

# choice

the magazine of professional coaching

## NEUROSCIENCE & COACHING:

*Separating myth  
from reality*



# Neuroscience & Coaching

SEPARATING MYTHS  
FROM REALITY

What's the truth about neuroscience and coaching? What are the biggest neuromyths? How do you coach neurodiverse clients? What has changed in neuroscience and coaching with the new understanding of the brain? What is the future of coaching as it relates to neuroscience? Join us as we explore how the latest science of the brain impacts our profession.



# COACHING AND THE BRAIN: PAST, PRESENT & FUTURE

By Ann Betz, CPCC, PCC



## 1990-2010

### Setting the Stage for Coaching and the Brain

The 1990s were designated the “Decade of the Brain” by the U.S. Congress, and during the ensuing decade, our understanding of the brain made huge leaps and bounds. To quote neuroscientist Antonio Damasio, “More may have been learned about the brain and the mind in the 1990s than during the entire previous history of psychology and neuroscience.”

One of the impacts of this “decade of the brain” is that by 2010, questions about the brain were beginning to move into the fields of leadership (first) and coaching (second). Instead of neuroscience being primarily approached from a health care perspective, it became more interesting in terms of everyday life – and especially to those of us working in the general area of human development.

By the beginning of the 21st century, and especially after 2010, we began to see more and more popular books and articles bringing neuroscience to the masses.

I found myself here at the end of this decade, as one of the early adopters of coaching and neuroscience. This happened because I saw a couple of articles about neuroscience that pointed towards an area of particular fascination to me: What makes human beings effective (or ineffective)? As I participated in graduate studies (in one of the first cohorts at the NeuroLeadership Institute), I not only gained more insight about this question; I also saw incredible validation for coaching.

I was, of course, not alone in this. In 2010, Richard Boyatzis and Anthony Jack of Case Western Reserve University published

## feature

their study on how “compassionate coaching” created a positive brain state.<sup>1</sup> Rock and Page published *Coaching with the Brain in Mind* in 2009, and many other timeless books addressing the neuroscience of human development emerged as well, including Dan Siegel’s *Mindsight* (2010), Louis Cozolino’s *The Neuroscience of Psychotherapy* (2002), and Norman Doidge’s *The Brain that Changes Itself* (2007), just to name a few of my own earliest inspirations.

## 2010-2023

### The Wild West of Coaching and the Brain

I think of the past 13 years as the “anything goes” era of coaching and the brain. On the one hand, we saw people robustly and persuasively arguing for outdated neuromyths such as the triune brain, right or left hemisphere dominance, and amygdala “hijacks.” (See “Top 5 Neuro-myths” sidebar).

Some neuroscientists assumed they understood coaching without having studied or practiced it, and offered their own version of coaching programs (I can just hear the internal dialogue “how hard could

**To quote neuroscientist Antonio Damasio,  
“More may have been learned about  
the brain and the mind in the 1990s  
than during the entire previous history  
of psychology and neuroscience.”**

it be?”) that were not really in alignment with established, successful coaching skills and tools. We also saw coaches assuming they understood neuroscience because they read a book or two or watched a TED Talk, and writing blogs or launching programs that may or may not have had reliable neuroscience grounding.

On the other hand, we also saw slow but real progress in terms of the true and accurate scientific validation of our profession. We were able to take powerful research from social and affective neuroscience (such as what works to diminish stress) and map it to existing coaching strategies. In addition, forward-thinking researchers (with actual coach training and experience) such as Richard Boyatzis and Anthony Jack conducted fMRI (brain scanning) research using actual coaching conversations, finding powerful differences between asking what people want and telling them what to do.

We also became increasingly aware of the importance of involving the body in the process of coaching. Pioneering work by folks like Richard Strozzi-Heckler, taken to the next level for coaching by the brilliant Amanda Blake, showed us that our thinking is not limited to the brains in our heads. Lamentably, the International Coaching Federation (ICF) still does not recognize involving the body in coaching as a key competency in and of itself. Neuroscience tells us they definitely should be.

Some of us went beyond the popular mass audience books and TED Talks to explore the original research, vetting and assessing validity

# THE TOP 5 NEURO- MYTHS ... AND THE REAL TRUTHS

## MYTH #1:

### The Triune Brain

**MYTH:** We have three layers to our brain, and the lower and middle layers can “take over” and run the show. That is, under stress we can be taken over by an older, less developed and more survival focused “reptilian brain” and lose our ability to think clearly and control ourselves. We have “amygdala hijacks” where lower structures of the brain replace our cognitive abilities and cause us to do and say things we might regret.

