NEUROSCIENCE FOR ENHANCED COACHING SKILLS

Is it possible to become a better coach by understanding how the brain works? Absolutely! The language of coaching, which concentrates on setting goals, making connections, and seeking breakthroughs, perfectly parallels what neuroscience tells us about how the brain operates. By understanding the physiology of personal growth, coaches can better tailor their coaching language, strategies, and goals to be in alignment with the clients' brains.

Building on the existing foundation of coaching by adding neuroscience as an evidence base for the profession, neuroscience shows that it is possible to become a better professional coach by understanding how the brain works. An understanding of neuroscience research can help coaches and leaders fulfil their potential as change agents in the lives of others.

In the past, there was some scepticism about coaching, because people assumed that it was remedial in nature. Also, when executives and professionals, with predominantly analytical training, look at coaching from an investment perspective, they often want theory-based, evidential criteria. It is now argued that a brain-based approach to coaching may provide more legitimacy to the coaching profession, but this will require coaches to have deeper understanding of brain functions and behaviour.

Getting people to change is important, because life, both individual and organizational life - is rapidly changing in our world. The traditional view of change management has focused on two levels. The first, at the individual level has traditionally focused on changing people by providing critical feedback and judgment, or through the work of professional help, on analysing peoples' problems. The second, at the organizational level, has focused on introducing leader-led organizational change initiatives - structural or process changes. These assume, by their nature, that they will create employee buy-in, or alternatively, increase employee motivation to increase productivity through the traditional "carrot-and-stick" approach, with a particular emphasis on financial rewards. The evidence is clear that such approaches have failed to produce meaningful and productive changes.

It had long been accepted that early childhood was the only time when the brain was malleable enough to be significantly influenced by external stimuli. However, in the last two decades, new technology such as; PET (positron emission tomography) and fMRI (functional magnetic resonance imaging) have revealed that adult brains are constantly changing in response to stimuli. More importantly, we now know that brains can be significantly restructured under the right learning conditions.

The discovery of the on-going ‘re-wiring’ or malleability of the brain has caused us to question traditional learning methods. Through guided coaching a person is now able to change their brain's physical structure, alter their mind's perceptual experiences and effect changes in behaviour, expectations and choices etc.

Neuroscience is highly relevant to the language and process of coaching in the business environment and it can be used in practical and effective ways to enhance the execution of strategies. If it is our job as coaches to help others to change and develop, shouldn't we know, therefore, how the brain works and how it creates and affects human behaviour?

Most people understand the value of coaching and how it can help them to develop skills and progress in their careers. However, just as people of different behaviour preferences accomplish work and communicate in different ways, they also have specific preferences on how to be coached. By understanding these preferences, you can impact people's reactions to your coaching. By understanding how the brain works, coaching professionals can better tailor their language, strategies, and goals to be in alignment with an individual's behavioural preferences or preferred ways of working.

The real power of neuroscience in coaching is summed up by the Managing Director of CPT in Zurich:

> "In the autumn of 2008 I sat down in a conference room in a hotel in New York. Just 15 minutes later I realized I now had in my hands an exceptionally powerful tool for coaching, for leadership and for change management. That was what I had realized after 15 minutes, now 6 months later do I still feel the same? No, now I would say it is my most powerful tool. And by saying that I don't mean that neuroscience makes my other tools and my love of all things psychology irrelevant - no it simply makes them *more* relevant. I feel like I could see the nail before and knew where to bang the nail and was banging it with a brick - still effective, still doing the right things at more or less the right time. The concept and insights neuroscience brought me gave me the hammer *really* to bang home the nail....".

The role of "coach" is intrinsically built into the role of all managers. When we use brain science as the basis of a coaching methodology or communication, our goal is to make this as practical as possible. In fact, it is really only useful when it is the *best* way to communicate.

This does not require an immediately in-depth understanding of brain chemistry, anatomy, and physiology as reflected in parts of this paper. Also, because neuroscience in coaching is in its infancy, the learning involved in coaching is a staged approach that is gradual but incremental. Although the field is advancing at a tremendously rapid pace, learning the fundamental principles of neuroscience and how brain science can help communication in coaching is a solid first step.

