetylcholine and dopamine. By adding a reflective discussion component to such an activity, an instructor increases the likelihood of long-term potentiation of the material. After all, if learning is not utilized after it is stored, it will most likely be lost – which is another argument for reflection following learning experiences (Jensen, 2008).

Another strategy for avoiding information overload is to begin and end with the most important class material to ensure reinforcement of key messages. When designing my first professional presentation, I was given this rule of thumb by a seasoned professor: tell them what you are going to tell them, tell them, and then tell them what you told them. In light of our understanding of how the brain learns, we submit this updated version: tell them what *they* are going to learn, let *them* experience, discuss, reflect it, and then have *them* tell *you* what *they* learned. These strategies can certainly enhance overall learning, retention, and development of students provided one thing – that they are awake and engaged.

Problem Two: Exhaustion/Burnout

As educators of adult students, we know too well the cognitive, physical, emotional, and logistical demands of graduate counseling programs; if left unchecked, such demands can lead to exhaustion, burnout and even impairment. Maslach, Jackson and Leiter (1996) characterized burnout as a condition affecting emotional and psychological well-being, as well as self-efficacy. McEwen (1998) explored the physiological effects of chronic stress and found a link to fatigue and illness, while Puig, et al. (2012) found a negative correlation between job burnout and physical wellness, creativity, and the ability to cope in a sample of mental health professionals. It seems that exhaustion and burnout create a vicious cycle with respect to wellness: the more exhausted a practitioner, the less likely she will be to engage in wellness activities that could help relieve exhaustion and prevent burnout.

Advanced counseling students are often required to juggle multiple demands including schoolwork, family/parenting, employment, and time in practica/internships. If students experience exhaustion at any point in the program, it is probable that self-care

will suffer. Given this, it is crucial that counselor educators provide opportunities for conversation about self-care and wellness; furthermore, as gatekeepers of the profession, it is important that we identify students who are at risk of burnout or show signs of exhaustion. Employing instruments such as the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996) can aid counselor educators in detecting warning signs of potential issues.

Solution: Encourage Wellness

While counselor educators cannot police the health practices of students, it does fall loosely within our ethical obligation to ensure that students are not impaired (ACA, 2005, F.8.b). Additionally, counselor educators are expected to teach students the ethics of our profession (F.6.d), which include self-care. It is important that we not only teach students about the possible implications of failing to care for the self (i.e., burnout or impairment), but also about *how* to engage in self-care. Educating students about the potential impacts of unhealthy habits on well-being and effectiveness, while helpful, does not necessarily elicit motivation to change habits; however, educating students about the cognitive benefits gained from self-care can certainly appeal to achievement-oriented graduate students.

Wellness as a concept is widely discussed and researched in counselor education (Lawson & Myers, 2011; Myers & Sweeney, 2004; Roach & Young, 2007). Myers and Sweeney (2004) developed the Indivisible Self Model of Wellness (IS-Wel) and corresponding Five Factor Wellness Inventory (5F-Wel, Myers & Sweeney, 2004), which measures the 5 second-order wellness factors: Essential Self, Social Self, Creative Self, Physical Self, and Coping Self. One aspect of the neuroscience literature bolstered by data is in the area of physical wellness (specifically diet and exercise) and the impact on the neurochemicals that drive learning; therefore, this review focuses on the Physical Self factor of this model.

According to the 5F-Wel (Myers & Sweeney, 2004), the Physical Self refers to the "biological and physical processes that comprise the physical aspects of one's development and function" (Wester, Trepal, & Myers, 2009, p. 95). The Physical Self factor includes Nutrition, or "eating a nutritionally balanced diet, maintaining a normal weight (i.e., within 15% of the ideal), and avoiding overeating," and Exercise, which is defined as "engaging in sufficient physical activity to keep in good physical condition; maintaining flexibility through stretching" (Wester, Trepal, & Myers, 2009, p. 95).

