

The Brain: Saboteur or Success Partner? Exploring the Role of Neuroscience in the Workplace

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ABSTRACT

The World Economic Forum's Future of Jobs Report has identified Cognitive Flexibility as one of the top ten skills for organizations to thrive in the Fourth Industrial Revolution (Industry 4.0), which is the ability to let go of an old way of thinking and adopt a new way of thinking; the ability to fluidly unlearn and relearn, to survive and thrive in an uncertain environment. Identifying cognitive flexibility as a key workplace skill displays the importance of integrating neuroscience into the practical applications of the corporate world. This article explores this integration and its evolution, the importance that employees, leaders and teams understand how the human brain functions, how it impacts how they perform in the workplace, how their brain is wired differently from the people they work with, how they can train their brains to partner in their success and how organizations today can nurture a brain-diverse workplace.

Keywords: Neuroscience, Neuroplasticity, Neurogenesis, Brain Diversity, Colored Brain, Industry 4.0, Brain-Based Learning, Brain at Work.

The Evolution of Neuroscience

Up till as recent as 30 years ago, neuroscientists were able to research the human brain only once it was damaged or upon death of its owner, and not when it was whole and working. Today, thanks to the advancement in neuroscience technology, we have neuroimaging facilities like the functional magnetic resonance imaging (fMRI) that allow neuroscientists to observe brain activity during specific tasks or emotional states. This is important because without neuroimaging facilities, we understood the brain differently, and sometimes, inaccurately.

One of the biggest debates in neuroscience is the adult neurogenesis debate (Snyder, 2019), which has seen conflicting neuroscience research on the brain's ability to generate new neurons or brain cells. We thought that the human brain stopped producing neurons at the young age of two, but now know that the brain is capable of neurogenesis well into adulthood. A research done on London cab drivers (Maguire, 2011) found that they had larger hippocampus compared with other people. London cab drivers go through an extensive learning

process known as "The Knowledge", which tests them on their knowledge of more than 25,000 streets and 30,000 points of interest, and this three to four-year process literally enlarges the hippocampus region of the brain. An important finding in this research is that it contradicts the fact that neurogenesis does not happen in the adult brain, which also explained neuroplasticity, or the plasticity of the brain – the brain can change.

Neuroscience in the Workplace

Neuroscience and its related fields are having a major impact within and beyond the walls of research, seeping its way into the corporate world, where it is being used to increase bottom lines, through enhanced employee engagement, the science of achievement, increased team synergy, better and more impactful leadership, and general organizational wellbeing.

Neuroplasticity, for one, which is the ability of the brain to continuously change and reorganize itself by forming new neural connections, has attracted the interest

of more than just neuroscientists. Today, organizations are curious to know how neuroplasticity can benefit the workplace, and cognitive training is quickly gaining traction across industries. The World Economic Forum (World Economic Forum, 2016) has identified for the first time, cognitive flexibility as one of the top ten skills needed by the workforce in 2020 and beyond for the Fourth Industrial Revolution or Industry 4.0. A similar report published by the Institute for the Future at the University of Phoenix Research Institute (UPRI) (Davies, 2011) identified cognitive load management as one of the necessary skills to survive in the 2020 workplace. Both reports highlighting the pruning of the brain as an essential skill, reveals how important a time it is for the integration and proper assimilation of neuroscience into workplaces.

Institutions of higher learning, like the Massachusetts Institute of Technology, MIT (Massachusetts Institute of Technology, 2019) are now offering neuroscience-related subjects for business courses, because of the inevitable benefits of how heightened awareness of the working of the brain can impact the way we think, lead and do business. Neuroleadership (Rock, 2010), a coined term that is making waves within organizations, and which provides knowledge on how to apply neuroscience within leadership practices, change management and employee engagement, is another clear indication of how the global workforce is embracing neuroscience in the workplace. Even PhD students in neuroscience are starting to branch out into more careers within the industry rather than within academia (Akil, et al., 2016).

The Focus of Neuroscience-Based Learning at Work: The Primary Aims of the Brain

In the corporate scope of neuroscience and how it can help enhance human performance through awareness of the functioning of the brain, the focus of most brain-based learning initiatives have been on the field of neuroplasticity, or how to rewire the brain, through the strengthening or weakening of neural pathways in the brain. Every time there is a new learning, the brain forms pathways between neurons, or brain cells, through synapses. When the learning is repeated, the neural pathways strengthen, and without realizing it, this learning sticks—we see this when we learn to drive a car. What may have seemed difficult, awkward or fearful at first, would seem very much easier and natural (Kalina Christoff, 2016) as we continue to do it. Just as the neural pathways strengthen when the learning or action is repeated, they weaken when the learning is not repeated. This shows that any habit or thought pattern can be changed within a person by actively training the brain to rewire.