The object of this paper is to help readers see what a substantial role an understanding of the brain can play in how you work with people; and why now, more than any other time in the history of building leaders, knowing how to apply a knowledge of the brain in the corporate

environment is an important and fundamental part of creating a context for change. This - *the ability to create a context for change* -is what coaching, management, and leadership are all about, and neuroscience is a critical part of this context development.

Neuroscience refers to the scientific study of the nervous system. Brain science is a division of neuroscience. Studies on the brain relate to either its structure or function. "Brain science," as it is used in this paper, refers predominantly to functional brain imaging studies that have been published in the peer-reviewed literature. Functional brain imaging examines how the brain works when it is presented with a task or challenge when people lie inside an MRI scanner. There are various kinds of functional brain imaging, such as fMRI (functional magnetic resonance imaging), PET (positron emission tomography), and SPECT (single photon emission computed tomography). The focus of this paper is fMRI, which measures brain blood flow as a correlate of brain cell (neuronal) activity. By understanding how brain blood flow changes in different brain regions in response to tasks or challenges, we can start to understand how the brain works, and in so doing, gain insights about a different metaphor to describe human behaviour (apart from organizational psychology). In addition, we can develop communication strategies that target specific brain regions.

It is important to remember that the field of fMRI brain scanning is relatively new and still evolving. We are still in the process of trying to understand what the "lighting up" of the brain actually means, but as we grow in our knowledge of this meaning, there are several compelling findings that deserve reflection and translation into the business environment.

Although the psychological frameworks can be used very effectively to help people develop, these are based mostly on "external" observations of behaviour. Inferences about interventions have been based on these external observations. With the advent of fMRI, we now have a chance to infer what is going on inside the brains of leaders so that we can augment this "external" behavioural and psychological approach with an "internal" understanding of what is going on inside the brain. On their own, brain anatomy and physiology are too esoteric to have practical significance in the coaching environment, but when the brain is examined in the context of personal or organizational development, it can provide amazing insights and can also provide a template for targeted strategies in accelerating the execution of strategy. Using brain imaging technologies, we now can gather more information in 20 minutes about an individual by analysing neural firing patterns that are monitored during specific tasks, than we could in 20 years previously.

The fundamental task of all coaching is to provide a context for change. This is true whether the coach is an external coach, an internal coach, the manager acting as coach, or is self-coaching. This context is powerfully dominated by language and emotion. The more tools we have to inform our language and emotion, the better our position to make intelligent coaching decisions. When managers or leaders try to improve things, they have to create the change they want or manage the change that is confronting them. The bottom-line goal is usually to increase pleasure,

productivity, or profits, but the process to get to that place is far from simple, purely analytical, or obvious.

Our mind is our cognitive reasoning, and the brain is the biological entity which allows the mind to exist. To execute a task, our brain first breaks it down into its component parts with each part then stored away. The parts are associated with each other by our brain stringing together a line of neurons to form a neural pathway (Conscious Incompetence). When we practice or further learn something related to this area this neural pathway grows larger as nearby neurons are recruited to learn how to perform the task (Conscious Competence).

As we repeat and practice the task the connections through the central core get stronger and the nearby neurons return to their previous state. And as we physically perform the activity the movements required then begin to become encoded in the brain's motor cortex. Sports coaches refer to this process as "muscle memory". For example; the ability to perform a specific movement such as catching a ball, without conscious thought. We now know that the movements are actually encoded in the brain's motor cortex.

The more you practice the task, the stronger the neural pathway becomes and the greater your ability to perform these motions using the non-conscious parts of your brain (Non-Conscious Competence).

The above process where the brain physically reconfigures itself in response to repetitive actions or stimuli is called Hebbian Learning. We now know that our brains are not “hard wired” from birth. New connections between previously unconnected brain cells are formed each time we learn a new skill or form a new association. As we learn new skills, we really are physically “sculpting” our minds. This brain transformation occurs because “cells that fire together, wire together.”