We can assume that most functioning adults have a cursory understanding of what is healthy and what is not; however, this knowledge is often not enough for students to change specific behaviors. Professors can educate students on how specific wellness practices can help them be successful as graduate students, which I suspect most students would be interested in knowing. For example, students may have a gut feeling that the chips and cookies they just bought from the vending machine may not have been the best choice, but may not fully grasp how these simple carbohydrates can impact learning. According to Jensen (2008), what students really need to maintain alertness and sharp thinking is protein, which contains the tyrosine responsible for production of dopamine and norepinephrine (neurotransmitters responsible for cognitive functioning, alertness, and motivation). In addition to consuming protein-rich snacks, students should consume water, but only if thirsty. McKinley and Johnson (2004) found that drinking water when

not thirsty and when one is already hydrated can lead to poorer cognitive performance. If students are thirsty, they should drink water in order to avoid the first stage of hydration, which often goes unnoticed but leads to problems with attention (Jensen, 2008).

Exercise has proven to be a major catalyst for learning and positive mood. Given the neurochemicals released as a result of exercise, such as BDNF, dopamine, serotonin, and norepinephrine, it certainly is not a surprise. It is important to note that exercise has an exponential impact on BDNF and serotonin in that movement creates a serotonin-BDNF loop: BDNF boosts the production of serotonin, and in turn serotonin stimulates the expression of BDNF (Mattson, Wenzhen, Ruqian, & Zhihong, 2004). While there is currently no empirical research on the prevalence of regular exercise in the graduate student population, from anecdotal evidence we would suspect a bimodal distribution in which students either faithfully follow an exercise routine or struggle to exercise at all.

Counselor educators should be mindful of the competing demands on students' time when they design out-of-class assignments. Instructors should have a clear rationale for each assignment, being careful to connect every project, paper, etc. to learning objectives for the course and the program as a whole. We should also be clear about our objectives and rationale to students, including our valuing their life balance and self-care. When we show students that self-care (both ours and theirs) is on our radar screens, we become role models for holistically healthy counselors. Additionally, we have found that assigning activities that require paying attention to wellness, such as keeping a mindfulness log, completing wellness-related inventories (Myers & Sweeney, 2004), and constructing a personal wellness plan can all have a positive impact on student wellness. Yager and Tovar-Blank (2007) reiterate the importance of engaging actively in wellness activities, and remind us that we need to talk about wellness in the classroom and model wellness to our students.

Problem Three: Lack of Student Engagement

We have established some of the problems associated with information overload, which can occur when professors rely too heavily on lecture to transmit information to students. To say that the potential for boredom increases when instructors employ more passive teaching strategies would likely be a safe assumption. It is also likely that students become bored or disengaged when given assignments that represent "busy work" rather than requiring them to apply or engage the material actively.

When instructors rely heavily on lecture, repeating the majority of the material covered in readings, students who lack time may simply choose not to do required readings. Creating further disengagement, instructors who do substantial review before each test or provide highly detailed study guides – essentially giving away the content – deprive students of opportunities to actively engage with the material. It is preferable to provide opportunities for active learning and engagement of material rather than passive engagement (Balch, 2005).

Because counseling demands skill in working with others, counselor educators tend to value collaborative learning. Working in groups can be effective as a strategy for learning – when the task is clear, relevant, and impactful. Ill-designed group activities, although active, do little to enhance student learning and encourage idle conversation. Students who already feel they lack time can begin to resent activities or classes that they perceive to be a waste of what little time they seem to have.

Solution: Require Engagement!

Although engagement could seem like a tall (and obvious) order, most graduate students tend to rise to the occasion when the occasion is *required.* When we require *active* participation and then fill every class with the sound of our own voice, we are sending a mixed message to students. Instead, we suggest sharing with students exactly what you mean by *active*, and then requiring activity in some form in every class.

A key element in engagement is mindfulness. Mindfulness is one of the most important skills we can teach our students, because the practice is not only helpful for centering, focus, and stress-reduction, but also for engaged learning (Langer, 2000). By teaching students mindfulness skills and incorporating activities that call upon them to practice, we encourage them to add to their belt of learning and wellness tools.

Students learn when they experience, rather than receive (Kolb, 1984). Another way to incorporate engagement would be to require that students move around when doing group work (that has a very clear stated purpose and outcome). If the task allows for it, they can walk as they talk, which promotes health through exercise. Finding ways for students to move around during class time can decrease the effects of fatigue, and setting an expectation that students will share their outcomes with the class following their group activity reinforces learning. Success with this activity requires careful planning and clear communication by the instructor; when the instructor can tie an activity directly to learning goals, students are much more likely to understand the purpose and be willing to engage.