When teaching employees about neuroplasticity, they must first understand the brain. Most people would have some prior knowledge about the brain, but a foundation or refresher is necessary, to ensure that brain-based learning in the workplace has a higher stickability factor. The two biggest elements of the brain that are constantly highlighted in corporate brain-based learning initiatives, are that the brain is extremely efficient and that it is wired to keep us safe.

In its primary function to be efficient, the brain manages almost 99 percent of its processing of sensory inputs in an automated manner (Wilson, 2004), which means, that most of the 11 million bits of input that comes in through our sensory organs per second, goes into non-conscious, automated processing which we are not aware of. The result is that most of our responses are automated, or on automatic pilot (auto-pilot). The brain needs to stay efficient because consciously processing every bit of data is time and energy-consuming, and so, it relies a lot on heuristics or mental shortcuts, also known as experience-dependent neuroplasticity. What we have experienced before gets stored in our brain through neural pathways, and the brain accesses these memories when dealing with a similar stimuli or trigger. Someone who has been bitten by a dog when he was a child, would most probably be still afraid of dogs as an adult, because the brain has made an association very early on based on the painful experience, that “dogs” equal “pain”, and that mental association has created a fear of dogs by default. The downside of the brain’s need to be efficient, it that this creates biases within humans, and these biases impact how we work with others and how we see our world. By default, if left unaware on how the brain functions, humans will continue living with and allowing these biases to pilot our lives, which usually lead to unideal outcomes, especially when living amongst society. Some examples of biases that have impacted us include Implicit Bias (Asamoah, 2019), where we unconsciously hold a set of deeply ingrained beliefs about a social group, and Negativity Bias (Ito, Larsen, Smith, & Cacioppo, 1998), where we tend to remember more of our negative experiences than positive ones.

Negativity bias can also be seen in the brain’s other primary aim, which is to keep us safe, where it has developed more networks to manage threats than it has to manage rewards (Gordon, Palmer, Liu, Rekshan, & DeVarney, 2013). To ensure that we are safe, the brain is on a continuous mode of pattern recognition so it can effectively and quickly detect threats, and because it thrives on accurate predictions, the brain hates ambiguity (Ruyle, 2016). Uncertainty registers in the brain as

an error, as something that must be fixed so one can feel that comfort again – and that is why organizations understand the importance of proper change management initiatives when introducing a new change in the workplace.

How the Brain Can Sabotage the Working Individual

In non-threatening, non-ambiguous scenarios, the prefrontal cortex (PFC), the executive region of the brain, is in charge, allowing us to think rationally and logically – but when the brain detects a threat, the amygdala, which is the emotional region of the brain, takes over and the PFC goes offline, giving full control of the amygdala, an event called the Amygdala Hijack. When this happens, we go on “fight or flight” mode, ready to address the perceived threat.

What we experience is an increase in heart rate, the mouth going dry, becoming sweaty – all symptoms of stress and anxiety. This definitely helped our ancestors survive real life threatening situations like the risks of being mauled by a saber-tooth tiger while hunting for lunch, but the brain cannot tell the difference in intensity levels of threats, and treats them all the same way.

So, an angry-sounding e-mail from the boss might be perceived as a threat by the brain, along with some of these other workplace-scenarios:

- Not being considered for a promotion
- Having a subordinate constantly come late for your Monday morning meetings
- Working for a leader who looks like your very mean high-school teacher
- Experiencing high levels of anxiety when presenting to senior leaders
- Getting agitated when people are not on time for meetings, or when meetings run later than was informed
- Feeling anxious when confronted with an angry customer
- Given an assignment that seems unworthy

The brain under threat is a very mentally taxing condition. The threat response uses high levels of oxygen and glucose, diverting it from other parts of the brain, including parts that are responsible to keep us productive, like the working memory function that is responsible for our ability to think analytically, to have creative insights and to solve problems – and these can lead to unproductive professional relationships, poor performance even by high achievers, low morale and engagement and decreased overall productivity.

The brain under threat can impact one’s psychological safety, which is the ability to speak one’s mind without the fear of making a mistake, and because an attack to one’s psychological safety can have a deeper and longer-lasting impact on the brain as a physical punch to the face (Eisenberger, 2012), creating a psychologically-safe environment at work is of great importance.