Brain science also shows that our brains are built to detect changes in our environment and are more sensitive to negative change. Any change that constitutes a threat can trigger fear causing the brain's amygdala (fear centre) to stimulate a defensive emotional or impulsive response. Altering our reactions to change is very difficult for the brain, even though logically we may want to. The lesson for coaches and leaders here is the harder you push people to change, the harder they will push back. So, how can coaching work effectively with the brain? First, brain research reveals that focusing on problems or negative behaviour just reinforces those problems and behaviours. Therefore, the best coaching strategies focus on the present and future solutions. This requires the development of new neural pathways in the brain and learning new thinking patterns. When new learning occurs, it literally changes the very architecture of the human brain. (Reading this information is changing your brain as you mentally process these words).

In fact, transformational leadership relies on the leader's own ability to change. When you are coaching a person to change a behavior, there are competing forces at play. Broadly speaking, these are forces "for" and forces "against" the change. Several brain processes need to be in order

for this change to occur:

The motor cortex in the brain has to be activated. It has to receive a decision from the ventromedial prefrontal cortex after the pros and cons of action have been calculated. In turn, the ventromedial prefrontal cortex then makes the calculation and informs the action centers as to whether to act or not.

Ideally, the ventromedial prefrontal cortex receives information from multiple brain regions, including the reward centers (basal ganglia), the emotional register (amygdala), the conflict center (anterior cingulate cortex), and short-term memory (dorsolateral prefrontal cortex). Unfortunately, too much information obstructs change. Many managers receive several hundred emails a day. Information overload creates distraction, obstructs change, and is very prevalent.

Long-term memory also feeds into this equation of pros and cons, in part by its connections to the emotional register, by contributing its material and content. Most people recognize that for change to occur, they have to think about the relevant situation. But many people also leave out the feeling or emotion when they are trying to change. If they do this, the brain's decision making facility in the frontal lobes is missing vital information. When there is resistance to change, it is very rarely a missing thought process. Most often, it is a missing emotion. Coaches or managers can say to leaders, "When you are trying to make a change, your brain has to assess the pros and cons of your decision. Before you act, the frontal lobes in your brain do a quick calculation, but they rely on more than just your rational thinking to do this. They also rely on your emotions. How would you feel if you were to make this change?" This will allow leaders to add the emotional component to their analysis more readily and will move them closer to change.

There are two types of reasoning: hot and cold reasoning. An example of cold reasoning is a straightforward arithmetic operation - although even this is not as cold as we think! Cold reasoning usually activates short-term memory centres only, without activating regions involved in "hot" reasoning. Very few thinking process are actually cold. Even reasoning that appears cold is motivated when people have an emotional stake in it. This is almost always the case in business. Hot reasoning, on the other hand, activates the brain's ventromedial prefrontal cortex, the conflict detector (the anterior cingulate cortex) and the "gut interpreter" (the insula). Activation of these brain regions is critical to making effective decisions.

Consider, for example, the case of companies who were fearless about lending money to people for mortgages. Without this fear, they lacked the information that was necessary to judiciously distribute money. Fear is an emotion, and it needed to be part of the equation before money was lent. On the other hand, if fear dominated the thought of people who invented the airplane, we might never have been able to fly. In each case, the emotion of fear is necessary to ensure adequate precautions. In the former case, it discourages lending, whereas in the latter case, it encourages innovation with safety.

It is not easy to tell most leaders who are opposed to emotions being part of decision-making that they need to be "in touch with their emotions." Neuroscience can help to provide more acceptable language. As a coach, you may tell leaders that their brains' ventromedial prefrontal cortex relies on emotional data to make the correct decisions and that experiments have shown that when the ventromedial prefrontal cortex corrects for errors in the brain, it is largely because it makes contact with emotional centres in the brain. You may also remind leaders who are sensitive to "emotions" that emotions are really just electrical impulses travelling through the emotional centres in the brain. The ventromedial prefrontal cortex in their brains needs a read on this electricity prior to making a decision.

Another reason that change is difficult is that we tend to increase the value of our choices after we make them. A recent study has shown that this change in preference is registered by the brain's reward system (caudate nucleus, part of the basal ganglia). In other words, after a choice is made, the difference in activation in the reward system for selected versus rejected choices is much greater. We often think that we have to first develop complete commitment to a choice before we make a decision, but research shows us that we develop increased commitment to our choices after we make a decision.