**TRUTH:** No one has a reptilian brain – unless you are actually a reptile. The brain evolved in a continuous process of adaptation, not a geologic three-layer strata. There isn’t a “reptilian brain” or “mammalian brain” waiting to get activated under stress. There are areas,



networks and even chemicals that have key responsibilities for certain things, but they are inextricably linked to other parts of the brain team. Emotions – even strong ones – are a whole brain process and are not located in a specific area. (See the brilliant work of Dr. Lisa Feldman Barrett for more on this.)

While we do have times when our brains become somewhat flooded with neurotransmitters due to an overload of stress, it's not the case that the amygdala "hijacks" us. Rather, the more complex truth is that limbic regions, including the amygdala, often start the cascade of neurotransmitters in the brain (and hormones in the body) associated with a fight-flight-freeze response. Our higher brains may at this point be somewhat harder to access, but they are simply less active, not gone.

## MYTH #2: Hemisphere Dominance

**MYTH:** You are right brain or left brain dominant (and here's a test to find out!).

**TRUTH:** This one is actually a bit more complex in my opinion, so let me break it down. On the one hand, research shows that almost everything we do – from math to music, to language, to all forms of creativity and logic – involves using both hemispheres of the brain. Each hemisphere simply contributes in different ways. As one researcher likes to say, it's not *what* each hemisphere does, it's *how*.

For example, in terms of language, the left hemisphere is better with the words themselves, while the right helps us with the meaning. And a large-scale study published in 2013<sup>1</sup> found no structural difference between the hemispheres (that is, no evidence of one being larger than the other).

On the other hand, I'm still waiting for a long-term study to see if we change over time. Because the study I mentioned was limited to ages 7 to 29, and research in neuroplasticity shows that the brain does tend to adapt and change with experience. And even if we do not see structural differences, we may get more or less activated in one hemisphere or the other in certain contexts and situations.

My bottom lines: a) it's complicated and the jury's still out, and b) evidence points to the most effective people being more *integrated* in terms of their two hemi-

spheres. In other words, the best leaders, artists, teachers, parents – and yes, even mathematicians – have equal access to both sides.

## MYTH #3: The Brain is in Charge

**MYTH:** It's all about the brain, which controls everything.

**TRUTH:** I think it's the difference between the brain being in *control* or the brain being *involved*. In other words, let's not dismiss the brain, but let's understand that it is actually more of a team member and not so much the boss. In fact, my view of the human system is that there is no boss. Every aspect of who we are – and the context in which we exist – plays a critical role in our thinking, decision-making, mood and orientation to life. This includes our body, our environment, our relationships, and even something more amorphous that we might think of as the energetic or quantum field.

Some of the most exciting new work in neuroscience is in the area of what is known as "The Extended Mind." In other words, how we think beyond our brains. (See the work of Annie Murphy Paul for a really comprehensive and compelling overview of this.)

## MYTH #4: It's Important to Know Where in the Brain

**MYTH:** As they say in real estate, it's all about location, location, location. This was the focus of much of the decade of the brain in the 1990s. Let's figure out where each aspect of who we are and what we do is located.

**TRUTH:** Current neuroscience research is beginning to focus more on systems and less on location. I like to say that the brain is best thought of as a system of systems. Most areas and aspects of the brain don't do just one thing, but rather, play a role in many. And, with focus and training, many areas of the brain can be trained to take on the role of others if lost due to damage or stroke. (See the work of Dr. Norman Doidge on neuroplasticity.)

Aspects of who we are and what we do

more often involve systems distributed over multiple areas of the brain – for example, the default mode and task positive networks (correlated with dreaming or doing); the salience network (which helps us know where rewards are); and the empathy and intuition systems, which also involve the body and possibly the energetic field as well.

## MYTH #5: Everyone can change

**MYTH:** Coaches tend to be positive and hopeful. We like to believe in possibility for everyone and that everyone can change if they just engage with personal development.

**TRUTH:** This is another complex one, but the bottom line is that no, it doesn't seem to be true that everyone can change and grow (those who can't may be as high as 10-20% of the population?). Some people do not have the essential core needed to develop themselves. Critical neural connections related to self-regulation, empathy and interpersonal relatedness did not develop in childhood, which can be from genetics, trauma, or both. This tends to manifest in personalities who find it very difficult to reflect and take personal responsibility, qualities necessary for successful growth (including through coaching).

The complexity is – and experts tend to agree on this – that maybe with very intense therapy (that is, multiple times a week over the course of years) some change would be seen. But the person would have to: a) see that they themselves are the problem, not everyone else; and b) stay committed to the process. And both of these are very rare.