The practicality of understanding these two primary brain functions especially in how they impact on how we function in the workplace is pivotal, because when the brain detects that it is under threat, it can unintentionally sabotage how we perform in the workplace and relate, react and respond to our colleagues, subordinates and leaders.

In a Workplace Stress and Anxiety Disorders Survey, 56 percent of employees surveyed claimed that stress and anxiety most often impact their workplace performance; 51 percent said that it impacted their relationship with co-workers and peers, 51 percent said that it impacted their quality of work, and 43 percent admitted that it affected their relationship with their superiors (Anxiety and Depression Association of America, 2006). Anxiety can have a negative impact on how we think, lead and make decisions at work, and it doesn’t help that anxiety is one of the leading causes of mental health issues globally (Ritchie & Roser, 2018).

Workplaces can use knowledge and awareness of how the brain functions to produce a more psychologically-safe environment for employees, leaders and teams. A two-year study on team performance at Google revealed that the highest performing teams are those which practice psychological safety (Rozovsky, 2015).

Accepting the Brain-Diverse Workplace

Organizations who can understand how the brain functions and how it dislikes uncertainty and ambiguity, can help nurture an environment that helps the brain be rewired to become every employee’s partner of success. Here are some ideas on what can be done within workplaces to understand, embrace, and nurture the Brain-Diverse workplace (Sivalingam, 2019).

Increasing awareness of how we are wired differently

A new research to better understand how the brain seeks to gain clarity amidst ambiguity (Carmazzi, 2018) reveals four genetic ambiguity relief processes– which are the chaotic, linear, relational, and intuitive processing, which

make the four colors of the Colored Brain concept. Having awareness that every individual in one's team might be wired differently, in the brain's attempt to seek clarity, can enhance our ability to better understand the people we work with and reduce misconceptions that one is trying to be difficult, when in actuality, they are responding to their brain's need for clarity. For example, we might be working for a leader who gets annoyed when a meeting runs late. It may seem like he is being difficult, but once we know that he is a Red-Brainer, whose brain needs to process information in a linear manner to gain clarity, we will be able to understand that he prefers an environment with structure; and in future, we can enhance our communication methods with him in case a meeting runs late again. Awareness has been identified by many studies, as a key element which affects an organization's bottom line (Korn/Ferry International, 2013) (MIT Sloan Management Review, 2012) – and for good reason. Awareness helps us become better leaders, more tolerant employees, and better team players.

Taking ownership over how to manage the brain at work

The entire organization should take ownership over the awareness and understanding that we are all working in a brain-diverse workplace, or that we are all a part of some brain-diverse society. Every employee should take ownership of how their brain functions and how it is wired differently from their team mates and leader. Every leader should take ownership to educate their team about the brain-diverse environment they are a part of, and how they can best work together. Every CEO, senior leader, business owner, and societal leader should take ownership to nurture a positive psychologically-safe brain diversity-friendly working environment. Every policy maker and governance officer should take ownership to develop guidelines, helping the organization better understand how they can train their brains to become a success partner instead of a saboteur. A research done reveals that 91 percent of managers agree that what they do as a manager affects the wellbeing of their staff (Mercer Marsh Benefits, 2017), which is a very promising start.

Interrupt work routines

Research has shown that short interruptions at work can improve focus (University of Illinois at Urbana-Champaign, 2011). The brain gradually stops focusing on a sensory stimulus over time if it remains constant, and

that can cause an attentional shift to something else, causing them to lose focus on a task.

Another good way to boost focus is by taking “transcendence” breaks, where one simply detaches themselves from any external stimuli, through initiatives like having time-off for reflection, like that practiced by consulting firm BrightHouse, which offers its employees five days a year to reflect and simply free-associate (Waytz & Mason, 2013).

Studies on the effects of mindfulness and meditation in the workplace have shown positive outcomes as well, with one revealing how ten minutes of meditation can help people with anxiety have more focus (University of Waterloo, 2017), and another revealing how the amygdala is less activated after eight weeks of mindfulness training (Desbordes, Shapero, & Powell, 2018).

Conclusion

There are great benefits in the integration of neuroscience, including neuroplasticity and cognitive pruning into the corporate world, especially through awareness of how the brain works, how it is wired differently, how it impacts workplace performance and relationships, and how to rewire it to become a success partner and not a saboteur in workplace success. There have been great efforts to integrate the two thus far, with hopes that more research keeps being generated and seen applied in the practicality of organizations leading toward Industry 4.0.

Competing Interests

No potential conflict of interest was reported by the author(s).

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