A good coach can use this information to handle a difficult conversation that involves overvaluing a choice that has been made in the past. For example, a team member may not want to change a way of doing things and rationalize previous methods. Instead of using judgmental language about overvaluing, you can talk about how the brain processes preference after choice and what the specific challenges are.

Similarly, using the language of brain science can be a powerful way for people to understand their behaviours without personalizing the explanation. When a coach focuses on a client, the effect is one of direct focus, whereas focusing on "the brain" is something the coach and client can look at together. For example, if a coach feels that a client's overconfidence is getting in his or her way, the coach cannot simply say to all clients that they are being overconfident. The client may feel insulted and may close up. Instead, if a coach explains that confidence is tricky, and that there are two types of confidence - real confidence (which reflects the truth) and illusory confidence (which does not reflect the truth) - and that both of these types of confidence activate different parts of the brain without us being able to know which one we have, this would soften the impact on the client and encourage an exploration of the type of confidence that the client has.

Successful change is often impaired due to greater needs for energy utilization, as evidenced by having to go through the whole process of registering memories in the dorsolateral prefrontal cortex (short-term memory center) against negative inputs from the amygdala (emotional register), basal ganglia (reward center), and anterior cingulate cortex (conflict detector) and then transferring information to the hippocampus prior to its being held in a symbolic form while the neocortex consolidates this. . If people avoid this process, they will choose to repeat old habits.

You do not have to remember the brain regions referred to in this paper, but it is important to remember that more brain regions and more energy are needed for new learning.

The basic neuroscientific principles related to memory and change is as follows:

> Old habits require less energy. New habits require more brain processing and therefore new energy.
>
> For change to occur, the new process has to be remembered.
>
> Remembering occurs in steps: first short term, then intermediate term, and then longer term. Reducing conflicts with old tasks will help the client remember new tasks. Make these conflicts conscious.
>
> The brain will tend to remember things that are reinforced in an emotional context. Therefore, for change to be successful and for the various brain regions to consolidate memory, emotions must be involved. This can be done by involving a person's imagination or experience and through the use of examples. Some people will use tools such as music or visual aids (such as pictures) to enhance learning.
>
> The brain will not register rewards for the new changes if there is high anxiety.

Most managers and coaches realize that unless change is self-initiated or starts from within, it is a very difficult process to undergo, in part because it is so painful. A long time ago, scientists believed that this was in part because the brain was hardwired in childhood, and that asking people to change in adulthood was impossible. Now, neuroscience has shown that this in fact is not true. Although most circuits have already formed in the brain, it has been shown that the right kind of behavioral intervention can actually change the way in which the brain is wired. Often, this requires practice, and in its most effective form, requires both a change in thinking and emotions.

Research has demonstrated that when people make decisions that require moving from one situation to another, they will most often change their attitudes so that they view the new decision more positively and the old decision more negatively

For decisions to be translated into effective and unconflicted behaviour, a person has to be motivated to approach the new thinking and goals after being committed to the new decision. New attitudes will develop, and a person has to be able to align these attitudes with the new goal in a consistent manner for the new goal to be achieved. As just described, the dissonance associated with the new decision is likely to accompany the new actions necessary for the actual change to occur.

Change is uncomfortable. Effective change requires activation of the left frontal cortex. A recent study using brainwave (EEG) recordings showed that an induced decrease in left frontal cortical activation, which has been implicated in approach motivational processes, caused a reduction in spreading of alternatives. That is, a decrease in left frontal cortical activation made switching to the more positive view of a new decision more difficult. A follow-up experiment manipulated an action-oriented mind-set following a decision and demonstrated that the action-oriented mind-set caused increased activation in the left frontal cortical region as well as increased spreading of alternatives. The results of the present two experiments strongly suggest that the process of dissonance reduction following commitment is due to action-oriented processing, which is evident in relative left frontal cortical activation.