Student engagement can be achieved through the use of emotionally-charged experiences. As mentioned above, emotions help to bind learning and promote longer-term retention. We are fortunate in our profession in that much of the content we teach has an emotional context. For courses with fewer obvious opportunities for emotionally-rich activity, it is important for educators to design creative experiences that connect students with their emotions. For example, when teaching research in counseling, professors can use powerful case studies to illustrate important concepts in research. This brings a human element to the material, to which counseling students tend to respond well. By designing opportunities for students to experience positive emotions such as joy and interest in the classroom, we create environments that are ripe for learning (Fredrickson, 1998).

One emotion that has gotten some attention in the Scholarship of Teaching and Learning is anxiety, or stress. Knowledge concerning the role of cortisol, otherwise known as the "stress hormone," in enhancing learning is somewhat mixed. A meta-analysis of studies on the relationship between cortisol levels and enhanced memory suggests that boosts in cortisol can have a slight positive effect on memory and learning, but the effect depends largely on the timing of the boost (Het, Ramlow, & Wolf, 2005). A more recent study found the opposite to be true. Baram, Chen, Dube, & Rice (2008) found that short-term stress mobilizes corticotropin releasing hormones (CRH), which are stress hormones more specialized in the brain. CRH causes damage to neurons, thus limiting our ability to learn. Another study on the effects of chronic stress on learning in mice found that that chronic stress decreased cell proliferation in the hippocampus, a part of the brain responsible for memory and learning (Yan, Zhang, Jia, Sun, & Liu, 2011). One phenomenon related to stress and learning that has been supported in the literature is the Yerkes-Dodson principle, which finds that learning complex tasks is maximized when

there is a moderate arousal (stress) level (Yerkes & Dodson, 1908). The Yerkes-Dodson principle occurs because a moderate increase in stress stimulates activity in the frontal cortex, a center for learning; however, when a stressor is more severe there is reduced activity in this executive region of the brain and a corresponding increase in activity in the posterior regions responsible for automatic responses (Arnsten, 2000). Simply put, once we become too stressed, our brains focus on helping us through the crisis and cannot simultaneously focus on complex learning tasks. Given this, we should design activities that raise the arousal level of our students but be mindful that too much stress negatively impacts learning.

One last important note about student engagement is to ensure that you give students at least 10 minute "brain breaks" for every 90 minutes of class (Jensen, 2008). From brain research we know that attention spans cycle about every 90 minutes, from high to low arousal. When you see a student nodding off during your class, you can bet that student is at the low end of his/her cycle. Giving breaks and suggesting that students get up and move around is one way to help them maintain focus while in class.

Assessment

Common methods of assessment in counselor education programs include scores on the National Counselor Examination (NCE) or equivalent licensure exam, exams and other assessments in specific courses, and evaluations of key or signature assignments or projects. In addition to these, we can use qualitative methods to better understand student engagement, learning preferences, and perceived effectiveness of specific teaching approaches such as those we have highlighted in this article. In addition to using qualitative methods for understanding the effectiveness of specific brain-based learning techniques, counselor educators can compare learning outcomes from brain-based techniques with those from TAU (that is, *teaching as usual)* using quantitative methods to discover meaningful differences.

While these evaluations certainly provide evidence of student learning and insights about how students learn, they do not offer us evidence of long-term retention or student wellness. Given that counselor educators strive to develop future practitioners who are competent, effective, and ethical, it is not a stretch to say that we hope our students remain well and avoid burnout. That said, we can employ assessments such as the Wellness Evaluation of Lifestyle (WEL; Myers, Sweeney, & Witmer, 1998) and Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996) to help us understand the wellness of our students and screen for signs of burnout. In addition, we can assess long-term learning by designing longitudinal studies targeting retention of specific material within the counselor education curriculum.

Conclusions

It is important for counselor educators to have a basic understanding of how and why people learn, and knowledge of brain-based learning can help us more effectively facilitate student learning. By creating active learning experiences for our students, encouraging their wellness, and avoiding information overload while minimizing passive learning, we create classroom environments that are fertile ground for long-term retention and growth.

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