I'm not sure if this is depressing or liberating, but as a coach, I have come to understand that most people who authentically engage in coaching will see growth and change. But not everyone – and to be honest, those folks also don't tend to fully engage in the process.

### NOTES:

- 1 [journals.plos.org/plosone/article?id=10.1371/journal.pone.0071275](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0071275)
- 2 I base this number on research in narcissism and psychopathy. The most credible experts in this field cite numbers as high as 20% of the population, so 10% is quite conservative.

and taking the time to sort the wheat from the chaff. What does work in coaching and why? (I like to say that if it works, there will be a scientific explanation as to why. There are just some things that take longer to explain.)

Still, this phase has been confusing for some coaches, as they participate in programs and listen to speakers and podcasts demonstrating a wide range of neuroscience validity. As one example, I recently saw a speaker at a conference confidently presenting that we have three brains – emotional (located in the heart), intuitive (located in the gut) and rational (located in the actual brain), and offering an assessment as to which one you are strongest in. None of this is true from a neuroscience perspective, other than that we process with more than simply the brain that’s in our skulls.

At a minimum, emotions and intuition involve the body and the brain, and logic or rationality is not devoid of emotions and intuition. We are incredibly complex systems and cannot be reduced to “three brains” or even “amygdala hijacks.” (See “Top 5 Neuromyths” sidebar for more on this.)

I am sure this person meant well, but he was, in fact, perpetuating myths about the brain. And if coaches go out and repeat these sort of myths to their clients, we are both less effective and less credible.

**Let’s stop saying that coaching is based on neuroscience. Coaching was created intuitively, not scientifically. What we are doing – and will continue to do – is make connections between the two fields.**

## 2020 Onwards

### The Future of Coaching and the Brain is Now

I am encouraged by the intelligence of professional coaches, not to mention their hunger for learning. Neuroscience consistently comes up when ICF chapters and other coaching groups ask their members what they most want to explore. There are even neuroscientists getting coaching credentials and more and more coaches studying neuroscience at a serious level from credible teachers.

I should also add that increasingly when I ask coaching groups questions about the triune brain or the right and left hemisphere or neuroplasticity, a notable percentage of people are either up to speed on current thinking or at a minimum have the sense that it may not be as simple as they have previously been told. Neuromyths are slowly dying!

I have also seen that as we as a profession have greater scientific evidence for the effectiveness of coaching (whether it is return on investment research or neuroscience connec-

tions), we have become more confident about our well-deserved place in the world of human development. I am excited about a future where this confidence is deeply ingrained in every coach.

And so, my own dreamed-for future of coaching and the brain has three components:

1 Neuroscience becomes more and more embedded in our professional training. Coaches understand from the very beginning that there are neuroscience arguments for everything we do that works. They have the language to explain this to their clients and they trust what they are doing. I long for the day when no coach says to a client “This might seem a little woo-woo,” but says instead “Let me explain what happens in your brain when I use this technique.”

2 Neuromyths die off and people who perpetuate them are called out and questioned. Not to shame them, but to hold the integrity of our profession and the overall field of human development.

3 More direct research on neuroscience and coaching. Much of the current scientific exploration of coaching and neuroscience is not direct. Scientists have explored things like stress reduction and people like me have seen that their findings correlate with what we do in coaching. This is cool, but even more powerfully, the brilliant team of Richard Boyatzis and Anthony Jack has shown us we can use neuroscience to explore actual coaching methods. There is a huge opportunity for the intersection of coaching and neuroscience here – and many things we can explore scientifically. (For example, if anyone wants to give me funding, I’d love to do a long-term study on how being a coach positively changes the coach’s brain.) With the continuing advancement of technology, this sort of research will hopefully become easier, cheaper, and more accurate.

And on this note, let’s stop saying that coaching is based on neuroscience. Coaching was created intuitively, not scientifically. What we are doing – and will continue to do – is make *connections* between the two fields. But the amazing founders of our profession didn’t know a thing about neuroscience. They knew what works in terms of human development and developed training programs for coaches based on intuition, experience, and maybe a small amount of social psychology.

I’m excited to see us move toward more accuracy, confidence and clarity around coaching and the brain, and I do believe we’ve tilled the ground and planted the seeds for a wonderful harvest in years to come. ●

#### NOTES:

- 1 “Coaching with Compassion Can Light Up Human Thoughts,” Case Western Reserve University via ScienceDaily, [sciencedaily.com/releases/2010/11/101117184501.htm](https://www.sciencedaily.com/releases/2010/11/101117184501.htm)