By targeting specific brain regions with the interventions discussed in this paper, coaches can remind themselves of steps they might have missed. Not every coach will want to use brain science as the predominant mode of interacting. These tools provide an additional approach to conventional tools used in coaching. Somehow, over the years, simple psychological approaches have gained the confidence of coaches because they sound "rational." For example, SWOT analysis is widely used, but many studies have shown that it is often not effective. Similarly, brain science sounds rational. However, the effective implementation of these targeted strategies relies on integrating them into an overall methodology. If we ask brain questions, we may get brain answers, which may illuminate your approach to a coaching or business problem from a completely different perspective.

Neuroscience has another major contribution to make to coaching - behavioural preference awareness and an awareness of the importance of adapting behaviour appropriately.

Adapting behaviour is crucial to effective coaching and HR leaders must include recognition and understanding of behaviour preferences in their organisations' Coaching Skills training. As a first step, coaches must become aware of their own behaviour preferences

Internal coaching is a key communication strategy that holds the promise of greater productivity and employee development, but recent research reveals that managers across the country are failing miserably at their coaching duties.

A 2011 survey - of human resource and training professionals, managers and chief executive officers - examined to what extent supervisors and managers are effective at performance diagnosis and how adept they are at adapting their coaching style.

Sixty one percent of managers and supervisors were unable accurately to assess employee performance issues to determine the right type of corrective action and/or necessary coaching. Only 8 percent were considered excellent.

When asked how effective managers and supervisors are at adapting their coaching style to meet the variety of performance situations they encounter, more than three-quarters (78 percent) of

managers and supervisors failed to adapt their coaching behaviour appropriately, and only eight percent were deemed excellent at adapting their coaching style.

In the absence of specific training, managers assume that good coaching equals good communication skills. However, good coaching requires much more than that.

It starts with an accurate understanding of one's own behaviour preferences and that of the one being coached. Behaviour preferences refer to the way people prefer to act and interact at work, or their "default" behaviours: keeping to themselves, being an encourager, dominating conversations and so on.

Because people have never operated in another behaviour preference, they tend to assume that their way of operating is the best or correct way. Understandably, this leads to assumptions about motives, character, effort and even the relative worth of various employees.

People unaware of individual behaviour preferences typically coach others with the unconscious intent of creating a mirror image of themselves. Coming into a coaching session, or into a coachable moment, with such misconceptions sets the stage for ineffective coaching at best, and discouraging or hostile interactions, at worst.

Fortunately for all involved in the coaching process, behaviour preference awareness can be learned and quickly put into practice, to great effect. One study has shown that managers with better behaviour preference awareness are better at leading teams (27 percent); better at coaching others (25 percent); and more likely to be promoted (19 percent).

Becoming a context-specific coach requires adaptability and perseverance, but behaviour preference awareness can be learned, practiced and improved. It's a soft skill that pays off in better coaching, better team leading, greater engagement, higher productivity and less conflict.

Awareness of behaviour preferences provides a sort of "power boost" that improves the effectiveness of communications and increases the productivity of coaching efforts. Behaviour awareness helps managers conduct the kind of robust one-on-one coaching that produces change and unleashes employee potential.

Conclusion

Much like a successful company, the brain relies on the input of its various parts prior to making a decision. That is, the brain acts as a set of collaborating brain regions that operate as a large-scale network.

Coaches can use this information to remind coachees that the company operates effectively due to the brains of all the people who are employed. All of these brains together form "the company brain." The leader is that part of the company brain that has to make the final decision: He or she

is the frontal lobe of the company brain. Let's reflect on how the frontal lobe functions: We know from extensive research that if there are insufficient inputs to the frontal lobe, it cannot make the correct decisions. Just as the frontal lobe of any individual brain needs inputs from the emotional centre in the brain before it can make a decision, the company's frontal lobe also needs this information. In the case of the company, these other "inputs" are other people. Coaches and managers can introduce leaders to the importance of working together by using this metaphor.

Furthermore, top managers who form these networks prior to becoming leaders are more likely to be successful. In the rise to greater responsibility, it is important for leaders to conceive of themselves much like the frontal lobe of the brain in "reaching out" to other "brain regions" within the company during the rise to leadership rather than after they have been nominated to that position. These frontal lobe functions in the business environment may involve bridging, framing, and capacitating - all ideas that are about relating and making the business environment relatable.